Phoenix RPC-693xx Event Descriptions Reference Guide

Introduction

This guide is for reference by storage administrators to help troubleshoot issues in Phoenix 693xx storage systems. It describes event messages that may be reported during system operation and specifies any actions recommended in response to an event.

Events and event messages

When an event occurs in a storage system, an event message is recorded in the system's event log and—depending on the system's event notification settings—may also be sent to users (via email) and host-based applications (via SNMP or SMI-S).

Each event has a numeric code that identifies the type of event that occurred, and has one of the following severities:

- Critical. A failure occurred that may cause a controller to shut down. Correct the problem *immediately*.
- Error. A failure occurred that may affect data integrity or system stability. Correct the problem as soon as possible.
- Warning. A problem occurred that may affect system stability but not data integrity. Evaluate the problem and correct it if necessary.
- Informational. A configuration or state change occurred, or a problem occurred that the system corrected. No action is required.

An event message may specify an associated error code or reason code, which provides additional detail for technical support. Error codes and reason codes are outside the scope of this guide.

Event format in this guide

This guide lists events by event code and severity, where the most severe form of an event is described first. Events are listed in the following format.

Event code **Event severity**

Event description.

Recommended actions

- If the event indicates a problem, actions to take to resolve the problem.

Resources for diagnosing and resolving problems

For further information about diagnosing and resolving problems, see:

- The troubleshooting chapter and the LED descriptions appendix in your product's setup guide
- The topics about verifying component failure in your product's FRU installation and replacement guide

For a summary of storage events and corresponding SMI-S indications, see Events sent as indications to SMI-S clients on page 43.

Event descriptions

1 **Warning**

Either:

- The indicated non-RAID-6 vdisk is operating with degraded health due to the failure of one disk.
- The indicated RAID-6 vdisk is operating with degraded health due to the failure of two disks.

The vdisk is online but cannot tolerate another disk failure.

If a dedicated spare or global spare of the proper size and type is present, that spare is used to automatically reconstruct the vdisk. If an assigned spare is not present, but an available disk of the proper type and size is present and the dynamic spares feature is enabled, that disk is used to automatically reconstruct the vdisk.

Recommended actions

- If no spare is present and the dynamic spares feature is disabled, replace the failed disk and use RAIDar to add the new disk as a dedicated spare for the vdisk. That spare is used to automatically reconstruct the critical vdisk.
- Replace the failed disk for future use.
- If the replacement disk was previously used in another vdisk and has status `LEFTOVR`, use RAIDar to clear the disk's metadata so you can assign the disk as a spare for the critical vdisk or for future use.
- See also Table 1 on page 41.

3 **Error**

The indicated vdisk went offline. Either one disk failed for RAID 0 or NRAID; three disks failed for RAID 6; or two disks failed for other levels. The vdisk cannot be reconstructed.

Recommended actions

- Use the `trust` command as described in the CLI reference guide. If the trust operation succeeds, subsequently delete the vdisk. If trust is not successful, contact technical support.

4 **Informational**

The indicated disk had an uncorrectable error and the controller reassigned the indicated block.

Recommended actions

- Monitor the error trend and whether the number of errors approaches the total number of bad-block replacements available.

6 **Warning**

Vdisk creation failed during initialization.

Recommended actions

- In RAIDar's System Overview panel, compare the vdisk count with the configuration limit for the maximum number of vdisks.
  - If you reached this limit, either purchase additional storage or removed unneeded vdisks.
  - If you have not reached the limit, contact technical support.

Informational

Vdisk creation either immediately failed, was canceled by the user, or succeeded.

Recommended actions

- No action required.

7 **Error**

In a testing environment, a controller diagnostic failed and reports a product-specific diagnostic code.

Recommended actions

- Perform failure analysis.

8 **Warning**

The indicated disk in the indicated vdisk failed and the vdisk changed to a critical or offline state. If a spare is present the controller automatically uses the spare to reconstruct the vdisk. Subsequent events indicate the changes which happen to the vdisk.

Recommended actions

- See Table 1 on page 41.

When the problem is resolved, event 9 is logged.

9 **Informational**

The indicated spare disk has been used in the indicated critical vdisk to bring it back to a fault-tolerant state. Vdisk reconstruction starts automatically.

This event indicates that a problem reported by event 8 is resolved.

Recommended actions

- No action required.

16 **Informational**

The indicated disk has been designated a global spare.

Recommended actions

- No action required.

18 **Warning**

Vdisk reconstruction failed.

Recommended actions

- Determine whether the reconstruction failed due to a disk problem and whether replacing that disk will enable reconstruction to start and complete without further errors. If you're unable to do this, contact technical support.

Informational

Vdisk reconstruction succeeded.

Recommended actions

- No action required.

19 **Informational**

A rescan has completed.

Recommended actions

- No action required.

20 **Informational**

Storage Controller firmware update has completed.

Recommended actions

- No action required.

21 **Warning**

Vdisk verification failed during the verification process.

Recommended actions

- Contact technical support.

Informational

Vdisk verification failed immediately, was aborted by a user, or succeeded.

Recommended actions

- No action required.

23 **Informational**

Vdisk creation has started.

Recommended actions

- No action required.

25 **Informational**

The statistics for the indicated vdisk have been reset.

Recommended actions

- No action required.

27 **Informational**

Cache parameters have been changed for the indicated vdisk.

Recommended actions

- No action required.

28 **Informational**

Controller parameters have been changed. This event is logged when general configuration changes are made; for example, utility priority, remote notification settings, user interface passwords, and management port IP values. This event is *not* logged when changes are made to vdisk or volume configuration.

Recommended actions

- No action required.

31 **Informational**

The indicated disk is no longer a global or dedicated spare.

Recommended actions

- No action required.

32 **Informational**

Vdisk verification has started.

Recommended actions

- No action required.

33 **Informational**

Controller time/date has been changed. This event is logged before the change happens so the event timestamp shows the “old” time. (May appear often if NTP is enabled.)

Recommended actions

- No action required.

34 **Informational**

Controller has been restored to factory defaults.

Recommended actions

- For an FC controller, restart it to make the default loop ID take effect.

37 **Informational**

Vdisk reconstruction has started.

Recommended actions

- No action required. When complete, event 18 is logged.

39 **Warning**

The sensors monitored a temperature or voltage in the warning range.

Recommended actions

- Check that the storage system’s fans are running.
- Check that the ambient temperature is not too warm. The enclosure operating range is 41–104° F (5–40° C).
- Check for any obstructions to the airflow.
- If none of the above explanations apply, replace the controller FRU that reported the error.

When the problem is fixed, event 47 is logged.

40 **Error**

The sensors monitored a temperature or voltage in the failure range.

Recommended actions

- Check that the storage system’s fans are running.
- Check that the ambient temperature is not too warm. The enclosure operating range is 41–104° F (5–40° C).
- Check for any obstructions to the airflow.
- If none of the above explanations apply, replace the controller FRU that reported the error.

When the problem is fixed, event 47 is logged.

41 **Informational**

The indicated disk has been designated a spare for the indicated vdisk.

Recommended actions

- No action required.

43 **Informational**

The indicated vdisk has been deleted.

Recommended actions

- No action required.

44 **Warning**

The controller contains cache data for the indicated volume but the corresponding vdisk is not online.

Recommended actions

- Determine the reason that the disks are not online.
- If an enclosure is down, determine corrective action.
- If the vdisk is no longer needed, you can clear the orphan data; this will result in lost data.
- If the volume is missing and was not intentionally removed, contact technical support.

45 **Informational**

A communication failure has occurred between the controller and an enclosure management processor (EMP).

Recommended actions

- No action required.

