



Linux Driver Installation for NS-Link

Overview

You use this document to install and configure the Linux device driver (NS-Link™) the following hardware platforms:

- DeviceMaster™
- RocketPort® Serial Hub *ia*
- RocketPort Serial Hub *Si*

Note: *The Linux operating system is distributed from several sources. While all distributions share general file structure and functionality, there are differences that can impede the installation of device drivers. The instructions in this document outline a generic installation procedure. You may need to adjust for differences in a particular distribution using the Linux system documentation as a reference.*

This document assumes that you have already installed the Linux operating system (kernel version 2.0 or 2.2) and that you have a basic understanding of the Linux operating system.

Red, underscored items are links to URLs. **Blue**, underscored items are links within this document or to another document on the media. If you copy this document from the ftp/web or CD and do not use the procedure discussed on the CD, you will get an error message when selecting hyperlinks outside of this document. For example, the hardware documentation.

Installation Procedure

Use this procedure to install the driver.

1. If you have not done so already, install the hardware using the appropriate documentation:

- [DeviceMaster 4/8-port](#)
- [DeviceMaster 16-port](#)
- [RocketPort Serial Hub *ia*](#)
- [RocketPort Serial Hub *Si* 2-port](#)
- [RocketPort Serial Hub *Si* 4/8-port](#)

2. If necessary, download the device driver to the `/usr/src/` directory on the Linux system. For example:

```
cp 1800026D.tgz /usr/src/
```

3. Change to the `/usr/src` directory and use the `untar` command. For example:

```
cd /usr/src
tar xzvf 1800026D.tgz
```

A subdirectory of `/usr/src` now exists called `nslink`, which contains the driver and associated files.

4. Change to the `/usr/src/nslink` directory. For example:

```
cd nslink
```

5. Compile the driver.

```
make clean
make
```

6. Install the driver as root:

```
make install
```

7. Edit the `/etc/nslink.conf` file to reflect the boot file, network addressing method, and port modes. See [Editing the `nslink.conf` File](#) or the `nslink.conf` man page for information on how to edit this file.

8. If necessary, edit your `/etc/rc.d/rc.S` file (or other appropriate boot-up script) so that the `rc.nslink` script runs automatically each time your system boots.

Note: *This is done for you automatically if you are using a system with System V init files, such as is used in the RedHat or Debian releases.*

9. Either reboot to load the driver into the currently running system, or manually load the driver by running the `rc.nslink` script with the `start` argument. For example:

```
/usr/src/nslink/rc.nslink start
```

10. Configure your applications and/or your `getty` scripts as appropriate for your application.
11. Optionally, configure `inittab` to run the `gettys`.
12. Verify that the hardware is working properly using this table:

Model	Status
DeviceMaster	<ol style="list-style-type: none"> 1. The PWR LED on the front of the unit is lit, indicating you have power and it has completed the boot cycle. 2. The red LNK/ACT LED is lit, indicating that you have a working Ethernet connection. 3. The red 100 LED is lit, indicating a working 100 MB Ethernet.
RocketPort Serial Hub ia	<ol style="list-style-type: none"> 1. The yellow PWR LED is lit, indicating you have power and that the device driver has been downloaded to the device. 2. The green LNK LED is lit, indicating that you have a working Ethernet connection. 3. The yellow ACT LED flashes, indicating Ethernet activity on the network. <p><i>Note: If the PWR LED is still flashing, this means that the driver has not downloaded to the device.</i></p>
RocketPort Serial Hub Si 2-port	<ol style="list-style-type: none"> 1. Both 10/100BASE-T LEDs should be lit. 2. The Power LED in the front of the unit should be flashing (waiting for the driver to load).
RocketPort Serial Hub Si 4/8-port	<ol style="list-style-type: none"> 1. The lower 10BASE-T LED should be lit (if using a 10Base-T Ethernet connection). 2. The Port 1 LED should be flashing (waiting for the driver to load).

