Adding A JetDirect Queue In AIX 4.1

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About This Document

The following steps should be taken when adding a JetDirect Network Printer in AIX 4.1.x. This is a step-by- step guide, and has been verified to be true on AIX 4.1.1 and AIX 4.1.2.

Adding A JetDirect Queue

Through smit, bring up the following menu to add a Print Queue.

```
lqqq
```

Software to support the printer attachment type you selected is not installed. Press Enter to install software support packages for printer attachment types (and printers).

This will bring up the following menu to install software.

```
Install Additional Printer/Plotter Software
[Entry Fields]
* INPUT device / directory for software      [ ]   +
HIT F4 to get the following menu.
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x                  INPUT device / directory for software     x
x                                                           x
x Move cursor to desired item and press Enter.              x
x                                                           x
x   /dev/rmt1.1 (2.3 GB 8mm Tape Drive)                     x
x   /dev/fd0 (Diskette Drive)                               x
x   /dev/cd0 (CD-ROM Drive)                                 x
x   /usr/sys/inst.images (Install Directory)                x
```

Select drive and hit enter

```
Install Additional Printer/Plotter Software
[Entry Fields]
* INPUT device / directory for software          /dev/rmt1.1
* SOFTWARE to install                [ ]           +
Hit F4 to go to selection menu.
Wait.............until menu appears
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x                            SOFTWARE to install              x
x                                                             x
x Move cursor to desired item and press F7. Use arrow         x
x keys to scroll.                                             x
x     ONE OR MORE items can be selected.                      x
x Press Enter AFTER making all selections.                    x
x                                                             x
x [TOP]
x  #-------------------------------------------------------
x  # + = No license password required                        x
x  # $ = License found                                       x
x  # ! = No license found                                    x
x  # @ = Currently installed                                 x
x  #                                                         x
x  # The "all_licensed" filter will include filesets with    x
x  # "+" and "$".                                           x
x  #------------------------------------------------------- x
x  4.1.0.0  printers                                    ALL x
x [MORE...112]
x                                                             x

hit / [enter]
```

```
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x                          Find                                           x
x                                                                         x
x Enter Search Pattern.                                                   x
x                                                                         x
x [ ]
x                                                                         x
```

type jet and hit enter.

```
x                    SOFTWARE to install                                  x
x                                                                         x
x Move cursor to desired item and press F7. Use arrow                     x
x keys to scroll.                                                         x
x     ONE OR MORE items can be selected.                                  x
x Press Enter AFTER making all selections.                                x
x                                                                         x
x [MORE...28]
x     + 4.1.0.0  Bull Compuprint PageMaster 970                           x
x     + 4.1.0.0  Bull PR-88                                               x
x     + 4.1.0.0  Canon Laser Shot LBP-A404PS/Lite                         x
x     + 4.1.0.0  Canon Laser Shot LBP-B406/S/DA404                        x
x     + 4.1.0.0  Canon Laser Shot LBP-B406G                               x
x     + 4.1.0.0  Common Bull 970/1070 fonts                               x
x     + 4.1.0.0  Dataproducts BP2000 Line Printer                         x
x     + 4.1.0.0  Dataproducts LZR 2665 Laser Printer                      x
x     + 4.1.0.0  Hewlett-Packard JetDirect Network Printer                x
x                Attachment                                               x
x [MORE...84]
```

Select the JetDirect line and hit enter.

```
Install Additional Printer/Plotter Software
[Entry Fields]
* INPUT device / directory for software         /dev/rmt1.1
* SOFTWARE to install        [+ 4.1.0.0  Hewlett-Pac> +
```

Hit enter to install

```
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x                     ARE YOU SURE?                                       x
x                                                                         x
x Continuing may delete information you may want                          x
x to keep.  This is your last chance to stop                              x
x before continuing.                                                      x
x     Press Enter to continue.                                            x
x     Press Cancel to return to the application.                          x
x                                                                         x
```

Hit enter again

This will bring the following screen:

```
COMMAND STATUS
Command: running       stdout: no            stderr: no
installp:  APPLYING software for:
printers.hpJetDirect.attach 4.1.0.0
```

