Step-by-Step Installing FreeBSD, version 12.2

The full FreeBSD installation guide is available from the FreeBSD Handbook online at:
https://www.freebsd.org/doc/en_US.ISO8859-1/books/handbook/bsdinstall.html

Get FreeBSD from a mirror located physically near you.
For our project, get the 64 bit (AMD64) image for USB flash drive (memory stick). For those unfamiliar with FreeBSD naming, the i386 branch is for 32bit Intel processors, while the amd64 branch is for both AMD and Intel 64 bit processors. All modern processors since Core-2 are 64 bit. The newest "N" series Intel Celeron supports the 64 bit instruction set and that is what we will use in this project.
https://www.freebsd.org/where.html#download
Look in image installers for amd64. The filename should be something like "FreeBSD-12.2-RELEASE-amd64-memstick.img.xz".

Use an unzip program such as 7-Zip www.7zip.org to unzip the xz file to just the img file.
Get Image Writer for Windows.
https://sourceforge.net/projects/win32diskimager/

Use the Image Writer utility to place the memory stick image on a flash (Pen) drive of at least 2GB capacity.

...:::WARNING:::...
Image writer will completely erase all existing data on the flash drive with the FreeBSD image file. After writing, the file system on the flash drive will not be recognized by Windows. This is not a problem. But, do not allow Windows to reformat the drive after the image has been written, or we will need to write the image again to the flash drive.

Place the flash drive in one of home gateway's rear panel USB ports. If the USB drive does not boot, go into your motherboard's BIOS and setup to boot from USB. (On my system, the USB booted automatically without any BIOS modifications.)

Save the BIOS settings, exit and reboot.

STEP 1 - Boot

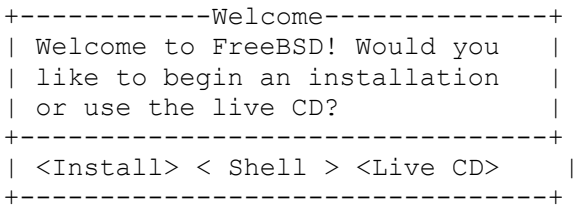
Now the PC will boot from the FreeBSD 12.2-RELEASE USB flash drive.

After the initial boot a text page of startup options will be displayed.

Press [Enter] or just let the counter count down to zero. The kernel will finish loading.

STEP 2 - The FreeBSD Installer

Next, the "sysinstall Main Menu" will be displayed.

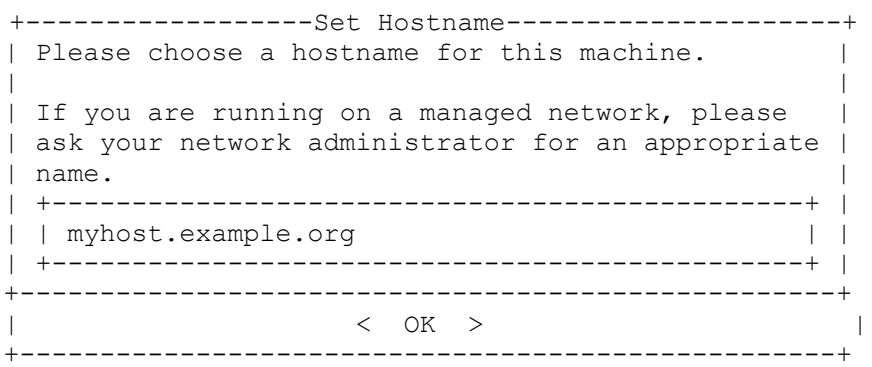


Use Arrow or Tab to select "Install". Press [Enter].

STEP 3 - Step 3 Keymap

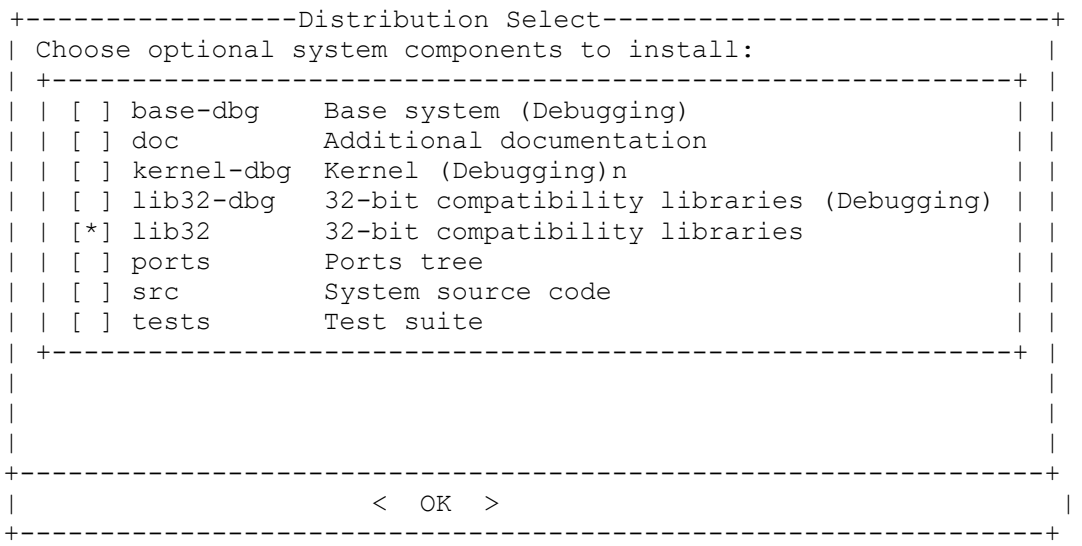
Next, on the 'Keymap Selection' page, just press [Enter] on ">>> Continue with default keymap" if this is a US keyboard.
Otherwise, select your keyboard using up/down arrow keys and press [Enter].

