

WES 9.2 DRIVE CONFIGURATION WORKSHEET

This packet will provide you with a paper medium external to your WES box to write down the device names, partitions, and mount points within your machine. You may consult this document after reimagining for reference when remounting these drives and subsequent partitions.

RE-IMAGED (36.4 GB) DRIVE: _____

WES DRIVE: _____

BACKUP DRIVE: _____

BACKUP DRIVE PATH: _____

DRIVE INFORMATION

DRIVE NAME

DRIVE SIZE

1. _____

2. _____

3. _____

4. _____

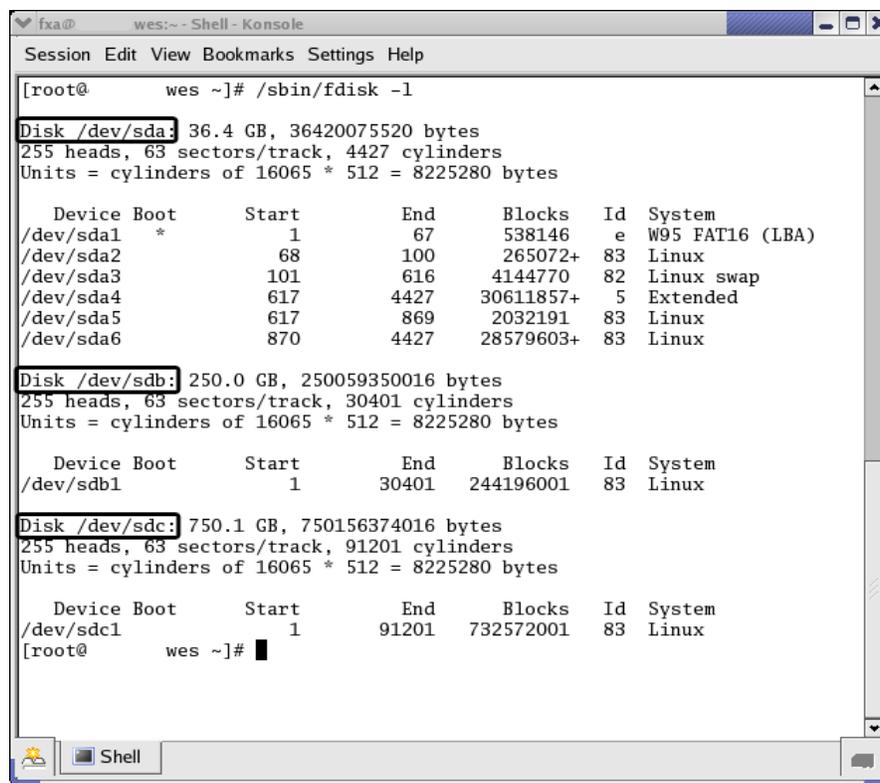
5. _____

Retrieving Your Hard Drive Configuration and Backing Up WES

9.0

Last Modified: 14 January 2010

1. Locate your WES 9.2 Drive Configuration Worksheet and something to write with. For reference, lines beginning with %> denote commands to be run within a terminal window. Also, provided with these instructions is a sample worksheet (at the end of this document) for your reference. The example worksheet reflects the same system configuration that is used in the following examples.
2. Log onto your WES machine as root.
3. If you have any external drives (e.g. a 1 TB external drive), please ensure they are connected, powered on, and mounted. Run the `mount -a` command to mount all filesystems listed in `/etc/fstab`. If you receive no errors, you can move on to the next step.
4. Identify the hard drives connected to your WES machine
 - (a) Run the `fdisk` command which will show information about the hard drives (NOTICE: the argument is - lower L, not - one):
 - i. %> `/sbin/fdisk -l`
 - (b) You should see output similar to Figure 1.



```
[root@ wes ~]# /sbin/fdisk -l
Disk /dev/sda: 36.4 GB, 36420075520 bytes
255 heads, 63 sectors/track, 4427 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *           1           67       538146    e   W95 FAT16 (LBA)
/dev/sda2                68          100       265072+   83   Linux
/dev/sda3             101           616      4144770   82   Linux swap
/dev/sda4             617          4427     30611857+   5   Extended
/dev/sda5             617           869       2032191   83   Linux
/dev/sda6             870          4427     28579603+   83   Linux

Disk /dev/sdb: 250.0 GB, 250059350016 bytes
255 heads, 63 sectors/track, 30401 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1                1          30401     244196001   83   Linux

Disk /dev/sdc: 750.1 GB, 750156374016 bytes
255 heads, 63 sectors/track, 91201 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sdc1                1          91201     732572001   83   Linux
[root@ wes ~]#
```

