



FreeBSD

hmwang

Outline

- ❑ FreeBSD version
 - 10.1-RELEASE
- ❑ Installing FreeBSD
 - From CD-ROM
 - From USB



FreeBSD Version

FreeBSD Branches/Tags

□ Three parallel development branches:

- *-RELEASE*
 - Latest Release Version:
 - 10.1 (November, 2014)
 - <http://www.freebsd.org/releases/>
- *-STABLE*
 - Tested new features and bug fixes
 - MFC: Merge From Current
- *-CURRENT*
 - Working space for FreeBSD developers
 - Current version:
 - 11.0-CURRENT
 - <http://www.freebsd.org/releng/>

FreeBSD Version

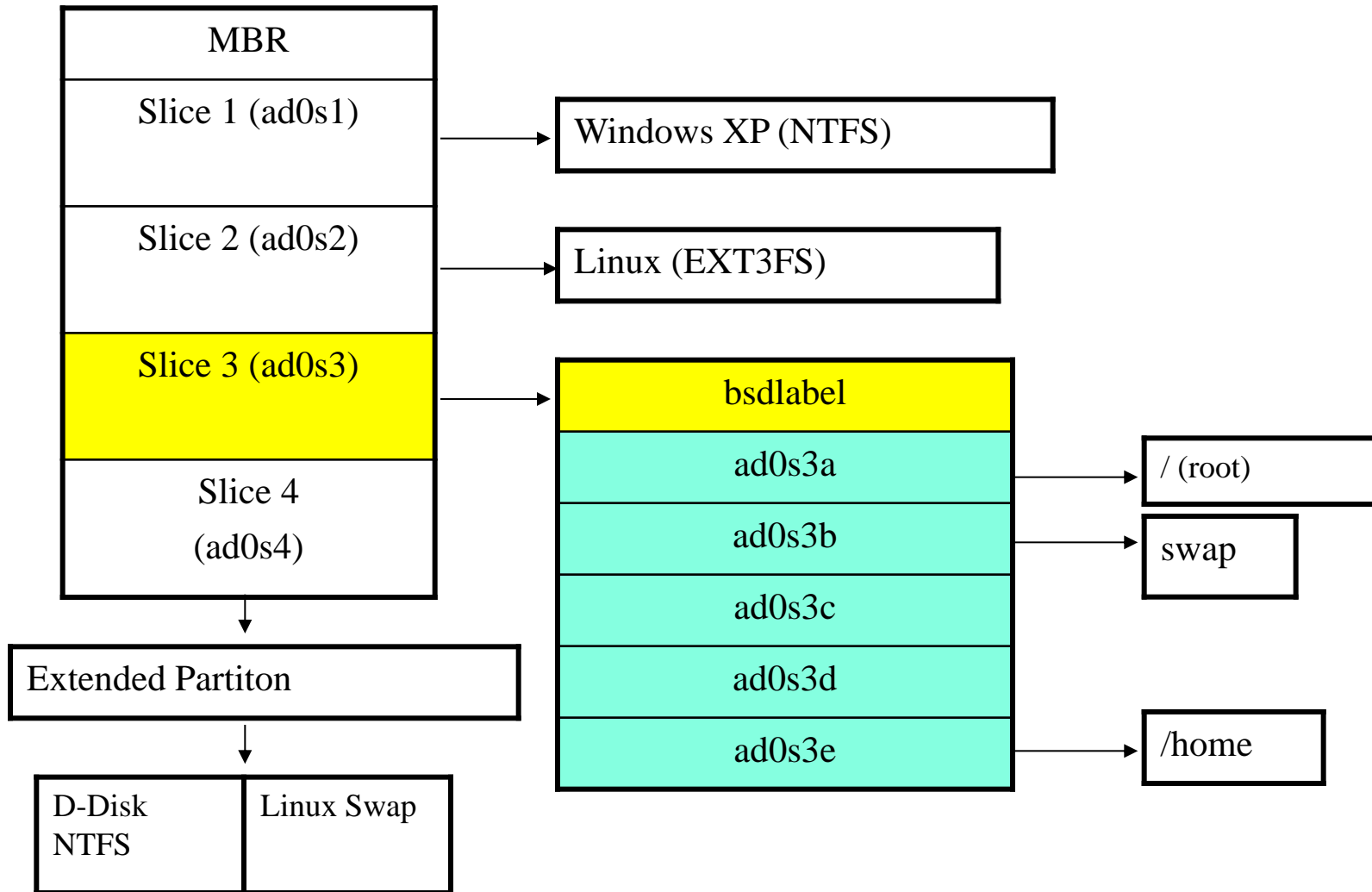
❑ FreeBSD–A.B.C–Type

- A: major version Number
- B: minor version Number
- C: slight patch version number
- Type: version type
 - PRERELEASE
 - BETA
 - RC
 - RELEASE
 - STABLE
 - CURRENT

A decorative graphic on the left side of the slide, consisting of several overlapping blue rectangular shapes of varying shades and sizes, creating a layered effect.

