1. Introduction

This document defines the contents of PNX Field Trial Release 3.0 B. It also contains instructions on the installation of PNX from the floppy disk set.

2. Floppy Disk Set

The Field Trial Release is issued on 16 single density floppy disks. With each set there are 4 boot floppies, one for each possible hardware type.

Disk Label	Contents
PNX 3.1.0	PERQ 1 Boot 4K WCS
PNX 3.2.0	PERQ 1 Boot 16K WCS
PNX 3.3.0	PERQ 2 Boot 16K WCS
PNX 3.3a.0	PERQ 2 Boot 16K WCS 5.25" Disk
PNX 3.4.0	Full Kernel & Window Manager
PNX 3.5.0	C Compiler
PNX 3.6.0	Utilities 1
PNX 3.7.0	Utilities 2
PNX 3.8.0	Utilities 3
PNX 3.9.0	Utilities 4
PNX 3.10.0	Utilities 5
PNX 3.11.0	Utilities 6
PNX 3.12.0	Utilities 7
PNX 3.13.0	Utilities 8
PNX 3.14.0	Manual 1
PNX 3.15.0	Manual 2
PNX 3.16.0	Learn
PNX 3.17.0	Learn & Spell
PNX 3.18.0	Demonstration
FOR 3.1.0	Fortran 77

Note: Disks 3.14.0 through 3.17.0 are not available with the initial distribution of the Field Trial Release.

3. Documentation

  1. PERQ Guide to PNX, Edition 2 with errata
  2. Establishing IPA under PNX
  3. Reader's Comment Sheet
  4. Software Report Form

4. New Facilities included with this release

  1. Support for Micropolis M1303 5.25" disk drives
  2. Support for Landscape Monitors
  3. Bad Block Processing

5. Installing PNX 3.0 B

A machine may be upgraded from an earlier version of PNX, or a new machine (or POS machine) may have PNX installed for the first time.

5.1. Upgrading existing PNX

  1. Select the appropriate boot floppy and boot the PERQ.

  2. The System identifies itself as follows:

System: PNX
Version: 3.0
Node: ??
Microcode: 3B16.5.1
Bootstrap: 2.20
User Memory: 790528

  3. PNX prompts for the date. Replay and confirm.

  4. The heading

   International Computers Limited
   Release 3.0 Field Trial B
   PNX Operation System

   is displayed on the screen

  5. Reply with 'root' to the login: and the password: prompts.
   The system responds with #.

  6. Type 'updatepnx'. The contents of the boot floppy are copied to hard disk.
   On completion, the message PNX CLOSED DOWN is displayed.

7. Remove the boot floppy. Press the boot button(booting from hard disk).
Steps 2 through should be repeated.

   Note: 1) /etc/fsck will run
         2) You may have a password other than root.

8. Insert disk 3.4.0 and type prime. The contents of the floppy are copied
to the hard disk. On completion, the message PNX CLOSED DOWN is displayed.
Remove floppy 3.4.0 from the drive.

9. Reboot the PERQ; repeat steps 2 through 5 again.

10. Insert the next floppy in the floppy drive and type prime. When the
appears, remove the floppy from the drive.

11. Repeat step 10 for the remaining floppies.

12. Type /etc/wetc/wsetup   This sets up the windows for the Window Manager.

   NOTE: Do not attempt to use the window manager until steps 11 and
         12 have been performed.

5.2. Installing PNX for the first time

NOTE: This erases all present contents of the hard disk.

1. Refer to section 5.1 and perform steps 1 through 5.

2. Type 'makepnx'. The hard disk has a PNX filestore format installed and the
contents of the boot floppy are copied to it. (approx. 20 minutes)
On completion, the message PNX CLOSED DOWN is displayed.

3. Refer to section 5.1 and perform steps 7 through 12.

5.3. Kriz Tablet

The system is supplied for use with the Summagraphics tablet. In order to use the Kriz tablet type:

1. rm /dev/tablet

2. /etc/mknod /dev/tablet c 12 0 (for portrait tablet absolute mode)
   or
   /etc/mknod /dev/tablet c 12 1 (for portrait tablet relative mode)
   or
   /etc/mknod /dev/tablet c 12 8 (for landscape tablet absolute mode)
   or
   /etc/mknod /dev/tablet c 12 9 (for landscape tablet relative mode)

R10139 <u>Guide to PNX</u>, Second Edition (2)

<u>Purpose of notice</u>

This publication notice introduces new information, and amends existing
information, in the light of product changes

The second sentence of the second paragraph should read:

PERQ2 is the term used to refer to the PERQ hardware equipped with a 5 1/4 inch Winchester type hard disc.

