



FreeBSD

---

hmwang

# Outline

---

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

A decorative graphic on the left side of the slide, consisting of several overlapping blue rectangles of varying heights and widths, creating a stepped effect. The top-left corner is the darkest blue, and the rectangles become progressively lighter and more transparent as they move down and to the right.

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

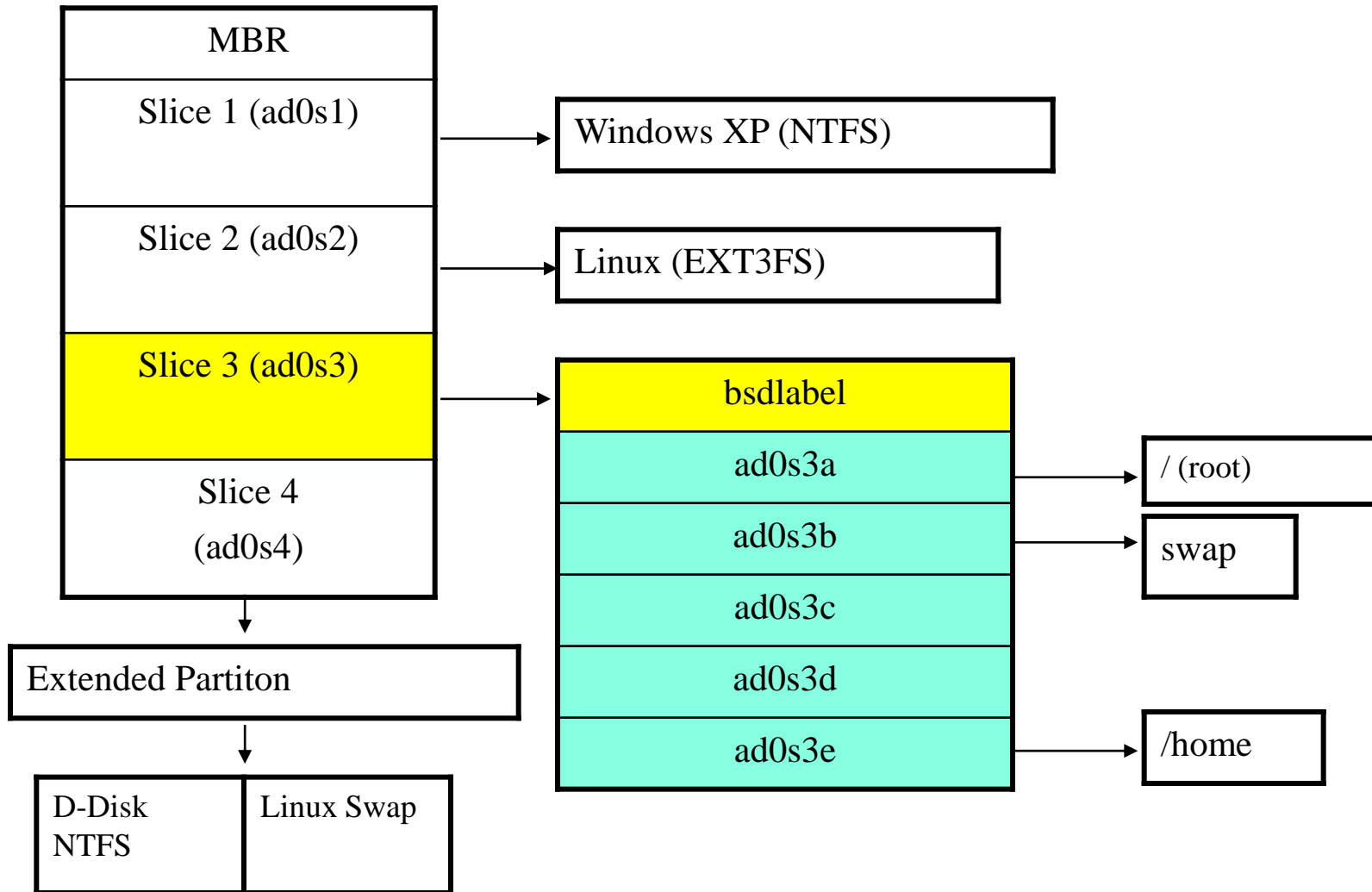
- A: major version Number
- B: minor version Number
- C: slight patch version number
- Type: version type
  - PRERELEASE
  - BETA
  - RC
  - RELEASE
  - STABLE
  - CURRENT

