



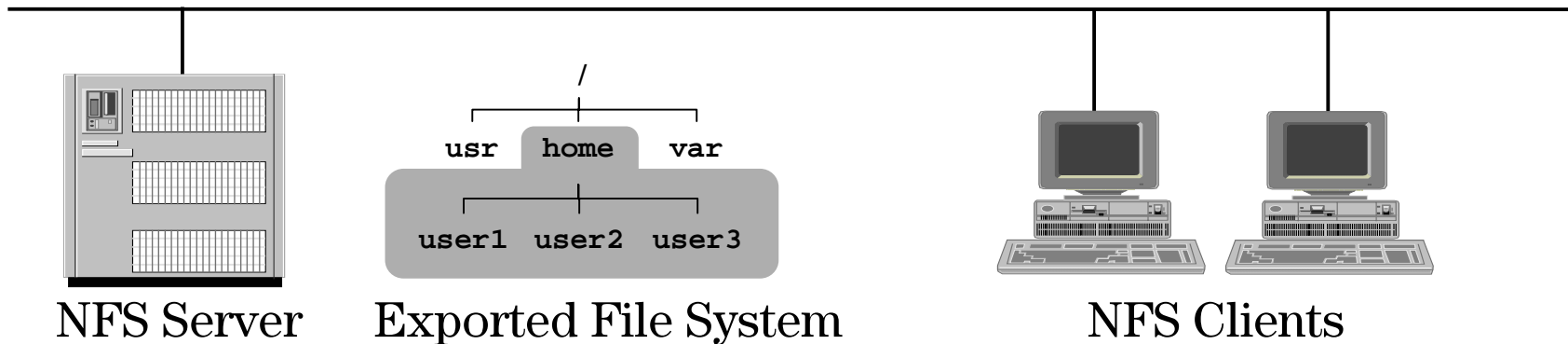
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Configuring NFS

Version C.00
H3065S Module 9 Slides

NFS Configuration Considerations

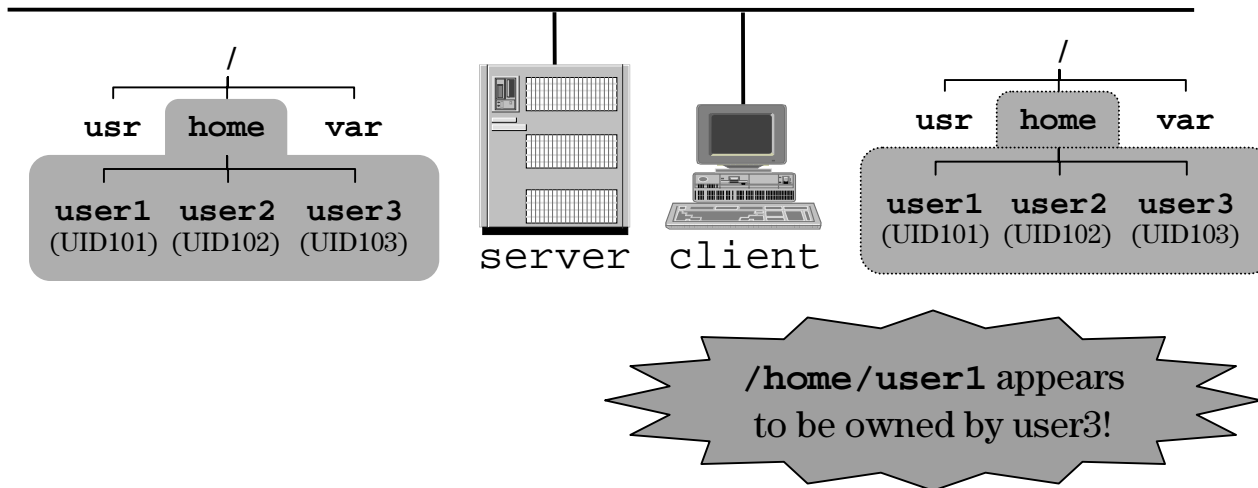
- ✓ Which files and directories should be shared?
- ✓ What is an appropriate client-to-server ratio?
- ✓ Which system should be used as the NFS server?
- ✓ What are the implications if the server goes down?
- ✓ What superuser access will be allowed?



