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6. How do i know the BIOS number for my SCSI disks

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6.1 The theory

Actually, it exists two ways to know it :

If you have an adaptec scsi card (2940u2, 29160, 39160), you simply use the 'diagnose' mode (using BIOS v3.10.0 recommended). It must be activated in the scsi card BIOS menu. Then you just have to wait and see something like :

	ID	LUN	Vendor	Product	Rev	Size	Sync	Bus	HD#
...	0	0	QUANTUM	ATLAS10K2	DDD6	17GB	160	16	80h
...	1	0	QUANTUM	ATLAS10K2	DDD6	17GB	160	16	81h
...	2	0	IBM	DDRS	DC1B	4GB	80	16	82h
...	3	0	IBM	DNES	SAH0	9GB	80	16	83h

If you don't own an adaptec card, you have to know what is the 'booting' disk (usually ID 0, but not necessary, it can be defined in the scsi card BIOS) where LILO is going to be found and start : this is the first disk so it has number 0x80. Then it's very simple, the BIOS follows the IDs.

By example :

```
ID 0 -> boot -> 0x80
ID 1 -> empty
ID 2 -> disk -> 0x81
ID 3 -> disk -> 0x82
```

or

```
ID 0 -> disk -> 0x81
ID 1 -> empty
ID 2 -> disk -> 0x82
ID 3 -> boot -> 0x80
ID 4 -> disk -> 0x83
```

This part doesn't care at all of what is installed on the scsi drives. But you should note that if you use an ID higher than the SCSI adapter it can be a problem. So you should always try to set the SCSI adapter ID after the SCSI devices IDs.

6.2 How to swap linux and NT booting ?

OK, but NT must be the first disk to boot, so i want it in 0x80, but i already have LILO and a full ext2 only drive on 0x80 and my NT drive is in 0x83. How can i 'swap' linux and NT ? This is very easy : you just have to tell BIOS that NT drive is now 0x80 and the Linux drive is 0x83.

```
other=/dev/sdd1
```

```

label=nt
map-drive = 0x83
to = 0x80
map-drive = 0x80
to = 0x83

```

This change will produce a warning :

```
Warning: BIOS drive 0x8? may not be accessible
```

but if you know what you are doing it will run without problem.

I used it on this configuration which has a Red Hat Linux 7.1 and a Windows 2000 Pro :

Name	Flags	Part Type	FS Type	[Label]	Size (MB)
Disk Drive: /dev/sda - 0x80					
sda1	Boot	Primary	Linux ext2	[/boot]	24.68
sda2		Primary	Linux Swap		139.83
sda3		Primary	Linux ext2	[/usr]	3150.29
sda4		Primary	Linux ext2	[/home]	15044.04
Disk Drive: /dev/sdb - 0x81					
sdb1		Primary	Linux Swap		139.83
sdb2		Primary	Linux ext2	[/]	3150.29
sdb3		Primary	Linux ext2	[/opt]	1052.84
sdb4		Primary	Linux ext2	[/public]	14015.88
Disk Drive: /dev/sdc - 0x82					
sdc1		Primary	Linux ext2	[/var]	1052.84
sdc2		Primary	Linux ext2	[/tmp]	106.93
sdc3		Primary	Linux ext2	[/cache]	1052.84
sdc4		Primary	Linux ext2	[/chroot]	2352.44
Disk Drive: /dev/sdd - 0x83					
sdd1	Boot	Primary	NTFS	[WINDOWS_2000]	9162.97

My full /etc/lilo.conf :

```

boot=/dev/sda
map=/boot/map
install=/boot/boot.b
prompt
default=Linux
read-only
compact
image=/boot/vmlinuz
    label=Linux
    root=/dev/sdb2
other=/dev/sdd1
    label=Windows
map-drive = 0x83
to = 0x80
map-drive = 0x80
to = 0x83

```

6.3 Miscellaneous

I just plugged a new scsi drive, and now LILO refuse to boot, what's going on ?

When you plug a disk, you must be careful with the IDs. If you add a drive between two already plugged disks the BIOS numbers are changed :

Before	----->	After
scsi id -		scsi id -
ID 0 - disk - 0x80		ID 0 - disk - 0x80
ID 1 - empty		ID 1 - new disk - 0x81
ID 2 - disk - 0x81		ID 2 - disk - 0x82 !!

If you change the BIOS ids, you have to re-evaluate them.

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