

第四章 如何在硬碟建置Linux系统

在前面章节中, 我们已经介绍过了 Slackware Linux 安装磁片的制作方法, 以及Slackware Linux 软体的取得, 本章中我们就来看看如何真正进行系统软体的安装。

- 系统安装的步骤
- 使用 bootdisk及rootdisk 磁片来开机
- 关于 root 使用者
- 关于虚拟萤幕 (Virtual Console)
- fdisk 硬碟分割区规划示范
- 系统软体安装前的说明
- set up 六程序
- setup 启动
- 启动虚拟记忆体
- 指定安装目的分割区 (Target)
- 指定安装来源 (Source)
- 选择安装软体
- Install 实际安装
- 系统设定

☐ 系统安装的步骤

我们简化来看, 安装的步骤可以说有三个步骤, 这三步骤都是用 Slackware Linux安装磁片启动系统後, 接着一步步来进行。我们现在就来看看这三步骤。

步骤一: fdisk 规划分割区 (Partitioning)

安装 Linux 的最低要求, 要有一个分割区[注], 但是这样一套系统所需要的虚拟记忆空间, 只能用 Swap File方法制作, 对学生来说, 这或许适合, 但是系统效率与安全性就差些。至於比较好一些的情况, 我们为 Linux 规划出两个分割区, 一个用来安置整个档案系统, 另外一个作为 Swap Partition 虚拟记忆体。至於最佳情况, 则是将系统规划出多重档案系统, 将 / 保留尽可能的小, /usr ii /tmp ii /var 及 /home 等等可以分为各自独立的档案系统, 也就是各自有专属的分割区, 最後并加上一个独立的分割区, 作为 Swap Partition 虚拟记忆体。这样设定的一部 Linux 系统在笔者看来, 就是一个最符合系统安全要求 ii 以及系统运转效率的一个多工多使用者作业系统环境。

注: 其实可以又例外, 用umsds144.gz 来做rootdisk, 可以在原本 MSDOS 分割区内安装并执行 Linux, 但是笔者不推荐这样做, 尤其对把 Linux 摆在严肃场合的朋友来说, 不要这样做。

步骤二: 建置档案系统 (格式化)

完成了硬碟分割, 事实上硬碟内仍然什麼也没有, 我们只是用逻辑上的方法, 把一个硬碟, 分割成好几个来用, 新规划出来的分割区仍然空空如也, 这样的分割规划动作, 比较接近硬体层次。

建置档案系统工作则是比较接近作业系统层次的规划动作, 我们在某个分割区建制档案系统後, 该分割区就变成一个拥有特殊结构属性的分割区。我们以大家熟悉的 DOS来说, 我们对硬碟或软碟执行 FORMAT动作, 这动作就是建置档案系统, 比方说 C:\> format a:/s。

Linux 环境下的档案系统建置动作, 是用 mkfs 或 mke2fs 等等工具程式来做。在本章系统安装示范过程中, 我们执行 Slackware Linux 安装程式时, 可以手工执行 mkfs (或mke2fs) 动作, 也可以在软体安装时, 让安装程式自动判别, 那时再决定是否 mkfs。

不过假如您事後有机会要手工进行系统维护时, 就会有需要用指令来建造档案系统, 比方说制造一个 Linux 属性 (ext2fs) 的磁碟片就

是一个典型的例子

步骤三：把 Slackware Linux 安装到硬碟

这个步骤是我们真正期待的，这个步骤会把软体从磁片（或者 CD-ROM ii 远端 NFS server 或硬碟都行）安装到硬碟内指定的分割区。注意，这个步骤也会拷贝一份新的 Kernel 到硬碟去，不过，这份 Kernel 不同於 bootdisk 磁片上的 Kernel，实际安装时，安装程式会询问您安装 IDE Kernel 或 SCSI Kernel，您一定要正确回答，也就是根据您硬碟控制卡形式，选用其中之一（假如您不知道您硬碟的规格，那大概就是 IDE）。

再次提醒读者，这个步骤一定要正确且仔细的安装，最好也要尽量完整的安装，最好您至少安装 A（系统基本工具）ii B（最基本的常用应用软体）及 N（网路应用软体）等系列软体，另外您想编译系统核心的话（这几乎是绝对有必要的动作），D 系列包含有系统发展工具以及系统核心服务程式码（Kernel source code）也有绝对必要，除此之外，F 系列包含各式 FAQ（常见问与答）文件，I 系列 Info page 线上手册等等最好也都安装，以及颇为重要的 Q 系列，这是针对不同硬体设备以及应用需求所事先编译好的系统核心服务程式（Kernel），您可以从这里选择一个来用。总之，把Linux定位在玩票性质的话，您不妨选择性安装，至於严肃场合则尽量全部安装。不甚漏失安装一些必要软体，会带给自己无谓的困扰。

☐ 使用 bootdisk及 rootdisk 磁片 开机

安装系统的第一步骤，就是拿刚刚制作好的 bootdisk 磁片，塞入第一部软碟机，启动电源。正常的话，您会在萤幕上看到以下画面。

<< 画面 4-1 >>
LILO

Welcome to the Slackware Linux 2.0.2 Bootkernel disk!

If you have any extra parameters to pass to the kernel, enter them at the prompt below. For instance, you might need something like this to detect the hard drive on PS/1 and ValuePoint models from IBM:

ramdisk hd=cyl,hds,secs (Where "cyl", "hds", and "secs" are the number of cylinders, sectors, and heads on the drive. Most machine won't need this.)

Also, in a pinch, you can boot your system with a command like:
mount root=/dev/hda1

On machines with low memory, you can mount root=/dev/fd1 or mount root=/dev/fd0 to install without a ramdisk. See LOWMEM.TXT for details.

If you would rather load the root/install disk from your second floppy drive: drive2 (or even this: ramdisk root=/dev/hd1)

DON'T SWITCH ANY DISKS YET! This prompt is just for entering extra paramters. If you don't need to enter any paramters, hit ENTER to conitnue.

boot:

萤幕画面在此处停止了。正常的话，在这里我们碰一下 <Enter> 键，可以继续。

<< 画面 4-2 >>

.....

Please remove the boot kernel disk from your floppy drive, insert a root/install disk (such as one of the Slackware color144, colrlite, tty144, or tty12 disks) or some other disk you wish to load into a ramdisk and boot, and then press ENTER to continue.

接着您可以在萤幕上看到开机磁片侦测到硬体周边装置的一系列讯息，这些讯息此处简略掉了。一直到下面画面，萤幕再度停住，此处，我们浏览一下其说明，其意思是说，把刚开机用的 bootdisk 拿出来，把 rootdisk（也就是系统安装磁片的第二片）插进磁碟机。

<< 画面 4-3 >>

VFS: Disk change detected on device 2/28

RAMDISK: Loading 1440 blocks into RAM disk
.....

<< 画面 4-4 >>

Welcome to the Slackware Linux installation disk, (v. 2.0.2)

IMPORTANT! READ THE INFORMATION BELOW CAREFULLY.

- You will need one or more partitions of type "Linux native" prepared. It is also recommended that you create a swap partition (type "Linux swap") prior to installation. Most users can use the Linux "fdisk" utility to create and tag the types of all these partitions. OS/2 Boot Manager users, however, should create their Linux partitions with OS/2 "fdisk", add the bootable (root) partition to the Boot Manager menu, and then use the Linux "fdisk" to tag the partitions as type "Linux native".
- If you have 4 megabytes or less of RAM, you MUST activate a swap partition before running setup. After making the partition with fdisk, use:
mkswap /dev/<partition> <number of blocks> ; swapon /dev/<partition>
- Once you have prepared the disk partitions for Linux, and activated a swap partition if you need one, type "setup" to begin the installation process.
- If you want the install program to use monochrome displays, type:

TERM=vt100
before you start "setup".

You may now login as "root".

slackware login:

以上连续画面到<<画面 4-4>> 停止，就算开机成功，接下来我们可以 root 进入系统（此时的环境已经是一个运转中的 Linux 系统），之后，就可以正式进行系统硬碟规划以及安装动作。

本节最后我们介绍一个相关的问题。有时候，bootdisk 磁片开机时，没有能够自动侦测到您的硬体设备，最常见的，就是网路卡以及 CD-ROM 控制卡。遇到这种情况时，我建议您用 bootdisk 磁片开机时，在 boot: 提示符号后，输入以下指令：

boot: ramdisk sbpcd=0xAAA,LaserMate 针对 Panasonic 562B/563B 光碟机

boot: ramdisk ether=B,0xCCC,eth0 针对网路卡

boot: ramdisk sbpcd=0xAAA,LaserMate ether=B,0xCCC,eth0 合在一起

以上：AAA：该唯独光碟机控制卡之 IO port

B: 该网路卡的 IRQ
CCC: 开网路卡之 IP port

☐ 关于 root 使用者

root 是系统环境中，最特殊的一个使用者帐号。在 Unix 环境，root 是个虚拟的使用者，这帐号用来让系统管理者(这时就是您)以最高的特权进入系统，之后执行系统维护及管理等工作。

这里暂时我们只需要知道这么多，在本系列 Linux 第二册〔轻轻松松管理 Linux> 里，我有更详细说明。

☐ 关于虚拟萤幕 (Virtual Console, VC)

即便只是进行系统安装工作，我们也已经可以享用 Virtual Console (VC) 所带来的便利，第一次接触这观念的朋友，不妨把 VC 想成有多多的萤幕的 Linux 工作站。

当您开机完成后，在萤幕上您所看到的，是第一个 VC，您可以用 <Alt>-F2 (按下 <Alt> 键不放，再按 F2 键) 切换到第二个萤幕，同理，<Alt>-F3 是第三个萤幕，<Alt>-F4 为第四个萤幕。

Linux 是多人多工的作业系统，所以在每一个 VC 下，您都可以执行各自独立的工作，执行系统安装时也不例外。额外一提，本章往下介绍中，笔者所需要的画面摘录，就是用这方法取得，也就是在当第一个 VC 执行安装工作时，第二个 VC 执行记录与画面摘录，这样一边安装一边记录画面。

☐ fdisk 硬碟分割区规划示范

接下来我们就要进行硬碟分割区规划，请读者特别小心操作这些步骤，以下我们是用 fdisk /dev/hdb 指定来执行分割动作，假如您只有一颗 IDE 硬碟，您可以使用 fdisk /dev/hda 指令，假如您只有一颗 SCSI 硬碟，则可以 fdisk /dev/sda 指令。

这里所执行的环境，仍然是用 bootdisk/rootdisk 磁片开机，以 root 帐号进入系统后所看到的环境。

<< 画面 4-5 >>

fdisk /dev/hdb ← 规划编号第二个硬碟

Command (m for help): p

Disk /dev/hdb: 16 heads, 63 sectors, 826 cylinders
Units = cylinders of 1008 * 512 bytes

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hdb1		1	1	100	50368+	83	Linux native
/dev/hdb2		101	101	405	153720	7	OS/2 HPFS
/dev/hdb3		536	536	736	101304	83	Linux native
/dev/hdb4	*	406	406	535	65520	a5	BSD/386

Command (m for help):

本例子只算是个大杂烩的情况，只有玩家才会把硬碟内安装有这麽多的作业系统，这不适合专业场合。我们可以看到上面这例子一共有四个分割区，其中两个分给 Linux (其 ID 为 83)，剩下两个，一