FreeBSD Installation

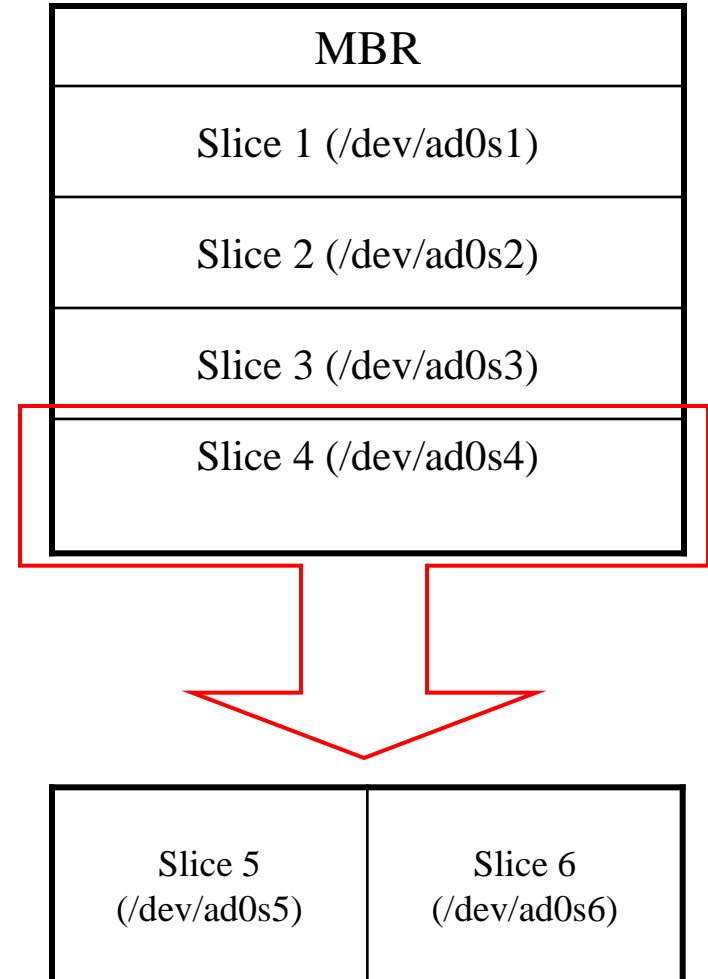
FreeBSD view of Disk (1)



FreeBSD View of Disk (2)

❑ What is the meaning of ad0s1a

- Disk name
 - ad: IDE, SATA
 - da: SCSI, usb stick
 - Replace { ad | da } by **ada**, and link to ada's
- Slice is equal to the partition of common use
 - Primary partition: s1 ~ s4
 - Extended partition: s5 ~ sn
- Label in each slice
 - a: root partition /
 - b: swap
 - c: entire slice
 - defgh: /usr, /home, ...



Knowing Your Hardware

- ❑ CPU
 - 32bit or 64bit
 - Intel 、AMD
 - Architecture: amd64, i386 (, ia64, pc98, powerpc, sparc64)
- ❑ RAM
 - Size
- ❑ HD
 - Size, amount, SCSI or IDE
- ❑ VGA
 - Brand, ram size
- ❑ Sound
 - Brand
- ❑ Network Interface Card
 - Brand
 - IP 、Netmask 、Default gateway 、Hostname 、DNS
- ❑ Other Special device
 - `pciconf -lv`

Pre-Installation Tasks

- Another Hard Disk or Shrink a Partition on Your Hard Drive (20 G)
- One IP (**no private!!**)
- Network Information
 - IP address
 - Subnet mask
 - Default router IP address
 - domain name of the local network
 - DNS server IP address(es)
- Prepare the Installation Media
 - <ftp://tw.freebsd.org/pub/releases/>
 - <http://www.freebsd.org/releases/10.1R/announce.html>

bsdinstall (FreeBSD 10.1) – (1)

□ 下載點

- <ftp://ftp.freebsd.org/pub/FreeBSD/releases/ISO-IMAGES/10.1/>



bsdinstall (FreeBSD 10.1) – (2)

❑ Install、Shell、Live CD

- 沒有要更改就直接選Install

```
FreeBSD Installer
-----
                                     Welcome
Welcome to FreeBSD! Would you
like to begin an installation
or use the live CD?
<Install> <Shell> <Live CD>
```

