

# RocketPort® Series Device Driver for the Solaris Operating System *Software Installation Card*

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## Before You Begin

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Before you install the RocketPort device driver for Solaris, you must:

- Install the RocketPort card or cards using the *Hardware Installation Card* that came with your card or download it from the web/ftp sites.
- Remove any older RocketPort device driver that may be on your system.
- [Obtain](#) and extract the current driver files.

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## Removing the Existing Driver

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Follow these steps to remove the existing RocketPort driver:

1. Log in as the system administrator (root) and invoke the `pkgrm` utility. Use this syntax:  

```
pkgrm rckt
```
2. If you have other drivers to remove at this time, do so.
3. Shut down and reboot the system so that your changes take effect.  

```
shutdown -y -i6 -g0
```

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## Extracting the Driver Files

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This driver is released in a `.z` file. The package is released with the following file name format:

`180xxxxX.Z`

where:

`180xxxx` is the Comtrol file name.  
`X` is the revision letter.  
`.Z` means that the file has been compressed.

1. Start up `/usr/openwin/bin/openwin`.
2. Go to the File Manager.
3. Insert the diskette that contains the Solaris file you downloaded.
4. Go to the File menu and select Check Floppy.
5. Drag the `180xxxxX.Z` file from the floppy to the `/var/spool/pkg` directory.
6. Return to the command prompt as root, go to the `/var/spool/pkg` directory, and type the following commands to create a directory structure named `rckt`.

```
uncompress 180xxxxX.Z
tar xvf 180xxxxX
```

7. Go to *Installing the Device Driver* to install the driver.

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## Installing the Device Driver

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After installing the RocketPort card and extracting the driver, follow these steps to install the RocketPort driver.

1. Boot the system, login as the system administrator (root), and invoke the `pkgadd` utility.  

```
pkgadd rckt
```
2. Press `Enter` to select the ALL option.
3. Select the number and type of cards you are installing by answering the questions presented during the install. See the *Hardware Installation Card* for I/O DIP switch settings for ISA series cards.
4. Shutdown the system and turn the computer off:  

```
shutdown -y -i6 -g0
```
5. Configure the RocketPort cards using the information in the following discussions.

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## Device Names

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This driver provides three device types:

- **Non-modem Control**  
Enabling direct device names allows communications with a *non-modem* serial device over a simple 3-wire connection, consisting of the transmit and receive data lines and the signal ground.
- **Modem Control**  
The modem control device names require modem control to function properly. Specifically, the carrier detect signal must be present before the serial port becomes active.
- **Transparent Print**  
This is an output-only device that allows you to access the auxiliary port on a terminal.

The driver creates only the required number of devices needed for each card. Non-modem control devices are in `/dev/term`, modem control devices are in `/dev/cua`, and transparent print devices are in `/dev/tprint`.

Device names are assigned as shown in the table below:

### Device Names

	Ports	Non-modem Control	Modem Control	Transparent Print
Board 1	0 - 7	r0a - r0h	r0A - r0H	tpr0a - tpr0h
	8 - 15	r1a - r1h	r1A - r1H	tpr1a - tpr1h
	16 - 23	r2a - r2h	r2A - r2H	tpr2a - tpr2h
	24 - 31	r3a - r3h	r3A - r3H	tpr3a - tpr3h
Board 2	32 - 39	r4a - r4h	r4A - r4H	tpr4a - tpr4h
	40 - 47	r5a - r5h	r5A - r5H	tpr5a - tpr5h
	48 - 55	r6a - r6h	r6A - r6H	tpr6a - tpr6h
	56 - 63	r7a - r7h	r7A - r7H	tpr7a - tpr7h
Board 3	64 - 71	r8a - r8h	r8A - r8H	tpr8a - tpr8h
	72 - 79	r9a - r9h	r9A - r9H	tpr9a - tpr9h
	80 - 87	raa - rah	raA - raH	tpraa - tprah
	88 - 95	rba - rbh	rbA - rbH	tprba - tprbh
Board 4	96 - 103	rca - rch	rcA - rcH	tprca - tprch
	104 - 111	rda - rdh	rdA - rdH	tprda - tprdh
	112 - 119	rea - reh	reA - reH	tprea - tpreh
	120 - 127	rfa - rfh	rfA - rfH	tprfa - tprfh