13. Connect your devices to the Control unit using the appropriate documentation:

- [DeviceMaster 4/8-port](#)
- [DeviceMaster 16-port](#)
- [RocketPort Serial Hub ia](#)
- [RocketPort Serial Hub Si 2-port](#)
- [RocketPort Serial Hub Si 4/8-port](#)



The driver's default port setting is RS-232. Make sure that you do not connect devices until the appropriate port interface type has been configured in the device driver.

14. If necessary, [configure your devices](#).

Editing the `nslink.conf` File

The network address type is the MAC address of the Control device or an IP address. Use the `nslink.conf` manual page for information about the attributes of the file. You can edit the `nslink.conf` file with:

- Any text editor
- **nslinktool**, an X11-based GUI front-end that allows you to perform common administrative tasks related to the Control device. `nslinktool` is written in Python using the Tkinter package, both must be installed to run `nslinktool`.

*Note: See the **nslinktool** manual page for information on how to use this program.*

The following information provides you with basic information and examples of the `nslink.conf` file. See the `nslink.conf` file for detailed information.

Configuration Overview

If the Control device is on the same LAN segment that this Linux server is on, then you can use either IP or MAC addressing. The network interface is normally **eth0**, unless you have multiple Ethernet cards. If you have multiple Ethernet cards, you should set the interface which is servicing the Ethernet LAN to be the same as where the Control device resides.

- If the Control device is on the same LAN segment as the Linux server, you use MAC addressing. During configuration use the Control device's hardware address, the server's Ethernet interface, and the number of ports available on this unit.

Note: The MAC address is on a label on the Control device and has this format: **00:C0:4E:##:##:##**.

- If the Control device is on a *different LAN segment* than the Linux server, then you must use IP addressing. During configuration use the Control device's IP address and the number of ports available on the Control device. The Control device gets its IP address through the network's DHCP server or with static configuration.

You can use either the **nslinkadmin** or **nslinktool** programs to configure IP information. See the **nslinkadmin** and **nslinktool** man pages.

- **nslinkadmin**, a command-line utility used to query, erase, or set the IP address information stored in non-volatile memory in the Control device.
- **nslinktool**, an X11-based GUI front-end that allows you to perform common administrative tasks related to the Control device. **nslinktool** is written in Python using the Tkinter package, both must be installed to run **nslinktool**.

Note: For **RocketPort Serial Hub Si 4/8-port models**, you can also use the Diagnostic and IP Configurator Utility to statically configure the IP address. You can find these diagnostic utilities on the CD shipped with your product or the [Web](#) site.

For **DeviceMaster RTS models**, you can also use *telnet* or a serial connection. See the [DeviceMaster RTS User's Guide](#) for IP programming information.

The ports of the Control device have selectable modes. You can configure each port individually as RS-232, RS-422, or RS-485. For each Control device configured, you have to define the modes for the ports. This section has to immediately follow the addressing line. Define the mode for each port, even if you are only using some of the ports. The definition contains the port number of the mode (RS-232, RS-422, or RS-485).

MAC Address Example

This example illustrates configuring a 2-Port device to use MAC addressing. Port 1 is configured to use RS-232 and Port 2 is configured to use RS-485.

```
# /etc/nslink.conf --- configuration file for NS-Link
# Ethernet MAC address interface number of ports (2/4/8/16)
00:C0:4E:11:FF:F0 eth0 2
# Port Number (1-8) RsMode (232,422,485, or Off)
1 232
2 485
```

IP Address Example

This example illustrates configuring a 2-Port device to use IP addressing. Port 1 is configured to use RS-232 and Port 2 is configured to use RS-485.

```
# /etc/nslink.conf --- configuration file for NS-Link
# IP address interface number of ports (2/4/8/16)
192.168.1.13 2
# Port Number (1-8) RsMode (232,422,485, or Off)
1 232
2 485
```

Configuring Your Devices

For current information on how to configure your devices for Linux, use the www.linuxdoc.org link to locate *HOWTO* documents for:

- Modems
- Printers
- Serial devices

Troubleshooting

If you are having trouble with the Control device, try the following.

Note: Most customer problems reported to Control Technical Support are eventually traced to cabling or network problems.