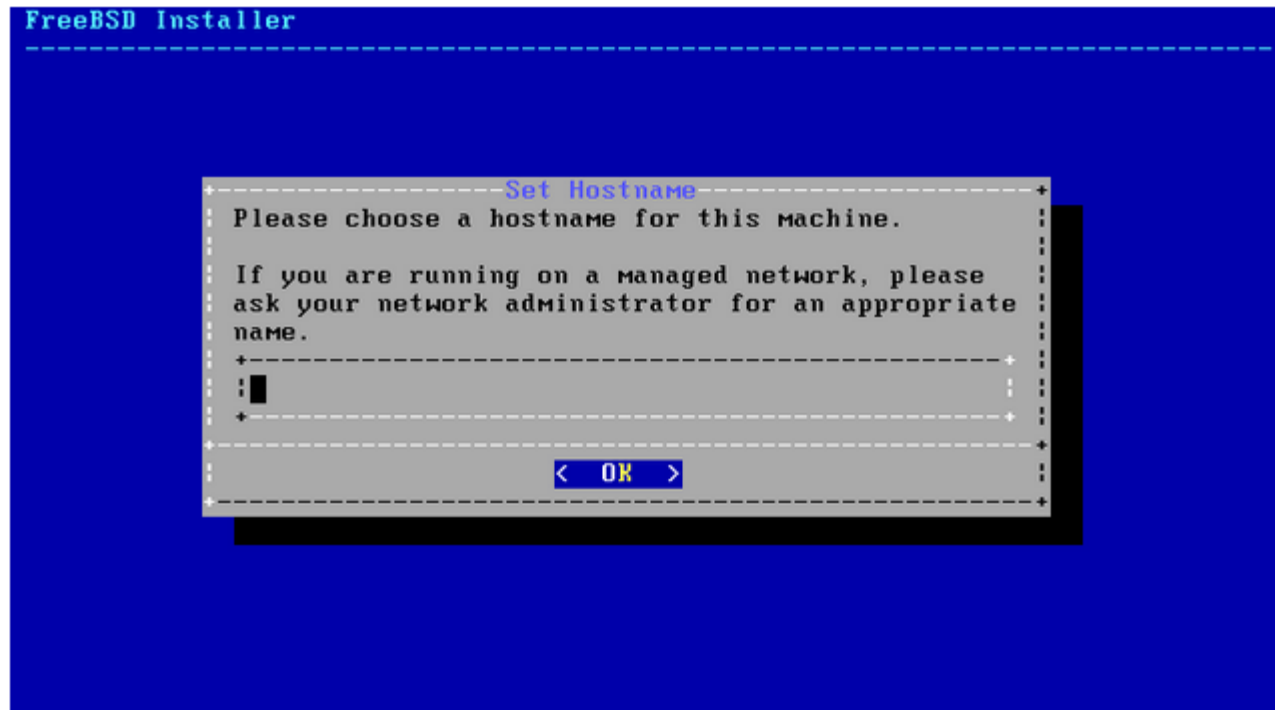
bsdinstall (FreeBSD 10.1) – (3)

□ Keymap(更改鍵盤對應)

```
FreeBSD Installer
-----
Keymap Selection
-----
The system console driver for FreeBSD defaults to standard "US"
keyboard map. Other keymaps can be chosen below.
+-----+
|>>> Continue with default keymap|
|->- Test default keymap          |
| ( ) Armenian phonetic layout    |
| ( ) Belarusian Codepage 1131   |
| ( ) Belarusian Codepage 1251   |
| ( ) Belarusian ISO-8859-5      |
| ( ) Belgian ISO-8859-1         |
| ( ) Belgian ISO-8859-1 (accent keys)|
| ( ) Brazilian 275 Codepage 850  |
| ( ) Brazilian 275 ISO-8859-1   |
| ( ) Brazilian 275 ISO-8859-1 (accent keys)|
| ( ) Bulgarian BDS              |
+-----+
v(+)                                     11%
-----
<Select>                               <Cancel>
-----[Press arrows, TAB or ENTER]-----
```

bsdinstall (FreeBSD 10.1) – (4)

❑ Enter Hostname



bsdinstall (FreeBSD 10.1) – (5)

