Customer Tips

… for the user

BSD vs. System V Printing

Issue

This document compares BSD and System V print subsystems, including the commands needed to set up a print queue, how to submit a print request, and/or retrieve print queue and printer status.

Overview

The Xerox multifunction devices use a BSD print subsystem. This document compares and contrasts the BSD and System V print subsystems to help you configure a Xerox multifunction device to print using BSD or System V.

Background Information

One of two main print subsystems exist in most versions of UNIX on the market today, either System V or BSD. In addition to the different print commands the subsystems use (lpr / lp),. System V and BSD use different methods to set up print queues, spool print requests, and administer print queues on the UNIX client.

Most UNIX operating systems identified as BSD (Berkeley Standard Distribution) or UCB (University of California Berkeley) compliant use an "lpd style" print subsystem. Solaris 1.x (SunOS 4.x) is an example of a BSD UNIX operating system.

Most UNIX operating systems identified as System V compliant use an "lpsched style" print subsystem. Solaris 2.x is an example of a System V UNIX operating system.

This document applies to these Xerox products:

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

Both subsystems perform the commands shown in the following table in a similar manner.

	BSD	System V
Print System Control	lpd	Lpsched lpshut
Queue Setup	/etc/printcap /etc/hosts.lpd	lpadmin lpfilter lpfilter
Queue Control	lpc lprm	Accept reject enable disable cancel lpmove
Queue Status	Lpq	Lpstat
Printing	Lpr	lp

BSD

BSD UNIX uses lpr to submit print jobs between a client and print server. The print server uses an lpd-to-lpd submission to spool the jobs it receives from the client to the printer. BSD's set of printing utilities is one of the older sets available for UNIX, so many other systems which are not BSD-based support this type of printing by using special utilities the system administrator can set up. A BSD print subsystem defines all filter and queue configurations in the /etc/printcap file.

Setup

BSD starts the print system with the **lpd** command. The lpd command is a UNIX daemon that runs in the background and monitors the print system for new print requests. Once started, the only way to stop the print system is to give the lpd process the kill signal (kill -9 PID).

All print queues are defined by editing the /etc/printcap file. A printcap entry (queue definition) defines the name of the queue, filter commands associated with the queue, and the output device to which the queue prints. The printcap file also defines accounting information for each queue as well as group access rights for privileged users. In addition to the printcap file, the /etc/hosts.lpd file is used to set access rights for remote UNIX clients. For more information about queue definitions and printcap file information, read the UNIX man page.

Printing

BSD initiates print requests with the **lpr** command. The print system spools the print request directly to the output device defined by the printcap entry for the print queue. To use a print filter, you must specify an appropriate command line switch.

Status

BSD determines queue status with the **lpq** command. The lpq command also briefly describes the status of the output device. Use the lpc command to obtain a more detailed output device status report.

Control

BSD uses the **lpc** command for all queue and printer control. You can also use the **lpc** command to obtain some queue and printer status.

Use the **lprm** command to remove print requests from a print queue.

You can apply a variety of command line switches that enhance functionality to each command. The switch arguments may vary slightly between different UNIX operating systems, but the general function of the commands remain the same. To understand a UNIX print system and the full functionality of each command in greater detail, refer to the related man page(s).

System V

The newer and more robust System V print subsystem uses lp to print. You can configure many System V style UNIX systems for BSD compatibility and interoperability. Most of the newer commercial versions of UNIX systems tend to use a System V style print subsystem.

The System V print subsystem stores printer, filter, and queue configurations within the /etc/lp directory structure. A separate directory structure is used for the configuration of each queue.

Setup

System V starts the print system with the l**psched** command. The lpsched command is a UNIX daemon that runs in the background and monitors the print system for new print requests. You can stop the print system with the **lpshut** command. After an lpshut command, you must issue the lpsched command again to resume the print system.

Use the lpadim command to create print queues. Define a queue by the type of input it can accept, the type of output device to which it prints, and the output device's name. Also use the lpadmin command to set user access rights, define printer classes, and define forms for a particular printer. For more information about the lpadmin command, read the UNIX man page.

System V uses the **lpfilter** command to define print filters for the print system. You define print filters independent of print queues. A print filter is defined by the type of input it accepts, the type of output it can produce, and the command used to perform the input/output conversion.

Printing

System V uses the **lp** command to initiate print requests. The print system determines the file type and verifies that the print queue indicated can accept it's input. The output device type is then compared to the queue contents. If the output device can accept the queue contents, the print system spools the print request to the output device. If there is a type mismatch between the queue contents and the output device, the print system tries to use defined print filters to convert the queue contents into a type acceptable by the output device. If the print system cannot resolve a type mismatch, an appropriate error is displayed.

Status

System V determines queue status with the **lpstat** command. In addition to queue status, use the lpstat command to determine the state of the output device.

Control

System V uses the **accept** and **reject** commands to determine if the lp print system accepts or rejects jobs spooled to the print queue. These commands turn the print queue spooling functionality on or off.

The **enable** and **disable** commands are used to enable or disable the print queue output device. These commands turn the print queue printing functionality on or off. A print queue can have spooling functionality on (accepting requests), and have printing disabled (disabled printer).

System V uses the **cancel** command to remove print requests from a print queue.

The **lpmove** command is used to move print requests from one print queue to another. This command only succeeds if the destination print queue can accept the same input type as the source print queue.

Additional Information

Xerox Customer Service 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.xerox.com/DocumentCentreFamily/Tips.

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