STEP 4 - Hostname



STEP 5 - Distribution Sets

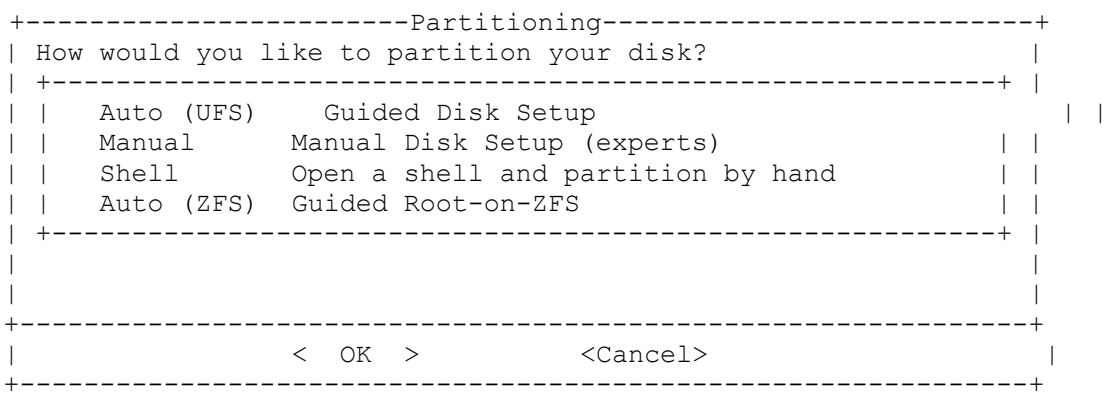
Select the distribution options to be installed. (Use arrow keys and select with [Space].) I recommend only a bare minimum of the lib32 (32bit application support). Ports can be manual installed by fetching the latest one via 'portsnap'.



Use the up and down arrow keys to highlight the options.
Press [Space] to change the option selection (*=selected).
Deselect 'ports'.
Leave the 'lib32' option, in case some 32bit code may need to run.
System source code is for a development system or kernel compilation.
Ports will be installed with latest, after the install.

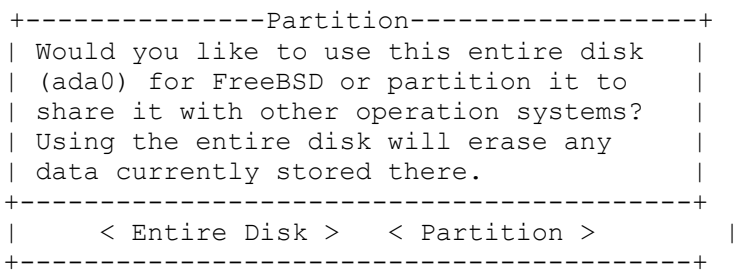
Press [Enter] to continue.

STEP 6 - Partitioning Method



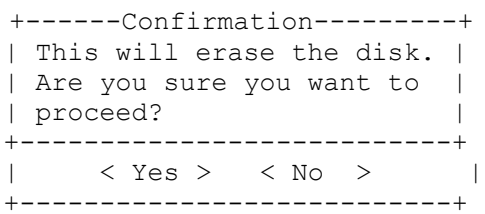
Just press [Enter] to use the default Auto (UFS) partitioning tool.
(Auto ZFS is required for software mirroring or RAID disks)

STEP 7 - Disc Partitioning



Just press [Enter] to use the entire disk for FreeBSD.

