

ATTO Celerity Fibre Channel Troubleshooting Guide for Mac OSX

This document describes troubleshooting techniques that can be used to identify and resolve issues associated with the ATTO Celerity Fibre channel host adapters. 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.

→ The computer will not boot when the host adapter is installed.

- The host adapter may be improperly seated. Power down the computer and reseal the host adapter.
- Try putting the host adapter in a different PCI slot.
- Make sure that the adapter, if PCIe, is installed in a slot configured as x4 or x8.
- Zap the PRAM (command+option+P+R) at boot. Allow to chime 3 times.
- Disconnect any Fibre devices from the host adapter and reboot the computer. If this resolves the issue, investigate the Fibre cables, SFP's or Fibre target devices as described in the section below.
- If the computer still does not boot, try installing the host adapter in a different computer. If the host adapter works in the new computer, report this as a possible interoperability issue between the host adapter and the computer. If the problem follows the host adapter, replace it with a new adapter.

→ With the ATTO host adapter installed, the operating system stops and displays a flashing question mark.

- This is an indication that the MAC is not able to find an OS to boot from.
- Use a CD or some other source to boot from and make sure the startup disk is correctly defined in "System Preferences" "Startup disks".
- ATTO's Fibre Channel Adapter does not support booting from an external Fibre drive.

→ The Celerity Fibre channel host adapter is installed in the computer but it does not appear in the System Profiler.

- The host adapter may be improperly seated. Power down the computer and reseal the host adapter.
- Check for the correct installation of the driver.
- Try putting the host adapter in a different slot.
- Make sure that the adapter, if PCIe, is installed in a slot configured as x4 or x8.

- Remove any non-vital PCI cards from the system to determine if there is a PCI bus conflict.
- Disconnect any Fibre devices from the host adapter and reboot the computer. If this resolves the issue, investigate the Fibre cable, SFP, or Fibre target devices as described in the section below.
- If the computer still does not boot, try installing the host adapter in a different computer. If the host adapter works in the new computer, try updating the flash on the host adapter as described in the “Installation and Operations” manual. Then try it again in the original computer.
- If it still fails, report this as a possible interoperability issue between the host adapter and the computer.
- If the problem follows the host adapter, replace it with a new adapter.

→ **The Mac freezes or hangs.**

- Disconnect all devices from the Fibre card and reboot the system.

If the system still freezes:

- Remove any non-vital PCI cards from the system to determine if there is a PCI bus conflict.
- Remove the Celerity Fibre host adapter and test it in a different computer (not the same model).
- If the problem follows the adapter, replace the host adapter with a new one.

If the system no longer freezes after disconnecting the Fibre devices:

- Check cable integrity. Check the cables for solid connections. Check SFP(s) for any physical damage. Replace SFP if possible. Inspect cable ends for dirt or abrasions (fingerprints can cause poor communication).
- Boot into OSX and use the ATTO Configuration Tool to hard set the “connection mode” to PTP or Loop (whatever your devices are set to) or hard set the “data rate” to the speed of your target devices (the default settings for the host adapter are to “auto-negotiate” these parameters. Save the changes and restart the MAC with the Fibre Channel device attached.
- Watch the LED indicators on the Fibre devices before, during, and 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. If a drive LED remains on when the computer freezes, suspect a problem with that drive.

→ **The system profiler recognizes the Celerity Fibre host adapter, but it does not detect any of the connected Fibre devices.**

- Verify the Fibre devices are powered on.
- Boot into OSX and use the ATTO Configuration Tool to hard set the “connection mode” to PTP or Loop (whatever your devices are set to) or hard set the “data

rate” to the speed of your target devices (the default settings for the host adapter are to “auto-negotiate” these parameters. Save the changes and restart the MAC with the Fibre Channel device attached.

- Check cable integrity. Check the cables for solid connections. Check SFP(s) for any physical damage. Replace SFP if possible. Inspect cable ends for dirt or abrasions (fingerprints can cause poor communication).
- If there are multiple devices connected to the host adapter (switch etc.), try attaching Fibre devices one at a time with different cables, adding drives and cables until the problem reoccurs. This will help pinpoint the device or cable causing the problem.
- Watch the LED indicators on the Fibre devices before, during, and 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 updating the firmware of the attached device(s). (not applicable to certain devices)
- If all else fails, replace the Fibre host adapter.