Configuring NFS Servers and Clients

1. Keep UIDs and GIDs consistent.
2. Configure the NFS server.
 - a. Ensure the NFS subsystem is in the kernel.
 - b. Edit the server's `/etc/rc.config.d/nfsconf` file.
 - c. Start NFS server daemons.
 - d. Create the `/etc/exports` file.
 - e. Export the directories.
 - f. Check the server configuration.
3. Configure the NFS client.
 - a. Ensure the NFS subsystem is in the kernel.
 - b. Edit the client's `/etc/rc.config.d/nfsconf` file.
 - c. Start NFS client daemons.
 - d. Create a new entry in the `/etc/fstab` file.
 - e. Mount the NFS file system.
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4. Keep the time synchronized with all other nodes.

Keep UIDs and GIDs Consistent



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server: /etc/passwd

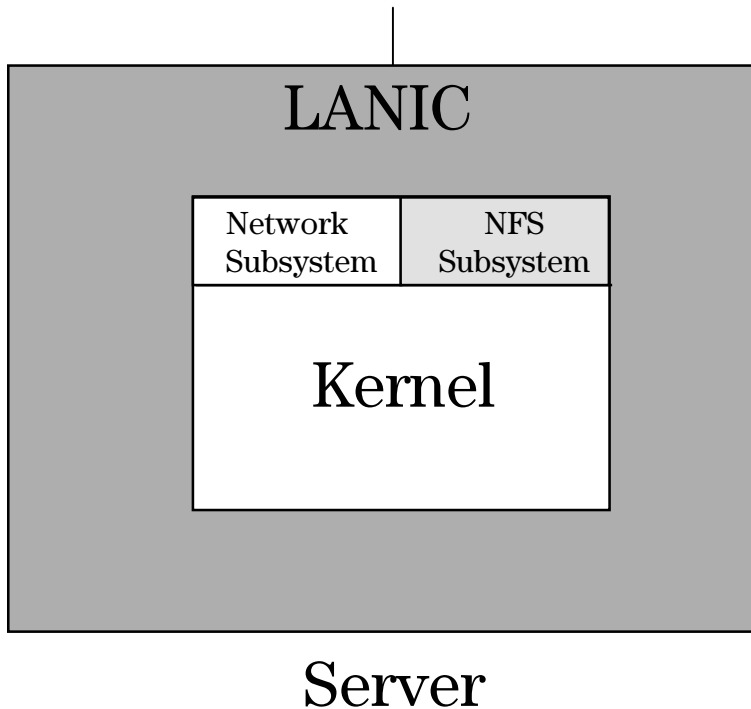
```
user1:...:101:100:...:/home/user1:...
user2:...:102:100:...:/home/user2:...
user3:...:103:100:...:/home/user3:...
```

client: /etc/passwd

```
user1:...:103:100:...:/home/user1:...
user2:...:102:100:...:/home/user2:...
user3:...:101:100:...:/home/user3:...
```

Note: Avoid this user configuration!

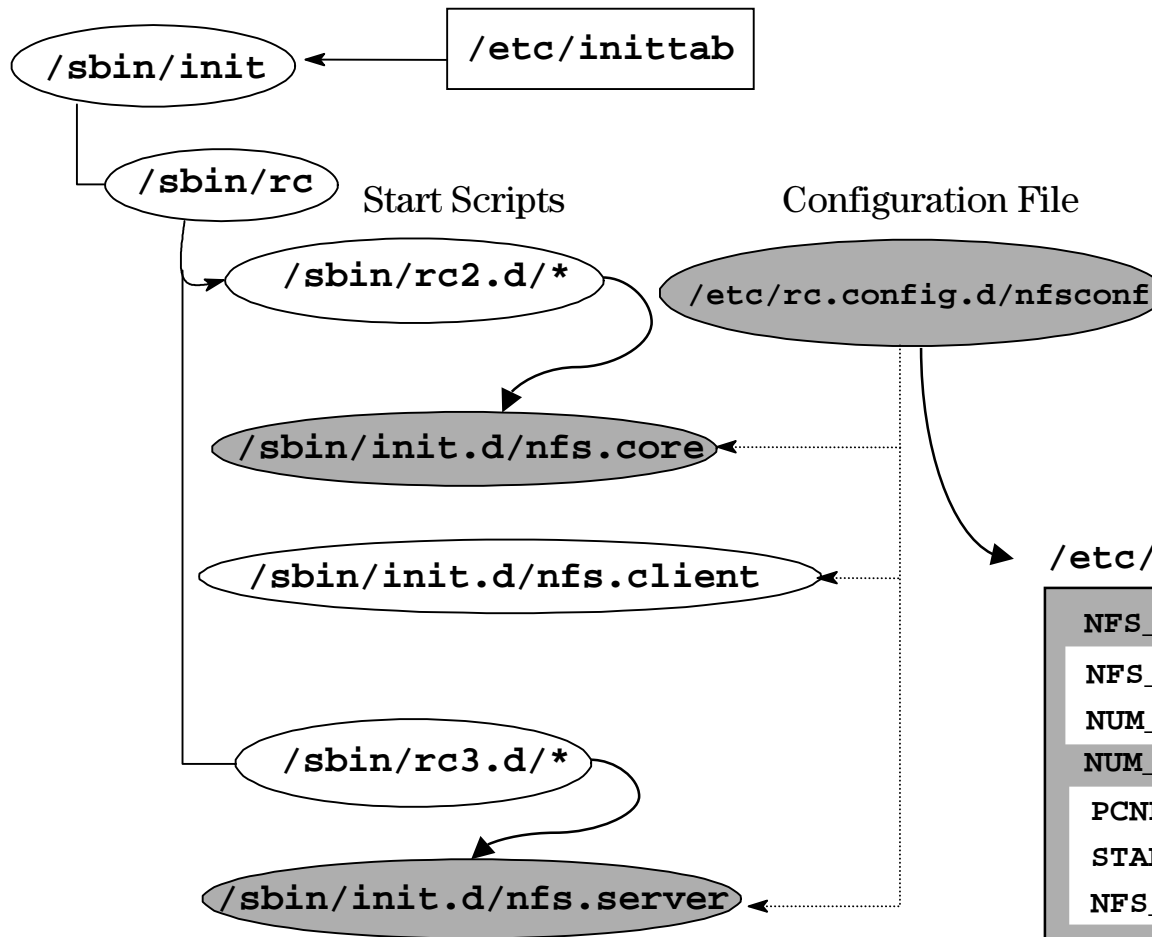
Ensure That the NFS Subsystem Is in the Kernel



