

Install FreeBSD

lctseng

Outline

- FreeBSD version

- 12.0-RELEASE

- Installing FreeBSD

- From CD-ROM
 - From USB

FreeBSD Version

FreeBSD Branches/Tags

□ Three parallel development branches:

- *-RELEASE*
 - Latest Release Version:
 - 12.0 (December, 2018)
 - <http://www.freebsd.org/releases/>
 - Upcoming 12.1 (November, 2019)
 - <https://www.freebsd.org/releases/12.1R/schedule.html>
- *-STABLE*
 - Tested new features and bug fixes
 - MFC: Merge From Current
- *-CURRENT*
 - Working space for FreeBSD developers
 - Current version:
 - 13.0-CURRENT
 - <http://www.freebsd.org/releng/>

FreeBSD Version

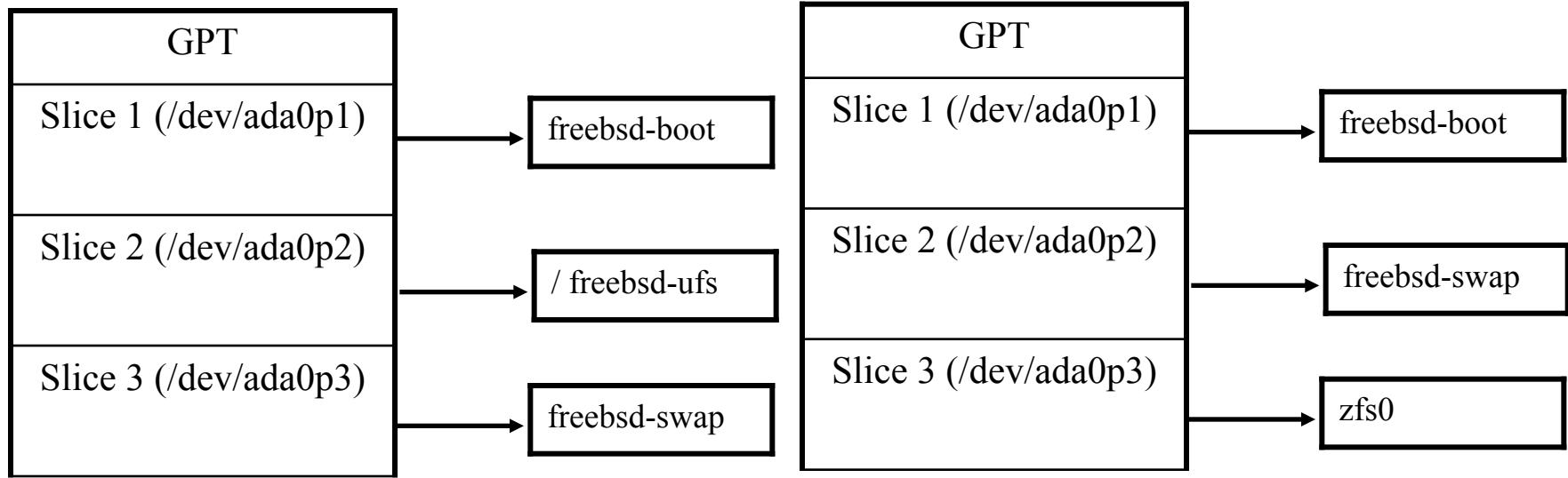
□ FreeBSD-A.B.C-Type

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

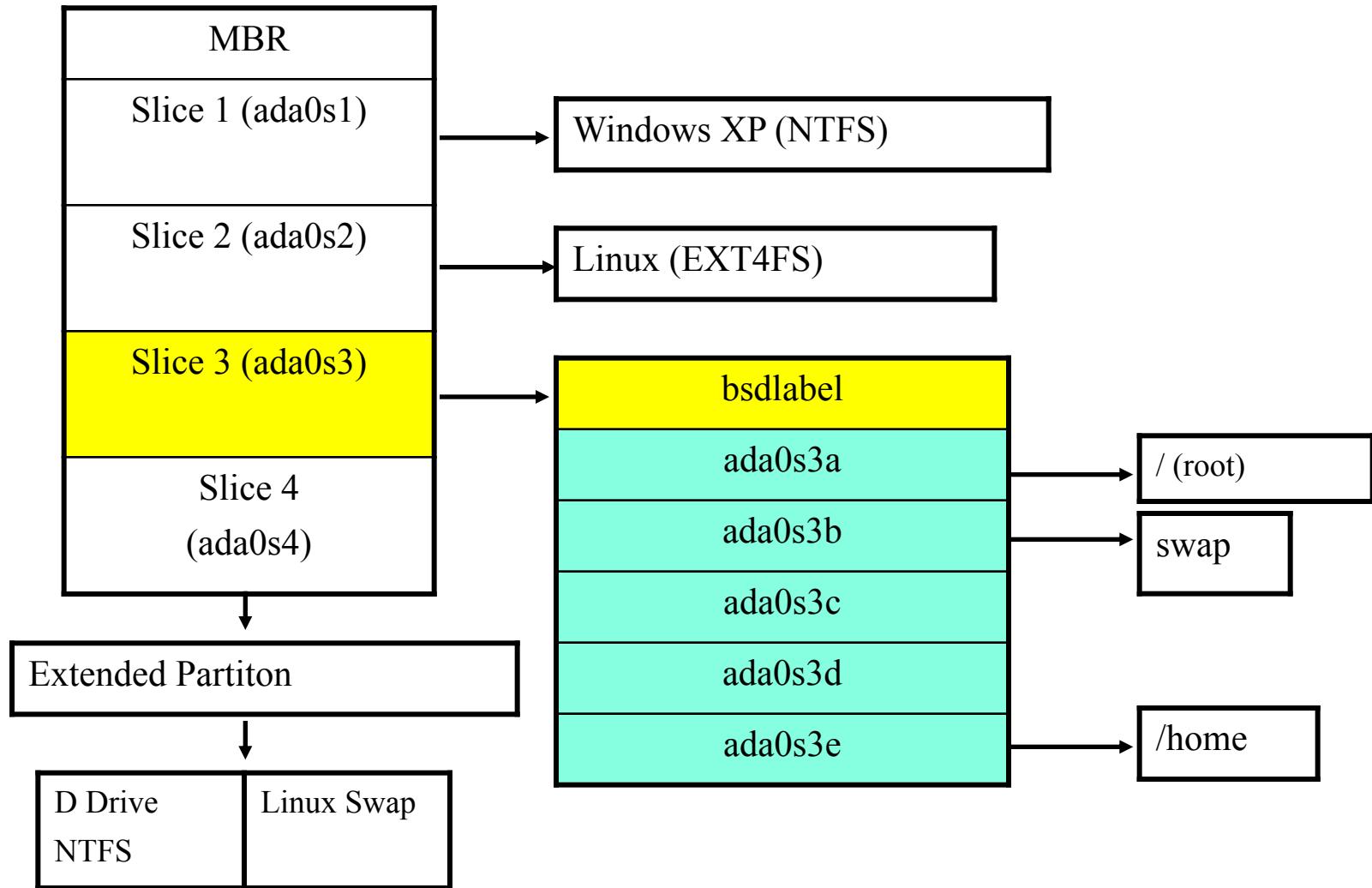
FreeBSD Installation

FreeBSD View of Disk (1)