Figure 1: Output from the `fdisk` command

- (c) The solid black rectangles in Figure 1 show the names of each drive connected to the WES machine. The number to the right of the name shows the size of each drive. In the example

provided (again see Figure 1), there are 3 drives connected: `/dev/sda` is 36.4 GB, `/dev/sdb` is 250.0 GB and `/dev/sdc` is 750.1 GB. On the configuration worksheet provided, record the names and sizes of each of the drives YOU have connected to YOUR WES machine in the section titled DRIVE INFORMATION.

- (d) One of the drives should be 36.4 GB in size. This drive will be wiped and re-imaged with Redhat 5. Please record the name of this drive in the RE-IMAGED (36.4 GB) DRIVE field on the configuration worksheet. In the example above, the `/dev/sda` drive is the device that will be re-imaged.
5. Identify the mount configuration of each of the hard drives. The mount configuration will help you re-mount your drives to the correct location after Redhat 5.2 is installed.
- (a) Run the `df` command for each drive:
 - i. `%> df -h | grep <DRIVE NAME>`
 - (b) Using the information from the example above, the `df` command would be run three times, once for `/dev/sda`, `/dev/sdb` and `/dev/sdc`. The output from each of these is shown in Figure 2.

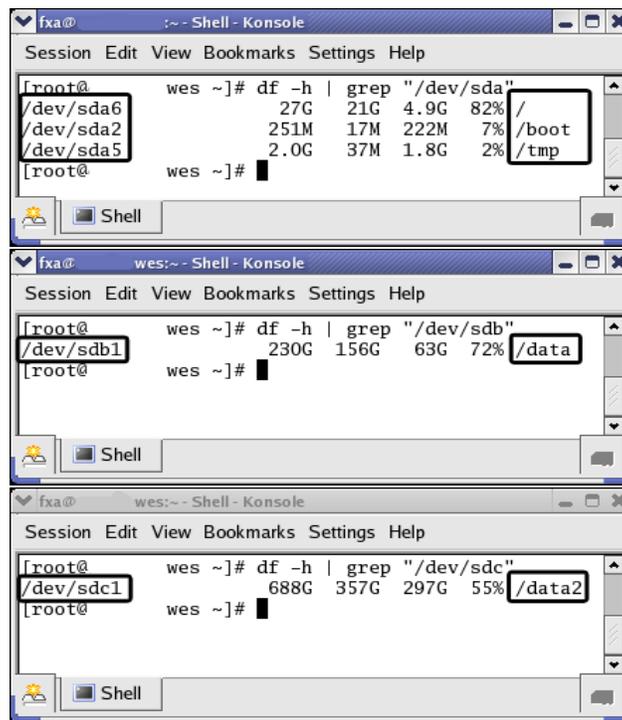


Figure 2: Output from the three `df` commands.

- (c) For each drive, record the partition name and the mount location in the PARTITION INFORMATION section of the configuration worksheet. In the example provided (see Figure 2) drive `/dev/sda` has 3 partitions, `sda6`, `sda2`, and `sda5`, mounted to `/`, `/boot` and `/tmp`, respectively. Drive `/dev/sdb` has one partition, `sdb1`, mounted to `/data` and drive `/dev/sdc` also has one partition, `sdc1`, mounted to `/data2`.
- (d) If the `df` commands do not provide the information shown in Figure 2, you can get this information from the `/etc/fstab` file.
 - i. Open the `fstab` file located in at `/etc/fstab` using a standard text editor. The file should look similar to Figure .

