

## *ATTO Celerity FC Troubleshooting Guide for Linux*

This document describes troubleshooting techniques that can be used to identify and resolve issues associated with the ATTO Celerity Fibre Channel host adapter. Some of these techniques may seem simplistic or overly obvious, but these are the ones that are commonly overlooked and can take several hours of frustration to find. It is important to only try one technique at a time. While changing multiple variables may seem to be a time saver, it usually complicates the troubleshooting process.

### A.) Linux Operating Systems

→ **The host adapter driver was loaded properly and everything was working, but the devices do not show up after the computer was rebooted. On some Red Hat Linux distributions, the driver may not automatically load when the system is booted.**

- To enable driver autoloading in Red Hat Enterprise Linux 3, 4, and 5, add the following line to **/etc/rc.modules** after installing the driver:

```
modprobe celerityfc <Enter>
```

(Note: you may need to create /etc/rc.modules and make it executable with 'chmod +x /etc/rc.modules')

→ **The host adapter can detect the target device at LUN 0 but not the devices at LUN 1 or higher in Red Hat Linux version 3 with kernel 2.4.**

- When using version 2.4 of the Linux kernel (eg. Red Hat 3), devices on LUN 1 or higher may not be detected automatically when the driver is loaded. This is a known issue with the 2.4 kernel. To manually detect such devices, issue the following command:

```
$ echo "scsi add-single-device <h> <b> <t> <l>" > /proc/scsi/scsi
```

Where <h> is the host, <b> is the port (always 0 for ATTO drivers), <t> is the target, and <l> is the LUN. You can confirm that the device has been detected by checking for it in /proc/scsi/scsi.

(Note: To automate the above "echo" command, write a script that executes at boot time. You need to include a line for each LUN. One possibility is add these lines to /etc/rc.d/rc.local for RedHat or to /etc/rc.d/boot.local for Suse.)

→ On certain 64-bit platforms, the driver Makefile may be unable to detect the correct CPU architecture. When compiling the driver, an error such as “*cc1 : error : CPU you selected does not support x86\_64 instruction set*”.

- This can be resolved by specifying the correct architecture when running the make command. For example: **\$make install ARCH=x86\_64**

→ The connected fibre devices aren't detected by the operating system.

- Verify the driver is loaded by examining the output of the **lsmod** command for “celertyfc”.
- Check **/proc/scsi/scsi** to see a list of SCSI and Fibre Channel devices that are known by the operating system.
- Try unloading and reloading the Celerity FC driver:
  - **rmmod celertyfc** (removes the driver)
  - **modprobe celertyfc** (re-applies the driver)

→ The Celerity host adapter is recognized, but it does not detect any of the connected fibre devices. The command *dmesg* can be used to see what devices are detected when the driver loads. It will list each device per fibre port.

- Verify the Fibre devices are powered on.
- Check the Fibre devices to see what type of connection mode and data rate they are set to. Some devices use “auto” for these settings. Manually setting the speed (1gig, 2gig, 4gig) may allow for better communication between the devices. You may also want to force these settings on the card. This can be done by using the ATTO Configuration Tool or entering into the ATTO CelerityFC Utility upon boot by entering CTRL-F when prompt.
- Check cable integrity. Check the cables for solid connections. Make sure the cables snap securely into place. Inspect cable for kinks or cuts. Be careful not to touch the ends of the cable, this can cause malfunctions in communication
- Verify the SFP is not damaged and rated for the Data Rate trying to be achieved. Also, try reseating the SFP. If this does not work, try replacing the SFP with a new one.
- If multiple Fibre Devices are being attached (switch, multiple Drive Arrays) try connecting one device at a time, adding devices until the problem occurs. This will help pinpoint the device or cable causing the problem.
- Watch the LED indicators on the Fibre card. They should show when you have a proper link and the connection speed you have negotiated with the device after startup. Drive lights should also flash at startup as the Fibre port is scanned. This may give a clue as to the root cause of the issue.
- Try putting the host adapter in a different PCI slot.
- Try updating the firmware on the host adapter as described in the “Installation and Operations” manual.
- If all else fails, replace the Celerity host adapter.

→ The computer's BIOS scan recognizes the Celerity host adapter, but only detects connected Fibre devices on one of the ports when using a dual or quad port Celerity Adapter. The other port(s) reports no devices. The command *dmesg* can be used to see what devices are detected on each Fibre port.