- Guided partitioning layout between UFS and Root on ZFS



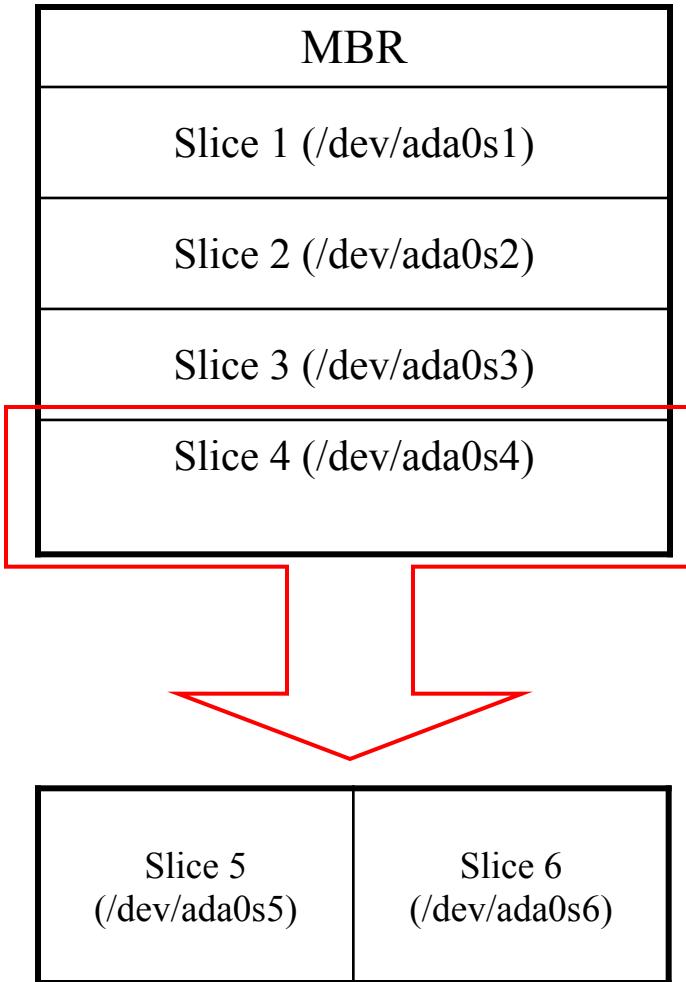
FreeBSD View of Disk (2)



FreeBSD View of Disk (3)

□ What is the meaning of ada0s1a

- Disk name
 - ada : IDE, SATA
 - da: SCSI, usb stick
- 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

❑ One PC, Laptop

- Another Hard Disk or Shrink a Partition on Your Hard Drive (20 GB)

❑ Or Virtual Machine

❑ Network Information

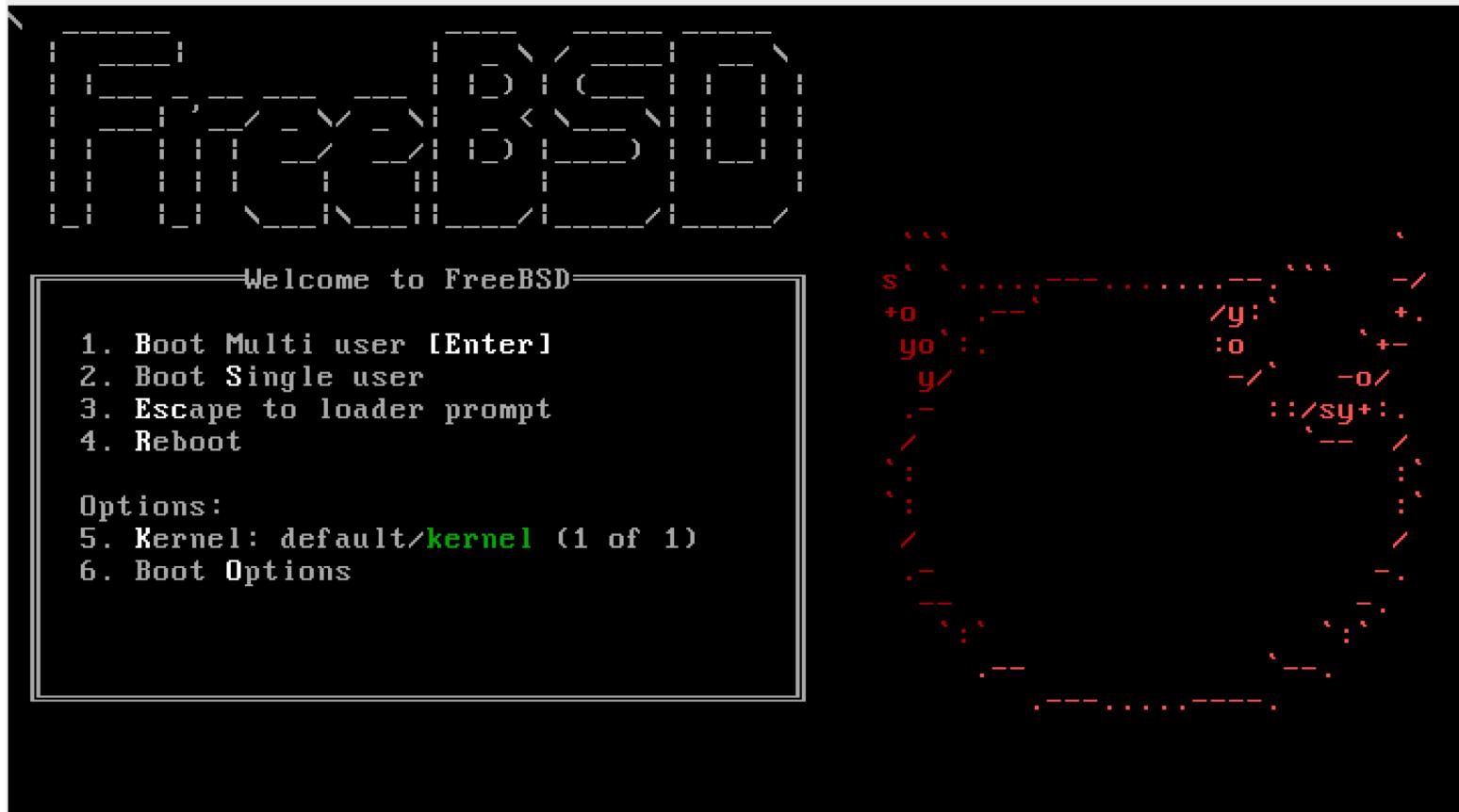
- IP address
- Subnet mask
- Default router IP address
- domain name of the local network
- DNS server IP address(es)

❑ Prepare the Installation Media

- <https://www.freebsd.org/where.html>
- Installer image (iso, discl or dvd1)

bsdinstall – (1)

- An easy to use, text-based installation program
 - Beginning with FreeBSD 9.0-RELEASE



