LSISAS6160 SAS Switch r200.08.00.00 Firmware

Release Notes

Version 1.0
December 2010

Revision History

Version and Date	Description of Changes
Version 1.0, October 2010	Initial release of this document.

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Release Notes

LSISAS6160 SAS Switch Firmware

These release notes correspond to r200.08.00.00 of the LSISAS6160 SAS switch firmware.

CAUTION: You *must* install r200.05.03.00 of the LSISAS6160 SAS switch firmware before you upgrade to r200.08.00.00. If you do not follow this upgrade path, your switch will become locked and you will need to download and run a switch recovery utility from the LSI Website to make it functional again.

Upgrading to r200.08.00.00

Refer to the *LSISAS6160 SAS Switch User Guide* for complete instructions on upgrading the switch firmware to r200.08.00.00. The following situations might occur when you upgrade the firmware:

- The notes in the Update Firmware- Activate window state "The switch automatically resets after the update." This is incorrect, you must click the **Activate** button to complete the upgrade.
- An error message appears stating "Could not reset expander [SAS Address]: Error occurred while communicating with server. Server connection lost! Please log in again." This is expected behavior, because the switch was reset, and during a reset you lose all networking capabilities.
- When you click the **OK** button, you are returned to the SDM login screen. At this point, close the browser and reconnect to SDM.
- If you do not close the browser, you will get an error stating "Could not get information for expander [SAS Address]: Protocol error occurred while communicating with server." Close the browser and reconnect to SDM at this point, and everything will work correctly.

New Features

This section lists the new features included with r200.08.00.00 of the LSISAS6160 SAS switch firmware. Refer to the *LSISAS6160 SAS Switch User Guide* for more information about these features.

- SAS Domain Manager (SDM) configuration backup and restore
- Performance monitors and error monitors
- Programmable thresholds for SES components (high and low thresholds for temperature and voltage)
- Secure User Authentication, including support for SSH file transfer protocol
- Support for SNMP
- Ability to get and set current date and time through SSP

Support Matrix

The LSISAS6160 SAS switch is designed to be compatible with SAS 2.1-compliant devices. The items in the following table have been explicitly tested for compatibility with the LSISAS6160 switch.

Table 1: LSISAS6160 Support Matrix

Operating System	LSI Driver Version
Windows® 2003 SP2 x64bit	Version 2.00.37.0 (LSI SAS-2)
SLES 11 x64bit	Version 8.0.0.0 (LSI SAS-2)
SLES 11 U1 x64bit	Version 8.0.0.0 (LSI SAS-2)
RHEL 5 U3 x64bit	Version 8.0.0.0 (LSI SAS-2)
RHEL 5 U5 x64bit	Version 8.0.0.0 (LSI SAS-2)
LSI Host Bus Adapter	**Firmware and BIOS Version**
SAS9210-8e	Firmware 8.0.0.0 BIOS 7.12.03.00
SAS9200-8e	Firmware 8.0.0.0 BIOS 7.12.03.00
LSISAS2008	Firmware 8.0.0.0 BIOS 7.12.03.00
LSISAS2108	Firmware 8.0.0.0 BIOS 7.12.03.00
LSILSI2116	Firmware 8.0.0.0 BIOS 7.12.03.00
LSISAS2208	Firmware 8.0.0.0 BIOS 7.12.03.00
LSI JBOD	**LSI Part Number**
LSI620J/LSI630J	LSI00217/LSI00218
CTS2600	Support coming soon.
Active Cables	**Vendor Part Number**
Active Cable – 10 meters	CBL-SFF8088SAS-10M
Active Cable – 20 meters[a]	CBL-SFF8088SAS-20M
Passive Cables	
Various	Several manufacturers were used in compatibility testing

a. Do not use this 20-meter cable to connect SATA drives. The SATA Specification does not allow cables of over 10 m.

Firmware and Hardware Advisories

This section lists the firmware and hardware advisories for the LSISAS6160 switch.

