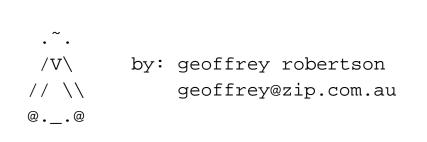
– General Linux 2 – Design Hard Disk Layout [2] (Linux Professional Institute Certification)



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Design hard disk layout [2]

Objective

Candidates should be able to design a disk partitioning scheme for a Linux system. This objective includes allocating filesystems or swap space to separate partitions or disks, and tailoring the design to the intended use of the system. It also includes placing /boot on a partition that conforms with the BIOS' requirements for booting.

Design hard disk layout [2]

Key files, terms, and utilities

/ (root) filesystem
/var filesystem
/home filesystem
swap space
mount points
partitions
cylinder 1024

Resources of interest

Linux Partitioning Mini-FAQ

http://pwl.netcom.com/~kmself/Linux/FAQs/partition.html

IA32 Disk Partitions

Primary Partitions

On i386 systems disks may be sliced up into to 15 partitions.

• The disk must have at least 1 primary partition.

/dev/hda1

• There may be up to 4 primary partitions.

/dev/hda1	(primary)
/dev/hda2	(primary)

- /dev/hda3 (primary)
- /dev/hda4 (primary)

IA32 Disk Partitions

Logical Partitions

On i386 systems disks may be sliced up into to 15 partitions.

- One of the 4 primary partitions may be made into an **extended** partition.
- The one **extended** partition must hold between 1 and 12 logical partitions.

/dev/hda1	(primary)
/dev/hda2	(extended)
/dev/hda5	(logical)
/dev/hda6	(logical)

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/dev/hda16 (logical)
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Basic Recommendation

/	50 - 100 MB			
/tmp	50 - 100 MB			
/var	200 - 500 MB			
/usr	1 - 2+ GB			
/usr/local	1 – 2+ GB			
/home	remainder			



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- Large amounts of swap should be divided across several partitions and preferably across several spindles.

Root partition

The root partition must have:

- /bin
- /dev
- /etc
- /initrd
- /lib
- /root
- /sbin

Other directory trees may be distributed on other partitions/spindles.

Directories on separate partitions

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- **/home** Variable content, usually most sensitive data both in terms of security and integrity. Can be mounted nosuid.

Typical Desktop

Filesystem	1k-blocks	Used	Available	e Use	e% Mounted on
/dev/hda3	152247	33526	110859	24%	/
/dev/hda6	249871	2004	234967	1%	/tmp
/dev/sda7	585008	457456	97836	83%	/var
/dev/hda5	495960	87588	382772	19%	/var/spool/news
/dev/sdb2	1929100	1518288	312816	83%	/usr
/dev/sda5	1209572	574152	573976	51%	/usr/local
/dev/hda7	378711	213496	145662	60%	/usr/local/data
/dev/hda2	1007992	584132	372656	62%	/home
/dev/hda1	157044	119252	37792	76%	/mnt/dos

Typical Desktop fdisk /dev/hda

Disk /dev/hda: 128 heads, 63 sectors, 620 cylinders
Units = cylinders of 8064 * 512 bytes

Device	Boot	Start	End	Blocks	Id	System
/dev/hda1		1	39	157216+	6	FAT16
/dev/hda2		40	293	1024128	83	Linux
/dev/hda3	*	294	332	157248	83	Linux
/dev/hda4		333	620	1161216	5	Extended
/dev/hda5		333	459	512032+	83	Linux
/dev/hda6		460	523	258016+	83	Linux
/dev/hda7		524	620	391072+	83	Linux

Typical Desktop fdisk /dev/sda

Disk /dev/sda: 255 heads, 63 sectors, 261 cylinders Units = cylinders of 16065 * 512 bytes

Device Boot	Start	End	Blocks	Id	System
/dev/sda1	1	17	136521	82	Linux swap
/dev/sda2	18	261	1959930	5	Extended
/dev/sda5	18	170	1228941	83	Linux
/dev/sda6	171	187	136521	82	Linux swap
/dev/sda7	188	261	594373+	83	Linux

Typical Desktop fdisk /dev/sdb

Disk /dev/sdb: 255 heads, 63 sectors, 261 cylinders
Units = cylinders of 16065 * 512 bytes

Device Boot	Start	End	Blocks	Id	System
/dev/sdb1	1	17	136521	82	Linux swap
/dev/sdb2	18	261	1959930	83	Linux

Typical Desktop /etc/fstab

/dev/hda3	/	ext2	defaults,errors	s=remount	z-ro	0	1
proc	/proc	proc	defaults			0	0
/dev/hda6	/tmp	ext2	defaults, nosuid	l,nodev		0	2
/dev/sda7	/var	ext2	defaults, nosuio	l,nodev		0	2
/dev/hda5	/var/spool/news	ext2	defaults, nosuio	l, noexec	,nodev	0	2
/dev/sdb2	/usr	ext2	defaults,rw,nod	lev		0	2
/dev/sda5	/usr/local	ext2	defaults,rw,nos	suid, node	ev	0	2
/dev/hda7	/usr/local/data	ext2	defaults, nosuid	l,nodev		2	2
/dev/hda2	/home	ext2	defaults, nosuio	l,nodev		0	2
/dev/hdc	/mnt/cdrom	iso90	660 noauto,user,	ro,nodev	<i>,</i> nosuid	2	2
/dev/fd0	/mnt/floppy	auto	noauto,gid=dis	.,umask=0)07,rw,user	2	2
/dev/hda1	/mnt/dos vfa	t auto	o,user,nosuid,no	odev,gid=	=6,umask=002	2	2
/dev/sda1	none	swap	SW	0	0		
/dev/sdb1	none	swap	SW	0	0		
/dev/sda6	none	swap	SW	0	0		