47 **Informational**

An error detected by the sensors has been cleared. This event indicates that a problem reported by event 39 or 40 is resolved.

Recommended actions

- No action required.

48 **Informational**

The indicated vdisk has been renamed.

Recommended actions

- No action required.

49 **Informational**

A lengthy SCSI maintenance command has completed. Output indicates whether it completed successfully or a failure occurred. (Typically appears after disk firmware update.)

Recommended actions

- No action required.

50 **Informational**

A correctable ECC error occurred in buffer memory.

Recommended actions

- No action required.

51 **Error**

An uncorrectable ECC error occurred in buffer memory.

Recommended actions

- If this event occurs only once, no action is required.
- If the event occurs more than once, replace the controller reporting the event.

52 **Informational**

Vdisk expansion has started.

Recommended actions

- This operation can take days to complete. When complete, event 53 is logged.

53 **Informational**

Vdisk expansion either completed, failed, or was aborted by a user.

Recommended actions

- If the expansion failed because of a disk problem: replace the disk; if vdisk reconstruction starts, wait for it to complete; and then retry the expansion.

55 **Informational**

A SMART event occurred on the indicated disk, indicating impending disk failure.

Recommended actions

- See Table 1 on page 41.

56 **Informational**

A controller has powered up or restarted.

Recommended actions

- No action required.

58 **Warning**

A disk drive or enclosure management processor (EMP) detected a serious error, such as a parity error or disk hardware failure.

Recommended actions

- If the event indicates that a disk or an expansion module is bad, replace the indicated device.

Informational

A disk drive or enclosure management processor (EMP) detected a non-serious error.

Recommended actions

- No action required.

59 **Warning**

The controller detected a parity error while communicating with the indicated SCSI device. The error was detected by the controller, not the disk.

Recommended actions

- If the event indicates that a disk or an expansion module is bad, replace the indicated device.

Informational

The controller detected a non-parity error while communicating with the indicated SCSI device. The error was detected by the controller, not the disk.

Recommended actions

- No action required.

60 **Informational**

A disk channel was reset from another initiator or target.

Recommended actions

- No action required.

61 **Error**

The controller reset the indicated disk channel to recover from a communication error. This event is logged to identify an error trend over time.

Recommended actions

- If the controller recovers, no action is required.
- View other logged events to determine other action to take. If you can't resolve the problem, contact technical support.

62 **Warning**

The indicated global or dedicated spare disk has failed.

Recommended actions

- Replace the failed disk.

65 **Error**

An uncorrectable ECC error occurred on the buffer memory on startup. The controller is automatically restarted and its cache data is restored from the partner controller's cache.

Recommended actions

- Replace the controller module.

67 **Informational**

The controller has identified a new disk or group of disks that constitute a vdisk and has taken ownership of the vdisk. This can happen when disks containing data have been inserted from another enclosure. This event only applies to non-Active-Active controllers.

Recommended actions

- You may need to clear the disks' metadata if you want to reuse them in one or more new vdisks.

68 **Informational**

The controller that logged this event is shut down, or both controllers are shut down.

Recommended actions

- No action required.

71 **Informational**

The controller has started or completed failing over.

Recommended actions

- No action required.

72 **Informational**

After failover, recovery has either started or completed.

Recommended actions

- No action required.

73 **Informational**

The two controllers are communicating with each other and cache redundancy is enabled.

Recommended actions

- No action required.

74 **Informational**

The FC loop ID for the indicated vdisk was changed to be consistent with the IDs of other vdisks. This can occur when disks containing a vdisk are inserted from an enclosure having a different FC loop ID.

This event is also logged by the new owning controller after vdisk ownership is changed.

Recommended actions

- No action required.

75 **Informational**

The indicated volume's LUN has been unassigned because it conflicts with LUNs assigned to other volumes. This can happen when disks containing data for a mapped volume have been inserted from another enclosure.

Recommended actions

- If you want hosts to access the volume data on the inserted disks, map the volume with a different LUN.

76 **Informational**

The controller is using default configuration settings. This event occurs on the first power up, and might occur after a firmware update.

Recommended actions

- If you have just performed a firmware update and your system requires special configuration settings, you must make those configuration changes before your system will operate as before.

77 **Informational**

The cache was initialized as a result of power up or failover.

Recommended actions

- No action required.

78 **Warning**

The controller could not use an assigned spare for a vdisk because the spare's capacity is too small. This occurs when a vdisk's status becomes critical and all global spares are too small or (if the dynamic spares feature is enabled) all disks are too small.

Recommended actions

- Replace existing spares or add spares with enough capacity to replace the smallest disk in the vdisk. The vdisk size is limited by its disk with the least capacity.

79 **Informational**

A trust-vdisk operation has completed for the indicated vdisk.

Recommended actions

- No action required.

80 **Informational**

The controller enabled or disabled the indicated parameters for one or more disks.

Recommended actions

- No action required.

81 **Informational**

The current controller has unkilled the partner controller. The other controller will restart.

Recommended actions

- No action required.

83 **Informational**

The partner controller is changing state (shutting down or restarting).

Recommended actions

- No action required.

84 **Warning**

The current controller has forced the partner controller to fail over.

Recommended actions

- Download the log files and contact technical support. A service technician can determine errors from the logs.

86 **Informational**

Host-port or disk-channel parameters have been changed.

Recommended actions

- No action required.

87 **Warning**

The mirrored configuration retrieved by this controller from the partner controller has a bad cyclic redundancy check (CRC). The local flash configuration will be used instead.

Recommended actions

- Restore the default configuration by using the `restore defaults` command, as described in the CLI reference guide.

88 **Warning**

The mirrored configuration retrieved by this controller from the partner controller is corrupt. The local flash configuration will be used instead.

Recommended actions

- Restore the default configuration by using the `restore defaults` command, as described in the CLI reference guide.

89 **Warning**

The mirrored configuration retrieved by this controller from the partner controller has a configuration level that is too high for the firmware in this controller to process. The local flash configuration will be used instead.

Recommended actions

- The current controller probably has down-level firmware. Update the firmware on the down-level controller. Both controllers should have the same firmware versions.

When the problem is fixed, event 20 is logged.

90 **Informational**

The partner controller does not have a mirrored configuration image for the current controller, so the current controller's local flash configuration is being used. This event is expected if the other controller is new or its configuration has been changed.

Recommended actions

- No action required.

91 **Error**

In a testing environment, the diagnostic that checks hardware reset signals between controllers in Active-Active mode failed.

Recommended actions

- Perform failure analysis.

95 **Error**

Both controllers in an Active-Active configuration have the same serial number. Non-unique serial numbers can cause system problems; for example, vdisk ownership and WWNs are determined by serial number.

Recommended actions

- Replace one of the controller modules.

96 **Informational**

Pending configuration changes that take effect at startup were ignored because customer data might be present in cache.

Recommended actions

- If the requested configuration changes did not occur, make the changes again and then use a user-interface command to shut down or restart the controller.

100 **Informational**

During Active-Active operation, an event (potential error) occurred while communicating with the enclosure management processor (EMP).

Recommended actions

- No action required.

101 **Informational**

An update of enclosure management processor (EMP) data has been triggered.

Recommended actions

- No action required.

103 **Informational**

The name has been changed for the indicated volume.

Recommended actions

- No action required.

104 **Informational**

The size has been changed for the indicated volume.

Recommended actions

- No action required.

105 **Informational**

The LUN (logical unit number) has been changed for the indicated volume.

Recommended actions

- No action required.

106 **Informational**

The indicated volume has been added to the indicated vdisk.

Recommended actions

- No action required.

107 **Error**

The controller experienced the indicated error. In a single-controller configuration, the controller will restart automatically. In an Active-Active configuration, the surviving controller will kill the controller that experienced the error.

