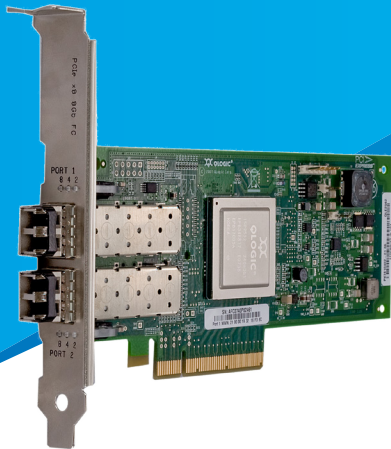


# Persistent Hardware Error Logs

## Serviceability Features Extended



Persistent hardware error logs provide key information that allows troubleshooting and root cause analysis of a product that normally would be listed as “no trouble found” or take many hours to repair.

### INDUSTRY CHALLENGE

Troubleshooting and finding the root cause of a network error is one of the major challenges that face Storage Area Network (SAN) administrators. In the rare case when a Host Bus Adapter (HBA) fails, the SAN experiences down time to replace the HBA. SAN administrators know that failure will occur, but want assurance from the HBA provider that the root cause of an issue can be found and resolved. Will they provide future preventative measures and/or assurance that the failure will not occur again?

### USER BENEFITS

- Developing a more reliable product**  
 Cavium™ provides a multi-prong approach to extend serviceability features into management applications, drivers, firmware, and the HBA.
- Improving troubleshooting and root cause analysis**  
 Maintaining and analyzing an error log can help identify the root cause of an error when the HBA is returned to the factory.

Time Stamp	Hostname	HBA ID	Application	Description
Fri Feb 01 12:02:23 PST 20...	n7105a6107c...	2-0LA230	HBA	BPS crossed maximum threshold High(0 Current)(00.0)
Mon Feb 04 12:38:55 PST 2...	n7105a6107c...	2-0LA230	HBA	HBA Port Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:38:55 PST 2...	n7105a6107c...	2-0LA230	HBA	Device Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:38:55 PST 2...	n7105a6107c...	2-0LA230	HBA	Reset crossed maximum threshold High(0 Current)(0583.0)
Mon Feb 04 12:38:55 PST 2...	n7105a6107c...	2-0LA230	HBA	IO Count crossed maximum threshold High(0 Current)(211.0)
Mon Feb 04 12:38:55 PST 2...	n7105a6107c...	2-0LA230	HBA	IQPS crossed maximum threshold High(0 Current)(0)
Mon Feb 04 12:38:55 PST 2...	n7105a6107c...	2-0LA230	HBA	BPS crossed maximum threshold High(0 Current)(00.0)
Mon Feb 04 12:40:00 PST 2...	n7105a6107c...	2-0LA230	HBA	HBA Port Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:40:00 PST 2...	n7105a6107c...	2-0LA230	HBA	Device Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:40:00 PST 2...	n7105a6107c...	2-0LA230	HBA	Reset crossed maximum threshold High(0 Current)(0576.0)
Mon Feb 04 12:40:00 PST 2...	n7105a6107c...	2-0LA230	HBA	IO Count crossed maximum threshold High(0 Current)(211.0)
Mon Feb 04 12:40:00 PST 2...	n7105a6107c...	2-0LA230	HBA	IQPS crossed maximum threshold High(0 Current)(0)
Mon Feb 04 12:40:05 PST 2...	n7105a6107c...	2-0LA230	HBA	BPS crossed maximum threshold High(0 Current)(00.0)
Mon Feb 04 12:40:05 PST 2...	n7105a6107c...	2-0LA230	HBA	HBA Port Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:40:05 PST 2...	n7105a6107c...	2-0LA230	HBA	Device Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:40:05 PST 2...	n7105a6107c...	2-0LA230	HBA	Reset crossed maximum threshold High(0 Current)(0589.0)
Mon Feb 04 12:40:05 PST 2...	n7105a6107c...	2-0LA230	HBA	IO Count crossed maximum threshold High(0 Current)(211.0)
Mon Feb 04 12:40:05 PST 2...	n7105a6107c...	2-0LA230	HBA	IQPS crossed maximum threshold High(0 Current)(0)
Mon Feb 04 12:40:05 PST 2...	n7105a6107c...	2-0LA230	HBA	BPS crossed maximum threshold High(0 Current)(00.0)
Mon Feb 04 12:40:10 PST 2...	n7105a6107c...	2-0LA230	HBA	HBA Port Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:40:10 PST 2...	n7105a6107c...	2-0LA230	HBA	Device Errors crossed maximum threshold High(0 Current)
Mon Feb 04 12:40:10 PST 2...	n7105a6107c...	2-0LA230	HBA	Reset crossed maximum threshold High(0 Current)(0612.0)
Mon Feb 04 12:40:10 PST 2...	n7105a6107c...	2-0LA230	HBA	IO Count crossed maximum threshold High(0 Current)(211.0)
Mon Feb 04 12:40:10 PST 2...	n7105a6107c...	2-0LA230	HBA	IQPS crossed maximum threshold High(0 Current)(0)
Mon Feb 04 12:40:10 PST 2...	n7105a6107c...	2-0LA230	HBA	BPS crossed maximum threshold High(0 Current)(00.0)
Mon Feb 04 12:40:15 PST 2...	n7105a6107c...	2-0LA230	HBA	HBA Port Errors crossed maximum threshold High(0 Current)

Persistent Hardware Error Log

### QLOGIC® PERSISTENT HARDWARE ERROR LOGS

Cavium leads the industry in retrieving useful information from HBAs returned due to possible failure. Persistent hardware error logs provide key information that allows troubleshooting and root cause analysis of a product that normally would be listed as “no trouble found” or take many hours to repair.

### HOW QLOGIC PERSISTENT HARDWARE ERROR LOGS WORK

When a fatal error condition is detected by the driver, the driver writes the error message into non-volatile memory on the HBA. Later, when Cavium field personnel receive the failed HBA, they can extract the error message to diagnose the specific problem experienced at the time of the error. This vital information provides key insights into the cause of the error and helps Cavium develop more reliable products.

## ABOUT CAVIUM

Cavium, Inc. (NASDAQ: CAVM), offers a broad portfolio of infrastructure solutions for compute, security, storage, switching, connectivity and baseband processing. Cavium's highly integrated multi-core SoC products deliver software compatible solutions across low to high performance points enabling secure and intelligent functionality in Enterprise, Data Center and Service Provider Equipment. Cavium processors and solutions are supported by an extensive ecosystem of operating systems, tools, application stacks, hardware reference designs and other products. Cavium is headquartered in San Jose, CA with design centers in California, Massachusetts, India, Israel, China and Taiwan.



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