

PQplus™
print spooler

Distributed Printing for UNIX

User guide for version 3.4

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Contents

CHAPTER 1 : WELCOME	11
HOW TO USE THIS MANUAL	11
SYMBOLS	12
CHAPTER 2 : INSTALLATION	13
CORE PRODUCT INSTALLATION	13
Prerequisites.....	13
Procedure.....	13
MACHINE TYPES	16
LICENSING THE PQ+ SOFTWARE	17
Extending the evaluation period	17
Permanently licensing the software	18
CONFIGURING YOUR MACHINE	18
Defining an alternative PQ+ location	19
Configuring the PATH environment variable.....	19
CHAPTER 3 : USER GUIDE	21
OVERVIEW.....	21
ADDING A REQUEST	21
Options	21
MODIFYING A REQUEST	29
TURNING OFF AN OPTION	29
DELETING A REQUEST	31
LISTING THE QUEUE	32
Basic listing	32
PQ+ job states.....	33
Full listing	34
CHAPTER 4 : ADVANCED USER GUIDE	37
ENVIRONMENT VARIABLES	37
OPTIONS REQUIRING A PARAMETER.....	37
Options not requiring a parameter	38
ADDING A REQUEST	39
Advanced options	39
CHAPTER 5 : ADMINISTRATOR GUIDE.....	41
OVERVIEW.....	41
THE PQ+ CONTROLLER	42
Starting the Controller	42

Stopping the Controller	42
Checking the Controller status	43
Checking the Controller log file.....	44
Signaling the Controller.....	44
THE PQ+ NETSERVER.....	45
Starting the Netserver	45
Stopping the Netserver	45
Checking the Netserver status	45
Checking the Netserver log file.....	46
Auditing the Netserver activity	46
QUEUE MAINTENANCE.....	47
Fixing the queue	47
CHAPTER 6 : CONFIGURATION FILES	49
CONFIGURATION FILES	49
PQ+ default parameters : 'defaults.cfg'	49
PQ+ controller parameters : 'control.cfg'	50
PRIVILEGED PQ+ USERS : 'ADMIN.CFG'	51
Description.....	51
PQ+ CHARACTER MENUS : 'CONTROL.KEYS'	51
Description.....	51
Options.....	52
Terminal type definition	53
REMOTE PQ+ USERS : 'REMOTE.CFG'	54
Description.....	54
Format	54
CHAPTER 7 : MENU SYSTEMS	55
DESCRIPTION	55
CHARACTER BASED MENUS : 'PQMENU'	55
Starting the menus	56
Configuring the control keys	56
Using the menu system	56
Changing PQ+ host	58
Changing the help text.....	59
Using select boxes.....	60
Command line options	61
Listing the PQ+ queues.....	61
CHAPTER 8 : PQ+ PRINTERS	62
CONTROLLING PQ+ PRINTERS	63
Starting a PQ+ printer	63
Stopping a PQ+ printer	63
Pausing a PQ+ printer.....	63

Unpausing a PQ+ printer	64
Printer status.....	64
Abandoning a PQ+ print	65
Restarting a PQ+ print	65
Backing up a PQ+ print	65
Printer log files.....	65
Printer Definitions.....	66
Paper types	66
Aliases.....	67
Active time windows	67
Banners and trailers	68
Model types.....	68
FILTERS.....	69
cr_null_map	70
expand_cr.....	70
double_ff	70
send_codes	70
send_ff	70
pstext.....	70
PRINTER ENGINES	75
NETWORK	75
Description	75
Options	75
Example.....	76
NETFLEX	77
Description	77
Options	77
Example.....	77
CHAPTER 9 : THE WORLD WIDE WEBSITE	79
COME AND VISIT US	79
CHAPTER 10 : APPENDICES	81
KEYWORDS	81
Description	81
Available Keywords.....	81
Options supporting keywords	81
RUNNING MULTIPLE COPIES OF PQ+ ON THE SAME MACHINE	82
Description	82

Chapter 1 : Welcome



PQ+ is a print spooler developed specifically for UNIX platforms. First released in 1992, PQ+ has proven an effective Print Spooling system for sites migrating from legacy systems where such facilities typically featured as part of the Operating system environment.

PQ+ has been implemented in a wide variety of computing environments and is employed of environments – from Operations through to the end-user. Key features of PQ+ that make it the ideal print spooling solution include :

- Flexible user interface
- Print 'engines' such as TCP/IP and JetDirect/Novell Netflex printing
- Customizable filter system for your unique printing requirements
- Multiple queue environment
- Full job history

PQ+ is currently available on the following UNIX platforms :

- IBM AIX
- Sequent Dynix/Ptx 4
- HPUX
- Solaris SPARC

For further information please visit the PQ+ World Wide Website :

www.grepit.com

How to use this manual

This manual consists of PQ+ User and PQ+ Administrator guides. Each of these guides is split into Basic and Advanced chapters, with the basic chapters allowing a quick start to the use of PQ+, while more advanced features are detailed separately and may not be required.

The menu interface is described in a chapter entitled 'Menus' and feature the ASCII (curses) menus.

Symbols

This following symbols are used throughout this manual :




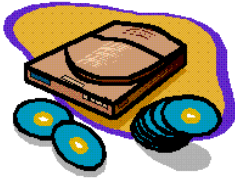
Symbol	Description
	Indicates a note, which should be read and understood before an option is used.
	Indicates a tip, which may be used or influence the way in which PQ+ is implemented.
	Indicates the default action taken by PQ+ if an option/switch is not used.

Table 1 : Symbols

Chapter 2 : Installation



Installing PQ+ is a straight forward exercise which should take no more than five minutes.

Core product installation

Prerequisites

access to the 'root' account.

approximately 2Mb of free disk space where PQ+ is to be installed.

approximately 2Mb of free disk space for use as a staging area. eg. '/tmp'

Procedure

The following procedure should be followed to successfully install PQ+.

- | | |
|---|--------------------------|
| 1. Login as 'root' on the machine on which PQ+ is to be installed. | <input type="checkbox"/> |
| 2. Create a UNIX group identifier (GID) named 'pqplus' ¹ . | <input type="checkbox"/> |

Continued

¹ This should be performed by the Systems Administrator

3.	Change directory to the staging area. (typically '/tmp')	<input type="checkbox"/>
4.	Insert the PQ+ distribution media in the drive.	<input type="checkbox"/>
5.	<p>If you are installing from disk or tape :</p> <p>Extract the PQ+ software from the distribution media using the following tar command :</p> <pre>tar -xvf /dev/fd0 installpq+ pq+.solss</pre> <p>Where '/dev/fd0' and 'sco' should be replaced as appropriate.</p> <p>If you want to download the software from the website :</p> <p>Open your browser and enter the following URL :</p> <p>www.grepit.com</p> <p>Select PQ+ from the contents list and subsequently click on downloads.</p> <p>Save the tar set into the temporary directory.</p> <p>Extract the tar set to create the install script and PQ+ distribution tar set.</p> <p>Remove the web tar set.</p>	<input type="checkbox"/>
6.	<p>Start the PQ+ installation script using the following command:</p> <pre>sh installpq+ solss</pre> <p>Where 'sco' should be replaced with your machine type².</p>	<input type="checkbox"/>

Continued

² See table of machine types on page 16

7. The 'installpq+' script will first confirm that no PQ+ processes are already running on the machine. If this is not the case you should exit the installation and stop the PQ+ Controller and any print jobs before restarting. Having confirmed that PQ+ is not already running on the machine you will be asked for the target directory into which PQ+ should be installed. Pressing <return> will instruct the procedure to install into a '/usr/pq+' location.
8. PQ+ will now be extracted from the tar set into the specified target directory. A message will be displayed at the completion of the installation process.

Table 2 : Core product installation procedure

Directory	Filename	Description	Mask ³
pq+		Home	775
➔ adm		Accounting files	770
➔ bin		Executables	775
	printq		6555
	pcon		6555
	controller		500
	pqmenu		6555
	netserver		500
	pqhelper		500
	makehelp.sh		700
➔ config		Configuration files	770
	defaults.cfg		770
	control.cfg		770
	remote.cfg		770
	admin.cfg		770
	operator.cfg		770
	printers.cfg		770

Continued

³ UID=root, GID=pqplus

	control.keys		770
	pqmenu.hlp		770
tmp		PQ+ temporary files	770
logs		PQ+ logfiles	770
queue		PQ+ queue	770
filters		PQ+ filter programs	770
engines		PQ+ printer engine programs	770
adm		Accounting files	770

Figure 1 : Core inventory

Congratulations, PQ+ is now installed and will operate for an evaluation period of thirty days.