Recommended actions

- Contact technical support. A service technician can use the debug log to determine the problem.

108 **Informational**

The indicated volume has been deleted from the indicated vdisk.

Recommended actions

- No action required.

109 **Informational**

The statistics for the indicated volume have been reset.

Recommended actions

- No action required.

110 **Informational**

Ownership of the indicated vdisk has been given to the other controller.

Recommended actions

- No action required.

111 **Informational**

The link for the indicated host port is up. This event indicates that a problem reported by event 112 is resolved. For a system with FC ports, this event also appears after loop initialization.

Recommended actions

- No action required.

112 **Warning**

The link for the indicated host port has unexpectedly gone down.

Recommended actions

- Look for corresponding event 111 and monitor excessive transitions indicating a host-connectivity or switch problem. If more than 8 transitions occur per hour, contact technical support.

Informational

The link for the indicated host port has gone down because the controller is starting up.

Recommended actions

- No action required.

114 **Informational**

The link for the indicated disk channel port is down. Note that events 114 and 211 are logged whenever a user-requested rescan occurs and do not indicate an error.

Recommended actions

- Look for corresponding event 211 and monitor excessive transitions indicating disk problems. If more than 8 transitions occur per hour, contact technical support.

116 **Error**

After a recovery, the partner controller was killed while mirroring write-back data to the current controller. The current controller restarted to avoid losing the data in the partner controller's cache, but if the other controller does not restart successfully, the data will be lost.

Recommended actions

- To determine if data might have been lost, check whether this event was immediately followed by restart event 56, closely followed by failover event 71 (specifying `p1=1`).

118 **Informational**

Cache parameters have been changed for the indicated volume.

Recommended actions

- No action required.

127 **Warning**

The controller has detected an invalid disk dual-port connection. This event indicates that a controller host port is connected to an expansion port, instead of to a port on a host or a switch.

Recommended actions

- Disconnect the host port and expansion port from each other and connect them to the proper devices.

136 **Warning**

Errors detected on the indicated disk channel have caused the controller to mark the channel as degraded.

Recommended actions

- Determine the source of the errors on the indicated disk channel and replace the faulty hardware.

When the problem is fixed, event 189 is logged.

139 **Informational**

The Management Controller (MC) has powered up or restarted.

Recommended actions

- No action required.

140 **Informational**

The Management Controller (MC) is about to restart.

Recommended actions

- No action required.

141 **Informational**

The IP address has been changed in the Management Controller (MC), which normally occurs during power up or failover recovery.

Recommended actions

- No action required.

152 **Warning**

The Management Controller (MC) has not sent a command to the Storage Controller (SC) for 15 minutes and may have failed.

This event is initially logged as Informational, as described below. If the problem persists, this event is logged a second time as Warning and the MC is automatically restarted in an attempt to recover from the problem. Event 156 is then logged.

Recommended actions

- If the controller that is logging this event can communicate with the MC, monitor the error trend. If the error occurs more than twice per hour, contact technical support.
- If the controller that is logging this event cannot communicate with the MC within 25 minutes, replace the controller module.

Informational

The Management Controller (MC) has not sent a command to the Storage Controller (SC) for 160 seconds.

If communication is restored in less than 15 minutes, event 153 is logged. If the problem persists, this event is logged a second time as Warning, as described above.

Recommended actions

- If the controller that is logging this event can communicate with the MC, monitor the error trend. If the error occurs more than twice per hour, contact technical support.
- If the controller that is logging this event cannot communicate with the MC within 25 minutes, replace the controller module.

153 **Informational**

The Management Controller (MC) has re-established communication with the Storage Controller (SC).

Recommended actions

- No action required.

154 **Informational**

New firmware has been loaded on the Management Controller (MC).

Recommended actions

- No action required.

155 **Informational**

New loader firmware has been loaded on the Management Controller (MC).

Recommended actions

- No action required.

156 **Warning**

The Management Controller (MC) has been restarted from the Storage Controller (SC) for the purpose of error recovery.

Recommended actions

- If this event occurs more than twice per hour, contact technical support.

Informational

The Management Controller (MC) has been restarted from the Storage Controller (SC) in a normal case, such as when initiated by a user.

Recommended actions

- No action required.

157 **Error**

A failure occurred when trying to write to the Storage Controller (SC) flash chip.

Recommended actions

- Replace the controller module.

158 **Informational**

A correctable ECC error occurred in the CPU memory.

Recommended actions

- No action required.

161 **Informational**

One or more enclosures do not have a valid path to an enclosure management processor (EMP). All enclosure EMPs are disabled.

Recommended actions

- Contact technical support to resolve this configuration problem.

162 **Warning**

The host WWNs (node and port) previously presented by this controller module are unknown. In a dual-controller system this event has two possible causes:

- One or both controller modules have been replaced or moved while the system was powered off.
- One or both controller modules have had their flash configuration cleared (this is where the previously used WWNs are stored).

The controller module recovers from this situation by generating a WWN based on its own serial number.

Recommended actions

- If the controller was replaced or someone reprogrammed its FRU ID data, verify the WWN information for this controller module on all hosts that access it.

163 **Warning**

The host WWNs (node and port) previously presented by the partner controller module, which is currently offline, are unknown.

This event has two possible causes:

- The online controller module reporting the event was replaced or moved while the system was powered off.
- The online controller module had its flash configuration (where previously used WWNs are stored) cleared.

The online controller module recovers from this situation by generating a WWN based on its own serial number for the other controller module.

Recommended actions

- If the controller was replaced or someone reprogrammed its FRU ID data, verify the WWN information for the other controller module on all hosts that access it.

166 **Warning**

The RAID metadata level of the two controllers does not match. Usually, the controller at the higher firmware level can read metadata written by a controller at a lower firmware level. The reverse is typically not true. Therefore, if the controller at the higher firmware level failed, the surviving controller at the lower firmware level cannot read the metadata on disks that have failed over.

Recommended actions

- If this occurs after a firmware update, it indicates that the metadata format changed, which is rare. Update the controller with the lower firmware level to match the firmware level on the other controller.

167 **Warning**

A diagnostic test at controller bootup detected an abnormal operation, which might require a power cycle to correct.

Recommended actions

- Contact technical support.

168 **Error**

The indicated SES alert condition was detected in the indicated enclosure. This event is logged as Error when one of the power supplies in an enclosure has no power supplied to it or when a hardware failure is detected.

Recommended actions

- Most voltage and temperature errors and warnings relate to the power supply module; see Table 2 on page 42. If there is no problem with the power source, the indicated FRU has probably failed and should be replaced.

When the problem is fixed, event 169 is logged.

Warning

The indicated SES alert condition was detected in the indicated enclosure.

Recommended actions

- Most voltage and temperature errors and warnings relate to the power supply module; see Table 2 on page 42.

When the problem is resolved, event 169 is logged.

Informational

The indicated SES alert condition was detected in the indicated enclosure.

Recommended actions

- Most voltage and temperature errors and warnings relate to the power supply module; see Table 2 on page 42.

169 **Informational**

The indicated SES alert condition has been cleared in the indicated enclosure. This event is generated when the problem that caused event 168 is cleared.

Recommended actions

- No action required.

170 **Informational**

The last rescan indicates that the indicated enclosure was added to the system.

Recommended actions

- No action required.

171 **Informational**

The last rescan indicates that the indicated enclosure was removed from the system.

Recommended actions

- No action required.

172 **Warning**

The indicated vdisk has been quarantined because not all of its disks are available. There are not enough disks to be fault tolerant. The partial vdisk will be held in quarantine until it becomes fault tolerant.