Hit F10 to exit

```
#smitty mkvirprt
lqqq
```

```
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x                        Printer Type                                       x
x                                                                           x
x Move cursor to desired item and press Enter.                              x
x                                                                           x
x   hplj-2    Hewlett-Packard LaserJet II                                   x
x   hplj-3    Hewlett-Packard LaserJet III                                  x
x   hplj-3si  Hewlett-Packard LaserJet IIISi                                x
x   hplj-4    Hewlett-Packard LaserJet 4,4M                                 x
x   Other (Select this if your printer type is not listed                   x
x   above)                                                                  x
x                                                                           x
x F1=Help                 F2=Refresh              F3=Cancel                 x
Select model
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x                    BOOTP/TFTP Server                                      x
x                                                                           x
x Move cursor to desired item and press Enter.                              x
x                                                                           x
x   1 Make this system a BOOTP/TFTP server                                   x
x   2 Do NOT make this system a BOOTP/TFTP server                           x
x                                                                           x
x F1=Help                 F2=Refresh              F3=Cancel                 x
x F8=Image                F10=Exit                Enter=Do                  x
```

Select appropriate connection type:

1. This is used if you have an external jetdirect card. Or if you wish to use bootp to give your internal jetdirect card its IP address.
2. This is used if you have programmed your internal jetdirect card's IP address from the front panel of the printer. It can also be used if you have already setup a queue using selection number 1, or if another system on your network is providing bootp service to the jetdirect card. The best way to test if you can use this selection is if you can ping the printer by hostname. If so, select option 2.

If option 2 is selected, the last three fields (HW addr, GW addr, SUBNET) will not be present, in the example below:

```
[Entry Fields]
Description                          Hewlett-Packard LaserJ>
Names of NEW print queues to add
PCL                                              [hppcl]
PostScript                                       [hpps]
HP-GL/2                                          [ ]
Printer connection characteristics
* HOSTNAME of the JetDirect Card                  [hp3]
* HARDWARE ADDRESS of the JetDirect Card  [1000090EAAC39]
GATEWAY ADDRESS                                  [ ]
SUBNET MASK                                      [255.255.255.0]
COMMAND STATUS
Command: OK            stdout: yes           stderr: no
```

Before command completion, additional instructions may appear below.

```
Added print queue 'hppcl'.
Added print queue 'hpps'.
```

Problem Trouble Shooting Tips / Diagnostics

- Problem: The job sits in the queue with status "RUNNING" ("lpstat" command will show status) and does not print.

  Cause: The JetDirect card is probably not booted up and never received tftp packets. Probably faulty cables or unterminated ethernet lines.

  Solution: If you have any other hosts on the same net, verify that they can still communicate with no errors. Check cables and termination.

- Problem: Can you ping the hostname? Can you ping the TCP/IP address of the hostname?

  Solution: Check the IP address of the printer by printing out a test page to see if the IP address is indeed on the printer. Then check to see if the IP address is the same as the one you have in the "/etc/hosts" file.

  If you can ping the hostname, then try the following:

  ```
  telnet hostname 9100
  ```

  This should get sent to the printer. (This is an example telnet session that printed to our printer.)

  ```
  mod590 /etc # telnet 150.1.1.4 9100
  Trying...
  Connected to 150.1.1.4.
  Escape character is '^]'
  Hey guys, this is going to print!!!
  '^]'
  telnet> quit
  Connection closed.
  The print out "Hey guys, this is going to print!!!"
  should go to the printer.
  ```

- Problem: The test sheet and the IP address and subnet mask are blank

Cause: The card has not been configured.

Solution: Find the area under TCP/IP labeled bootp. It should say bootp in progress.

Cause: This means that the card is sending out boot packets but is not getting packets back from the Risc (unless there is a problem with the packets that the Jet Direct card is sending). Risc is not acknowledging the packets and sending replies.

Cause: Hardware address was entered incorrectly.

Solution: You can verify the hardware address by exam- ining the file "/etc/bootptab". The "ha" field should match the hardware address printed out in the test page.

If this is incorrect, then change as appropriate.

1. At the AIX command line, type "inetimp" to redigest file and then type "refresh -s inetd" to refresh "inetd" daemon.
2. Turn off/on printer (if card inside printer) or turn off/on JetDirect box (if external).
3. If this does not work, then remove the entry from "/etc/bootptab" file and go to "Steps to Configure Server" and start with step 3.