Machine types

Machine	Distribution abbreviation
IBM AIX	AIX
Sequent Dynix/Ptx 4	ptx4
Hewlett Packard	hpux
Solaris SPARC	solss
Redhat Linux	redhat

Table 3 : Machine type abbreviations

Licensing the PQ+ software

When PQ+ is first installed an evaluation period of thirty days is allowed for use of the product. At the completion of the thirty days the PQ+ Controller process will not start. At this juncture two actions may be taken :

Contact your PQ+ distributor and obtain an evaluation extension license code.

Contact your distributor and purchase the PQ+ software to obtain a permanent license code.

Extending the evaluation period

1. Type the following command : 'pcon -extend'	<input type="checkbox"/>
2. You will now be provided with a unique security string which must be passed to your software provider.	<input type="checkbox"/>
3. Your software provider will provide you with a unique license code which should now be typed in.	<input type="checkbox"/>

Table 4 : Evaluation license extension procedure

Your PQ+ system will now be licensed for an additional 30 evaluation days. This can be checked by restarting the PQ+ controller and inspecting the controller log file using the command 'pcon -log'.

Permanently licensing the software

To permanently license the PQ+ software the following procedure should be followed :

1.	Determine the machine name of the node on which PQ+ has been purchased. This can easily be found by viewing the PQ+ Controller log file using the command <code>'pcon - log'</code> .	<input type="checkbox"/>
2.	Contact your software distributor with the machine name and UNIX platform information to hand. You will be given an eight character permanent license code.	<input type="checkbox"/>
3.	License the software using the following procedure : Login as <code>'root'</code> . Change directory to the PQ+ config directory. (eg. <code>'/usr/pq+/config'</code>) Edit the controller configuration file <code>'control.cfg'</code> and insert your unique 8 character license code where the <code>'license_code'</code> directive is found.	<input type="checkbox"/>
4.	PQ+ will now be permanently licensed. A message will be displayed at the completion of the installation process.	<input type="checkbox"/>

Table 5 : Permanent licensing procedure

Congratulations, you are now an official PQ+ user!

Configuring your machine

While PQ+ will function immediately, you may choose to make some simple modifications to integrate PQ+ in the machine environment.

Defining an alternative PQ+ location

PQ+ will by default operate in the location ``/usr/pq+'`. If installed in a different location two ways of indicating this are possible :

Create a symbolic link ``/usr/pq+'` which points to the actual PQ+ directory.

eg. In -s /opt/pq+ /usr/pq+



Note :

If appropriate this will normally be performed during the installation procedure.

Create a `PQ_HOME` environment variable that indicates the location of PQ+.

e.g. `PQ_HOME=/opt/pq+; export PQ_HOME`

Configuring the PATH environment variable

The `PATH` environment variable is used to indicate those directories that contain programs that are available for execution. Multiple directories are separated by colons ``:'` and are searched in the order that they have been defined.

PQ+ programs reside in the PQ+ ``bin'` directory. This directory may be included in the `PATH` environment variable so that commands such as ``printq'` can be typed without the need for a full pathname. To include PQ+ in the `PATH` the following command should be used :

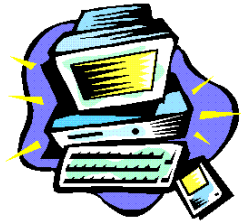
**`PATH=$PATH:/usr/pq+/bin`
`export PATH`**

Where ``/usr/pq+'` can be replaced by an alternative PQ+ location, as appropriate.

If the `PQ_HOME` environment variable has been defined you may of course use the following command :

```
PATH=$PATH:$PQ_HOME/bin  
export PATH
```

Chapter 3 : User Guide



This section provides all the information for a user to be able to submit, modify and delete PQ+ jobs. In addition the user will be able to inspect the PQ+ queue for print progress and status. Examples in this section use the command line interface, for details on the menu system please refer to the 'Menus' chapter later in this document.

Overview

The PQ+ system has a single queue, to which requests can be added, modified and deleted; this is achieved through the 'printq' command.

Adding a request

The following command should be used to submit a request to the PQ+ queue.

```
$ printq 'filename'
```

A new PQ+ request will be created in the default PQ+ queue which will print the file 'filename'.

```
# printq /reports/myreport.txt
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Request 9 added to queue : /reports/myreport.txt
```

Figure 2 : Adding a request

Options

A variety of options to the 'printq' command are provided to access all of the PQ+ functionality. Each option starts with the '-' character and can be combined with other options on the same command line. Options can be specified in any order on the command line, but must only occur once in each PQ+ command.



Note :

If the argument contains any spaces or reserved characters then it must be protected by quotation marks. This is shown in most of the examples that follow.

Directing a print to a printer

-at `printer_name`

Where `printer_name` must be a valid printer defined in the `/usr/pq+/ config/printers.cfg` file.

```
# printq /reports/myreport.txt -at myprinter
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Node name : solaris]
Request 10 added to queue : /reports/myreport.txt
```

Figure 3 : Specifying a printer

Once in the PQ+ queue the print request will be considered by the PQ+ controller process, and if eligible will be printed by a PQ+ printer.

Paper type

-on `paper_type`

Direct the PQ+ request to a particular paper type. In order to be eligible for printing the printer must have a corresponding paper type loaded.

Start time

-start `date/time`

Define an earliest start time for the print request.

 Default :
A print will be attempted as soon as possible.

```
# printq /reports/myreport.txt -at myprinter -start 20:00
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Earliest start time for print : 07 Nov @ 20:00:00
Request 11 added to queue : /reports/myreport.txt
```

Figure 4 : Specifying a start time

Date and Time format

A valid date/time string consists of a date, a time or both. The format of each must comply with the following :

Date : DD/MM/YY (UK) or MM/DD/YY (US)
Time : HH:MM
Date/Time :
DD/MM/YY.HH:MM (UK)
MM/DD/YY.HH:MM (US)

Examples of these are as follows :

19/06/96 (UK) or 06/19/96 (US)
17:30
19/06/96.17:30 (UK) or 06/19/96.17:30 (US)

Date keywords may be substituted for date components of a date/time string.


Description	PQ+ date
Day of the week	mon, tue, wed, thu, fri, sat, sun
1 st , 2 nd , 3 rd etc. of the month	1mon, 1tue ... 1sun 2mon, 2tue ... 2sun 3mon, 3tue ... 3sun 4mon, 4tue ... 4sun 5mon, 5tue ... 5sun
Every day	emon, etue ... esun
Last day of the month	lmon, ltue ... lsun
1 st , 2 nd , 3 rd etc. working day of the month	work1, work2 ... work31
Weekends	wend
Weekday	wday
Day of the month	mday1, mday2 ... mday31
Special days	workll : last working day mdayl : last month day asap : as soon as possible

Table 6 : Date/time syntax


Notification

-mail

Request that a message is send when the print has completed. Typically this will be via the UNIX mail system, but the Systems Administrator can configure alternative methods if required.


 Default :
No notification will be sent.

Printing without any formatting

 Tip :
Use raw when printing pre processed print files such as graphics or postscript files.

-raw


Instruct the PQ+ printer not to use any PQ+ features when printing the file. This includes filters, banners, trailers, fonts, orientation etc.

 Default :
Formatting is enabled.

Holding a print

-hold

Using this option will place add an entry to the PQ+ queue and place it in a 'held' state. When a print is held it will not be started by the PQ+ Controller.

 Default :
A new job is added to the queue in a 'new' state.

Specifying a start page

-from 'start_page'

Instruct the PQ+ printer to print the file from a particular page number.

✘ Default :
'0' which indicates the first page.

📄 Note :
Page breaks are calculated in two different ways :

Form feeds.

If a hard coded form feed is encountered in the file (<CTRL>L) then data following it will be treated as being printed at the start of a new page.

Lines per page.

A PQ+ printer definition can contain a maximum number of lines per page. If this number of lines is exceeded PQ+ will treat the file as if a form feed has been encountered.

Specifying an end page

-to 'end_page'


Instruct the PQ+ printer to print the file to a particular page number.


✘ Default :
Is '0' which indicates the last page.

Specifying the font to be used

-font 'font_name'

Instruct the PQ+ printer to print the file using a particular font.


 Default :
No font codes are sent to the printer before printing.


 Note :
The codes to enable the font on the printer must be defined in the printer type definition file.

Page orientation

-landscape
-portrait

Instruct the PQ+ printer to print the file with a particular page orientation.