**Note:** With RocketPort/ISA cards, the board numbering sequence is determined by card I/O addresses. With RocketPort/PCI cards, the numbering sequence is determined by the PCI slot number. When mixing ISA- and PCI-bus RocketPort cards, the ISA cards always come before the PCI cards. For example, if you have one ISA and one PCI RocketPort, the ISA card will always be Board 1 and the PCI card will always be Board 2.

For more information on ISA I/O addressing, see your RocketPort Hardware Installation Card.

You can use the shell scripts in the following table to establish port services. The shell scripts make installation of `ttymon` login services easier. See the man pages for information about using port monitors, and the `sacadm` and `pmadm` commands.

After you set up the login services, you may need to do the following:

- Optionally, configure Transparent Print.
- Optionally, use Baud Rate Mapping to access baud rates higher than 38,400.

### Port Services Shell Scripts

Script Name	Description
<b>addttymon</b> <i>port_monitor</i>	Adds a <code>ttymon</code> port monitor named <i>port_monitor</i> . The system needs only one port monitor to manage login service for all serial ports.
<b>addtysrv</b> <i>port_monitor</i> <i>service_tag</i> <i>ttydefs_entry</i>	Adds login service for a port to the port monitor named <i>port_monitor</i> . The <i>service_tag</i> is the same as the device name in <code>/dev/term</code> . Line settings are obtained from the <i>ttydefs_entry</i> in the <code>ttydefs</code> file.
<b>addmdmsrv</b> <i>port_monitor</i> <i>service_tag</i> <i>ttydefs_entry</i>	This script is similar to <code>addtysrv</code> , except that this script configures the login service as a dial-in/dial-out modem. The device names table shows the modem control device names assigned to each serial port on the RocketPort controller. You must use uppercase device names that may be found in <code>/dev/cua</code> .
<b>rmsrv</b> <i>port_monitor</i> <i>service_tag</i>	Removes the login service name <i>service_tag</i> from the port monitor named <i>port_monitor</i> .

The following example shows how to create a port monitor, enable direct connect login services for Port `r0a`, and configure the port for dialup login with a baud rate of 38400.

```
/control/rckt/addttymon port_monitor
/control/rckt/addtysrv port_monitor r0a 38400
/control/rckt/addmdmsrv port_monitor r0B 38400
```

### Enabling Ports

To enable a port, enter this command:

```
pmadm -e -p<port_monitor> -s<service_tag>
```

For more information, see the man page for `pmadm`.

### Disabling Ports

To disable a port, enter this command:

```
pmadm -d -p<port_monitor> -s<service_tag>
```

For more information, see the man page for `pmadm`.

### Viewing Settings

To view the current `tty` settings for a port, enter this command:

```
stty -a </dev/term/portname
```

For more information see the man page for `stty`.

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## Baud Rate Mapping

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UUCP and CU do not support baud rates above 38.4 Kbps. Therefore, to take full advantage of the RocketPort board's potential speed (such as 57.6K, 76.8K, 115.2K, or 230.4K), you must use one of the following methods to remap baud rates on one or more ports:

- **setbaud**

This program enables you to remap baud rates for one or more ports, for the current session only.

**Note:** 460K is not supported.

- **baud.init**

This command enables you to remap the baud rates automatically each time the system is rebooted.

