

MCS98xx Linux Driver Installation Guide

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Revision History

Revision	Date	Description
V1.00	2014/03/20	Initial release

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1. Introduction

This installation guide describes the procedures to install MCS9805, MCS9815, MCS9820, MCS9835 and MCS9845 PCI Serial / Parallel ports on Linux platform.

Note: In this document MCS9835 is taken as an example. Please follow the same procedures to install MCS9805, MCS9815, MCS9820 and MCS9845.

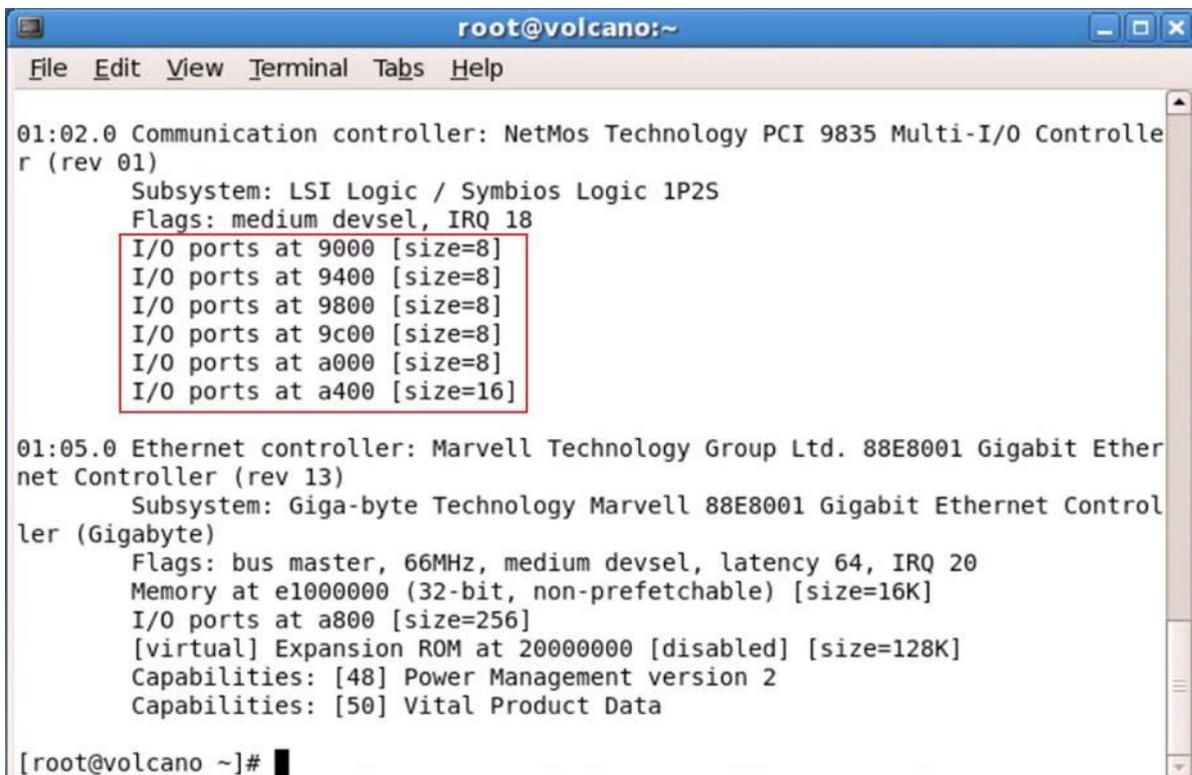
2. Linux Serial Port Driver Installation

2-1. How to install MCS98xx Linux serial port driver

The following are the MCS98xx Linux serial port driver installation procedures.

1. Connect the tested MCS98xx serial port to the COM port of another PC through RS-232 Null modem cable.
2. Run "lspci -v" command to make sure the assigned MCS98xx Serial Ports I/O and IRQ resources.

