

NetBSD Installation for the Washington University Gigabit Switch Kits Program

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NetBSD Installation Procedure

- I. Pre-Installation Preparations
 1. If necessary, install all hardware including ATM card in PC
 2. Have all figured out and handy the following information:
 - a. hostname
 - b. IP address
 - c. domain
 - d. IP address of gateway
 - e. IP address of nameserver
 - f. what netmask you will use (0xfffff0)
 - g. what kind of video card you have
 3. Retrieve the extra packages from the WUGS web site.
 4. Know whether you will be installing NetBSD on a system that already has a Windows system that you want to maintain.
 5. Visit <http://www.netbsd.org>
 6. Grab: <ftp://ftp.NetBSD.ORG/pub/NetBSD/NetBSD-1.3/i386/INSTALL>
 7. **Realize that you need to be relatively self sufficient when it comes to NetBSD.**

NetBSD Installation Procedure (con't)

II. Disk preparations for dual boot machines

If Windows is already installed it is probably taking up the whole disk. We can use a utility FIPS to squeeze the Windows partition onto a smaller partition on the disk and use the rest for NetBSD. For more information on FIPS see:

<http://karel.tsuda.ac.jp/~nitta/class1997/pro2/fips/fips.html>

<http://www.student.informatik.th-darmstadt.de/~schaefer/fips.html>

So far we have had pretty good luck with defrag and FIPS to get Windows onto a smaller partition. This may have just been lucky. Your experience may be different. Whatever you do, make a backup of your machine first if there is anything on it that is of value.

Try to get at LEAST 850MB for NetBSD. Our typical configuration on a new machine is at least a 4GB disk with 2.5GB for NetBSD and 1.5 for Windows.

1. Use defrag to defragment the Windows disk (perhaps use it with "Free Space Only".)
2. Boot the machine using a DOS boot floppy with the FIPS utility.
3. Run FIPS to squeeze the windows installation into a smaller partition so we can fit NetBSD on also.

NetBSD Installation Procedure (con't)

III. Boot from NetBSD-1.3 boot floppy

IV. Start of NetBSD Installation

1. NetBSD-1.3 Install System Menu screen:

a. Install NetBSD to hard disk

b. upgrade NetBSD on a hard disk

c. Re-install sets or additional sets

d. Reboot the computer

e. Utility menu

f. Exit Install system

V. Disk Partitioning

Warning about maybe needing to do a backup before the installation to save whatever is on your disk now.

1. Partition disk screen:

a. No

b. Yes

2. Find Disk Screen, tells you how many disks it found and which one to do the install on:

a. Ok

3. Geometry

a. Re-enter geometry

b. Continue with Install?

4. Disk Geometry screen:

NetBSD Installation Procedure (con't)

- a. Use Real geometry
 - b. Choose fake geometry
5. Exclude last cylinder:
- a. No
 - b. Yes
6. Use entire disk or only part. Select your choice:
- a. Use the entire disk
 - b. Use only part of disk
7. Choose size specifier:
- a. Megabytes
 - b. Sectors
 - c. Cylinders
8. Choose Partition to Edit:
- a. Edit partition 0 (NOTE end of partition 0!! e.g. 1507)
 - b. Edit partition 1
 - c. Edit partition 2
 - d. ...
 - e. ...
9. Select to change:
- a. Kind
 - b. Start and Size
 - c. Set active

NetBSD Installation Procedure (con't)

- d. Partition ok
10. Partition Kind
- a. NetBSD
 - b. DOS < 32 Meg
 - c. DOS > 32 Meg
 - d. unused
11. Select to change:
- a. Kind
 - b. Start and Size
 - c. Set active
 - d. Partition ok
12. Set start and size: (e.g. this example for a ~4GB drive where partition 0 ended on 1507)
- a. start: 1508
 - b. size: 2500
13. Select to change:
- a. Kind
 - b. Start and Size
 - c. Set active
 - d. Partition ok
14. Select to change:
- a. Kind

NetBSD Installation Procedure (con't)

- b. Start and Size
- c. Set active

d. [Partition ok](#)

15. NetBSD-1.3 Install System Menu screen:

a. [Install NetBSD to hard disk](#)

- b. upgrade NetBSD on a hard disk
- c. Re-install sets or additional sets
- d. Reboot the computer
- e. Utility menu

f. [Exit Install system](#)

16. **OR** Choose Partition to Edit:

- a. Edit partition 0 (NOTE end of partition 0!! e.g. 1507)
- b. Edit partition 1
- c. Edit partition 2
- d. ...

e. [Exit](#)

NetBSD Installation Procedure (con't)

VI. Operation System Installation

1. How Unix partitions will be set up

Choose your installation:

a. Standard

b. [Standard with X](#)

c. Custom

2. Unix Partitions: (i.e. /, /usr, swap, ...)

a. [Partitions OK](#)

b. Change a partition

3. Please enter a name for your NetBSD disk [mydisk]:

mydisk is fine, you can put your hostname here, whatever

4. Ready to Install. **Last chance before anything changes on disk.**

a. No

b. [Yes](#)

5. Loading basic NetBSD

<Lots of messages as it loads...>

If Target Filesystems look good...