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## Setbaud

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Follow these steps to remap baud rates for the current session:

1. Disable the ports for which you want to remap baud rates.
2. Enter this command:

```
/control/rckt/setbaud -h /dev/term/portname
```

The rates are remapped as shown in the following table:

**Baud Rate Mapping**

System Rate	Setbaud Rate
50	57600
75	76800
110	115200
134	230400

3. Repeat Step 2 for each port for which you are remapping rates.
4. Use the normal tty administrative procedure to set the port to the system rate. The *setbaud* rate is used instead.

To map a port to a rate not in the *setbaud* table, enter this command:

```
/control/rckt/setbaud -u /dev/term/portname oldrate newrate
```

Where *oldrate* is the system rate and *newrate* is the desired new rate.

To reset a port to standard system rates, enter this command:

```
/control/rckt/setbaud -n /dev/term/portname
```

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## Baud.init

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Follow these steps to permanently remap baud rates:

1. Edit the `/control/rckt/baud.cfg` file to list the ports for which you are remapping baud rates. To use the remapped rates listed in the *setbaud* table, simply list the devices names. For example:

```
/dev/term/r0a  
/dev/cua/r0A  
/dev/term/r0b  
/dev/cua/r0B
```

To create a custom mapping scheme, enter the device name, the old rate, and the new rate the old rate is mapped to. For example:

```
/dev/term/r0a 9600 230400  
/dev/cua/r0A 9600 230400  
/dev/term/r0b 9600 230400  
/dev/cua/r0B 9600 230400
```

Each port can be remapped to different rates, and you can remap more than one rate for a given port. For example:

```
/dev/term/r0a 300 115200  
/dev/cua/r0A 300 76800  
/dev/cua/r0A 1200 230400
```

2. Reboot the system, or execute `/control/rckt/baud.init` for immediate change. The rates will be remapped each time the system is rebooted.
3. Use the normal tty administrative procedure to set the port to the system rate. The remapped rate is used instead.

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## Terminal Sessions in Solaris

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The following procedure is a step-by-step example of how to enable login services and log in under Solaris. Adapt this procedure as needed.

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### Enabling Login Services

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This example enables port r0a for direct connection at 38,400 baud.

1. Connect a null modem cable from RocketPort Board 1, Port 0, to the modem port of a dumb terminal.
2. Set the terminal modem port baud rate to 38400, 8 data bits, no parity, 1 stop bit. If needed, reinitialize the terminal so that it is using the new settings.
3. Enter this command to create a port monitor named `rcktttest`:

```
/control/rckt/addttymon rcktttest
```
4. Enter this command to create port service:

```
/control/rckt/addttypsv rcktttest r0a 38400_8bit
```

- From the terminal, enter your login name and password. If you get gibberish in response, check the terminal baud rate setting and verify that it matches the baud rate setting on the server port. If you get an intelligible response but still can't log in, check the parity and data bits settings.

To see the current settings for the RocketPort port, enter this command on the system console:

```
stty -a < /dev/term/r0a
```

- From the terminal, move around the system and open files to verify that everything is working correctly. Access the **custom** utility to verify that the system is interpreting ASCII control sequences correctly.
- When you are finished, type **exit** and log out.

## Transparent Print

The *transparent print* feature enables users to attach a printer to the auxiliary port available on most video display terminals. Data can then be directed from the host through the terminal to the printer, without disturbing the normal keyboard entry and terminal display functions. In effect, this enables you to attach two devices—a terminal and a printer—to one port. You may assign a printer name to the port using a print spool facility and use it as any other output-only device.

### Basic Setup

Follow these basic steps to set up transparent print:

- Using a null modem cable, attach a printer to the auxiliary port on the terminal.
- Create and edit the `/control/rckt/tprint.cfg` file to configure the tprint port using `tprint.sample`.
- Run `/control/rckt/psetup -t` to invoke test mode and verify the statements in `tprint.cfg` without updating the driver.  
If the test fails, return to Step 2.  
When the test results are error-free, proceed to Step 4.
- Run `/control/rckt/psetup` to inform the driver of the new configuration.
- Enable the terminal for logins.
- You may now redirect output to the printer via the tprint port device name.