Boot screen of FreeBSD 12.0

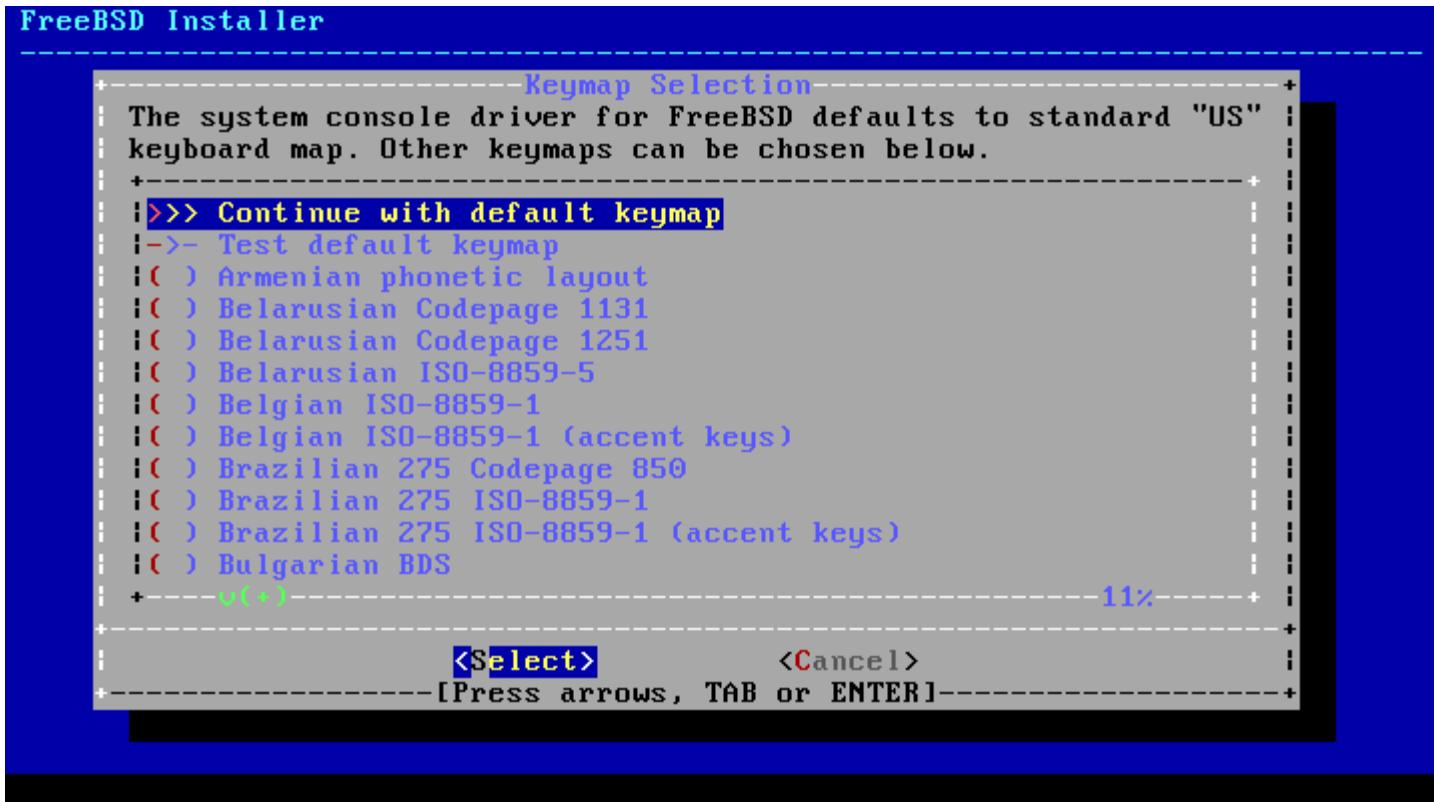
bsdinstall – (2)

- Install 、 Shell 、 Live CD



bsdinstall – (3)

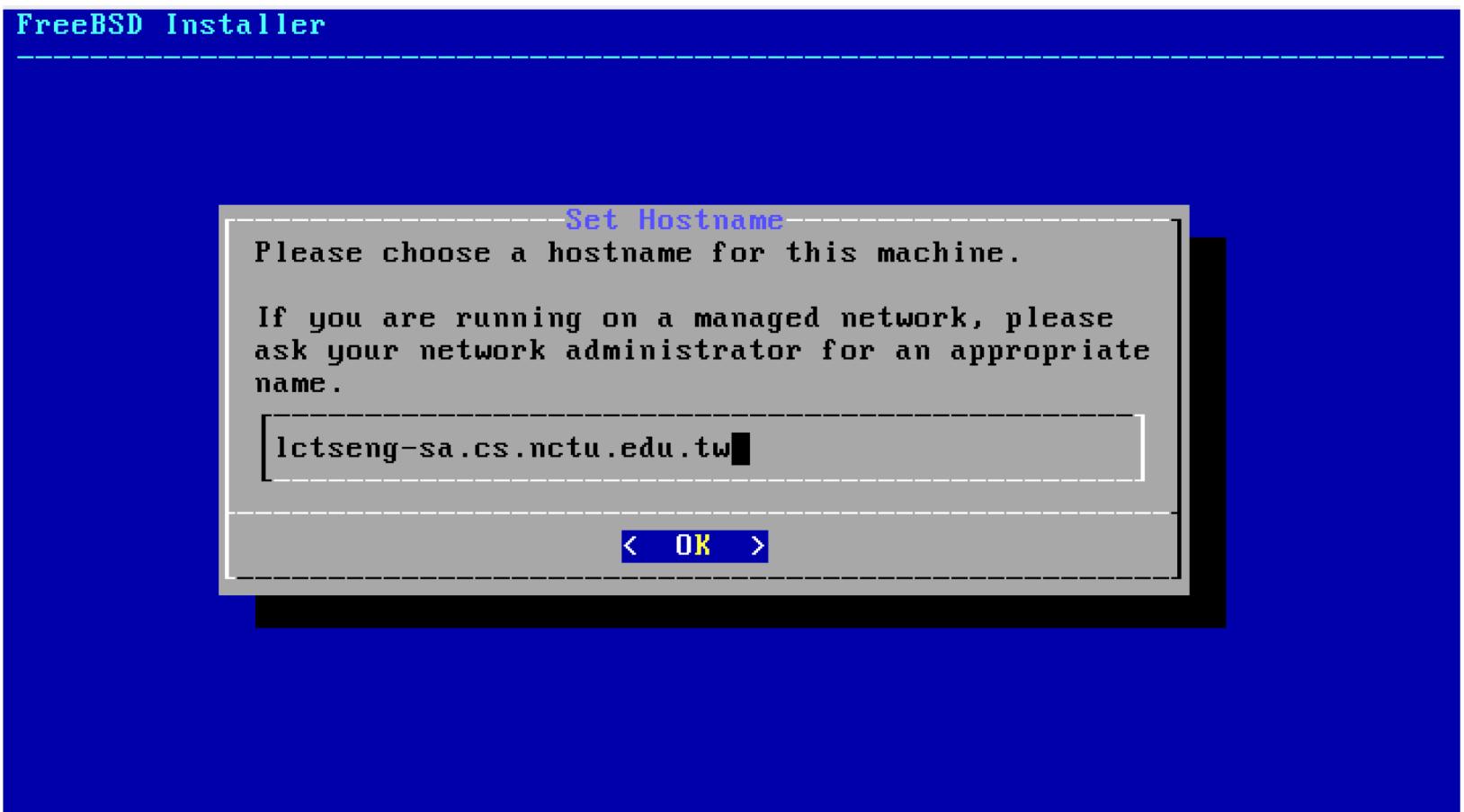
□ Select keymap



bsdinstall – (4)