→ The system profiler recognizes the Dual/Quad Channel Celerity Fibre channel host adapter, but only detects connected Fibre devices on one of the ports. The other port reports no devices.

- Swap the devices, cables and SFP’s from the Fibre port that appears to be working with the one having issues. If the issue follows the port, replace the Celerity Fibre channel host adapter.

****Note:** Mac OSX has a built in Multipathing feature. Some external devices do not support the feature in the way OSX does. This may cause drives to appear on only one port when both are actually connected. You can determine this by pulling the “connected” port to see if the drives move to the “suspected non-working” port. If they do, please contact ATTO Technical support for further assistance on how to disable multipathing if necessary.

If the issue follows the attached FIBRE devices, troubleshoot the attached devices:

- Verify the Fibre devices are powered on.
- Boot into OSX and use the ATTO Configuration Tool to hard set the “connection mode” to PTP or Loop (whatever your devices are set to) or hard set the “data rate” to the speed of your target devices (the default settings for the host adapter are to “auto-negotiate” these parameters. Save the changes and restart the MAC with the Fibre Channel device attached.
- Check cable integrity. Check the cables for solid connections. Check SFP(s) for any physical damage. Replace SFP if possible. Inspect cable ends for dirt or abrasions (fingerprints can cause poor communication).
- If there are multiple devices connected to the host adapter (switch etc.), try attaching Fibre devices one at a time with different cables, adding drives and cables until the problem reoccurs. This will help pinpoint the device or cable causing the problem.

- Watch the LED indicators on the Fibre devices before, during, and 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 updating the firmware of the attached device(s). (not applicable to certain devices)
- If all else fails, replace the Celerity Host Adapter

→ My Mac kernel panics with the Celerity Fibre channel host adapter installed and Fibre devices attached.

- Check cable integrity. Check the cables for solid connections. Check SFP(s) for any physical damage. Replace SFP if possible. Inspect cable ends for dirt or abrasions (fingerprints can cause poor communication).
- Verify the correct driver is installed and the latest firmware is being used.

If problem still persists:

- Disconnect Fibre cables and devices and reboot

If problem still persists:

- If there are multiple devices connected to the host adapter (switch etc.), try attaching Fibre devices one at a time with different cables, adding drives and cables until the problem reoccurs. This will help pinpoint the device or cable causing the problem.
- Try using a different SFP(s)
- If all else fails, replace the FIBRE host adapter.

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

- Verify the Fibre devices are powered on.
- Boot into OSX and use the ATTO Configuration Tool to hard set the “connection mode” to PTP or Loop (whatever your devices are set to) or hard set the “data rate” to the speed of your target devices (the default settings for the host adapter are to “auto-negotiate” these parameters. Save the changes and restart the MAC with the Fibre Channel device attached.
- Check cable integrity. Check the cables for solid connections. Check SFP(s) for any physical damage. Replace SFP if possible. Inspect cable ends for dirt or abrasions (fingerprints can cause poor communication).
- If there are multiple devices on the chain (switch etc.), try attaching Fibre devices one at a time with different cables, adding drives and cables until the problem reoccurs. This will help pinpoint the device or cable causing the problem.

- Watch the LED indicators on the Fibre devices before, during, and 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 updating the firmware of the attached device(s). (not applicable to certain devices)

→ Errors are reported while trying to flash new firmware onto the Celerity Fibre host adapter.

- The ATTO Configuration Tool performs validations on the structure of the file. If it does not pass these validations, the file is rejected. The image file may be corrupted. Try downloading the image file from the support section of the website again.
- Make sure you are using the latest ATTO Configuration Tool when trying to flash to the latest firmware.

→ The software application being used to communicate with the attached Fibre devices reports communication errors.

- Check cable integrity. Check the cables for solid connections. Check SFP(s) for any physical damage. Replace SFP if possible. Inspect cable ends for dirt or abrasions (fingerprints can cause poor communication).
- Boot into OSX and use the ATTO Configuration Tool to hard set the “connection mode” to PTP or Loop (whatever your devices are set to) or hard set the “data rate” to the speed of your target devices (the default settings for the host adapter are to “auto-negotiate” these parameters. Save the changes and restart the MAC with the Fibre Channel device attached.
- If the issue is not resolved, enable the Event logs as described below and contact ATTO Technical Support.

→ Errors are reported while using the ATTO Configuration Tool.