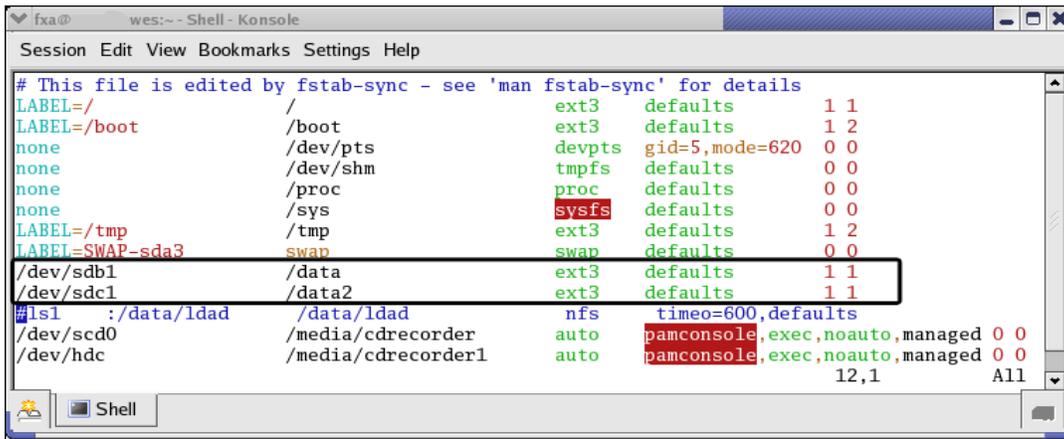


Figure 3: A sample /etc/fstab file

- ii. Notice the two drives enclosed in the solid rectangle in Figure 3 correspond to hard drives two and three from step 4c (/dev/sdb and /dev/sdc). The second column in the example provides the mount locations for each drive, specifically /data for /dev/sdb and /data2 for /dev/sdc.
 - iii. Locate YOUR drives in YOUR /etc/fstab file (consult the configuration worksheet for the drive names) and record the mount points for each drive on the configuration worksheet.
6. Locate the drive that contains the WES 9.0 Installation.
- (a) Run the df command for the WES 9.0 installation:
 - i. `%> df -h /awips/fxa`
 - (b) The output will be similar to that from step 5a (see Figure 4). In the example given, the far left solid rectangle contains the drive name and partition number (name: sda, number 6) for the WES 9.0 installation and the right most solid rectangle contains the location of the installation (/). Find this information for YOUR WES 9.0 installation and record it in the WES DRIVE field at the top of your configuration worksheet.

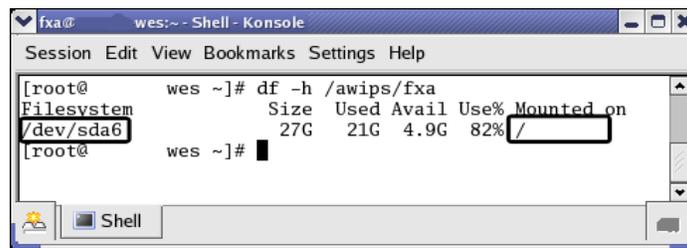


Figure 4: Finding the drive and location of the WES 9.0 installation.

7. Backing up the WES 9.0 Installation

NOTE: It is STRONGLY SUGGESTED that if the WES software home (/awips/fxa) is located on the drive to be re-imaged a backup be made. Certain folders (like /awips/fxa/DRT/macro) will need to be restored after the re-imaging process and WES 9.2 is installed to allow for the loading of case macros with existing cases in /data/awips.

- (a) Choose a drive other than the RE-IMAGED DRIVE (identified in step 4d, for this example, we've chosen /dev/sdb). This will be your backup drive. Record this drive name in the BACKUP DRIVE field on the top of your configuration worksheet. Also, copy the partition mount for the BACKUP DRIVE from the PARTITION INFORMATION section to the BACKUP DRIVE PATH field at the top of the configuration worksheet.
- (b) Compare the RE-IMAGED (36.4 GB) DRIVE name and the WES Drive name. If the RE-IMAGED DRIVE name and the WES DRIVE name are the same, WE STRONGLY RECOMMEND YOU MAKE A BACKUP COPY OF THE WES 9.0 INSTALLATION.