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If the NFS subsystem is *not* present,
add it into the kernel via SAM

Edit NFS Server's Configuration File



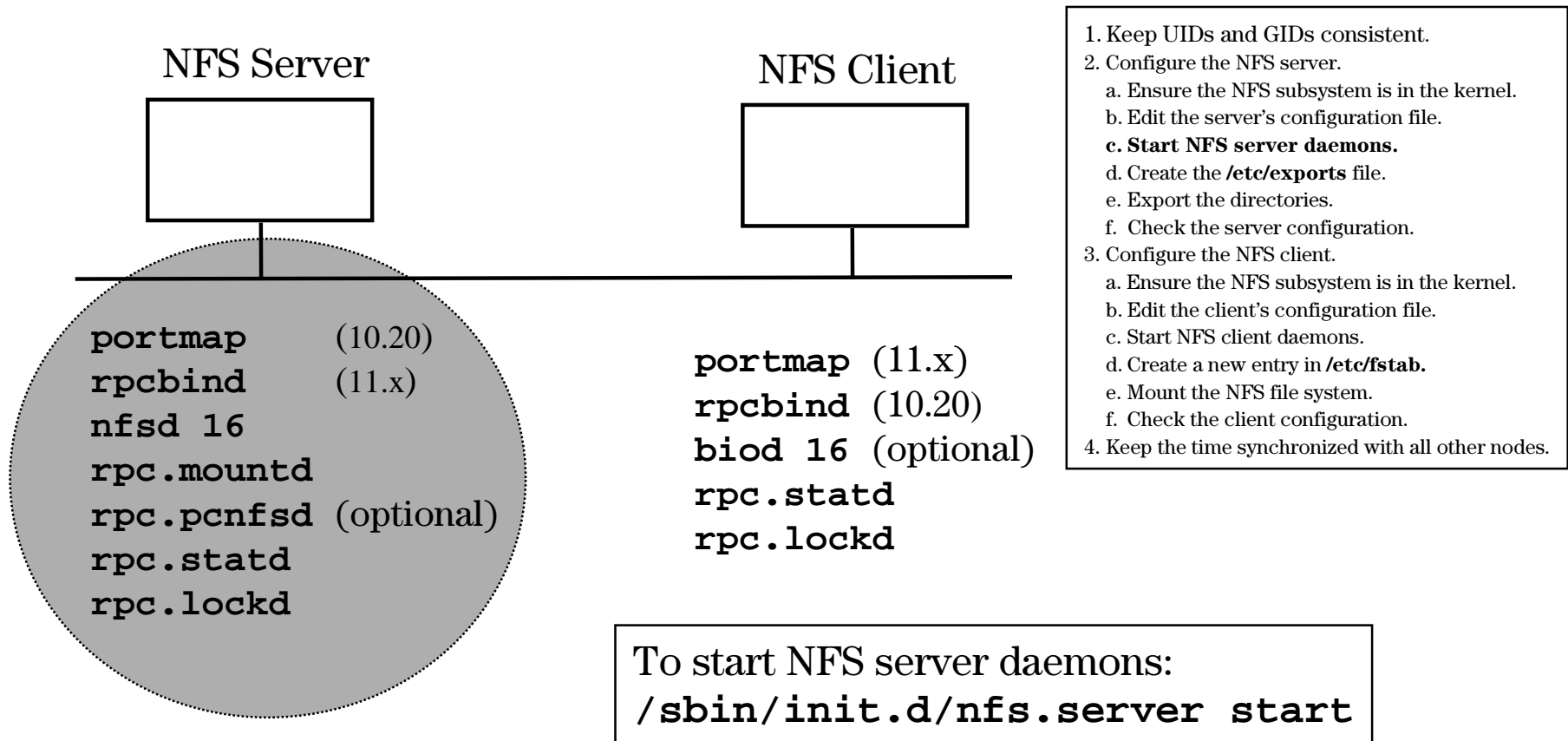
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`/etc/rc.config.d/nfsconf`

```

NFS_CLIENT=1
NFS_SERVER=1      #Required!
NUM_NFSD=16      #Required!
NUM_NFSIOD=16
PCNFS_SERVER=1   #Optional!
START_MOUNTD=1  #Required!
NFS_TCP=1        #Optional!
  