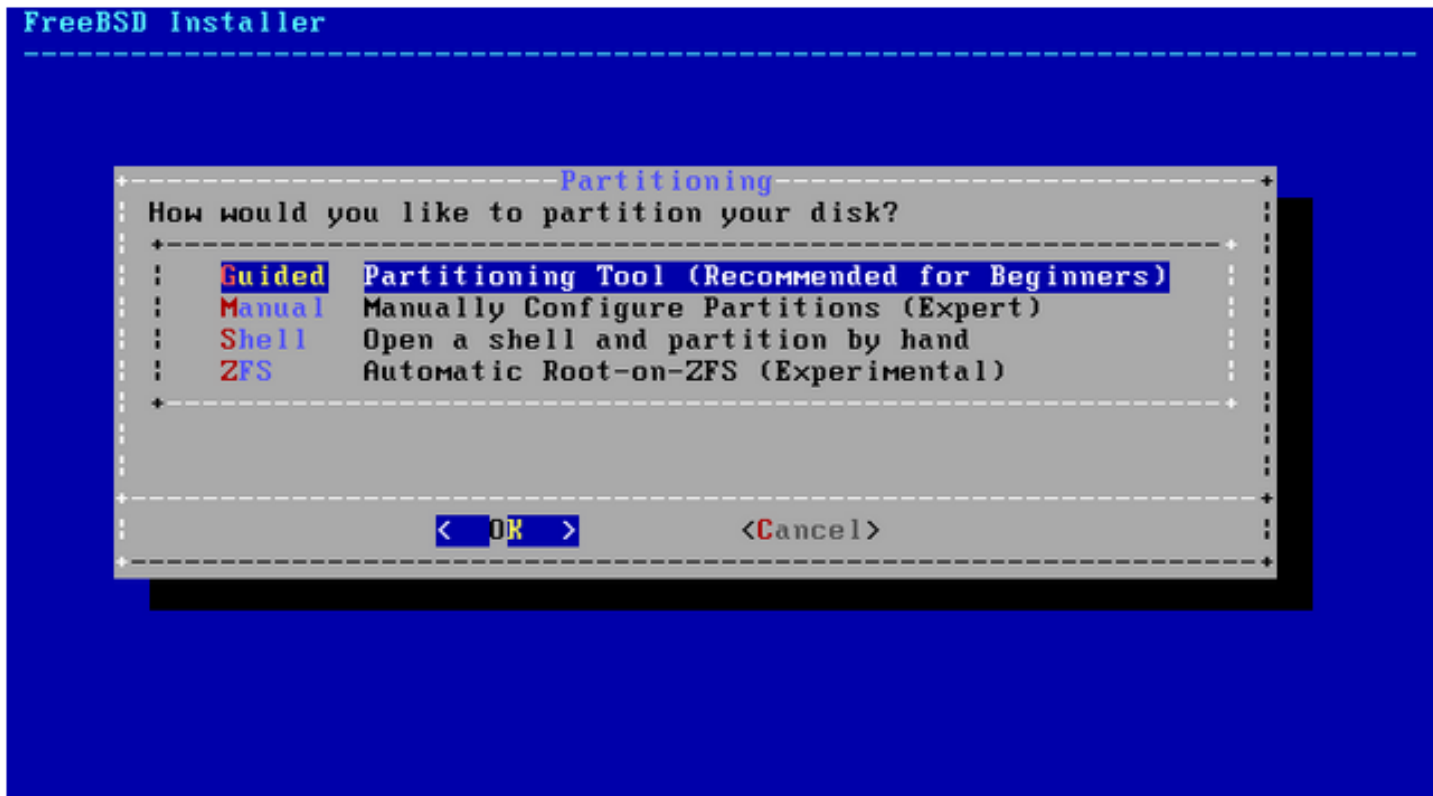
- ❑ Selecting components to install

```
FreeBSD Installer
-----
--Distribution Select--
Choose optional system components to install:
+-----+
| [ ] doc   Additional documentation
| [*] games Games (fortune, etc.)
| [*] lib32 32-bit compatibility libraries
| [*] ports Ports tree
| [ ] src   System source code
+-----+
< OK >
```

bsdinstall (FreeBSD 10.1) – (6)

❑ Partitioning methods

- Shell – gpart(8) 、 fdisk(8) 、 bsdlabell(8)



bsdinstall (FreeBSD 10.1) – (9)

❑ Manual Partitioning

```
FreeBSD Installer
-----
Partition Editor
Create partitions for FreeBSD. No changes will be
made until you select Finish.
+-----+
| ada0          12 GB |
+-----+
+-----+
| <Create> <Delete> <Modify> <Revert> <Auto> <Finish> |
+-----+
Add a new partition
```

bsdinstall (FreeBSD 10.1) – (10)

❑ Choose a partitioning scheme

- Master Boot Record (MBR)
 - 4 Primary Partition, 1 Extended Partition, multiple Logical Partition
- GUID Partition Table (GPT)
 - 128 Partitions per disk
- **DON'T use BSD!!!**



bsdinstall (FreeBSD 10.1) – (11)

❑ Final confirmation

```
FreeBSD Installer
-----
+----- Partition Editor -----+
| Please review the disk setup. When complete, press |
| the Finish button.                               |
+----- Confirmation -----+
| Your changes will now be written to disk. If you  |
| have chosen to overwrite existing data, it will  |
| be PERMANENTLY ERASED. Are you sure you want to  |
| commit your changes?                             |
+-----+
| < Commit > < Revert & Exit > < Back > |
+-----+
+-----+
| < Create > < Delete > < Modify > < Revert > < Auto > < Finish > |
+-----+

Exit partitioner (will ask whether to save changes)
```

bsdinstall (FreeBSD 10.1) – (12)

❑ Fetching → Checksum Verification → Extraction

```
FreeBSD Installer
-----
Archive Extraction
-----
base.txz          [ Done      ]
kernel.txz       [ 88%      ]
games.txz        [ Pending   ]
src.txz          [ Pending   ]

Extracting distribution files...

+-Overall Progress-+
| [ 25% ]          |
+-----+-----+
```