个安装 OS/2, 以及一个安装 FreeBSD。 对于玩票性质的学生来说, 您这样做倒是无妨。

不过, 对于想把 Linux 摆在有实际生产力场合的朋友来说, 我们就必须实际依照我们事先对于档案系统的规划, 来配合硬碟磁区的规划。比方说, 若我们想规划出如 <<画面 4-6>> 这样的系统, 我们实际上就要有两个硬碟, 之后在第一个硬碟 (/dev/hda) 规划四个分割区, 在第二个硬碟 (/dev/hdb) 规划三个分割区, 而且这一共六个分割区其属性都必须是 Linux native (其中一个分割区的属性为 Linux swap, 这是用来做虚拟记忆体之用的, 此处没显示)。

<< 画面 4-6 >>

```
$ df
Filesystem      1024-blocks  Used Available Capacity Mounted on
/dev/hda1        139112    101280      30648      77% /
/dev/hdb3        137825     54679      80299      41% /var
/dev/hdb1        313715     96612     213515      31% /var/spool/news
/dev/hda3         47586     36833      8289       82% /home
/dev/hda2        198099     76000     111869      40% /usr/local
/dev/hda4         19355        793     17563        4% /tmp
/dev/sbpcd       660480    660480         0     100% /cdrom
```

<< 画面 4-7 >>

```
$ fdisk /dev/hda
Using /dev/hda as default device!
```

Command (m for help): p

```
Disk /dev/hda: 15 heads, 62 sectors, 899 cylinders
Units = cylinders of 930 * 512 bytes
```

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hda1	*	2	2	310	143685	83	Linux native
/dev/hda2		311	311	750	204600	83	Linux native
/dev/hda3		751	751	856	49290	83	Linux native
/dev/hda4		857	857	899	19995	5	Extended

<< 画面 4-8 >>

```
$ fdisk /dev/hdb          ← 指定规划第二颗硬碟
The number of cylinders for this disk is set to 1048.
This is larger than 1024, and may cause problems with some software.
```

Command (m for help): p ← 用 p 指令来浏览目前分割区的配置

```
Disk /dev/hdb: 16 heads, 63 sectors, 826 cylinders
Units = cylinders of 1008 * 512 bytes
```

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hdb1		1	1	100	50368+	83	Linux native
/dev/hdb4	*	406	406	535	65520	a5	Unknown

Command (m for help): n ← n 设立新分割区

Command action

e extended

p primary partition (1-4)

p

← p 指定 primary 分割区

Partition number (1-4): 2

← 2 指定第二个

First cylinder (101-826): 101

← 指定第二分割区位置
从 101 - 250 cylinder

Last cylinder or +size or +sizeM or +sizeK (101-405): 250

Command (m for help): n ← n 设立新分割区

Command (m for help):
 e extended
 p primary partition (1-4)
p ← p 指定 primary 分割区

Partition number (1-4): 3 ← 指定第三分割区位置
 从 251 - 250 cylinder

First cylinder (251-826): 251 ← 填入 251
Last cylinder or +size or +sizeM or +sizeK (251-405): 290 ← 填入 290

Command (m for help): p ← 用 p 指令浏览设定结果

Disk /dev/hdb: 16 heads, 63 sectors, 826 cylinders
Units = cylinders of 1008 * 512 bytes

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hdb1		1	1	100	50368+	83	Linux native
/dev/hdb2		101	101	250	75600	83	Linux native
/dev/hdb3		251	251	290	20160	83	Linux native
/dev/hdb4	*	406	406	535	65520	a5	Unknown

Command (m for help): t ← 修改分割区类型
Partition number (1-4): 3 ← 指定修改第三个分割区

Hex code (type L to list codes): 82 ← 82 代表 Linux Swap Partition

Changed system type of partition 3 to 82 (Linux swap)

Command (m for help): wq ← w: 储存 q: 结束跳出

完成分割区规划後, 我们还不能立刻执行安装的工作, 现在我们必须重新开机。这时, 把 rootdisk 磁片从磁碟机拿出来, 再换插 bootdisk 磁片进去, 之後在提示符号下, 执行 reboot 指令从新启动机器。

☐ 系统软体安装前的说明

到这里为止, 我们硬碟内实际上仍然没有东西, 我们只做了基本的分割区规划, 更重要的档案系统 ii 系统软体 ii 系统核心服务程式 ii 系统工具程式以及应用软体等等, 都还未安装。

刚刚我们完成分割区规划後, 重新开机, 并再次以 root 帐号进入系统, 假如无误的话, 我们接下来要用 setup 指令, 完成全程安装动作。请读者留意, setup 的动作可以指定全自动, 也可以指定一步一步监督安装。这两不种不同方式其所需的时间相差很大, 我建议读者第一次执行的话, 指定一步一步慢慢来 (这是内定方式), 这样您可以浏览整个过程, 也就可以对系统有更深入的了解。还有一点很重要的, 由於您不想由於您的不慎, 以致於安装了一套有潜在瑕疵的 Linux 系统, 可是明显的您又没有经验, 怎麽办呢? 简单, 先把第一次安装当作是测试, 不论成功与否, 都仔细观察仔细学, 之後, 再重新从头开始一次, 仔细的一步一步进行硬碟规划 ii 建置档案系统 ii 及系统软体安装。

- ☐ set up 六程序
Slackware Linux 的安装可以大略分解为六个步骤, 其实这些步

骤其在彩色安装画面上都已经清楚显示，读者此处不妨快速浏览即可。以下这六个步骤可以是连贯动作，但也可以个别独立操作。

1. 启动 SWAP PARTITION

除非您硬碟内已经没有可用的分割区，最好您第一个步骤就要先设置 SWAP PARTITION，让系统所需要的虚拟记忆体立刻生效，这对记忆体很小的机器尤其重要，否则您甚至可能没有办法继续进行安装工作。

2. 指定安装目的分割区 (Target)

第二个步骤，就是告诉系统安装程式，究竟您想把系统安装到哪一个（或者哪几个）硬碟分割区。实际执行这步骤时，您只需要把游标移到萤幕上的 Target 选项，按下 <Enter> 键，之後回答一些问题即可。

3. 指定安装来源 (Source)

您首先要告诉安装程式，您究竟想用什麼方式安装，比方磁片 ii 硬碟 ii CD-ROM ii 网路远端一部 NFS server 或 磁带等等，这就是安装来源。实际执行操作时，您可以在刚刚指定 Target 的阶段之後面，接着进行指定 Source，或者，也可以在萤幕上选择 Source 选项。

4. 选择安装软体 (DISK SETS)

执行这项操作时，首先我们要选择安装哪些软体，或者哪些不安装。

5. 实际安装 (Install)

这步骤就是真枪实弹把软体从 Source 安装到 Target 的过程。

6. 最後系统设定 (Configuration)

前面五个步骤完成後，基本上整个系统所需的软体都已经安装完成，只不过，这仍然是一套死的系统，因为大部分的功能都还没有办法正确运转，这是为什麼，我们需要进一步做最後的设定。这步骤实际上的作法，也是回答一些问题，之後安装软体会自动执行。

☐ setup 启动

透过上面的说明，我们大概已经明了 setup 所执行的工作，接下来我们就要实际来执行 setup 的各项细节。

我们先来回忆一下。刚刚用 bootdisk 及 rootdisk 开机成功後，我们首先以 root 帐号进入系统，我们眼前就已经是一个阳春的 Linux/Unix 作业环境，使用 sh (Bounre Shell) 与系统打交道。

以下我们在 Shell 提示符号下键入 setup 指令，就可以开始执行安装程序。

```
$ setup
```

```
<< 画面 4-9 >>
```

```
_____ Slackware Linux Setup (version FD-2.0.2) _____
Welcome to Slackware Linux Setup.
Select an option below using the UP/DOWN keys and SPACE or ENTER.
Alternate keys may also be used: '+', '-', and TAB.

HELP      Read the Slackware Setup HELP file
KEYMAP    Remap your keyboard if you're not using a US one
QUICK     Choose quick or verbose install mode [now: VERBOSE]
MAKE TAGS Experts may customize tagfiles to preselect packages
```

```

ADDSWAP    Set up your swap partition(s)
TARGET     Set up your target partitions
SOURCE     Select source media
DISK SETS  Decide which disk sets you wish to install
INSTALL    Install selected disk sets
CONFIGURE  Reconfigure your Linux system
EXIT       Exit Slackware Linux Setup

```

< OK > <Cancel>

在这画面中，我们可以移动上下方向键，萤幕上的反白就会跟着移动，我们把反白移动到某一行，之後按 <Enter> 键，就是要执行该选项工作。

至於萤幕底端有 <OK> 及 <Cancel> 两个选项，可个可以 <Tab> 键或者左右方向键来跳跃选择，您也同样可以游标移动，假如移到 <Cancel> 处，接着按 <Enter>，这就会取消目前的作业。

下面说明则是该画面的中文翻译说明。

```

HELP       阅读线上安装说明
KEYMAP     更改键盘排列
QUICK      快速安装模式，假如使用这选项的话，系统安装过程
           就不会停下来——询问您问题。 另外，这选项可以，
           搭配下面 "MAKE TAGS"，但是，不是专家的话，请勿
           使用。
MAKE TAGS  改变软体内键安装选项
ADDSWAP    启动 swap partition，使虚拟记忆体即刻生效
TARGET     指定目的硬碟分割区
SOURCE     指定来源 source media
DISK SETS  选择安装软体系列
INSTALL    开始安装
CONFIGURE  系统设定
EXIT       结束安装作业

```

☐ 启动虚拟记忆体

前面主服务画面 (< 画面 4-9 >) 下第五个选项 ADDSWAP，我们用方向键往下移动到此，之後按 <Enter> 键。这画面中的 /dev/hdb2 是系统自己抓到的，无须额外手工指定，不过，前提是之前进行硬碟分割时，已经把 /dev/hdb2 的分割区型态 (Partition Type) 正确设定为 "Linux swap"。

以下自动化程序所作的有三个动作，第一就是对现有的 Swap Partition 执行规划动作 (mkswap)，第二个动作，是让该新规划好的 Swap partition 即刻生效 (swapon)。最後一步，则是安装到将来系统的 /etc/fstab，这样系统安装完成後，每次系统开机时就会自动启动虚拟记忆体。

<< 画面 4-10 >>

SWAP SPACE DETECTED

Slackware Setup has detected a swap partition:

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hdb2		101	101	160	30240	82	Linux swap

Do you wish to install this as your swap partition?

< Yes > < No >

上面这画面下, 按 <Enter> 就可以继续到下面画面, 假若要中断的话, 按 <Tab> 键可以移动反白到 < No > 区域。

<< 画面 4-11 >>

MKSWAP WARNING

IMPORTANT NOTE: If you have already made any of your swap partitions active (using the swapon command), then you should not allow Setup to use mkswap on your swap partitions, because it may corrupt memory pages that are currently swapped out. Instead, you will have to make sure that your swap partitions have been prepared (with mkswap) before they will work. You might want to do this to any inactive swap partitions before you reboot.

< OK >

<< 画面 4-12 >>

USE MKSWAP?

Do you want Setup to use mkswap on your swap partitions?

