

Installing RH6.0 on the Compaq Alphaserver DS20 ¹

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This is a description of the install procedure for the Compaq Alphaserver DS20. It involves installing Linux twice: first, to enable the 'zeroing' of the partition table on the disk used initially by DEC Unix and the second, to install Linux on that first disk ('a'). There may be other ways to do this but this is what I did. The reason for putting the system on the first disk relates to personal preferences about managing the system.

Basically, you go through the installation using /dev/sdb ('b' in BSD terms) and then do it again using /dev/sdb ('a'). You don't have to go through all the steps listed below for the installation on 'b'. In retrospect, you could stop after any boot which gets you to Linux from which you can 'zero' the partition table on the drive ('a') that had DEC Unix on it (see section 6 below). However, I was learning and wanted to convince myself that the system would boot a hard drive at all.

Hardware Configuration

The machine this procedure was developed on has the following configuration:

- Compaq Alphaserver DS20
- 2 CPUs
- 512MB RAM
- 3 SCSI disks (8GB /dev/sda, 17GB /dev/sdb, 17GB /dev/sdc) with an NCR SCSI bus (won't boot from the distribution since it keeps trying to send SCSI commands unsuccessfully)
- already had Dec Unix installed on the first drive (/dev/sda)

You will have to interact with the System Resource Manager (SRM) to do a lot of this installation. I had no idea what the SRM did or how to

¹ None of this would have been discovered without the help of folks from axp-list@redhat.com. There were numerous respondents to my pleas for help and each one contributed to this result. However, particular thanks go to Jay Eastabrook (Jay.Estabrook@digital.com) and Dan Frasnelli (dfrasnel@alphalinux.org] for patience and persistence in helping me get this to work.

command it when I started this so there's no attempt here to provide much information about the SRM. Note that the commands to SRM require device names that are different than the Linux device names. You can find out what the SRM calls the devices by using the 'show dev' command. For example, my /dev/sda is a DKB0 and my /dev/sdb is a DKB100.

Installation Instructions:

- 1 Obtain a copy of the kernel (vmlinux.gz) provided by Jay Eastabrook (<ftp://gatekeeper.dec.com/pub/DEC/Linux-Alpha/Kernels>). I used generic-smp-223.gz since the DS20 is a dual-processor (SMP stands for symmetric multip-processor). This has to be written to a 3.5" floppy. I used a PC running Windows 98 and the rawrite utility distributed on the RH6.0 cd under dosutils. This produces a disk which has the vmlinux.gz file on it. This is the kernel I used. It eventually gets copied to the /boot directory as you will see below.
- 2 Get to the SRM console. I did this by interrupting the boot-up of Dec UNIX by Ctrl-C with the boot diskette out of the drive so the search for it fails or the HALT button. Once you have the SRM console established (blue screen, P00>>> prompt), you can control the source of the boot kernel file.
- 3 Boot from the floppy with the CD as the root file system. Put the floppy in the floppy drive, the RH6.0 Alpha distribution cd in the cd player and issue the following command at the SRM console:

```
boot dva0 -fi vmlinux.gz -fl "root=/dev/scd0"
```

- 4 Partition the Drives. The RH install screens should come up and give you an opportunity to partition your drives using Disk Druid or fdisk. You must use fdisk to enable the creation and editing of the BSD disklabels using the 'b' option since SRM only understands BSD disk labels. These are the only ones that SRM understands. This is different than partitioning the disks on PCs. You will not be able to use the disk that Dec Unix was on until it has the existing partition table erased ('zeroed'), so don't even bother with it until later. Choose one of the other drives for the system disk. I used /dev/sdb, the second drive.

4.1 Using fdisk, select the 'b' option for editing BSD disklabels.

If there are any partitions there, delete them. There might be a 'c' partition containing the whole disk. Create partitions according to your needs starting at cylinder 2. You must leave the first cylinder to later install the boot record in. I created a swap partition of 1GB (2x512MB RAM) and an 'a' partition with the rest of the space on /dev/sda.

On the two other, bigger drives (/dev/sdb, /dev/sdc) I created an 8GB 'a' partition and a 'b' partition of the remainder. Then proceed with the installation. After the install completes you go back to the SRM to boot the machine. I found that the RH6.0 installation always wants you to reformat the system drive else it won't be able to mount it.

4.2 Get the SRM up again and reboot from the diskette using the second partition on the hard drive as the root file system.

I do it by leaving the boot diskette out of the drive and pressing the reset button. When it can't find the diskette I hit Cntl-C and this gives me the PO>>> prompt of the SRM. Issue the command:

```
boot dva0 -fi vmlinux.gz -fl "root=/dev/sdb2"
```

Note that this uses the second partition on the second drive as the root file system. The first partition is the swap partition and won't work.

4.3 When you get Linux up and running copy the contents of the boot diskette to /boot/vmlinux.gz as follows:

```
mount /dev/fd0 /mnt
cp /mnt/vmlinux.gz /boot/.
```

This mounts the floppy as /mnt. You are copying the kernel (vmlinux.gz) from the floppy to the /boot directory.

4.4 Write the boot record to the system hard drive

From within the /boot directory write the boot record on the cylinder you previously left blank using the Linux command swriteboot as follows:

```
swriteboot /dev/sdb ./bootlx
```

4.5 Re-boot using hard disk.

Re-establish SRM, and confirm that you can boot from the hard drive /dev/sdb using the following command:

```
boot /dev/sdb -fi vmlinux.gz -fl "root=/dev/sdb2"
```

5 If this works then make it permanent (i.e. autobooting) as follows:

```
P0>>> set bootdef_dev dkb100
P0>>> set boot_file "2/boot/vmlinux.gz"
P0>>> set boot_osflags "root=/dev/sdb2"
P0>>> boot
```

Note that the commands to SRM require device names which are different than the Linux device names. You can find out what the SRM calls the devices by using the 'show dev' command.

6 Zeroing a hard disk partition table

From within Linux issue the following command to 'zero' the partition table on /dev/sda. Substitute your favorite drive as long as it's not the one you are currently using.

```
dd if=/dev/zero of=/dev/sda count=2 bs=512
```

7 Repeat the whole process for /dev/sda and reformat /dev/sdb.