



Automount NFS

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 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

	mountpoint	map_name	[-options]
<i>master</i>	/net	/etc/auto.net	-rw, intr
	/-	/etc/auto.direct	-ro, intr
	+autofs.map		
	key	[-options]	location
<i>direct</i>	/vlsi/vlsi1	-rw,soft,nosuid	scorpio:/vlsi1
	/vlsi/vlsi2	-rw,soft,nosuid	scorpio:/vlsi2
<i>indirect</i>	WWW	-rw,soft,nosuid,vers=2	vega:/home/www
	mail	-rw,soft,nosuid,quota	ccserv:/spool/mail
	ftp	-ro,soft,nosuid	ftp:/home/ftp
	*	-intr,nfsv4	magpie:/share/&
	sys		dragon:/sys/\${OSNAME}

autofs (3)

Selector	Description
ARCH	Expands to the output of <code>uname -p</code>
CPU	Same as ARCH
HOST	Expands to the output of <code>uname -n</code>
OSNAME	Expands to the output of <code>uname -s</code>
OSREL	Expands to the output of <code>uname -r</code>
OSVERS	Expands to the output of <code>uname -v</code>
&	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}
- /etc/rc.d/autounmountd {start|stop} (FreeBSD)
- /etc/init.d/autofs {start|stop} (Solaris)
- /etc/init.d/autofs {start|stop|reload|status} (Linux)

❑ autofs in FreeBSD

- Edit rc.conf

```
...  
autofs_enable="YES"  
...
```

autofs (5)

❑ 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      chimchim:/usr/man band(1):/usr/man  
/www/data     -ro      ccbsd4,altair:/www/data
```

autofs (6)

❑ 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 chimchim exports **/usr/share/man**
 - Automount at the path **/net/chimchim/usr/share/man**