< Yes > < No >

以上三个连续画面所执行的, 也可以用下面这个指令手工完成, 这提供读者参考。

```
$ /sbin/mkswap /dev/hdb2 30240
```

还有一点要注意, 假如以前已经做过这指令, 此处就不要重复。至於操作方法, 上面画面中, 可以移动 <Tab> 键, 选择 No 不安装, 这样会直接跳到下面画面。假若以前没有操作过, 可以直接按 <Enter>, 这样会自动执行 mkswap动作。

下面画面则无论如何一定要执行, 这样就立刻才可以使 Swap Partition 生效。以此例来说, 会立刻增加约 30MB 的虚拟记忆体。

<< 画面 4-13 >>

ACTIVATE SWAP SPACE?

If you have not already activated your swap partitions with 'swapon', you should do so at this time. Activate swap partitions with 'swapon'?

< Yes > < No >

上面画面所执行的, 就等同於以下这指令:

```
$ /sbin/swapon /dev/hdb2
```

下面这画面, 安装程式询问说要不要更改 /etc/fstab, 这效果是

以後系统（指安装完成後的系统）每次开机後，会自行启动该 Swap Partition，此处我们按 <Enter> 键，选择安装。

<< 画面 4-14 >>

```

                SWAP SPACE CONFIGURED
-----
Your swapspace has been configured. This information will
be added to your /etc/fstab:

/dev/hdb2      swap      swap      defaults

-----
                        < OK >
-----
```

下面是最後一个画面，安装程式询问我们是否接下来继续执行我前面介绍的『2. 指定安装目的分割区 (Target)』，若按 <Enter> 回答 Yes，则会立刻接续下去，若按 <Tab> 选择 No，则回到最外层主服务画面。

<< 画面 4-15 >>

```

                CONTINUE WITH INSTALLATION?
-----
Now that you've set up your swap space, you may
continue on with the installation. Otherwise, you'll
be returned to the main menu. Would you like to
continue the installation and set up your TARGET
drive(s)?

-----
                < Yes >      < No >
-----
```

☐ 指定安装目的分割区

在这步骤里，我们要一一的告诉系统安装程式，哪一个分割区我们想作为 / 档案系统，哪一个分割区指定为 /usr 档案系统，等等。除此以外，假如硬碟某一个分割区已经安装有 DOS 或 OS/2，也可以在此告诉系统安装程式，这样子将来就可以直些在 Linux 档案系统下取用 DOS 与 OS/2 档案系统内的东西 (Linux 支援 DOS FAT 及 OS2 HPFS 等档案系统)。

这一阶段的实际操作步骤也很简单。我们首先指定所要安装 Linux 的分割区，接着安装程式会询问确认该分割区的属性，然後们需决定要不要对该分割区规划出档案系统 (make filesystem)。

下面画面中，我们可以看到，系统安装程式会自动侦测出所有属性为 Linux native (Partition ID 为 83) 的分割区。这画面中，我们被询问的第一个话题，就是 / 档案系统将设於何处？这里笔者回答 /dev/hdb3，这是第二颗硬碟的第三个分割区。额外一提，Linux 可以安装在第一或第二颗硬碟，悉听尊便。

<< 画面 4-16 >>

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hdb1		1	1	100	50368+	83	Linux native
/dev/hdb3		536	536	736	101304	83	Linux native

Which device would you like to use for your root Linux partition?

dev/hdb3

< OK > <Cancel>

接下来读者会看到下面这画面，这里询问档案系统型态，我建议读者选择 ext2，因为绝大多数人都是选用这个。我们用方向键把反白移至 ext2 这行，之後按<Enter> 键。

<< 画面 4-17 >>

CHOOSE LINUX FILESYSTEM

There are two main filesystem types that are used for Linux. These are the xiafs filesystem, and the second extended filesystem (ext2). Ext2 seems to be the current standard. Xiafs hasn't really been changed in quite some time. Ext2 has one really nice feature that xiafs doesn't have: as an ext2 partition is unmounted, a clean bit is written to it. When the machine is rebooted, checking is skipped for any partitions that have the clean bit on them. Xiafs may be a better choice for machines with low memory, however, so it's still supported. What filesystem do you plan to use on your root partition (/dev/hdb3), ext2fs or xiafs?

ext2	Linux Second Extended Filesystem
xiafs	Linux Xiafs

< OK > <Cancel>

选择 ext2 档案系统後，接着又询问我们是否要真的执行建造动作（相当於DOS的格式化动作），假如这是我们第一次安装，很可能我要就要选择 Format 或 Check，但是如果确定以前已经做过，这里也可以选择 No。至於 Format 与 Check 的不同，Check 除了做 Format 动作外，还额外检测硬碟是否有坏轨，假如您硬碟有瑕疵的话，记得选用 Check。

<< 画面 4-18 >>

FORMAT PARTITION

If this partition has not been formatted, you should format it.
NOTE: This will erase all data on it. If you are trying to upgrade an existing Linux partition, you should use setup from your hard drive, not from the boot/root disk. (The versions of setup supplied on the hard drive and the boot/root disk differ)
Would you like to format this partition?

Format	Quick format with no bad block checking
Check	Slow format that checks for bad blocks
No	No, do not format this partition

< OK > <Cancel>

以下我选择 Format, 系统就立刻执行 mkfs 动作, 额外一提, 这动作相同於 \$ mke2fs /dev/hdb3 101304 指令, 读者朋友以後进行正常系统管理时, 会用到这命令。

<< 画面 4-19A >>

SELECT INODE DENSITY

Ext2fs defaults to one inode per 4096 bytes of drive space. If you're going to have many small files on your drive, then you may need more inodes (one is used for each file entry). You can change the density to one inode per 2048 bytes, or even per 1024 bytes. Select '2048' or '1024', or just hit enter to accept the default of 4096 bytes. NOTE: If you are going to run from CD using a small (<60MB) partition, use 1024 to be safe. Each link uses an inode and it's easy to run out of space.

4096	1 inode per 4096 bytes. (default)
2048	1 inode per 2048 bytes.
1024	1 inode per 1024 bytes.

< OK > <Cancel>

画面 4-19A 的选择, 笔者建议, 若是用来作为 News spool 区域 (也就是 /var/spool/news) 的档案系统, 不妨选择 1024 这一栏, 这结果会造成一个 Block (照内定, 一个Block等於1024 bytes) 等於一个 Inode 除此以外的正常状况, 选择第一选项 4096, 这结果一个Inode 会等於 4096 bytes。以上若读者无法明白什麼是 Bloack/Inode, 请忽略无妨, 这些观念并不重要。

<< 画面 4-19B >>

FORMATTING

Formatting /dev/hdb3
 Size in 1K blocks: 70560
 Filesystem type: ext2

以上连续几个动作已经成功的指定某一个分割区作为系统的 / (root) 档案系统, 假如您只有一个 Linux属性的分割区, 这时 / 档案系统就是您唯一的档案系统。不过, 假如您有一个以上, 您就可以看到下面画面, 这画面告诉我们说, 本电脑硬碟下有不只一个 Linux 属性分割区, 而 /dev/hdb3 已经指定作为 / 档案系统, 这时是否要把剩下的分割区也包含进来, 比方独立出 /usr 或 /usr/X11 档案系统等等的?

这里我回答是。再重复一次, 把 / 档案系统规划小一些, 也就是把 /usr ii /var ii /home ii /tmp 独立出来对系统执行效率以及系

统安全都会有助益。不过，对 Linux 或 Unix 经验仍薄弱的朋友，我强烈建议您就此停住，先不要顾虑效率或安全，先跑看看，增加一些经验，之後，再考虑重新设定一个最佳的系统。

<< 画面 4-20 >>

You seem to have more than one partition tagged as Linux native. You may use these to distribute your Linux system across more than one partition. Currently, you have /dev/hdb3 mounted as your / partition. You might want to mount large directories such as /usr or /usr/X11 on separate partitions. You should not try to mount /etc, /sbin, or /bin on their own partitions since they contain utilities needed to bring the system up and mount partitions. Would you like to use some of the other Linux partitions to mount some of your directories?

< Yes > < No >

以下重复进行刚刚的动作，这里我回答 /dev/hdb1 分割区。另外一点要注意的是，假如这时您临时决定不再增加任何分割区，可以键入 q，之後按 <Enter> 键即可。

<< 画面 4-21 >>

These are your Linux partitions:

/dev/hdb1	1	1	100	50368+	83	Linux native
/dev/hdb3	536	536	736	101304	83	Linux native

These partitions are already in use:
/dev/hdb1 on /mnt type ext2 (rw)

Please enter the partition you would like to use, or
type [q] to quit adding new partitions:

/dev/hdb1

< OK > <Cancel>

以下同样指定 ext2。

<< 画面 4-22 >>

CHOOSE LINUX FILESYSTEM

There are two main filesystem types that are used for Linux. These are the xiafs filesystem, and the second extended filesystem (ext2). Ext2 seems to be the current standard. Xiafs hasn't really been changed in quite some time. Ext2 has one really nice feature that xiafs doesn't have: as an ext2 partition is unmounted, a clean bit is written to it. When the machine is rebooted, checking is

skipped for any partitions that have the clean bit on them. Xiafs may be a better choice for machines with low memory, however, so it's still supported. What filesystem do you plan to use on your root partition (/dev/hdb3), ext2fs or xiafs?

```

-----
      ext2  Linux Second Extended Filesystem
      xiafs  Linux Xiafs
-----
      < OK >      <Cancel>
-----

```

<< 画面 4-23 >>

```

-----
                        FORMATTING
-----
Formatting /dev/hdb3
Size in 1K blocks:   70560
Filesystem type: ext2
-----

```

假如您硬碟内规划有很多 Linux 分割区, 这时您重复以上动作就可以。以下接着安装程式侦测到我第一个硬碟内有 DOS 分割区 (C: 碟), 就问我们说, 是否要把这DOS分割区包含进来, 成为系统的档案系统之一, 於是我们可以在 Linux系统下直接存取原本 C: 磁碟内的东西。这里按 <Enter> 回答是, 若不要, 按 <Tab> (或方向键), 把反白移到 No, 之後按 <Enter>。

<< 画面 4-24 >>

```

-----
                        DOS AND OS/2 PARTITION SETUP
-----

The following DOS FAT or OS/2 HPFS partitions were found:

/dev/hda1  *      1      1    1000 127491+  6  DOS 16-bit >=32M

Would you like to make some of these partitions visible from Linux?

-----
      < Yes >      < No >
-----

```

由於我回答 Yes, 以下就要进一步回答 /dev/hda1。

<< 画面 4-25 >>

```

-----
                        CHOOSE PARTITION
-----
These DOS or OS/2 partitions are available to mount:
/dev/hda1  *      1      1    1000 127491+  6  DOS 16-bit >=32M

```

Please enter the partition you want to access from Linux,
or type [q] to quit adding new partitions:

dev/hda1

< OK > <Cancel>

以下画面则是要选择 Mount Point, 这个就是说把 C: 磁碟挂在系统的哪里, 注意, Linux/Unix 没有 C: 磁碟观念 (C: 是 DOS 的观念与用法), 我们可以设立比方说 /msdos 目录, 之後把 C: 所在的分割区, 挂在这 /msdos 目录下, 这样就可以很方便存取 该 C: 内的 DOS 档案。以下, 我就指定 /msdos 为这个挂点 (Mount Point)。

<< 画面 4-25 >>

SELECT MOUNT POINT

Now this new partition must be mounted somewhere in your directory tree. Please enter the directory under which you would like to put it. for instance, you might want to reply /dos, /dosd, or something like that. NOTE: This partition won't actually be mounted until you reboot.