lspci -v



```
root@volcano:~  
File Edit View Terminal Tabs Help  
01:02.0 Communication controller: NetMos Technology PCI 9835 Multi-I/O Controller (rev 01)  
Subsystem: LSI Logic / Symbios Logic 1P2S  
Flags: medium devsel, IRQ 18  
I/O ports at 9000 [size=8]  
I/O ports at 9400 [size=8]  
I/O ports at 9800 [size=8]  
I/O ports at 9c00 [size=8]  
I/O ports at a000 [size=8]  
I/O ports at a400 [size=16]  
  
01:05.0 Ethernet controller: Marvell Technology Group Ltd. 88E8001 Gigabit Ethernet Controller (rev 13)  
Subsystem: Giga-byte Technology Marvell 88E8001 Gigabit Ethernet Controller (Gigabyte)  
Flags: bus master, 66MHz, medium devsel, latency 64, IRQ 20  
Memory at e1000000 (32-bit, non-prefetchable) [size=16K]  
I/O ports at a800 [size=256]  
[virtual] Expansion ROM at 20000000 [disabled] [size=128K]  
Capabilities: [48] Power Management version 2  
Capabilities: [50] Vital Product Data  
  
[root@volcano ~]#
```

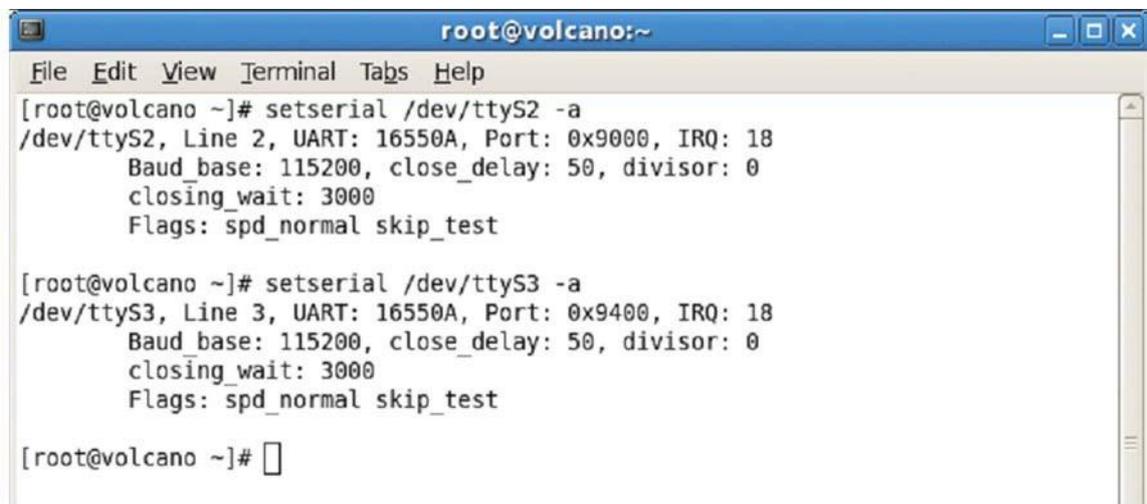
3. Run below commands to install the Linux serial port driver for MCS98xx serial ports.

Note that please run the “setserial /dev/ttyS2 -a” and “setserial /dev/ttyS3 -a” commands to make sure the ttyS2 and ttyS3 are not assigned to other serial ports yet before running the following commands to install the Linux serial port driver.

```
# setserial /dev/ttyS2 port 0x9000 uart 16550A irq 18 baud_base 115200  
# setserial /dev/ttyS3 port 0x9400 uart 16550A irq 18 baud_base 115200
```

4. Run below commands to check the ttyS2 and ttyS3 serial ports setting.

```
# setserial /dev/ttyS2 -a  
# setserial /dev/ttyS3 -a
```



```
root@volcano:~  
File Edit View Terminal Tabs Help  
[root@volcano ~]# setserial /dev/ttyS2 -a  
/dev/ttyS2, Line 2, UART: 16550A, Port: 0x9000, IRQ: 18  
  Baud_base: 115200, close_delay: 50, divisor: 0  
  closing_wait: 3000  
  Flags: spd_normal skip_test  
  
[root@volcano ~]# setserial /dev/ttyS3 -a  
/dev/ttyS3, Line 3, UART: 16550A, Port: 0x9400, IRQ: 18  
  Baud_base: 115200, close_delay: 50, divisor: 0  
  closing_wait: 3000  
  Flags: spd_normal skip_test  
  
[root@volcano ~]#
```

5. Now the MCS98xx serial ports, ttyS2 & ttyS3 are ready now. You can run "minicom" command to test the MCS98xx serial ports if necessary.

```
# minicom
```

On minicom console, press Ctrl + A and then Z to configure a proper serial port setting such as "/dev/ttyS2", 8N1, etc. After changing the serial port setting, press "X" command to exit the minicom tool and then run the minicom tool again to take effect the new serial port setting.

