NFS

NFS – Network File System

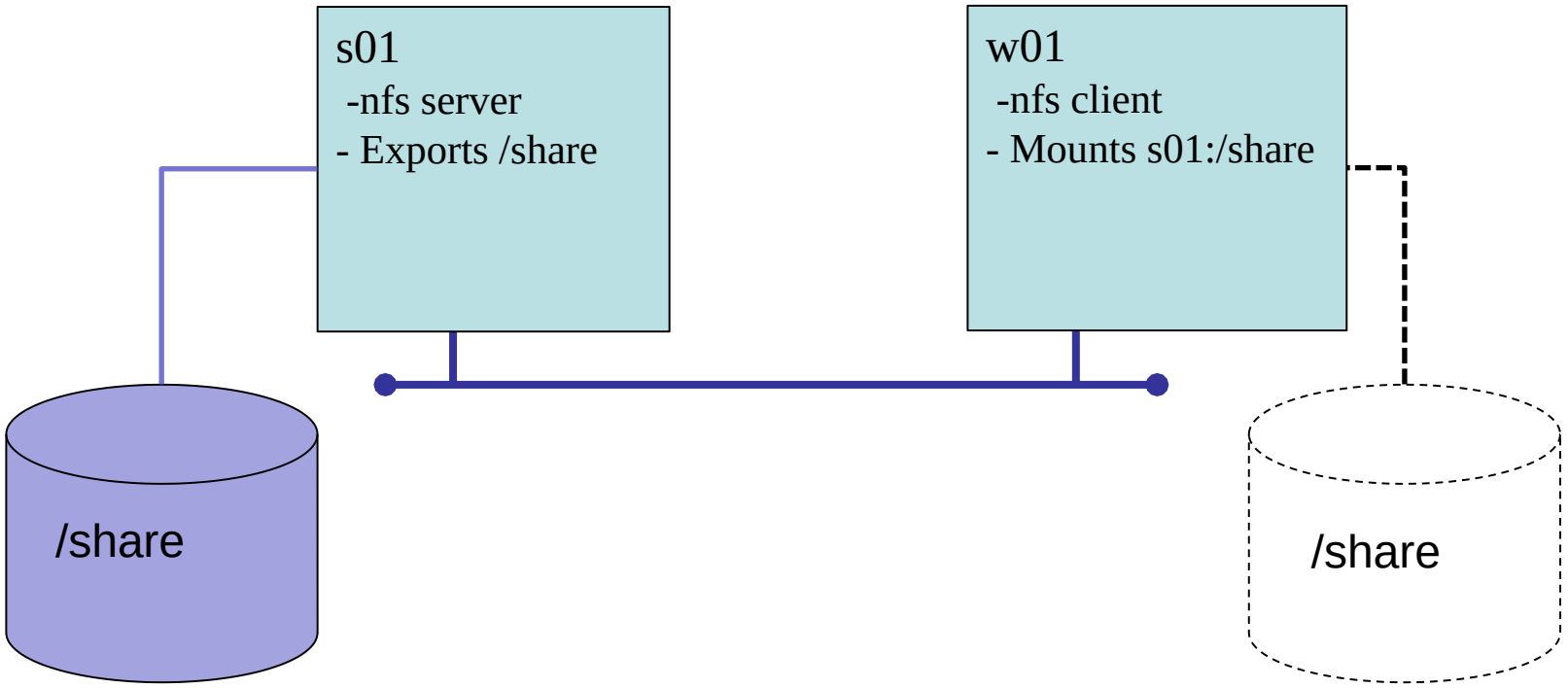
- Simple system for remote access to a server's file system
- Created in 1984 by Bill Joy of Sun Microsystems
- Tightly bound to the Lunix/Unix permissions model
  - *for better or worse*
- Allows one system to use and other's storage 'like it was local'

NFS – Network File System

Servers and Clients

- Servers *export* a portion of their file system tree
- Clients *mount* what the server has exported

How we will use NFS in the lab...



How do we tell s01 what to share?

/etc/exports

- Text file
- Lists directories to be shared
- Tells NFS which systems can access the share
- Tells NFS how “much” to share

/etc/export examples

Export /shares/foo in read only mode to w01

```
/shares/foo w01(ro)
```

Export /shares/bar in read/write only mode to w02

```
/shares/bar w02(rw)
```

Some export options

Option	Description
ro	Read only
rw	Read/Write
root_squash	Map remote root to nfsnobody
no_root_squash	Allow remote root access
all_squash	Map all remote users to nfsnobody

What's this squashing and why should I care?

NFS Security Model

Simple extension of basic UID based model across the network

Access is controlled at the Node level (IP Addr)

- If you allow one user from w01 your allow *almost* everyone from w01
- What about root on w01???

NFS Security Model - Implications

- UID numbers should be consistent across all nodes
- Be careful with root access (this is why we squash)
- Susceptible to IP spoofing

NFS Version 3 vs Version 4

Version 3 (and below) uses UID and only UID

- Allows files to be created with UID not in /etc/passwd

Version 4 uses a combination of ‘user@domain’ and UID

- Modifies incoming UID to ‘best’ match

  Username not on system -> nobody

  Username on systems -> local UID

This can be very confusing...

***When using NFS, make sure UID/UserNames pairs are consistent**.*

Client Configuration

Specially formatted entry in **/etc/fstab**

```
s01:/share/foo  /s01/foo  nfs  defaults   0 0
```

Instead of a local device like
/dev/sda2
we have,
<host>:<share_name>

Tells the system to mount a share not a local device.

Examples

Let's walk through some examples...