```

Start NFS Server Daemons

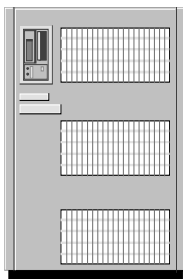


Create the `/etc/exports` File

Examples:

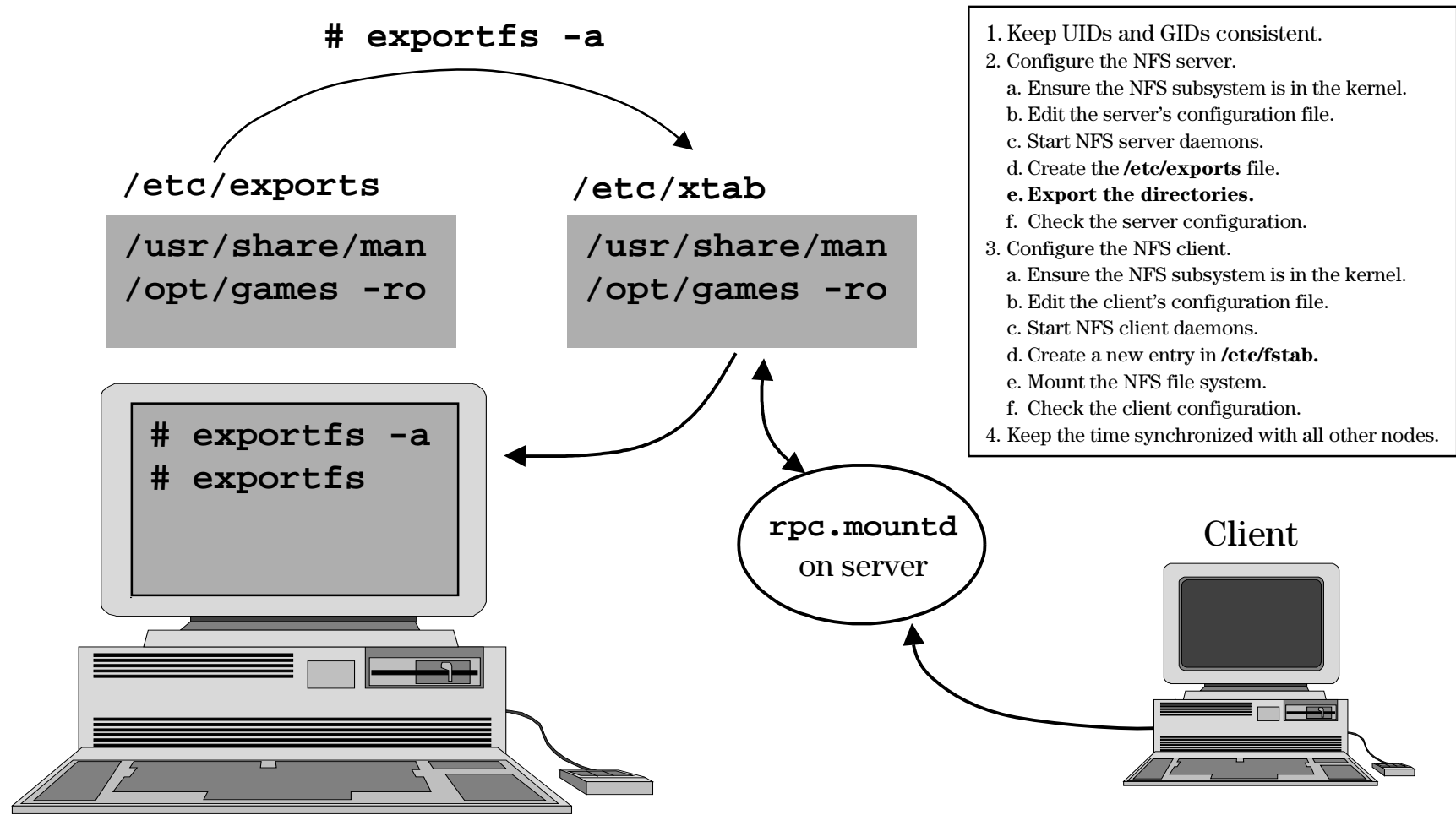
1. `/usr/share/man`
2. `/home` `-access=oakland:la`
3. `/opt/games` `-ro`
4. `/opt/appl` `-access=oakland:la,ro`
5. `/usr/local` `-rw=oakland`
6. `/etc/opt/appl` `-root=oakland,access=la`

