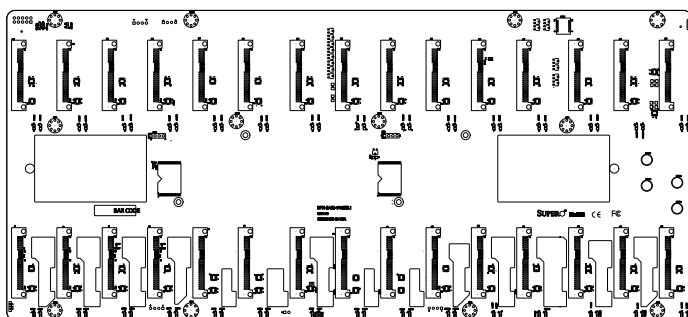# BPN-SAS3-946SEL1/EL2 Backplane

USER'S GUIDE

Revision 1.0

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

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WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Table of Contents

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Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the backplane in the original Supermicro box, using the original packaging materials. If these are no longer available, be sure to pack the backplane in an anti-static bag and inside the box. Make sure that there is enough packaging material surrounding the backplane so that it does not become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 1

Safety Guidelines

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

1-1   ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.

- Touch a grounded metal object before removing a component from the antistatic bag.

- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

- When handling chips or modules, avoid touching their pins.

- Put the card and peripherals back into their antistatic bags when not in use.

1-2   General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the BPN-SAS3-946SEL1/EL2 series backplane.

- Make sure that the backplane is properly and securely on the motherboard to prevent damage to the system due to power outages.

1-3   An Important Note to Users

All images and layouts shown in this user's guide are based upon the latest back-plane revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

1-4   Introduction to the BPN-SAS3-946SEL1/EL2 Backplane

The BPN-SAS3-946SEL1/EL2 backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects BPN-SAS3-946SEL1/EL2 Revision 1.00, the most current release available at the time of publication. Always refer to the Supermicro website at www.supermicro.com for the latest updates, compatible parts and supported configurations.

Chapter 2

Connectors and LEDs

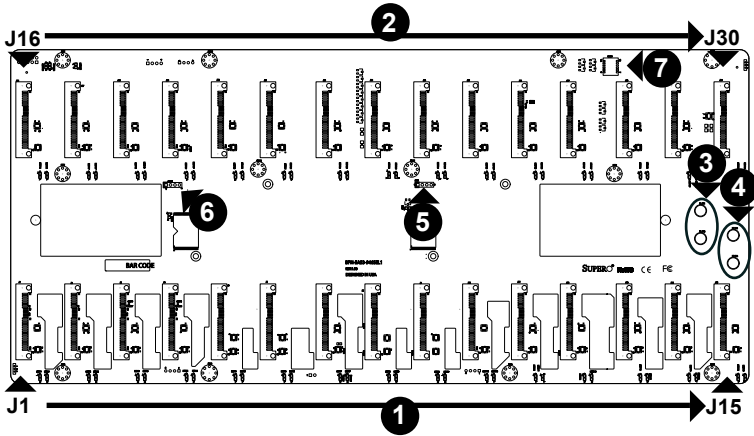## 2-1   Connector Side Components

Figure 2-1. BPN-SAS3-946SEL1/EL2 Connector Side Components

1. HDD Connectors J1 - J15.

2. HDD Connectors J16 - J30.

3. 12V Power Cable Input: NI_TP1 and NI_TP2.

4. Ground Cable Input: NI_TP3 and NI_TP4.

5. SDB Connector for the Primary Expander: J803.

6. SDB Connector for the Secondary Expander: JB803.

7. DIP Switch: S5401

2-2   Connector Side Component Definitions

1. - 2. HDD Connectors

The HDD connectors are designated J1 through J30. These are for SAS3, SATA3 and SAS2 drives.

3. 12V Power Connector

The power connectors are designated NI-TP1 and NI-TP2 provide power to the backplane.

4. Ground Cable Input Connector

The ground cable input connectors are designated NI_TP3 and NI_TP4.

