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GNU/Linux

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1

GNU/Linux

GNU/Linux

가

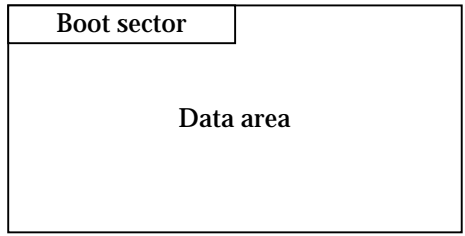
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3

x86 PC GNU/Linux 4 5 가
 가 " Werner Almesberger , "LINUX hacker UNIX KERNEL
 , "LILO Technical overview" [1] 가 .

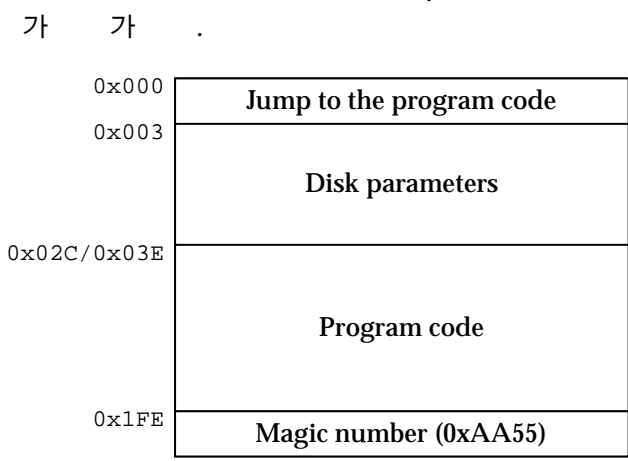
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PC 가 , LILO GNU/Linux
 "LILO User's guide" [1]
 가 , FAT (File Allocation Table), (super block)
 가 가 , 가
 , GNU/Linux /dev/fd0



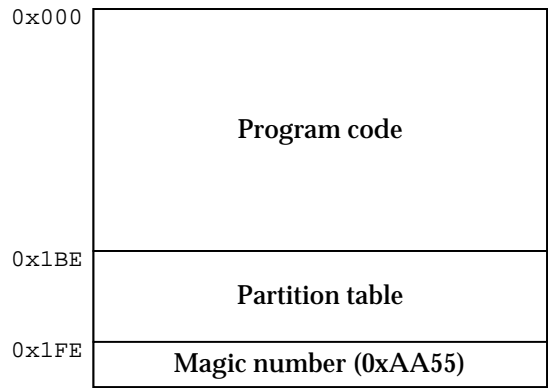
1 -

, MS-DOS



2 - MS-DOS

LILO , (disk parameters)



3 - LILO

가 . MS-DOS 가 , MS-DOS Minix, Ext2, LILO
 LILO 가 MS-DOS 가 SYSLINUX [2] MS-DOS
 LILO 가 .
 . MS-DOS (primary partitions)
 (extended partition) , (logical partitions) .
 /dev/hda, /dev/hdb, /dev/sda, .
 /dev/hda1, /dev/hda2 .

Partition table	/dev/hda
Partition 1	/dev/hda1
Partition 2	/dev/hda2

4 -

가 가 .
 가 .

Partition table	/dev/hda
Partition 1	/dev/hda1
Partition 2	/dev/hda2
Extended partition table	/dev/hda3
Logical partition table	/dev/hda5
Partition 3	
Logical partition table	/dev/hda6
Partition 4	

5 -

가 ,

가

MBR (Master Boot Record)

, 3 LILO

LILO

LILO

- Linux

(/dev/fd0, etc.)

-

MBR (/dev/hda, /dev/sda, etc.)

-

(/dev/hda1, /dev/hda2, etc.)

-

(/dev/hda1, etc.)²

- Linux

(:MS-DOS)

- Linux

3

-

4

3

가

² FDISK

, GNU/Linux LILO activate fdisk

가

³ LILO -b

⁴

가

가

. MS-DOS

가 가 , , 가 가

0, 0, 1

MBR . MBR

3 0x000 0x1BD 446 (magic number) 64 가 2

MBR MBR

, MS-DOS

가

- "DOS-MBR": MS-DOS MBR "active" MS-DOS fdisk active
- Linux fdisk LILO activate
- "MS-DOS": IO.SYS, MS-DOS.SYS, COMMAND.COM MS-DOS
- "COMMAND.COM": MS-DOS
- "LOADLIN": MS-DOS RAM Linux CONFIG.SYS
- BOOT.SYS CONFIG.SYS
- "LILO": Linux

3.1 MS-DOS

6 MS-DOS가

MBR	Boot sector	Operating system
DOS-MBR	→ MS-DOS	→ COMMAND.COM

6 - MS-DOS

DOS-MBR (active partition) MS-DOS
 IO.SYS MSDOS.SYS MS-DOS
 MS-DOS COMMAND.COM

3.2 LOADLIN

LOADLIN MS-DOS Linux
 MS-DOS 가 , CONFIG.SYS AUTOEXEC.BAT
 LOADLIN .[3]

MBR	Boot sector	Operating system
DOS-MBR	→ MS-DOS	→ COMMAND.COM
		→ LOADLIN → Linux

7 - LOADLIN

CONFIG.SYS AUTOEXEC.BAT BOOT.SYS
 , 가 .[4]

3.3 DOS-MBR LILO

DOS-MBR LILO 가 , 가 LILO
 가 Linux 가 LILO
 , 가 fdisk activate "active"

