NFS

CHUGALUG

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Mount directories between machines

Pro

- Lightweight
  - Fast transfers
  - Screams past ssh/scp
- Around forever
  - Everyone knows/has
- Robust
  - Used
    - For years
    - Often
    - By many

Con

- Bad for public situations
  - No encryption
  - Little security
- No longer sexy
  - Support can be weird/hard
- Quirky
  - Not just NFS

The basics you have to mess with

Server

- /etc/hosts
- /etc/exports
- nfsd
- Set ports if firewall
  - Default: new each time
  - Setting static depends a lot on the system
- Firewall
  - Reliable ports or
  - Trusted interface

Client

- /etc/hosts
- /etc/fstab
- nfs
- Mount point(s)
- Firewall
  - Know server ports or
  - Trusted interface

NFS mounting instructions common to

MOST SYSTEMS

Sanity checks

```
root@bob|dobbs:~# rpcinfo -p
   program vers proto    port
    100000    2   tcp     111  portmapper        ## there will
    100024    1   tcp     866  status            ## likely be
    100003    3   udp    2049  nfs               ## more than
    100021    3   udp    4045  nlockmgr          ## one of
    100011    2   tcp     863  rquotad           ## any of
    100005    3   tcp     862  mountd            ## these
(red = server only; black = both)

## Make sure nfsd is started on the server
root@bob:~# ps -ef | grep nfsd
root      4685     2  0 Oct11 ?        00:00:00 [nfsd]
root      4686     2  0 Oct11 ?        00:00:00 [nfsd]
root      4687     2  0 Oct11 ?        00:00:00 [nfsd]
… one of these for however many you started
in /etc/rc.d/rc.nfsd /etc/init.d/nfs or similar for your system
```

some content from: http://rlworkman.net/howtos/NFS_Firewall_HOWTO

Little things

Be sure host and client know each other (/etc/hosts)

Make mount points! (mkdir /path/to/mount/point)

Make sure there is not content already in the mount point!

Don’t put anything necessary to the client in the nfs mount!
(like home directories, system config files)

Don’t forget to open the relevant ports on server & client
(not doing ipchains today…)

General info:

```
root@bob:/etc# man nfs
root@bob:/etc# man nfsd
root@bob:/etc# man nfsstat  ## statistics on your nfs mounts
```

Server: give permission to export

```
root@bob:/etc# vi exports
/home/lachele  dobbs(rw,anonuid=1000,anongid=100) alice
/programs  *.woods.ccrc
### the default is read-only
##
### anonuid and anongid export write privs per those numbers
###     to the anonymous user
###     any user with all_squash (but only in trusted environ)
##
### wild cards match any

root@bob:/etc# exportfs -av

### for more info
root@bob:/etc# man exports
root@bob:/etc# man exportfs
```

Client: specify what to mount

```
root@dobbs:/etc# vi fstab
bob:/home/lachele /home/lachele/Bob nfs rw,user,noauto,bg,soft 0 0
### the default is read-only
##
### user = user can mount/umount – only really useful if “noauto”
##
### soft = only way to (sort of) stop apps from hanging
###        most sites say don’t use (can corrupt data)
###        we use, and it has usually worked
##
### see also:  timeo, retrans, rsize, wsize, etc…
root@dobbs:/etc# mount /home/lachele/Bob ##(lachele can mount, too)

### for other info
root@dobbs:/etc# man nfs ### for mount options
root@dobbs:/etc# man fstab
root@dobbs:/etc# man mount
```

Quirky

- Disappearing server = big headache
  - “hard” option
    - Hangs and must kill processes
    - Less likely to corrupt data
  - “soft” option
    - Still might hang, but less likely
    - More likely to corrupt data
- Can’t mount a mount (chain mounting)
  - Not sure why. Just never works.
- 32-bit and 64-bit
  - Some 64-bit programs have trouble with 32-bit mounts
  - Currently seems a kernel or fs issue