Where would you like to mount /dev/hda1?

msdos

< OK > <Cancel>

以下画面按 <Enter>。

<< 画面 4-26 >>

CURRENT DOS/HPFS PARTITION STATUS

DOS partition added to /etc/fstab:

/dev/hda1	/msdos	msdos	defaults
-----------	--------	-------	----------

< OK >

下面画面问我们要不要进一步接着进行「指定安装来源」作业, 若回答 Yes, 则立刻接续到之後的操作, 若 No, 则回到最外层画面。

<< 画面 4-27 >>

```

CONTINUE?
Now that you've set up your target partitions, would
you like to go on to the SOURCE section and select
your installation media?

< Yes >      < No >

```

☐ 指定安装来源 (Source)

接下来我们要指定用什麼方式安装，以下画面就是询问用什麼方法来安装，其实也就是问存放媒体是什麼。以下五种方法中，NFS 应该算是轻松愉快的安装方法，假如读者可以上 Internet 网路，或者您区域网路中已经有 NFS server，且其内存放有 Slackware Linux 软体，这就可以用 NFS 安装。以下笔者五种方法全部做介绍，不过读者们选择其中之一参考即可，其他跳过去无妨。

其实这五个安装方法都有其类似之处，就是无论哪一种方法，都必须在安装之前或过程，把安装来源（软碟 ii 硬碟 ii CD-ROM 或 NFS 等等）挂（Mount）在安装软体系统（其实已经是一个阳春 Linux 系统）之下的一个目录。以硬碟来安装来说，很多朋友的作法是先把 Linux 系统软体存放在同一部电脑的硬碟内 DOS 系统分割区内，这情况的作法，是把该 DOS 分割区挂上来，并指定正确路径。CD-ROM 安装法也很类似，但我们必须先拿支援该品牌 CD-ROM 的 bootdisk，启动後把 CD-ROM drive 挂上来成为系统的一部份，并指定正确路径。NFS 也是一样，不过一些起码网路基本常识要具备，程序上也类似，只不过多了一道网路设定程序，网路设定成功後，把远端 NFS server 所 export 的目录挂上来。

以上所描述的操作动作，并不需要透过命令执行，而是在萤幕画面上回答一些问题或者做一些选择即可。细节的操作请看下面例子。

软碟安装法

选择磁片安装的话，我们必须事先拷贝所有的磁片，要嘛从 CD-ROM 拷贝下来，或者从 Internet FTP 档案库，或者从 BBS 或任何地方都可以。确定您要由磁片安装後，操作上下方向键，把反白移至选项 "2"，之後按 <Enter> 键。

<< 画面 4-28 >>

```

SOURCE MEDIA SELECTION
Where do you plan to install Slackware Linux from?

1 Install from a hard drive partition
2 Install from floppy disks
3 Install via NFS
4 Install from a pre-mounted directory
5 Install from CD-ROM

< OK >      <Cancel>

```

接下来步骤是选择磁碟机规格，其中有四个选项，<在画面 4-29> 请选择其中之一。

<< 画面 4-29 >>

```
_____ SELECT FLOPPY DRIVE _____

The base Slackware series (A) can be installed from 1.2M
or 1.44M media. Most of the other disks will not fit on
1.2M media, but can be downloaded to your hard drive and
installed from there later.

Which drive do you want to install from?

_____/dev/fd0H1440 1.44M drive a:
      /dev/fd1H1440 1.44M drive b:
      /dev/fd0h1200 1.2M drive a:
      /dev/fd1h1200 1.2M drive b:
_____

_____ < OK > <Cancel> _____
```

NFS网路 安装法

透过 NFS 安装其实没有想像困难，以下的操作过程，一开始先设定 NFS 网路部份，我们要指定我们这机器的 IP，以及网路上另外一部 NFS server 的 IP，接着，我们指定该 server 的档案存放路径，就是这样。

至於有关网路的技术部份，我们在此完全没有解释，比方以下所需要的基本网路资料，像是本机器的 IP 地址 ii Netmask ii Broadcast 及 Gateway 位址等等资料，您必须自行询问您所属网路管理单位，不要引用下面资料。至於网路上公开性的 NFS server，交大资工提供有这服务，其 NFS server IP 地址是 140.113.235.252 (linux.csie.nctu.edu.tw)，其存放路径是 /Slackware (请注意大小写)。

<< 画面 4-30 >>

```
_____ SOURCE MEDIA SELECTION _____

Where do you plan to install Slackware Linux from?

_____/1 Install from a hard drive partition
      2 Install from floppy disks
      3 Install via NFS
      4 Install from a pre-mounted directory
      5 Install from CD-ROM
_____

_____ < OK > <Cancel> _____
```

以下讯息浏览一下，之後按 <Enter>，开始进行设定 NFS client。

<< 画面 4-31 >>

```
_____ INSTALLATION THROUGH NFS _____

WARNING! Installing via NFS can be a real time-saver if you're
good with TCP/IP, but is a tricky installation choice for the
beginner. Some of the things you may have to do to get this
```

option to work include:

- Setting up an /etc/networks file on the bootdisk
- Mandatory: getting the source directory exported from your NFS server
- Starting up 'portmap'

Are you sure you want to try to install via NFS?

< Yes > < No >

下面画面回答所安装这部机器的 IP 地址。

<< 画面 4-32 >>

ASSIGN IP ADDRESS _____

You will need to enter the IP address you wish to assign to this machine. Example: 111.112.113.114

What is your IP address?

92.168.1.148

< OK > <Cancel>

下面回答 Netmask。

<< 画面 4-33 >>

ASSIGN NETMASK _____

Now we need to know your netmask.
Typically this will be 255.255.255.0
but this can be different depending on
your local setup.

What is your netmask?

55.255.255.0

< OK > <Cancel>

以下填入 Broadcast 地址。

<< 画面 4-34 >>

ASSIGN BROADCAST ADDRESS _____

Typically your broadcast address will be the same as
your IP address with 255 replacing the final value.
Example: 111.112.113.255

What is your broadcast address?

92.168.1.255

< OK > <Cancel>

下面则回答网路地址。

<< 画面 4-35 >>

ASSIGN NETWORK ADDRESS

Now we need your network address.

Your network address will usually be the same as your IP address, with the last value replaced by 0.
For example: 111.112.113.0

What is your network address?

92.168.1.0

< OK > <Cancel>

底下再问，您这部机器需不需要经过 Gateway才能连线出去。
由於笔者示范是透过内部网路安装，所以没有 Gateway。不过，绝大部分 Internet 连线的机器，是有 Gateway的。

<< 画面 4-36 >>

Do you have a gateway?

< Yes > < No >

下面回答 NFS server 所在 IP 地址，在台湾的读者，若有 Internet 连线的话，以下可以填入 140.113.235.252，或者其他您知道有提供此服务的机器的 IP 地址也行。

<< 画面 4-37 >>

ENTER IP ADDRESS OF NFS SERVER

Good! We're all set on the local end, but now we need to know where to find the software packages to install. First, we need the IP address of the machine where the Slackware sources are stored.

What is the IP address of your NFS server?

```
92.168.1.150
```

```
< OK > <Cancel>
```

底下问说，本机器之网路界面卡是外接式，或者是一般内接式，一般桌上型电脑用的都是内接式。

<< 画面 4-38 >>

```
ETHERNET DEVICE SELECTION
```

Slackware can configure either an INTERNAL ethernet card, or an EXTERNAL D-Link adaptor.

Which type of ethernet device do you have?

```
Internal  Internal ethernet card
External  External D-Link adaptor
```

```
< OK > <Cancel>
```

下面回答 该 NFS server存放 Slackware Linux系列软体之路径。

<< 画面 4-39 >>

```
SELECT SOURCE DIRECTORY
```

There must be a directory on the server with the Slackware sources for each disk in subdirectories beneath it.

The installation script needs to know the name of the directory on your server that contains the disk subdirectories. For example, if your A3 disk is found at /slackware/a3, then you would respond: /slackware

What is the Slackware source directory?

```
root/slackware-2.0.2
```

```
< OK > <Cancel>
```

<< 画面 4-40 >>

We'll switch into text mode here so you can see if you have any errors.

We'll switch into text mode here so you can see if you have any errors.

Configuring ethernet card...
Mounting NFS...

mount: 192.168.1.150:/root/slackware-2.0.2 failed, reason given by server:
No such file or directory

Current mount table:
/dev/fd0 on / type minix (rw)
none on /proc type proc (rw)
/dev/hdb1 on /mnt type ext2 (rw)
Do you think you need to try this again ([y]es, [n]o)?

上面是最後一个问题，这里是问说，我们要不要再试一次，通常我们从萤幕上并没有看到错误讯息的话，就可以回答 n。本例子中，由於路径回答错误，所以我必须回答 y，之後，从新来一次。

☐ 硬碟安装法

前面说过，从硬碟安装很简单。底下我就是过程实际示范出来。

至於以下我们选择 1 或选择与 4 其实是一样的，不同的是，选项 4 可以配合我们事先手工挂上来的目录，而不论来源是硬碟 ii NFS 或 CD-ROM drive。以底下 < 画面 4-42 > 的操作来说，我们先要哪一个硬碟分割区，之後再决定目录的路径以及档案属性等等。

<< 画面 4-41 >>

```

_____ SOURCE MEDIA SELECTION _____

Where do you plan to install Slackware Linux from?

_____
1 Install from a hard drive partition
2 Install from floppy disks
3 Install via NFS
4 Install from a pre-mounted directory
5 Install from CD-ROM
_____

< OK >      <Cancel>
_____
```

选择选项 1 硬碟安装後，我们进一步要指定分割区所在。下面画面中，由於我 Slackware Linux 软体放在第一个硬碟的第一个分割区，我回答 /dev/hda1。假如您不清楚哪一个分割区，可以光按 <Enter> 键，这可以浏览您硬碟内所有的分割区。

<< 画面 4-42 >>

```

_____ INSTALLING FROM HARD DISK _____

In order to install directly from the hard disk you must
have a partition with a directory containing the Slackware
distribution such that each disk other than the boot disk
is contained in a subdirectory. For example, if the
distribution is in /stuff/slack, then you have to have
directories named /stuff/slack/a1, /stuff/slack/a2, and so
on each containing the files that would be on that disk.
You may install from DOS, HPFS, or Linux partitions.
Please enter the partition where the Slackware sources can
be found, or [enter] to see a partition list:

_____
dev/hda1
_____
```

< OK > <Cancel>

接下来画面我们要回答路径所在, 这里我回答 /slackware, 这路径实际上是 C:\SLAKWARE。

<< 画面 4-43 >>

SELECT SOURCE DIRECTORY

Now we need to know what directory on this partition the Slackware sources can be found in. (The directory in which the subdirectories for each disk is found)
NOTE: You must give the directory name relative to the top of the partition. So, for example, if you're going to mount this partition under /usr, don't include the '/usr' at the beginning of the pathname.

What directory are the Slackware sources in?

slackware

< OK > <Cancel>

接下来还要指定档案属性, 由於是 DOS C: 磁碟, 我选 1。

<< 画面 4-44 >>

SELECT FILESYSTEM TYPE

What type of filesystem does your Slackware source partition contain?