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I can use the `/etc/exports` file to control which clients mount my file systems!

Export the Directories



Check the Server Configuration

✓ Are the NFS server daemons registered?

```
# rpcinfo -p server
  program vers proto  port  service
  100003   2    tcp   2049  nfs
  100003   3    tcp   2049  nfs
```

✓ What file systems have been exported to whom?

```
# showmount -e server
  /usr/share/man (everyone)
  /opt/games     (everyone)
```

✓ What export options were specified?

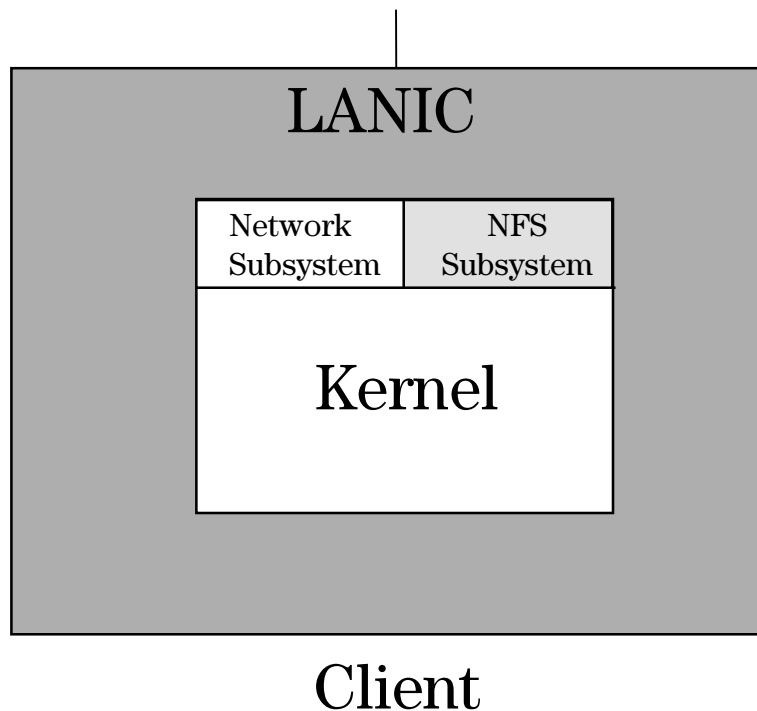
```
# exportfs
  /usr/share/man
  /opt/games -ro
```

✓ Which clients currently have file systems mounted from the server?

```
# showmount -a server
  client:/usr/share/man
  client:/opt/games
```