The first item should read as follows

★ An A4 size high resolution graphics display screen, designed so that its longer side stands vertically, is standard. This arrangement is referred to as a portrait screen. Also available is an optional high resolution screen, almost twice the size of the portrait screen, which has its longer side horizontal. This is known as a landscape screen.

The portrait screen, with its 1024 x 768 bit mapped raster display and 60 Hz refresh rate, and the landscape screen, with its 1280 x 1024 bit mapped raster display and 60 Hz refresh rate, both allow the presentation of extremely detailed diagrams, many different fonts for text, and real animation. Additional hardware instructions, RasterOp, Line and DrawByte, enable all or part of the display to be changed by a single instruction.

- The third item should read as follows:

✱ The standard graphics tablet is designed to match the portrait screen. It has a three button pointing device (the puck) which can be used to input or construct diagrams or point to parts of the display. An optional graphics tablet is available for the landscape screen, and is similar in construction and use to the portrait tablet.

Page 2-2 Section 2.1.2

The last paragraph should read:

The supplied system is set up to use the Summagraphics Bit Pad Tablet. In order to use the Kriz portrait tablet issue the following two command lines:

rm /dev/tablet
/etc/mknod /dev/tablet c 12 0

In order to use the Kriz landscape tablet issue the following two command lines:

rm /dev/tablet
/etc/mknod /dev/tablet c 12 8

Page 2-11 Section 2.3.3.3

A third of the way down the page is a line beginning with the word fsck. The second sentence following should read:

This file normally contains the string /dev/hard, so the command checks the fixed disc; in the case of a system which has two hard discs, the file should also contain the string /dev/hd1 if the second hard disc is to be checked.

Page 6-2 Table 6.1

After /dev/hard, four additional entries are required:

/dev/hd0	b	0	0	Primary hard disc
/dev/bhd0	b	0	1	To write bootstraps onto primary, and to pick up the bad block map
/dev/hd1	b	0	2	Secondary hard disc
/dev/bhd1	b	0	3	To pick up the bad block map

Note hd0 and hard are synonyms: either may be used with identical result.

Page 6-2 Table 6.1

The entry for /dev/tablet should read as follows:

/dev/tablet	C	12	0	Portrait tablet absolute tracking
	C	12	1	Portrait tablet relative tracking
	C	12	8	Landscape tablet absolute tracking
	C	12	9	Landscape tablet relative tracking

The paragraph should read as follows:

Fixed discs are not usually accessed directly. Ordinary files and directories on a fixed disc are accessed using system calls issued by utilities or programs.

It is possible to access a fixed disc as a single device using files specially provided for this purpose. (See hard(4).)

The following sections should be added:

6.3.1 Disc flaw block handling

The 5 1/4 inch fixed discs which form part of PERQ have flaws which arise during their manufacture. This is quite common in the case of such magnetic media, and the manufacturer provides a map giving the location of the flaws. When the discs are installed in PERQ they are formatted using BBMAP (1) and the information from the flaw map is converted into block addresses (cylinder, head and sector). The block addresses are then written to the disc in a known place, outside the area used by the filesystem.

6.3.2 Flaws detected after installation

Any flaws which occur after the system is built will need to be detected, and their location added to the list of flawed block addresses, which is known as the bad block list. This is catered for by software which, on detection of a new disc flaw, will ask for the system to be rebooted and fsck(1) run. This process will add the location of the new flaw to the bad block list.

6.3.3 Using Two Disks

The standard PERQ is equipped with a single disk drive, which contains the whole file structure for the machine, as well as a swapping area and an area to hold the bootstrap. On some PERQ 2 models, a second hard disk drive can be fitted which can hold part of the filesystem. This section describes how the extra space is used.

6.3.4 Mounting Filesystems

Although the root of the file system is always stored on the boot device, whether it be the floppy or the hard disk, it is not necessary that the entire file system hierarchy reside on this device. There is a mount system request with two arguments: the name of an existing ordinary file, and the name of a special file whose associated storage volume (a floppy disk, or second hard disk drive) has the structure of an independent file system containing its own directory hierarchy. The effect of mount is to cause references to the heretofore ordinary file to refer instead to the root directory of the file system on the new volume. In effect, mount replaces a leaf of the hierarchy tree (the ordinary file) by a whole new subtree(the hierarchy stored on the subsidiary volume). After the mount, there is virtually no distinction between files on the second volume and those in the root file system.