- 1 FAT (MS-DOS, DR-DOS, OS/2)
 - 2 Linux Second Extended Filesystem
 - 3 Linux Xiafs
 - 4 Linux MINIX
 - 5 OS/2 HPFS
-

< OK > <Cancel>

☐ CD-ROM 安装法

CD-ROM 的安装方法也一样简单, 不过记得先知道您的 CD-ROM 类型, 并且因此选择一个恰当的 bootdisk。有关选择 bootdisk 的根据, 您必须先了解您的唯独光碟机的类型或品牌, 之後参考下表, 至於更详细的细节请参考前面第二章的说明。

SCSI CD-ROM:	scsi.gz
Panasonic 562B/562B:	sbpcd.gz
Mitsumi CD-ROM:	mitsumi.gz

SONY CDU31A 及 535 CD-ROM: cdu31a.gz

<< 画面 4-45 >>

```

SOURCE MEDIA SELECTION
-----
Where do you plan to install Slackware Linux from?

1 Install from a hard drive partition
2 Install from floppy disks
3 Install via NFS
4 Install from a pre-mounted directory
5 Install from CD-ROM

-----
< OK >    <Cancel>
-----
```

以下选择您正确 CD-ROM drive。

<< 画面 4-46 >>

```

INSTALLING FROM CD-ROM
-----
In order to install Slackware Linux from a CD-ROM, it must
contain the distribution arranged beneath a source directory
in the same way as if you were to install it from a hard
drive or NFS. The source directory must contain subdirectories
for each floppy disk. Your CD-ROM should be compatible with
this format if it contains a mirror of the Slackware FTP site.

What type of CD-ROM drive do you have?

1 SCSI [ /dev/scd0 or /dev/scd1 ]
2 Sony CDU31A [ /dev/sonycd ]
3 Sony 535 [ /dev/cdu535 ]
4 Mitsumi [ /dev/mcd ]
5 Sound Blaster Pro (Panasonic) [ /dev/sbpcd ]
6 NEC 260 IDE CD-ROM [ /dev/nec260 ]

-----
< OK >    <Cancel>
-----
```

选择该片 CD 片存放 Slackware Linux 的实际路径。若以下都没有，则选择 Custom。对于交通大学出版的『云观 CD-ROM III, Linux Plug & Play CD-ROM』的使用者来说，以下要选择第三选项

<< 画面 4-47 >>

```

SELECT SOURCE DIRECTORY
-----
Now we need to know which directory on the CD contains the Slackware
sources. This location may vary depending on the cd you have. There
are default selections for the Slackware Professional CD (including
an option to run mostly from the CD), InfoMagic CD, TransAmeritech
CD, and the Linux Quarterly CD-ROM. There may be other directories
containing other versions - enter a custom directory name if you
like. Which option would you like?

-----
```

```

      slakware           Slackware Pro: install to HD
      slackpro           Slackware Pro: run from CD
      slackware/slakware TransAmeritech CD
      packages/slackware Linux Quarterly CD-ROM
      distributions/slackware InfoMagic CD-ROM
      Custom             Enter your own directory name

```

```

      < OK >      <Cancel>

```

由於上一个画面选择 Custom, 接下来我要自行回答完整路径, 關於这项资料, 您必须自行参考您手上的 CD 片为准。

<< 画面 4-48 >>

```

      SELECT SOURCE DIRECTORY
      Now we need to know which directory on the CD contains the
      Slackware sources. This location may vary depending on the CD
      you have. You may omit the leading '/' if you like. What
      directory are the Slackware sources in?

```

```

      /linux/slakware

```

```

      < OK >      <Cancel>

```

☐ 选择安装软体

前面罗哩罗唆的介绍四种安装方法, 读者请根据您的设定及条件, 选择其中之一就可以, 之後, 进入到这一节, 这里我们要来选择究竟安装哪些软体, 或许哪些可以省略。

下面第一个画面是前一节『指定安装来源』操作时的最後一个画面, 通常我们选择 Yes, 就进行到这一节的操作, 或者读者选 No 的话, 之後在主选单上选择进入 DISK SETS选项也可以进行这里的操作。

<< 画面 4-49 >>

```

      CONTINUE?
      Would you like to go on to the DISK SETS section and
      select which catagories of software to install?

```

```

      < Yes >      < No >

```

以下就是第一个选择画面, 有關於选择方法, 先移动上下方向键, 之後, 使用空白键把想安装的部份标示起来, 底下画面 A 选项其左边已经有打叉标示, 这是内键情况, 表示 A 系列一定要安装。再之後的画面 (画面 4-51), 才是笔者所选择的。读者朋友可以比对一下 <画面 4-50> 与 <画面 4-51> 的差异。

以下选项就是 Slackware Linux 系列编号软体, 其中第一选向是用来安装非标准 (Customer) Slackware Linux软体, 这里我们没有介绍。假如光选择 A 系列的话, 则可以架设出一套最基本 Linux 系统。至於想要安装能够直接由 CD-ROM 执行者, 这是比较特殊的

情况, 以下除了 Q 系列以外, 什麼都不要装 (对云观 CD-ROM III 的用户来说, 请参考您手上的使用手册, 或者第五章「交大『云观 CD-ROM III』直接由 CD-ROM 执行之安装法」)。

以下的选择方法, 用上下方向键移动反白, 用按空白键来做选择切换。

<< 画面 4-50 >>

SERIES SELECTION

Use the spacebar to select the disk sets you wish to install.
You can use the UP/DOWN arrows to see all the possible choices.
Press the ENTER key when you are finished. If you need to
install a disk set that is not listed here, check the box for
custom additional disk sets.

☐	CUS	Also prompt for CUSTOM disk sets
☒	A	Base Linux system
☐	AP	Various Applications that do not need X
☐	D	Program Development (C, C++, Lisp, Perl, etc.)
☐	E	GNU Emacs
☐	F	FAQ lists, HOWTO documentation
☐	I	Info files readable with info, JED, or Emacs

(+)

< OK > <Cancel>

底下画面我统统标示起来, 意思是要安装一个最完整的 Linux 作业系统。

<< 画面 4-51 >>

SERIES SELECTION

Use the spacebar to select the disk sets you wish to install.
You can use the UP/DOWN arrows to see all the possible choices.
Press the ENTER key when you are finished. If you need to
install a disk set that is not listed here, check the box for
custom additional disk sets.

☐	CUS	Also prompt for CUSTOM disk sets
☒	A	Base Linux system
☒	AP	Various Applications that do not need X
☒	D	Program Development (C, C++, Lisp, Perl, etc.)
☒	E	GNU Emacs
☒	F	FAQ lists, HOWTO documentation
☒	I	Info files readable with info, JED, or Emacs

(+)

< OK > <Cancel>

下面画面问说, 我们要不要接着立即进行安装, 到这里, 几乎万事已经具备。

<< 画面 4-52 >>

CONTINUE?

Now that you've decided what you want to install you
may begin the installation process by moving to the

INSTALL section. Please note that if you have not completed all the prerequisites you will be informed of this and returned to the main menu. Would you like to go on to the INSTALL section?

< Yes > < No >

☐ Install 实际安装

经过以上前置作业後，我们已经指定了安装的来源与去处，且对於软体的安装范围也已经指定好，现在我们真的要把 Linux 系统安装到硬碟里面。

下面画面的反白停在第一个选项，这是内定方式，不熟的朋友这里按<Enter>，采用内定方法即可。

<< 画面 4-53 >>

```

_____ SELECT PROMPTING MODE _____

Now you must select which type of prompting you would like to
use while installing your software packages. If you're not
sure which mode to use, read the help file.

Which type of prompting would you like to use?

Normal  Use the default tagfiles
Custom  Use custom tagfiles in the package directories
Path    Use tagfiles in the subdirectories of a custom path
None    Use no tagfiles - install everything
HELP    Read the prompt mode help file

_____
_____
_____ < OK >      <Cancel> _____
_____
```

<< 画面 4-54 >>

```

_____
PROMPT mode selected. Using prompting
defaults found in tagfiles along the way.
_____
```

以下就开始进行拷贝安装了，由於画面好几十个，这里我们就不一一摘录出来，我只收录第一个画面，以及其中一个选则 Kernel 的画面。

以下读者们会碰到选择系统核心的过程，其实照笔者的看法，以下即使您挑选了一个最适合的系统核心（以下两个，以及 Q 系列大约有 11 个，也未必是最适合您硬体以及需求的系统核心。照笔者这样的浅见，最适合的系统核心当然要自己来做，而这也就是为什麼，笔者强调，系统核心的重新编译 (Recompile Kernel) 是您系统安装完

成，且开始正常运转了，之後的第一件工作。

假如您也认为笔者以上的看法可接受，以下选择系统 Kernel 时，您的选择底线，就是，最起码，该 Kernel 能够启动您的机器，并成功认得您的硬体配备。最起码，这样子能够确保系统能够初步运转起来，之後就可以重新编译一份系统核心。

<< 画面 4-55 >>

_____ Auto-installing package ==>base<== Priority: [required] _____

Basic Linux filesystem package.

Sets up the basic directory structure and adds a few important binaries such as GNU mtools 2.0.7 and fdisk.

Size: Compressed: 128K, uncompressed: 410K.

以下画面要选择一个系统核心，假如我们的机器刚好是 IDE 硬碟界面，刚好也只需要 UMSDOS 及 PPP 两项支援，这里就按 <Enter> 选择安装，假如不是，或者是 IDE 但需要更多支援，您需要则把反白移到 <Cancel>，就可以跳过不安装。

<< 画面 4-56 >>

_____ Package Name: ==>idekern<== Priority: [recommended] _____

Linux kernel version 1.1.54, without SCSI support.

A Linux kernel for computers that do not need SCSI support. You MUST install a kernel image in order for your system to boot. This kernel also contains UMSDOS and PPP. See the file 'config.in' for an exact list of included drivers.

IMPORTANT! If you have special hardware, such as a non-SCSI CD-ROM drive, you'll need to install a kernel from the Q series that supports it, or compile the support into your own custom kernel.

Size: Compressed: 398K, uncompressed: 480K.

Install package idekern?

_____ Yes Install package idekern
_____ (+) _____

_____ < OK > <Cancel> _____

_____ INSTALLING _____
_____ Installing package idekern _____

假如您使用 SCSI 界面硬碟，您要选用下面画面，若不是，则跳过去不选用。注意，整个 Q 系列有其他更多选择。

<< 画面 4-57A >>

Package Name: ==>scsikern<== Priority: [recommended] _____

Linux kernel version 1.1.54, with SCSI + IDE support.

This is a Linux kernel with full support for SCSI devices such as hard drives, tape drives, and CD-ROM drives. This kernel also contains UMSDOS and PPP. See the file 'config.in' for an exact list of included drivers.

IMPORTANT! If you have special hardware, such as a non-SCSI CD-ROM drive, you'll need to install a kernel from the Q series that supports it, or compile the support into your own custom kernel.

Size: Compressed: 487K, uncompressed: 580K.

Install package scsikern?

Yes Install package scsikern
(+)

< OK > <Cancel>

以下我们要忽略了一系列的画面，之後，我们轮到了 Q 系列的安装。

姓闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹

Installing disk series ==>q<==

敛闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹闹

以下约连续十一个画面，

<< 画面 4-57B >>

FILE MISSING FROM YOUR DISK

WARNING!!!