 Default :
The print will be printed in portrait mode by default.

 Note :
The codes to switch the page orientation on the printer must be defined in the printer type definition file.

Multiple copies

-copies 'ncopies'


Instruct PQ+ to print more than one copy of the file

 Default :
One copy will be printed.

Print banner

-banner


Instruct PQ+ to print a banner and trailer page at the start and end of the print file respectively.

 Default :
Banners will be printed.

Saving completed jobs

-retain, -rehold

Request that when the print completes, the entry will remain in the queue in an 'held' state.

 Default :
Completed PQ+ jobs will be deleted from the queue.

```
# printq /reports/nyreport.txt -at nyprinter -start 20:00 -retain
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Modename : solaris]
Earliest start time for print : 07 Nov @ 20:00:00
Request 12 added to queue : /reports/nyreport.txt
```

Figure 5 : A retained job


Silent running

 Tip :

'-quiet' can be used if PQ+ is being run from an automated script that is displaying its own messages after interpreting the return status of the 'printq' command.

-quiet

Prevent PQ+ from displaying any messages when the 'printq' request is being carried out

 Default :
PQ+ messages will be displayed.


Taking a copy of the print file

 Tip :

Use this if you want to print a snapshot of a file which will subsequently be changed.

-copy

Instruct PQ+ to take a copy of the file and place it in the 'pq+/data' directory. This will then be used as the file to be printed.

 Default :
A print file is printed from source, ie. no copy is taken.

Modifying a request

Having submitted a job to PQ+ the user may choose to change parameters associated with that job through the use of the modify option.

A PQ+ request can only be modified while it is not printing; printing jobs are shown in the queue with a state of 'exec'.

To modify a job the PQ+ entry number is used in conjunction with the '-mod' option. Options that are required to be changed are also provided as necessary.

```
$ printq -mod 'entry_number' .....
```

Where 'entry_number' is the PQ+ entry number of the job to be modified.

Turning off an option

To turn off an option that has been specified for a PQ+ entry, you should first identify whether the option is specified with or without a parameter.

Options not requiring a parameter can be turned off by inserting 'no_' in front of the option itself. e.g. to turn off mail the option '-no_mail' should be used.

Options that fall into this category are :

- mail
- retain

```
# printq -mod 12 -no_retain
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Modename : solaris]
Request 12 modified
```

Figure 6 : Turning off an option not requiring a parameter

Options requiring a parameter can be turned off by respecifying the option with an argument of '-none-'.

For example to turn off any arguments that may have been specified use the following option :

... -font `none' ...

Options that fall into this category are :

font

```
# printq -nod 12 -font -none-  
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]  
[Nodename : solaris]  
Request 12 modified
```

Figure 7 : Turning off an option requiring a parameter

Unholding a print

-unhold

PQ+ prints that are held will be shown in the queue with a 'held' state. Modifying the entry using the '-unhold' option will set the state to 'new' and allow the PQ+ Controller to start the job.

Retrying a print

-retry

Instruct PQ+ to retry a job that is in the queue and is marked as 'error'd.

Resetting a print

-reset

Instruct PQ+ to reset a print job that has previously been serviced by a PQ+ printer. This consists of removing any affinity to a specific PQ+ printer and resetting the earliest start time to be as soon as possible.

Deleting a request

To delete a request from a PQ+ queue the following command should be used :

```
$ printq -delete `entry_no`
```

Where `entry_no` is the PQ+ entry number of the request to be deleted.

```
# printq -del 12
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Request 12 deleted
```

Figure 8 : Deleting a job

If the PQ+ request is printing at the time of the delete request the print will be instructed to abort. This is accomplished by signaling the job with UNIX signals that have been defined by the PQ+ Administrator.

```
# printq -del 11
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Printer myprinter aborted
Job #11 instructed to abort!
```

Figure 9 : An aborted print

Listing the queue

In order to monitor and effectively control PQ+ jobs, a variety of queue listing facilities are provided.

Basic listing

The format of the command to request a basic queue listing is as follows :

\$ printq -list

When issued a display of jobs currently found in the PQ+ queues are displayed. A number of characteristics associated with each job will be shown including the current job state.

```
# printq -list
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Printer   Req.   User   Filename                               State
-----
myprinter
07 Nov 2002
           8     root   /etc/hosts
           9     root   /reports/myreport.txt
          10     root   /reports/myreport.txt
          11     root   /reports/myreport.txt
```

Figure 10 : Print queue listing

PQ+ job states

A variety of PQ+ states can be associated with a PQ+ job, and can be seen when a queue listing is requested.


State	Description
(new)	Job is ready to be run by the PQ+ Controller.  Note : A state of 'new' is sometimes displayed for clarification purposes.
exec	The job is currently printing.
held	The job is in a held state and will not be started by the PQ+ Controller.
error	The job has attempted to print and failed to complete with a successful exit code of zero.

Table 7 : Print states

Full listing

To obtain a comprehensive listing of the queue the following command should be used :

\$ printq -list -full

```
# printq -list -full
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Printer Req. User Filename State
-----
myprinter
07 Nov 2002
      8 root /etc/hosts
      i> Print command failed, see logfile for further detail
      i> Paper : plain, Directed to : myprinter, Earliest start :
        07 Nov @ 18:55:13
      9 root /reports/myreport.txt
      i> Paper : plain
     10 root /reports/myreport.txt
      i> Paper : plain
     11 root /reports/myreport.txt
      i> Paper : plain, Earliest start : 07 Nov @ 20:00:00
```

Figure 11 : Detailed print queue listing

Selective listing

A variety of options are provided to allow many different views of the PQ+ queue.

- Entry number
- Printer name

Entry number

To display a listing of a particular PQ+ entry the following command should be used :

\$ printq -list 'entry_number'

```
# printq -list -full 8
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Printer   Req.   User      Filename                                     State
-----
myprinter
07 Nov 2002
          8      root      /etc/hosts
          i> Print command failed, see logfile for further detail
          i> Paper : plain, Directed to : myprinter, Earliest start :
            07 Nov @ 18:55:13
```

Figure 12 : Listing a particular entry number

Printer name

To display a listing of a specific PQ+ queue the following command should be used :

\$ printq -list -at 'printer _name'

```
# printq -list -at myprinter
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
Printer   Req.   User      Filename                                     State
-----
myprinter
07 Nov 2002
          8      root      /etc/hosts
          i> Print command failed, see logfile for further detail
          9      root      /reports/myreport.txt
          10     root      /reports/myreport.txt
          11     root      /reports/myreport.txt
```

Figure 13 : Listing a particular printer

Ready prints

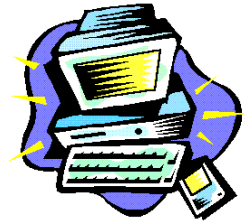
To display entries that are available to print the following command should be used :

\$ printq -list -ready

Combining listing options

Queue listing options may be combined to provide a higher level of selection.

Chapter 4 : Advanced User Guide



This section contains the information which the advanced PQ+ user may require.

Environment variables

All PQ+ options may be controlled through the use of environment variables. This avoids the user having to respecify an option or value that is always required; in addition the user may customise the environment for personal use, rather than having to request a change to the global configuration files.

By default, environment variables will only be consulted when a new job is being submitted to the queue. To enable consultation during a modify command the option `'-use_envs'` should be used.

 Note :

Only the job submission screens in the menu systems will reflect environment variables, `'use_envs'` should be used with care from the modify screen.

The two types of PQ+ option require a slightly different use of environment variables in order to be controlled.

Options requiring a parameter

Any PQ+ option requiring a parameter should be configured as follows :

```
PQ_option=value
export PQ_option
```

Where 'option' is the actual PQ+ option requiring to be controlled, specified in UPPERCASE.

For example to force all PQ+ jobs to be submitted to the printer 'laser', the following commands could be used :

```
$ PQ_AT=laser  
$ export PQ_AT
```

Options not requiring a parameter

A PQ+ option that does not require a parameter can either be turned on or turned off.

Turned on

To turn on an option not requiring a parameter, the following command format should be used :

```
PQ_option=Y  
export PQ_option
```

Where 'option' is the actual PQ+ option requiring to be controlled, specified in UPPERCASE.

Turned off

To turn off an option not requiring a parameter, the following command format should be used :

```
PQ_NO_option=Y  
export PQ_NO_option
```

Where 'option' is the actual PQ+ option requiring to be controlled, specified in UPPERCASE.

Should an environment variable exist to both turn off and turn on an option, the option will be turned on.