Recommended actions

- Ensure that all disks are latched into their slots and have power.
- During quarantine, the vdisk is not visible to the host. If after latching disks into their slots and powering up the vdisk, the vdisk is still quarantined, you can manually remove the vdisk from quarantine so that the host can see the vdisk. The vdisk is still critical.
- If disks have failed, replace them.

When the vdisk has been removed from quarantine, event 173 is logged.

173 **Informational**

The indicated vdisk has been removed from quarantine.

Recommended actions

- No action required.

174 **Informational**

Enclosure or disk firmware update has succeeded, been aborted by a user, or failed.

Recommended actions

- No action required.

175 **Informational**

An Ethernet link has changed status (up/down).

Recommended actions

- Monitor the error trend. If this event occurs more than 8 times per hour, contact technical support.
- If the controller that is logging this event cannot communicate with the MC within 25 minutes, replace the controller module.

176 **Informational**

The error statistics for the indicated disk have been reset.

Recommended actions

- No action required.

177 **Informational**

Cache data was purged for the indicated missing volume.

Recommended actions

- No action required.

181 **Informational**

The Ethernet configuration has been changed.

Recommended actions

- No action required.

182 **Informational**

All disk channels have been paused. I/O will not be performed on the disks until all channels are unpaused.

Recommended actions

- If this event occurs in relation to disk firmware update, no action is required. When the condition is cleared, event 183 is logged.
- If this event occurs and you are not performing disk firmware update, contact technical support.

183 **Informational**

All disk channels have been unpaused, meaning that I/O can resume. An unpause initiates a rescan, which when complete is logged as event 19.

This event indicates that a problem reported by event 182 is resolved.

Recommended actions

- No action required.

185 **Informational**

An enclosure management processor (EMP) write command has completed.

Recommended actions

- No action required.

186 **Informational**

Enclosure parameters have been changed by a user.

Recommended actions

- No action required.

187 **Informational**

The write-back cache has been enabled.

Recommended actions

- Look for event 188.

188 **Informational**

Write-back cache has been disabled.

Recommended actions

- If event 187 is not logged within a reasonable amount of time, contact technical support.

189 **Informational**

A disk channel that was previously degraded or failed is now healthy.

Recommended actions

- No action required.

190–201 **Informational**

Includes component-specific environmental indicator events generated by the auto-write-through feature when an environmental change occurs. If an auto-write-through trigger condition has been

met, write-back cache is disabled and event 188 is also logged. Once the fault is resolved, event 187 is logged to indicate that write-back mode has been restored.

Recommended actions

- If a positive event is not logged within a reasonable period after a negative event, contact technical support. For example, if event 198 is not soon followed by event 199, the PSU might require service.

202 **Informational**

An auto-write-through trigger condition has been cleared, causing write-back cache to be re-enabled. The environmental change is also logged. (See events 191, 193, 195, 199, 201, and 241.)

Recommended actions

- No action required.

203 **Warning**

An environmental change occurred that allows write-back cache to be enabled, but the auto-write-back preference is not set.

The environmental change is also logged. (See events 190–200.)

Recommended actions

- Manually enable write-back cache.

204 **Error**

This event is generated by the hardware flush firmware whenever the boot processing firmware needs to inform the user about something.

Recommended actions

- Contact technical support. Send the log file to the service technician for further diagnosis.

Warning

This event is generated by the hardware flush firmware whenever the boot processing firmware needs to inform the user about something.

Recommended actions

- Contact technical support. Send the log file to the service technician for further diagnosis.

Informational

This event is generated by the hardware flush firmware whenever the boot processing firmware needs to inform the user about something.

Recommended actions

- No action required.

205 **Informational**

The indicated volume has been mapped or unmapped.

Recommended actions

- No action required.

206 **Informational**

Vdisk scrub has started. The scrub checks disks in the vdisk for the following types of errors:

- Data parity mismatches for a RAID 3, 5, 6, or 50 vdisk
- Mirror verify errors for a RAID 1 or RAID 10 vdisk
- Medium errors for a RAID 0 or non-RAID vdisk

When the scrub is complete, event 207 is logged.

Recommended actions

- No action required.

207 **Error**

Vdisk scrub found that at least one disk in the indicated vdisk has unfixed parity errors. If a disk fails data may be at risk.

Recommended actions

- See Resolving scrub errors on page 44.

Warning

Parity errors found by vdisk scrub in the indicated vdisk have been fixed through use of the verify vdisk command's fix parameter. The command verified data in the vdisk and made the parity match the data in all cases.

Recommended actions

- Check whether any disks in the vdisk have logged SMART events or unrecoverable read errors. If so, replace those disks.

Informational

Either vdisk scrub completed and found no parity errors, or it was aborted by a user.

Recommended actions

- No action required.

210 **Informational**

All snapshots have been deleted for the indicated master volume or snap pool.

Recommended actions

- No action required.

211 **Warning**

SAS topology has changed; no elements are detected in the SAS map. The message specifies the number of elements in the SAS map, the number of expanders detected, the number of expansion levels on the native (local controller) side and on the partner (partner controller) side, and the number of device PHYs.

Recommended actions

- Perform a rescan to repopulate the SAS map.
- If a rescan does not resolve the problem, then shut down and restart both controllers.
- If the problem persists, contact technical support.

Informational

SAS topology has changed; the number of SAS expanders has increased or decreased. The message specifies the number of elements in the SAS map, the number of expanders detected, the number of

expansion levels on the native (local controller) side and on the partner (partner controller) side, and the number of device PHYs.

Recommended actions

- No action required.

212 **Informational**

All master volumes have been deleted for the indicated snap pool.

Recommended actions

- No action required.

213 **Informational**

The indicated standard volume has been converted to a master volume, or the indicated master volume has been converted to a standard volume.

Recommended actions

- No action required.

214 **Informational**

The creation of snapshots is complete. The number of snapshots is indicated. Additional events give more information for each snapshot.

Recommended actions

- No action required.

215 **Informational**

A previously created batch of snapshots is now committed and ready for use. The number of snapshots is indicated. Additional events give more information for each snapshot.

Recommended actions

- No action required.

217 **Error**

A super-capacitor failure occurred on the controller.

Recommended actions

- Replace the controller module reporting this event.

218 **Warning**

The super-capacitor pack is near end of life.

Recommended actions

- Replace the controller module reporting this event.

219 **Informational**

Utility priority has been changed by a user.

Recommended actions

- No action required.

220 **Informational**

Rollback of data in the indicated master volume to data in the indicated snapshot has been started by a user.

Recommended actions

- No action required.

221 **Informational**

Snapshot reset has completed.

Recommended actions

- No action required.

222 **Informational**

The policy for the snap pool has been changed by a user. A policy specifies the action for the system to automatically take when the snap pool reaches the associated threshold level.

Recommended actions

- No action required.

223 **Informational**

The threshold level for the snap pool has been changed by a user. Each snap pool has three threshold levels that notify you when the snap pool is reaching decreasing capacity. Each threshold level has an associated policy that specifies system behavior when the threshold is reached.

Recommended actions

- No action required.

224 **Informational**

Background rollback of data in the indicated master volume to data in the indicated snapshot has completed.

Recommended actions

- No action required.

225 **Error**

A copy-on-write failure occurred when copying data from the indicated master volume to a snapshot.

Due to a problem accessing the snap pool, the write operation could not be completed to the disk. Data is left in cache.

Recommended actions

- Delete all snapshots for the master volume and then convert the master volume to a standard volume.

226 **Error**

Background rollback for the indicated master volume failed to start due to inability to initialize the snap pool. The rollback is in a suspended state.

Recommended actions

- Make sure the snap pool and the vdisk on which this volume exists are online. Restart the rollback operation.

