# Printing in AIX 3.2

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> **Note:** The information in this document has **not** been verified for AIX 4.1.

## ABOUT THIS DOCUMENT

This document contains information about printing in AIX 3.2. It contains the following sections:

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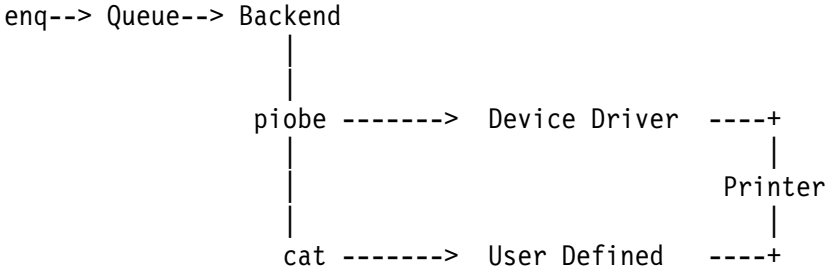
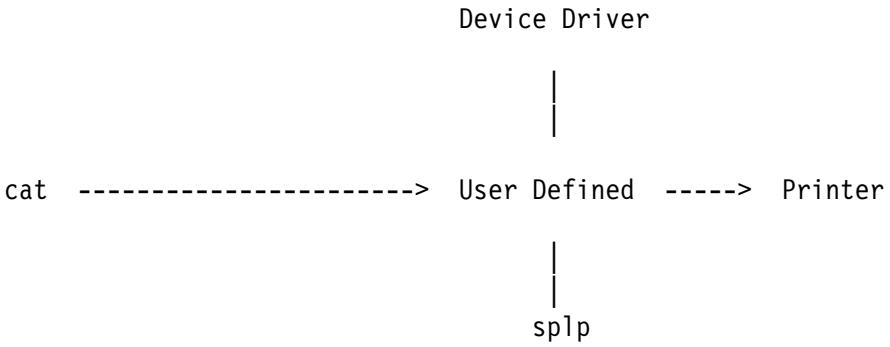
## How It Works

The printing command places the file, plus any print flags, onto the Queue. When the printer is ready, the qdaemon passes the file and flags to the printer backend which formats the output for the specific printer. The data is then passed to the Printer Device driver which communicates with the actual device and prints the file (see figure below).



It is also possible to bypass the Queue and backend by redirecting the file to the device (e.g., with the "cat" command).




## Printer Terminology

***"Printer/Plotter Device"***

This is the special file in the /dev/ directory for the device. It can only be used by redirection (e.g. cat filename > /dev/lp0) and may be manipulated with "splp". Printer commands will not be able to access a "Printer Device" unless a "Virtual Printer" has been created or a change made to the printer backend in /etc/qconfig.

***"Virtual Printer"***

The Virtual Printer is really a combination of a specific Queue and Queue Device in the "/etc/qconfig" file plus the associated file in the "/var/spool/lpd/pio/ddi" directory (which contains formatting data). The Virtual Printer, when added through smit, will automatically create the Queue, Queue Device, and ddi file.

To create a Queue and Queue Device for a printer that will use the standard piobe backend, add a "Virtual Printer".

To add a second Queue Device to an existing Queue, to allow load sharing, add a "second Virtual Printer" to an "existing Queue".

***"Queue"***

The Queue is where the user directs a print job. It is a stanza in the "/etc/qconfig" file whose name is the name of the Queue and which points to the associated Queue Device.

```
lp0:
device = lp0
```

Only add a Queue when the backend will NOT be the standard piobe backend. Adding a Virtual Printer is the normal way to create a Queue and Queue Device.

### *"Queue Device"*

The Queue Device is the stanza in the "/etc/qconfig" file that normally follows the local Queue stanza. It specifies the actual "/dev/" file (Printer Device) to which printing should be done and the "backend" that should be used.

```
lp0:
file = /dev/lp0
header = never
trailer = never
access = both
backend = /usr/lpd/piobe
```

There may be more than one Queue Device associated with a single Queue. The Virtual Printer can handle this as it associated itself with a "Queue&colonQueue Device" pair.

Only add a Queue Device to an existing Queue, if it is to use a backend other than the standard "piobe" backend. Adding a Virtual Printer will create a standard Queue Device entry to an existing Queue.

**Note:** With a remote printer, there will be no file entry in the Queue Device stanza in the "/etc/qconfig" file, as the Queue directs the file to the server.

### *The Printing Commands*

There are now four commands which use the piobe that can be used to print the files. The four commands are "enq", "lp", "lpr", and "qprt". These commands bypass some of the splp settings, since they use the settings that are contained in the Virtual Printer. The Virtual Printer settings can be configured using smit.

The commands lp, lpr, and qprt are actually just a front end to the enq command. Therefore the first thing that happens to a printed file is that it is passed to the enq program. The enq program simply places the information about the file, along with the flags, in the Queue for the qdaemon to use. The Queue is actually the "/var/spool/lpd/qdir" directory.

If the job is not a file (e.g., pipe output of a command to enq) then a real file is created in "/var/spool/qdaemon" which contains the data to be printed. The information in the "/var/spool/lpd/qdir" file then points to the file in "/var/spool/qdaemon".

### *The Qdaemon Program*

The qdaemon is a process that runs in the background. It is generally started with the "startsrc" command when the system is powered on. Startsrc is a command to the "srcmstr" daemon which is started from "/etc/inittab".

The qdaemon keeps track of the print requests in the "/var/spool/lpd/qdir" directory and ensures that the jobs are sent to the proper printer at the proper time. It also keeps track of the status of the printers and stores printer usage data for system accounting purposes (e.g., lpstat, enq -a commands). This information is held in the "/var/spool/lpd/stat" directory.

If the qdaemon is killed it will be restarted by the "srcmstr".

**Note:** Never kill the srcmstr process because it controls other daemons that will be running on the system.

To stop the qdaemon issue "enq -G" or "stopsrc -s qdaemon" (if there are no jobs queued).

To start the qdaemon again, use "startsrc -s qdaemon".

### *Suggested Reading*

"AIX Version 3.2 System Management Guide" from IBM. Order number is SC23-2457-00

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