

# 1 Lab: Standard Operations

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## Introduction

This lab exercise allows you to apply classroom learning by performing a series of operations on an M2000 system.

## General Instructions

Perform the steps in the given sequence and complete the entire exercise. Refer to the Alpha Training Manual, the man pages and any other related documents as required. Contact your instructor with any concerns or questions. Good luck and have fun with the exercise.

## Objectives

- ▲ Establish network connectivity
- ▲ Set up the M2000 as a NIS client
- ▲ Create and manage RAID arrays and virtual partitions
- ▲ Create, fsck, and mount LFS filesystems
- ▲ Export an LFS filesystem as an NFS filesystem

# Establishing Network Connectivity

1. Log on to your system as root.
2. Edit the `/etc/hosts` file on both the client and the M2000 to add the appropriate entries:

M2000 Name	M2000 IP	Client Name	Client IP
piaget	172.16.65.72	tehipite	172.16.65.75
edum2k1	172.16.65.50	dragtooth	172.16.65.44
edum2k2	172.16.65.73	deerhorn	172.16.65.74
edum2k3	172.16.65.51	doodad	172.16.65.46

3. Edit the file `/usr/AXbase/etc/iftab` to set `afe0` to be the primary interface. Note several things:
  - ▲ While the “init state” field is still shown in the `iftab` comments, it should not be specified
  - ▲ The netmask for both labs is `255.255.255.224 (ffffffe0)`
  - ▲ If you are in the Yellowstone lab, you should run at 100mhz half duplex, and in the Grand Canyon lab you should run 10mhz half duplex.
4. Execute the command `ax_ifconf 1` to bring up `afe0` as specified in `iftab`.
5. Test network connectivity by pinging between the M2000 and the specified client.

## Creating RAID Arrays.

1. Logon to the M2000 as root.
2. Use the **ax\_storage ldrv** command to list all disks.
3. Use the **ax\_storage lcdrv** command to list all disks available for configuration.
4. You will be using 4 disks in your RAID arrays. Create one RAID7 array using the **ax\_storage create** command.
5. Partition the RAID7 array into slices of your choice. The command to partition is **ax\_label**.
6. List the partitioning information using the **ax\_lslabel** command.
7. Create a RAID0(striped array) using 3 drives.
8. Partition each drive of the RAID0 array into 6 slices with Slice 6 having all the remaining sectors.
9. Create a concatenated virtual partition consisting of RAID slices and a plain RAID7 drive.

# Creating Filesystems

1. Create an LFS filesystem on one of the RAID arrays created in the previous section, using the `mkfs` command.
2. Create a fsck scratch partition by editing the file `/usr/AXbase/etc/fstab` and executing the command **`ax_fsck_scratch -s`**, then verify its existence with the command **`ax_fsck_scratch -l`**.
3. Execute a fsck on the newly created filesystem.
4. Create a mount point for the filesystem, add an entry in `/usr/AXbase/etc/lfstab` for the newly created filesystem and mount point, and then run the command **`mount -aF lfs`** to mount the new LFs filesystem.
5. Verify that you can read and write to the new filesystem.

# Exporting a filesystem via NFS

1. Edit the `/etc/dfs/dfstab` file to add an entry for the newly created filesystem
2. Run the command **shareall** to execute the command just added to `dfstab`.
3. From the client execute the command **dfshares <servername>** to verify that the filesystem is indeed available for NFS mounting.
4. Mount the filesystem on the client and verify that you are able to read and write as specified.

# Things to Try

- ▲ Set up NIS. You'll want to bind to alpha1 or auspex. Don't forget to change nsswitch.conf to use NIS.
- ▲ Degrade a filesystem by pulling out the drawer while accessing the filesystem. Once you "fix" the disk problem, you'll need to fsck the filesystem to get it back to a read/write state.
- ▲ Reboot and make sure that everything (network, RAID arrays, filesystems, NFS exports) comes back up and running.