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Hanlin 15/03/25, 18:25

Release Note for AIC SAS 6G 4U60_SubEnclosure Expander

Mar 25, 2015

Changelog

03/25/2015 (firmware 1.11.2.52 + mfg 1.2.0.52 + firmware 1.11.3.54 + mfg 1.3.0.51 + mfg 1.3.1.51) - Part Number (B98-004U60E2110252 + B98-004JS6G2020052 + B98-004U60E3110354 + B98-004JS6G3030051 + B98-004JS6G3030151)
Old Part Number B98-004JS6G2020051 is replaced by B98-004JS6G2020052.
1. Resolve the drive mapping issue in Windows with SAS 12G HBA

05/12/2014 (firmware 1.11.2.52 + mfg 1.2.0.51 + firmware 1.11.3.54 + mfg 1.3.0.51 + mfg 1.3.1.51) - Part Number (B98-004U60E2110252 + B98-004JS6G2020051 + B98-004U60E3110354 + B98-004JS6G3030051 + B98-004JS6G3030151)
Old Part Number B98-004U60E3110353 is replaced by B98-004U60E3110354.
1. Resolve the function, enabling/disabling the blue LED associated with a disk drive, doesn't work

04/24/2014 (firmware 1.11.2.52 + mfg 1.2.0.51 + firmware 1.11.3.53 + mfg 1.3.0.51 + mfg 1.3.1.51) - Part Number (B98-004U60E2110252 + B98-004JS6G2020051 + B98-004U60E3110353 + B98-004JS6G3030051 + B98-004JS6G3030151)
Old Part Number B98-004U60E3110352 is replaced by B98-004U60E3110353.
1. Support firmware/MFG update via inband SAS including Hub, Left Edge, and Right Edge.
2. Support enabling/disabling the blue LED associated with a disk drive

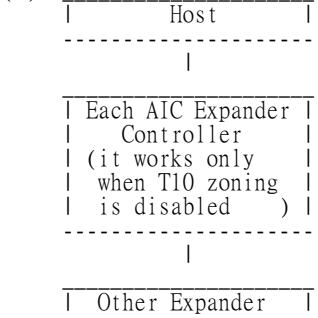
11/22/2013 (firmware 1.11.2.52 + mfg 1.2.0.51 + firmware 1.11.3.52 + mfg 1.3.0.51 + mfg 1.3.1.51) - Part Number (B98-004U60E2110252 + B98-004JS6G2020051 + B98-004U60E3110352 + B98-004JS6G3030051 + B98-004JS6G3030151)
1. Initial revision

Definition of the visual LED indicators (blue and red) associated with a disk drive

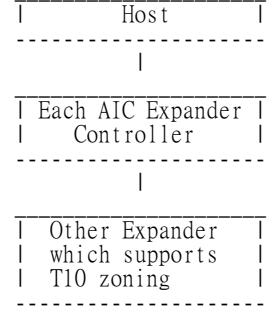
Host Control Bit	Blue LED	Red LED
OK	ON	OFF
RSVD DEVICE	ON	OFF
HOT SPARE	ON	OFF
CONS CHECK	ON	Fast blink
IN CRIT ARRAY	ON	Slow blink
IN FAILED ARRAY	ON	Slow blink
REBUILD/REMAP	ON	Fast blink
R/R ABORT	ON	Slow blink
ACTIVE	ON	OFF
DO NOT REMOVE	ON	OFF
MISSING	ON	ON
INSERT	ON	Slow blink
REMOVE	ON	Slow blink
IDENT	Slow blink	OFF
FAULT	ON	ON
DEVICE OFF	ON	OFF

Supported Configuration

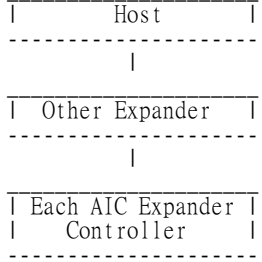
(1)

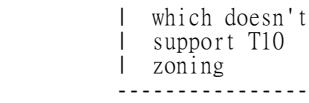


(2)

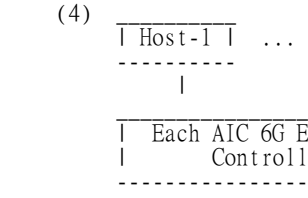


(3)





(4)



To have multiple host access support (the host number can be up to the number of wide ports on each AIC 6G Expander Controller), only the following drives are supported for shared access:

1. SAS drive
2. SATA drive with an interposer which provides SATA-to-SAS convertion

Unsupported Configuration

1. This only applies to the enclosure which supports dual AIC 6G Expander Controllers.
   The enclosure with dual AIC 6G Expander Controllers attached is inserted with a SATA drive without any interposer. It will cause the drive LEDs behaves incorrect.