Post-installation

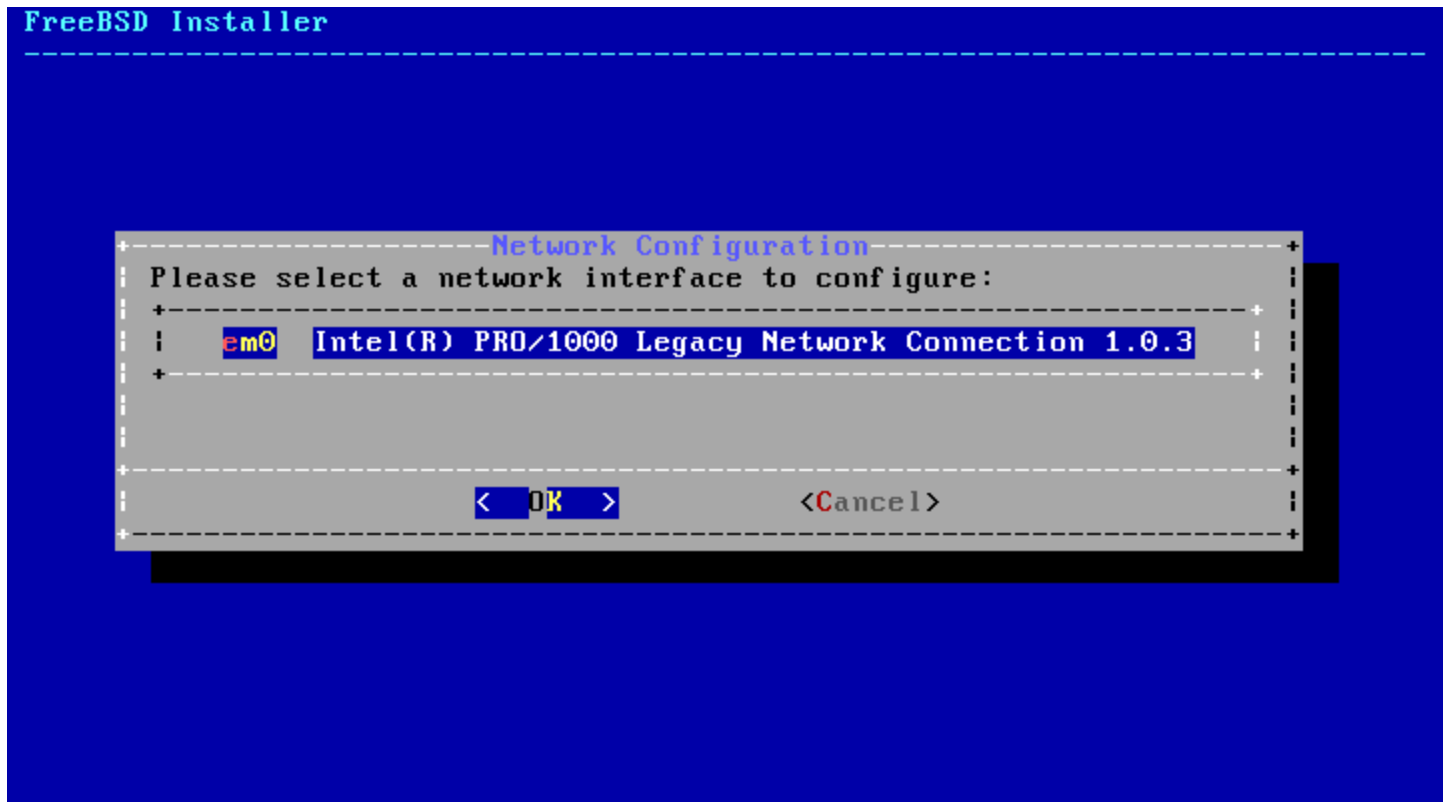
- ❑ Setting the root Password(記得使用鍵盤上方的數字鍵)

```
FreeBSD Installer
=====

Please select a password for the system management account (root):
Changing local password for root
New Password:
Retype New Password:█
```