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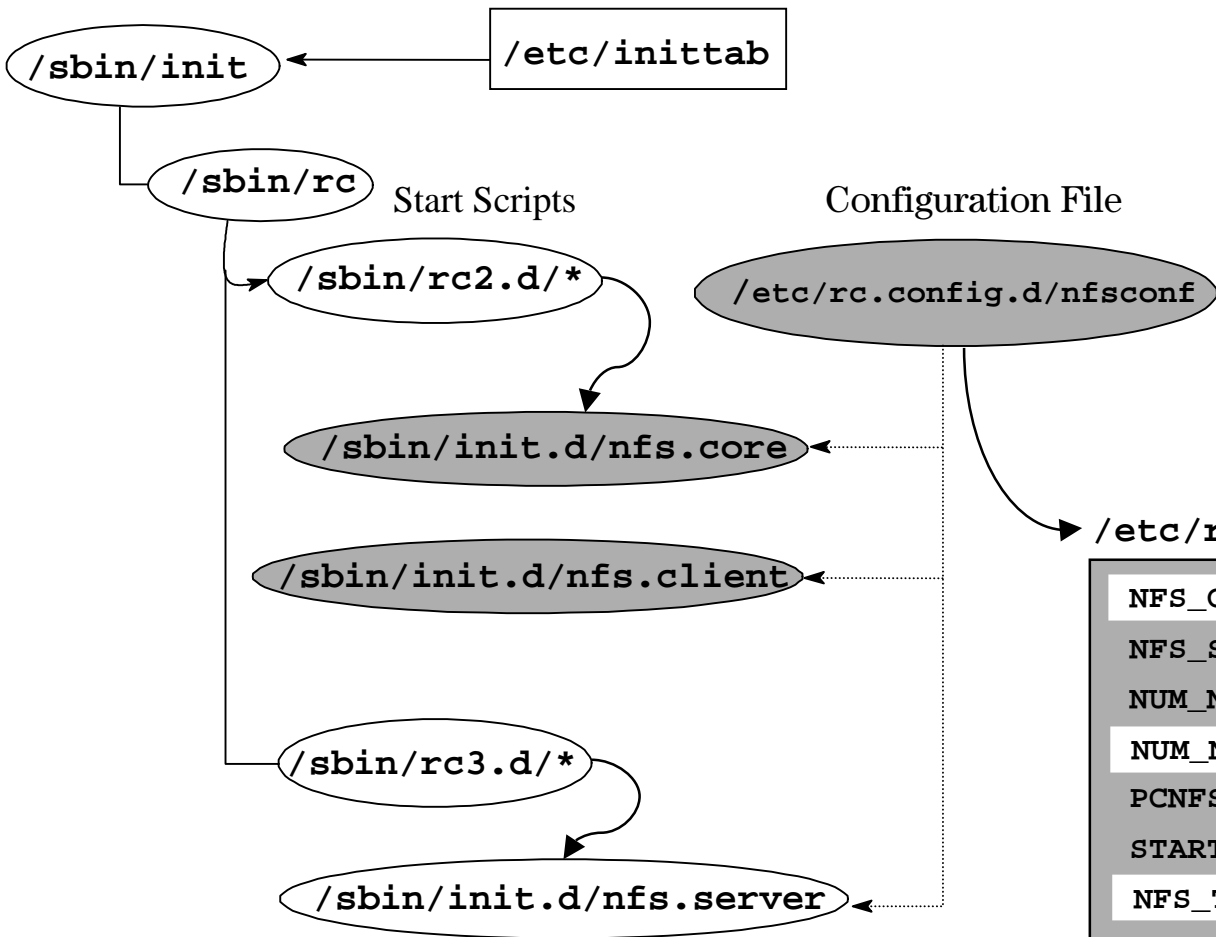
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Edit the Client's Configuration File