227 **Error**

Failed to execute rollback for a particular LBA (logical block address) range of the indicated master volume.

Recommended actions

- Restart the rollback operation.

228 **Error**

Background rollback for the indicated master volume failed to end due to inability to initialize the snap pool. The rollback is in a suspended state.

Recommended actions

- Make sure the snap pool and the vdisk on which this volume exists are online. Restart the rollback operation.

229 **Warning**

The indicated snap pool has reached its warning threshold.

Recommended actions

- You can expand the snap pool or delete snapshots.

230 **Warning**

The indicated snap pool has reached its error threshold. The system will take the action set in the policy for this threshold level. Default is to auto-expand the snap pool.

Recommended actions

- You can expand the snap pool or delete snapshots.

231 **Warning**

The indicated snap pool has reached its critical threshold. The system will take the action set in the policy for this threshold level. Default is to delete all snapshots on the snap pool.

Recommended actions

- If the policy is to halt writes, then you must free up space in the snap pool, or convert the master volume to a standard volume in order to resume operations.

232 **Warning**

The maximum number of enclosures allowed for the current configuration has been exceeded.

Recommended actions

- The platform does not support the number of enclosures that are configured. The firmware has removed the enclosure indicated by this event from its configuration.

233 **Warning**

The indicated disk type is invalid and is not allowed in the current configuration.

Recommended actions

- One or more disks are not allowed for this platform. They have been removed from the configuration. Replace the disallowed disks with ones that are supported.

234 **Error**

The indicated snap pool is unrecoverable and can therefore no longer be used.

Recommended actions

- All the snapshots associated with this snap pool are invalid and you may want to delete them. However, the data on the master volume can be recovered by converting it to a standard volume.

235 See event 58.

236 **Informational**

A special shutdown operation has started. These special shutdown types are used as part of the firmware-update process.

Recommended actions

- No action required.

237 **Informational**

A firmware update has started and is in progress. This event provides details of the steps in a firmware-update operation that may be of interest to technical support if you have problems updating firmware.

Recommended actions

- No action required.

238 **Warning**

An attempt to write license data failed due to an invalid license.

Recommended actions

- Check the license for what is allowed for the platform, make corrections as appropriate, and reinstall. If the license is invalid, the write will fail.

239 **Warning**

A timeout occurred while flushing the CompactFlash.

Recommended actions

- Cycle power and restart the system. If the error persists, save the log files and contact a service technician.

240 **Warning**

A failure occurred while flushing the CompactFlash.

Recommended actions

- Cycle power and restart the system. If the error persists, save the log files and contact a service technician.

241–242 **Informational**

CompactFlash-specific environmental indicator events generated by the auto-write-through feature when an environmental change occurs. If an auto-write-through-trigger condition has been met, write-back cache is disabled and event 188 is also logged. Once the fault is resolved, event 187 is logged to indicate that write-back mode has been restored.

Recommended actions

- If event 241 is not logged soon after event 242, contact technical support.

243 **Informational**

A new controller enclosure has been detected. This happens when a controller FRU is moved from one enclosure to another and the controller detects that the midplane WWN is different from the WWN it has in its local flash.

Recommended actions

- No action required.

245 **Informational**

An existing disk channel target device is not responding to SCSI discovery commands.

Recommended actions

- Check the indicated target device for bad hardware or bad cable, then initiate a rescan.

246 **Warning**

The coin battery is not present or is not properly seated or has reached end-of-life. The battery provides backup power for the real-time (date/time) clock. In the event of a power failure, the date and time will revert to January 1, 1970 00:00:00.

Recommended actions

- Replace the controller module reporting the event.

247 **Warning**

The FRU ID SEEPROM for the indicated field replaceable unit (FRU) cannot be read; FRU ID data might not be programmed. FRU ID data includes the worldwide name, SCSI ID, and branding information. This event is logged once each time a Storage Controller is started for each FRU that is not programmed, and is logged by each I/O module.

Recommended actions

- Return the FRU to have its FRU ID data reprogrammed.

248 **Informational**

A valid feature license was successfully installed. See event 249 for details about each licensed feature.

Recommended actions

- No action required.

249 **Informational**

After a valid license is installed, this event is logged for each licensed feature to show the new license value for that feature. The event specifies whether the feature is licensed, whether the license is temporary, and whether the temporary license is expired.

Recommended actions

- No action required.

250 **Warning**

A license could not be installed. The license is invalid or specifies an unsupported feature.

Recommended actions

- Review the readme file that came with the license. Verify that you are trying to install the license on the system that the license was generated for.

251 **Warning**

A volume-copy operation has started for the indicated source volume.

Recommended actions

- If the source volume is a master volume, you can remount it. If the source volume is a snapshot, do not remount it until the copy is complete (as indicated by event 268).

252 **Informational**

Snapshot write data on the indicated master volume has been deleted.

Recommended actions

- No action required.

253 **Informational**

A license was uninstalled.

Recommended actions

- No action required.

255 **Informational**

The PBCs across controllers do not match as PBC from controller A and PBC from controller B are from different vendors. This may limit the available configurations.

Recommended actions

- No action required.

256 **Informational**

The indicated snapshot has been prepared but is not yet committed. This can occur when a snapshot is taken by an application, such as the VSS hardware provider, that is timing-sensitive and needs to take a snapshot in two stages.

After the snapshot is committed and event 258 is logged, the snapshot can be used.

Recommended actions

- No action required.

257 **Informational**

The indicated snapshot has been prepared and committed and is ready for use.

Recommended actions

- No action required.

258 **Informational**

The indicated snapshot has been committed and is ready for use.

Recommended actions

- No action required.

259 **Informational**

In-band CAPI commands have been disabled.

Recommended actions

- No action required.

260 **Informational**

In-band CAPI commands have been enabled.

Recommended actions

- No action required.

261 **Informational**

In-band SES commands have been disabled.

Recommended actions

- No action required.

262 **Informational**

In-band SES commands have been enabled.

Recommended actions

- No action required.

263 **Warning**

The indicated disk spare is missing. Either it was removed or it is not responding.

Recommended actions

- Replace the indicated disk.

264 **Informational**

The link speed of the port bypass circuit and interconnect mode has been set to the default.

Recommended actions

- No action required.

265 **Informational**

Port bypass circuits currently use the service port, which may limit the link speed or interconnect mode support.

Recommended actions

- Perform a system-level shutdown and restart. Note that this will cause all data to be unavailable for about 1 minute.

266 **Informational**

A volume-copy operation for the indicated master volume has been aborted.

Recommended actions

- No action required.

267 **Error**

While cleaning up resources in metadata at the end of a background rollback process, the firmware found at least one error and suspended the process for the indicated volume.

Recommended actions

- Make sure that disks and vdisks associated with the rollback do not have problems (health `OK`, status `FTOL` or `UP`) and then retry the rollback.

268 **Informational**

A background volume-copy operation for the indicated master volume has completed.

Recommended actions

- No action required.

269 **Informational**

A partner firmware update operation has started. This operation is used to copy firmware from one controller to the other to bring both controllers up to the same version of firmware.

Recommended actions

- No action required.

270 **Warning**

Either there was a problem reading or writing the persistent IP data from the FRU ID SEEPROM, or invalid data was read from the FRU ID SEEPROM.

Recommended actions

- Check the IP settings (including iSCSI host channel IP settings for an iSCSI system), and update them if they are incorrect.

271 **Informational**

The storage system could not get a valid serial number from the controller's FRU ID SEEPROM, either because it couldn't read the FRU ID data, or because the data on it isn't valid or hasn't been programmed. Therefore, the MAC address is derived by using the controller's serial number from flash. This event is only logged one time during bootup.