Adding a request

This section continues to detail options that may be used when placing a job in the PQ+ queue for execution using the `'printq'` command.

Advanced options

Using environment variables in a modify operation

-use_envs

Instruct PQ+ to consult the environment variables in addition to any options that have been supplied via the command line.

 Note :

This should be used with care as incorrect environment variables will confuse an apparently correct command line.

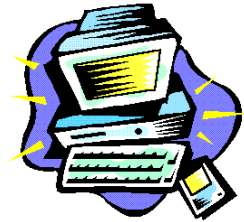
Command line options will always override environment variables. For further information please refer to 'Environment variables' on page 37.

Remote PQ+ working

-host 'hostname'

Instruct that the PQ+ command should be executed on a remote machine.

Chapter 5 : Administrator Guide



This section contains the information which the PQ+ Systems Administrator requires to get the print spooler up and running and configured to a sites requirements. Examples in this section use the command line interface, for details on the menu system please refer to the 'Menus' chapter starting on page 55.

Overview

Unlike previous versions of the software a single process coordinates all of the PQ+ printer daemons - the PQ+ controller.

If the PQ+ controller is not running no printers will be started and it is therefore important to make sure that this is not the case.

The PQ+ controller polls the queue at a pre-set frequency and starts printer processes as necessary. The printer processes will service requests that are found in the queue before terminating; subsequently the controller will restart the printer as necessary.

The PQ+ Controller

Starting the Controller

To start the PQ+ controller the following command should be used:

```
$ pcon -start
```

Once started the PQ+ Controller will service the PQ+ queue until requested to stop or is terminated.

```
# pcon -start  
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]  
[Nodename : solaris]  
PQ+ controller started
```

Figure 14 : Starting the controller

Stopping the Controller

To stop the PQ+ controller the following command should be used:

```
$ pcon -stop
```

Once stopped, no PQ+ prints will be started. Note that PQ+ jobs that are already started will continue to run through to completion.

```
# pcon -stop  
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]  
[Nodename : solaris]  
PQ+ controller stopped
```

Figure 15 : Stopping the controller

Checking the Controller status

To check the status of the PQ+ controller, the following command should be used :

```
$ pcon -status
```

If the Controller is running the UNIX PID will be displayed by the 'STARTED' message, which may be useful to the Systems Administrator.

```
# pcon -status
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
PQ+ Servers
-----
controller      STOPPED
netserver       STARTED (908)

PQ+ Printers
-----
myprinter       (READY)
```

Figure 16 : Displaying the controller status

Checking the Controller log file

To check the PQ+ controller log file, the following command should be used :

\$ pcon -log

```
# pcon -log
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Hostname : solaris]

Visit PQ+ on the World Wide Web at 'www.grepit.com' and learn about
upcoming features and great new products from Corporate Practical Solutions.

Running on host solaris
PQ+ evaluation period will end on 07/12/02.18:07 (0)

PQ+ controller started at 07/11/02.18:56
Running in timezone GB

Queue poll rate           : 60 seconds
Debug detail              : none
Purging accounts files older than 10 days
```

Figure 17 : Displaying the controller logfile

Signaling the Controller

To signal the PQ+ controller to poll the queue the following command should be used :

\$ pcon -jump

The PQ+ controller polls the queue at a pre-defined rate. Should you want to wake up the controller and request an immediate poll of the queue you should use this command.

The PQ+ Netserver

The Netserver is the process by which other UNIX machines can communicate with the PQ+ system. Once started it will listen on a pre-defined TCP/IP port and service incoming remote PQ+ requests. If the Netserver is not started no remote machines will be able to communicate with the PQ+ system.

Starting the Netserver

To start the PQ+ Netserver the following command should be used:

```
$ pcon -start netserver
```

Once started the PQ+ Netserver will service remote PQ+ requests.

Stopping the Netserver

To stop the PQ+ Netserver the following command should be used:

```
$ pcon -stop netserver
```

Once stopped, no remote PQ+ operation into the host will be possible.

Checking the Netserver status

To check the status of the PQ+ Netserver, the following command should be used :

```
$ pcon -status
```

If the Netserver is running the UNIX PID will be displayed by the 'STARTED' message, which may be useful to the Systems

Administrator.

```
# pcon -status
[PQ+ 3.4 Copyright (c) 1993-2001, Corporate Practical Solutions.]
[Nodename : solaris]
PQ+ Servers
-----
controller      STARTED (1013)
netserver       STARTED (908)

PQ+ Printers
-----
myprinter       READY
```

Figure 18 : Displaying the Netserver status

Checking the Netserver log file

To check the PQ+ Netserver log file, the following command should be used :

```
$ pcon -log netserver
```

Auditing the Netserver activity

To enable auditing of all requests received by the Netserver, the 'remote_audit' switch should be enabled in the configuration file 'defaults.cfg'. This is more fully described in the 'Configuration files' section on page 49.

Queue maintenance

The PQ+ is self maintaining and should not normally require any manual intervention in its operation. An option is however provided to allow the PQ+ administrator to fix the queue should it become necessary.

Fixing the queue



Tip :

Place a fix command in the PQ+ startup script to fix the queue when a machine is rebooted.

\$ printq -fix

This command performs the following :

- Correct any invalid entry states to be accurate
- Delete invalid entries
- Compress queue to a minimum size
- Order queue entries for maximum efficiency



Note :

For the duration of the fix operation PQ+ will be unavailable to users and should therefore only be used when absolutely necessary or out of normal processing hours.

Chapter 6 : Configuration Files



Configuration files

Configuration files are ASCII files that can be found in the PQ+ 'config' directory. The majority of these can be maintained through the PQ+ menu systems, but may also be manually configured using an editor such as 'vi'.

PQ+ default parameters : 'defaults.cfg'

Description

Switches

default_shell **'shell'**

Instruct PQ+ to use a specific default shell, when a user has not specified a shell using the '-shell' option of the 'printq' command. 'shell' may be one of the following :

sh (Borne)
ksh (Korn)
csh ('C' shell)

PQ+ controller parameters : 'control.cfg'

Description

When the PQ+ controller is started, the 'control.cfg' configuration file is inspected for options which control the way in which it operates.

Switches

license_code 'code'

The code is a unique string provided by your PQ+ supplier and allows PQ+ to operate in non-demonstration mode. Please refer to page 17 for more information about licensing the software.

poll_timer 'nsecs'

The period of time taken by the controller between polling the queue.



Note :

Try and keep the poll rate at a reasonable period of time. Reducing the delay to a very small period will cause the controller to stay busy and potentially use CPU time better spent elsewhere!

kill_sequence 'signal1 signal2 ...'

The set of UNIX signals that are to be sent to an executing job in order to abort. The signals may be supplied as the signal name or the equivalent signal number.

kill_delay 'nsecs'

The number of seconds between sending the signals as defined in

the 'kill_sequence' (above).

Privileged PQ+ users : 'admin.cfg'

Description

A number of PQ+ options are available only to those who have been defined as being privileged. PQ+ recognises one type of privileged user - an administrator.

A PQ+ administrator has the highest privilege within the PQ+ system.

If a user is defined as a PQ+ administrator he/she may perform the following operations :

- Start, stop and configure the controller
- Add, delete and modify PQ+ printers
- Modify, delete, abort and display any PQ+ jobs
- Configure the PQ+ default values

PQ+ character menus : 'control.keys'

Description

This file defines the keys that are used to control the character based menu system : 'pqmenu'. It consists of a number of keywords followed by a unique key definition for that function in the menu system. The administrator should ensure that the keys defined in this file are unique as no checking is performed by the menu system itself.

Typically the keys defined will be a control code or a function key. Function keys may range from F1 to F12 and are easily defined by typing the representation 'F1'...'F12'. Control keys are harder to define and should be input as the actual control key itself. This can be achieved in 'vi' by entering insert mode and pressing

'<CTRL>V' followed by '<CTRL>'key''.

For example to type a <CTRL>P in 'vi' the following key sequence should be used in insert mode :

<CTRL>V<CTRL>P

Options

Directive	Description
CANCEL_CHAR	'cancel form key'
HELP_CHAR	'help pop-up key'
SELECT_CHAR	'select list key'
TOGGLE_CHAR	'toggle view-screen key'
EXECUTE_CHAR	'execute form key'
QUIT_CHAR	'quit menu key'
HOST_CHAR	'host change key'

Table 8 : Menu keys and descriptions

Terminal type definition

In addition to the definition of the menu control keys, 'control.keys' can also be used to define line drawing characteristics for terminals. This supplements the 'terminfo' definition, and can be used if the terminfo file does not display the menus using proper lines.