1. Verify that you are using the correct types of cables in the correct places and that all cables are connected securely.
2. Reboot the server.
3. **RocketPort Serial Hub Si (4/8-port):** If you are using a 10/100mb NIC, try locking the card to 10mb/s.
4. Verify that the Ethernet hub and any other network devices between the server and unit are powered up and operating.
5. Isolate the unit from the network.
 - DeviceMaster, move the Ethernet cable from for the port labeled UP to the port labeled DOWN.
 - RocketPort Serial Hub *ia* and RocketPort Serial Hub *Si*, use a “crossover” ethernet cable to connect the unit directly to the server (discussed in the *Hardware Installation* documentation).
6. Use [Minicom](#) to test the serial ports. Make sure that you configure the serial ports in the Minicom setup. For example, A - Serial Device: /dev/ttySI0.
7. Verify that the unit is powered on.
8. If a **RocketPort Serial Hub Si (4/8-port)**:
 - Turn the unit’s power switch off and on while watching the LED diagnostics. See the *Hardware Installation* documentation for information about the LEDs and running the diagnostics program.
 - If the Port 1 LED is flashing, this indicates that the driver has not downloaded to the unit. If you believe that the server’s configuration is correct, then there is probably a network problem.
 - Verify that the port polarity is correct.
9. Verify which servers are having problems controlling the device.
10. Verify that the network (MAC) address in the driver matches the MAC address on the Control device.
11. Verify that the network IP address is what the Control device acquired from the DHCP server or was manually entered. If you are using IP addressing, the server should be able to ping the Control device.
12. If you have a spare unit, try replacing the unit. If this corrects the problem, the Control device that you have removed from service may be defective or in need of repair.
13. Remove and reinstall the driver.

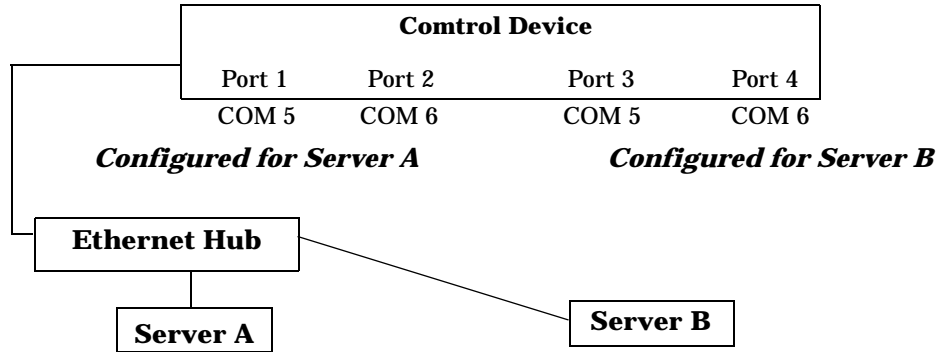
If you are unable to resolve the problem, see [Technical Support](#).

Using the Port Sharing Feature

The Control device can be shared with multiple servers on a network. To do so, follow the [Installation Procedure](#) discussion for each server that you want to permit access to the serial ports.

You can implement the port sharing feature in several ways. You can share the same port with multiple servers or you can set up multiple servers to share specific ports on the Control device.

Example of Using the Port Sharing Feature



COM port names must be unique to each server. Multiple servers can use the same COM port names, if desired.

Note: Most applications do not release ports, so you may not be able to use port sharing across multiple servers with the same port. Also, if using port sharing, make sure that two computers do not try to access the same port at the same time. Only one computer can control a given port at a given time.

Technical Support

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	
Operating system type and release	
Device driver version from HISTORY file	
PC make, model, and speed	

Control	Headquarters	Europe
Phone	(763) 494-4100	+44 (0)1869 323220
FAX	(763) 494-4199	+44 (0)1869 323211
Email	support@comtrol.com	support@comtrol.co.uk
Web support	Searchable Solution Database and FAQs	
Web site	www.comtrol.com	www.comtrol.co.uk
FTP site	ftp.comtrol.com	

Reporting Bugs

Please send Linux-related bug reports to support@comtrol.com. Control technical support can resolve issues related to the Control hardware and Linux driver software, but given the nature of Linux and the many variant distributions available, we cannot be held responsible for the behavior of the operating system.

Trademark Notices

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