

Customer Tips

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... for the user

Solaris XPXX Print Driver Principles of Operation

Introduction

The purpose of this document is to describe the operation of the Centroware Solaris XPXX print driver. For information about how to use the driver functions, enter the following URL in a Web browser to access html pages that install with the driver:

file:/opt/Xerox/xpax/CWguide-en_US.html

When Centroware commands are used to create a print queue, XPXX actually creates two queues. The queue that uses the name you enter is the **entry** queue. The entry queue converts the file to PostScript and sends it to the **transmit** queue.

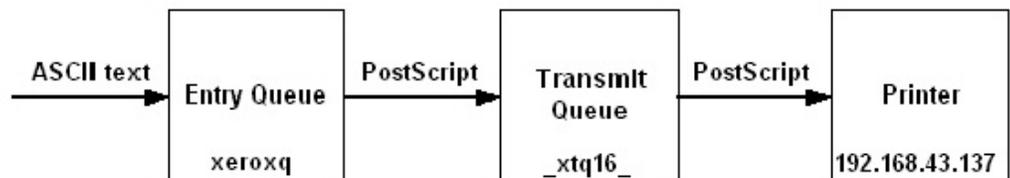
For an example, this document uses the names **xeroxq** for the entry queue, **_xtq16_** for the transmit queue, and **192.168.43.137** for the ip address of the Xerox printer.

Printers.conf

Solaris uses the /etc/printers.conf file to determine the appropriate server and queue when a lp command is issued. Basically it translates the destination (-d) queue specified on the lp command line to the appropriate printer queue. Consider the following sample printers.conf:

```
xeroxq:\
:bsdaddr=unknown,xeroxq,Solaris:
_xtq16_:\
:bsdaddr=192.168.43.137,lp,Solaris:
```

There are two queues that lp is aware of, **xeroxq** and **_xtq16_**. There are 4 fields per queue: *queue name*, *server address*, *remote queue name*, and *print protocol adaptor*. Currently, Sun only supports the **Solaris** print protocol adaptor.



This document applies to these **Xerox** products:

x	WC Pro C2128/C2636/C3545
x	WC Pro 165/175
x	WC M165/M175
x	WC Pro 32/40 Color
x	WC Pro 65/75/90
X	WC Pro 35/45/55
X	WC M35/M45/M55
x	DC 555/545/535
x	DC 490/480/470/460
x	DC 440/432/425/420
x	DC 332/340
x	DC 265/255/240
x	DC 220/230
	DCCS 50

The Entry Queue

The server address of the **xeroxq** entry queue is either the IP of the local machine or "unknown" (which points to the LPD queue name xeroxq). When a print request for xeroxq is invoked (`lp -dxeroxq /etc/hosts`), `lp` refers to `printers.conf` to determine that it should create a local LPD session and specify the xeroxq LPD queue name.

PostScript

The printing process begins when the entry queue receives the data to print and converts it to PostScript. XPXX has internal functions to convert ASCII text to a PostScript print-ready file. Two functions require the use of an external conversion utility: N-Up and man page printing. For these two functions, XPXX uses a GNU-licensed utility called **a2ps**. The utility is in: `/opt/Xerox/xpdx/bin/bin`. The GNU license and default a2ps configuration files are in: `/opt/Xerox/xpdx/bin/etc`, `/opt/Xerox/xpdx/bin/ppd` and `/opt/Xerox/xpdx/share`.

PrinterPkg

The **PrinterPkg** file contains information about a each printer model's features. The PostScript print-ready file is built using this information.

The Transmit Queue

After the PostScript print ready file is made, the entry queue sends it to the transmit queue. The information required to send the file is in a database maintained by XPXX, not in the `printers.conf` file. The XPXX driver performs the handoff from the entry queue to the transmit queue internally in `/opt/Xerox/xpdx/db/que.xdb`. Return to the example to see what happens next:

In our example transmit queue **_xtq16_**, the server address points to a printer with the ip address of 192.168.43.137, and the queue name **lp**. As before, when a print request for xeroxq is invoked (`lp -dxeroxq /etc/group`), `lp` determines that it should create an LPD session to 192.168.43.137 and specify the `lp` LPD queue name.