5. - 6. SDB Connector

The Serial Debug (SDB) connector for the primary and secondary expander are designated J803 and JB803 respectively. The debug connector is for the manufacturer's diagnostic purposes only.

7. DIP Switch

The DIP switch S5401 is reserved for manufacturer's configuration purposes only.

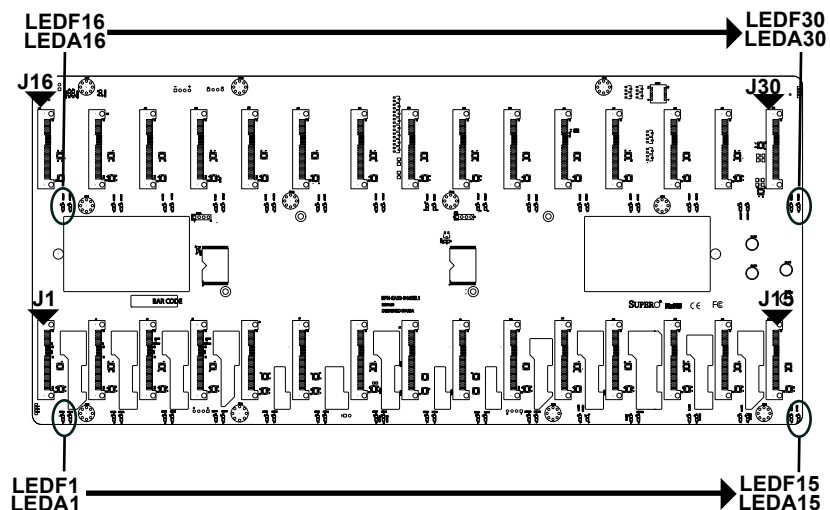## 2-3   Connector Side LED Indicators and SAS Connectors

Figure 2-2. BPN-SAS3-946SEL1/EL2 Connector Side LEDs

Connector Side SAS Connectors			
SAS Connector	SAS Drive Number	SAS Connector	SAS Drive Number
J1	SAS HDD #0	J16	SAS HDD #15
J2	SAS HDD #1	J17	SAS HDD #16
J3	SAS HDD #2	J18	SAS HDD #17
J4	SAS HDD #3	J19	SAS HDD #18
J5	SAS HDD #4	J20	SAS HDD #19
J6	SAS HDD #5	J21	SAS HDD #20
J7	SAS HDD #6	J22	SAS HDD #21
J8	SAS HDD #7	J23	SAS HDD #22
J9	SAS HDD #8	J24	SAS HDD #23
J10	SAS HDD #9	J25	SAS HDD #24
J11	SAS HDD #10	J26	SAS HDD #25
J12	SAS HDD #11	J27	SAS HDD #26
J13	SAS HDD #12	J28	SAS HDD #27
J14	SAS HDD #13	J29	SAS HDD #28
J15	SAS HDD #14	J30	SAS HDD #29

Connector Side LED Indicators		
SAS Connector	**Hard Drive Activity LED**	**Failure LED**
J1	LEDA1	LEDF1
J2	LEDA2	LEDF2
J3	LEDA3	LEDF3
J4	LEDA4	LEDF4
J5	LEDA5	LEDF5
J6	LEDA6	LEDF6
J7	LEDA7	LEDF7
J8	LEDA8	LEDF8
J9	LEDA9	LEDF9
J10	LEDA10	LEDF10
J11	LEDA11	LEDF11
J12	LEDA12	LEDF12
J13	LEDA13	LEDF13
J14	LEDA14	LEDF14
J15	LEDA15	LEDF15
J16	LEDA16	LEDF16
J17	LEDA17	LEDF17
J18	LEDA18	LEDF18
J19	LEDA19	LEDF19
J20	LEDA20	LEDF20
J21	LEDA21	LEDF21
J22	LEDA22	LEDF22
J23	LEDA23	LEDF23
J24	LEDA24	LEDF24
J25	LEDA25	LEDF25
J26	LEDA26	LEDF26
J27	LEDA27	LEDF27
J28	LEDA28	LEDF28
J29	LEDA29	LEDF29
J30	LEDA30	LEDF30