For more information, see the following discussions.

### TPRINT.CFG

Each printer device must be described in the `tprint.cfg` file. This description consists of a group of statements which describe the characteristics of the terminal and printer used. Each statement consists of a keyword/parameter pair in the form, *keyword=parameter*.

See your hardware owner's manuals for information regarding the statements required by your printer.

`tprint.cfg` statements consist of up to five lines for each port used:

```
device=
auxon=
auxoff=
printcps=
option=
```

The keywords are described further in the following table.

Keyword	Description
<b>device</b>	This specifies the printer device for a group of statements, and must be the first line in each group of statements describing a device. All statements that follow this statement and come before the next device statement (or the end of the file) will apply to the named device. <i>Example: device=tpr0a</i>
<b>auxon</b>	This requires a 1- to 4-character ASCII sequence enclosed by parentheses, a mnemonic form, or a literal hexadecimal value preceded by a backslash, and specifies the control sequence that must be sent to the terminal to enable auxiliary port printing. While in transparent mode, all characters received by the terminal are redirected out the auxiliary port. The following example enables transparent printing on a Wyse 60: <i>Example: auxon=(esc d #)</i> See your terminal documentation for more information about <code>auxon</code> and <code>auxoff</code> auxiliary on/off.
<b>auxoff</b>	This is similar to <code>auxon</code> , and specifies the control sequence that must be sent to the terminal to disable auxiliary port printing. The following example is for a Wyse 60: <i>Example: auxoff=(dc4)</i>
<b>printcps</b>	This statement specifies (in decimal) the throughput count for the printer in characters per second ( <i>not</i> the baud rate). The device driver meters out 80-percent of this number. For example, if you select 100, the actual throughput count is 80 CPS. See your printer documentation for more information about the throughput count.

Keyword	Description
<b>option</b>	<p>This specifies any optional post-processing that is to be performed on data output to the auxiliary port.</p> <p>There are three options available:</p> <ul style="list-style-type: none"> <li>• <b>onlcr</b> outputs a newline character as nl,cr (newline, carriage return)</li> <li>• <b>ocrnl</b> outputs a carriage return as a newline</li> <li>• <b>none</b> produces normal output</li> </ul> <p>See your printer documentation for more information about post-processing.</p>

## PSETUP

After **tprint.cfg** has been set up, run the **psetup** program in test mode. This will verify the statements in **tprint.cfg**, but *not* update the driver. Any errors found are listed by **tprint.cfg** line number. The syntax is:

```
/control/rckt/psetup -t
```

After you have verified that the configuration is error-free, run **psetup** in normal mode to transfer the **tprint** information to the device driver. The syntax is:

```
/control/rckt/psetup
```

**Psetup**, which is installed with the driver, can be run from a bootscript in the `/etc/rc2.d/s51rcktpport` directory any time after booting, and may be run repeatedly.

You must have **login** service running on the terminal attached to a configured printer, otherwise no data is sent to the printer.

It is not necessary to restart the system if the configuration file is changed. Simply re-execute `/control/rckt/psetup` to re-scan the configuration file and configure the port with the new parameters.

## Example Transparent Print Setup

The following example uses an IBM InfoWindow II 3153 and an Epson LQ-510 printer. Copy and adapt these procedures as needed. More examples may be found in the file `/control/rckt/tprint.sample`.

The terminal is set up as follows:

```
emulation=wyse60
enhanced mode=on
commmode=full duplex
Host/Printer=EIA/None
EIAbaud=38400
AUXbaud=38400
EIAdata=8/1/N
AUXdata=8/1/N
```

1. Use a null-modem cable to connect the SES1-EIA port on the terminal to RocketPort Board 1, Port 0 (ttyr0a).
2. Use a serial-to-parallel cable to connect the printer to the SES2-AUX port on the terminal.