2-2. How to manually add a new serial port device node on Linux

Normally, Linux system supports 4 default serial ports (e.g. ttyS0, ttyS1, ttyS2, ttyS3; ttyF0, ttyF1, ttyF2, ttyF3; etc.). Most likely, ttyS0 & ttyS1 are supported by mother board's built-in serial controllers, and ttyS2 & ttyS3 are free for additional I/O card. If you need manually add more serial port device nodes on Linux system, you can refer to the following command to add more serial port device nodes (e.g. ttyS4, ttyS5 as below).

```
# mknod /dev/ttyS4 c 4 68
```

```
# mknod /dev/ttyS5 c 4 69
```

```
root@volcano:~
elp
tty18  tty48      usbdev3.3_ep01
tty19  tty49      usbdev3.3_ep81
tty20  tty5       usbdev4.1_ep00
tty21  tty50      usbdev4.1_ep81
tty22  tty51      usbdev5.1_ep00
tty23  tty52      usbdev5.1_ep81
tty24  tty53      vcs1
tty25  tty54      vcs2
tty26  tty55      vcs3
tty27  tty56      vcs4
tty28  tty57      vcs5
tty29  tty58      vcs6
tty30  tty59      vcs7
tty31  tty60      vcs8
tty32  tty61      vcsa1
tty33  tty62      vcsa2
tty34  tty63      vcsa3
tty35  tty64      vcsa4
tty36  tty65      vcsa5
tty37  tty66      vcsa6
tty38  tty67      vcsa7
tty39  tty68      vcsa8
tty40  tty69      watchdog
tty41  urandom    X0R
tty42  usbdev1.1_ep00 zero
tty43  usbdev1.1_ep81
tty44  usbdev2.1_ep00
tty45  usbdev2.1_ep81
```

```
root@volcano:~
elp
tty25  tty55      vcs1
tty26  tty56      vcs2
tty27  tty57      vcs3
tty28  tty58      vcs4
tty29  tty59      vcs5
tty30  tty60      vcs6
tty31  tty61      vcs7
tty32  tty62      vcs8
tty33  tty63      vcsa1
tty34  tty64      vcsa2
tty35  tty65      vcsa3
tty36  tty66      vcsa4
tty37  tty67      vcsa5
tty38  tty68      vcsa6
tty39  tty69      vcsa7
tty40  tty70      vcsa8
tty41  urandom    watchdog
tty42  urandom    X0R
tty43  zero
tty44  zero
tty45  zero
```

3. Linux Parallel Port Driver Installation

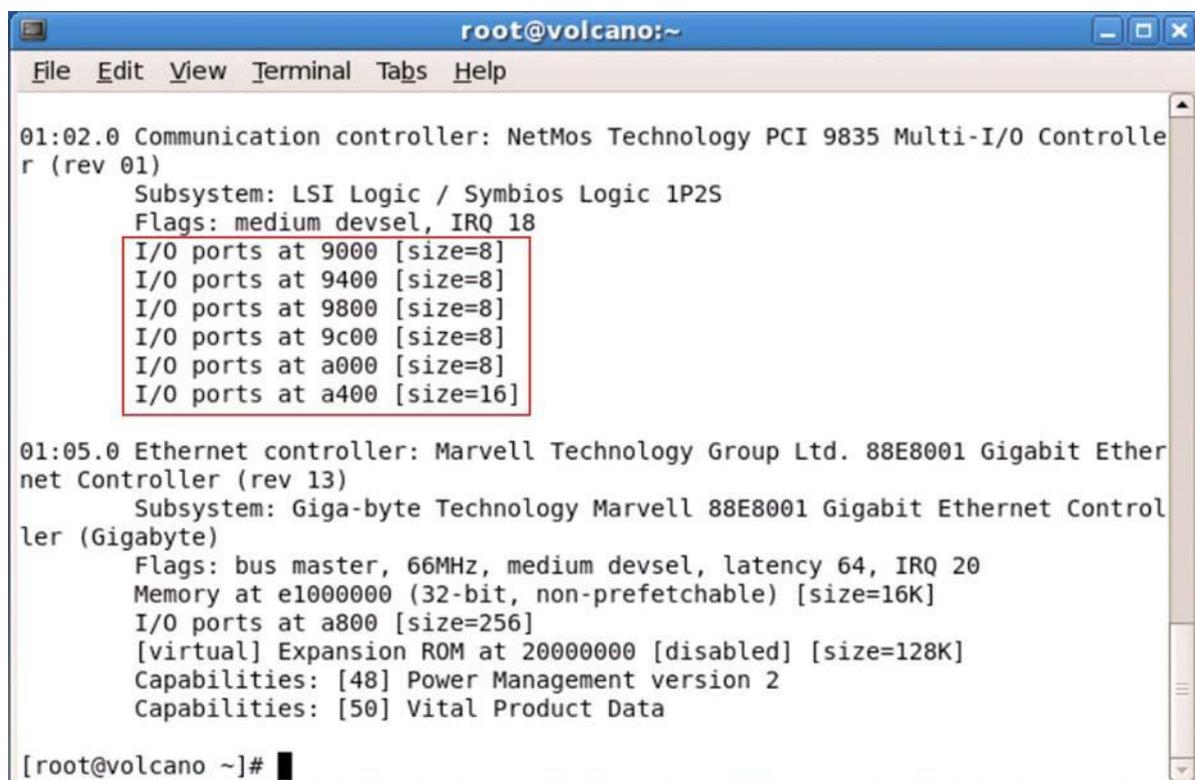
The following are the MCS98xx Linux parallel port driver installation procedures.