Zone Group in Route Table Entries for Expanders Outside ZPSDS Is Not Updated after Activate or Deactivate

LSI has identified an issue that occurs when non-zoning JBODs are attached to the LSISAS6160 switch and a zone activate or zone deactivate takes place. The switch does not update the route table entries for the devices attached to the non-zoning JBODs.

Technical Description: When the LSISAS6160 switch is connected to table phys instead of subtractive phys, the Report General command returns an expander change count that does not match the count stored in memory. The count mismatch generates a discoverList command, which eventually causes the end devices to be added to the pending Route Ops table.

Observed Behavior	When the zone set is activated, the zoned host cannot access the devices attached to the non-zoning JBOD.
Impact	The zoned host cannot access devices attached to the non-zoning JBOD.
Workaround	A rediscovery is the recommended workaround. Force a rediscovery by disconnecting and reconnecting any SAS cable attached to the LSISAS6160 switch.

Cascaded Switches with SAS-1 and SAS-2 HBAs

LSI has identified a potential setup problem when integrating SAS-2 switches in cascaded topologies.

Technical Description: Cascaded switches are supported only for SAS-2 HBAS in which the *Allow Table-to-Table Links* bit is enabled. SAS-1 HBAs do not support cascaded switches.

Observed Behavior	In both SAS-1 and SAS-2, the host bus adapter (HBA) reports the following topology discovery error when booting up the system: SAS discovery error 0x00000400
Impact	• In SAS-1, the firmware does not display devices behind a cascaded switch. Topology changes can affect future discovery and driver stability. • In SAS-2, discovery only reports the error as required for informational purposes and takes no further action.
Workaround	• In SAS-1, cascaded switches are not supported. • In SAS-2, ignore the SAS discovery error message. This error will be removed from future releases of the LSI HBA firmware.

I/O Fails when Activating a Zone Set

LSI has identified an issue when zone sets are activated while I/O is running. This issue applies to JBODs only. RAID boxes are supported.

Technical Description: All ports lock and there is a large burst of arbitrations in process (AIPs) when zone sets are activated while I/O is running.

Observed Behavior	If a zone set is activated while I/O is running, the LSISAS6160 switch and the attached JBODs might become unresponsive.
Impact	I/O activity stops and management is not possible.
Workaround	Contact your JBOD manufacturer for an updated version of the firmware that supports changing zone sets while I/O is running.

SATA Drive Capacities Appear as UNKNOWN

Technical Description: The SATA protocol assumes that it is always communicating with a single initiator. SATA over SAS (STP) is implemented so that the first initiator that sends an I/O to a SATA drive is then *affiliated* with that drive. No other initiator can communicate with an affiliated SATA drive, and therefore the LSISAS6160 switch cannot send I/Os to the SATA drive to query it and to retrieve the drive size. Therefore, SATA drives capacities are reported as UNKNOWN.

Observed Behavior	SATA drive capacities are shown as UNKNOWN in SDM.
Impact	None.
Workaround	None. Limitations in the SATA specification do not allow the SAS switch to display SATA drive capacities.

Cannot Use Cables Longer than 10 m with SATA Drives

Technical Description: The SATA specification does not allow cables of over 10 m.

Observed Behavior	The LSISAS6160 switch cannot establish connections with SATA drives if using cables longer than 10 m.
Impact	Intermittent or nonexistent communication with SATA drives.
Workaround	None.

SDM Error after Firmware Upgrade

Technical Description: The SDM error window indicates a reset expander failure after you upgrade and activate firmware on the LSISAS6160 switch from r200.05.03.00.

Observed Behavior	While waiting to reset the LSISAS6160 switch with the new firmware, SDM times out and displays an error message stating that it failed to reset the expander and that it lost communication with it.
Impact	None. The switch actually did reset.
Workaround	Ignore the error window and log back in to SDM.

Xip Utility with MegaRAID and 3Ware SAS RAID Controllers

Technical Description: Before the Xip utility can gather and set IP information for the LSISAS6160 switch, its SCSI enclosure must be presented to the operating system.