While looking through your index file (diskq1), I noticed that you might be missing a package (alpha.tgz) that is supposed to be on this disk (disk q1). You may go on with the installation if you wish, but if this is a crucial file I'm making no promises that your machine will boot.

< OK >

看到以上警告讯息，忽略掉没有关系。

<< 画面 4-57C >>

Package Name: ==>idekerno<== Priority: [optional] _____

Linux kernel version 1.1.18, without SCSI support.

A Linux kernel for computers that do not need SCSI support. If you don't have SCSI, the advantage of using the idekern kernel is that your machine will boot faster with a leaner kernel. See the file 'idekern.log' for an exact list of included drivers. A short list:

This kernel also has support for PPP, UMSDOS, CSLIP, ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 328 K, uncompressed: 390 K.

Install package idekerno?

Yes Install package idekerno
(+) _____

< OK > <Cancel>

<< 画面 4-57D >>

Package Name: ==>scsikrno<== Priority: [optional] _____

Linux kernel version 1.1.18, with SCSI + IDE support.

This is a Linux kernel with full support for SCSI devices such as hard drives, tape drives, and CD-ROM drives. See the file 'scsikern.log' for an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 404 K, uncompressed: 480 K.

Install package scsikrno?

Yes Install package scsikrno
(+) _____

< OK > <Cancel>

<< 画面 4-57E >>

Package Name: ==>cdu31ao<== Priority: [optional] _____

Linux kernel version 1.1.18, with SCSI+IDE+Sony CDU31A CD support.

This is a Linux kernel with support for the Sony CDU31A CD-ROM drives, as well as full support for SCSI devices such as hard drives, tape drives, and SCSI CD-ROM drives. See the file 'cdu31a.log' for

an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 410 K, uncompressed: 480 K.

Install package cdu31ao?

Yes	Install package cdu31ao
(+)	
< OK >	<Cancel>

<< 画面 4-57F >>

Package Name: ==>sbpcdo<== Priority: [optional] _____

Linux kernel version 1.1.18, with SCSI+IDE+SoundBlaster Pro CD (also Panasonic/Lasermate).

This is a Linux kernel with support for the whole family of IDE-style Kotobuki/Matsushita/Panasonic CR-5xx drives for SoundBlaster ('Pro' or '16 ASP' or compatible) cards and for 'no-sound' interfaces like Lasermate and the Panasonic CI-101P.

This kernel also has support for PPP, UMSDOS, CSLIP, ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 416 K, uncompressed: 490 K.

Install package sbpcdo?

Yes	Install package sbpcdo
(+)	
< OK >	<Cancel>

<< 画面 4-57G >>

Package Name: ==>sony535o<== Priority: [optional] _____

Linux kernel version 1.1.18, with SCSI+IDE+Sony 535/531 CD support.

This is a Linux kernel with support for the Sony CDU 535/531 CD-ROM drives, as well as full support for SCSI devices such as hard drives, tape drives, and SCSI CD-ROM drives. See the file 'sony535.log' for an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 409 K, uncompressed: 480 K.

Install package sony535o?

Yes	Install package sony535o
-----	--------------------------

_____ (+) _____
_____ < OK > <Cancel> _____

<< 画面 4-57H >>

_____ Package Name: ==>cdu31a<== Priority: [optional] _____

Linux kernel version 1.1.59, with SCSI+IDE+Sony CDU31/33A CD support.

This is a Linux kernel with support for the Sony CDU31/33A CD-ROM drives, as well as full support for SCSI devices such as hard drives, tape drives, and SCSI CD-ROM drives. See the file 'cdu31a.cfg' for an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, Ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 487 K, uncompressed: 580 K.

Install package cdu31a?

_____ Yes Install package cdu31a
_____ (+) _____
_____ < OK > <Cancel> _____

<< 画面 4-57I >>

_____ Package Name: ==>cdu535<== Priority: [optional] _____

Linux kernel version 1.1.59, with SCSI+IDE+Sony CDU531/535 CD support.

This is a Linux kernel with support for the Sony CDU531/535 CD-ROM drives, as well as full support for SCSI devices such as hard drives, tape drives, and SCSI CD-ROM drives. See the file 'cdu535.cfg' for an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, Ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 486 K, uncompressed: 580 K.

Install package cdu535?

_____ Yes Install package cdu535
_____ (+) _____
_____ < OK > <Cancel> _____

<< 画面 4-57J >>

_____ Package Name: ==>mitsumi<== Priority: [optional] _____

Linux kernel version 1.1.59, with SCSI+IDE+Mitsumi CD support.

This is a Linux kernel with support for Mitsumi CD-ROM drives, as well as full support for SCSI devices such as hard drives, tape drives, and SCSI CD-ROM drives. See the file 'mitsumi.cfg' for an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, Ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 487 K, uncompressed: 580 K.

Install package mitsumi?

Yes	Install package mitsumi
(+)	
< OK >	<Cancel>

<< 画面 4-57K >>

Package Name: ==>nec260<== Priority: [optional] _____

Linux kernel version 1.1.59, with SCSI+IDE+NEC260 IDE CD support.

This is a Linux kernel with support for the NEC 260 CD-ROM as the second device on the IDE controller. It also supports all the SCSI devices supported by the standard kernel.

Size: Compressed: 484 K, uncompressed: 570 K.

Install package nec260?

Yes	Install package nec260
(+)	
< OK >	<Cancel>

<< 画面 4-57L >>

Package Name: ==>sbpcd<== Priority: [optional] _____

Linux kernel version 1.1.59, with SCSI+IDE+Soundblaster CD support.

This is a Linux kernel with support for the whole family of Matsushita/Panasonic CD-ROM drives, as well as full support for SCSI devices such as hard drives, tape drives, and SCSI CD-ROM drives. See the file 'sbpcd.cfg' for an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, Ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 495 K, uncompressed: 590 K.

Install package sbpcd?

Yes	Install package sbpcd
(+)	
< OK >	<Cancel>

<< 画面 4-57M >>

Package Name: ==>xt<== Priority: [optional] _____

Linux kernel version 1.1.59, with IDE+XT (MFM/RLL) drive support.

This is a Linux kernel with support for XT style (MFM/RLL) hard drives. See 'xt.cfg' for an exact list of included drivers.

This kernel also has support for PPP, UMSDOS, CSLIP, Ethernet, Ftape, and the PS/2 style mouse (but not other busmouse types).

Size: Compressed: 384 K, uncompressed: 460 K.

Install package xt?

Yes	Install package xt
(+)	
< OK >	<Cancel>

☐ 系统设定

刚刚完成的安装工作，所花时间可能会用掉一两个小时之间，假如想更快些，在后面我会示范快速自动安装法。

下面画面是刚刚安装过程最后的一个画面，也就是在安装完成时，安装程式会立刻询问我们要不要接着进行系统设定，我们按 <Enter> 选择 Yes。

<< 画面 4-58 >>

CONFIGURE YOUR SYSTEM?

Now it's time to configure your Linux system. If this is a new system, you must configure it now or it will not boot correctly. Otherwise, you can back out to the main menu if you're sure you want to skip this step. If you've installed a new kernel image, it's important to reconfigure your system so that you can install LILO (the Linux loader) or create a bootdisk using the new kernel. Do you want to move on to the CONFIGURE option?

< Yes > < No >

制作一张系统启动磁片

<< 画面 4-59 >>

MAKE BOOT DISK?

It is HIGHLY recommended that you make a standard boot disk for your Linux system at this time. Such a disk can be very handy if LIL0 of a kernel is ever improperly installed. Since the boot disk will contain a kernel that is independent of LIL0 and the kernel on your hard drive, you'll still be able to use it to boot your system no matter what you do to LIL0 or your hard drive kernel. Would you like to make a standard boot disk?

< Yes > < No >

画面 4-49 要我们制作一张系统开机磁片，这样子，即使稍後安装 LIL0 时（不论安装在 MBR 或 root partition 的 superblock 或者软碟）不慎失败了，这张磁片也可以正常开机。换句话说，这张系统开机磁片完全与 LIL0 无关，这张磁片包含有系统的 Kernel，只要在开机时把这磁片插入第一个磁碟，则不论原先硬碟设定由 DOS 或任何的作业系统开机，这磁片也可以开机进入硬碟 Linux 系统，这方式就是最原始的开机选择（传统用软碟机来达成多重开机选择，是最安全的），这方式完全无须依赖任何的开机选择程式。作者强烈建议您制作这样一张磁片，您平常可以用这张来开机，或者，把这张开机片当作辅助开机片，平常摆在安全的地方，不用它，但在万一的时刻，比方说原本的硬碟开机与软碟开机都毁了，这时，这一张磁片就可以派上用场。

<< 画面 4-60 >>

BOOT DISK CREATION

Now put a formatted floppy in your boot drive.
This will be made into your Linux boot disk. Use this to boot Linux until LIL0 has been configured to boot from the hard drive.

Any data on the target disk will be destroyed.

YES creates the disk, NO aborts.

< Yes > < No >

<< 画面 4-61 >>

```
          CREATING DISK
    _____
    Creating boot disk from 'vmlinuz'...
```

设定数据机

以下询问是有配备有数据机 (Modem)? 有数据机则直接按 <Enter> 键, 若没有, 使用 <Tab> 或 左右方向键把反白移到 < No >, 再按 <Enter> 键。

<< 画面 4-62 >>

```
          MODEM CONFIGURATION
    _____

    This part of the configuration process will create a link in /dev
    from your callout device (cua0, cua1, cua2, cua3) to /dev/modem.
    You can change this link later if you put your modem on a different
    port.

    Would you like to set up your modem?
    2

    _____
    < Yes >      < No >
```

若有数据机, 则进一步选择数据机所在之串列埠。请移动反白做正确选择。以下这动作相当於正常 Linux环境下的指令:
\$ ln -s /dev/ttyS1 mouse, 但是把 ttyS1 换成正确的一个。

<< 画面 4-63 >>

```
          SELECT CALLOUT DEVICE
    _____
    Please select the callout device which you would like
    to use for your modem:

    _____
    cua0  com1: under DOS
    cua1  com2: under DOS
    cua2  com3: under DOS
    cua3  com4: under DOS

    _____
    < OK >      <Cancel>
```

设定滑鼠装置

以下询问有没有滑鼠装置?

<< 画面 4-64 >>

```
          MOUSE CONFIGURATION
    _____

    This part of the configuration process will create a link in /dev
    from your mouse device to /dev/mouse. You can change this link
    later if the setting chosen does not work, or if you switch to a
```

different type of mouse.

Would you like to set up your mouse?

< Yes > < No >

以下回答滑鼠种类。很多朋友不清楚，我们一般常的滑鼠都是串列式滑鼠，这些是串接在 RS-232C 通讯埠上（25针或9针），另外有一些圆形接头的滑鼠，这些则是各品牌的 Bus 滑鼠。以下选项 1 与 6 分别是两键式与三键式串列滑鼠，请做小心正确选择。

<< 画面 4-65 >>

```
_____ SELECT MOUSE TYPE _____
These mouse types are supported:
_____
1 Microsoft compatible serial mouse
2 C&T 82C710 or PS/2 style mouse (Auxiliary port)
3 Logitech Bus Mouse
4 ATI XL Bus Mouse
5 Microsoft Bus Mouse
6 Mouse Systems serial mouse
_____
_____
< OK >      <Cancel>
_____
```

对串列滑鼠来说，我们还要具体指定滑鼠所接的通讯埠所在，如下图。

<< 画面 4-66 >>

```
_____ SELECT SERIAL PORT _____
Your mouse requires a serial port. Which one would you
like to use?
_____
ttyS0 com1: under DOS
ttyS1 com2: under DOS
ttyS2 com3: under DOS
ttyS3 com4: under DOS
_____
_____
< OK >      <Cancel>
_____
```

设定唯独光碟机

下面问有没有唯独式光碟机?