□ Setting hostname

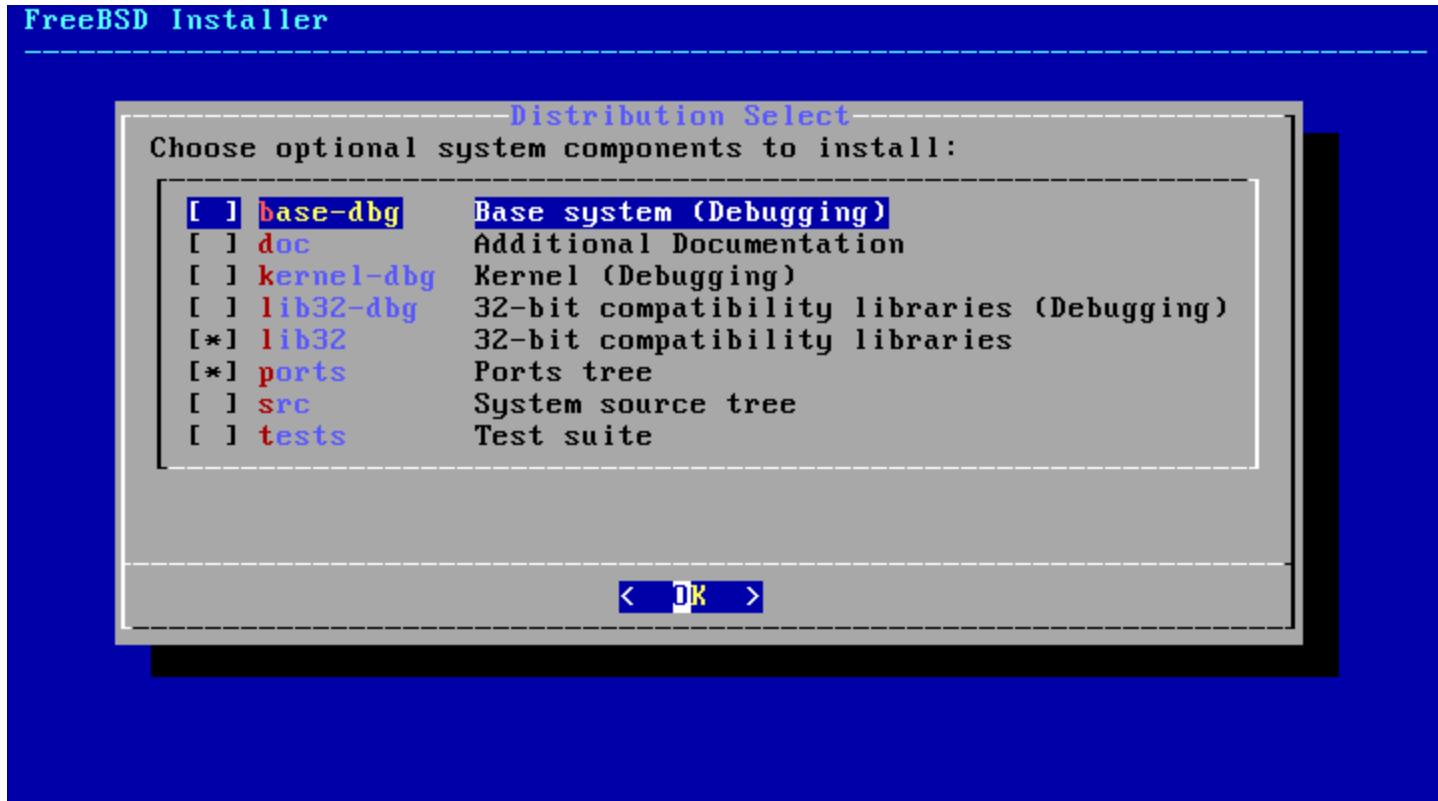
- e.g., xxx-sa.cs.nctu.edu.tw



bsdinstall – (5)

□ Selecting components to install

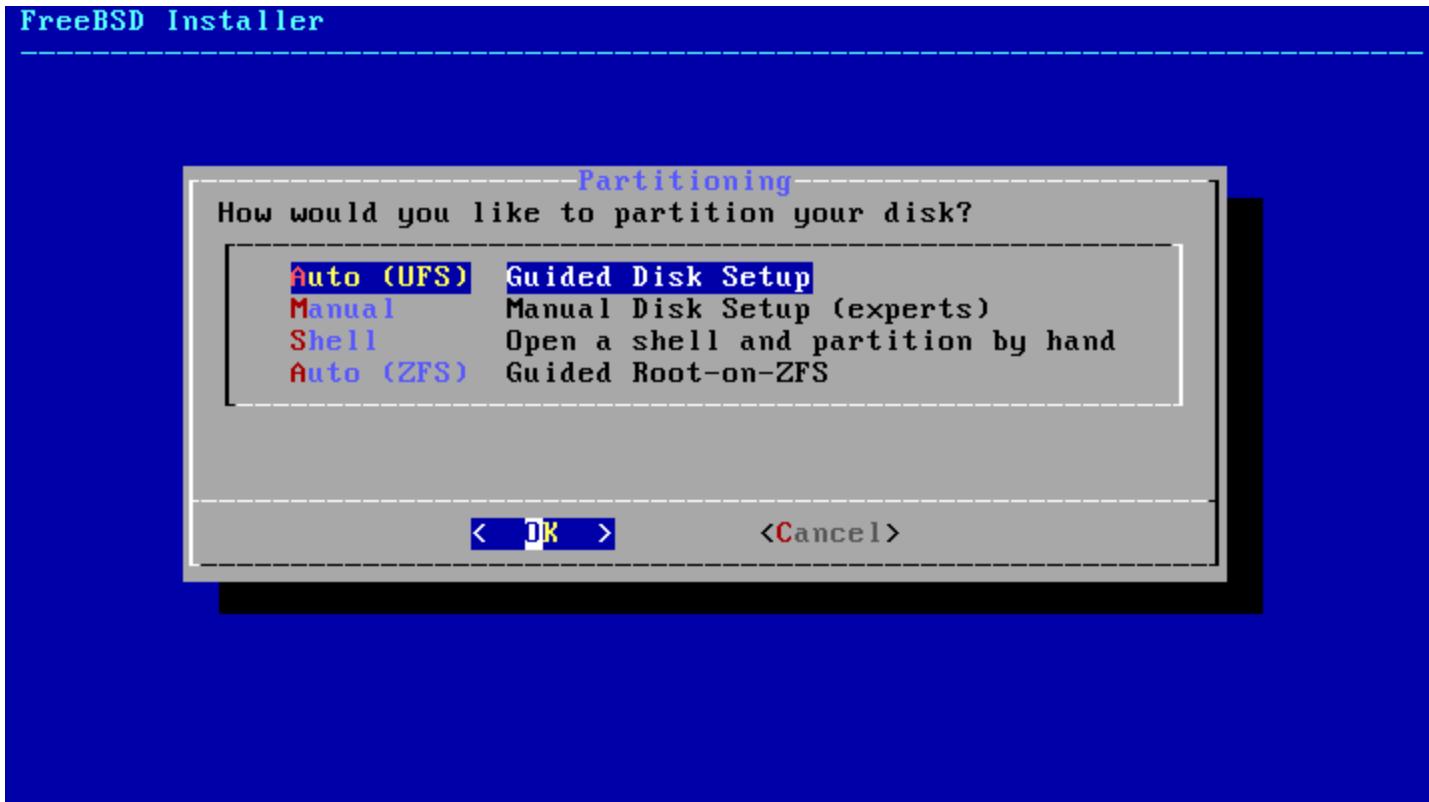
- Toggle using **space** key



bsdinstall – (6)

□ Partitioning methods

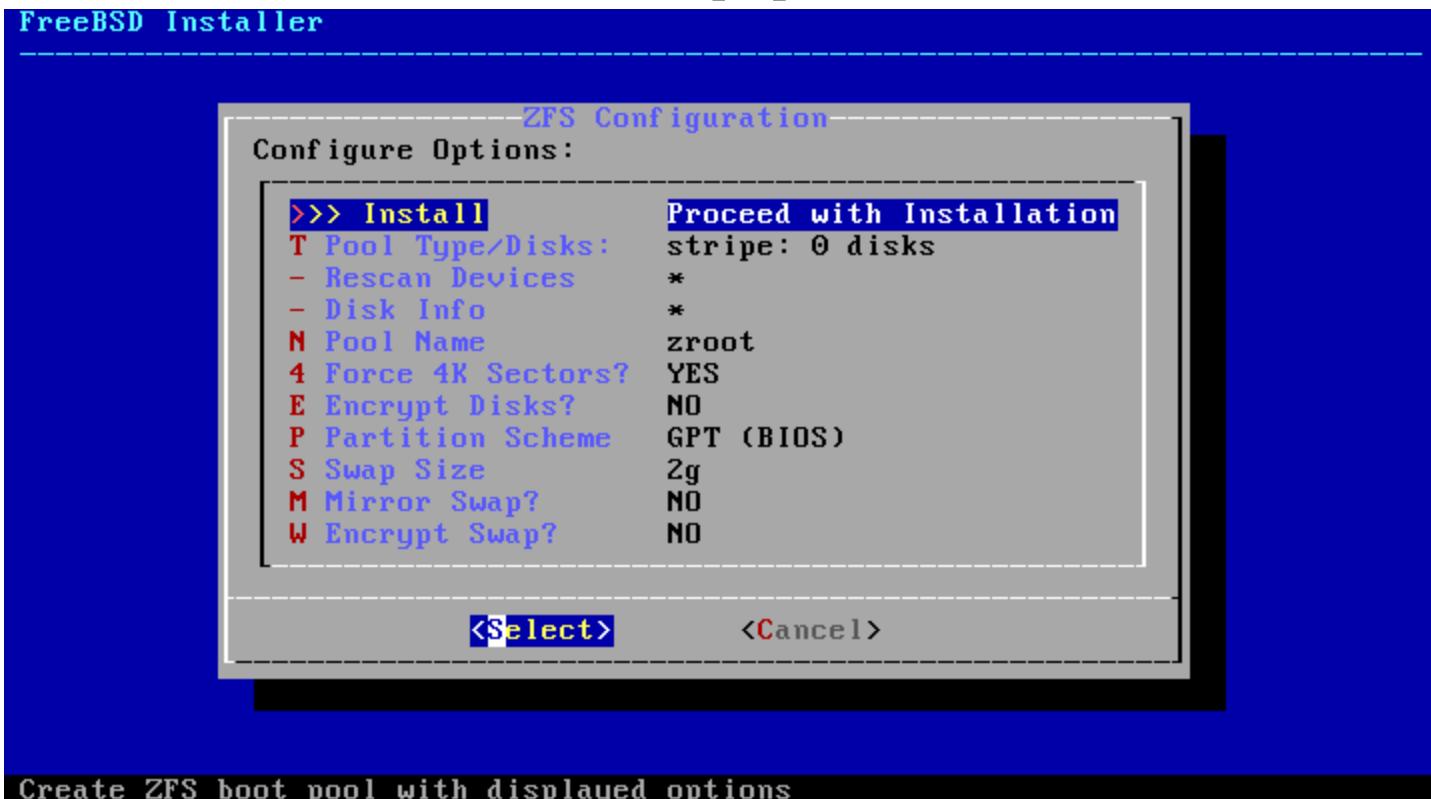
- Shell – gpart(8)、fdisk(8)、bslabel(8)
- Use Auto (ZFS)