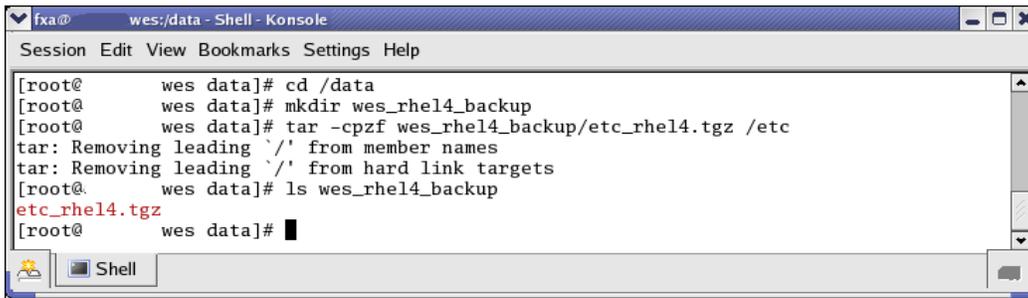


Figure 6: /etc Backup

- i. cd to backup drive [you will need the mount location for this drive (in this example, the mount location for `/dev/sdb` is `/data`). See the configuration worksheet for the mount locations for YOUR drives]:
 - A. `%> cd <BACKUP DRIVE PATH>`
- ii. Make a directory on the backup drive for the WES 9.0 installation backup:
 - A. `%> mkdir wes_rhel4_backup`
- iii. Copy the WES 9.0 installation to the backup location:
 - A. `%> cp -Rp /awips/fxa wes_rhel4_backup`

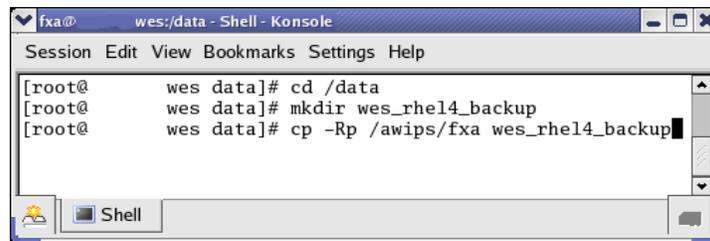


Figure 5: WES 9.0 Backup Commands

8. Backing up supplemental data

- (a) We strongly recommend backing up the `/etc` directory for troubleshooting purposes. Put the `/etc` backup in the same directory as your WES 9.0 installation backup.
- (b) cd to the backup drive (again, in the example this is `/data`, check the configuration worksheet for the mount point for your backup drive)
 - i. `% cd <BACKUP DRIVE PATH>`
- (c) If you DIDN'T backup your WES 9.0 Installation (step 7), you will need to make a backup directory on your backup drive:
 - i. `%> mkdir wes_rhel4_backup`
- (d) Tar up the `/etc` directory and copy it to the backup directory on the backup drive
 - i. `%> tar -cpzf wes_rhel4_backup/etc_rhel4.tgz /etc`
- (e) We strongly recommend backing up other information based upon your local settings in the office. If you do indeed backup other information, please add it to the `wes_rhel4_backup` directory on your backup drive.

9. Once you have finished backing up any additional local information, you may continue the installation with the "Installing the Redhat Enterprise Linux 5.2 Disk Image for use with the NWS Weather Event Simulator 9.2" instructions. BE ADVISED: Once you have completed the Redhat Image Installation, you will not be able to retrieve any information from the hard drive that has been re-imaged (in the example `/dev/sda`). All data residing on other drives should remain intact (in this case `/dev/sdb` and `/dev/sdc`).

Installing the Redhat Enterprise Linux 5.2 Disk Image for use with the NWS Weather Event Simulator 9.2

Last Modified: 17 March 2010

1. Place the RHEL5.2 Boot CD disk in the CD-ROM drive.
2. Open the BOOT Device Menu using boot option F9:
 - (a) Reboot the WES Machine
 - (b) When the boot menu options appear at the bottom of the screen, press F9.
3. A screen should appear with a dialog saying: "Press Enter to Select IPL Device, ESC to Exit"
 - (a) Choose the CD-ROM and press ENTER
4. A Redhat Enterprise Linux 5 prompt will appear (Figure 1).