The syntax of a terminal type definition is as follows :

'Terminal Name' ABCDEF1

Where characters are as follows :

Character	Description	Ideal
A	Upper left	┌
B	Upper right	┐
C	Lower left	└
D	Lower right	┘
E	Horizontal	—
F	Vertical	
1	Disable bold	This is optional

Table 9 : Menu line drawing characters

An indication of what characters provide the required graphics may be found by typing the following command :

```
$ pqmenu -create_terminal
```

Having defined the terminal definition, an environment variable 'PQ_TERM' should be set to the relevant 'terminal_name'.

For example :

```
$ PQ_TERM=MY_VT100  
$ export PQ_TERM
```

Remote PQ+ users : 'remote.cfg'

Description

In order for a remote user to access the PQ+ system they must be defined in the 'remote.cfg' configuration file. The format of an entry is shown below.



Note :

Care should be exercised before defining a remote PQ+ user. Once the user is in the configuration file, he may access the PQ+ system through the 'Netserver' without the need for a password. It is recommended that no user is given 'root' access from a remote host.

Format

remote_username.hostname local_username



Tip :

Only allow low privileged accounts to be used by remote users.

Where 'remote_username' is the username in use by the workstation that is trying to access the local queue from the host 'hostname'. 'local_username' is the account that you are allowing the user to use.

Chapter 7 : Menu Systems



Description

PQ+ comes complete with a set of 'curses' based menus which utilise the terminfo database and will therefore run on standard terminal emulation. This would include terminals such as VT100, VT220 etc.

Character based menus : 'pqmenu'

As described above the character based menus have been developed using the 'curses' libraries which in turn use the terminfo database to control the attributes associated with the terminal in use. The terminfo database uses the 'TERM' environment variable to determine which terminal definition is used, and must accordingly be set correctly.

Starting the menus

To start the menu system you should use the following command:

\$ pqmenu

This will bring up the front menu screen and will appear as follows

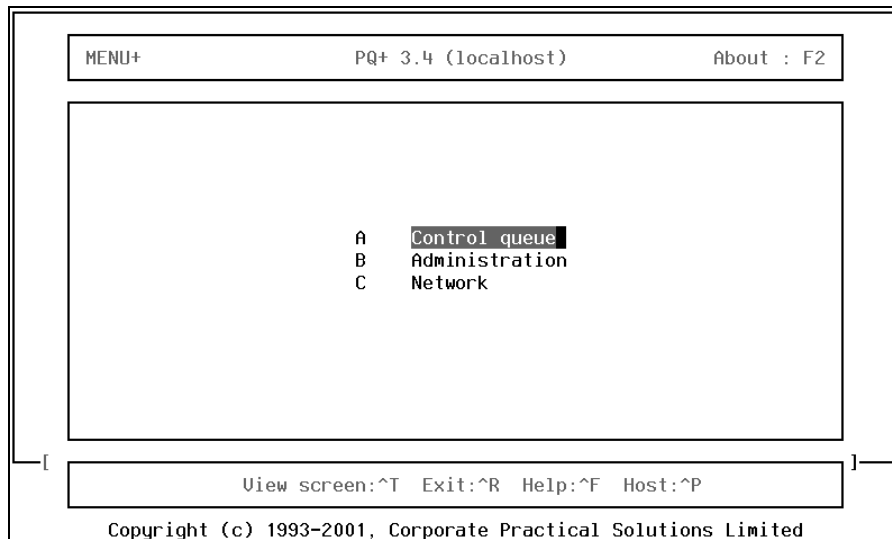


Figure 19 : The pqmenu front screen

Configuring the control keys

In order to allow maximum flexibility the control keys used by the menu system are completely user-definable. The configuration file 'control.keys' is provided for this purpose and is discussed in more detail on page 51 :Configuring the control keys.

Using the menu system

The menu system works by presenting the user with a number of menus and submenus which are selected by the use of cursor

keys and the <return> key. Alternatively the user can select a submenu by pressing the alpha character associated with that submenu.

Having reached the submenu with the required operation the user is then presented with a pop-up form which can be completed as appropriate and executed by pressing the 'execute' key. Focus then switches to the 'PQ+ view screen' where the corresponding PQ+ action is performed.

An example of this process is shown below, where the user has entered the menu system and is submitting a new request.

```

MENU+                PQ+ 3.4 (localhost)                About : F2
Submit a request
Filename  /etc/hosts                                     Hold    n
Printer   myprinter                                    Raw      n
Paper     plain                                         No_banner n
Start time asap                                       Mail     n
Font      -none-                                       Retain   n
From
To Request 8 added to queue : /etc/hosts
Alias
As
Copy

[ MENU+ view screen ]                [ <return> for menus ]
/usr/pq+/bin/printq /etc/hosts
Copyright (c) 1993-2001, Corporate Practical Solutions Limited

```

Figure 20 : An example menu operation



Note :

Certain fields in pqmenu forms are only valid if another option has been specified, until this is true the field will be disabled. This means that if an attempt is made to move to such a field the cursor will in fact be placed on the next enabled field. When the necessary options have been supplied, disabled fields will be enabled automatically.

Changing PQ+ host

When the pqmenu is first started you will notice that on the top of the menu a name of 'localhost' is displayed in brackets after the PQ+ title. This indicates that any operations carried out through the menu will be performed on the machine which you are currently logged on to. ie. the local host.

It is possible to administer remote systems through the menu by using the 'Netserver' inter-host facility.

To start the process of changing the menus to work on another PQ+ host you should follow this procedure :

1.	Press the host key, as displayed at the bottom of the screen.
2.	Select the required host from the pop up list.
3.	Wait while you are authorised on the remote host. This will be confirmed with a pop up message box, which will also indicate the account the you will use on the remote machine and the corresponding level of PQ+ access.

Table 10 : Changing PQ+ host

Should you require to return to working on the local machine, you should follow the procedure as shown previous and select 'localhost' from the pop up list of hosts.

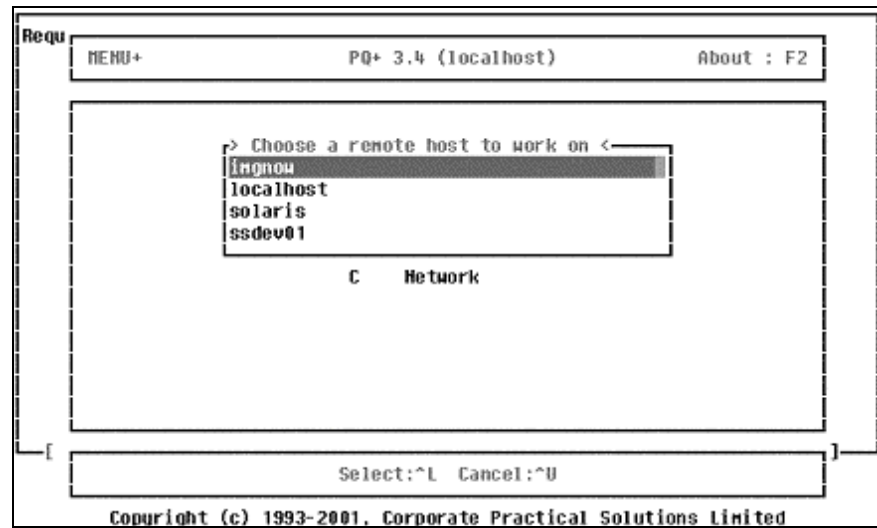


Figure 21 : Administering a remote PQ+ system

Changing the help text

Changing the help text is a simple exercise which requires knowledge of a UNIX editor such as 'vi'.

The help text for the menu system is held in the file '\$PQ_HOME/config/pqmenu.hlp'. The file is not an ASCII file and cannot be edited directly.

To change the help text of a particular item in the menus you should follow this procedure :

1. Use the menu system and note down the help text which you want to change.
2. Edit the file '\$PQ_HOME/bin/makehelp.sh'

Continued

3. Locate the help text that you want to change.
4. Make the changes.
5. Save the file.
6. Update the 'pqmenu.hlp' file by executing the following command : \$ \$PQ_HOME/bin/makehelp.sh

Table 11 : Changing the menu help text

The help text will now be updated and can be viewed by returning to the appropriate menu screen and requesting help.

Using select boxes

Select boxes are a useful way of saving time and ensuring that any values entered into a field are valid.

From a form, the user moves between fields by using either the <return> or cursor keys. If a select box is available for a particular field the 'select key' prompt will be displayed at the bottom of the screen. If no 'select key' prompt is displayed, no select box is available.