bsdinstall – (7) Auto (ZFS)

□ Guided Root-on-ZFS

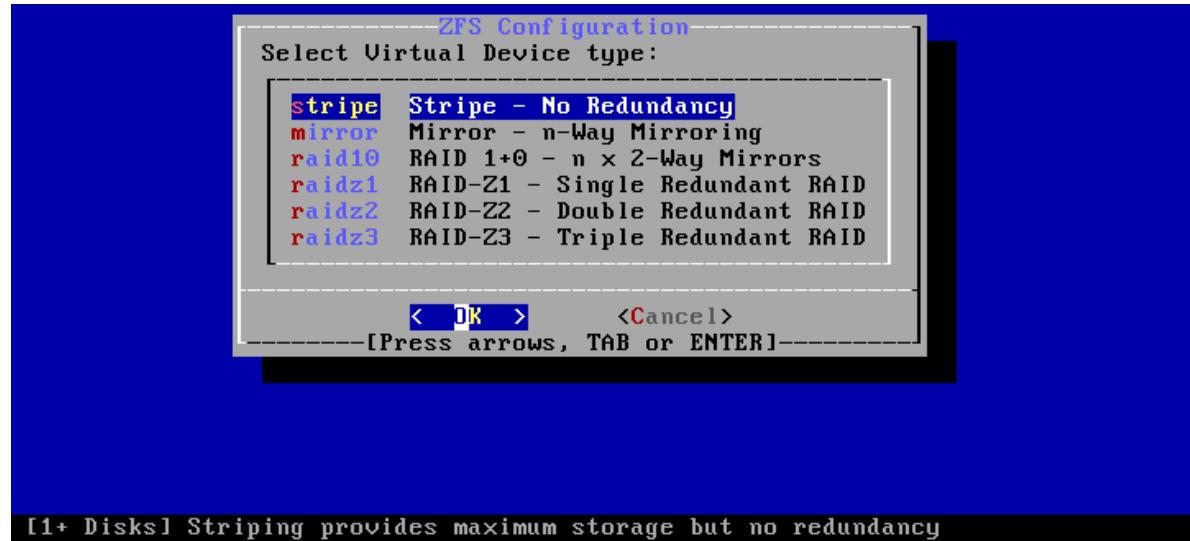
- Enter a pool name, disable forcing 4k sectors, enable or disable encryption
- Switch between GPT (recommended) and MBR partition table types, and select the amount of swap space



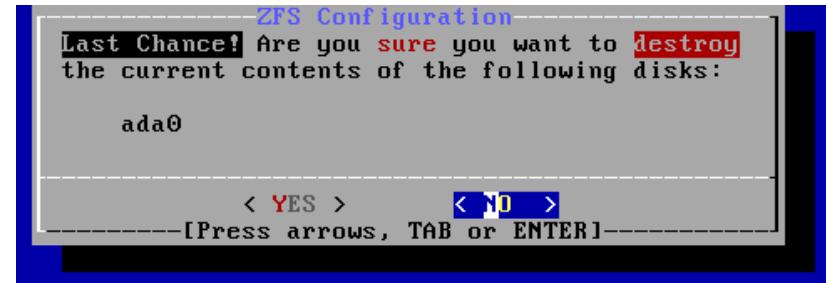
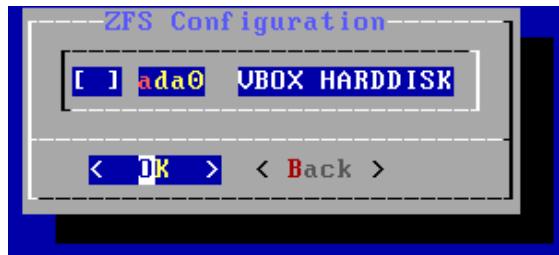
bsdinstall – (8) Auto (ZFS)

□ Virtual Device type

- Stripe
- Mirror
- RAID10
- RAID-Z 1, 2, 3



[1+ Disks] Striping provides maximum storage but no redundancy



Caution! Backup important data when using dual OS

bsdinstall – (9)

- ☐ Fetching → Checksum Verification → Extraction



bsdinstall – (10)

□ Post-installation

- root password
- Network interfaces
 - Wired – Static IPv4 / DHCP / Static IPv6 / SLAAC
 - Wireless
 - DNS
- Time Zone
- Services
- System security hardening options
- Add users