Post-installation

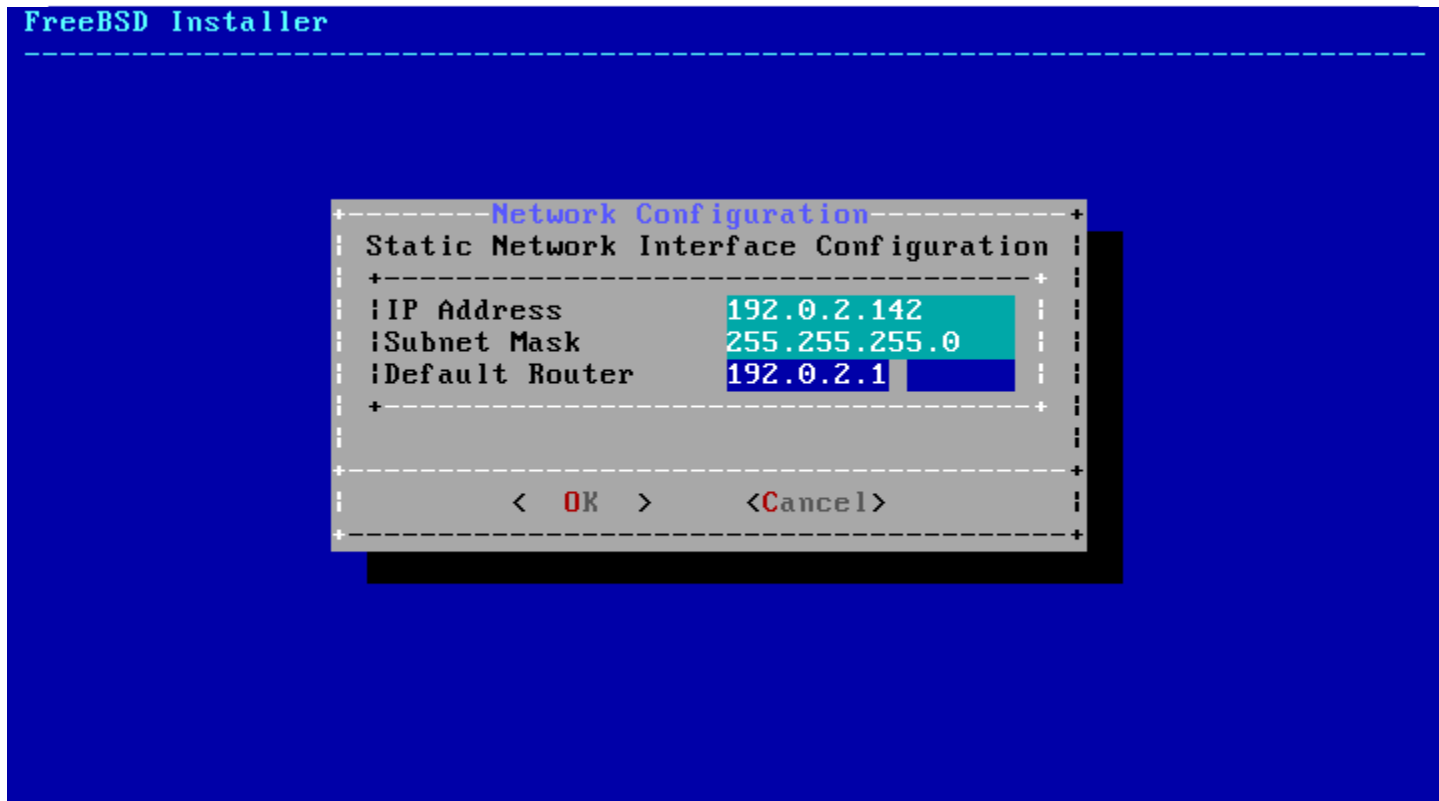
❑ Network interfaces(選擇網卡)