MBR	Boot sector	Operating system
DOS-MBR	→ LILO	→ Linux
	→	other OS

8 - DOS-MBR LILO

- Linux LILO
- fdisk activate active
-
- active
- LILO and/or Linux

3.4 DOS-MBR

MBR Linux MS-DOS
 3.3 . LILO

MBR	Boot sector	Operating systems
DOS-MBR	→ MS-DOS	→ COMMAND.COM
		→ LOADLIN → Linux
	→ LILO	→ Linux
		→ MS-DOS → COMMAND.COM

9 - DOS-MBR

3.5 LILO

LILO , MBR LILO가 Linux
 , LILO가 MBR
 Linux MBR

MBR	Operating system
LILO	→ Linux
	→ other OS

10 - LILO

LILO

```

- Linux
- MBR
dd if=/dev/hda of=/fd/MBR bs=512 count=1
- MBR LILO
- LILO
- Linux
- MBR
if=/fd/MBR of=/dev/hda bs=446 count=1
LILO MBR LILO
(lilo.conf "boot=" )

```

4

LILO가 가 GNU/Linux /etc/lilo.conf

```

boot = /dev/hda2
compact
image = /vmlinuz
image = /vmlinuz.old
other = /dev/hda1
table = /dev/hda
label = msdos

```

```

LILO Linux /vmlinuz /vmlinuz.old
/dev/hda1 MS-DOS
compact map installer

```

4.1 BIOS

20GB
 PC BIOS가 18
 가
 LILO 가 1024
 LILO가
 BIOS
 BIOS
 BIOS
 IED 504MB 가
 가 1024 10GB
 BIOS 1024 LILO
 linear⁵

⁵ /usr/src/linux/Documentation/ide.txt

- 1024 , 가 .
 - .
 - DOS/Windows , LILO LOADLIN .
- LILO가 BIOS .
- /boot/boot.b
 - /boot/map⁶
 -
 - LILO가
 -

Linux 가 /boot , /boot , /boot

4.2 가 Linux가

가 Linux , MBR , 11 가
LILO 가 , boot 가

MBR	/dev/hda
MS-DOS	/dev/hda1
Linux	/dev/hda2

11 - One disk, Linux on a primary partition

4.3 가 Linux가

Linux
Linux MBR
LILO 12

MBR	/dev/hda
MS-DOS	/dev/hda1
Extended	/dev/hda2
Linux	/dev/hda5
....	/dev/hda6

12 - One disk, Linux on a logical partition

activate , active LILO

4.4 가가 Linux가

가 Linux

⁶ /sbin/lilo

가 . Linux
 , Linux , /boot/boot.b, /boot/map

4.5 가 Linux

가 가 Linux MBR 가 LILO
 13

First Disk		Second Disk	
MBR	/dev/hda	MBR	/dev/hdb
MS-DOS	/dev/hda1	Linux	/dev/hdb1
Extended	/dev/hda2	/dev/hdb2
....	/dev/hda5		
....	/dev/hda6		

13 - Two disks, Linux on second disk, first disk has an extended partition

active LILO activate

4.6 가 Linux

가 Linux
 LILO MBR 가 LILO가
 14가

First Disk		Second Disk	
MBR	/dev/hda	MBR	/dev/hdb
MS-DOS	/dev/hda1	Linux	/dev/hdb1
....	/dev/hda2	/dev/hdb2

14 - Two disks, Linux on second disk, first disk has no extended partition

LILO MBR MBR , LILO가

MBR LILO가 /etc/lilo.conf boot
 , 4 lilo.conf boot=/dev/hda2 boot=/dev/hda

4.7 2 가

가 가

LILO

BIOS가

Warning: BIOS drive 0xnnonn may not be accessible

BIOS

Linux가

가 .

5 x86 GNU/Linux

GNU/Linux가 x86 CPU PC ROM
BIOS (Basic Input/Output System) . BIOS 가

- POST (Power-On Self Test) 가
- I/O
- ROM (bootstrap routine)

RESET , CPU 0FFFF0H
POST x86 ROM . 0FFFF0H

POST RAM ROM

BIOS CD-ROM 가
가 가
가

ROM MS-DOS IO.SYS MSDOS.SYS 가 IO.SYS
MSDOS.SYS RAM
IO.SYS .8

Invalid system disk
Replace the disk, and then press any key

GNU/Linux 0, 0, 1 LILO가 Linux
(entry point) .9

7 2

8 IO.SYS , IO.SYS가 MSDOS.SYS

9 가 512 , 가 가 , Linux

Linux 가 (boot loader) 가 BIOS

. GNU/Linux 가 LILO ,

. LILO . lilo.conf lilo.conf lilo LILO

가 . BIOS LILO 가 가 ,¹⁰

LILO , Linux ,¹¹

가 , init inittab .

가 sysinit , fsck ,fstab

sysinit 가 init ,init

inittab initdefault default runlevel .

runlevel tty getty ,

getty "login: " , login

0

¹⁰ 가 , LILO lilo.conf <http://www.linuxdoc.org/HOWTO/BootPrompt-HOWTO.html>

¹¹ RAM RAM RAM RAM RAM

- [1] Werner Almesberger, "LILO User's guide",
<ftp://metalab.unc.edu/pub/Linux/system/boot/lilo/>
- [2] H. Peter Anvin, "SYSLINUX - A boot loader for Linux using MS-DOS floppies"
- [3] LOADLIN, <ftp://sunsite.unc.edu/pub/Linux/system/boot/dualboot/lodlin16.tgz>
- [4] BOOT.SYS, <ftp://ftp.funet.fi/pub/Linux/tools/boot142.zip>
- [5] Microsoft PRESS, "2ed, Advanced MS DOS Programming", SOHNZS Research: ,

- [6] , "PC ",