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

---

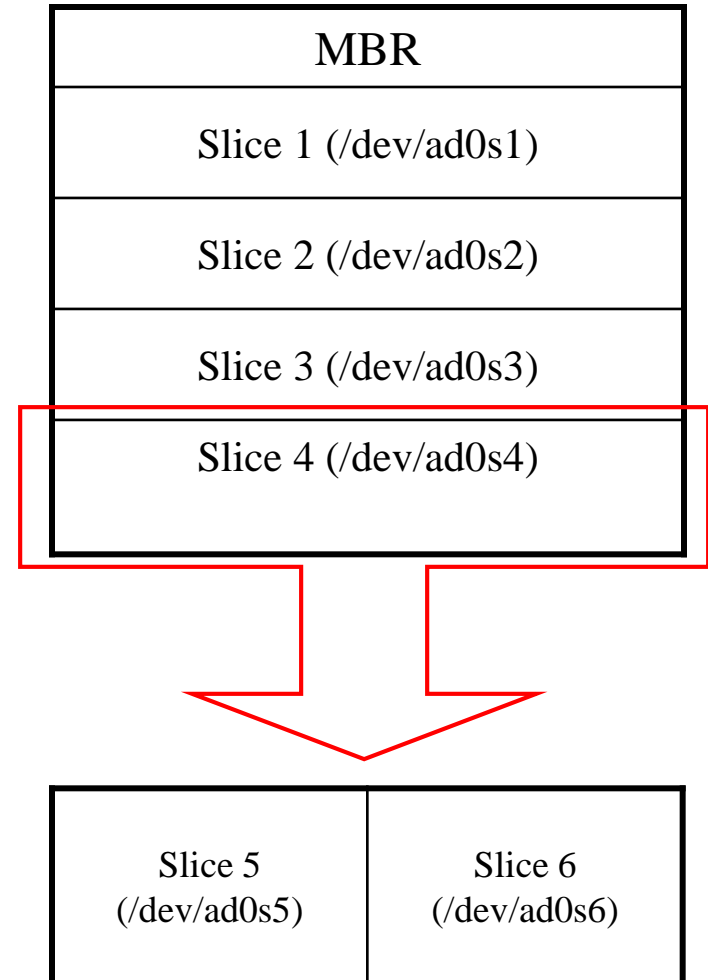
# FreeBSD view of Disk (1)