Figure 1: Redhat Enterprise Linux 5 rescue prompt

- (a) Type: `%> linux rescue` and hit ENTER
5. You should now be ready to install the Redhat Enterprise Linux Client. Make the specified selections for the following options:
 - (a) – What language would you like to use during the installation process?
 - i. Select ENGLISH and press ENTER
 - (b) – What type of keyboard do you have?
 - i. Select US and press ENTER
 - (c) – Do you want to start the network interfaces on this system
 - i. Select NO and press ENTER
 - (d) – Trying to find the old RHEL 5 install..
 - i. Select SKIP using the KEYBOARD ARROW KEYS and press ENTER
6. You should be returned to a new command prompt.

7. Place the WES RHEL5.2 Disk Image DVD disk in the DVD-ROM drive.

8. Make a device file and mount the DVD.

NOTE: The following instructions assume that your WES box hardware has a DVD-RW drive connected as the slave.

(a) Make the device file:

i. `%> mknod /dev/dvd b 22 64`

(b) Make a directory for the dvd mount

i. `%> mkdir /mnt/dvd`

(c) Mount the DVD

i. `%> mount /dev/dvd /mnt/dvd`

ii. You may receive a warning like: `mount /dev/dvd is write-protected, mounting read-only.`
This is normal.

(d) If the mount fails, your DVD-RW may be connected as the master drive. Try the following instructions below:

i. Remove the device file:

A. `%> rm -R /dev/dvd`

ii. Make the device file:

A. `%> mknod /dev/dvd b 22 0`

iii. Mount the DVD

A. `%> mount /dev/dvd /mnt/dvd`

B. You may receive a warning like: `mount /dev/dvd is write-protected, mounting read-only.`
This is normal.

9. Copy the image contents on the DVD to smallest hard drive. The copy will take about 1 HOUR to complete.

(a) `%> dd if=/mnt/dvd/RHEL52.img.bz2 | bzip2 -d | dd of=/dev/sda`

10. Reboot the machine and remove the discs.

(a) At the prompt, type: `%> exit` and press ENTER

(b) During the machine reboot, remove both the CD and DVD

11. After the machine reboots you will be taken to the RHEL5 graphical login screen

(a) To login:

i. Username = `root`

ii. Password = `root!!`

Re-Installing the NVIDIA Drivers

Last Modified: 15 January 2010

There is a possibility that the re-imaging process crashes the X Server (your graphical interface). This can occur when there is a mismatch in the graphics configuration settings between your local machine and what was specified within the disk image. This procedure will outline the steps to re-install the NVIDIA drivers. If your X Server has restarted correctly, you may move onto the “Re-Mounting of Secondary Hard Drives After Installation of Redhat Enterprise Linux 5.2 Disk Image” section of this document.

1. When the X Server fails to start, you may be prompted with the following messages:
 - (a) Failed to start the X server (your graphical interface). It is likely that it is not set up correctly. Would you like to view the X server output to diagnose the problem?
 - i. Select NO and press ENTER
 - (b) Would you like to try to configure the X server? Note that you will need the root password for this.
 - i. Select NO and press ENTER
 - (c) The X server is now disabled. Restart GDM when it is configured correctly
 - i. Select OK and press ENTER
 - ii. You will be returned to a command prompt
2. Running the Linux display driver install package:
 - (a) Login as the root user:
 - i. Username = `root`
 - ii. Password = `root!!`
 - (b) A `/zero.file` was placed on the image to improve compression. Remove this file.
 - i. `%> rm /zero.file`
 - (c) Install the Linux display driver package by typing:
 - i. `%> sh /usr/local/src/NVIDIA-Linux-x86-185.18.36-pkg1.run`
3. The Linux display driver install process:
 - (a) Read through the License agreement, select `ACCEPT` and press `ENTER`.
 - (b) If an Nvidia driver exists on your machine, you may get the following window:
 - i. There appears to already be a driver installed on your system...
 - A. Select `YES` and press `ENTER`
 - (c) If there is a mismatch in the precompiled kernel interface, you may get the following window:
 - i. No precompiled kernel interface was found to match your kernel; would you like the installer to attempt to download a kernel interface for your kernel from the NVIDIA ftp site (`ftp://download.nvidia.com`)?