Observed Behavior	Xip fails to initialize when using 3ware and MegaRAID SAS RAID controllers and displays the error *IAL or HAL API Failed*.
Impact	Unable to retrieve or set IP information for the LSISAS6160 switch when using 3ware and MegaRAID SAS RAID controllers with the Xip utility.
Workaround	With MegaRAID controllers, you can enable the ExposeEnclDevicesEnbl bit by issuing the following megacli command before booting the operating system: `MegaCli -AdpSetProp ExposeEnclDevicesEnbl 1 -a0` 3ware SAS RAID controllers do not support the Xip utility. Use another model of HBA that supports Xip.

Sending Long Client Version Strings Prevents SSH Connection from Closing Properly

Technical Description: When an SSH session is being established, the SSH server sends its version identification string. The SSH client then responds with its own version identification string. This is used to check server-client compatibility. The problem was observed with version strings longer than 2000 bytes, but it could occur with shorter strings as well.

Observed Behavior	Cannot connect to the LSISAS6160 switch through SSH with SDM CLI.
Impact	SSH connection to the LSISAS6160 switch does not work.
Workaround	Reset the LSISAS6160 switch. To prevent the problem from occurring, do not modify client version strings to make them very long.

Invalid Switch Port Prevents Zoning from Being Activated or Deactivated

Zoning cannot be activated or deactivated if phys are added to an invalid port on the LSISAS6160 switch for which zoning is already activated. All phys in a port must be in the same zone group, as stated in the SAS-2 specification.

Observed Behavior	SDM generates an *Invalid Port* error message, and zoning cannot be activated or deactivated. The LED on the LSISAS6160 switch blinks, indicating an invalid port.
Impact	Zoning cannot be activated or deactivated.
Workaround	Be sure that all ports on the switch are under the same zone group. If zoning is activated and the port is invalid, deactivate zoning by fixing the invalid port first (for example, by removing extra phys that were added). After the port is valid, you can perform all zoning related operations. You can also deactivate zoning by restoring the factory defaults, but this has the undesirable effect of clearing all zoning related data, such as zone groups and zone permissions.

SDM Does Not Allow Voltage Threshold Values to be Set Inconsistently

Technical Description: If you attempt to set the High Warning Threshold greater than the Low Warning Threshold, SDM rejects it because it is inconsistent.

Observed Behavior	The Voltage Sensor Threshold keeps the original settings.
Impact	No impact on the operation of the switch.
Workaround	Be sure to set the High Warning Threshold lower than the Low Warning Threshold.

Erratic Response to VoltageSense03 Threshold Changes

Technical Description: VoltageSense03 does not always respond the first time to threshold changes.

Observed Behavior	It may require multiple threshold requests before the threshold changes for VoltageSense03.
Impact	VoltageSense03 threshold changes are not updated on the first request.
Workaround	Retry the request until the change is accepted.

SDM Allows Temperature Threshold Values to be Set Inconsistently

Technical Description: You cannot change temperature threshold values beyond the range of 1 °C to 79 °C. This prevents you from accidentally changing important system values. However, the range check is independent of all four thresholds. For example, the Low Critical setting retains its original value if the range check fails for it, but the Low Warning setting gets the new value, which might be lower than the old Low Critical value but still within the range.

Observed Behavior	A change to a temperature threshold setting is accepted when it should be rejected.
Impact	The firmware might generate a critical alarm when it should have generated a warning alarm first.
Workaround	Do not set any temperature threshold value outside the stated range of 1 °C to 79 °C. See the *User Guide* for more information.

SDM Allows High Critical Voltage Threshold to be Set Lower than High Warning Value

Technical Description: You cannot change voltage threshold values beyond the range of 5.5 percent to 24.5 percent. However, the range check is independent of all four thresholds. For example, the High Critical setting retains its original value if the range check fails for it, but the High Warning setting gets the new value, which might be higher than the old High Critical value but still within the range.