Having pressed the select key the user is presented with a pop-up select box from which a value can be chosen. This is achieved by moving up and down the list using the cursor keys and pressing the select key again when the required item is highlighted.

Having selected an item the pop-up select box is removed and control returned to the form, where the selected value is now displayed in the current field.

At any time in the select pop-up the user can press the 'cancel key' and return to the form without having selected a value.

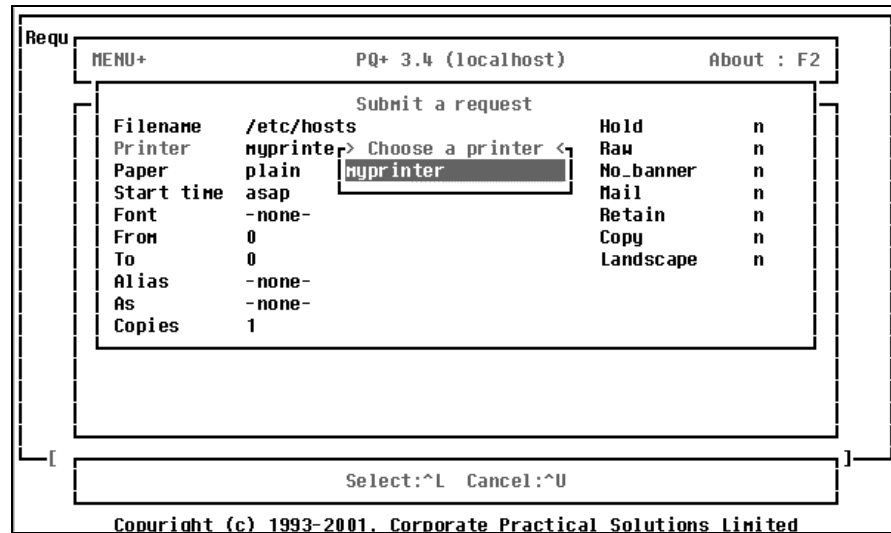


Figure 22 : Using a menu select box

Command line options

A number of command line options are available for the pqmenu program. In previous versions of PQ+ these have not been made known to the user as the majority of the facilities offered by these options are specific to the menu system. However a number of installations have found these options useful for developing in-house PQ+ scripts and these are now made available for all users.

\$ \$PQ_HOME/pqmenu 'option'



Note :

Should a command line option be incorrectly typed the user will by default enter the menu system.

Listing the PQ+ queues

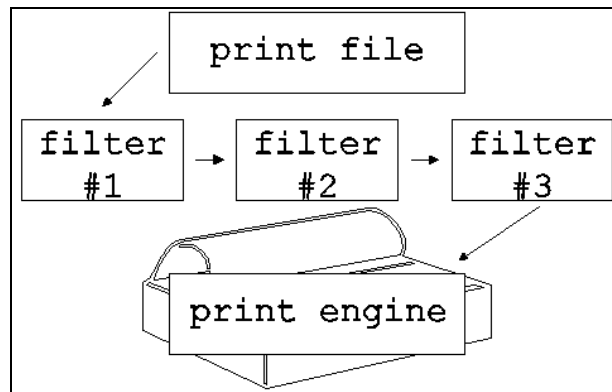
-list_the_queues

Will display all currently configured PQ+ queues in a simple list, one queue will be displayed per line.

Chapter 8 : PQ+ printers

A PQ+ printer is defined in the configuration file `'/usr/pq+/config/printers.cfg'`, and consists of any number of filters and a print engine.

The PQ+ controller process will start the printers as necessary. Once started the printer filters pre-process the print file before the print engine actually delivers the print to the printer.



A number of filters are supplied with PQ+ and are detailed in the 'filters' section of this manual.

It is very important to note that the ordering of the filters will effect the way in which the file is processed.

Controlling PQ+ printers

Starting a PQ+ printer

To start a PQ+ printer the following command should be used :

```
$ pcon -start `printer_name`
```

When a PQ+ printer is 'started' the controller will start it as appropriate.

Stopping a PQ+ printer

A printer can be stopped in two ways.

To stop a PQ+ printer when idle or at end of the current print, the following command should be used :

```
$ pcon -stop `printer_name`
```

To stop a PQ+ printer immediately, the following command should be used :

```
$ pcon -stop `printer_name` -now
```

If the printer is busy when an immediate stop is requested, the active print will remain in the queue and will be reprinted when the printer is restarted.



Note :

When a PQ+ printer is 'stopped' the controller will not be able to start it up to service print requests.

Pausing a PQ+ printer

To pause a PQ+ printer currently printing a request, the following

command should be used :

```
$ pcon -pause `printer_name`
```

Unpausing a PQ+ printer

To unpause a paused PQ+ printer the following command should be used :

```
$ pcon -unpause `printer_name`
```

Printer status

In order to display the current status of the PQ+ printers the following command should be used :

```
$ pcon -status
```

State	Description
READY	The printer is able to be started by the PQ+ controller as required.
(READY)	The printer is ready but the PQ+ controller is stopped.
STOPPED	The printer will not be started by the PQ+ controller
PRINTING	The printer has been started by the PQ+ controller, and is servicing a print request.
PAUSED	The printer has been paused whilst servicing a print request.

OUT OF ACTIVE FRAME	The printer is outside the time window which has been defined using the 'active window directives and will not print any requests.
------------------------	--

Abandoning a PQ+ print

If a PQ+ printer is printing a file which is not required, the printer may be instructed to abandon the print by using the following command :

```
$ pcon -abandon `printer_name`
```

Restarting a PQ+ print

If a PQ+ printer is printing a file and is required to go back to the start and begin printing again, the following command should be used :

```
$ pcon -restart `printer_name`
```

Backing up a PQ+ print

If a PQ+ printer is printing a file and is required to go back a certain number of pages and re-print them, the following command should be used :

```
$ pcon `printer_name` -backup `npages`
```

Where 'npages' is the number of pages required to go back.

Printer log files

The PQ+ printers maintain a log file while running; they may be viewed by using the following command :

```
$ pcon -log `printer_name`
```

Printer Definitions

Printers are defined in the ``usr/pq+/config/printers.cfg`` file. A block of directives starts with the ``BEGIN`` statement and finishes with an ``END``.

A sample definition might be as follows :

```
BEGIN laser  
      status STARTED  
      paper plain  
END LASER
```



Note :

Printer definitions are normally maintained by the menu system, but can be changed through the use of an editor such as ``vi``.

Paper types

A printer can service prints that have been printed on particular paper types. This is achieved by the use of the ``paper`` and ``extra_paper`` directives in the ``usr/pq+/config/printers.cfg`` configuration file.

This might be done as follows :

```
BEGIN laser  
...  
paper plain  
extra_paper cheques  
extra_paper cheques2  
...  
END laser
```

In this example there are three types of paper that will be serviced by the printer, ``plain``, ``cheques`` and ``cheques2``. You can define as many ``extra`` types of paper for clearing as is necessary.

Aliases



Tip : aliases could be used for the following:

getting one printer to cover for another which is temporarily unavailable. logically grouping printers together. ie. all central printers might have an alias of 'central'. Any prints submitted to 'central' would then be printed on the first central printer that was available.

By default a printer will service prints that have been submitted to a printer of the same name⁴. You can however define a PQ+ printer to run with alias names.

For example :

```
BEGIN laser
...
...
alias laser2
END laser
```

This example shows a printer 'laser', which will service prints that have been submitted to 'laser' and to 'laser2'.

Active time windows

In order to automatically stop a printer outside certain hours of the day it is possible to limit the printer activity to a time window. This is achieved by using start and stop directives in the printer definition file.

For example :

```
START laser
...
start 8:00
stop 18:00
...
END laser
```

This example shows a printer 'laser', which will only service prints between 8AM and 6PM. The 'start' and 'stop' time may also include dates and special PQ+ keywords.

⁴ Using the '-at' directive of the printq command.

Banners and trailers

In order to print a banner page at the beginning of the print the following directive should be placed in the printer definition in the `\usr/pq+/config/printers.cfg` file.

``banner``

In order to print a trailer page at the end of the print the following directive should be placed in the printer definition in the `\usr/pq+/config/printers.cfg` file.

``trailer``

For example :

To turn banners and trailers on for a printer called ``laser``.

START laser

**`...
banner
trailer`**

**`...
END laser`**

Model types

The printer model type is used to obtain the relevant character sequences for items such as fonts and page orientation.

This is achieved by using the model directive in the printer definition file.