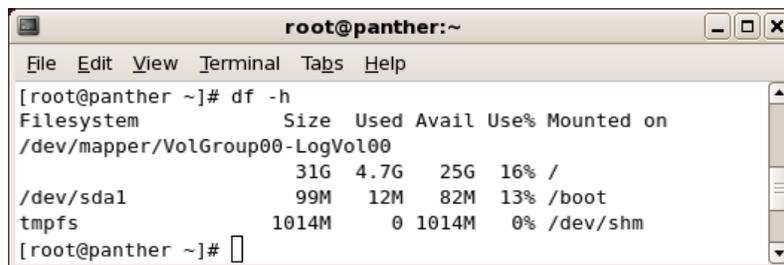
- A. Select NO and press ENTER
 - ii. This will return: No precompiled kernel interface was found to match your kernel;
this means that the installer will need to compile a new kernel interface
 - A. Select OK and press ENTER
 - (d) During the installation process, you may get a warning stating:
 - i. WARNING: Your driver installation has been altered since it was initially installed;
this may happen, for example, if you have since installed the NVIDIA driver through
a mechanism other than nvidia-installer (such as your distribution's native package
management system). Nvidia-installer will attempt to uninstall as best it can.
Please see the file '/var/log/nvidia-installer.log' for details.
 - A. This is fine, select OK and press ENTER
 - (e) Once the installation process is complete, you will be returned the following window:
 - i. Would you like to run the nvidia-xconfig utility to automatically update your
X configuration so that the NVIDIA X driver will be used when you restart X? Any
pre-existing X configuration file will be backed up.
 - A. Select YES and press ENTER.
 - (f) If the installation process completes successfully, you will see the following window:
 - i. Your X configuration file has been successfully updated. Installation of the
NVIDIA Accelerated Graphics Driver for Linux-x86 (version: 185.18.36) is now
complete.
 - A. Select OK and press ENTER
 - B. You will be returned back to a command prompt.
4. Restarting the X Server:
- (a) At the command prompt, type the following:
 - i. `%> init 3 ; init 5`
 - (b) This will restart the X Server session. If successful, you will be returned with the RED HAT
ENTERPRISE LINUX 5 login window.

Re-Mounting of Secondary Hard Drives After Installation of Redhat Enterprise Linux 5.2 Disk Image

Last Modified: 15 January 2010

This procedure outlines how to mount the drives identified from the “Retrieving Your Hard Drive Configuration and Backing Up WES 9.0” document, into the RedHat 5.2 environment. The example setup below is for 2 additional drives, each with 1 partition. Your local configuration may differ (refer to the PARTITION INFORMATION section of the configuration worksheet), in which case you would follow the steps below with additional commands/entries to account for this.

1. Removing the compression file (if not done so already within the NVIDIA recompile).
 - (a) A `/zero.file` was placed on the image to improve compression. Remove this file.
 - i. `%> rm /zero.file`
2. Figure 1 shows the output of the `df -h` command after imaging. Notice that only the device information from the RHEL 5.2 image is present.

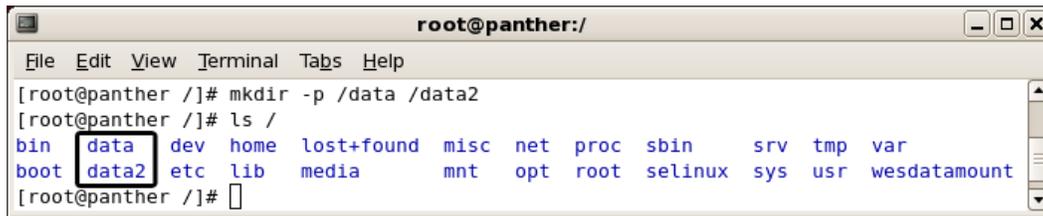


```
root@panther:~  
File Edit View Terminal Tabs Help  
[root@panther ~]# df -h  
Filesystem      Size  Used Avail Use% Mounted on  
/dev/mapper/VolGroup00-LogVol00  
                 31G  4.7G   25G  16% /  
/dev/sda1        99M   12M   82M  13% /boot  
tmpfs            1014M    0 1014M   0% /dev/shm  
[root@panther ~]#
```