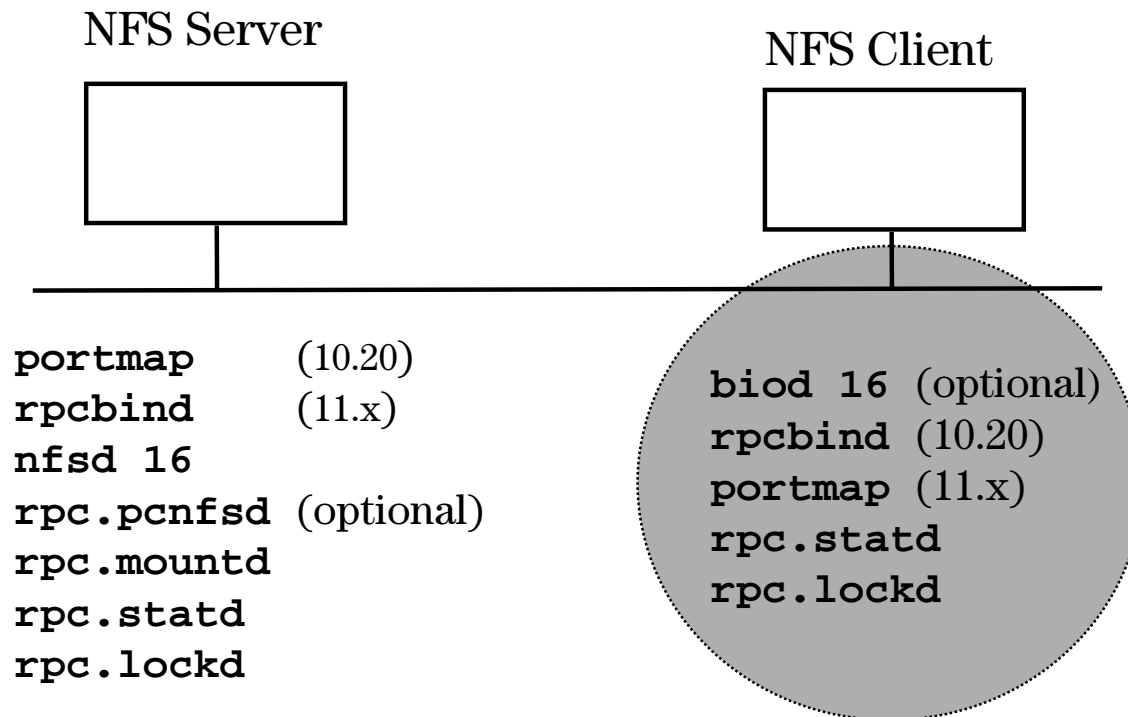


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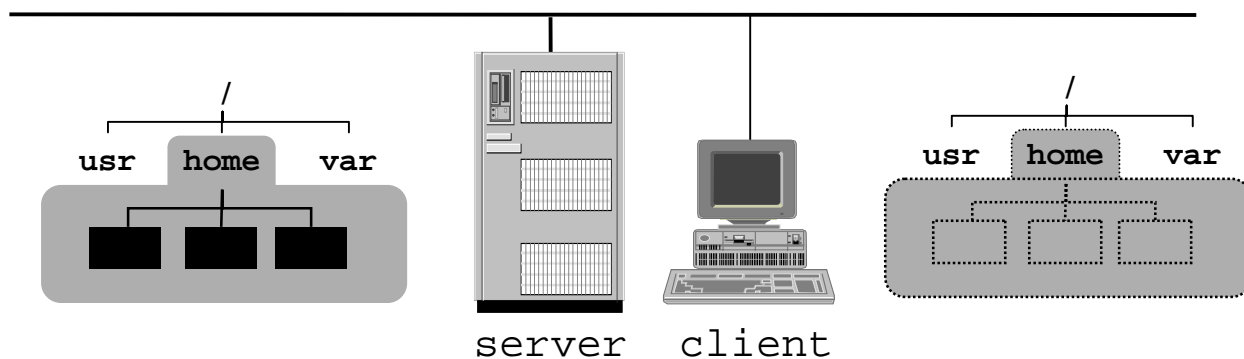
Start NFS Client Daemons



To start the client NFS daemons:
`/sbin/init.d/nfs.client start`

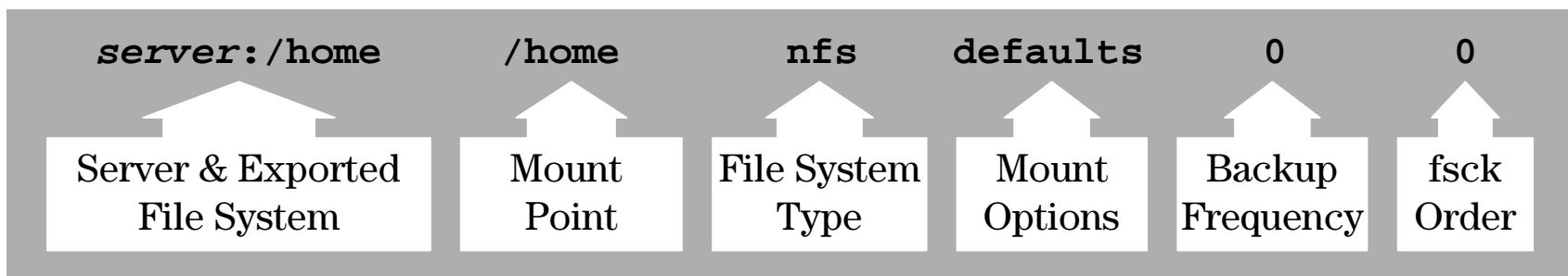
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Create a New Entry in `/etc/fstab`