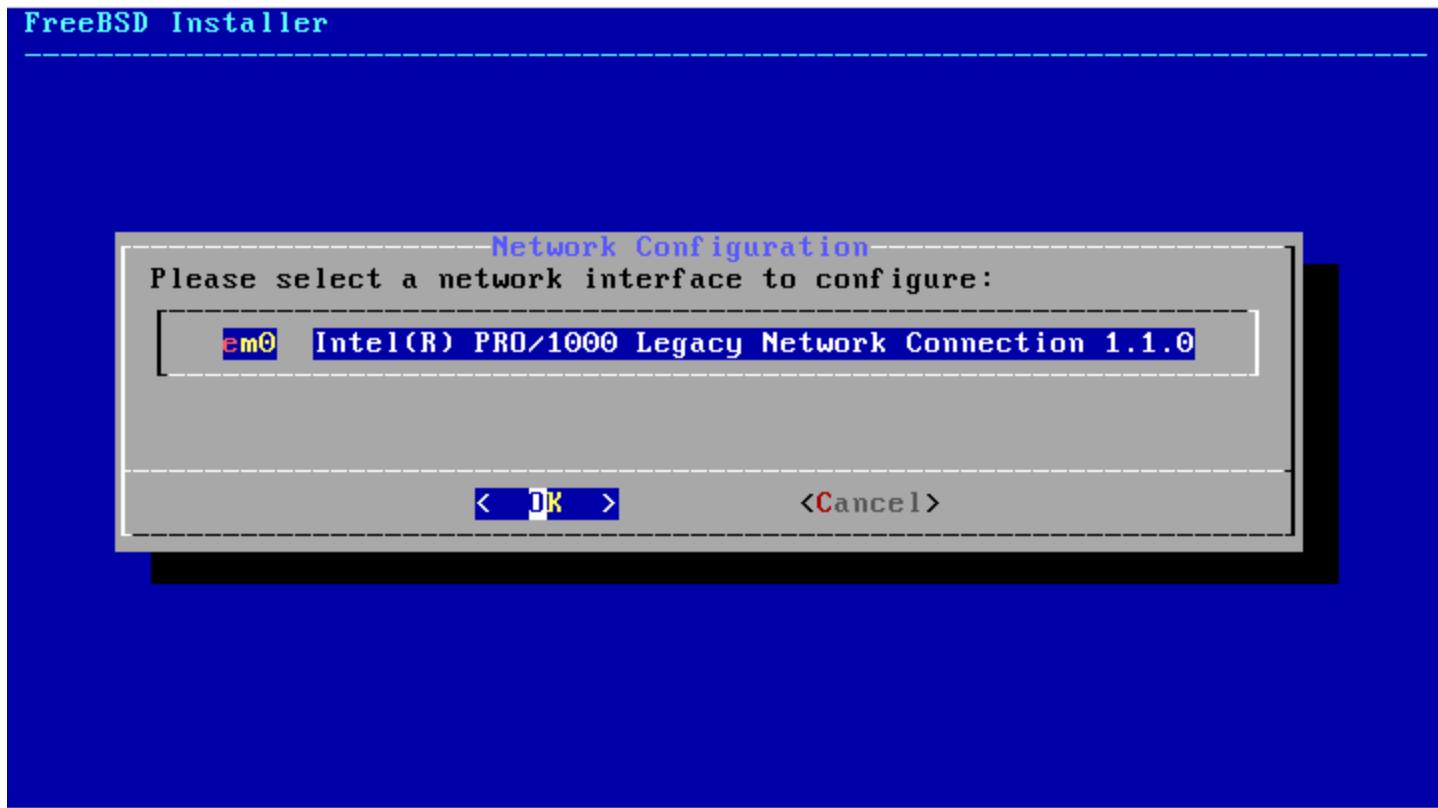
Post-installation

□ Setting the root Password

```
FreeBSD Installer
=====
Please select a password for the system management account (root):
Changing local password for root
New Password:
Retype New Password:■
```