Figure 1: Output of the `df -h` command after imaging

3. Using the PARTITION SECTION of the configuration worksheet, identify which drives need to be mounted.
 - (a) Each drive partition will need to be mounted EXCEPT any partitions on the RE-IMAGED DRIVE.
4. Create new directories where the additional drives/partitions will be mounted.
 - (a) For each partition identified in part 3a, make a directory that corresponds to the PARTITION MOUNT. In this example, we have 2 additional drives each with one partition. `/dev/sdb` has one partition `/dev/sdb1` which was mounted on `/data`. `/dev/sdc` has one partition `/dev/sdc1` which was mounted on `/data2`. An example of this is seen in figure 2.
 - (b) Now that we have identified the necessary mount directories, we will create them:
 - i. `%> mkdir -p PARTITION MOUNT`

(c) Repeat step 4(b)i for each DRIVE PARTITION identified in step 3a.



```
root@panther:/
File Edit View Terminal Tabs Help
[root@panther /]# mkdir -p /data /data2
[root@panther /]# ls /
bin data dev home lost+found misc net proc sbin srv tmp var
boot data2 etc lib media mnt opt root selinux sys usr wesdatamount
[root@panther /]#
```

Figure 2: The creation of 2 root directories and their location in the '/' path.

(d) Modify the permissions on these newly created directories using `chmod` to ensure the proper users and groups will have the appropriate access rights.

5. Edit the `/etc/fstab` file to add the additional drives/partitions.

(a) Open up the `/etc/fstab` file via a file editing program.

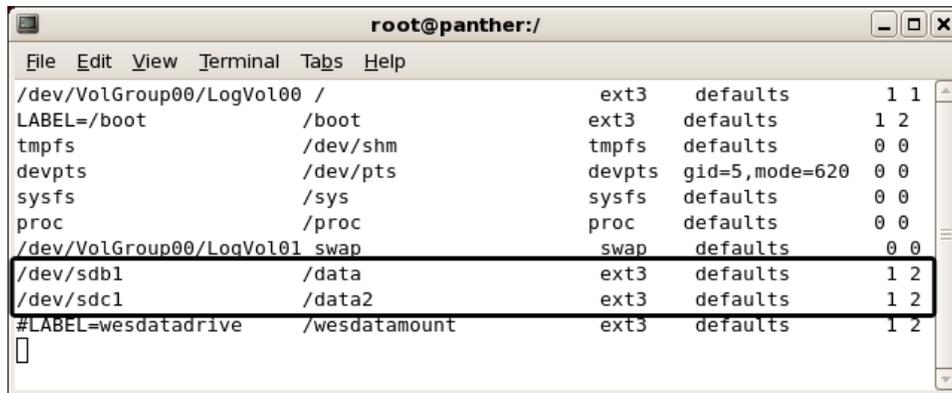
(b) Add entries for the additional drives/partitions. The entries should be entered following:

i. PARTITION NAME PARTITION MOUNT ext3 defaults 1 2

(c) In the example, we will add 2 entries: 1 for `/dev/sdb1` and 1 for `/dev/sdc1`. So the `fstab` file would have 2 new entries that look like (Figure 3):

i. `/dev/sdb1 /data ext3 defaults 1 2`

ii. `/dev/sdc1 /data2 ext3 defaults 1 2`



```
root@panther:/
File Edit View Terminal Tabs Help
/dev/VolGroup00/LogVol00 / ext3 defaults 1 1
LABEL=/boot /boot ext3 defaults 1 2
tmpfs /dev/shm tmpfs defaults 0 0
devpts /dev/pts devpts gid=5,mode=620 0 0
sysfs /sys sysfs defaults 0 0
proc /proc proc defaults 0 0
/dev/VolGroup00/LogVol01 swap swap defaults 0 0
/dev/sdb1 /data ext3 defaults 1 2
/dev/sdc1 /data2 ext3 defaults 1 2
#LABEL=wesdatadrive /wesdatamount ext3 defaults 1 2

```

Figure 3: The edited `/etc/fstab` file.