.... fetch and unpack distribution filesets

[Press return to proceed.](#)

NetBSD Installation Procedure (con't)

Your disk is now ready for installing ...

6. Select Medium for retrieval of the rest of NetBSD

- a. [ftp](#)
- b. NFS
- c. cdrom
- d. ...
- e.

7. Network device [ep1]

I have found the following network interfaces: ep1

Network device [ep1]:

<give the name of your ethernet device>

8. Network configuration information

domain:
hostname:
IP Address:
gateway:
nameserver:
netmask:
media type:

9. Are values ok?

- a. [Yes](#)
- b. No

NetBSD Installation Procedure (con't)

10. Directory for FTP [/usr/INSTALL]?

11. FTP site [ftp.netbsd.org]? <You can also go to:>

[wuarchive.wustl.edu](#)

12. Directory [<default at ftp.netbsd.org>]:

for wuarchive use:

[/systems/unix/NetBSD/NetBSD-1.3/i386/binary/sets](#)

13. Get distribution

<ftps a bunch of stuff>

14. Select your distribution:

- a. [Full installation](#)
- b. Custom installation

15. Do you want to see file names?

- a. [No](#)
- b. Yes

16. Extraction

<some messages about extracting...>

17. All selected distribution sets unpacked successfully.

Hit enter to continue.

- a. [OK](#)

Making device files...

18. Is network information accurate for this machine in regular operation and do you want it installed in /etc [y]?

19. Installation complete. (Message about needing to change rc_configured=YES in /etc/rc.conf. We'll do that later.)

NetBSD Installation Procedure (con't)

VII. Installation of dual boot server, OSBS

1. put in DOS Boot disk with OSBS
2. NetBSD-1.3 Install System Menu screen:
 - a. Install NetBSD to hard disk
 - b. ...
 - c. ...
 - d. [Reboot the computer.](#)
 - e. ...

3. Comes up to DOS A> prompt:

A> OS-BS (is this correct spelling?)

Then select the Install menu and follow instructions.

Set things up so it boots NetBSD by default and leave about a 10 second timeout to give you a chance to select Windows as an alternative.

VIII. NetBSD details

1. remove floppy from drive and reboot
<bunch of boot messages...>
Enter pathname of shell or RETURN for **sh**
2. Now you are in Unix single user mode
3. Change the setting of rc_configured to YES in /etc/rc.conf
> mount -a
> TERM=pc3
> export TERM
> vi /etc/rc.conf
<change it, save and quit.>
4. set up /etc/myname file so it has your hostname in it
> cat > /etc/myname
kits7
^D <ctrl-d>
> reboot
5. Now your system is in Unix multi-user mode
6. log in as root (there isn't a password yet.)
7. change the root password
> passwd

IX. Install extra packages

1. retrieve bundle of packages from WUGS web site

```
> cd /usr
> mkdir INSTALL
> cd INSTALL
<ftp the file from somewhere...>
> ls
  WUGS_Packages.tgz
> tar -xzf WUGS_Packages.tgz
> ls
  install.sh ldconf *.tgz ...
> chmod 755 install.sh # probably unnecessary now
> ./install.sh

Installing the X Window System
Installing WUGS
Installing NetBSD Kernel source
Installing local packages
```

2. After successful installation, you may want to **carefully**:

```
> cd /usr
> rm -rf INSTALL
```

You will now have things like:

- X Windows
- WUGS Software
- emacs
- netscape
- shells
- fvwm, fvwm2
- lesstif
- NetBSD kernel source

X. NetBSD kernel building

1. set up a local kernel configuration file to modify

> cd /usr/src/sys/arch/i386/conf

> cp GENERIC WUGS

2. edit WUGS

- a. uncomment the line (or put it in if there isn't one. It should go after the section labelled "ISA network interfaces")

options NATM

- b. uncomment the line:

```
pms0 at pckbd? irq 12      # PS/2 auxiliary port
mouse
```

- c. unneeded drivers?

you can take out a lot of unneeded driver support if you know what you are doing. It is probably best to leave it alone for now and build a first kernel and verify that everything, including NATM, is working. Then you can save that kernel and play with removing other stuff.