<< 画面 4-67 >>

```
_____ CONFIGURE CD-ROM? _____
Do you have a CD-ROM?
_____
< Yes >      < No >
_____
```

若回答有唯读式光碟机，以下动作则是进一步做一个 /dev/cdrom 连结档。这样做方便使用者或管理者统一以 /dev/cdrom 代表光碟装置，否则不同类型光碟机在 Linux 系统下的档案名称并不一样，这对生手还说会很困扰，比方说 Panasonic 562B/563B 牌为 /dev/sbpcd, Mitsumi 牌为 /dev/mcd, Sony 535 为 /dev/sonycd, Sony CDU31A 为 /dev/cdu31a, 至於 SCSI 规格则可能为 /dev/sr0ii /dev/sr1ii /dev/scd0 或 /dev/scd1 等等其中之一。

<< 画面 4-68 >>

```
_____ Configuring CD-ROM link (/dev/cdrom) _____
What type of CD-ROM drive do you have?

_____
1 SCSI [ /dev/sr0, /dev/sr1, /dev/scd0, or /dev/scd1 ]
2 Sony CDU31A [ /dev/cdu31a ]
3 Sony 535 [ /dev/sonycd ]
4 Mitsumi [ /dev/mcd ]
5 Sound Blaster Pro (Panasonic) [ /dev/sbpcd ]
_____
< OK > <Cancel>
_____
```

设定数据机速度

以下设定数据机速度，一般 14.4K v.32bis/v.42bis 数据机不妨指定最高速的 38400 (Linux 可以用 setserial 这支工具程式把 DTE 通讯速度调为 57600 或甚至 115200 bps)。

<< 画面 4-69 >>

```
_____ SET YOUR MODEM SPEED _____
Please select a modem speed. You may use setserial
later to make 38400 stand for a higher baud rate if
these speeds aren't fast enough.

_____
38400
19200
9600
4800
2400
1200
300 Ouch!
_____
< OK > <Cancel>
_____
```

设定 LILO

以下进行到最重要的，设定 LILO 开机选择程式。LILO 是一个相当优秀的系统工具，读这若漏装了这软体，将非常可惜。有了 LILO，您不需要任何其他开机选择程式。

假如我们电脑内只有 Linux 系统，没有其他作业系统，这时只需执行以下 Begin 及 Linux 两个程序，假如说硬碟内有 DOS，而我们也想开机时可以选择 DOS 或 Linux，这样子也把以下 DOS 选项也一并执行，当确定设定无误后，执行 Install 程序。以下我再分别简单说明各步骤之作用：

Begin: 设定 LILO 安装模式, 比方安装在硬碟 MBR 的 Superblock
或者软碟, 要不要 LILO 稍作延迟等等细节。
Linux: 设定把 Linux 包含进开机选择。
DOS : 设定把 DOS 包含进开机选择。
Install: 实际安装动作

以下画面中, 我们就把反白移到 Begin 选项上。

<< 画面 4-70 >>

```

LIL0 INSTALLATION
LIL0 (the Linux Loader) allows you to boot Linux from your hard
drive. To install, you make a new LIL0 configuration file by
creating a new header and then adding at least one bootable
partition to the file. Once you've done this, you can select the
install option. Alternately, if you already have an /etc/lilo.conf,
you may reinstall using that. If you make a mistake, you can always
start over by choosing 'Begin'. Which option would you like?

Begin   Start LIL0 configuration with a new LIL0 header
Linux   Add a Linux partition to the LIL0 config file
OS/2    Add an OS/2 partition to the LIL0 config file
DOS     Add a DOS partition to the LIL0 config file
Install Install LIL0
Recycle Reinstall LIL0 using the existing lilo.conf
Skip    Skip LIL0 installation and exit this menu
View    View your current /etc/lilo.conf
Help    Read the Linux Loader HELP file

< OK >    <Cancel>
```

下面首先询问要不要在启动时, 传一些参数给 Kernel。据笔者了解, 有些情况会有这需要, 比方说您使用级特殊规格的硬碟 (IBM 牌硬碟可能是其中之一), 还有比方说您的光碟机控制卡 Kernel 无法侦测到, 另外还有配备两块网路卡时, 这些情况都会需要在系统启动时额外传参数给 Kernel。

不过, 我建议读者朋友先忽略这操作, 等系统设定完成后, 若发觉有需要, 届时手工编修 /etc/lilo.conf 档即可。

<< 画面 4-71 >>

```

OPTIONAL append= LINE
Some systems might require extra parameters to be passed to the
kernel in order to boot. An example would be the hd=cyl,hds,secs
needed with some SCSI systems and some machines with IBM
motherboards. If you needed to pass parameters to the kernel when
you booted the Slackware bootkernel disk, you'll probably want to
enter the same ones here. Most systems won't require any extra
parameters. If you don't need any, just hit ENTER to continue.

< OK >    <Cancel>
```

底下我们就来选择开机模式。 以下有三个选项, 我分别解释如下:

MBR: MBR是位在第一颗硬碟 ii 第一-sylinder内的第一个sector, 电脑一启动电源後, 会先读取这区域, 来决定开机。

Root: 这是所谓 superblock, 就是把 LILO 装在 Linux 所在的分割区。

Floppy: 指定把LILO安装在软碟上, 这样可以软碟开机。

以上 MBR 与 Floppy可能比较常用, 第一次安装 Linux的生手, 笔者尤其推荐用软碟开机, 等熟悉後, 最好把也同时设定 MBR, 这样万一其中一个坏掉, 还可以用另外一个方式开机。

<< 画面 4-72 >>

```

      SELECT LILO TARGET LOCATION
-----
LILO can be installed to a variety of places: the master
boot record of your first hard drive, the superblock of
your root Linux partition (which could then be made the
bootable partition with fdisk), or a formatted floppy disk.
If you're using a boot system such as OS/2's Boot Manager,
you should use the Root selection. Please pick a target
location:
-----
MBR      Use the Master Boot Record
Root     Use superblock of the root Linux partition
Floppy   Use a formatted floppy disk in the boot drive
-----
      < OK >      <Cancel>
-----
```

以下询问要不要开机时, 让 LILO停顿一下, 若选择 None, 则开机时, 除非按住 <Shift> 或 <Alt> 键, 这样会迫使 LILO停下来, 否则 LILO 不会停下来。

照笔者的习惯, 我习惯设定停顿五秒钟, 在这五秒钟内, 只要我碰一下 <Caps Lock>键, 就会出现 LILO: 提示符号, 我再进一步按一下 <Tab> 键, 就会出现所有 OS 的选单。

<< 画面 4-73 >>

```

      CHOOSE LILO DELAY
-----
How long would you like LILO to wait for you to hit left-shift to
get a prompt after rebooting? If you let LILO time out, it will
boot the first OS in the configuration file by default.
-----
None      Don't wait at all - boot straight into the first OS
5          5 seconds
30         30 seconds
Forever   Present a prompt and wait until a choice is made
-----
      < OK >      <Cancel>
-----
```

以上已经指定好 LILO 的运作方式了, 接下来我们就要把我们硬碟里现的 OS, 全部加入 LILO 的开机选单中。底下先把反白移道第二行。

<< 画面 4-74 >>

LILO INSTALLATION

LILO (the Linux Loader) allows you to boot Linux from your hard drive. To install, you make a new LILO configuration file by creating a new header and then adding at least one bootable partition to the file. Once you've done this, you can select the install option. Alternately, if you already have an /etc/lilo.conf, you may reinstall using that. If you make a mistake, you can always start over by choosing 'Begin'. Which option would you like?

Begin	Start LILO configuration with a new LILO header
Linux	Add a Linux partition to the LILO config file
OS/2	Add an OS/2 partition to the LILO config file
DOS	Add a DOS partition to the LILO config file
Install	Install LILO
Recycle	Reinstall LILO using the existing lilo.conf
Skip	Skip LILO installation and exit this menu
View	View your current /etc/lilo.conf
Help	Read the Linux Loader HELP file

< OK > <Cancel>

底下侦测到一共有两个 Linux属性的分割区，我们在空白内填入想要 LILO 开机启动的分割区。

<< 画面 4-75 >>

SELECT LINUX PARTITION

These are your Linux partitions:

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hdb1		1	1	100	50368+	83	Linux native
/dev/hdb3		161	161	300	70560	83	Linux native

Which one would you like LILO to boot?

dev/hdb3

< OK > <Cancel>

以下填入一个代号，这样在开机时 LILO 提示符号下，键入该代号，就可以启动进入这代号所代表的作业系统。

<< 画面 4-76 >>

SELECT PARTITION NAME

Now you must select a short, unique name for this partition. You'll use this name if you specify a partition to boot at the LILO prompt. 'Linux' might

not be a bad choice. THIS MUST BE A SINGLE WORD.

linux1

< OK > <Cancel>

把 Linux 分割区加入开机选单後，以下我们要回到 LILO 的主服务画面。底下我想把我 /dev/hda1 的 DOS 分割区也加入选单，以下选择 DOS。

<< 画面 4-77 >>

LILO INSTALLATION

LILO (the Linux Loader) allows you to boot Linux from your hard drive. To install, you make a new LILO configuration file by creating a new header and then adding at least one bootable partition to the file. Once you've done this, you can select the install option. Alternately, if you already have an /etc/lilo.conf, you may reinstall using that. If you make a mistake, you can always start over by choosing 'Begin'. Which option would you like?

Begin	Start LILO configuration with a new LILO header
Linux	Add a Linux partition to the LILO config file
OS/2	Add an OS/2 partition to the LILO config file
DOS	Add a DOS partition to the LILO config file
Install	Install LILO
Recycle	Reinstall LILO using the existing lilo.conf
Skip	Skip LILO installation and exit this menu
View	View your current /etc/lilo.conf
Help	Read the Linux Loader HELP file

< OK > <Cancel>

以下安装程式侦测到 /dev/hda1 有 DOS分割区，我们就回答该分割区作为启动之用。

<< 画面 4-78 >>

SELECT DOS PARTITION

These are possibly DOS partitions. They will be treated as such if you install them using this menu.