2-4   Expander Chip Side Components
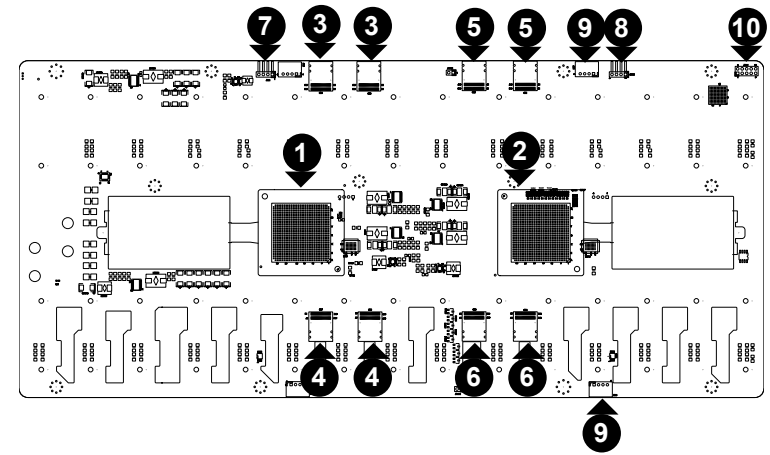
Figure 2-3. BPN-SAS3-946SEL1/EL2 Expander Chip Side Components

1. Primary Expander Chip.

2. Secondary Expander Chip

3. Primary SAS Slim Line Connectors: CN5 and CN6.

4. Primary SAS Slim Line Connectors: CN7 and CN8

5. Secondary SAS Slim Line Connectors: CN1 and CN2

6. Secondary SAS Slim Line Connectors: CN3 and CN4

7. Primary UART Connector: J802

8. Secondary UART Connector: JB802

9. I²C Connectors: J501 and J503

10. JTAG Connector: J5301

2-5   Expander Chip Side Component Definitions

1. - 2. Primary and Secondary Expander Chips

These chips allow connectivity to the primary and secondary components on the backplane.

3.-4. Primary SAS Slim Line Connectors

These primary SAS slim line connectors are designated CN5, CN6, CN7 and CN8.

5. - 6. Secondary SAS Slim Line Connectors

These secondary SAS slim line connectors are designated CN1, CN2, CN3 and CN4.

7.-8. Primary and Secondary UART Connectors

The primary and secondary UART connectorsare designated J802 and JB802 and are used for manufacturer's diagnostic purposes only.

9. I²C Connectors

The I²C connectors are designated J501 and J503. These connectors are used to monitor hard drive activity and status through LEDs. See the table on the right for pin definitions. Connect to J501 by default. J503 is for the manufacturer's use only.

I²C Connector Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

10. JTAG Connector

The JTAG connector is designated J5301 and is for manufacturer's diagnostic purposes only..

Chapter 3

Cascading Configurations

3-1 Cascading Two Backplanes via One SAS Controller

The BPN-SAS3-946SEL1/EL2 can be cascaded to a second BPN-SAS3-946SEL1/EL2 backplane and an AOM-S3108-H8L-P SAS RAID or AOM-S3008-L8-SB HBA controller using the primary and secondary expander components of both backplanes. Note that the connectors are located on the underside of the boards in the following illustrations.
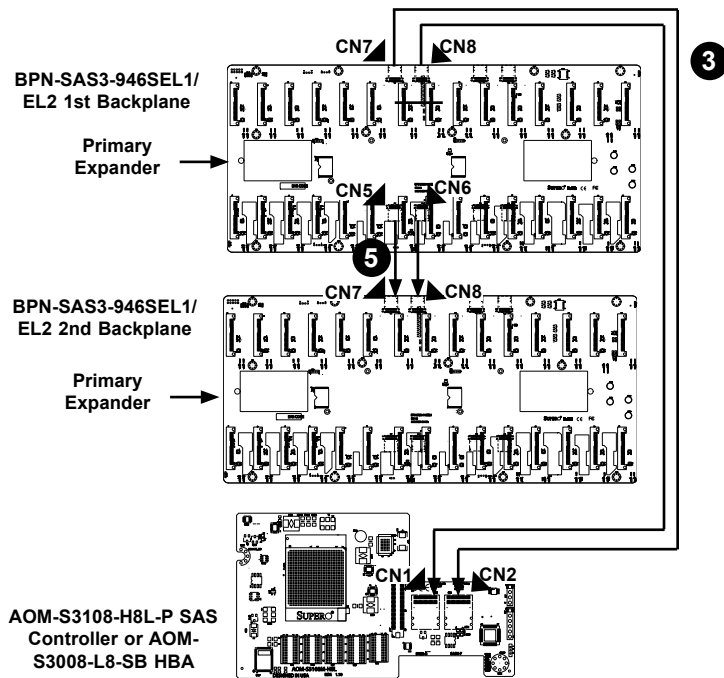
Figure 3-1. Backplane Cascading Configuration (EL1 Version)

