Enclosure Management Cabling for Pedestal Systems with Hot-Swap Drive Backplanes

Cabling Guide for:

- Intel® Server Chassis SC5299 and SC5400
- Intel® Server Boards S5000VSA, S5000XVN, S5000PSL/XSL
- Intel® Server System SC5400RA
- Intel® RAID Controllers SRCS16, SRCS28X, SRCSAS18E, SRCSAS144E, SRCSATAWB, SRCSASRB, SRCSASJV, SRCSASBB8I, SRCSASLS4I, SRCSASPH16I, RS2BL080, RS2BL040 and RS2PI008

Revision 3.0

September 2009

Revision History

Date	Revision Number	Modifications
January, 2007	1.2	Initial release.
February, 2007	1.3	Corrected color of SES connectors on server boards
March, 2007	1.4	Added Native SAS mode
May, 2007	1.6	Updated SRCS16, SRCS28X, SRCSAS144E, and SAS Embedded RAID information
March, 2008	2.0	Added new RAID controllers. Updated instructions for onboard SAS controllers. Added instructions for configurations with two backplanes.
September, 2009	3.0	Added new RAID controllers.

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1. Connecting One Expander Backplane

You must connect the following cables to the backplane:

- SATA/SAS data cables
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
    - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
    - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
    - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board. Do not use the HSBP_B connector.

2. Connecting Two Expander Backplanes

You must connect the following cables to the backplane:

- SATA/SAS data cables
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
    - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
    - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
    - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board to connect the six-drive backplane. Use the white 4-pin HSBP_B connector to connect the four-drive backplane.

3. Connecting One Non-Expander Backplane

You must connect the following cables to the backplane:

- SATA/SAS data cables:
    - With 4-drive Non-expander backplane, RAID controller ports 0-3 must be connected to the Non-expander backplane. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
    - With 6-drive Non-expander backplane, RAID controller ports 0-5 must be connected to the Non-expander backplane ports. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
    - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
    - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
    - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board. Do not use the HSBP_B connector.
- Connect the Fault LED control cable (for drive identification and drive fault/rebuild indication with amber drive LEDs) according to the instructions for your RAID controller provided in Section 6.

4. Connecting One Non-expander + One Expander Backplane

You must connect the following cables to each backplane:

- SATA/SAS data cables:
    - With 4-drive Non-expander backplane, RAID controller ports 0-3 must be connected to the Non-expander backplane. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
    - With 6-drive Non-expander backplane, RAID controller ports 0-5 must be connected to the Non-expander backplane ports. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
    - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
    - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
    - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board to connect the six-drive backplane. Use the white 4-pin HSBP_B connector to connect the four-drive backplane.
- Connect the Fault LED control cable to the Non-Expander backplane (for drive identification and drive fault/rebuild indication with amber drive LEDs) according to the instructions for your RAID controller provided in Section 6.

5. Connecting Two Non-Expander Backplanes

Only Intel® RAID Controller SRCSASPH16I can support Fault LED control with two Non-expander backplanes.

You must connect the following cables to the backplane:

- SATA/SAS data cables:

- With 4-drive Non-expander backplane, RAID controller ports 0-3 or port 8-11 must be connected to the Non-expander backplane. Make sure port 0 is connected to slot 0, port 1 to slot 1, port 8 to slot 0, port 9 to slot 1, and so on.

- With 6-drive Non-expander backplane, RAID controller ports 0-5 or port 8-13 must be connected to the Non-expander backplane ports. Make sure port 0 is connected to slot 0, port 1 to slot 1, port 8 to slot 0, port 9 to slot 1, and so on.

- Power cables

- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:

  - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.

  - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.

  - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board to connect the six-drive backplane. Use the white 4-pin HSBP_B connector to connect the four-drive backplane.

- Connect the Fault LED control cable (for drive identification and drive fault/rebuild indication with amber drive LEDs) according to the instructions for your RAID controller provided in Section 6.

6.   Connecting Fault LED Control Cables

Only non-expander backplanes (AXX6DRV3G and AXX4DRV3G) require drive LED control cables.

Important: *Only one Fault LED control cable – either SES or SGPIO depending on the RAID controller – must be connected to a backplane. Do not connect both SES and SGPIO cables to the same backplane. This may result in unexpected behavior including RAID array failures.*

The following matrix describes the connectors and cables for connecting Fault LED control cables.

RAID Controller	Expander Backplanes: AXX6DRV3GEXP or AXX4DRV3GEXP	Non-Expander Backplanes: AXX6DRV3G or AXX4DRV3G
SATA Embedded RAID (ESB2)	Not supported. SATA RAID controllers are not supported with SAS expander backplanes.	Server board connector: SATA_SGPIO, black Backplane connector: SGPIO, black Cable: 4-pin SGPIO
SAS Embedded RAID or SAS controller in native mode (LSI* 1064e)	SAS in-band. No drive LED control cable needed.	Server board connector: SES, yellow on S5000VSA, white on S5000PSL/XVN Backplane connector: SES, white Cable: 3-pin SES
SAS integrated RAID on S5000PSLROMB (ROMB card)	SAS in-band. No drive LED control cable needed.	Not supported.
SRCSAS144E	SAS in-band. No drive LED control cable needed.	Enclosure management not supported with passive backplanes/midplanes. Do not connect SES cable.
SRCSAS18E	SAS in-band. No drive LED control cable needed.	RAID card connector: J18, white Backplane connector: SES, white Cable: 3-pin SES
SRCSATAWB, SRCSASRB	SAS in-band. No Fault LED control cable needed. Note: Intel® RAID Controllers SRCSATAWB offers expander backplane support.	RAID card connector: J6, white Backplane connector: SES, white Cable: 3-pin SES Note: RAID FW 420 or higher is required.
SRCSASJV	SAS in-band. No Fault LED control cable needed.	RAID card connector: J2, white Backplane connector: SES, white Cable: 3-pin SES Note: RAID FW 312 or higher is required.
SRCSASBB8I, SRCSASLS4I	SAS in-band. No Fault LED control cable needed.	RAID card connector: J7, white Backplane connector: SES, white Cable: 3-pin SES
SRCSASPH16I	SAS in-band. No drive LED control cable needed.	RAID card connector: J17 (if you use port 0-7) and J18 (if you use port 8-15), white Backplane connector: SES, white Cable: 3-pin SES
SRCS16 (SATA only)	Not supported. SATA RAID controllers are not supported with SAS expander backplanes.	RAID card connector: 4-pin J6, see picture Backplane connector: SES, white Cable: 3-pin SES Note: RAID firmware ver. 713S or higher and HSC FW 2.05 or higher are required.

SRCS28X (SATA only)	Not supported. SATA RAID controllers are not supported with SAS expander backplanes.	RAID card connector: J13, white Backplane connector: SES, white Cable: 3-pin SES Note: HSC FW 2.05 or higher is required.
RS2BL080	SAS in-band. No drive LED control cable needed.	RAID card connector: J11, white Backplane connector: SES, white Cable: 3-pin SES
RS2BL040	SAS in-band. No drive LED control cable needed.	RAID card connector: J11, white Backplane connector: SES, white Cable: 3-pin SES
RS2PI008	Not supported.	Not supported.