3-1. How to install MCS98xx Linux parallel driver

1. Run below commands to install the Linux parallel port driver for MCS98xx parallel port.

Below command indicates onboard parallel port at 0x378 with IRQ 4 and MCS98xx parallel port at 0x9800 with IRQ18 as below figure.

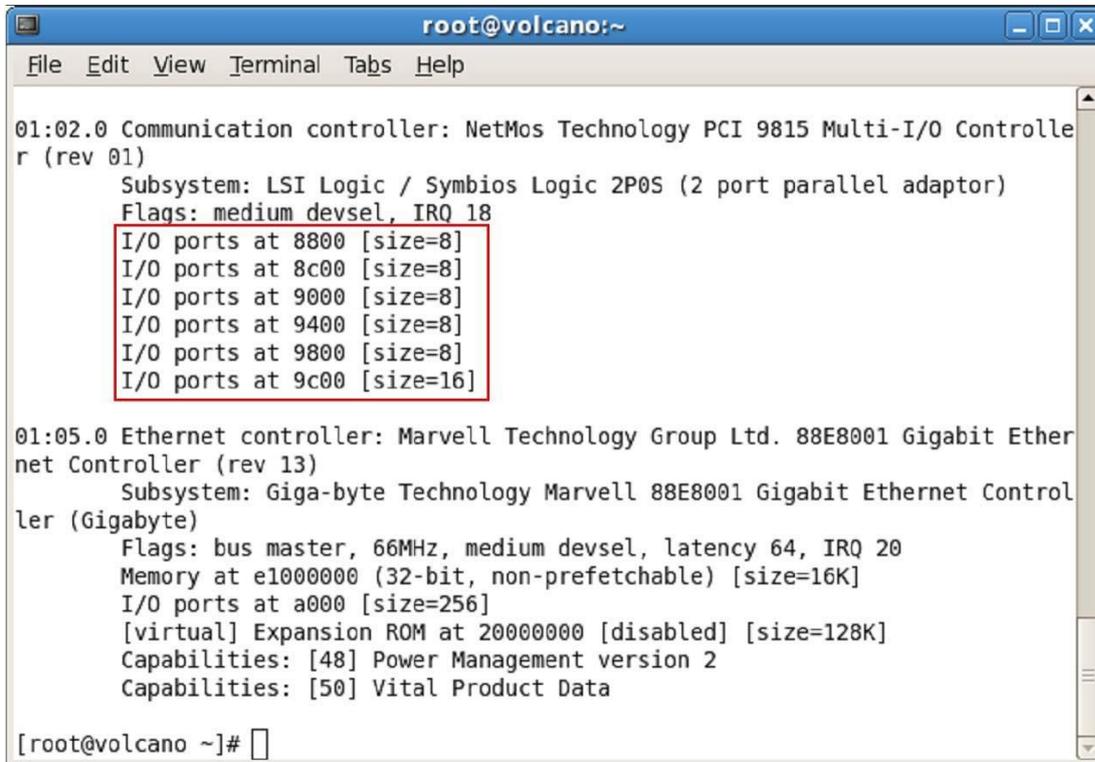
```
# modprobe parport_pc io=0x378,0x9800 irq=4,18
```



```
root@volcano:~  
File Edit View Terminal Tabs Help  
01:02.0 Communication controller: NetMos Technology PCI 9835 Multi-I/O Controller (rev 01)  
Subsystem: LSI Logic / Symbios Logic 1P2S  
Flags: medium devsel, IRQ 18  
I/O ports at 9000 [size=8]  
I/O ports at 9400 [size=8]  
I/O ports at 9800 [size=8]  
I/O ports at 9c00 [size=8]  
I/O ports at a000 [size=8]  
I/O ports at a400 [size=16]  
01:05.0 Ethernet controller: Marvell Technology Group Ltd. 88E8001 Gigabit Ethernet Controller (rev 13)  
Subsystem: Giga-byte Technology Marvell 88E8001 Gigabit Ethernet Controller (Gigabyte)  
Flags: bus master, 66MHz, medium devsel, latency 64, IRQ 20  
Memory at e1000000 (32-bit, non-prefetchable) [size=16K]  
I/O ports at a800 [size=256]  
[virtual] Expansion ROM at 20000000 [disabled] [size=128K]  
Capabilities: [48] Power Management version 2  
Capabilities: [50] Vital Product Data  
[root@volcano ~]#
```