Observed Behavior	A change to a voltage threshold setting is accepted when it should be rejected.
Impact	The firmware might generate a critical alarm when it should have generated a warning alarm first.
Workaround	Do not set any voltage threshold value outside the stated range of 5.5 percent to 24.5 percent.

Disk Capacity for SAS Device Shown as UNKNOWN After a Power Cycle

Technical Description: The Disk Capacity for SAS end devices is intermittently displayed as UNKNOWN following a power cycle.

Observed Behavior	Disk Capacity might be displayed incorrectly following a power cycle.
Impact	Disk Capacity data could be unreliable.
Workaround	Reset the LSISAS6160 switch.

SDM Connector Wizard Displays x2 Ports Incorrectly

Technical Description: The SDM GUI Connector Wizard displays x2 ports incorrectly if a x4 connector is split and devices are connected to it through x2 connections.

Observed Behavior	In the Connector Wizard, the port with the x2 connection is listed twice.
Impact	Port information is incorrect.
Workaround	None. Ignore the extra phys listed in the Connector Wizard for a x2 connection.

Show Device Command Might Show Phys Incorrectly

Technical Description: The SDM-CLI Show Device command does not display all Phys when a x16 connection is made between the LSISAS6160 switch and an initiator.

Observed Behavior	The SDM-CLI Show Device command shows only 4 of the 16 Phys when a x16 connection is made between the LSISAS6160 switch and an initiator.
Impact	No impact to switch functionality.
Workaround	Use the SDM-CLI Show Phy command, or use the SDM-GUI to view the phys in their correct configuration.

SNMP OIDs Using DisplayString Incorrectly Accept non-ASCII Characters

Simple Network Management Protocol (SNMP) object identifiers (OIDs) that support SET operations such as *sysContact*, *sysName*, and *sysLocation* accept non-ASCII characters.

Technical Description: The OIDs allow non-ASCII characters to be stored. The OIDs then allow those characters to be returned in an SNMP GET operation, which can cause a non-displayable string to be returned.

Observed Behavior	Request with non-ASCII characters is accepted when it should be rejected.
Impact	SNMP operations might return non-displayable strings.
Workaround	Be sure to use valid ASCII display strings.

Heavy Activity Causes Telnet Functionality to Become Unresponsive

Technical Description: The Telnet connection might become unresponsive if the maximum number of Telnet sessions are open, with command activity.

Observed Behavior	Open Telnet connections become slow or unresponsive.
Impact	You cannot run the Telnet connection into the LSISAS6160 switch because the connection is slow or unresponsive.
Workaround	Reset the switch if you are unable to log in to Telnet sessions.

Cannot Modify the 248th Zone Set when Maximum Number of Zone Groups are Applied to it.

Technical Description: The maximum number of supported Zone Sets is 32. A problem occurs if you try to modify the 248th Zone Group in the 32nd Zone Set.

Observed Behavior	You receive this error: "Could not create/modify zone set *[zone set name]*: Error creating zone set. Could not create more zone sets than supported."
Impact	You cannot modify the 248th Zone Group in the 32nd Zone Set.
Workaround	Log out of SDM and log back in. Do not add more than 247 Zone Groups (numbered 0 to 246) to the 32nd Zone Set.

SDM End Device Wizard Unable to Select Two RAID Controllers Individually

Technical Description: When your system is using certain types of RAID controllers and you are running the End Device Wizard in SDM, you might not be able to select individual controllers to set zoning.

Observed Behavior	The End Device Wizard highlights both RAID controllers when one controller is selected.
Impact	You are unable to use the End Device Wizard.
Workaround	Do not use the Wizard. Instead, use manual zoning in SDM.

The Day of the Week is Incorrect in the Event Log Timestamp

Technical Description: The SDM GUI is calculating the day of the week incorrectly.

Observed Behavior	The wrong day of the week is displayed for entries in the SDM event log.
Impact	You must use the calendar date to determine the correct day of the week.
Workaround	None.