# 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>   |
+-----+
```

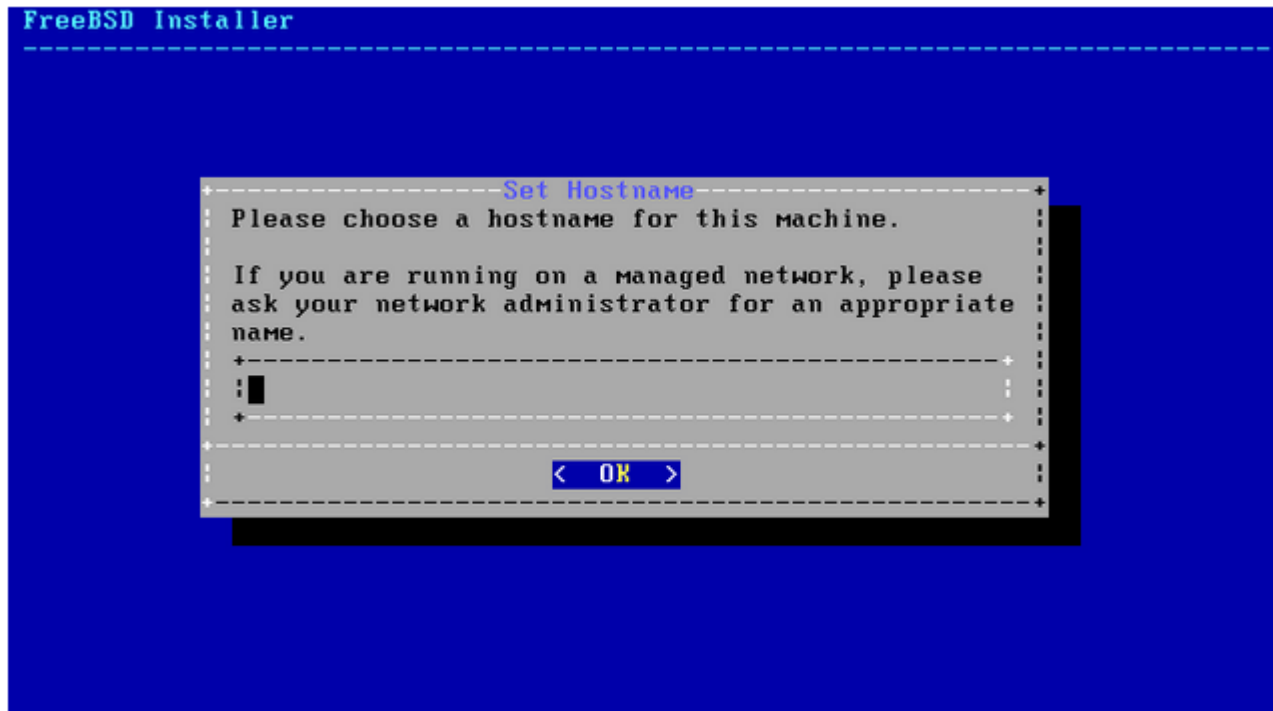
# bsdinstall (FreeBSD 10.1) – (3)