For example :

START laser

**`...
model laserjet`**

**`...
END laser`**

In turn a model such as 'laserjet', as shown above, must be defined in the model configuration file - '/usr/pq+/config/models.cfg'.

For example :

START laserjet

```

...
portrait portrait_codes
landscape landscape_codes
courier courier_codes
times times_codes

```

END laserjet

Where the '..._codes' are replaced by the appropriate control/escape sequences appropriate for the printer type.

Filters

Filters are a set of programs that are typically located in the PQ+ 'filters' subdirectory. They are a number of programs that read standard input, manipulate the data and then write it to standard output. Filters are included in printer definition files and are 'executed' in the order in which they are typed.

A sample definition might be as follows :

```

BEGIN laser
status STARTED
paper plain
filter filter1
filter filter2
END LASER

```

Filters provided with PQ+ are shown below, but you can of course develop your own. For instructions on how this can be achieved please contact your PQ+ distributor.

cr_null_map

'cr_null_map' is a filter supplied for use with certain terminal servers which require that a carriage return ('<CR>') is padded out to include a trailing NULL character ('<CR><NULL>').

No arguments are required with this filter.

expand_cr

'expand_cr' is a filter supplied for use with printers that require a carriage return as well as a line feed at the end of each line of text in a printfile. This is achieved by inserting a carriage return ('<CR>') before each line feed ('<CR><LF>').

No arguments are required with this filter.

double_ff

Double form feed will convert any form feed characters (<CTRL>L) to a double form feed pair (<CTRL>L<CTRL>L).

No arguments are required with this filter.

send_codes

No arguments are required with this filter.

send_ff

No arguments are required with this filter.

pstext

'pstext' is a Postscript filter written by Dan Judd of Michigan State University.

This program takes plain ASCII text and converts it to Postscript.

Description

Pstext reads each file in sequence converts it from plain text to PostScript and writes it to the standard output, if no files are specified it reads from the standard input. Backspaces move the current point back the width of the underscore (_) in the current font and pointsize. Form feeds cause text to begin printing on a new page, in the case of dual page mode the next page may actually be on the same piece of paper. Separate files always begin on a new page. Tabs are set every width of the current tabstring (see -t option below).

Some care has been taken to keep the PostScript generated as generic as possible.

Options

-p	prints portrait mode 1 page (default)
-l	prints landscape mode 1 page
-ld	dual landscape mode 2 pages per page
-d	dual portrait mode, prints 2 pages per page
-n number	number of lines per page
-t tabstring	use a different tabstring size (00000000 default)
-f fontname	use a different font (Courier default)
-s pointsize	use a different point size (12 default)
-i pointoffset	offset pointoffset points from normal (0 default)
-cy	turn font checking on (default)
-c	turn font checking on
-cn	turn font checking off
-x value	set x left margin to value
-xl value	set x left margin to value (18 default)
-xr value	set x right margin to value (14 default)
-xp value	set x page size to value (612 default)
-y value	set y top margin to value
-yt value	set y top margin to value (8 default)
-yb value	set y bottom margin to value (13 default)

-yp value	set y page size to value (792 default)
-v	print version and quit
-T printertype	set defaults for printertype later flags modify this



Note :

Margin values are based on 8 1/2 X 11 inch paper from an Apple LaserWriter other printers may vary. To change defaults see defines below.

'pstext' handles tabs and backspaces in an intelligent way in any font.

Postscript font names

The Apple LaserWriter, one of the more common PostScript printers, has the following fonts available: (note: the fonts must be specified exactly as shown.)

AvantGarde-Book	AvantGarde-BookOblique	AvantGarde-Demi
AvantGarde-DemiOblique	Bookman-Demi	Bookman-DemiItalic
Bookman-Light	Bookman-LightItalic	Courier
Courier-Bold	Courier-BoldOblique	Courier-Oblique
Helvetica	Helvetica-Bold	Helvetica-BoldOblique
Helvetica-Narrow	Helvetica-Narrow-Bold	Helvetica-Narrow-BoldOblique
Helvetica-Oblique	NewCenturySchlbk-Bold	NewCenturySchlbk-BoldItalic
NewCenturySchlbk-Italic	NewCenturySchlbk-Roman	Palatino-Bold
Palatino-BoldItalic	Palatino-Italic	Palatino-Roman
Symbol	Times-Bold	Times-BoldItalic
Times-Italic	Times-Roman	ZapfChancery-MediumItalic
ZapfDingbats		

Options in detail

-l

Text will be displayed in landscape mode.

-ld

Text will be displayed in landscape and dual page mode.

-d

Text will be displayed in portrait and dual page mode.

-p

Text will be displayed in portrait mode (default).

-cy

Font checking is turned on. If a font can't be found Courier is used (default).

-cn

Font checking is turned off. No attempt is made to check validity of font.

-s "pointsizes"

Text will be displayed in the given pointsizes (12 default). Fractional pointsizes are acceptable.

-f "fontname"

Text will be displayed in the give font if available (Courier default). Any font may be specified, if the printer (or whatever is displaying the PostScript) can not find the font Courier will be used anyway. Fonts commonly available are Courier-Bold, Helvetica, Helvetica-Bold, Times-Roman Times-Bold, Times-Italic and Symbol. There are obviously more depending on your output device.

-i "pointoffset"

Text will be offset pointoffset points from where text normally starts. Note: this does not mean from the edge of the page, there is an offset from there already.

-n "numberoflines"

Text will be displayed with numberoflines per page. This takes precedence over -s flag.

-t "tabstring"

Tabs will be the width of tabstring in the current pointsizes and font. The default tabstring is 00000000, meaning that tabstops are placed every width of 8 0's. Tabs will go to the nearest forward tab stop. 0000000 is used so columns of numbers will line up nicely.

-T "printertype"

Sets up default margins, page size and font checking information for printertype subsequent flags (-x[lrp], -y[tdp], etc) will modify these. The printertype is not case sensitive.

alwnt	Apple LaserWriter NT
alwntx	Apple LaserWriter NTX (same as alwnt)
next	Next's 400 dpi laser printer
hpiii	HP LaserJet III with PostScript Cartridge

`-x[lrp] "pointdist"`

The x margins can be changed from their default settings to pointdist. The flags are xl xr and xp standing for x left margin, x right margin, x page size respectively. The defaults are 18, 14, and 612 respectively.

`-y[tbp] "pointdist"`

The x margins can be changed from their default settings to pointdist. The flags are yt yb and yp standing for y top margin, y bottom margin, y page size respectively. The defaults are 8, 13, and 792 respectively.

Reference

PostScript Language Reference Manual by Adobe Systems Inc.

Further information

In some systems (Next for example) findfont will look for fonts in more places than just those that FontDirectory gives. In these cases pstext output may not print in the desired font and will print in Courier instead. There are a couple of options in dealing with this. Specifying the `-cn` option will override the font validation.

The default margins have been set to work for an Apple LaserWriter NTX these may need to be reset for devices whose margins differ. No checking is done of user specified margins, pstext assumes you know more about your printer than pstext does.

If the file printed is an exact multiple of the number of lines per page a trailing blank page is produced. This is due the first line on the new page being set up before any text is on the page when the end of file is reached there could be something on the page so it is printed. In general only nroffed documents seem to have this problem often, deleting the last blank line is generally an easy option in this case.

Printer engines

The print engine is the mechanism which is used to actually deliver the print file to the printer. All PQ+ printers must have an engine in order to print successfully.

A number of print engines are supplied with PQ+.

Network

Description

The Network TCP/IP engine will deliver data read from stdin to a printer attached to a port on a terminal server.

The port should have been configured with a port number and will therefore be addressable through the use of this coupled with the TCP/IP address of the server.

Options

-printer_ip `tcp/ip_address`

Defines the address of the terminal server to which the printer is attached. This should be supplied using the traditional 'n.n.n.n' format or alternatively a host name which is defined in the hosts or DNS files.

-printer_port `port_number`

Defines the terminal server port number that has been configured for use by the printer. This is usually set using an administrator function in the terminal server software.

-connect_retries `num_retries`

Defines the number of attempts to connect to a terminal server port before giving up. (default : 3)

-connect_timeout `num_seconds`

Defines the maximum duration of a connect attempt to a terminal server before giving up. (default : 5)

-connect_delay `num_seconds`

Defines the duration of the pause between connect attempts. (default : 5)

Example

```
BEGIN printer3  
  ...  
  paper plain  
  ...  
  engine network -printer_ip 10.4.0.10 -printer_port 5000  
  ...  
END printer3
```

Netflex

Description

The NetWare Flex/IP engine will deliver data read from stdin to a JetDirect connected printer or Windows 2000/NetWare print queue found on a server running the appropriate UNIX printing services.