Post-installation

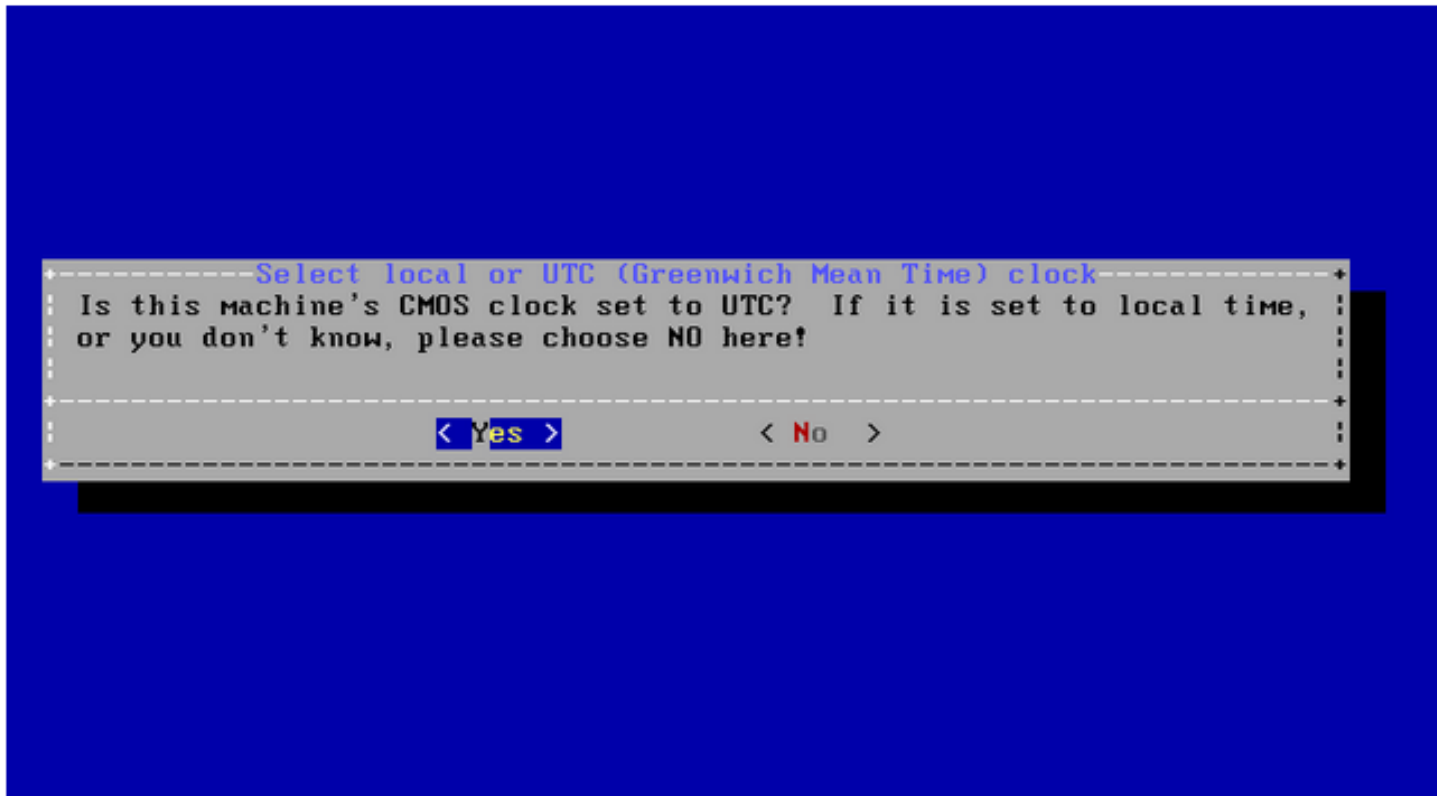
❑ Configuring IPv4 Networking

- (IPV4 、 DHCP -> yes , IPV6 -> no)



Post-installation

❑ Setting the Time Zone



Post-installation

❑ Setting the Time Zone

- Asia => Taiwan



Post-installation

❑ Selecting Services to Enable

```
FreeBSD Installer
-----
System Configuration
Choose the services you would like to be started at boot:
+-----+
: [*] sshd      Secure shell daemon
: [ ] moused    PS/2 mouse pointer on console
: [ ] ntpd      Synchronize system and network time
: [ ] powerd    Adjust CPU frequency dynamically if supported
: [*] dumpdev   Enable kernel crash dumps to /var/crash
+-----+
< OK >
```

Post-installation

❑ Add User

```
FreeBSD Installer
-----
                                +-----+
                                | -Add User Accounts- |
                                | Would you like to add |
                                | users to the installed |
                                | system now?           |
                                |-----+
                                | < Yes >  < No  >      |
                                |-----+
                                +-----+
```

Post-installation

❑ Add Users

- Username - hmwang
- Full name - Hsuan-min WANG
- Uid - User ID. Typically left blank.
- Login group - The user's group. Typically left.
- Invite *user* into other groups? - **wheel**
- Login class - Typically left blank for the default.
- Shell - The interactive shell for this user. CSCC use **tcsh**.
- Home directory - The user's home directory.
- Home directory permissions - The default is usually correct.
- Use password-based authentication? - Typically "yes".
- Use an empty password? - Typically "no".
- Use a random password? - Typically "no".
- Enter password - The actual password for this user.
- Enter password again - The password must be typed again for verification.
- Lock out the account after creation? - Typically "no".

Post-installation

❑ Final Configuration

```
FreeBSD Installer
-----
Final Configuration
-----
Setup of your FreeBSD system is nearly complete. You can now
modify your configuration choices. After this screen, you will
have an opportunity to make more complex changes using a shell.
-----
: Exit                Apply configuration and exit installer
: Add User          Add a user to the system
: Root Password    Change root password
: Hostname          Set system hostname
: Network           Networking configuration
: Services          Set daemons to run on startup
: Time Zone         Set system timezone
: Handbook         Install FreeBSD Handbook (requires network)
-----
< OK >
```

Post-installation

❑ Enabling Crash Dumps (no)

```
FreeBSD Installer
-----
--Dumpdev Configuration--+
: Would you like to enable crash dumps? :
: If you start having problems with the :
: system it can help the FreeBSD :
: developers debug the problem. But the :
: crash dumps can take up a lot of disk :
: space in /var. :
:
: < Yes >          < No > :
-----
```