## □ 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)

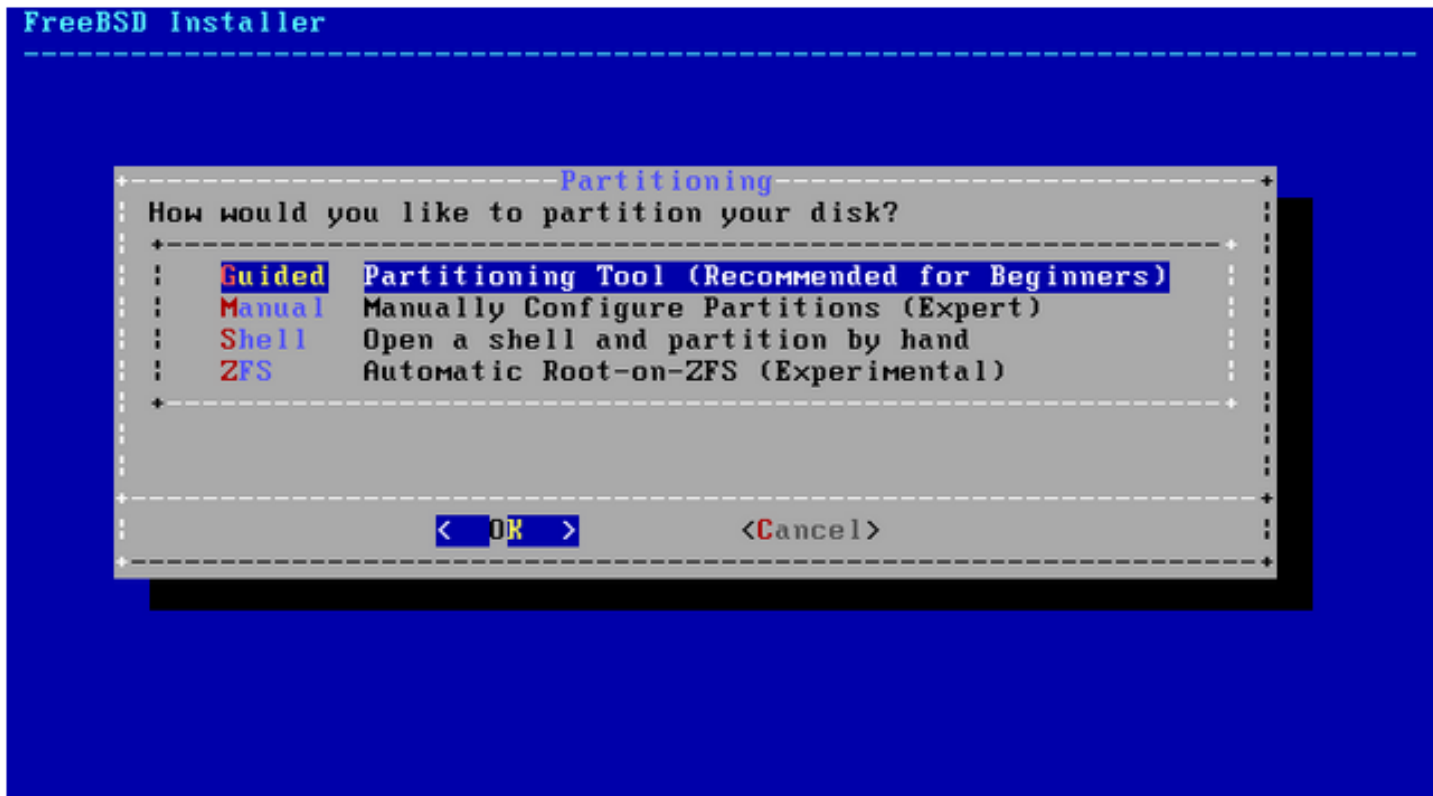
- ❑ Selecting components to install