Options

-s 'JetDirect IP Address/server_name'

Direct the print to the JetDirect TCP/IP address or named NetWare server, which must be defined in the hosts or DNS files.

-p 'queue_name'

Directs the print to the named NetWare print queue. Note : this can be any value for a JetDirect connected printer.

Example

```
BEGIN printer4
    ...
    paper plain
    ...
    engine netflex -s server10 -p laserjet4
    ...
END printer4
```


Chapter 9 : The World Wide Website



A website has been set up for Corporate Practical Solutions and features a set of pages for the PQ+ product. Facilities for download, feedback, tips and late breaking news are available for viewing.

Come and visit us

The screenshot shows the website for Corporate Practical Solutions, specializing in Unix and Microsoft Windows utilities since 1992. The page is dated Thu Nov 7 2002. The main navigation menu includes Home, Products, Download, Support, Contact, News, and About. A dropdown menu is set to 'PQplus print spooling'. The page title is 'Print Spooling for UNIX' and the main heading is 'Printing to NT and Novell print queues is a snip with PQplus'. The text describes PQplus as an advanced software package for networked printing on UNIX systems. A 'Testimonials' section features a quote from the European Leisure Group. A diagram illustrates the architecture where a UNIX system with PQplus connects to a TCP/IP network, which in turn connects to NT and Novell print servers and printers. A 'Download PQplus today' button is visible on the right side.

If you feel that something is missing from the website or would like certain parts of it extended, please feel free to feedback to our Webmaster, who will be pleased to help.

Chapter 10 : Appendices

Keywords

Description

PQ+ keywords are special words which are enclosed in percentage (%) marks. They may be specified in certain strings that are supplied to PQ+ and will be replaced by appropriate values at job execution time.

The following table indicates all of the PQ+ keywords and their meaning.

Available Keywords

PQ_JOBNO	The entry number of the PQ+ request that is currently being executed.
PQ_HOME	The home directory of the PQ+ installation. This would normally be '/usr/PQ+' or '/opt/PQ+'.

Table 12 : PQ+ keywords

Options supporting keywords

The following PQ+ options support parameters that contain keywords :

Printer engine definition

Running multiple copies of PQ+ on the same machine

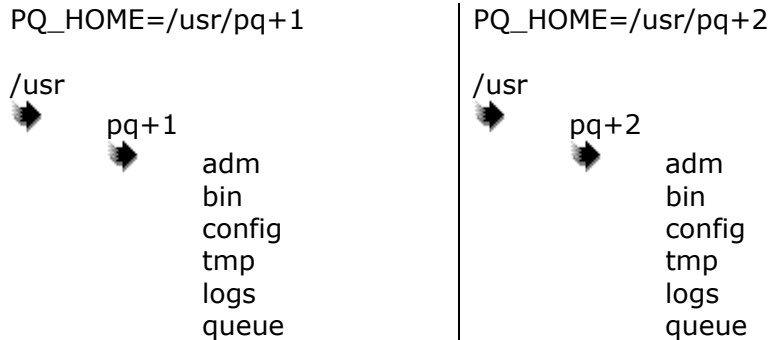
Description

💡 Tip :

In order to save space, the 'bin' directory in one of the PQ+ systems could be a symbolic link to the 'bin' directory in the other.

A particular installation may require a specific machine to run more than one PQ+ system at the same time. This might be useful for example, in a clustered configuration. This is possible, and can be achieved by using more than one PQ+ directory subsystem and an environment variable defining the PQ+ home directories.

For example to run two PQ+ systems the following might be set up:



In this scenario, two PQ+ systems 'pq+1' and 'pq+2' have been installed onto the '/usr' partition.

In order to access the correct PQ+ system, the environment variable 'PQ_HOME' must be defined as the appropriate home directory; i.e. '/usr/pq+1' or '/usr/pq+2'.

📌 Note :

If no 'PQ_HOME' variable is defined, '/usr/pq+' will be used. In this case '/usr/pq+' should be set up as a symbolic link to either '/usr/pq+1' or '/usr/pq+2'.

In order for both systems to operate, two PQ+ Controller processes must be started. This can easily be achieved by using the 'PQ_HOME' environment variable to select the appropriate system and the 'pcon -start' command.

 Note :

Running more than one PQ+ system on the same machine can get a little complicated. If you have difficulty, first check that the 'PQ_HOME' environment variable is set correctly.

INDEX

- A**
- abandoning a print ...65
 - active time windows .67
 - admin.cfg51
 - administrator.....41
 - alias67
 - aliases.....67
 - api
 - menu command line
 - options.....61
 - appendices.....81
 - applications
 - programming interface
 - menu command line
 - options.....61
 - audit
 - Netserver46
 - automatic options37
 - not requiring a
 - parameter38
 - requiring a parameter
 -37
- B**
- backing up a print65
 - banner68
 - banners 27, 68
- C**
- character based menus
 - pqmenu55
 - combining listing options
 -35
 - completed jobs28
 - configuration files.....49
 - admin.cfg.....51
 - control.cfg.....50
 - control.keys.....51
 - remote.cfg54
 - control.cfg18, 50
 - control.keys..... 51
 - controller..... 22, 62, 63
 - log file..... 44
 - overview 41
 - signalling..... 44
 - starting 42
 - status 43
 - stopping 42
 - controller overview .. 41
 - controlling printers .. 63
 - cr_null_map 70
- D**
- date/time string 23
 - default_shell 49
 - definitions
 - printer 66
 - deleting a request.... 31
 - developing in house
 - scripts
 - menu command line
 - options 61
 - disk space 13
 - double_ff..... 70
- E**
- end page..... 26
 - engines
 - printer 75
 - entry number..... 34
 - environment variables37
 - modifying a job 39
 - options not requiring a
 - parameter..... 38
 - options requiring a
 - parameter..... 37
 - evaluation period..... 17
 - expand_cr 70
- F**
- filters 62, 69
 - fixing the queue.....47
 - Flex/IP77
 - font26
 - formatting
 - disabling25
 - full listing.....34
- G**
- GID 13
- H**
- help text.....59
 - holding a job25
- I**
- installPQ+ 14
- J**
- job states33
- K**
- keywords.....81
 - options supporting 81
 - kill_delay50
 - kill_sequence 50
- L**
- LaserWriter 72, 74
 - license_code 18, 50
 - licensing17
 - extending evaluation
 -17
 - permanent18
 - listing the queue.....32
 - log file
 - controller44
 - Netserver.....46

logfiles	PATH	19	-portrait	27
printer	pausing a printer	63	-quiet	28
M	pcon		-raw	25
machine name	-extend	17	-retain	28
Machine types	-log	18	-retry	30
menus	permanently licensing	18	-to	26
changing host	platforms	11	-unhold	30
changing the help text	poll_timer	50	pstext	71
.....	Postscript	71	Q	
character based	PQ_HOME	19	queue	
description	PQ+ controller	41	maintenance	47
command line options	PQ+ location	19	queues	
.....	pqmenu		listing API	61
control.keys	-create_terminal... ..	53	R	
starting character	starting	56	remote working	39
based menus	print engine	62, 75	remote.cfg	54
using select boxes in	print file		restarting a print	65
character based	copying	28	retrying a print	30
menus	printer		S	
model types	definitions	66	selective listing	34
modifying a request .	engines	75	send_codes	70
multiple copies	pausing	63	send_ff	70
multiple PQ+	specifying	22	signalling the controller	
N	starting	63	44
netflex	stopping	63	silent running	28
netflex engine	unpausing	64	staging area	13
Netserver	printer name	35	start page	26
audit	printers.cfg ..	22, 62, 66,	start time	23
log file	68		starting a printer	63
starting	printq	21, 67	starting the controller	42
status	-at	22	starting the Netserver	45
stopping	-copy	28	states	33
NetWare	-delete	31	status	
notification	-fix	47	printer	64
P	-font	26	stopping a printer	63
page	-from	26	stopping the controller	42
orientation	-hold	25	stopping the Netserver	
paper	-host	39	45
specifying	-landscape	27	symbolic link	19
paper type	-list	32		
paper types	-list -at	35		
	-list -full	34		
	-mail	25		
	-on	23		

T		
TCP/IP.....	75	
terminal		
line drawing.....	53	
terminal servers	70	
trailer	68	
		trailers
		turning off an option
		U
		unholding a print.....
		unpausing a printer .
		W
		Website