Device	Boot	Begin	Start	End	Blocks	Id	System
/dev/hda1	*	1	1	1000	127491+	6	DOS 16-bit >=32M

Which one would you like LILO to boot?

dev/hda1

< OK > <Cancel>

同样的，以下我们也给这DOS分割区取一个代码，这里我们取名为 dos (大小写无关系)。

<< 画面 4-79 >>

```

                SELECT PARTITION NAME
Now you must select a short, unique name for this
partition. You'll use this name if you specify a
partition to boot at the LILO prompt. 'DOS' might not
be a bad choice. THIS MUST BE A SINGLE WORD.

dos
                < OK >      <Cancel>

```

又回到这画面，现在我们可以把反白移动到 Install 这一行，真正执行 LILO Install。

<< 画面 4-80 >>

```

                LILO INSTALLATION
LILO (the Linux Loader) allows you to boot Linux from your hard
drive. To install, you make a new LILO configuration file by
creating a new header and then adding at least one bootable
partition to the file. Once you've done this, you can select the
install option. Alternately, if you already have an /etc/lilo.conf,
you may reinstall using that. If you make a mistake, you can always
start over by choosing 'Begin'. Which option would you like?

Begin   Start LILO configuration with a new LILO header
Linux   Add a Linux partition to the LILO config file
OS/2    Add an OS/2 partition to the LILO config file
DOS     Add a DOS partition to the LILO config file
Install Install LILO
Recycle Reinstall LILO using the existing lilo.conf
Skip    Skip LILO installation and exit this menu
View    View your current /etc/lilo.conf
Help    Read the Linux Loader HELP file

                < OK >      <Cancel>

```

我们接着可以在萤幕上看到下面这讯息。

<< 画面 4-81 >>

Installing the Linux Loader...

设定网路

紧接着设定 LILO 之後，我们要进行网路的设定。

<< 画面 4-82 >>

```

                CONFIGURE NETWORK?
      _____
      Would you like to configure your network?

      _____
                < Yes >      < No >
      _____
```

下面讯息稍微阅读一下，尤其不要忘记，当您系统建议起来後，随时还可以用 netconfig 命令重新设定网路。

<< 画面 4-83 >>

```

                NETWORK CONFIGURATION
      _____

Now we will attempt to configure your mail and TCP/IP. This
process probably won't work on all possible network
configurations, but should give you a good start. You will be
able to reconfigure your system at any time by typing:

netconfig

      _____
                < OK >
      _____
```

以下首先回答您这部 Linux 的主机名称，在这里，笔者将之取名为 linux3，注意，hostname 加上 domain name 就是您机器的完整网路名称。通常假如您在台湾学术网路的话，这名称要在学校的 nameserver 注册，至於在台湾非学术网路部份，可以透过 service@tpts1.seed.net.tw 的服务来注册（也就是那些 *.org.tw ii *.com.tw 及 *.gov.tw 等等），假如是公司内部网路，则无须登记。

<< 画面 4-84 >>

```

                ENTER HOSTNAME
      _____
First, we'll need the name you'd like to give your host. Only
the base hostname is needed right now. (not the domain)

Enter hostname:

linux3
      _____
                < OK >      <Cancel>
      _____
```

以下回答该机器所在网路之 domain name，以下我回答 uuser.v.net.tw。

<< 画面 4-85 >>

```

                ENTER DOMAINNAME
      _____
Now, we need the domain name. Do not supply a leading '.'

Enter domain name for linux3:
      _____
```

```
uuser.v.net.tw
< OK > <Cancel>
```

下面询问是否是单机网路，也就是说假如该机器没配备有网路卡，也没有透过串列通讯界面（比方SLIP/PPP）或 平行通讯界面（PLIP）连接网路，底下就回答 Yes，假如想上网路，则回答 No。

<< 画面 4-86 >>

```
LOOPBACK ONLY?
If you only plan to use TCP/IP through loopback, then your
IP address will be 127.0.0.1 and we can skip a lot of the
following questions.

Do you plan to ONLY use loopback?

< Yes > < No >
```

假如上一个画面回答 No，您接着就会看到以下画面。以下回答该机器的 IP 地址，注意，假如这机器要连上 Internet 的话，这 IP 不可以乱定，因为 Internet 上的 IP 地址是不可以重复的。至於是内部网路的话，可以任意选用以下的 IP。

```
10.0.0.0 ~ 10.255.255.255
172.16.0.0 ~ 172.31.255.255
192.168.0.0 ~ 192.168.255.255
```

注意，假如您在台湾学术网路的话，往下的资料，通常您要询问贵校的计算机中心才可获得，否则，找一个网路前辈问看看。

<< 画面 4-87 >>

```
ENTER LOCAL IP ADDRESS
Enter your IP address for the local machine. Example:
111.112.113.114
Enter IP address for linux3 (aaa.bbb.ccc.ddd):

92.168.1.149
< OK > <Cancel>
```

假如有 Gateway 的话，填到底下。

<< 画面 4-88 >>

```
ENTER GATEWAY ADDRESS
Enter your gateway address, such as 111.112.113.1

If you don't have a gateway on your network, you can enter
your own IP address.

Enter gateway address (aaa.bbb.ccc.ddd):
```

```
_____  
92.168.1.150  
_____  
_____  
                < OK >      <Cancel>  
_____
```

底下填入 Netmask。

<< 画面 4-89 >>

```
_____  
ENTER NETMASK  
Enter your netmask. This will generally look something  
like this: 255.255.255.0  
Enter netmask (aaa.bbb.ccc.ddd):  
_____  
55.255.255.0  
_____  
_____  
                < OK >      <Cancel>  
_____
```

以下询问是否有 nameserver, 内部私有网路可以回答 No, 至於想上 Internet 的机器, 则一定要有 (此处是指定一部 Name server 提供不机器的需要的 IP<-> Domain name 转换服务, 而不是说要设立自己的一部 Name server。对大部分人来说, 没有必要有自己的 Name server)。

<< 画面 4-90 >>

```
_____  
USE A NAMESERVER?  
Will you be accessing a nameserver?  
_____  
                < Yes >      < No >  
_____
```

Internet 上负责把 IP 转 Domain name (或反过来) 的服务, 就是由 nameserver 负责, 以下把距您最近的一部 nameserver 的 IP 填入。

<< 画面 4-91 >>

```
_____  
SELECT NAMESERVER  
Here is your current IP address, full hostname, and base hostname:  
192.168.1.149      linux3.uuser.v.net.tw      linux3  
  
Please give the IP address of the name server to use.  
You can add more Domain Name Servers by editing /etc/resolv.conf.  
  
Name Server for domain uuser.v.net.tw (aaa.bbb.ccc.ddd):  
_____  
39.175.249.15  
_____  
_____  
                < OK >      <Cancel>  
_____
```

<< 画面 4-92 >>

```
_____  
NETWORK SETUP COMPLETE  
_____
```

Your networking software has now been configured.

< OK >

以上，基本网路设定已经妥当。接下来，我们要设定电子邮件服务系统 (sendmail)，这里的设定只适用在 Slackware Linux 2.02 以後的版本，之前的版本无须此道操作。

接下来进行到画面 4-93，这里所遇到的，是 selection 萤幕剪贴 (只在 Console有效) 程式，这里问说，是否要在系统一开机时就执行该程式，使得随时可以有剪贴功能 (类似 DOS常驻功能)。笔者建议这里回答 No，之後假如发现有用到，随时执行该程式即可。

<< 画面 4-93 >>

SELECTION 1.5 CONFIGURATION

Selection is a program that allows you to do cut and paste on the virtual consoles using a mouse. If you choose to have it run at boot time, the line:

```
selection -t ms &
```

will be added to the end of your /etc/rc.d/rc.local.

Running selection with a bus mouse can cause problems with XFree86 2.0. If XFree86 2.0 refuses to start and complains that it cannot open the mouse then you might want to comment the line out of /etc/rc.d/rc.local. Would you like to add

```
selection -t ms &
```

to /etc/rc.d/rc.local so that selection will load at boot time?

< Yes > < No >

以下主要有三个选择，假如您的机器摆在 直接 Internet连线，这时您可以选择 SMTP+BIND，假如内部 TCP/IP 网路，可以选用SMTP，至於想透过 UUCP通讯，则选择 UUCP。安装软体在自动拷贝恰当的设定档，并摆在 /etc/sendmail.cf。

<< 画面 4-94 >>

SENDMAIL CONFIGURATION

Sendmail requires a configuration file (/etc/sendmail.cf). Three versions are provided: TCP/IP with a nameserver, TCP/IP without a nameserver, and UUCP. If none of these proves suitable, you can make your own (look in /usr/src/sendmail). It probably won't hurt to try one of these, though.

SMTP+BIND	Connected to the net with nameserver access
SMTP	Connected to a network with no nameserver
UUCP	Use UUCP for mail transmission
SKIP	Do not install /etc/sendmail.cf

< OK > <Cancel>

最後填入时区，如画面 4-95 的说明。读者若在台湾的话，移动往下方向键，一直到 ROC，之後按 <Enter> 键做选择。请读者特别留意，是用放向键移动反白，不是用空白键。

<< 画面 4-95 >>

```
_____ TIMEZONE CONFIGURATION _____
Select one of the following
timezones:

_____
Australia/LHI
Australia/NSW
Australia/North
Australia/Queensland
Australia/South
Australia/Tasmania
Australia/Victoria
Australia/West
Australia/Yancowinna
Brazil/Acre
Brazil/DeNoronha
Brazil/East
Brazil/West
Mexico/BajaSur
Mexico/General
MET

... (画面省略)
...

NZ
Navajo
PRC
Poland
ROC
_____ (+)_____
_____
< OK > <Cancel>
```

<< 画面 4-96 >>

```
_____ REPLACE /etc/fstab? _____
You already have an /etc/fstab on your install
partition. If you were just adding software, you
should probably keep your old /etc/fstab. If you've
changed your partitioning scheme, you should use the
new /etc/fstab. Do you want to replace your old
/etc/fstab with the new one?

_____
< Yes > < No >
```

画面 4-96应该是您执行 CONFIGURATION阶段所看到的最後一个画面, 假如您没有看到这画面, 就表示一定哪里出问题了, 最好您能够重新执行一遍 CONFIGURATION, 否则通常您也没有办法正常开机进入系统。尤其對於安装交大云观 CD-ROM III Linux Plug and Play, 想直接由 CD-ROM 跑 Linux的朋友来说, 若您没有看到画面 4-96 更新 /etc/fstab 的动作, 您将完全无法启动机器来 Plug & Play :-)

以上終於大公告成, 恭喜您, 您就此拥有一部完整的多工多使用者作业系统, 而且支援完整的 TCP/IP 网路功能。这里我提一些建议给新手朋友, 不要期望第一次就可以安装一部没有瑕疵的 Linux 系统, 照笔者经验, 很多新手们问一些奇奇怪怪的问题, 这类的问题有很多都是起因於安装过程的错误。

最後, 回到主服务画面, 底下我们可以 <EXIT> 离开, 之後用 reboot 指令重新开机, 且注意, 用刚刚您造出来的系统开机磁片来启动。

<< 画面 4-97 >>

```

Slackware Linux Setup (version FD-2.0.2)
Welcome to Slackware Linux Setup.
Select an option below using the UP/DOWN keys and SPACE or ENTER.
Alternate keys may also be used: '+', '-', and TAB.

HELP      Read the Slackware Setup HELP file
KEYMAP    Remap your keyboard if you're not using a US one
QUICK     Choose quick or verbose install mode [now: VERBOSE]
MAKE TAGS Experts may customize tagfiles to preselect packages
ADDSWAP   Set up your swap partition(s)
TARGET    Set up your target partitions
SOURCE    Select source media
DISK SETS Decide which disk sets you wish to install
INSTALL   Install selected disk sets
CONFIGURE Reconfigure your Linux system
EXIT      Exit Slackware Linux Setup

< OK >      <Cancel>

```

```

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