**\*Please note that if all devices attached to the Fibre card are reported on one channel although connected with two links to the device, this is most likely a MPIO or Multipathing issue. Please contact Technical Support for further a resolution.**

- Swap the devices **and cables** from the Fibre port that appears to be working with the one having issues. If the issue follows the port, verify the NVRAM settings are the same for both channels (connection mode and data rate). If this does not resolve the problem, replace the Fibre card.

**If the issue follows the attached Fibre devices, troubleshoot the attached devices:**

- Verify the Fibre devices are powered on.
- Check the Fibre devices to see what type of connection mode and data rate they are set to. Some devices use "auto" for these settings. Manually setting the speed (1gig, 2gig, 4gig) may allow for better communication between the devices. You may also want to force these settings on the card. This can be done by using the ATTO Configuration Tool or entering into the ATTO CelerityFC Utility upon boot by entering CTRL-F when prompt.
- Check cable integrity. Check the cables for solid connections. Make sure the cables snap securely into place. Inspect cable for kinks or cuts. Be careful not to touch the ends of the cable, this can cause malfunctions in communication.
- Verify the SFP is not damaged and rated for the Data Rate trying to be achieved. Also, try reseating the SFP. If this does not work, try replacing the SFP with a new one.
- Try connecting one device at a time, adding devices until the problem occurs. This will help pinpoint the device or cable causing the problem.
- Watch the LED indicators on the Fibre card. They should show when you have a proper link and the connection speed you have negotiated with the device after startup. Drive lights should also flash at startup as the Fibre port is scanned. This may give a clue as to the root cause of the issue.

→ The Celerity host adapter is detected by the operating system, it detects some of the connected devices on some or all Fibre ports, but does not detect all of the connected devices.

- Verify the Fibre devices are powered on.
- Check cable integrity. Check the cables for solid connections. Make sure they snap into place. Inspect cable for kinks or cuts.
- Verify the SFP is not damaged and rated for the Data Rate trying to be achieved. Also, try reseating the SFP. If this does not work, try replacing the SFP with a new one.
- Try connecting one device at a time, adding devices until the problem occurs. This will help pinpoint the device or cable causing the problem.

- Watch the LED indicators on the Fibre card. They should show when you have a proper link and the connection speed you have negotiated with the device after startup. Drive lights should also flash at startup as the Fibre port is scanned. This may give a clue as to the root cause of the issue.

## B.) Error Log Capabilities

**The ATTO Celerity FC host adapter driver can be directed to log all failure related information to an event log. The user can control the classification of events that are recorded via a registry setting for Windows and a command line argument for Linux.**

The driver records events broken into the following classifications.

- FATAL Records various fatal situations within the driver and card.
- FIBRE Records FIBRE errors as reported by the card.
- ISP Records errors as reported by the FW of the card.
- LOOP Records event notifications as reported by the FW.
- INFO Records events related to the starting and restarting of the driver.

We recommend Event Logging only be active for troubleshooting purposes as performance will be affected and that when in this mode of operation, all flags be enabled.

To enable the advanced event logging features of the Celerity FC Host Adapter in a **Linux** environment please do the following:

- Remove the driver (**rmmod celerityfc**)
- Load the driver with event logging enabled (**modprobe celerityfc event\_log\_mask=0xffffffff**) [the flag uses the numerical symbol "0" and eight f's]
- The output can be obtained from **dmesg**.

To disable event logging under Linux, simply remove the driver with the event log mask and reload it normally.

## C.) Escalating issues to Tech Support.

When an error is encountered, please insure you have an answer to each of the following questions when reporting it as an issue:

QUESTION	ANSWERED
1. Computer Model:	
2. Operating System:	

3. OS Patch Level:	
4. PCI slot # and type:	
5. ATTO driver version:	
6. ATTO firmware revision:	
7. List all of the devices attached to the ATTO HBA. Include the manufacturer and model number for each device:	
8. Did it ever work? Is this a new error that just started happening, or is this an error that has been around since the first use.	
9. Does it happen when you try it with a second host adapter (if possible)? For example, swap out one host adapter for another and see if error still occurs.	
10. Is the latest firmware and driver being used?	
11. Is the device in default mode? Are there settings that have been adjusted that may be causing the problem? Do settings need to be adjusted to allow the device to function properly?	
12. How duplicable is the error? Does the error occur sporadically/randomly, or can it be reproduced each and every time?	
13. If the system was working previously, what changed about the configuration?	