- d. configure and build kernel

> config WUGS

> cd ../compile/WUGS

> make depend

< lots of make output...>

> make

< lots of make output...>

> mv /netbsd /netbsd.bak

> cp netbsd /netbsd

> reboot

- e. When it finishes rebooting you should have a working NetBSD system which supports NATM

XI. Configuring the ATM interface

1. set up /etc/netstart.local. here is sample for kits1

```
#!/bin/sh
# kits1.arl.wustl configuration:
ifconfig en0 inet 128.252.50.114 netmask 0xfffff00
broadcast 128.252.50.240 up
# add a route to kits6 over ATM VCI 200
route add -iface 128.252.50.119 -link en0:1.0.0.c8
```

XII. Local Time

1. You may want to go in and change the /etc/localtime file so that it points to the appropriate timezone info for your time-zone. For use here in St. Louis, use:
 - > cd /etc
 - > rm localtime
 - > ln -s /usr/share/zoneinfo/CST6CDT /etc/localtime

XIII. X Window System configuration

1. log in as root

```
> cd /usr/X11R6/bin
> ./XF86Setup
Press [Enter] to switch to graphics mode
This may take a while...
Press [Enter] to continue ...
```

<GUI comes up slowly ...be patient...>

2. First try the mouse. If it doesn't cause the cursor to move then we need to configure the mouse first.
3. The mouse button at the upper left is probably already selected but if it isn't, [TAB] until it is, then hit [Enter]
4. There will be a screen about <something> with a Dismiss button at the bottom. Hit [Enter] to dismiss it.
5. [TAB] until you select Mouse Systems, then hit [Enter].
6. [TAB] until you get into the list of mouse devices
7. Arrow down to select /dev/pms0, then hit [Enter]
8. Arrow down to select "Enable 3-button Mouse", hit [Enter]
9. hit 'a' for Apply.
10. Now you should be able to move the cursor with the mouse.
11. Select Card (top row of buttons)

12. Find your video card in the list, Select it.
13. Select Monitor (top row of buttons)
14. Find your monitor in the list, Select it.
15. Select Done
16. Select Okay.
17. The X Server should start now and give you a screen to tune it, save the configuration and exit, etc...
Select save configuration and exit.
18. If anything goes wrong, <ALT-Backspace> kills X Server.
19. Do you want to create an 'X' link to the Mach64 (or whatever) server?
The link will be created in the directory: /usr/X11R6/bin.
Okay (y/n)? **y**
Link created successfully.
Press [Enter] to continue.
20. Configuration complete.
21. Individual users will have to create their own local configuration and startup files for X and whatever window manager they want to use.

XIV. Add a 'wugs' user

1. adding the login:

```
> cd /etc
```

```
> vipw
```

This will put you into a 'vi' session to edit the password file. Add this line to the end:

```
wugs:*:104:31::0:0:WUGS KITS USER:/usr/home/wugs:/usr/local/bin/tcsh
```

2. add the home directory:

```
> mkdir /usr/home
```

```
> mkdir /usr/home/wugs
```

```
> chown wugs.guest /usr/home/wugs
```

```
> chmod 700 /usr/home/wugs
```

3. make wugs owner of all of WUGS software:

```
> chown -R wugs.guest /usr/wugs
```

XV. Configuration or 'wugs' stuff

1. logout and log back in as wugs
2. set a password for the wugs account
3. add X and fvwm2 startup files

```
> cd /usr/home/wugs
```

```
> ftp www.arl.wustl.edu
```

```
<use anonymous for user name>
```

```
<use email address for password>
```

```
ftp> bin
```

```
ftp> cd pub
```

```
ftp> get wugs_startup_files.tar
```

```
ftp> quit
```

```
> tar xvf wugs_startup_files.tar
```

```
> chown wugs.guest .[a-zA-Z]*
```

4. Try starting X windows:

```
> xinit
```

XVI. WUGS Software rebuilding

1. take a look at the global Makefile: /usr/wugs/src/Makefile
2. build everything:

```
> cd /usr/wugs/src
```

```
> make
```

```
< lots of make command stuff...>
```

```
> cd /usr/wugs/bin/NetBSD
```

```
> ls -l
```

```
< see that things really haven't changed>
```

3. do a clean

```
> cd /usr/wugs/src
```

```
> make clean
```

```
< lots of make command stuff to remove object files ...>
```

4. build and install!

```
> cd /usr/wugs/src
```

```
> make install
```

```
< lots of make command stuff ...>
```

```
< some messages about stuff being installed ...>
```

```
> cd /usr/wugs/bin/NetBSD
```

```
> ls -l
```

```
< has anything changed?>
```

XVII. WUGS Software Testing

1. Try running GBNSC and Jammer
2. Try setting up Video connection from earlier exercises
3. Try setting up IP connections from earlier exercises