Post-installation

❑ Reboot

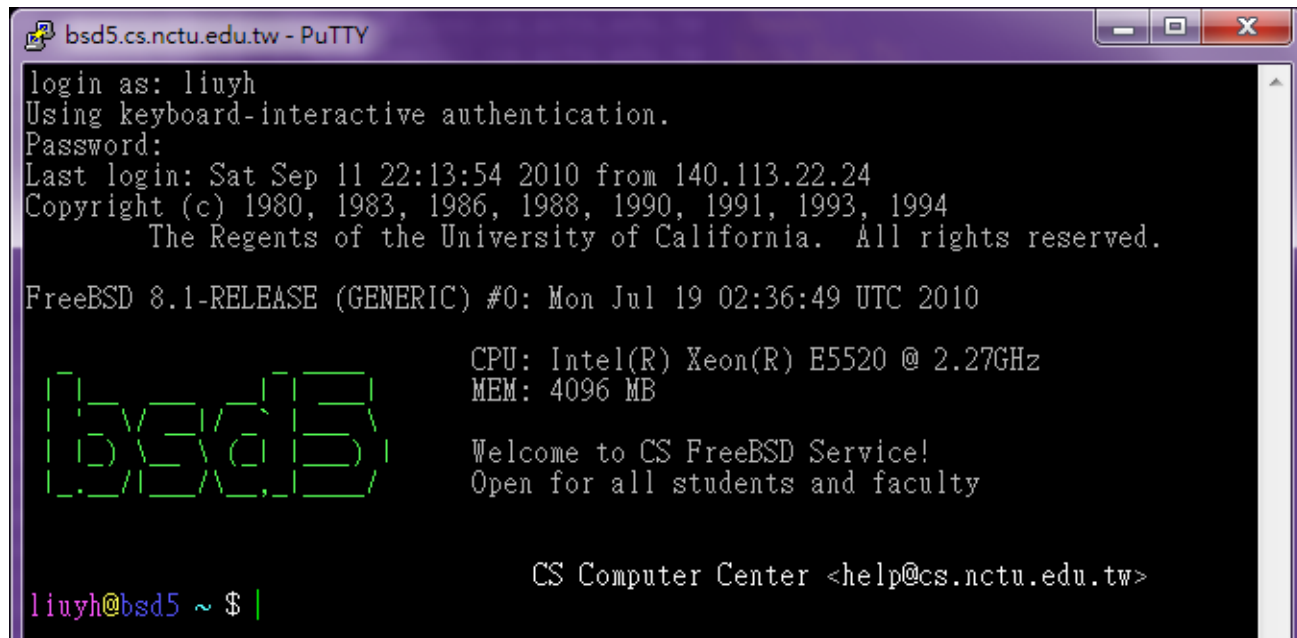
```
FreeBSD Installer
-----
                                Complete
Installation of FreeBSD
complete! Would you like
to reboot into the
installed system now?
<Reboot > <Live CD>
```

Login

❑ SSH (Secure Shell)

- PuTTY:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>



```
bsd5.cs.nctu.edu.tw - PuTTY
login as: liuyh
Using keyboard-interactive authentication.
Password:
Last login: Sat Sep 11 22:13:54 2010 from 140.113.22.24
Copyright (c) 1980, 1983, 1986, 1988, 1990, 1991, 1993, 1994
    The Regents of the University of California.  All rights reserved.

FreeBSD 8.1-RELEASE (GENERIC) #0: Mon Jul 19 02:36:49 UTC 2010

                                CPU: Intel(R) Xeon(R) E5520 @ 2.27GHz
                                MEM: 4096 MB

                                Welcome to CS FreeBSD Service!
                                Open for all students and faculty

                                CS Computer Center <help@cs.nctu.edu.tw>

liuyh@bsd5 ~ $ |
```

Play with Your FreeBSD

❑ Useful commands

- passwd, chsh, chfn, chpass
- ls
- ps, top
- mkdir/rmdir
- cp/mv/rm
- write
- man
- login/exit/logout/screen
- Editor: ee, vim, joe, ...etc.
- Connecting: ssh/telnet
- Email reader: mutt, ...etc.
- News reader: tin
- File Transmission: ftp, ncftp, lftp, scp, wget, curl, ...etc.
- Compilers: gcc, g++, javac, ...etc.
- Scripting: perl, php, ruby, python ...etc.

Help Yourself – man (1)

□ man pages (manual)

- Contain descriptions of
 - Individual command.
 - % man cp
 - File format.
 - % man rc.local
 - Library routines.
 - % man strcpy

Help Yourself – man (2)

❑ Command

- % man [section] *title*
 - % man printf **(printf command)**
 - % man 3 printf **(C Standard printf func.)**
 - % man -k exit **(keyword search)**

%man man

❑ Man pages organization

AT&T	BSD	Contents
1	1	User-Level commands and applications
2	2	System calls and kernel error code
3	3	Library calls
4	5	Standard file format
5	7	Miscellaneous files and documents
6	6	Games and demonstrations
7	4	Device Drivers and network protocols
1m	8	System administration commands
9	9	Obscure kernel specs and interfaces

Conventions

□ Syntax of commands:

- Anything between “[” & “]” – are optional.
- Anything followed by “...” – can be repeated.
- {a | b} – you should choose one of them.
- Example:

➤ `bork [-x] { on | off } filename ...`

`bork on /etc/hosts` ○

`bork -x off /etc/hosts /etc/passwd` ○

`bork -x /etc/hosts` X

`bork -h /etc/hosts` X

HOWTO - Shutdown

❑ FreeBSD Shutdown

- shutdown -p now
- reboot