LPD opens port 515 and sends the print job. Occasionally an acknowledgement is sent by the printer to the host on the "listener" port 1061 to verify the job. When the print job completes, the host sends a FIN request via port 1061. The printer acknowledges the end of job, and the 515 ports close. Port 1061 remains open to listen for the next print job request.

The transmit queue accepts the PostScript file and sends it to the printer. XPXX automatically creates a name for the transmit queue in the form of **_xtq1_** (the queue number is incremented as XPXX queues are added).

XPXX creates transmit queues for several reasons:

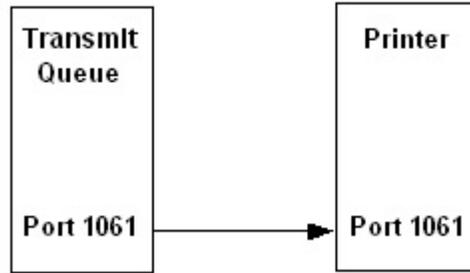
- By using a transmit queue, LPD sessions are handled in a first-in first-out order. Without the transmit queue, multiple queues would attempt to connect to the printer simultaneously, creating network overhead. The transmit queue helps limit the number of outgoing LPD connections.
- The transmit queue allows the entry queue to return process control before the job transmission begins. After the user interface is dismissed (after selecting the Print command), `lp` passes control back to the initiating shell and readies itself for the next job. The job is then passed to the transmit queue for transmission.

Without the transmit queue, the entry queue would wait until the transmission finishes before sending another job. In a single queue configuration, new jobs sent to high traffic queues (or queues on a print server) are held until the preceding jobs complete. `lp` can appear as though it is hung, when it is actually waiting.

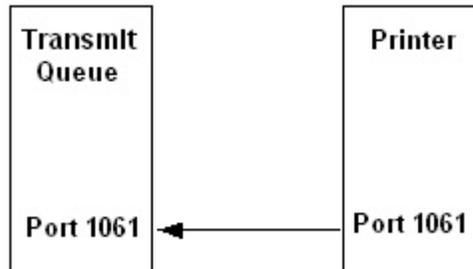
For each new job, the entire printing process begins again at the entry queue.

LPR/LPD

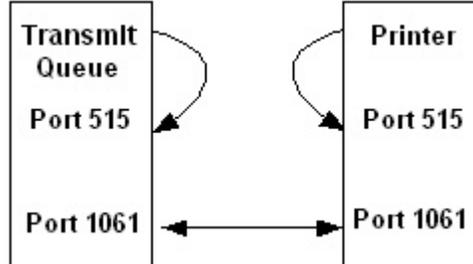
1. The transmit queue directs the Solaris OS to initiate an lpr session. When LPD starts, the “listener” port 1061 opens and a LPR session request is sent to the printer’s port 1061.



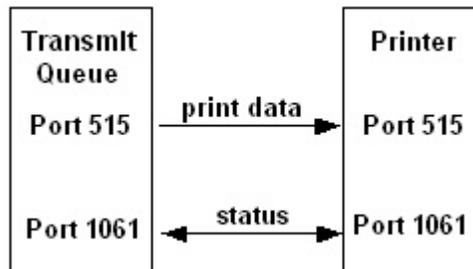
2. The printer responds on port 1061 with an “acknowledge.”



3. The transmit queue on the Solaris server LPD opens port 515 to send a print job. Port 1061 remains open to send/receive status messages. A corresponding LPD process occurs at the printer.



4. While a print job is in transit Ports 1061 and 515 remain open. When the print job completes LPD closes Port 515 and leaves Port 1061 to listen for the next print job.



Additional Information

Xerox Customer Support welcomes feedback on all documentation - send feedback via e-mail to: USA.DSSC.Doc.Feedback@mc.usa.xerox.com.

You can reach Xerox Customer Support at 1-800-821-2797 (USA), TTY 1-800-855-2880 or at <http://www.xerox.com>.

Other Tips about Xerox multifunction devices are available at the following URL: <http://www.office.xerox.com/support/dctips/dctips.html>.

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