ATTO Celerity FC Troubleshooting Guide for Windows

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.) Windows Operating Systems

→ The computer will not boot past its Power On Self Test when the host adapter is installed.

- The host adapter may be improperly seated. Power down the computer and reseat the host adapter.
- Try putting the host adapter in a different PCI slot.
- 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.
- Verify that the latest version of the computer BIOS is installed. Use caution when updating the computer's BIOS. A mistake could leave the system in an unusable state.

→ The Celerity host adapter is installed in the computer but it does not appear during the system BIOS scan.

Note: *The ATTO Technology banner should appear shortly after booting the computer.*

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*************************************************************
*          ATTO Celerity FC ™    Version 2.50         *
* Copyright © 2001-2006    ATTO Technology, Inc. *
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            **** Press [Ctrl] [F] for Setup Utility ****
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Channel	Model	I/O Addr	Port	Dev	Func	Controlled By
1	CelerityFC FC42XS	CC00	02	02	00	Celerity
2	CelerityFC FC42XS	CC01	03	03	00	Celerity

- The host adapter may be improperly seated. Power down the computer and reseat the host adapter.
- Try putting the host adapter in a different PCI slot.
- Verify that the latest version of the computer BIOS is installed.   Use caution when updating the computer's BIOS. A mistake could leave the system in an unusable state.
- Remove any non-vital PCI cards from the system to determine if there is a PCI port conflict.
- Disconnect any Fibre Channel devices from the host adapter and reboot the computer. If this resolves the issue, investigate the Fibre cable, SFP and 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 computer freezes when the ATTO Banner is displayed during the system BIOS scan.**

- 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 port conflict.
- Remove the Celerity host adapter and test it in a different computer (not the same model). If the card works properly, enter the ATTO CelerityFC Utility during the system BIOS scan by hitting Control-F when prompted. Enter the host adapter configuration menu and disable the BIOS (note: this will need to be done for each channel). There may be a BIOS conflict between the ATTO host adapter and the original computer. Place the host adapter back into the original machine and reboot.
    - If this resolves the issue, report this as a BIOS conflict. Note that you can continue to operate. Disabling the BIOS will only prevent the computer from booting from an external drive connected to the host adapter.
    - If the computer still hangs, replace the host adapter with a new one.

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

- 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 proper negotiation 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 (CTRL-F).

- 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. Finger prints can cause malfunction 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.

→ **The system's BIOS scan recognizes the Celerity FC host adapter, but does not detect** <u>any</u> **of the connected SCSI devices.**

> ***Note:*** *The ATTO Technology banner should appear shortly after rebooting the computer. If the host adapter's BIOS is set to "enabled" or "scan only", the connected devices, WWN and negotiated transfer rate for each of the Fibre ports will also be displayed.*

- The Celerity host adapter BIOS may have been set to disabled (factory default: BIOS enabled). Set it back to Enabled (if you need to boot from an external device connected to the host adapter) or Scan Only.
- 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.
- 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** <u>only detects</u> **connected Fibre devices on** <u>one</u> **of the ports. The other port reports no devices. 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, cables and SFP from the Fibre port that appears to be working with the one having issues. If the issue follows the Fibre 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 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.
- 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.