If the above still does not work, then try running the "bootpd" daemon in debug mode. Do the following:

1. Comment out the "bootps" line in "/etc/inetd.conf" file.
2. Redigest "/etc/inetd.conf" again with "inetimp".
3. Refresh "inetd" daemon with "refresh -s inetd".
4. At AIX command line, type "bootpd -d -d -d -s".
5. Turn off/on printer (if internal card) or turn off/on JetDirect box (if external). This will cause the hardware broadcast to start up.

You should see something like this:

```
bootpd: bootptab mtime is Wed Oct 19 13:21:23 1994
bootpd: reading "/etc/bootptab"
bootpd: read 1 entries from "/etc/bootptab"
bootpd: dumped 1 entries to "/etc/bootpd.dump".
```

Then something like this:

```
bootpd: bootptab mtime is Wed Oct 19 13:21:23 1994
bootpd: request from hardware address 080109463974
bootpd: hardware address not found: 080109463974
bootpd: Dats all folks...
```

- Problem: You do not receive message or nothing else comes up.

  Cause: The RISC is not picking up any hardware broadcast across the network. Signals a definite hardware problem on the network.

Solution: Check your network connections and settings.

- Problem: The third line above reads, "bootpd: hardware address not found: "080109463974".

  Cause: This indicates that you do not have an entry in the "/etc/bootptab" file for the particular hardware address.

Solution: Check your file for proper entry. Also check other entries that are outdated/unused and delete them.

- Problem: Subnet mask is set incorrectly. If your subnet mask is 255.255.255.0 then you don't need an entry for "sm=255.255.255.0" since this is assumed. However, if your subnet mask is different, for example, 255.255.0.0, then you definitely need an entry "sm=255.255.0.0" in your /etc/bootptab file for the printer in question.

  Solution: You can use "ifconfig <network type>" command to figure out your network mask; for example, "ifconfig en0"...

  ```
  en0: flags=2000063<UP,BROADCAST,NOTRAILERS,RUNNING,NOECHO>
  inet 150.1.1.1 netmask 0xffff0000 broadcast 150.1.255.255
  ```

  Note the subnet mask of 255.255.0.0 in this example.

- Problem: Possible bootpd error is:

  ```
  bind fail::socket name already in use
  bootpd::bind:
  ```

  Cause: This error means that you have another bootpd process running on your system.

  Solution: Do a "ps -ef | grep bootp" to get the PID of the bootp process presently running and do a "kill -9 PID" to get rid of the process. Then retry the bootp in debug mode again.

- Problem: Possible external JetDirect problem.

  Also note that with the external JetDirect box EX model, there is an indicator LED light called "Fault". Check if this light is on or is blinking.

  Cause: If yes then you have a hardware problem with the JetDirect.

  Solution: Call Hewlett-Packard for hardware help.

- Problem: Interface settings.

  Some printers accept more than one interface; i.e., serial or parallel.

  Solution: Be sure that you have the interface set to the one that you are using. This is especially true with the external JetDirect.

- Problem with BOOTP?TFTP server

  Having problems getting the printer working with the BOOTP/TFTP server?

  Solution.Try attaching the printer DIRECTLY to the Ethernet card in the RISC System/6000. After you get that working, set up the printer to use the RISC System/6000 as the BOOTP/TFTP server.

CAVEATS

- To conserve resources, bootpd exits if it receives no request for 15 minutes. It will restart when another request is received. Therefore, you will not see it running all the time.
- Removing the virtual printer will not clean up the entry in bootptab or the device file in /var/spool/lpd/pio/dev. You must delete these yourself.

Token Ring Setting

Change the "ht" variable in "/etc/bootptab" for your particular entry to "tr".

```
ht=tr
```

Do this only after you have finished ALL the steps.

Example Token Ring Setting

Example setting in "/etc/bootptab" using token ring instead of ethernet:

```
hp4:ht=tr:ha=080109463974:ip=150.1.1.4:sm=255.255.255.0:gw=150.1.1.1:
```

Legend For "/etc/bootptab" File

first field -- hostname

(may be full domain name and probably should be)

hd -- home directory

bf -- bootfile

sa -- boot server IP address

gw -- gateways

ha -- hardware address

ht -- hardware type

ip -- host IP address

sm -- subnet mask

tc -- template host (points to similar host entry)

hn -- name switch

bs -- boot image size

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