3. Verify that the driver has been installed with transparent print feature enabled and a port speed of 38,400.
4. Disable `/dev/term/r0a`.
5. Edit `/control/rckt/tprint.cfg` and add the following lines:

```
device=tpr0a
auxon=(esc d #)
auxoff=(dc4)
printcps=90
option=onlcr
```
6. Run `/control/rckt/psetup -t`.

The program should return (test mode). If not, resolve the error conditions and repeat until **tprint.cfg** is error-free.
7. Run `/control/rckt/psetup`.
8. Enable `/dev/term/r0a`.
9. You may now direct output to the printer via the **tprint** device name. For example, enter this command:

```
ls> /dev/tprint/tpr0a
```

This should print a listing of the present working directory on the printer, without printing to the terminal screen.
10. To further test the printer, cat files to `/dev/tprint/tpr0a`.
11. Login on the terminal and cat files to the printer. The video display should not stop while printing is in progress.

## Common Installation Issues

Before you call Control technical support, please use following checklist:

- Check to make sure all cables are connected properly.
- Check the signals between your peripherals and the RocketPort interface box to verify that they match (if applicable). See the *RocketPort Hardware Installation Card* for port pinouts.
- If using a RocketPort/ISA cards, check the DIP switch settings on each card to verify that the addresses are correct.
- Use **resmgr** to examine the system memory usage for conflicts.
- Make sure the controller board is seated firmly in the bus slot and the expansion slot screw is in place.
- Reinstall the board and driver, selecting a different I/O address range for the controller.

If this fails to resolve the problem, run the diagnostic:

1. Shut down your system.
2. Insert the **RocketPort Diagnostics** diskette in your primary drive.
3. Power-up your system, and allow it to boot from the diagnostic diskette.
4. Follow the on-screen instructions.

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## Solving Modem-Related Problems

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If you have problems connecting to a modem-equipped port, disconnect the cable to the modem or turn off the modem. You can use the `cu` command to test a port with no modem present. After connecting to the port, reconnect or power on the modem and set the modem parameters.

The most useful tool for diagnosing dial-out problems is the `-d9` option to `cu`. Using this option causes `cu` to display diagnostic output. To do so, follow this syntax:

```
cu -d9 -l devicename phonenumber
```

Where *devicename* is the port you are trying to use and *phonenumber* is the number you are trying to dial.

If you get a “connected” message when you test the modem with `cu` but no response to an AT command, follow these steps:

1. Move the modem to a standard serial port and try it there. If it works on a standard port but not on a RocketPort port, the problem lies in the RocketPort board or port configuration.
2. Move the modem back to the RocketPort port.
3. Verify that the modem switch and software settings are correct.
4. Check the modem cable to make sure it is attached at both ends.
5. After issuing the `cu` command, press **Enter** several times and watch the lights on the modem. The receive light should flash. If only the send light flashes, the local echo may be turned off. Use the `ATE1` command to turn on the modem’s local echo feature.
6. If no lights flash, the modem cable may be defective. Replace it.
7. Use the **RocketPort Diagnostics** to verify that the port is working.

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## Solving Printer-Related Problems

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To identify and resolve printer problems *not* related to transparent print, follow these steps:

1. Verify that a **serial** printer is powered up, connected to the correct port, and on-line.
2. Verify that the printer is connected using the correct cable. See the *RocketPort Hardware Installation Card* and your printer manual for connector pinouts and cable specifications.
3. Move the printer to a standard serial port, and try it there. If it works on a standard port but not on a RocketPort, the problem may lie in the RocketPort board or port configuration.
4. Move the printer back to a RocketPort port.
5. Enter this command to send a file directly to the printer port:

```
cat /etc/termcap >/dev/term/rXX
```

Where *XX* is the port to which the printer is attached.