(d) Save and close the `/etc/fstab` file.

6. Mounting the drives.

(a) Run the `mount` command:

i. `%> mount -a`

The `mount -a` command will attempt to mount all drives currently not mounted based on the inputs in the `/etc/fstab` file. Figure 4 shows an example of this command and the output of the `df -h` command after mounting. We see our 2 device partitions (`/dev/sdb1` and `/dev/sdc1`) are mounted.

```

root@panther:/
File Edit View Terminal Tabs Help
[root@panther /]# mount -a
[root@panther /]# df -h
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol00
                          31G       11G   19G  38% /
/dev/sda1                  99M       12M   82M  13% /boot
tmpfs                      2.5G      0      2.5G   0% /dev/shm
/dev/sdb1                  114G     7.9G  100G   8% /data
/dev/sdc1                  917G     37G   834G   5% /data2
[root@panther /]#

```

Figure 4: An example of the `mount -a` command and the results of the `df -h` command.

- (b) If the `mount -a` command returns errors, you can mount each partition individually using the `mount <PARTITION NAME>` command. This will isolate where the error is occurring and you can make the appropriate fixes by either re-creating the directory or modifying the `/etc/fstab` file. In this example, we would run:

- i. `%> mount /dev/sdb1`
- ii. `%> mount /dev/sdc1`

Figure 5 shows the manual mounting commands above with a `df -h` command before and after.

```

root@panther:/
File Edit View Terminal Tabs Help
[root@panther /]# df -h
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol00
                          31G       11G   19G  38% /
/dev/sda1                  99M       12M   82M  13% /boot
tmpfs                      2.5G      0      2.5G   0% /dev/shm
[root@panther /]# mount /dev/sdb1
[root@panther /]# df -h
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol00
                          31G       11G   19G  38% /
/dev/sda1                  99M       12M   82M  13% /boot
tmpfs                      2.5G      0      2.5G   0% /dev/shm
/dev/sdb1                  114G     7.9G  100G   8% /data
[root@panther /]# mount /dev/sdc1
[root@panther /]# df -h
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol00
                          31G       11G   19G  38% /
/dev/sda1                  99M       12M   82M  13% /boot
tmpfs                      2.5G      0      2.5G   0% /dev/shm
/dev/sdb1                  114G     7.9G  100G   8% /data
/dev/sdc1                  917G     37G   834G   5% /data2
[root@panther /]#

```

Figure 5: Terminal output while mounting each partition manually.

7. Additional configuration steps at the local level.

- (a) With your additional drives mounted, you can go to the location where you backed up your configuration files from the RHEL4 environment. From the “Retrieving Your Hard Drive Configuration and Backing Up WES 9.0” document, we created a `/data/wes_rhel4_backup` directory on `/dev/sdb1` (your backup directory may differ) and stored the contents of the `/etc` directory

as well as a backup of WES 9.0 for customization reference (WES 9.0 software will not function in RHEL5.2). You may have backed up additional items from the old RHEL4 environment for future reference.

- (b) Configure your imaged machine to whatever internal/network specifications are necessary for your local office.
8. Once complete, you may install the WES 9.2 software from the WES 9.2 software install DVD.
- (a) The WES 9.2 DVD contains an installation document (INSTALL_WES92.pdf) that outlines the WES 9.2 installation process.

EXAMPLE

WES 9.2 DRIVE CONFIGURATION WORKSHEET

This packet will provide you with a paper medium external to your WES box to write down the device names, partitions, and mount points within your machine. You may consult this document after reimaging for reference when remounting these drives and subsequent partitions.

RE-IMAGED (36.4 GB) DRIVE: /dev/sda

WES DRIVE: /dev/sda

BACKUP DRIVE: /dev/sdb

BACKUP DRIVE PATH: /data

DRIVE INFORMATION

	DRIVE NAME	DRIVE SIZE
1.	<u> /dev/sda </u>	<u> 36.4GB </u>
2.	<u> /dev/sdb </u>	<u> 250.0GB </u>
3.	<u> /dev/sdc </u>	<u> 750.1GB </u>
4.	<u> </u>	<u> </u>
5.	<u> </u>	<u> </u>