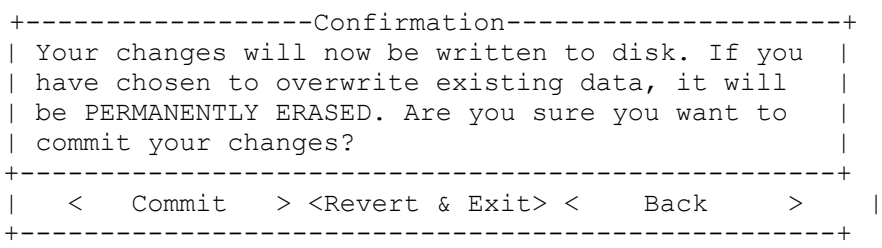
STEP 8 - Confirmation



Press [Enter] to continue ...

The partition editor will be displayed with default partitioning
for boot, root and swap.
Press [Enter] to continue ...

STEP 9 - Final Confirmation



Note: If this is NOT what you want to do, use [Tab] to
select 'Revert & Exit'.
This is the final confirmation. Up until now, nothing has been written
to the hard disk. Proceeding will erase all existing data.
Press [Enter] to continue ...

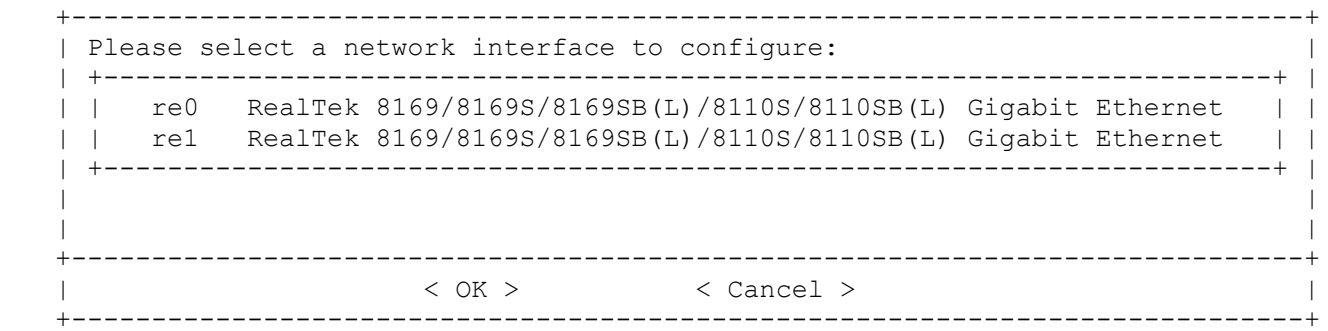
The installation extraction will proceed. It is very quick.

STEP 10 - Set root Password

The root password is very important. Make it secure and don't loose it.

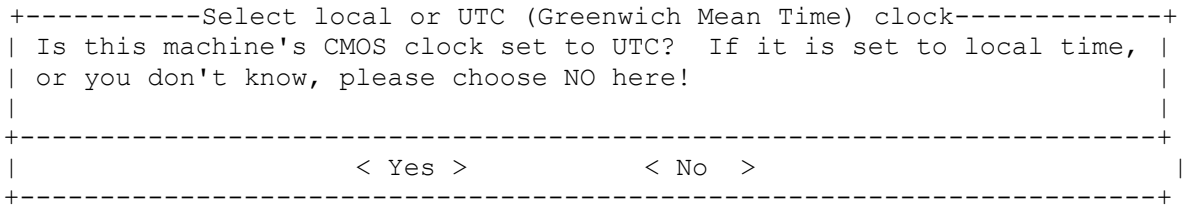
Enter the password twice.

STEP 11 - Network Configuration



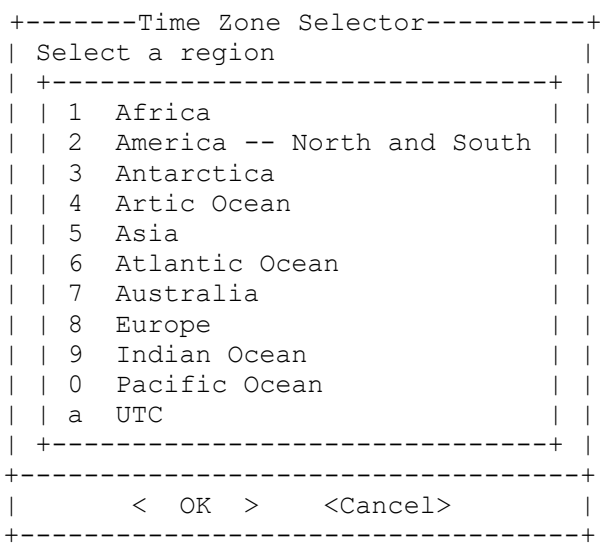
Select the interface to be configured first.
It can be configured for IPv4 and/or IPv6.
It can be DHCP client, or manually configured.

