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Hanlin 14/12/18, 12:57

Release Note for AIC SAS 6G 5U90swap Expander

Dec 18, 2014

Changelog

12/18/2014 (firmware 1.11.13.4 + mfg 1.13.0.2 + firmware 1.11.14.3 + mfg 1.14.0.2) - Part Number
(B98-005U90E0111304 + B98-005JU6G0130002 + B98-005U90E0111403 + B98-005JU6G0140002)
Old Part Number B98-005U90E0111402 is replaced by B98-005U90E0111403.
1. Resolve the drive fault LED issue when multiple Array control events happen at the same time

11/27/2014 (firmware 1.11.13.4 + mfg 1.13.0.2 + firmware 1.11.14.2 + mfg 1.14.0.2) - Part Number
(B98-005U90E0111304 + B98-005JU6G0130002 + B98-005U90E0111402 + B98-005JU6G0140002)
Old Part Number B98-005U90E0111303 is replaced by B98-005U90E0111304.
1. Resolve multiple resets for "check_wide_port standby"

11/10/2014 (firmware 1.11.13.3 + mfg 1.13.0.2 + firmware 1.11.14.2 + mfg 1.14.0.2) - Part Number
(B98-005U90E0111303 + B98-005JU6G0130002 + B98-005U90E0111402 + B98-005JU6G0140002)
Old Part Number B98-005U90E0111302 is replaced by B98-005U90E0111303.
1. Resolve the issue for "check_wide_port standby"

09/30/2014 (firmware 1.11.13.2 + mfg 1.13.0.2 + firmware 1.11.14.2 + mfg 1.14.0.2) - Part Number
(B98-005U90E0111302 + B98-005JU6G0130002 + B98-005U90E0111402 + B98-005JU6G0140002)
Old Part Number B98-005U90E0111401 is replaced by B98-005U90E0111402.
1. Resolve the zoning issue: each COM port should have the same zone count configuration

09/12/2014 (firmware 1.11.13.2 + mfg 1.13.0.2 + firmware 1.11.14.1 + mfg 1.14.0.2) - Part Number
(B98-005U90E0111302 + B98-005JU6G0130002 + B98-005U90E0111401 + B98-005JU6G0140002)
Old Part Number B98-005U90E0111301 is replaced by B98-005U90E0111302.
1. CLI temperature settings for Temperature 5 ~ 7 should be applied to Temperature 2 ~ 7

07/01/2014 (firmware 1.11.13.1 + mfg 1.13.0.2 + firmware 1.11.14.1 + mfg 1.14.0.2) - Part Number
(B98-005U90E0111301 + B98-005JU6G0130002 + B98-005U90E0111401 + B98-005JU6G0140002)
Old Part Number B98-005JU6G0130001 is replaced by B98-005JU6G0130002.
Old Part Number B98-005JU6G0140001 is replaced by B98-005JU6G0140002.
1. Resolve the drive mapping issue in Windows with SAS 12G HBA

06/09/2014 (firmware 1.11.13.1 + mfg 1.13.0.1 + firmware 1.11.14.1 + mfg 1.14.0.1) - Part Number
(B98-005U90E0111301 + B98-005JU6G0130001 + B98-005U90E0111401 + B98-005JU6G0140001)
1. Initial revision

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

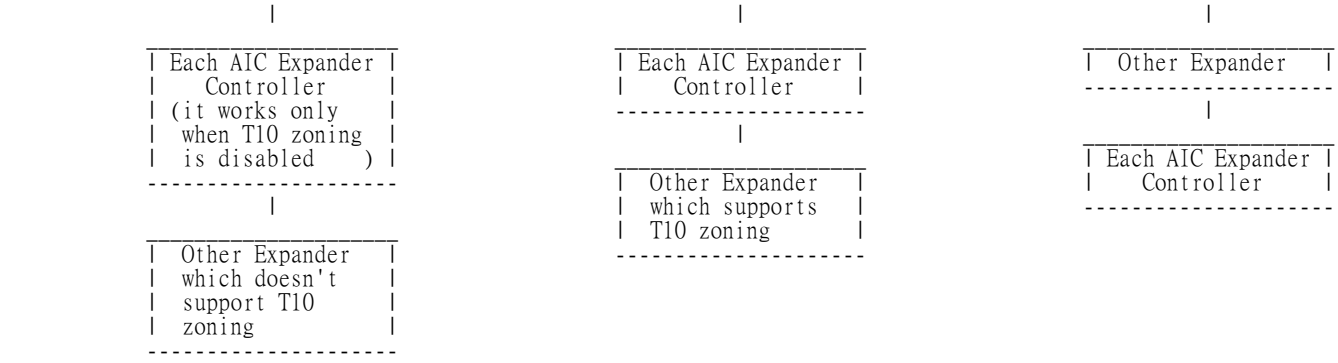
Host Control Bit	Blue LED	Red LED
OK	ON	OFF
RSVD DEVICE	ON	OFF
HOT SPARE	ON	OFF
CONS CHECK	ON	Fast blink
IN CRIT ARRAY	ON	Slow blink
IN FAILED ARRAY	ON	Slow blink
REBUILD/REMAP	ON	Fast blink
R/R ABORT	ON	Slow blink
ACTIVE	ON	OFF
DO NOT REMOVE	ON	OFF
MISSING	ON	ON
INSERT	ON	Slow blink
REMOVE	ON	Slow blink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