In case if you require using more than 2 parallel ports (for example MCS9815), you can run below command to install the parallel port driver for two MCS9815 parallel ports as below figure.

```
# modprobe parport_pc io=0x378,0x8800,0x9000 irq=4,18,18
```



```
root@volcano:~  
File Edit View Terminal Tabs Help  
01:02.0 Communication controller: NetMos Technology PCI 9815 Multi-I/O Controller (rev 01)  
  Subsystem: LSI Logic / Symbios Logic 2P05 (2 port parallel adaptor)  
  Flags: medium devsel, IRQ 18  
  I/O ports at 8800 [size=8]  
  I/O ports at 8c00 [size=8]  
  I/O ports at 9000 [size=8]  
  I/O ports at 9400 [size=8]  
  I/O ports at 9800 [size=8]  
  I/O ports at 9c00 [size=16]  
01:05.0 Ethernet controller: Marvell Technology Group Ltd. 88E8001 Gigabit Ethernet Controller (rev 13)  
  Subsystem: Giga-byte Technology Marvell 88E8001 Gigabit Ethernet Controller (Gigabyte)  
  Flags: bus master, 66MHz, medium devsel, latency 64, IRQ 20  
  Memory at e1000000 (32-bit, non-prefetchable) [size=16K]  
  I/O ports at a000 [size=256]  
  [virtual] Expansion ROM at 20000000 [disabled] [size=128K]  
  Capabilities: [48] Power Management version 2  
  Capabilities: [50] Vital Product Data  
[root@volcano ~]#
```

2. Connect the printer to MCS98xx LPT port.
3. Boot up Linux system and run below commands to test the MCS98xx parallel port through printer. (The Linux printer driver should be installed automatically while booting up Linux system)

```
# dmesg
```

==> Check if the printer is installed properly or not?

```
# ls /dev/lp0
```

```
# ls /dev/parport0
```

==> Check if the lp0 device is installed properly or not?

```
# cat log1.txt > /dev/lp0
```

```
# echo test1_text > /dev/lp0
```