STEP 12 - Local time



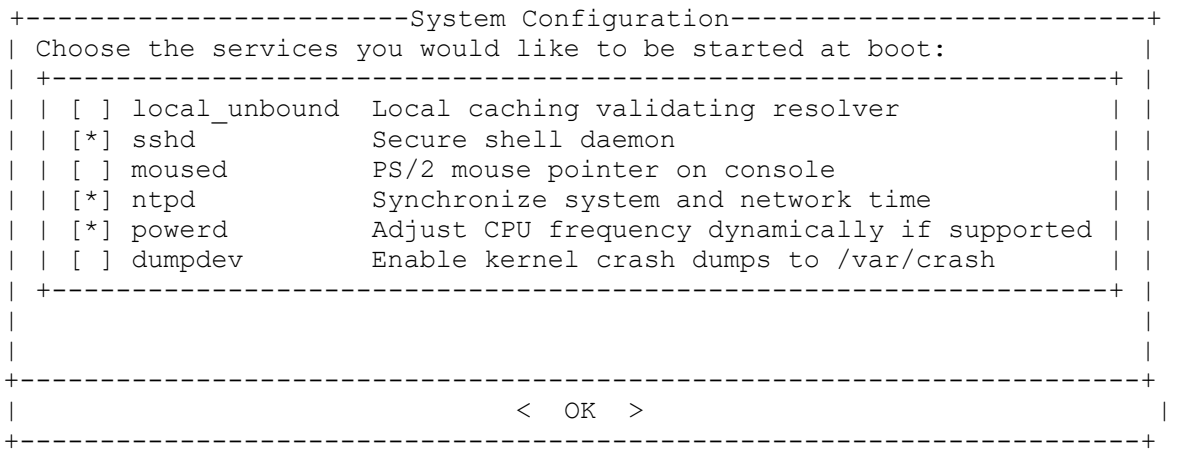
Normally the machine time is already set for local time,
so select 'No' and [Enter]

STEP 13 - Time Zone



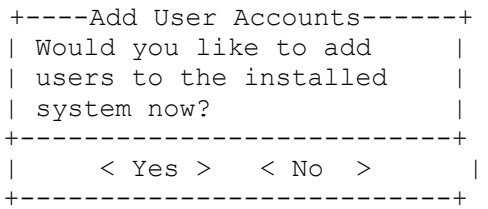
Choose a region and then a country
Verify and confirm setting

STEP 14 - System Configuration



Use the up/down arrow to select and [space] key to enable/disable.
This system is going to be a web server, without X11 or other GUI, and
therfore a mouse will not be required. Enable powerd option for enery saving.
Enable dumpdev for development systems.
Press [Enter] to continue ...

STEP 15 - Add User Accounts



For remote access via SSH, a normal user account is required. FreeBSD does not allow remote access via 'root' user. The correct method is to create a user, add them to the 'wheel' group so they can 'su' to root. FreeBSD does not have 'sudo', however it can be installed from Ports.

```
FreeBSD Installer
=======================
Add Users

Username: john [Enter]
Full name: John Doe [Enter]
UID (Leave empty for default): [Enter]
Login group [john]: [Enter]
Login group is john. Invite john into other groups? []: wheel [Enter]
Login class [default]: [Enter]
Shell (sh csh tcsh nologin) [sh]: csh [Enter]
Home directory [/home/john]: [Enter]
Home directory permissions (Leave empty for default): [Enter]
Use password-based authentication? [yes]: [Enter]
Use an empty password? (yes/no) [no]: [Enter]
Use a random password? (yes/no) [no]: [Enter]
Enter password: enter this user's password, twice
Enter password again: ********
Lock out the account after creation? [no]: [Enter]
OK? (yes/no): yes [Enter]
adduser: INFO: Successfully added (john) to user database.
Add another user? (yes/no): no [Enter]
```

STEP 16 - Final Configuration

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

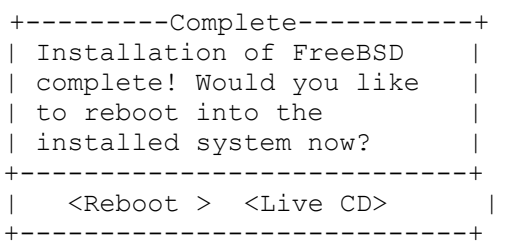
We have basically already done these, so it is time to exit. Press [Enter].

STEP 17 - Manual Configuration

```
+-------Manual Configuration----------+
| The installation is now finished.   |
| Before exiting the installer, would |
| you like to open a shell in the new |
| system to make any final manual     |
| modifications?                      |
+-------------------------------------+
|         < Yes >     < No  >          |
+-------------------------------------+
```

[Tab] or left arrow to 'Yes' if desired,
otherwise press [Enter] on 'No'.

STEP 18 - Reboot



The installation is complete, press [Enter] to reboot. Remove the USB flash drive.

For more information, see the FreeBSD Handbook.