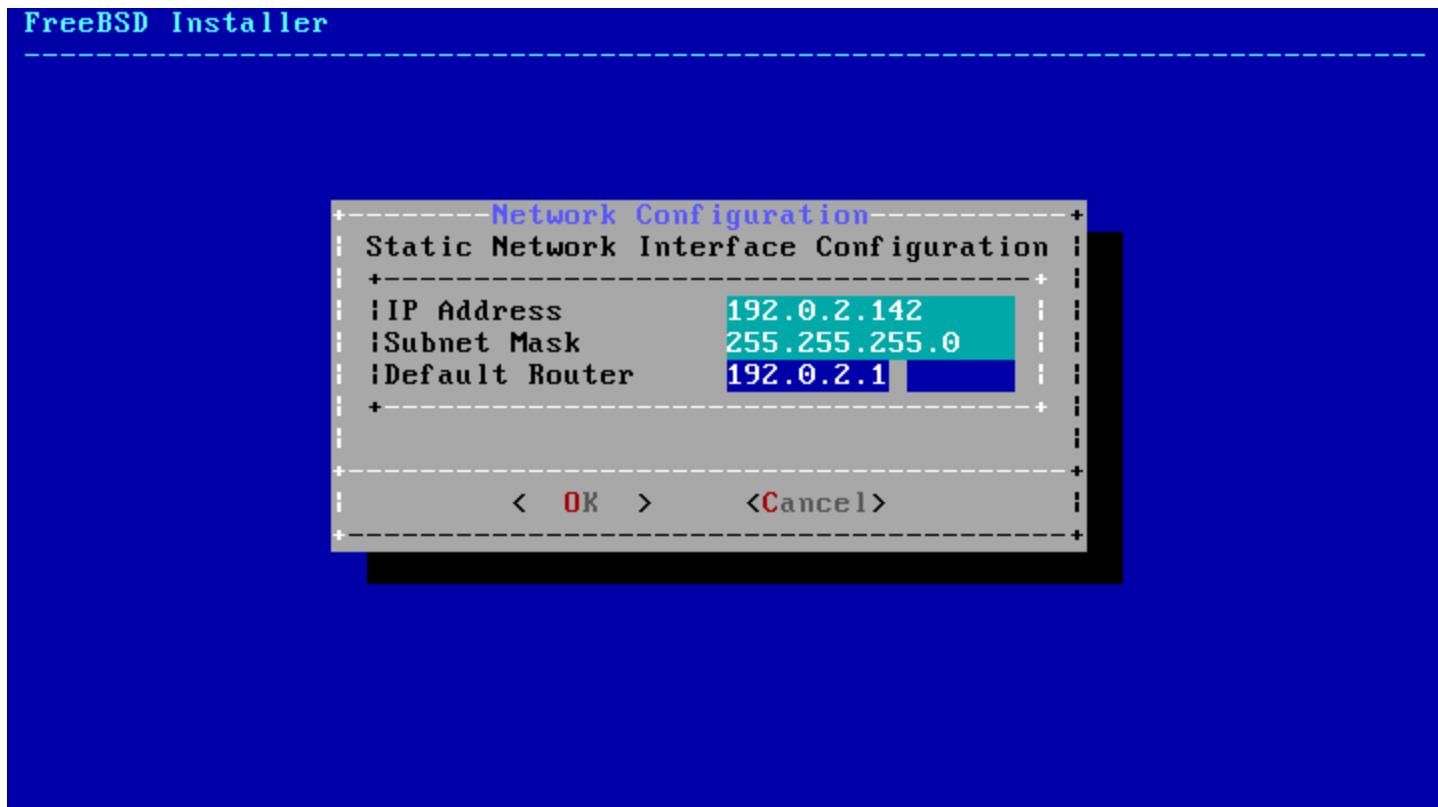
Post-installation

- Select a network interfaces



Post-installation

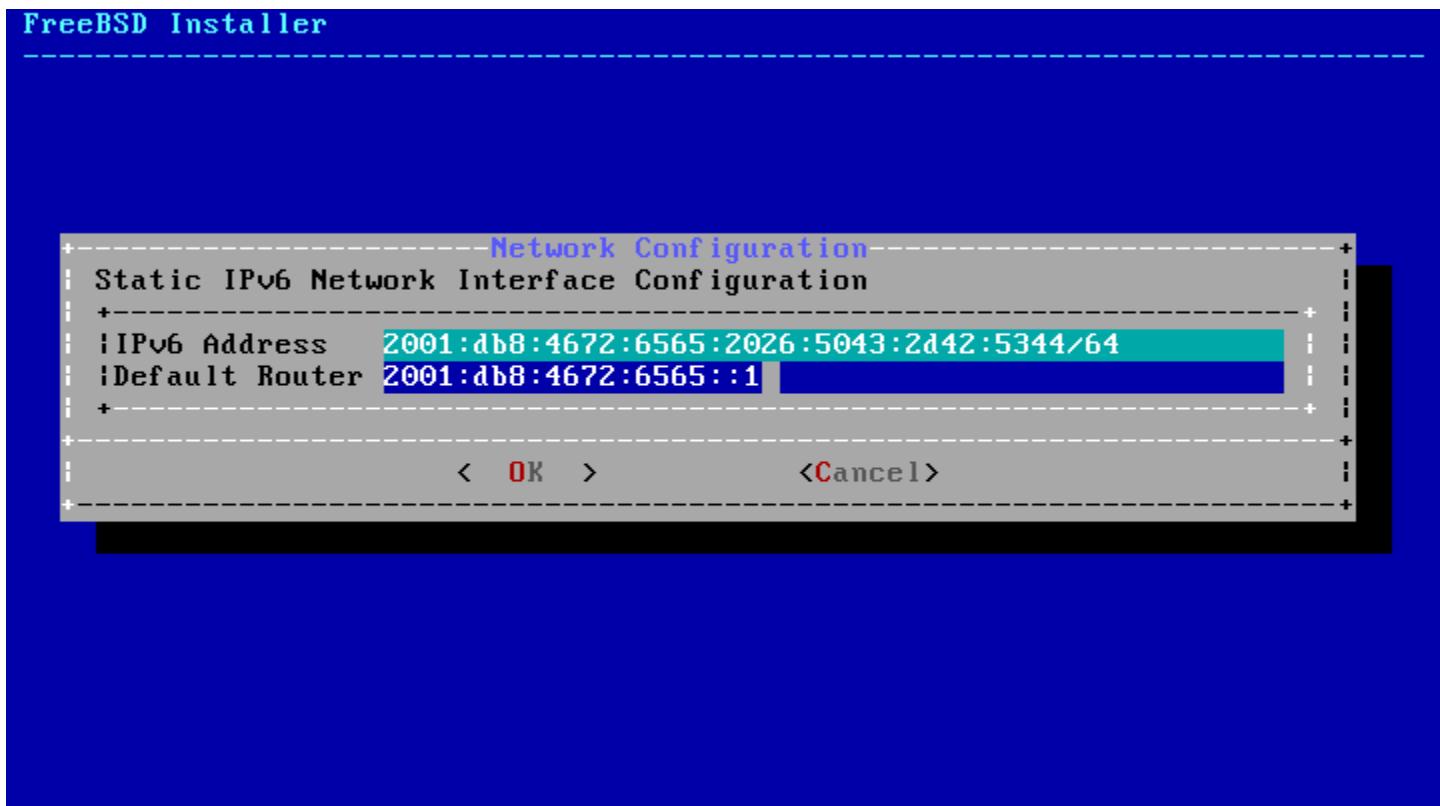
□ Configuring IPv4 Networking



Post-installation

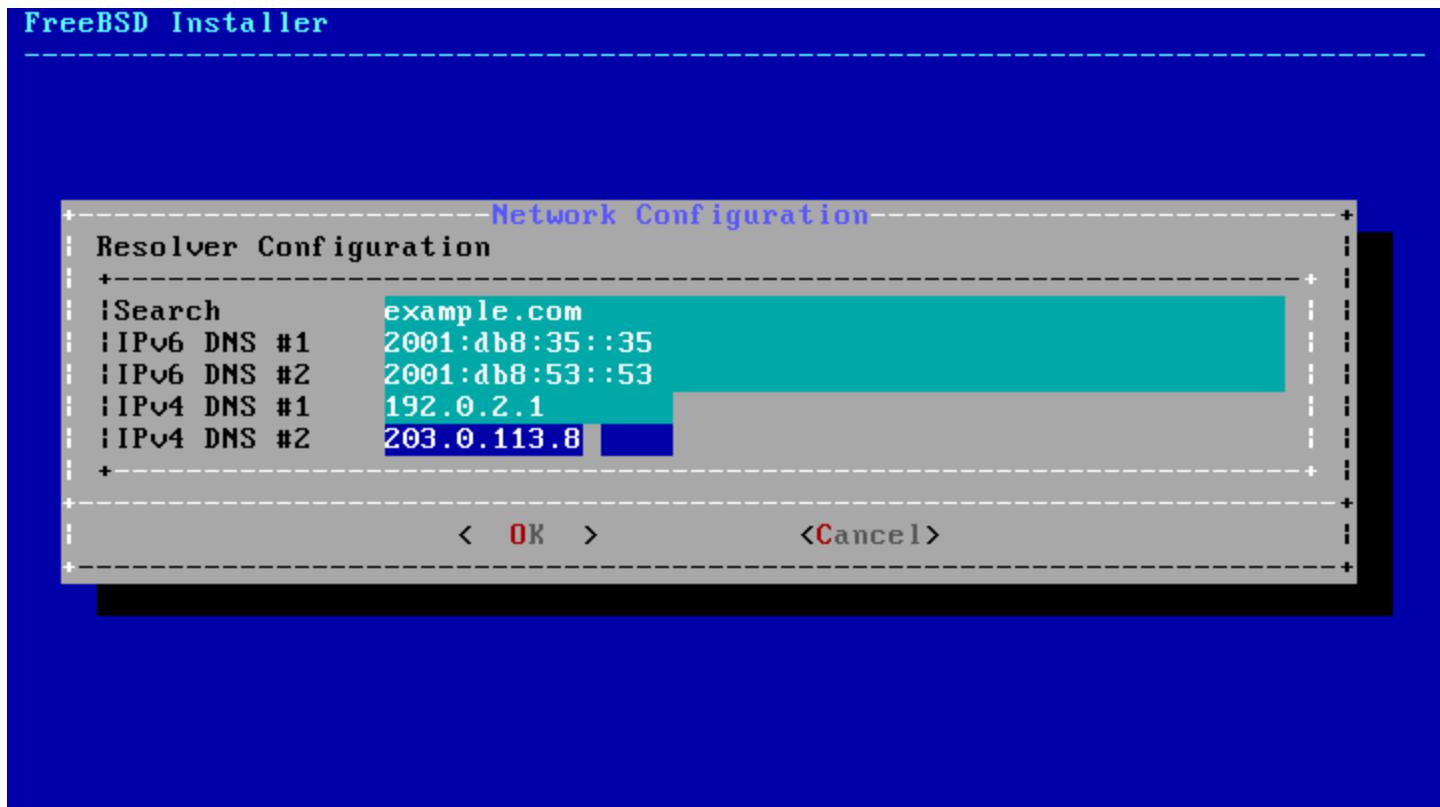
□ Configuring IPv6 Networking

- IPv6 Stateless Address Auto configuration (SLAAC)