- a. If you get nothing, check to make sure the device driver is loaded, the port is enabled, and that you are in fact connected to the port you think you’re connected to. If all of this is true, connect the printer to the COM1 or COM2 port and repeat this step. If the printer still fails to print, the problem is in the printer. If the printer does print, run the RocketPort diagnostic.
- b. If you get a partial file printout or garbled characters, go to the sections on *Flow Control*.
- c. If the file is printed correctly, but you are unable to print from an application, check the application setup.
- d. If the file is printed correctly, but you are unable to print through the UNIX spooler, go to the section on *UNIX Spooler Problems*.

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## Checking Flow Control

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To check flow control setup, enter this command:

```
stty -a </dev/term/rXX
```

Where *XX* is the port to which the printer is attached.

The system should respond with something like this:

```
speed 38400 baud;
intr = DEL; quit = ^\; erase = ^H; kill = ^U;
eof = ^D; eol = ^@; eol2 = <undef>; swtch = ^@
start = ^q; stop = ^s; susp = ^2; dsusp = <undef>
rprnt = ^r; flush = ^o; werase = ^w; lnext = ^v;
-parenb -parodd cs8 -cstopb hupcl cread -clocal -loblk -
parext
-ignbrk -brkint ignpar -parmrk -inpck -istrip -inlcr -igncr
icrnl -iucl
ixon ixany -ixoff -imaxbel
isig icanon -xcase echo echoe echok -echonl -noflsh
-tostop -echoctl -echoprnt -echoke -detecho -flusho -pendin -
ixterm
opost -olcuc onlcr -ocrnl -onocr -onlret -ofill -ofdel tab3
rtsxoff ctsxon -dtrxoff -cdxon -isxoff xcibrg rcibrg tsetcoff
restcoff
-isscancode
```

**Note:** *These lines are shown for example only. The parameters for your system will probably be different. A minus sign (-) in front of a parameter indicates that it is not configured, while a blank space means that it is configured.*

## Software (XON/XOFF) Flow Control

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Pay particular attention to the minus signs (-) in front of *ixon*, *ixany*, and *ixoff*. A minus sign means that the parameter is turned off, which in turn may mean that flow control is not being handled correctly. To force XON/XOFF flow control, enter these commands:

```
cat </dev/term/rXX >/dev/term/null &  
stty 38400 IXON -IXANY IXOFF </dev/term/rXX
```

Where *XX* is the port to which the printer is attached.

This example assumes the printer is running XON/XOFF handshaking and 38400 baud. The `cat` command opens a background process on the printer port and the `stty` command sets the baud rate and handshaking.

If this solves the problem, make the corrections permanent by adding the `cat` and `stty` commands shown above to the boot file, then rebooting the system.

## Hardware (CTS/RTS) Flow Control

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Pay particular attention to the minus signs (-) in front of *ctsxon* and *rtsxoff*. A minus sign means that the parameter is turned off, which in turn may mean that flow control is not being handled correctly. To force CTS/RTS flow control, enter these commands:

```
cat </dev/term/rXX >/dev/term/null &  
stty 38400 -IXON -IXANY IXOFF ctsxon rtsxoff </dev/  
term/rXX
```

Where *XX* is the port to which the printer is attached.

This example assumes the printer is running hardware handshaking and 38400 baud. The `cat` command opens a background process on the printer port and the `stty` command sets the baud rate and handshaking.

If this solves the problem, make the corrections permanent by adding the `cat` and `stty` commands shown above to the boot file, then rebooting the system.

## UNIX Spooler Problems

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The System V `lp` spooler has a known problem that causes serial ports with buffers beyond the UNIX internal buffers to drop characters at the end of print jobs.

When the `lp` spooler daemon wants to print something, it forks a child process. The child opens the printer port, then forks a process to run the interface shell script. When the shell is finished printing, it exits.

There can still be characters in the output buffer at this point, but because the child still has the printer port open, the shell exits immediately. The child is notified that the shell has exited, it sends a message to the daemon (via the named FIFO) indicating the print job has completed, the child then exits, and the exit code eventually enters the port's close routine.