Server and client setup for system configurations similar to

SLACKWARE

Server: /etc/services

```
root@bob:/etc# vi services    ## can change ports – use unique
    sunrpc 111/tcp rpcbind     # SUN Remote Procedure Call
    sunrpc 111/udp rpcbind     # SUN Remote Procedure Call
    mountd 862/tcp             # NFS mountd
    mountd 862/udp             # NFS mountd
    rquotad 863/udp            # NFS rquotad
    rquotad 863/tcp            # NFS rquotad
    status 865/udp             # NFS status (listen/send)
    status 865/tcp             # NFS status (listen/send)
    status 866/udp             # NFS status (send/listen)
    status 866/tcp             # NFS status (send/listen)
    nfsd 2049/tcp              # NFS server daemon
    nfsd 2049/udp              # NFS server daemon
    lockd 4045/udp             # NFS lock daemon/manager
    lockd 4045/tcp             # NFS lock daemon/manager

(listen/send reversed on reciprocal server)
```

lots of content from: http://rlworkman.net/howtos/NFS_Firewall_HOWTO

Server setup: /etc/sysctl.conf

Slackware 13.1 and later:

```
root@bob:/etc# vi sysctl.conf
fs.nfs.nlm_udpport=4045
fs.nfs.nlm_tcpport=4045
```

Earlier versions:

```
root@bob:/etc/modprobe.d# vi lockd.conf
options lockd nlm_udpport=4045 nlm_tcpport=4045
```

lots of content from: http://rlworkman.net/howtos/NFS_Firewall_HOWTO

Server setup: /etc/rc.d/rc.nfsd

```
root@bob:/etc/rc.d# chmod +x rc.nfsd
root@bob:/etc/rc.d# vi rc.nfsd

# set quota daemon to port 863
if [ -x /usr/sbin/rpc.rquotad ];
 then echo " /usr/sbin/rpc.rquotad -p 863“
 /usr/sbin/rpc.rquotad -p 863
 fi

# set mount daemon to port 861
if [ -x /usr/sbin/rpc.mountd ];
 then echo " /usr/sbin/rpc.mountd -p 861“
 /usr/sbin/rpc.mountd -p 861
 fi
```

lots of content from: http://rlworkman.net/howtos/NFS_Firewall_HOWTO

Server and client setup: /etc/rc.d/rc.rpc

```
root@bob|dobbs:/etc/rc.d# chmod +x rc.rpc
root@bob|dobbs:/etc/rc.d# vi rc.rpc # bits might be in rc.nfsd

if [ -x /sbin/rpc.portmap –a –x /sbin/rpc.statd ]; then
  # portmap daemon chroot to /var/empty …increases security
  if ! ps axc | grep –q rpc.portmap ; then
    echo “Starting RPC portmapper: /sbin/rpc.portmap –t /var/empty“
    /sbin/rpc.portmap –t /var/empty
  fi
  # status daemon listen on port 865 and talk on port 866
  if ! ps axc | grep –q rpc.statd ; then
    echo “Starting Net. Stat. Mon.: /sbin/rpc.statd –p 865 –o 866“
    /sbin/rpc.statd –p 865 –o 866 # server
    echo “Starting Net. Stat. Mon.: /sbin/rpc.statd –p 866 –o 865“
    /sbin/rpc.statd –p 866 –o 865 # client
  fi
fi
```

lots of content from: http://rlworkman.net/howtos/NFS_Firewall_HOWTO

(don’t forget to open firewall ports and)

reboot…

Server and client setup for system configurations similar to

RED HAT

Server

```
## Only need this to set static ports for a firewall
root@cap:/etc/sysconfig# vi nfs ## can change ports – use unique
    RQUOTAD_PORT=1073
    LOCKD_TCPPORT=35793
    LOCKD_UDPPORT=35999
    MOUNTD_PORT=1095
    STATD_PORT=1072
    STATD_OUTGOING_PORT=2620

root@cap:~# chkconfig portmap on  ## usually already started
root@cap:~# chkconfig --list portmap  ## command to check

root@cap:~# chkconfig nfs on
root@cap:~# reboot
```

content from Google searches and mucking about on my own

Client

should just work…
(but don’t forget to open firewall ports)

content from Google searches and mucking about on my own