Post-installation

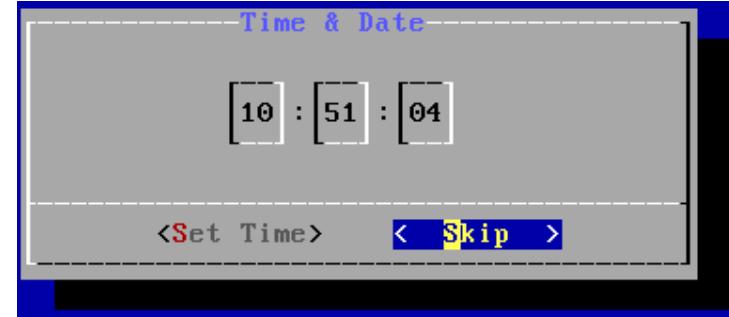
□ Configuring DNS



Post-installation

□ Setting the Time Zone

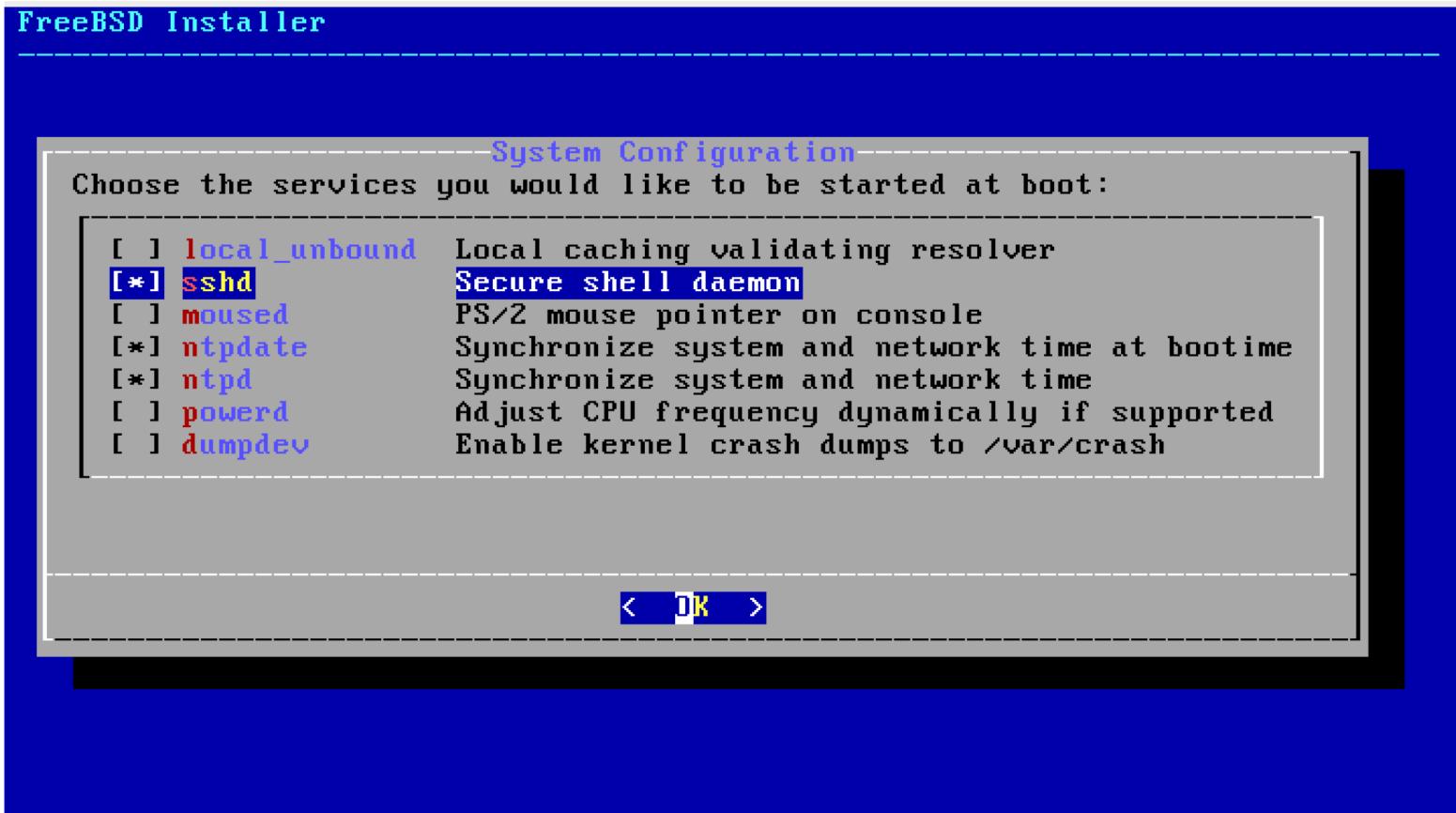
- 5 Asia → 42 Taiwan



Post-installation

□ Selecting services to be enabled at boot

- Enable sshd, ntpd, ntpdate
- Disable dumpdev



Post-installation

□ Selecting system security hardening options



Post-installation

□ Add Users

- Username - lctseng
- Full name - Liang-Chi Tseng
- Uid - User ID. Typically left blank for default.
- Login group - The user's group.
- Invite *user* into other groups? - **wheel**
- Login class - Typically left blank for 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".

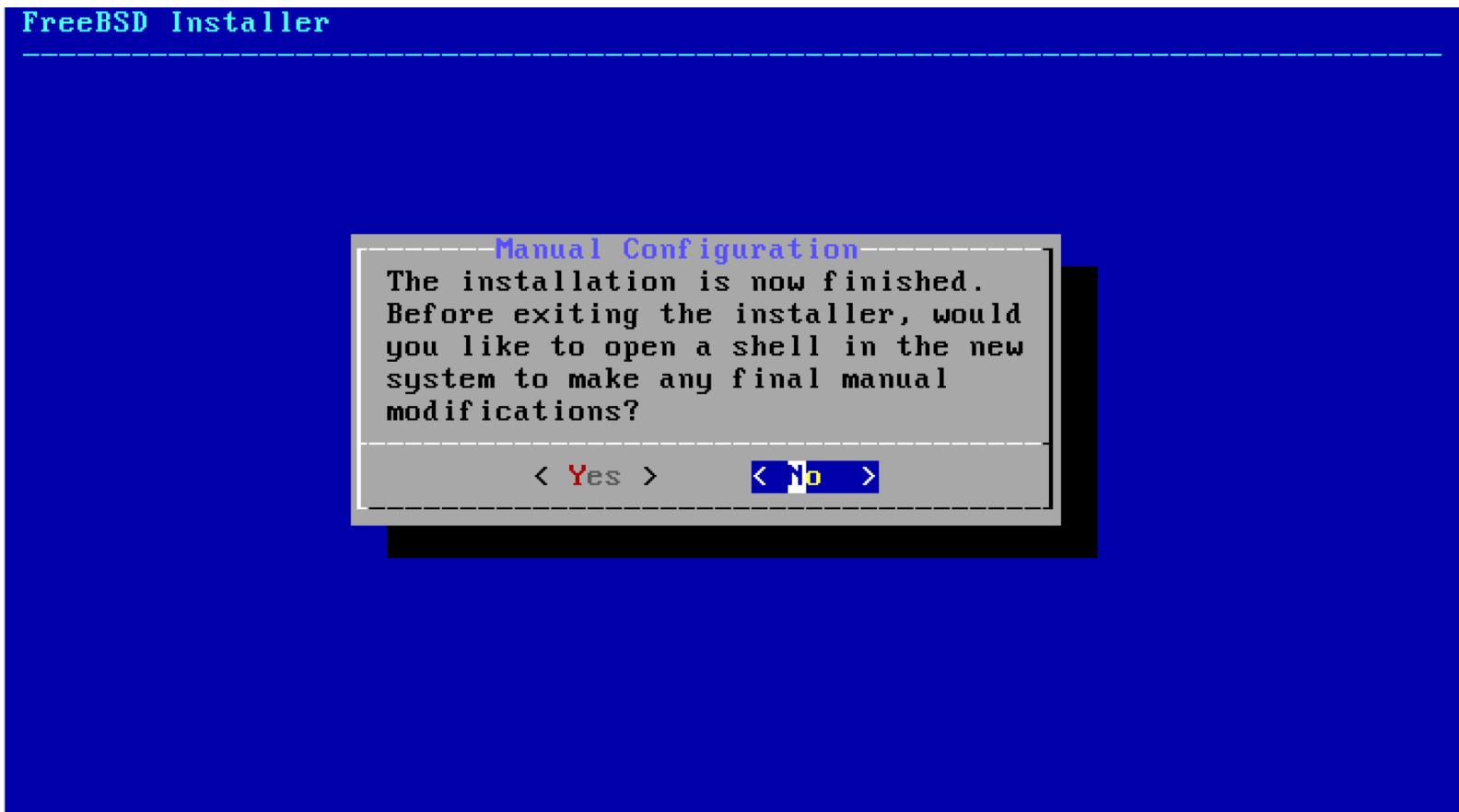
Post-installation

□ Final Configuration



Post-installation

- Make change if needed
- Remove installation media



FreeBSD Handbook

- Chapter 2. Installing FreeBSD (FreeBSD 9.0 Release and Later)
 - <http://www.tw.freebsd.org/doc/en/books/handbook/bsdinstall.html>
- Chinese resources
 - https://www.tw.freebsd.org/doc/zh_TW/books/handbook/bsdinstall.html

Appendix

bsdinstall – Manual (UFS)

bsdinstall – Manual (UFS)

□ Guided Partitioning result



bsdinstall – (7) Manual

□ Guided Partitioning

- Select disk
- How to partition the disk
 - Entire Disk
 - Partition – use free space



bsdinstall – (8) Manual

□ Manual Partitioning



bsdinstall – (9) Manual

□ 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 – (10) Manual

□ Add partitions

- freebsd-boot
 - FreeBSD boot code. This partition must be first on the disk.



bsdinstall – (11) Manual

□ Final confirmation