```
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) 、 bsdlablel(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

---

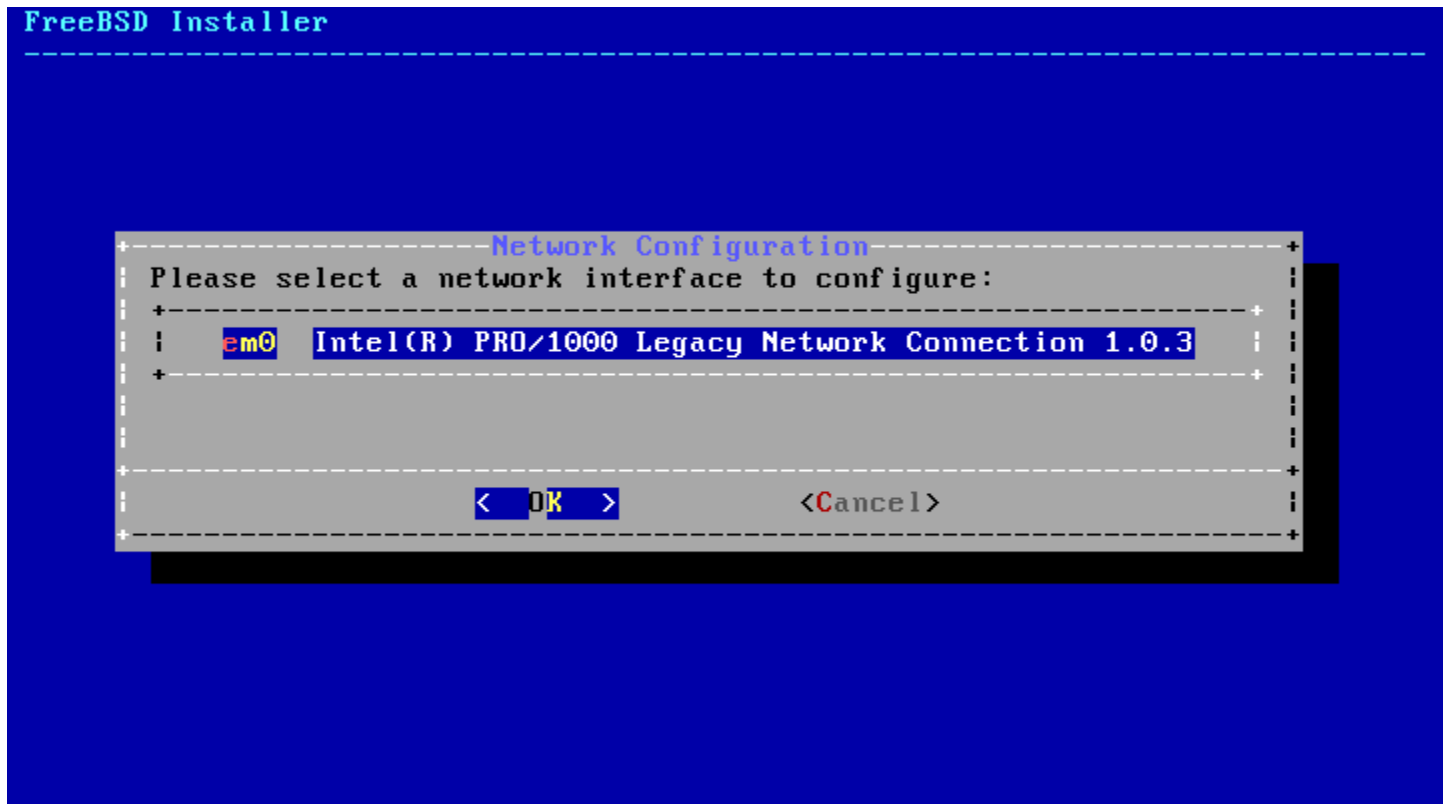
- ❑ **Setting the root Password**(記得使用鍵盤上方的數字鍵)

```
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)

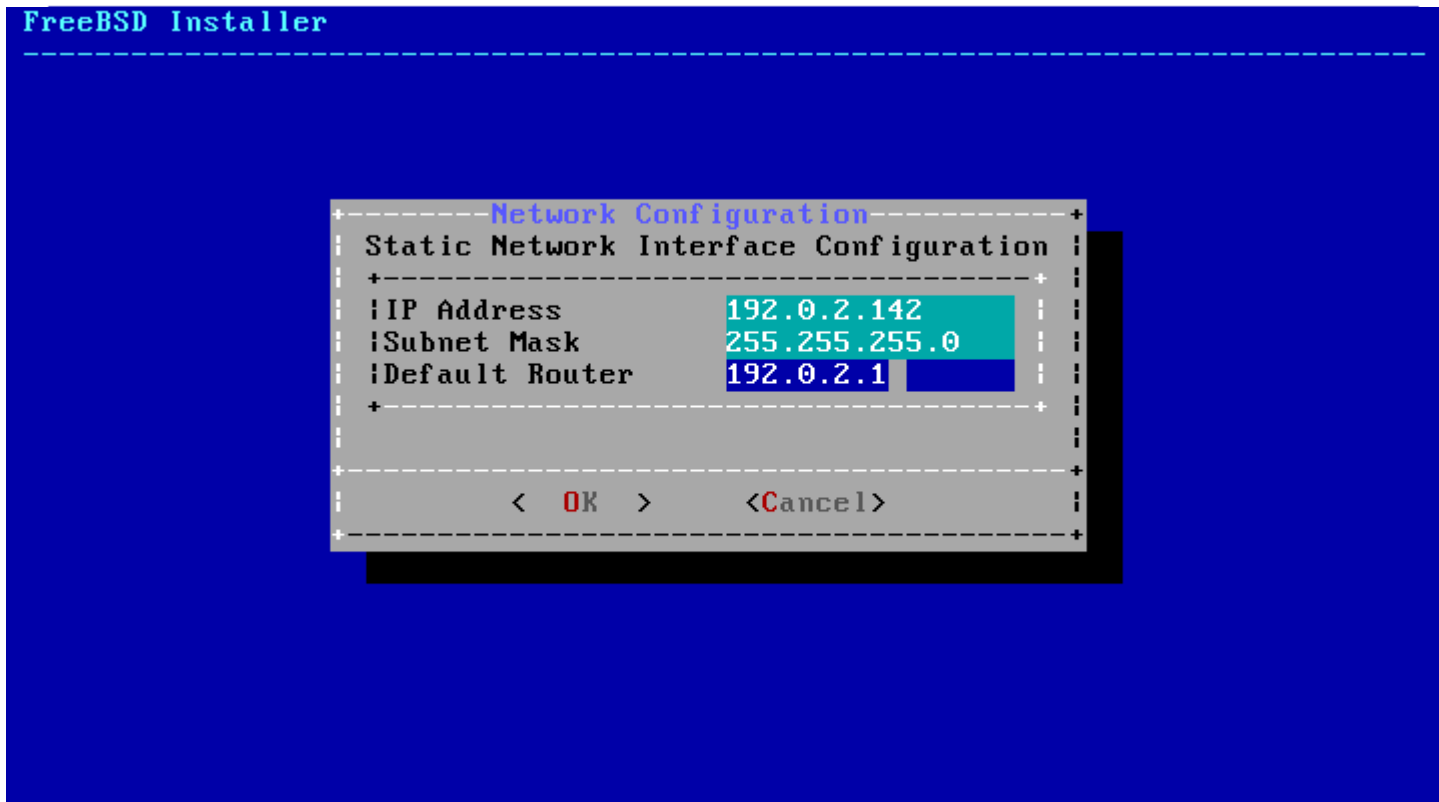




# Post-installation

## ❑ Configuring IPv4 Networking

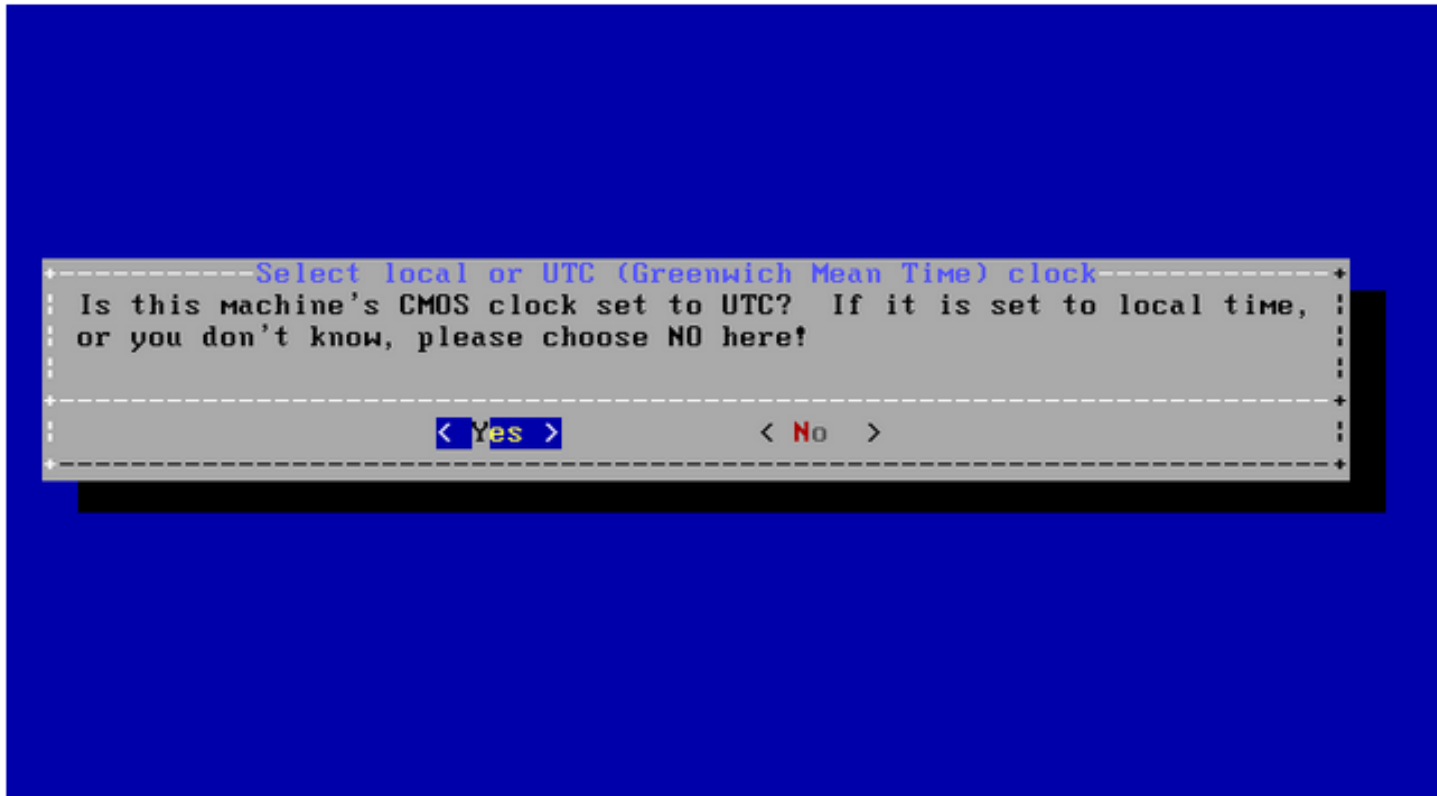