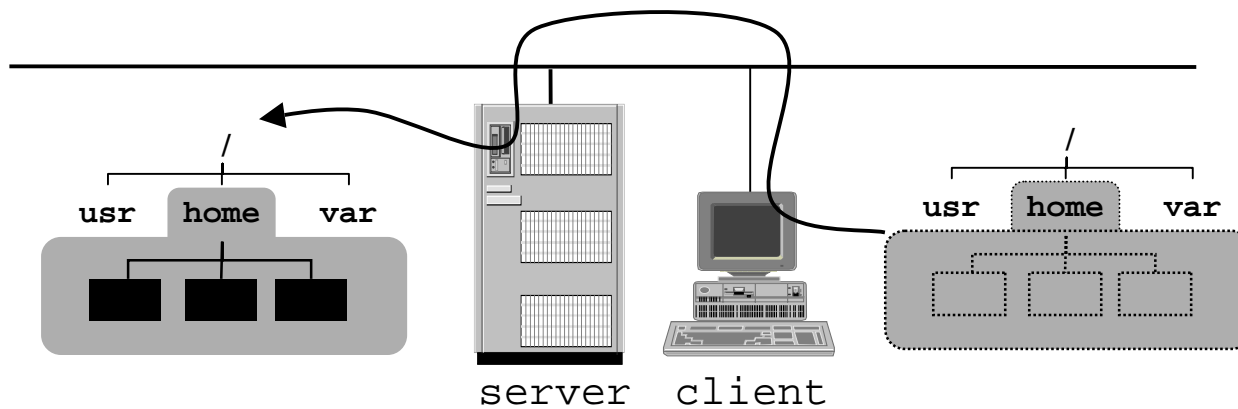


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client: `/etc/fstab`



Mount the NFS File System



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Mount Examples

```
# mount server:/home /home
# mount /home
# mount -aF nfs
# mount -a
# mount -v
```

Unmount Examples

```
# umount server:/home
# umount /home
# umount -aF nfs
# umount -a
```

Check the Client Configuration

✓ Are the NFS client daemons running?

```
# ps -e | grep -e rpc -e biod
1000 ? 0:00 biod
1010 ? 0:00 rpcbind
1020 ? 0:00 rpc.lockd
1030 ? 0:00 rpc.statd
```

✓ What file systems are available from the server?

```
# showmount -e server
/usr/share/man (everyone)
/opt/games      (everyone)
/home           oakland,la
```

✓ What file systems do I have mounted?

```
# mount -v
/dev/vg00/lvol1 on /stand type hfs defaults on Sat Jan 1 2000
/dev/vg00/lvol3 on / type vxfs defaults on Sat Jan 1 2000
server:/home on /home type nfs defaults,NFSv3 on Sat Jan 1 2000
```

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Review: Configuring NFS Servers and Clients

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Common NFS Problems

- ✓ The `/etc/exports` file is missing, incomplete, or erroneous.
- ✓ The `/etc/exports` file restricts file system access.
- ✓ The `/etc/exports` file contains aliases rather than official host names.
- ✓ A new entry in `/etc/exports` was not exported with `exportfs`.
- ✓ The `portmap/rpcbind` daemon was accidentally killed.
- ✓ The `rpc.mountd` daemon is not running on the server.
- ✓ The NFS server is down.
- ✓ The NFS server is heavily loaded.

Monitoring NFS Activity with `nfsstat`

```
# nfsstat -s
```

```
Server rpc:
```

```
Connection oriented:
```

calls	badcalls	nullrecv	badlen	xdrCALL	dupchecks	dupreqs	TCP
50505334	0	0	0	0	16826459	0	

```
Connectionless oriented:
```

calls	badcalls	nullrecv	badlen	xdrCALL	dupchecks	dupreqs	UDP
11	0	0	0	0	0	0	

```
Server nfs:
```

calls	badcalls
38543	0

```
Version 2: (0 calls)
```

calls	badcalls	getattr	setattr	root	lookup	readlink	read	PV2
0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	
wrcache	write	create	remove	rename	link	symlink		
0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	
mkdir	rmdir	readdir	statfs					
0 0%	0 0%	0 0%	0 0%					

```
Version 3: (50505345 calls)
```

calls	badcalls	getattr	setattr	lookup	access	readlink	read	PV3
4 0%	118 0%	2007 0%	33678605 66%	106 0%	0 0%	0 0%	0 0%	
write	create	mkdir	symlink	mknod	remove	rmdir		
49 0%	16822390 0%	0 0%	0 0%	0 0%	1921 0%	0 0%	0 0%	
rename	link	readdir	readdir+	fsstat	fsinfo	pathconf		
46 0%	0 0%	0 0%	0 0%	0 0%	4 0%	0 0%	0 0%	