→ **The Celerity host adapter is detected during the system's BIOS scan but it is not detected by the operating system.**
    Note: *When working properly, the Celerity host adapter will show up in the device manager.*
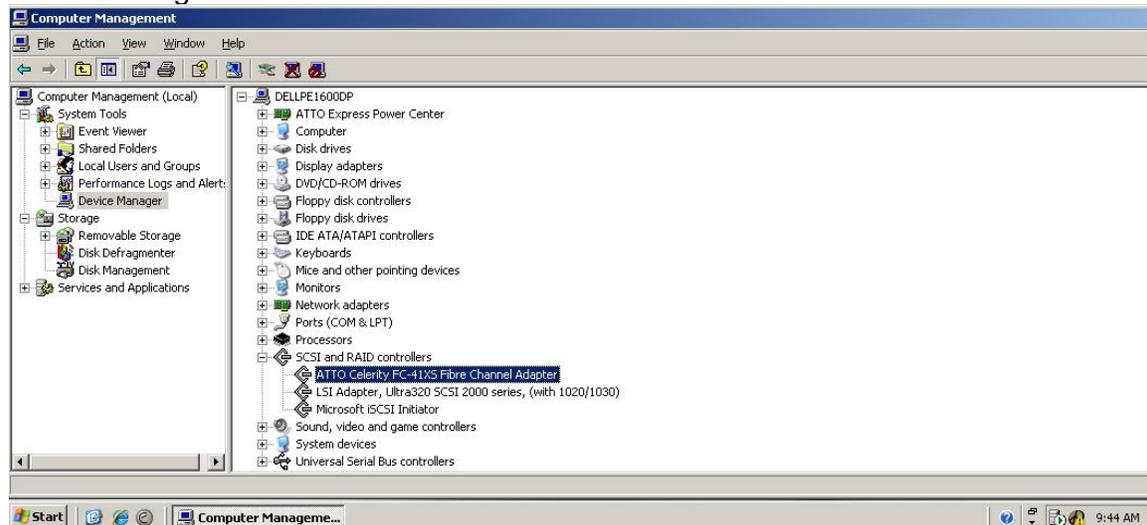
- The host adapter driver may not be properly installed. Please refer to the host adapter Installation and Operations manual for instructions on installing your OS driver.

- The firmware and driver may not be at compatible revision levels. The drivers are updated more frequently than the firmware, therefore the revision levels are seldom the same. There may be an occasion where the latest driver also requires a firmware update. Verify from the web site that the latest firmware and driver version are being used. The firmware version can be viewed when the host adapter is detected during the computer's BIOS scan. The driver version can be verified from within the Device Manager.

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

- Verify the Fibre devices are all 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.

→ **Errors are reported while trying to flash new firmware onto the Celerity 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. If you continue to have problems, contact our Technical Support Department.

→ **The Celerity host adapter fails its Power On Self Test/Post.**
- The BIOS driver will perform several checks to verify that the host adapter is functioning. If the BIOS driver determines that the adapter has non-functioning hardware it will not complete the initialization of the OS driver. If the BIOS driver determines that the FW on the adapter is not functioning, then it will complete the initialization in degraded mode. Under Windows, degraded mode will not perform I/O but it will allow the end user to flash the adapter with working FW. The POST failure will be recorded in the Windows Event Log. Try to re-flash the

firmware using the Configuration Tool in Windows. If the problem persists, replace the host adapter.

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

- Check your cables. There could be a kink or a cut in the cable. Also, make sure the ends of the fibre cables are clean. Dirt, such as fingerprints, can obstruct the fibre link and cause communication problems.
- 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.
- 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.

B.) Error Log Capabilities

The ATTO Celerity FC host adapter driver logs 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.

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 firmware of the card.
- LOOP   Records event notifications as reported by the firmware.
- 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 ATTO Celerity FC Host Adapter in a *Windows* environment, please do the following:

- Click **"Start"** and **"Run"**.
- Type **"regedit"** to start the registry editor.
- Follow the tree structure to : **\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\celerityfc\Parameters\ATTO**
- Right-click the right hand pane and select "**New**" to create a new registry key.
- Select "**DWORD Value".**
- Type "**EventLogMask**".
- Double-click "**EventLogMask"** and enter the value of "**FFFFFFFF**".
- Reboot your computer.

Advanced event logging is now enabled. To retrieve the log to provide to support personnel please do the following:

- Go to "**Computer Management**".
- Select "**Event Viewer**"
- Select "**System**"
- Save the file by clicking "**Action**" and "**Save Log File as**" [filename].
- This "[**Filename**]" is what you need to provide to support personnel.

Once you have provided the log and your issue is resolved you may delete the registry key by doing the following:

- Click **"Start"** and **"Run"**.
- Type **"regedit"** to start the registry editor.
- Follow the tree structure to :
  \HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\celerityfc\Parameters\ATTO
- Highlight "**EventLogMask**", right-click and select "**delete**".

NOTE: be careful to only select this key as deleting other keys could harm your computer.

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?	