Supported Configuration

(1)

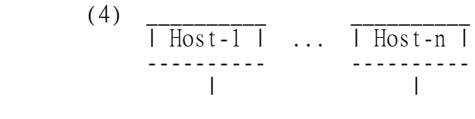

(2)


(3)

Most 3G Expanders don't support T10 zoning.

(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.

Command Line Interface Operation

1. How to configure zone count
   Remove the SAS cable between the HBA/RAID card and the 5U90swap before configuring zone count. Power off the 5U90swap after configuring zone count. Power on the 5U90swap, then insert the SAS cable.

   Three zone configurations supported are one zone with 90 drives, two zones with 45 drives per zone, and three zones with 30 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 three zones) is enabled.

   Each of seven COM ports (one COM port for Hub and six COM ports for Edge) should be applied with the respective configuration.

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

   (B) One-zone configuration supports one-up/two-down links. Each host can access up to 90 drives in this 5U90swap.
   ```
   cmd> zonecount 1
   cmd> reset
   ```

   (C) Two-zone configuration supports one-up link for the first zone and one-up/one-down links for the second zone. Each host can access up to 45 drives in this 5U90swap.
   ```
   cmd> zonecount 2
   cmd> reset
   ```

   (D) Three-zone configuration supports one-up link per zone. Each host can access up to 30 drives in this 5U90swap.
   ```
   cmd> zonecount 3
   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) Micro controller 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 per sensor ID are T1, T2, warning threshold, and alarm (critical) threshold. Only the COM for Hub supports this command.

(A) Get the current temperature settings (sensor ID = 2)
cmd> temperature 2
Temperature 2 in Celsius (t1=20 C, t2=55 C, warning=50 C, alarm=55 C)

(B) Set temperature (sensor ID = 2) 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 2 18 52 48 54
cmd> reset

4. How to enable/disable the enclosure alarm by your software
The "REQUEST FAILURE" and "REQUEST WARNING" for Enclosure are defined in the bit1, byte3 and bit0, byte3 of the "Enclosure control element" in the SES-3 specification. Setting either one can enable the enclosure alarm. Clearing both settings disables the enclosure alarm. 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 5U90swap. We use Linux for example.

(A) Show the device for AIC Expander Controller (canister)
$ sg_map -i

/dev/sg60 AIC CORP 5U90swap: Hub 0b0d

(B) Enable the enclosure alarm (Only Hub should be applied)
$ sg_ses --descriptor=EnclosureElement01 --set=3:1:1 /dev/sg60
or
$ sg_ses --descriptor=EnclosureElement01 --set=3:0:1 /dev/sg60

(C) Disable the enclosure alarm (Only Hub should be applied)
$ sg_ses --descriptor=EnclosureElement01 --clear=3:1:1 /dev/sg60
$ sg_ses --descriptor=EnclosureElement01 --clear=3:0:1 /dev/sg60

5. How to identify AIC Expander Controller (canister) in the enclosure
The canister LED is used for the canister identity. The "RQST IDENT" for Enclosure is defined in the bit7, byte1 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 5U90swap. We use Linux for example.

(A) Show the device for AIC Expander Controller (canister)
$ sg_map -i

/dev/sg60 AIC CORP 5U90swap: Hub 0b0d

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

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

6. How to power off the enclosure via inband SAS
The "RQST ON" for Power Supply is defined in the bit5, byte3 of the "Power Supply control element" in the SES-3 specification. Clear the bit to power off the enclosure. 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 5U90swap. We use Linux for example.

(A) Show the device for AIC Expander Controller (canister)
$ sg_map -i

/dev/sg60 AIC CORP 5U90swap: Hub 0b0d

(B) Power off the enclosure (Only Hub should be applied)

```
$ sg_ses --descriptor=PowerSupply01 --clear=3:5:1 /dev/sg60
```

7. 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 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
```

8. How to configure wide port checker

This feature is applicable for SAS drives instead of SATA drives. If there is no connection with any active SAS initiator by checking all wide ports, AIC Expander Controller stops all attached SAS drives to save power consumption of SAS drives. Otherwise, AIC Expander Controller starts all attached SAS drives to provide drive access service to any active SAS initiator. All COM ports support this command. Please apply the same setting on all COM ports.