Recommended actions

- No action required.

272 **Informational**

Expansion of the indicated snap pool has started.

Recommended actions

- No action required.

273 **Informational**

PHY fault isolation has been enabled or disabled by a user for the indicated enclosure and controller module.

Recommended actions

- No action required.

274 **Warning**

The indicated PHY has been disabled, either automatically or by a user. Drive PHYs are automatically disabled for empty disk slots.

Recommended actions

- Look for corresponding event 275. If either of the following occur, contact technical support:
  - Event 274 event occurs for an ingress or egress PHY and event 275 doesn't occur.
  - The system transitions between 274 and 275 more than 8 times per hour.
- If a drive PHY for an installed disk has been automatically disabled, replace the disk.

275 **Informational**

The indicated PHY has been enabled.

Recommended actions

- No action required.

298 **Warning**

The controller's real-time clock (RTC) settings might be invalid after an unexpected power loss.

Recommended actions

- Check the system date and time. If either is incorrect, set them to the correct date and time.
- Also look for event 246 and take appropriate action.

When the problem is resolved, event 299 is logged.

299 **Informational**

The controller's real-time clock (RTC) settings were recovered after an unexpected power loss.

Recommended actions

- No action required.

300 **Informational**

CPU frequency has changed to high.

Recommended actions

- No action required.

301 **Informational**

CPU frequency has changed to low.

Recommended actions

- No action required.

302 **Informational**

DDR memory clock frequency has changed to high.

Recommended actions

- No action required.

303 **Informational**

DDR memory clock frequency has changed to low.

Recommended actions

- No action required.

304 **Informational**

The controller has detected I^2C errors that may have been fully recovered. This event is logged as Informational to note an existence of previous I^2C errors.

Recommended actions

- No action required.

305 **Informational**

A serial number in Storage Controller (SC) flash memory is invalid. The valid serial number will be recovered automatically.

Recommended actions

- No action required.

306 **Informational**

An old serial number in Storage Controller (SC) flash memory has been updated to a new serial number.

Recommended actions

- No action required.

307 **Critical**

A temperature sensor on a controller FRU detected an over-temperature condition that caused the controller to shut down.

Recommended actions

- Check that the storage system's fans are running.
- Check that the ambient temperature is not too warm. The enclosure operating range is 41–104° F (5–40° C).
- Check for any obstructions to the airflow.
- If none of the above explanations apply, replace the controller FRU that reported the error.

308 **Informational**

The default host port speed has changed from 4 Gbit/sec to 2 Gbit/sec because the controller module's HIM has a Broadcom PBC.

Recommended actions

- No action required.

309 **Informational**

Normally when the Management Controller (MC) is started, the IP data is obtained from the midplane FRU ID SEEPROM where it is persisted. If the system is unable to write it to the SEEPROM the last time it changed, a flag is set in flash memory. This flag is checked during startup, and if set, this event is logged and the IP data that is in flash memory is used. The only time that this would not be the correct IP data would be if the controller module was swapped and then whatever data is on the controller's flash memory is used.

Recommended actions

- No action required.

310 **Informational**

After a rescan, back-end discovery and initialization of data for at least one EMP (Enclosure Management Processor) has completed. This event is not logged again when processing completes for other EMPs in the system.

Recommended actions

- No action required.

311 **Informational**

An iSCSI ping operation completed. The event specifies the number of pings that passed and the number that failed.

Recommended actions

- If the ping operation failed, check connectivity between the storage system and the remote host.

312 **Informational**

This event is used by email messages and SNMP traps when testing notification settings. This event is not recorded in the event log.

Recommended actions

- No action required.

313 **Error**

The indicated controller module has failed. This event can be ignored for a single-controller configuration.

Recommended actions

- Replace the failed controller module. The module's Fault/Service Required LED will be illuminated (not blinking).

314 **Error**

The indicated FRU has failed or is not operating correctly. This event follows some other FRU-specific event indicating a problem.

Recommended actions

- To determine whether the FRU needs to be replaced, see the topic about verifying component failure in your product's FRU installation and replacement guide.

315 **Critical**

The controller module is incompatible with the enclosure. The controller will automatically shut down. If two incompatible controllers are inserted at the same time, or booted at the same time, one controller will crash and the other will hang. This behavior is expected and prevents data loss.

Recommended actions

- Move the controller module to a compatible enclosure.

316 **Warning**

The temporary license for a feature has expired. Any components created with the feature remain accessible but new components cannot be created.

Recommended actions

- To continue using the feature, purchase a permanent license.

Informational

The temporary license for a feature will expire in 10 days. Any components created with the feature will remain accessible but new components cannot be created.

Recommended actions

- To continue using the feature after the trial period, purchase a permanent license.

317 **Error**

A serious error has been detected on the back-end host adapter. The controller will be killed by its partner.

Recommended actions

- Contact technical support.

318 **Critical**

A hardware failure occurred: XOR error.

Recommended actions

- Replace the controller module reporting the event.

322 **Warning**

The controller has an older Storage Controller (SC) version than the version used to create the CHAP authentication database in the controller's flash memory.

The CHAP database cannot be read or updated. However, new records can be added, which will replace the existing database with a new database using the latest known version number.

Recommended actions

- Upgrade the controller firmware to a version whose SC is compatible with the indicated database version.
  - If no records were added, the database becomes accessible and remains intact.
  - If records were added, the database becomes accessible but contains only the new records.

352 **Informational**

Expander Controller (EC) assert data or stack-dump data is accessible.

Recommended actions

- No action required.

353 **Informational**

Expander Controller (EC) assert data and stack-dump data have been cleared.

Recommended actions

- No action required.

354 **Warning**

SAS topology has changed on a host port; at least one PHY has gone down. For example, the SAS cable connecting a controller host port to a host has been disconnected.

Recommended actions

- Check the cable connection between the indicated port and the host.
- Monitor the log to see if the problem persists.

Informational

SAS topology has changed on a host port; at least one PHY has gone up. For example, the SAS cable connecting a controller host port to a host has been connected.

Recommended actions

- No action required.

355 **Warning**

The faceplate's debug button was found to be stuck in the On position during boot up.

Recommended actions

- If the button remains stuck, replace the controller module.

358 **Critical**

All PHYs are down for the indicated disk channel. The system is degraded and is not fault-tolerant because all disks are in a single-ported state.

Recommended actions

- Power-cycle the controller enclosure.
  - If the condition doesn't persist, no further action is required.

- If the condition persists, this indicates a hardware problem in one of the controller modules or in the controller enclosure midplane. For help identifying which FRU to replace, contact technical support.

Warning

Some, but not all, PHYs are down for the indicated disk channel.

Recommended actions

- Monitor the log to see whether the condition persists.
  - If the condition doesn't persist, no further action is required.
  - If the condition persists, this indicates a hardware problem in one of the controller modules or in the controller enclosure midplane. For help identifying which FRU to replace, contact technical support.

359 **Informational**

All PHYs that were down for the indicated disk channel have recovered and are now up.

Recommended actions

- No action required.

360 **Informational**

The speed of the indicated disk PHY was renegotiated.

Recommended actions

- No action required.

412 **Warning**

One disk in the indicated RAID-6 vdisk failed. The vdisk is operational with Degraded health and status FTDN (fault tolerant with a down disk).

Recommended actions

- Replace the down disk with a spare so the system can start reconstructing the vdisk.

413 **Informational**

Created a replication set with the indicated primary volume.

Recommended actions

- No action required.

414 **Error**

Failed to create the indicated replication set for the indicated volume.

Recommended actions

- No action required.

415 **Informational**

Deleted the indicated replication set.

Recommended actions

- No action required.

