LSISAS6160 SAS Switch r201.12.00.00 Firmware

Release Notes

Version 1.0
November 2011

DB07-000116-00

Revision History

Version and Date	Description of Changes
Version 1.0, November 2011	Initial release of the document.

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LSISAS6160 SAS Switch Firmware Release Notes

These release notes correspond to r201.12.00.00 of the LSISAS6160 SAS switch firmware.

ATTENTION Read the following instructions for upgrading from older versions of the firmware.

Upgrading from Older Versions

If you have an earlier version of the firmware, perform the following instructions.

- If your version is earlier than 200.05.03.00, you must install version 200.05.03.00.
- If your version is earlier than 200.10.00.00, you must install version 200.10.00.00.
- If your version is earlier than 200.11.02.00, you must install version 200.11.02.00.

After performing these steps, as needed, you can install version 201.12.00.00.

Upgrading to r201.12.00.00

Refer to the *LSISAS6160 SAS Switch User Guide* for complete instructions on upgrading the switch firmware to r201.12.00.00. The following situations might occur when you upgrade the firmware:

- Depending on the current running version of firmware, the notes in the Update Firmware- Activate window might state "The switch automatically resets after the update." This is incorrect, you must click the **Activate** button to complete the upgrade.
- An error message might appear 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 can return to the SAS Domain Manager (SDM) login screen. At this point, close the browser and reconnect to the SDM.
- If you do not close the browser, you might 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 the SDM at this point, and everything will work correctly.

New Features

This section lists the new features included with r201.12.00.00 of the LSISAS6160 SAS switch firmware. Refer to the LSISAS6160 SAS Switch User Guide for more information about these features.

- Concatenated the manufacturing (MFG) image to the existing Lynx Firmware (FW) and SAS Domain Manager (SDM) image. The Lynx image is now a combination of FW+SDM+MFG images. This change is marked by moving the Major FW version from 200 to 201. This MFG image includes only non-Unit-specific data.
- Added support to download and upload the concatenated Lynx (FW+SDM+MFG) image.
- Added support for non-saving zoning configuration expanders.
- Added new graphical topology display.

Support Matrix

The LSISAS6160 SAS switch is designed to be compatible with SAS 2.1-compliant devices. Perform the following steps to see a list of the operating systems and hardware that have been explicitly tested for compatibility with the LSISAS6160 switch:

1. Go to this website: http://www.lsi.com/channel/products/storagecomponents/Pages/LSISAS6160Switch.aspx
2. Click on the ***Resources*** tab.
3. Scroll down to ***Compatibility Documents***.
4. Click on the latest version of the LSI SAS6160 Switch Hardware Compatibility Matrix.

Firmware and Hardware Advisories

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

Aliases

Technical Description: When a large number of aliases (180 or more) are created using the SDM-CLI, any aliases-related SDM-CLI command such as, "show_aliases" fails with this error: "Problem getting alias information Error code is (-5:MESSAGE_INVALID)."

Observed Behavior	When a large number of aliases (180 or more) are created using the SDM-CLI, any aliases-related SDM-CLI command such as, "show_aliases" fails with this error: "Problem getting alias information Error code is (-5:MESSAGE_INVALID)."
Impact	The SDM CLI cannot be used to show, add, or delete aliases when a topology has 180 or more aliases.
Workaround	Do not use the SDM CLI when having 180 or more aliases. Use the SDM GUI.

Link Reset under Heavy I/O

Technical Description: Link reset is observed on phys after long period of arbitrations in process (AIPs).

Observed Behavior	If heavy I/Os are running, then the LSISAS6160 switch might reset phys on which AIPs are observed for a long duration. This issue is intermittent and the frequency depends on the load and the size or configuration of the topology.
Impact	Unnecessary repetitive discovery is triggered in the topology. During the AIP issue and subsequent reset and discovery, the performance on the impacted links is degraded. The issue is resolved when the I/O load decreases so that long periods of AIPs no longer occur.
Workaround	N/A

Connector Can be Marked as Invalid if a Link Reset Occurs When Specific HBAs are Attached

Technical Description: If a link reset occurs with specific HBAs attached, the connector can be marked as invalid and the switch can be marked as degraded. The behavior has only been observed with 1068 revision B1.

Observed Behavior	The switch amber LEDs start blinking because the switch is degraded and SDM shows the connector as degraded.
Impact	The switch is marked as degraded.
Workaround	Remove the attached HBA.