(A) Get the current state of wide port checker

```
cmd> check_wide_port
Checking wide port is OFF
```

(B) Enable checking wide port. The new setting will take effect after reset.

```
cmd> check_wide_port on
cmd> reset
```

(C) Disable checking wide port. The new setting will take effect after reset.

```
cmd> check_wide_port off
cmd> reset
```

9. 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
```

10. How to turn on/off the power of a drive slot

The "DEVICE OFF" for a drive slot is defined in the bit4, byte3 of the "Array Device Slot control element" in the SES-3 specification. Set the bit to turn off a slot power, 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 5U90swap. We use Linux for example.

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

```
$ sg_map -i

/dev/sg61   AIC CORP   5U90swap: Edge   0b0e
```

(B) Get the current state of a slot power (Only Edge should be applied). In this example the "Device off=0" means the slot power is on.

```
$ sg_ses --page=2 /dev/sg61

Element 0 descriptor:
  App client bypass B=0, Fault sensed=0, Fault reqstd=0, Device off=0
```

(C) Get the descriptor of a slot power (Only Edge should be applied)

```
$ sg_ses --page=7 /dev/sg61

Element 0 descriptor: Disk001
```

(D) Turn off a slot power (Only Edge should be applied)

```
$ sg_ses --descriptor=Disk001 --set=3:4:1 /dev/sg61
```

(E) Turn on a slot power (Only Edge should be applied)

```
$ sg_ses --descriptor=Disk001 --clear=3:4:1 /dev/sg61
```

11. How to get DC voltage/current and status from PSU
    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 5U90swap. Only the COM for Hub supports this command. We use Linux for example.

    (A) Show the device for AIC Expander Controller (canister)
        $ sg_map -i

        /dev/sg60   AIC CORP   5U90swap: Hub   0b0d

    (B) Get DC voltage/current and status from PSU. Output 15 bytes with the following format. When failed to get the data, "FF FF" will be shown. The output formats for Status_Word, Read_VOUT, and Read_IOUT follow PMBus Spec rev1.1 Part II and above.
        $ sg_ses --page=4 --raw /dev/sg60

```
    00     00     00     00     00     00     00     00     00     00     00     83     d9     4c     f0
     |     ---------     ---------     ---------     ---------     ---------     ---------     ---------
I2C congestion   |           |           |           |           |           |           |
                 |           |           |           |           |           |           |
               PDB       Module1     Module2     Module3     Module4    DC voltage   DC current
         Status_Word   Status_Word   Status_Word   Status_Word   Status_Word   Read_VOUT    Read_IOUT
```

12. How to power off/on all disk drives manually
    The "RQST ON" for Power Supply is defined in the bit5, byte3 of the "Power Supply control element" in the SES-3 specification. Clear the bit to power off all disk drives. Set the bit to power on all disk drives. 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 5U90swap. We use Linux for example.

    (A) Apply the following commands on every Edge COM port.
        cmd> check_wide_port standby
        cmd> reset

    (B) Show the device for AIC Expander Controller (canister)
        $ sg_map -i

        /dev/sg60   AIC CORP   5U90swap: Hub   0b0d

    (C) Power off all disk drives (Only Hub should be applied)
        $ sg_ses --descriptor=DiskPowerSupply --clear=3:5:1 /dev/sg60

    (D) Power on all disk drives (Only Hub should be applied), and then reset the Hub via inband SAS
        Step1. Get SAS address for the Hub. The Hub SAS address (500605B0:000272BF) is used.
               $ ./xflash -i get avail

        Step2. Power on all disk drives
               $ sg_ses --descriptor=DiskPowerSupply --set=3:5:1 /dev/sg60

        Step3. Reset the Hub
               $ ./xflash -i 500605b0000272bf reset exp

13. How to power off/on all disk drives automatically
    This feature is applicable for SAS/SATA drives. If there is no connection with any active SAS initiator by checking all wide ports, AIC Expander Controller powers off all attached SAS/SATA drives to save power consumption. Otherwise, AIC Expander Controller powers on all attached SAS/SATA drives to provide drive access service to any active SAS initiator. All COM ports support this command. Please apply the same setting on all COM ports.

    (A) Apply the following commands on every Hub/Edge COM port.
        cmd> check_wide_port standby
        cmd> reset

14. How to configure power setting
    This feature is for restoring on AC power loss. Three supported options are "keep off", "keep on", and "keep last state". The default setting is "keep off". Only the COM for Hub supports this command.

    (A) Get the current power setting
        cmd> power_setting
        Power setting: keep off

    (B) Set "keep off"
        cmd> power_setting keep_off

(C) Set "keep on"
cmd> power_setting keep_on

(D) Set "keep last state"
cmd> power_setting keep_last_state

15. 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