- (IPV4 、 DHCP -> yes , IPV6 -> no)



# 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



# 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

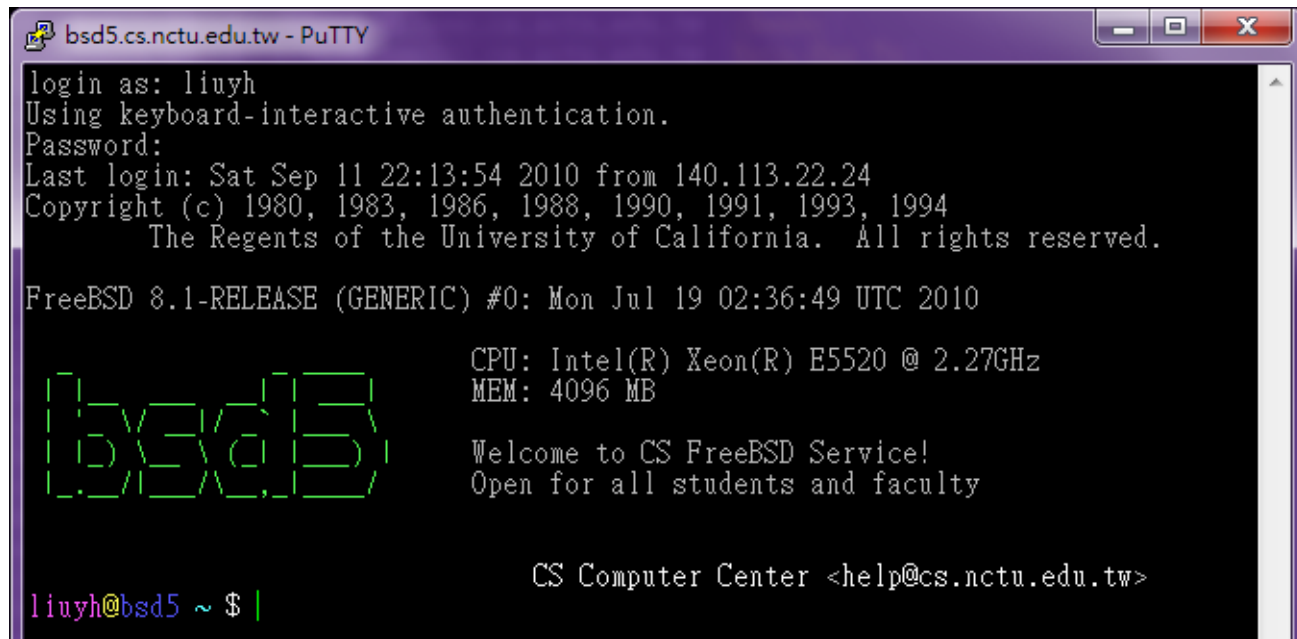
```
FreeBSD Installer
-----
                                Complete
Installation of FreeBSD
complete! Would you like
to reboot into the
installed system now?
<Reboot > <Live CD>
```

# 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 <b>commands</b> and applications |
| 2    | 2   | <b>System calls</b> and kernel error code   |
| 3    | 3   | <b>Library</b> 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` ✕

`bork -h /etc/hosts` ✕

# HOWTO - Shutdown

---

## ❑ FreeBSD Shutdown

- `shutdown -p now`
- `reboot`