416 **Error**

Failed to delete the indicated replication set. This can occur if an invalid identifier was specified for the replication set, or if the specified primary volume is not on the local system.

Recommended actions

- Repeat the deletion using a valid replication-set identifier, or on the local system for the primary volume.

417 **Informational**

Automatically deleted the indicated snapshot to make space for a new snapshot or for a remote snapshot proxy volume, or while changing the secondary volume to be the primary volume. The snapshot to delete is determined by the snap-pool's policy.

Recommended actions

- No action required.

418 **Warning**

A replication operation cannot complete because it needs to create a proxy volume or a replication snapshot in the secondary vdisk, but the maximum number of volumes exists for that vdisk or its owning controller and the vdisk contains no suitable snapshot to automatically delete.

This event is logged on the secondary volume's system only.

Recommended actions

- To enable the replication operation to continue, delete at least one unneeded volume from the destination vdisk or from another vdisk owned by the same controller.
- After performing the above action, if the replication fails for the same reason and becomes suspended, events 431 and 418 will be logged. Repeat the above action and resume the replication.

419 **Informational**

Started to add the indicated secondary volume to the indicated replication set.

Recommended actions

- No action required.

420 **Error**

Failed to add the indicated secondary volume to the indicated replication set. This can occur for several reasons, such as:

- The volume is already a replication volume.
- The volume is not local to the system.
- The communication link is busy or experienced an error.
- The volume is not the same size as the existing volume.

Recommended actions

- If any of the above problems exist, resolve them. Then repeat the add operation with a valid volume.

421 **Informational**

Completed adding the indicated secondary volume to the indicated replication set.

Recommended actions

- No action required.

422 **Informational**

Completed removing the indicated secondary volume from the indicated replication set.

Recommended actions

- No action required.

423 **Error**

Failed to remove the indicated volume from the indicated replication set. This can occur for several reasons, such as:

- The volume record is not found.
- The volume record is not yet available.
- A primary volume conflict exists.
- You cannot delete the volume from a remote system.
- You cannot remove the volume because it is the primary volume.

Recommended actions

- If any of the above problems exist, resolve them. Then repeat the remove operation with a valid volume.

424 **Informational**

Completed modifying parameters for the indicated secondary volume in the indicated replication set.

Recommended actions

- No action required.

425 **Informational**

Started a replication to the indicated secondary volume.

Recommended actions

- No action required.

426 **Informational**

Completed a replication to the indicated secondary volume.

Recommended actions

- No action required.

427 **Warning**

A communication error occurred when sending information between storage systems.

Recommended actions

- Check your network or fabric for abnormally high congestion or connectivity issues.

428 **Informational**

A user suspended a replication to the indicated secondary volume.

Recommended actions

- No action required.

429 **Informational**

A user resumed a replication to the indicated secondary volume.

Recommended actions

- No action required.

430 **Informational**

A user aborted a replication to the indicated secondary volume.

Recommended actions

- No action required.

431 **Error**

Replication to the indicated secondary volume has suspended due to an error on that volume. User intervention is required to resume replication. This can occur for several reasons, such as:

- The cache request was aborted.
- The cache detected that the source or target volume is offline.
- The cache detected a media error.
- The snap pool is full.
- The communication link is busy or experienced an error.
- The snapshot being used for the replication is invalid.
- There was a problem establishing proxy communication.

Recommended actions

- Resolve the error and then resume the replication.

432 **Error**

Aborted a replication due to an error on the indicated secondary volume.

Recommended actions

- Verify that the secondary volume is valid and that the system where the volume resides is accessible.

433 **Informational**

Skipped a replication to the indicated secondary volume.

Recommended actions

- No action required.

434 **Warning**

A replication collided with an ongoing replication to the indicated secondary volume.

Recommended actions

- No action required.

435 **Informational**

Failed to initialize the indicated replication set.

Recommended actions

- No action required.

436 **Informational**

Completed a manage-volume request for the indicated volume in the indicated replication set. This event is logged in addition to an event that specifies the type of request being completed: 428, 429, 430, or 437.

Recommended actions

- No action required.

437 **Informational**

Started to change the primary volume for the indicated replication set to the indicated volume.

Recommended actions

- No action required.

438 **Informational**

Completed changing the primary volume for the indicated replication set to the indicated volume.

Recommended actions

- No action required.

439 **Error**

Failed to change the primary volume to the indicated volume for the indicated replication set. This can occur for several reasons, such as:

- The volume is not in the replication set.
- Configuration tag or configuration data not found.
- The retry limit has been reached.

Recommended actions

- Verify that the specified volume is part of the replication set.
- Verify that there are no network issues preventing communication between the storage systems.

440 **Warning**

Retrying a replication due to an error on the indicated secondary volume. This can occur for several reasons, such as:

- The cache request was aborted.
- The cache detected that the source or target volume is offline.
- The cache detected a media error.
- The snap pool is full.
- The communication link is busy or experienced an error.
- The snapshot being used for the replication is invalid.
- There was a problem establishing proxy communication.

The replication is being retried after a moderate delay.

Recommended actions

- No action required.

441 **Error**

Failed to forward an add-volume request for a volume in a replication set. The secondary volume cannot be fully added to the replication set.

Recommended actions

- Remove the indicated secondary volume from the replication set.

442 **Warning**

Power-On Self Test (POST) diagnostics detected a hardware error in a UART chip in either or both of the controllers. The event returns 1 if the Storage Controller (SC) UART failed, 2 if the Management Controller (MC) UART failed, or 3 if both UARTs failed.

Recommended actions

- Replace the controller module.

444 **Warning**

A snap pool reached a capacity threshold and the associated Auto Expand policy failed because there is not enough available space in the vdisk.

Recommended actions

- Increase the available space in the vdisk either by expanding the vdisk or by removing any unneeded volumes.

Informational

A snap pool reached a capacity threshold and the associated policy completed successfully; for example, the snap pool was expanded successfully, or the oldest snapshot was deleted, or all snapshots were deleted. If the policy is Delete Oldest Snapshot, the serial number of the deleted snapshot is reported.

Recommended actions

- No action is required.

449 **Informational**

Aborted rollback for the indicated master volume.

Recommended actions

- No action required.

450 **Warning**

A remote volume's status changed from online to offline. This can occur for several reasons, such as:

- The communication link is busy or experienced an error.
- The local initiator experienced an error.

Recommended actions

- No action required.

451 **Informational**

A remote volume's status changed from offline to online.

Recommended actions

- No action required.

452 **Informational**

The indicated volume has been detached from the indicated replication set. The volume can now be physically moved to another storage system.

Recommended actions

- No action required.

453 **Informational**

The indicated volume has been reattached to the indicated replication set.

Recommended actions

- No action required.

454 **Informational**

A user changed the drive-spin-down delay for the indicated vdisk to the indicated value.

Recommended actions

- No action required.

455 **Warning**

The controller detected that the configured host-port link speed exceeded the capability of an FC SFP. The speed has been automatically reduced to the maximum value supported by all hardware components in the data path.

Recommended actions

- Replace the SFP in the indicated port with an SFP that supports a higher speed.

456 **Warning**

The system's IQN was generated from the default OUI because the controllers could not read the OUI from mid-plane FRU ID data during startup. If the IQN is wrong for the system's branding, iSCSI hosts might be unable to access the system.

Recommended actions

- If a disk discovery timeout – as indicated by event 270 with status code 0 – caused the problem to occur, restart the controllers.

464 **Warning**

A user inserted an unsupported cable or SFP into the indicated controller host port.

Recommended actions

- Replace the cable or SFP with a supported type, as specified in your product's setup guide.

465 **Informational**

A user removed an unsupported cable or SFP from the indicated controller host port.