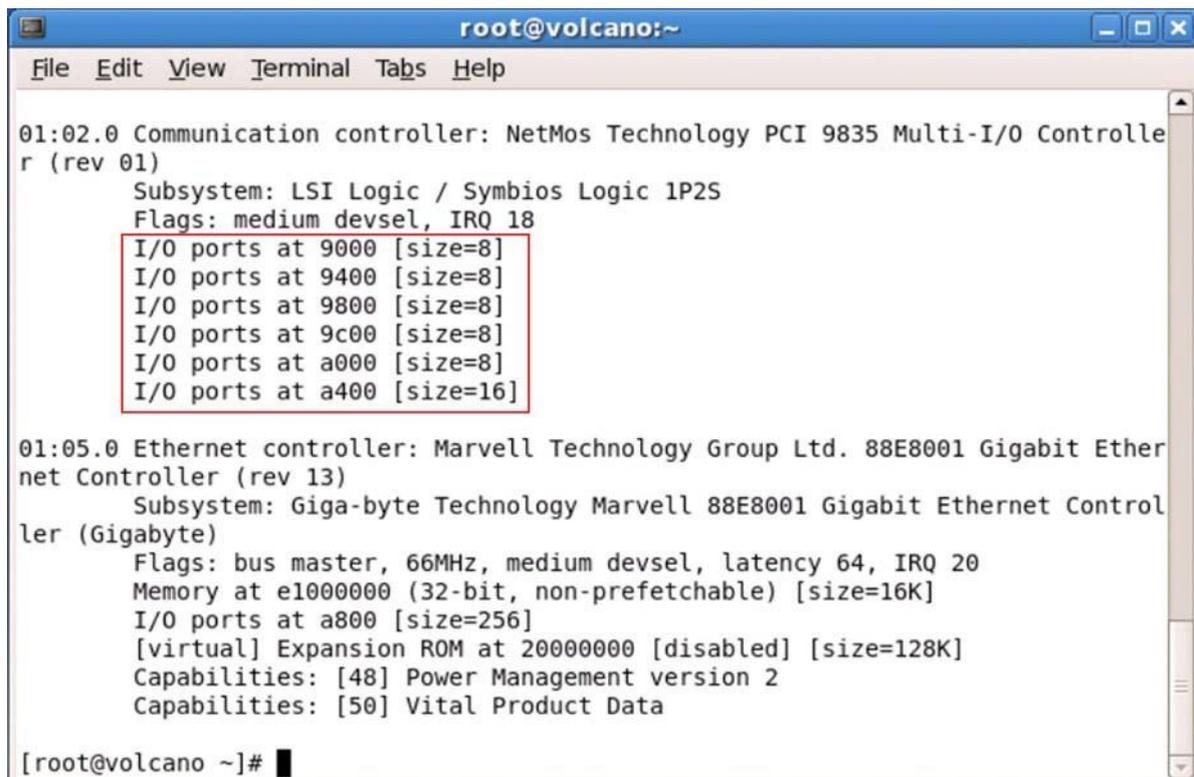
==> Print some texts to printer to test MCS98xx LPT port.

3-2. How to manually add a new parallel port device node on Linux

If the “lp0” parallel port device is not created properly, you can run the following commands to manually create the “lp0” parallel port device node.

1. Run "lspci -v" command to make sure the assigned I/O and IRQ resources of MCS98xx Parallel Port (at 0x9800 with IRQ18 as below figure).

lspci -v



```
root@volcano:~  
File Edit View Terminal Tabs Help  
01:02.0 Communication controller: NetMos Technology PCI 9835 Multi-I/O Controller (rev 01)  
Subsystem: LSI Logic / Symbios Logic 1P2S  
Flags: medium devsel, IRQ 18  
I/O ports at 9000 [size=8]  
I/O ports at 9400 [size=8]  
I/O ports at 9800 [size=8]  
I/O ports at 9c00 [size=8]  
I/O ports at a000 [size=8]  
I/O ports at a400 [size=16]  
01:05.0 Ethernet controller: Marvell Technology Group Ltd. 88E8001 Gigabit Ethernet Controller (rev 13)  
Subsystem: Giga-byte Technology Marvell 88E8001 Gigabit Ethernet Controller (Gigabyte)  
Flags: bus master, 66MHz, medium devsel, latency 64, IRQ 20  
Memory at e1000000 (32-bit, non-prefetchable) [size=16K]  
I/O ports at a800 [size=256]  
[virtual] Expansion ROM at 20000000 [disabled] [size=128K]  
Capabilities: [48] Power Management version 2  
Capabilities: [50] Vital Product Data  
[root@volcano ~]#
```

2. Run the following commands to uninstall all Linux parallel port related drivers first.

```
# rmmod lp  
# rmmod ppdev  
# rmmod parport_serial  
# rmmod parport_pc  
# rmmod parport
```

3. Run the following commands to install all Linux parallel port related drivers again.

```
# modprobe parport  
# modprobe parport_pc io=0x9800 irq=18  
# modprobe parport_serial  
# modprobe ppdev  
# modprobe lp
```

4. The “lp0” parallel port device node should be ready now.

```
# ls /dev/lp0  
# ls /dev/parport0
```



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