Unsupported Feature

1. Enclosure logical identifier can be changed.
2. Locating a drive via any HBA utility. Users should send standard SES command to the enclosure service (4U60: Hub) to locate a drive.

Command Line Interface Operation

1. How to configure zone count
   Remove the SAS cable between the HBA/RAID card and the 4U60 before configuring zone count. Power off the 4U60 after configuring zone count. Power on the 4U60, then insert the SAS cable.

   Three zone configurations supported are one zone with 60 drives, two zones with 30 drives per zone, and four zones with 15 drives per zone. The default configuration is one zone of which T10 zoning configuration is disabled. T10 zoning configuration of the other configurations (two zones and four zones) is enabled.

   Each of three COM ports (COM for Hub, COM for Left Edge, and COM for Right Edge) should be applied with the same zone configuration.

   (A) Check the current zone configuration
   ```
   cmd> zonecount
   Zone count = 1
   ```

   (B) One-zone configuration to support one host and up to three down links. The host can access up to 60 drives in this 4U60.
   ```
   cmd> zonecount 1
   cmd> reset
   ```

   (C) Two-zone configuration to support two hosts and up to one down link per host. Each host can access up to 30 drives in this 4U60.
   ```
   cmd> zonecount 2
   cmd> reset
   ```

   (D) Four-zone configuration to support four hosts. Each host can access up to 15 drives in this 4U60.
   ```
   cmd> zonecount 4
   cmd> reset
   ```

2. How to get all revisions in AIC SAS 6G Expander
   (A) Expander firmware revision
   ```
   cmd> rev
   ```

(B) Expander configuration revision
cmd> showmfg

(C) Microchip firmware for managing sensors (Only the COM for Hub supports this command)
cmd> sensor

3. How to configure temperature sensor
Four temperature settings in Celsius are T1, T2, warning threshold, and alarm (critical) threshold. Only the COM for Hub supports this command.

(A) Get the current temperature settings
cmd> temperature
Temperature in Celsius (t1=20 C, t2=55 C, warning=50 C, alarm=55 C)

(B) Set temperature with new T1=18 C, T2=52 C, warning threshold=48 C, and alarm threshold=54 C. The new setting will take effect after reset.
cmd> temperature 18 52 48 54
cmd> reset

4. How to identify the enclosure
The LED on the power button is used for the enclosure identity. The "RQST IDENT" for Enclosure is defined in the bytel and bit7 of the "Enclosure control element" in the SES-3 specification. Please install a software package "sg_utils" on your host computer, and have a SAS HBA and a cable to connect your host with the expander. We use Linux for example.

(A) Show the device for the enclosure
$ sg_map -i

/dev/sg60 AIC CORP 4U60: Hub 0b02

(B) Enable the enclosure identity (Only Hub should be applied)
$ sg_ses --descriptor=EnclosureElement01 --set=1:7:1 /dev/sg60

(C) Disable the enclosure identity (Only Hub should be applied)
$ sg_ses --descriptor=EnclosureElement01 --clear=1:7:1 /dev/sg60

5. How to configure SAS standby timer
This feature is applicable for SAS drives instead of SATA drives. SAS standby timer is in units of minutes. Setting SAS standby timer with 0 minute disables this feature. The COM ports for Left Edge and Right Edge support this command.