Recommended actions

- No action required.

468 **Informational**

FPGA temperature has returned to the normal operating range and the speed of buses connecting the FPGA to downstream adapters has been restored. The speed was reduced to compensate for an FPGA over-temperature condition.

Recommended actions

- No action required.

469 **Informational**

The speed of buses connecting the FPGA to downstream adapters has been reduced to compensate for an FPGA over-temperature condition.

Recommended actions

- No action required.

Disk error conditions and recommended actions

Table 1 Disk error conditions and recommended actions

Condition	Recommended action
Event 8 reports that the RAID controller can no longer detect the disk.	Reseat the disk.
Event 8 reports that a media error occurred.	Replace the disk.
At the time a disk failed, the dynamic spares feature was enabled and a properly sized disk was available to use as a spare.	No action required; the system automatically uses that disk to reconstruct the vdisk.
At the time a disk failed, the dynamic spares feature was enabled but no properly sized disk was available to use as a spare.	Replace the disk so the system can automatically use the new disk to reconstruct the vdisk.
At the time a disk failed, the dynamic spares feature was disabled and no dedicated spare or properly sized global spare was available.	Replace the disk and use RAIDar to assign the new disk as a spare for the vdisk so the system can automatically use that disk to reconstruct the vdisk.
The status of the vdisk that originally had the failed disk status is Good. A global or vdisk (dedicated) spare has been successfully integrated into the vdisk and the replacement disk can be assigned as either a global spare or a vdisk spare.	Use RAIDar to assign the new disk as either a global spare or a vdisk spare.
The status of the disk just installed is LEFTOVR.	All of the member disks in a vdisk contain metadata in the first sectors. The storage system uses the metadata to identify vdisk members after restarting or replacing enclosures. Use RAIDar to clear the metadata if you have a disk that was previously a member of a vdisk. After you clear the metadata, you can use the disk in a vdisk or as a spare.
If the status of the vdisk that originally had the failed disk status is FATAL FAIL, one or more disks have failed in a RAID-0 vdisk; two or more disks have failed in a RAID-1, 3, or 5 vdisk; or three or more disks have failed in a RAID-6 vdisk.	All data in the vdisk is lost. Use the CLI `trust` command to attempt to bring the vdisk back online.
The status of the vdisk that originally had the failed disk status is DRV ABSENT or INCOMPLETE. These status indicators only occur when the enclosure is initially powered up. DRV ABSENT indicates that one disk is bad. INCOMPLETE indicates that two or more disks are bad.	Make sure the enclosures and associated data host were powered on in this order: first the drive enclosures, then the controller enclosure, then the data host. If the power-on sequence was correct, locate and replace the additional failed disks.
The status of the vdisk that originally had the failed disk indicates that the vdisk is being rebuilt.	Wait for the vdisk to complete its operation.
The status of the vdisk that originally had the failed disk is DRV FAILED.	If this status occurs after you replace a defective disk with a known good disk, the enclosure midplane might have experienced a failure. Replace the enclosure.

Power supply faults and recommended actions

Table 2 Power supply faults and recommended actions

Fault	Recommended action
Power supply fan warning or failure, or power supply warning or failure. Event code 168.	• Check that all of the fans are working using RAIDar. • Make sure that no slots are left open for more than 2 minutes. If you need to replace a module, leave the old module in place until you have the replacement, or use a blank cover to close the slot. Leaving a slot open negatively affects the airflow and might cause the unit to overhead. • Make sure that the controller modules are properly seated in their slots and that their latches are locked.
Power supply module status is listed as failed or you receive a voltage event notification. Event code 168.	• For each power supply module with a switch, check that the switch is turned on. • Check that the power cables are firmly plugged into both power supply and into an appropriate electrical outlet. • Replace the power supply module.
Power LED is off.	Same as above.
DC Voltage/Fan Fault/Service Required LED is on.	Replace the power supply module.

Events sent as indications to SMI-S clients

If the storage system's SMI-S interface is enabled, the system will send events as indications to SMI-S clients. For information about enabling the SMI-S interface, see the chapter about configuring the system in the RAIDar Reference Guide.

The event categories below pertain to FRU assemblies and certain FRU components.

Table 3 Events and corresponding SMI-S indications

FRU/Event category	Corresponding SMI-S class	Operation status values that would trigger alert conditions
Controller	DHS_Controller	Down, Not Installed, OK
Hard Disk Drive	DHS_DiskDrive	Unknown, Missing, Error, Degraded, OK
Fan	DHS_PSUFan	Error, Stopped, OK
Power Supply	DHS_PSU	Unknown, Error, Other, Stressed, Degraded, OK
Temperature Sensor	DHS_OverallTempSensor	Unknown, Other, Error, Non-Recoverable Error, Degraded, OK
Battery/SuperCap	DHS_SuperCap	Unknown, Error, OK
FC Port	DHS_FCPort	Stopped, OK

Resolving scrub errors

Certain conditions such as bad blocks in a disk, the failure of multiple disks at the same time, or an enclosure failure can cause the scrub utility to find a parity discrepancy error. Follow the directions below to recover from such events.

NOTE: This procedure will not correct scrub errors caused by a failing or failed disk. This would typically be taken care of by letting vdisk reconstruction complete. Do not follow this procedure when reconstruction is running or needs to run. Let reconstruction complete before taking further action. Parity errors caused by a failing disk may be corrected by replacing the failed disk. Disks that have logged SMART events or Unrecoverable Read Errors may be candidates for replacement.

To resolve scrub issues

1. Ensure that the storage system's firmware version is one of the following or newer:
   J200P39, J210P19, J300P20, M110R21, T100R
2. Ensure that the storage system's hardware is healthy and stable.
3. Create a full backup of all data in the vdisk. You should enable all available verification options. Use tools to verify the data integrity of the backup.
4. Correct any hardware issues. Failed or failing controllers, power supplies, I/O modules, or other components all contribute to causing scrub to log an error.
5. After completing the above steps, if parity errors continue to be reported, perform the procedure below.

To fix parity errors reported by the scrub utility

In this procedure you will use the CLI `verify vdisk` command with its `fix` parameter, hereafter referred to as "verify-fix." Verify-fix corrects parity based on the data in the stripe at the present time.

NOTE:

- Verify-fix recalculates parity for the failed stripe.
- Verify-fix does not compare parity to data.
- If there is a problem with the data prior to running verify-fix it will make parity match the incorrect data.
- Running verify-fix before checking data validity has the potential to correct the parity on bad data. Take extreme care to protect data before correcting the parity.

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1. Complete the steps in To resolve scrub issues above.
2. Save the current logs from the storage system in a safe location:
   a. Log in to the system's FTP interface.
   b. Enter:
      `get logs file-name.zip`
3. Disable background scrub:
   a. Log in to the CLI.
   b. Enter:
      `set job-parameters background-scrub off`
4. Verify that scrub is not running on the affected vdisk. If scrub is running on the vdisk, either:
   - Wait for it to complete.
   - Manually abort the scrub by logging in to the CLI and entering:
     `abort scrub vdisk vdisk`
5. Run verify-fix by entering:
   `verify vdisk vdisk fix yes`

- When prompted for a pass code, enter: `parity`
- Wait 24 hours for this process to complete.

6. When verify-fix has completed, re-enable background scrub:
   a. Log in to the CLI.
   b. Enter:

      ```
      set job-parameters background-scrub on
      ```

7. Create a full backup of all data in the vdisk. You should enable all available verification options. Compare with the original backup.

If errors occur during this procedure, or if the parity errors were not corrected or are seen again within a short period of time, place a call with technical support. To help expedite your case, provide logs gathered at the beginning of this procedure to technical support and a current copy of the logs.