Temperature Threshold Value Information Not Included in SDM Help

Technical Description: You cannot change temperature threshold values in SDM beyond the range of 1 °C to 79 °C. This restriction prevents accidental changes to important system values. Some devices might have different temperature ranges. See the *User Guide* for information about temperature threshold values, because the SDM help topics do not include this information.

Observed Behavior	SDM does not accept the value if you try to enter a temperature threshold value less than 1 °C or greater than 79 °C.
Impact	None.
Workaround	Refer to the *User Guide* for information about appropriate temperature threshold values.

Resolved Firmware and Hardware Issues

This section lists firmware and hardware issues for the LSISAS6160 switch that have been resolved.

Loss of Connection to Drives

Issue: On rare occasions, the LSISAS6160 switch did not self-recover from a failure in a connected component under highly stressed conditions and heavy I/O. Failures in connected components included broken links, HBA failures, and so on. A power cycle was required for recovery.

Resolution: This issue is resolved in the latest version of the switch firmware.

Linux HBA Does Not Restore Devices after Zone Set Activation or Deactivation

Issue: When using the SAS-2 Linux® driver and activating or deactivating a zone set on the LSISAS6160 switch, disk drives that were part of the activated zone group were not restored in a way that made them accessible to the operating system. A reset was required to gain access to the disk drives.

Resolution: This issue is resolved in the latest version of the switch firmware.

SAS-2 Switch Must Comply with Enclosure Settings to Properly Integrate with LSI SAS HBA

Issue: When the LSISAS6160 switch connector type for its virtual phy was set to 0, the enclosure information for the virtual phy did not indicate that it was virtual. This caused some applications to treat the virtual phy as though it were a physical phy.

Resolution: This issue is resolved in the latest version of the switch firmware.

JBODs Appear as Switches in SDM-GUI

Issue: SDM-GUI did not display JBODs correctly. Instead, it used the switch icon for them in the on-screen display.

Resolution: This issue is resolved. SDM now displays the JBODs with the correct expander icon.

Two Connections between a Switch and an HBA Appear as a Wide Port

Multiple connections from an HBA or from a JBOD to the LSISAS6160 switch create a single SAS wide port: for example, two x4 cables form a single x8 SAS port.

Resolution: No firmware changes are required. The LSISAS6160 switch is functioning as designed.

Troubleshooting

This section lists troubleshooting tips for the LSISAS6160 switch.

Internal Fans Change to Critical State when Downgrading Firmware from r200.08.0.0 to r200.05.03

Description: The status of the internal fans changes to a Critical state if you downgrade the LSISAS6160 firmware from r200.08.0.0 to r200.05.03.

Observed Behavior	The internal fans spin up to full RPM and do not spin down.
Impact	Internal fan state becomes Critical.
Workaround	Press the Restore Defaults button on the front of the switch.

Switch Becomes Locked when Upgrading the Firmware

Description: If you do not follow the specified firmware upgrade sequence for the LSISAS6160 switch, or if the upgrade process is disrupted in some way, the switch management GUI can become unavailable.

Observed Behavior	The LSISAS6160 switch is still operational, but the SDM-GUI interface becomes unavailable and an error page is displayed.
Impact	You cannot manage the LSISAS6160 switch through the SDM interface.
Workaround	Download the switch recovery utility and its Readme file from the LSI website and follow the instructions to restore management functionality to your switch.

Cannot Connect to Switch for Management

Description: SDM uses several Ethernet ports for management functions. You must enable these ports before you can connect to the switch for management.

Observed Behavior	You can ping the LSISAS6160 switch, but you cannot connect to the switch through a browser for management.
Impact	You cannot manage the LSISAS6160 switch.
Workaround	Enable these ports on the Ethernet switch and/or on the firewall: • Port 22: SSH (Secure SHELL) • Port 23: Telnet. • Port 80: HTTP. • Port 5573: SDM port. Enables the GUI to log in to the switch.


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