(A) Get the current SAS standby timer
cmd> sas_standby_timer
SAS standby timer : 0 minutes

(B) Set the SAS standby timer with 10 minutes. The new setting will take effect after reset.
cmd> sas_standby_timer 10
cmd> reset

6. How to configure enclosure address
(A) Get the current enclosure address
cmd> enclosure_addr
Enclosure Address: 0x500605B0000272BF

(B) Set the enclosure address with 0x500605B0000272BF. The new setting will take effect after reset.
cmd> enclosure_addr 500605B0000272BF
cmd> reset

7. How to configure serial number
(A) Get the current serial number
cmd> serial_number
Expander number: 421-12021704510010
or
Expander number: 421-12021704510010 Enclosure number: 526-12071100500088

(B) Only set Expander serial number with 421-12021704510010.
cmd> serial_number 421-12021704510010

(C) Set both of Expander serial number (421-12021704510010) and Enclosure serial number (526-12071100500088).
cmd> serial_number 421-12021704510010 526-12071100500088

8. How to enable/disable the blue LED associated with a disk drive

The "Report" for a drive slot is defined in the bit0, byte2 of the "Array Device Slot status element" in the SES-3 specification. Set the bit to disable a slot blue LED, and vice versa. Please install a software package "sg_utils" on your host computer, and have a SAS HBA and a cable to connect your host with the 4U60_SubEnclosure. We use Linux for example.

(A) Show the device for AIC Expander Controller (canister)

```
$ sg_map -i

/dev/sg60   AIC CORP   4U60: Hub   0b02
```

(B) Get the current state of a slot blue LED. In this example the "Report=0" means the slot blue LED is enabled.

```
$ sg_ses --page=2 /dev/sg60

Element 0 descriptor:
  Ready to insert=0, RMV=0, Ident=0, Report=0
```

(C) Get the descriptor of a slot blue LED

```
$ sg_ses --page=7 /dev/sg60

Element 0 descriptor: Disk001
```

(D) Disable a slot blue LED

```
$ sg_ses --descriptor=Disk001 --set=2:0:1 /dev/sg60
```

(E) Enable a slot blue LED

```
$ sg_ses --descriptor=Disk001 --clear=2:0:1 /dev/sg60
```

9. How to update firmware/MFG on Left Edge and Right Edge via inband SAS

The Left/Right Edges are hidden behind the Hub, so please follow the steps below to update firmware and MFG on Left Edge via inband SAS. The same steps can be applied to Right Edge also. Please install the software package "sg_utils" and LSI utility "xflash" on your host computer, and have a SAS HBA and a cable to connect your host with the 4U60_SubEnclosure. We use Linux for example.

Step1. Show the device for the Hub

```
$ sg_map -i

/dev/sg1   AIC CORP   4U60: Hub   0b02
```

Step2. Make the Left Edge or Right Edge be visible (Use Disk001 for Left Edge, and Disk015 for Right Edge)

```
$ sg_ses --descriptor=Disk001 --set=2:5:1 /dev/sg1
```

Step3. Get SAS address for the Hub. The SAS address (500605B0:000272BF) is used for the Hub.

```
$ ./xflash -i get avail
```

Step4. Reset the Hub to have an additional device for the Left Edge in Linux

```
$ ./xflash -i 500605b0000272bf reset exp
```

Step5. Show the devices for the Hub and Left Edge. If there is no device for Left Edge, go back to the previous step.

```
$ sg_map -i

/dev/sg1   AIC CORP   4U60: Hub   0b02
/dev/sg2   AIC CORP   4U60: Left Edge   0b03
```

Step6. Update firmware on Left Edge

```
$ sg_write_buffer --id=0x0 --in=<firmware filename> --mode=0x2 --offset=0 /dev/sg2
```

Step7. Update MFG on Left Edge

```
$ sg_write_buffer --id=0x83 --in=<MFG filename> --mode=0x2 --offset=0 /dev/sg2
```

Step8. Get SAS address for Left Edge. The SAS address (50015B20:9000EBBF) is used for Left Edge.

```
$ ./xflash -i get avail
```

Step9. Reset the Left Edge to activate its new firmware/MFG

```
$ ./xflash -i 50015b209000ebbf reset exp
```

Step10. Get the current firmware version on Left Edge for confirmation

```
$ ./xflash -i 50015b209000ebbf get ver
```

Step11. Make the Left Edge or Right Edge be invisible (Use Disk001 for Left Edge, and Disk015 for Right Edge)

```
$ sg_ses --descriptor=Disk001 --set=3:7:1 /dev/sg1
```

Step12. Reset the Hub to refresh the change on Left Edge in Linux (you may have to try more times)

```
$ ./xflash -i 500605b0000272bf reset exp
```