Loss of DHCP Settings when Downgrading from Phase 11 to Phase 10

Technical Description: To apply IP configuration settings on the switch, Phase 11 FW refers a different configuration page id(0xFD10) than Phase 10 (0xFF10). The downgrade operation results in a return to IP configuration defaults (which is a DHCP disabled state).

Observed Behavior	After the downgrade, the DHCP setting is disabled.
Impact	The switch IP address changes and reverts back to default static IP address.
Workaround	Re-enable DHCP by using the Xip or the ipcontrol command in FWCLI or SDM.

Upload Firmware Fails While Uploading from a Wireless System or Laptop

Technical Description: While performing upload firmware operations with SDM GUI, firmware data (TCP/IP) packets get divided into multiple fragments. Sometimes, one of the fragments is dropped and the firmware upload operation hangs. This happens due to the network fire wall policy, which does content-based filtering for a particular 4 Kb IP fragmented packet causing loss in uploaded data.

Observed Behavior	While performing upload firmware operation, the operation hangs and the SDM-GUI times out. This issue occurs with SDM GUI on wireless networks.
Impact	Switch firmware cannot be uploaded.
Workaround	Retry the upload or use a wired network to upload the firmware. Contact the locally available IT/networking team.

Phase 11 Firmware Upgrade Fails if Upgraded from a Phase before Phase 10

Technical Description: Non-Phase 10 to Phase 11 firmware upgrade is not supported. Phase 10 firmware is needed as a bridge firmware to upgrade to Phase 11.

Observed Behavior	User gets an error regarding invalid signature if the firmware is upgraded to phase11 from any phase other than phase 10.
Impact	Firmware upgrade is not possible.
Workaround	Upgrade to Phase 10 before upgrading to Phase 11.

Zoned Switch with Failed Master Phys Does Not Send Zoned Broadcast Change SMP

Technical Description: In certain failed topologies, the switch does not properly forward a broadcast out of a port that is inside the ZPSDS.

Observed Behavior	When the switch is in a condition with one port degraded or multiple ports degraded, the device attached to the switch might not receive a broadcast from the switch.
Impact	The attached device might not properly update when the topology changes occur.
Workaround	■ Replace the cable between the switch and the attached device ■ Replace the switch ■ Replace the attached device

Switch Discovery Does Not End in a Large Topology with Multiply Phy Failures

Technical Description: In the failing case, the switch's discovery might not end. In this case, repeated SMP REPORT GENERAL commands could be observed on the bus.

Observed Behavior	In a large topology, when multiple switch phys fail on a repeated basis, discovery might not end.
Impact	I/O impact because the switch is incorrectly configured.
Workaround	Make sure that all cables are good and power cycle the 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 that occurs when zone sets are activated while I/O transactions are 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 transactions are running.

Observed Behavior	If a zone set is activated while I/O transactions are 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 transactions are 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 reported 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 longer than 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	Use shorter cables.

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. This happens only when upgrading from 200.05.03.00
Impact	None. The switch actually did reset.
Workaround	Ignore the error window and log back in to SDM.

Using the 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 HBA model that supports Xip.

Attaching a Tape Drive to a Master Phy Causes the Master to Lock Up and Become Permanently Failed

Technical Description: If you connect certain tape drive models to an even-numbered port connector (top row) of the switch, they might cause the switch to go into a permanently failed state.

Observed Behavior	A tape drive attached to an even-numbered port connector (top row) might cause the switch to fail.
Impact	The switch is permanently failed and cannot be recovered.
Workaround	Only attach tape drives to odd-numbered port connectors on the bottom row of the switch.

SAS Port Might Not Be Marked as Invalid when All Phys in the Port Are NOT Configured to Be in the Same Zone Group

Technical Description: The SAS specification requires that all phys in a port have the same zone phy information. Any port that does not meet this requirement is not a valid SAS port and should be marked as invalid. The switch implementation hides these invalid ports during discovery.

Observed Behavior	Ports might show up in discovery with invalid zone configuration.
Impact	None.
Workaround	Reconfigure zoning.

SAS Devices Can Disappear When the Switch is in Failed or Degraded State

Technical Description: If both phys of the master or both phys of the slave in a wide port fail, the switch might mistakenly fail SAS frames causing the devices to be eventually removed from the SAS domain.

Observed Behavior	SAS devices are removed from the SAS domain.
Impact	Device does not show up in SAS domain display, or I/Os to the device fail.
Workaround	Replace the switch.