There is one exception to the rule of identical treatment of files on different devices: no link may exist between one file system hierarchy and another. This restriction is enforced so as to avoid the elaborate bookkeeping that would otherwise be required to assure removal of the links whenever the removable volume is dismounted.

An example of this is the way PNX file store floppy disks are accessed. The floppy disk itself contains a distinct file system, with a root directory and a number of subsidiary directories. The PNX mountflop command mounts the floppy onto the ordinary file /fd so that the root of the flopy is mapped onto the directory /fd.

6.3.5 Organising Multiple Disks

If only one hard disk is available, the entire file system hierarchy
resides on the one disk, and the space can be used arbitrarily. If a
second disk is available, then the total space available is somewhat
greater, but the space available is then divided by the requirement that
no links can cross from one file system to the other. This means that
the second disk must hold a complete subtree of the hierarchy.

The standard system is built such that the second disk contains all of
the /usr subtree, and this gives a substantial increase in the space
available for user files. Some performance improvements are also
possible, since the swap device and the user filestore are then
decoupled. The second disk drive will normally be mounted automatically
when the system goes into multi-user mode.

To make full use of the space released on the root file system, the
System Administrator should consider adding an additional subtree to the
root device, possibly as a second user subtree. Different users can then
be allocated to home directories on each disk.

Page A3-157 WINIT(1)

The second sentence of the description should read as follows:

The system window appears at the top right hand corner of the portrait screen
or near the top centre of the landscape screen.

Page A3-237 TABLET(4)

The data for the standard tablet in the description should read:

```
minor device number=any   /*
0=absolute portrait
1=relative portrait
8=absolute landscape
9=relative landscape
```

Name

bbmap - bad block format translator

Synopsis

bbmap device secpertk tkpercyl cyls (bootsize)

Description

BBMAP reads the manufacturer supplied bad block map from a 5 1/4 inch
disc, and translates the physical addresses into filesystem block numbers.
The bad block map starts at sector 8 on track 1, cylinder 0. The default
size for the reserved area which separates the basic device from the
filestore is 300 blocks, but an optional fifth parameter can override
this.

Files

/etc/bbmap

See also

bbadd(1), bbswap(1)

Diagnostics

Appropriate messages are output if the bad block list looks garbled.

Name

hard, hd0, hd1 - PERQ fixed disc

Description

The file hard gives access to the PERQ fixed disc filestore area as a single sequentially addressed file. Machines which have two fixed discs can access them as hd0 and hd1. For compatibility, on two disc machines hard is designed to be a synonym for hd0.

Files

/dev/hd0	Primary hard disc device, logical block 0 is at physical block 300
/dev/hard	Synonym for /dev/hd0 for compatibility
/dev/hd1	Secondary hard disc device, logical block 0 is at physical block 300
/dev/bhd0	Used only for writing bootstraps onto primary drive, and picking up the bad block map. Logical block number 0 is at physical block 0
/dev/veryhard	Synonym for /dev/bhd0 for compatibility.
/dev/bhd1	Used only for reading the bad block map from the secondary disc drive. Logical block 0 is at physical block 0.

Diagnostics

Error at block n of the hard disc, recovered after m retries.
Unrecoverable error at block n of the hard disc.
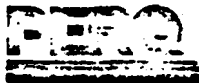
TP no.	Title (Notice no.)	Date

R10139   Guide to PNX, Second Edition (1)
R10125   Unix Programmer's Manual Volume 1, Seventh Edition (1)   21/2/84

Purpose of notice

This publication notice provides additions and corrections to the publications
listed above.

Page 2-3 Section 2.2.1

The final sentence should be extended to read as follows:

If fsck finds an error the single user login prompt appears, or else the message *****BOOT PNX (NO SYNC!)*****. In the latter case the PERQ should be rebooted without trying to input any commands.

Page 2-14 Item 5

The second sentence should read:

This instruction lists out the transport address file so you can check that you have entered everything; the list also supplies the network address of the local machine.