If there are still characters left to be output to the printer, the process sleeps in the close routine until the characters have gone out the port or until the process gets a signal.

The `lp` spooler, however, upon receipt of the "print done" message, sends a `sigterm` signal to the child. If the child is in the close routine waiting for characters, it wakes up,

flushes its buffers, and exits. This is how the data is lost.

## Possible Solutions

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1. Enter `stty -hupcl &1 ;` in the interface shell script immediately before every possible exit. This prevents the shell from exiting before all the characters have been sent out the serial port.
2. Enter `sleep 30` in the interface shell script immediately before every possible exit. This also prevents the shell from exiting before all the characters have been sent out the serial port.
3. For applications which must access the printer device directly, insert the following command in the boot file:

```
stty baud IXON IXOFF -IXANY; while: ; do sleep 3600;  
done)< portname &
```

Where *baud* is the printer baud rate and *portname* is the serial device name. This line can also be issued as a command from the root prompt, but unless `nohup` is used, this process will exit and the serial line will be reset when root logs out. Placing this command in the boot file will ensure that the process will be spawned upon going into multi-user mode, and continue until the system is shut down or the process is killed manually.

## Retaining Non-Default Parameters on Disabled Ports

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Drivers only retain `stty` settings for a particular line as long as that line is open. Likewise, when you do an `stty` on a closed port, the `stty` settings are not retained. When you apply `stty` settings to your login `tty`, the changes are retained because even after `stty` terminates, the login shell continues to hold the line open.

To make `stty` settings permanent, enter these commands:

```
(while;; do sleep 3600; done) < /dev/term/rXX &  
stty desired parameters < /dev/term/rXX
```

Where *XX* is the board/port number, and *desired parameters* are the desired `stty` command parameters.

The effect of this is to open, set, and close the port, but because this is nested inside the first open, the parameters will stick. You may place these lines in one of the boot scripts in the `rc.d` directory.

## Transparent Print: Known Issues

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The `stty` command is not effective for the auxiliary devices supported by transparent print. This is important when setting up a printer interface program through the print spool facility. The `stty` commands must be removed or disabled within the print spool facility, otherwise a bad address message appears at the top of any printed output.

If the corresponding terminal is very busy, output to the printer may be extremely sluggish or not at all.

Applications that use spreadsheets, menus, windows, and so on send *escape sequences* to the terminal. Escape sequences cannot be broken up by data going to the printer. Output to the screen is given top priority, and output to the printer is passed through only when nothing is going to the screen, in order to ensure that escape

sequences are not broken up.

If control sequences similar to the auxon/auxoff sequences are being printed, the sequences are incorrect. Make sure you are configuring auxon/auxoff control sequences, *not* transparent print on/off.

If you are experiencing flow-control problems, make sure the terminal and port settings are the same as the printer settings. *Auxiliary* port settings do not need to match the terminal settings.

Finally, make sure you are using the right cable for your printer, and that it provides the control signals your printer requires. For more information, consult the printer manual.

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## Technical Support

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Control has a staff of support technicians available to help you. Before you call, please have the following information available:

Item	Your System Information
Model number	
Serial number	
Interface type	
I/O address and IRQ	
Operating system type and release	
Device driver version	
PC make, model, and speed	
List other devices in the PC and their addresses	

Control	Headquarters	Europe
Phone	(651) 631-7654	+44 (0)1869 323220
FAX	(651) 631-8117	+44 (0)1869 323211
Email	<a href="mailto:support@control.com">support@control.com</a>	<a href="mailto:support@control.co.uk">support@control.co.uk</a>
web site	<a href="http://www.control.com">www.control.com</a>	<a href="http://www.control.co.uk">www.control.co.uk</a>
ftp site	<a href="ftp://ftp.control.com">ftp.control.com</a>	

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