Resolved Firmware and Hardware Issues

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

Switch Sends Broadcast (Change) Instead of SMP Zoned Broadcast Over Certain Port Configurations

Technical Description: After zoning is enabled, the switch sends a Broadcast (Change) primitive instead of an SMP Zoned Broadcast over links that are configured to be inside ZPSDS.

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

Phy is Sometimes Dropped while Combining and Separating Connections with a x2 Cable

Technical Description: If a connection between an HBA and a switch is combined or separated by connecting and disconnecting a x2 cable between the devices, sometimes a phy is dropped in SDM CLI and SDM GUI. This occurs because a series of connect and disconnect events is generated continuously, and SDM cannot get proper data during discovery.

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

SDM GUI Takes a Long Time to Download Firmware

Technical Description: The firmware image (`lynx6160.fw`) takes 8 or 9 minutes to download, using SDM GUI. This defect applies to an upgrade from r200.09.01.00 to another release, such as r200.11.02.00.

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

Configuration Restore Fails for Topology that has 100+ drives

Technical Description: Configuration restore fails on a topology that has 100 or more drives. Backup works fine but when that backed-up file is restored, the timeout happens and client loses the connection with switch. Also, until this times out, no new GUI or CLI session can connect to the switch.

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

Erratic Response to VoltageSense03 Threshold Changes

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

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

SDM-CLI Displays Incorrect Device Type for SAS-1 x12 Expander

Technical Description: SDM-CLI displays an incorrect device type for SAS-1 x12 expanders.

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

End Device Wizard Auto Selects Multiple Targets

Technical Description: The End Device Wizard selects multiple targets with a topology that has many targets. This happens when selecting a target at the top of the list.

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

In SDM-CLI with Discovery Disabled, an Attempt to Change Configuration Returns an Improper Error

Issue: After discovery is disabled, SDM-CLI returns a MESSAGE_INVALID error when you deactivate or deactivate a zoneset. This occurs because zoneset activation and deactivation are not supported when discovery is disabled. SDM generates an error in this case, and SDM-CLI cannot catch the error properly.

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

Slave Phys Always Report Zoning Enabled = 1 and Saved Zoning Enabled = 0 in Discover Response

Issue: When a Discover SMP request is sent to a slave phy, it always reports Zoning Enabled = 1 even if zoning is disabled. When zoning is enabled, the slave reports Saved Zoning Enabled = 0.

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

Phys from Unconnected Switch Ports Can Be Mistakenly Added to an Existing Wide Port

Issue: If both phys of the master or both phys of the slave in a wide port are repetitively enabled or disabled, the switch might mistakenly add an unconnected and incorrect phy to the wide port.

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

Malformed Zone Set Error Occurs in SDM GUI

Issue: If you erase region 10 and region 11 after zoneset activation when using a x2 connection, all zonegroups and zonesets created at the SDM end are lost. Therefore, SDM cannot map an activated zoneset with any of its database, and it displays the *Malformed Zone Set* error.

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

SDM Connector Wizard Displays x2 Ports Incorrectly

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

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

An Incomplete File Can Be Created When Creating a Backup after Zoneset Activation

Issue: Discovery is initiated after zoneset activation. If the topology is not stable, and SDM cannot see all the devices in the topology, an incomplete backup file might be created. Do not create a backup file until the topology is stable, after zoneset activation.

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

SDM Allows Temperature Threshold and High Critical Voltage Threshold to be Set Inconsistently

Issue: 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.

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.

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

Heavy Activity Causes Telnet Functionality to Become Unresponsive

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

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

SNMP v3 No Such Name Response is Malformed

Issue: When requesting an object that does not exist using SNMP v3, some managers do not correctly interpret the No Such Name response from the switch.

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

Portstatus Does Not Update If One Phy in a x16 Connection Is Removed and Connected to a Different Device

Issue: Starting with a connection of between two and four connectors attached to the same SAS address, the switch creates a very wide port to that device. (A *very wide port* is a port larger than x4, such as x8, x12, or x16.) If one phy from this port is connected to another SAS address, that connector is invalid. However, it stays mapped into the very wide port, creating an invalid port mapping.

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

Troubleshooting

This section lists troubleshooting tips for the LSISAS6160 switch.

Internal Fans Change to Critical State when Downgrading Firmware from r200.09.04.00 to r200.05.03

Description: The status of the internal fans changes to Critical state if you downgrade the LSISAS6160 firmware from r200.09.04.00 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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