Page 3-7 Table 3.1

An additional command is available:

| terminate | Closes down window manager | Entering terminate into the system window |

Page 3-13 Section 3.3.2.1

The final line should read:

2   Typing q followed by RETURN at the keyboard

Page 4-8 Section 4.1.6.2

The paragraph before the end should read:

The black cue bar represents the current display. Pressing the Mark button marks this display with a white downpointing triangle on the lower part thumb bar so that you can return to it easily.

Page 4-13 Section 4.1.10

The third sentence should read:

When you press the button, GLOBAL highlights to show that it is selected.

Page 4-18 Table 4.2

Item 2 in the Issue commands box should read:

| 2   Press the command button | Command Menu |

Page 5-13 Table 5.2

The entry in the Purpose column of the Help command should read:

Displays the name
of the help file
/usr/lib/cfedra
/cedra.hlp

Page 6-3 Table 6.1

Line 4 of the table should read:

| /dev/ep | c | 6 | 35 | Electrostatic Printer/Plotter |

Page 6-3 Section 6.2.1

The last sentence on the page should read:

The default is single density so if you want the disc to be double density you must specify the /doubledensity switch before issuing the format command.

Page 6-10 Table 6.2

The entry for the third printer type should say:

ICL 6202/03	As for the	lpc	lpdcr
Correspondence	ICL 6202/02		
Printer			

Page 6-10 Section 6.10.1

The entry for the fourth printer type should say:

ICL 6203 Electrostatic	/etc/mknod	/dev/ep	c	6	35
Printer/Plotter					

Page A2-1

Item 1 of the second paragraph should read:

1   A √ indicates the Version 7 item is supported

Page A2-4

Line 2 should read as follows:

iostat   report I/O statistics   UNIX 7

Page A3-15

The last sentence of the DESCRIPTION should read:

cedra commands are described in the help file /usr/lib/cfedra/cedra.hlp

Page A3-43

Add the following note to the bottom of the page:

See also Appendix A4, page A4-14 for details of the -N option

Page A3-83

Synopsis should read:

mkflop [-f] [-o] [-d] [-rt11] [-b]

The second sentence of the description should read:

If all options are omitted, mkflop formats and sets up a single density PNX style file store floppy.

The third parameter, which commences '-s', should read:

-d creates a double density floppy. Filestore type is determined by default or by -rt11 option

Page A3-131

After the second sentence in the objectfile paragraph of the DESCRIPTION there should be an additional sentence as follows:

The object file created by using SDB is significantly larger than that created without the -g option.

<u>Page A3-139</u>

The paragraph starting with the word <u>slaveft</u> in the DESCRIPTION should read:

<u>slaveft</u> must be loaded originally by the user of the responder machine by inserting an entry /etc/slaveft & at the end of file /etc/rc. The machine needs to be rebooted to activate this file. The machine will then respond to any other user from an <u>nftp</u> PNX PERQ or from PERQFTP on a POS PERQ.

<u>Page A3-159A</u>

An additional page A3-159A forms page 5 of this notice.

<u>Page A3-197</u>

Line 3 of DESCRIPTION should read

3 q is typed at the keyboard

<u>Page A4-3   Section A4.1.1.11</u>

After the line beginning '73+' an additional sentence is required:

There is a restriction of 18 continuation lines in FORTRAN77, making 19 in all.

<u>Page A4-6   Section A4.1.3.2</u>

An additional item (7) applies to 'Opening files':

7   If a unit has been implicitly opened, then a read statement on the unit will ignore any spaces in the input record which appear within a field described by a numeric conversion code. An explicit open statement which assigns a string value of ZERO to the BLANK specifier will ensure that spaces (other than leading spaces) are interpreted as zeros

<u>Page A4-7   Section A4.1.3.2</u>

An additional item (7) applies to 'Input/output':

7   A read statement on an internal file which specifies list directed formatting will not be reported as incorrect, but will result in _s_rsli and _e_rsli being reported as missing externals at load time

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<u>Page 109</u>

The following note applies to LOOK (1)

To ensure correct operation, the <u>file</u> being consulted must have been sorted with the same options as those being used with <u>look.</u>

Name

wmrunning - determines whether the window manager is running

Synopsis

wmrunning

Description

wmrunning determines whether window manager is running, in which case it
returns an exit status of 0. If the window manager is not running, a value of 1
is returned, unless /dev/screen is unreadable, in which case an exit status of
2 is returned.

Example

In this example in a user's .profile, wmrunning is used to run the window
manager if it is not already running:

```
if    wmrunning
then :
else winit
fi
```