Cascading Configuration, EL1 Backplane to Controller

Connecting EL1 Backplanes to the SAS Controller

1. Power down the system and remove the power cords from the rear of the power supplies. Open the chassis cover and access the backplanes as described in your system manual.

2. Locate connectors CN7 and CN8 on the underside of the primary backplane.

3. Plug the cables into connectors CN7 and CN8, then route the cables to connectors CN1 and CN2 on the underside of the AOM-S3108-H8L-P SAS controller as illustrated in Figure 3-1.

4. Locate connectors CN5 and CN6 on the underside of the 1st backplane.

5. Connect the cables to CN5 and CN6, then route them to CN7 and CN8 on the underside of the 2nd backplane as illustrated in Figure 3-1.

6. Close the chassis cover, plug the power cords into the rear of the power supplies and power up the system.
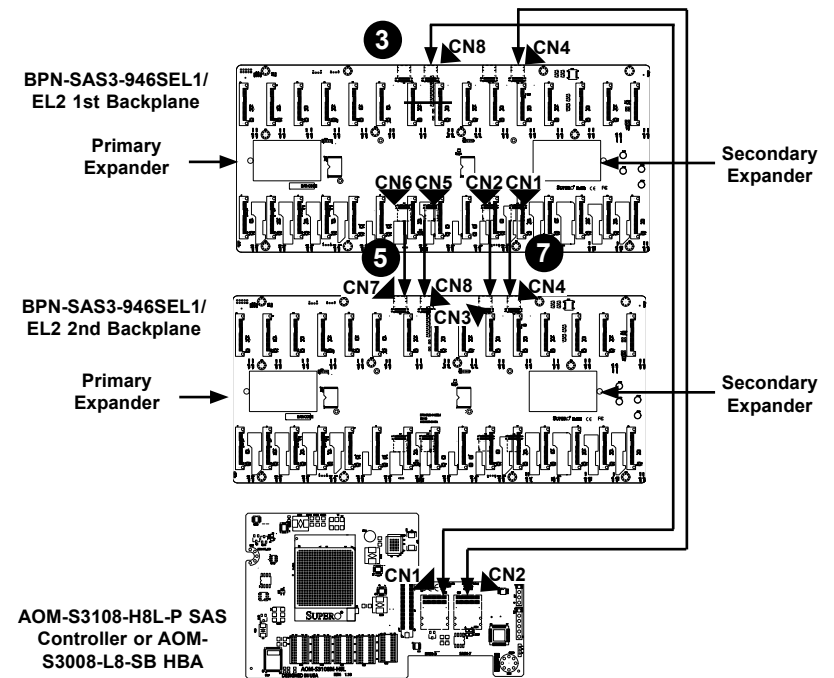

Figure 3-2. Backplane Cascading Configuration (EL2 Version)

Cascading Configuration EL2 Backplane to Controller

Connecting EL2 Backplanes to the SAS Controller

1. Power down the system and remove the power cords from the rear of the power supplies. Open the chassis cover and access the backplanes as described in your system manual.