***Note:** Sometimes when using the ATTO Configuration Tool, an error message describing an unexpected event or incorrect information discovered by the application will be displayed.*

- Use the help text presented with the error message to correct the issue.

The following conditions cause a warning or error message to be posted in the "Status" area of the configuration utility. These messages will be shown in red.

- *An error occurred loading NVRAM data* - The first time a host adapter channel is highlighted, the application makes an attempt to read NVRAM from the card. If

the size of the NVRAM buffer does not match the expected size, or if the NVRAM buffer couldn't be retrieved at all, this message is displayed.

- *Warning: NVRAM could not be read, defaults returned* - This message occurs as a result of corrupt NVRAM. When the driver accesses the NVRAM, a continuity check is performed on the NVRAM to ensure the returned data is valid. If this check fails, the driver has no other alternative than to return a known NVRAM data buffer that represents card defaults. When this situation occurs the defaults are presented via the graphical user interface and the user is informed that the values shown are defaults. These defaults must be committed in order to correct the state of the NVRAM.
- *An error occurred updating the NVRAM* - This message occurs during a committal of NVRAM to the card. If the driver is unable to put the new settings on the card, this message is displayed to the user and no changes are made to the card.
- *This is not a flash file, or it is corrupt* – Checks are performed to assure the proper file has been selected for flashing to the specific model of host adapter.

Error Log Capabilities

The ATTO Celerity FC Driver does not use the system log to communicate driver events to the user. The system log has very limited resources and events are easily lost. Instead, the driver logs events internally until they are retrieved using the `ATTOCelerityfcLog` utility.

The application is stored in `/System/Library/Extensions/ATTOCelerityFCUtils`

The `ATTOCelerityfcLog` utility will continuously display events as they are logged by the driver. You can set the utility as a Startup Item to always retrieve events in the background; however, this may result in a small degradation in performance.

Once events are retrieved and displayed, they can not be displayed again even if they are not overwritten by future events. To keep the events for future reference, save the terminal output or use standard redirection when starting `ATTOCelerityfcLog` to save the output to a file.

System NVRAM Options

A system NVRAM environment variable, `atto-args-celerityfc`, can be used to pass options to the Celerity FC driver. The options are as follows:

- d Disable the driver.
- e mask Specify the hexadecimal mask 'mask' for event logging. See Section B for more details.
- f Load the driver in 'flash-only' mode. You will be able to use the ATTO Configuration Tool to update the adapter, but devices will not be visible.
- [blank] Leave the options parameter blank to clear the options.

Note:

1. These options are stored in system NVRAM; therefore they persist between reboots and shutdowns.
2. Resetting the system NVRAM via Command+Option+P+R will remove the options.
3. You can view the current options in OS X by opening a Terminal window and entering

```
nvrnm atto-args-celerityfc
```

Setting the options from the Open Firmware User Interface (PowerPC systems only)

1. Boot to the Open Firmware User Interface by pressing Command+Option+O+F while booting.
2. At the prompt, enter the following command:

```
setenv atto-args-celerityfc [options]
```

where [options] are listed above.

3. At the prompt, enter the command 'mac-boot' to boot into OS X.

Setting the options in OS X

1. Open a Terminal window.
2. At the prompt, enter the following command:

```
sudo nvrnm atto-args-celerityfc="[options]"
```

where [options] are listed above.

****NOTE**** If event logging is the option of choice use “-e 0xff”

3. Reboot the system for the changes to take effect.

Obtaining the logs in OS X

1. Reproduce the issue
2. Navigate to the ATTOCelerityFClog Utility. This utility can be found in:

```
System/Library/Extensions/ATTOCelerityFCUtils
```

3. Copy and paste the output into “TextEdit”.
4. Save the document and forward onto the designated support channel.

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
1. Computer Model:
2. Operating System:
3. OS Patch Level:
4. PCI or PCIe slot # and type:
5. ATTO driver version:
6. ATTO firmware revision:
7. An IORegistry listing which can be created by running ioreg.command
8. The output from the driver event log. See above for more information.
9. List all of the devices attached to the ATTO HBA. Include the manufacturer and model number for each device.
10. 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.
11. 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.
12. Is the latest firmware and driver being used?
13. 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?
14. How duplicable is the error? Does the error occur sporadically/randomly, or can it be reproduced each and every time?
15. If the system was working previously, what changed about the configuration?