2. Locate connector CN8 on the underside of the primary expander, and CN4 on the underside of the secondary expander on the first backplane.

3. Plug the cables into connector CN8 and CN4, then route the cables to connectors CN1 and CN2 on the underside of the AOM-S3108-H8L-P SAS controller as illustrated in Figure 3-2.

4. Locate connectors CN5 and CN6 on the underside of the 1st backplane.

5. Connect the cables to CN5 and CN6, then route them to CN7 and CN8 on the underside of the 2nd backplane as illustrated in Figure 3-2.

6. Locate connectors CN1 and CN2 on the underside of the 1st backplane.

7. Connect the cables to CN1 and CN2, then route them to CN3 and CN4 on the underside of the 2nd backplane as illustrated in Figure 3-2.

8. Close the chassis cover, plug the power cords into the rear of the power supplies and power up the system.
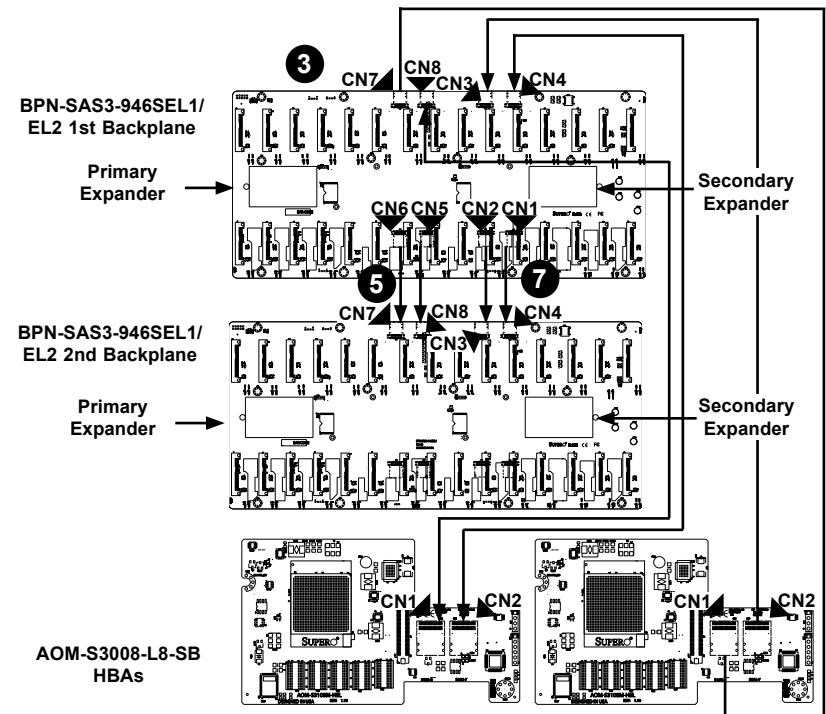

Figure 3-3. Backplane Cascading Configuration (EL2 Version)

Cascading Configuration EL2 Backplanes to HBA

Connecting EL2 Backplanes to the Dual HBA

1. Power down the system and remove the power cords from the rear of the power supplies. Open the chassis cover and access the backplanes as described in your system manual.

2. Locate connector CN7 and CN8 on the underside of the primary expander, and CN3 and CN4 on the underside of the secondary expander on the first backplane.

3. Plug the cables into connector CN7 and CN8 then CN3 and CN4, then route the cables to connectors CN1 and CN2 on the undersides of both AOM-S3008-L8-SB HBAs as illustrated in Figure 3-3.

4. Locate connectors CN5 and CN6 on the underside of the 1st backplane.

5. Connect the cables to CN5 and CN6, then route them to CN7 and CN8 on the underside of the 2nd backplane as illustrated in Figure 3-3.

6. Locate connectors CN1 and CN2 on the underside of the 1st backplane.

7. Connect the cables to CN1 and CN2, then route them to CN3 and CN4 on the underside of the 2nd backplane as illustrated in Figure 3-3.

8. Close the chassis cover, plug the power cords into the rear of the power supplies and power up the system.

Notes