

ASR5500 FSC가 슈퍼 커패시터 오류로 인해 실패했습니다.

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소개

이 문서에서는 Cisco ASR(Aggregated Service Router) 5500의 FSC(Fabric and Storage Card)에서 발생하는 특정 하드웨어 문제에 대해 설명합니다.

문제/장애:고객이 성능이 저하된 HD-raid로 FSC 16에 결함이 있다고 보고

```
***** Show alarm outstanding verbose *****
```

```
Severity Object                Timestamp                      Alarm ID
```

```
-----
```

Alarm Details

```
-----
```

```
Minor      Card 14                Sunday August 21 07:16:34 A    3610743104839221248
```

The Fabric & 2x200GB Storage Card in slot 14 is a single point of failure. Another Fabric & 2x200GB Storage Card of the same type is needed.

```
Minor      Card 15                Sunday August 21 07:16:34 A    3610743104839221249
```

The Fabric & 2x200GB Storage Card in slot 15 is a single point of failure. Another Fabric & 2x200GB Storage Card of the same type is needed.

```
Minor      Card 17                Sunday August 21 07:16:34 A    3610743104839221250
```

The Fabric & 2x200GB Storage Card in slot 17 is a single point of failure. Another Fabric & 2x200GB Storage Card of the same type is needed.

```
***** show card table all *****
```

```
Slot          Card Type                Oper State    SPOF  Attach
```

```
-----
```


Updated : Fri May 23 23:05:53 2014
Events : 0
Model : STEC Z16IZF2E-200UCU E4TC
Serial Number : STM000171E75
Size : 200GB (200049647616 bytes)

Disk hd16b

State : In-sync component
Created : Fri May 23 23:05:53 2014
Updated : Fri May 23 23:05:53 2014
Events : 0
Model : STEC Z16IZF2E-200UCU E4TC
Serial Number : STM000171E8B
Size : 200GB (200049647616 bytes)

문제 해결

이러한 오류는 syslog로 트러블슈팅을 시작할 때 보고됩니다.

```
[local-60sec34.188] [hdctrl 132011 critical] [5/0/7135 <hdctrl:0> rl_fsm_mirror.c:5938] [software internal system critical-info syslog] hd16, FSC16 SAD17160089 failed from RAID 59a7ebf0:7f798af6:68869614:3210b2c6, MIO5 SAD1716021N.
```

```
[local-60sec34.188] [hdctrl 132016 error] [5/0/7135 <hdctrl:0> rl_fsm_mirror.c:3399] [software internal system critical-info syslog] Error detected on hd16a (STEC Z16IZF2E-200UCU E4TC STM000171E75), FSC16 SAD17160089: ioerr_cnt increased from 25 to 27
```

```
[local-60sec34.221] [alarmctrl 65201 info] [5/0/7072 <evlogd:0> alarmctrl.c:192] [software internal system critical-info syslog] Alarm condition: id 321befb92b220000 (Minor): The Fabric & 2x200GB Storage Card in slot 14 is a single point of failure. Another Fabric & 2x200GB Storage Card of the same type is needed.
```

```
[local-60sec34.222] [alarmctrl 65201 info] [5/0/7072 <evlogd:0> alarmctrl.c:192] [software internal system critical-info syslog] Alarm condition: id 321befb92b220002 (Minor): The Fabric & 2x200GB Storage Card in slot 17 is a single point of failure. Another Fabric & 2x200GB Storage Card of the same type is needed.
```

```
[local-60sec34.222] [alarmctrl 65201 info] [5/0/7072 <evlogd:0> alarmctrl.c:192] [software internal system critical-info syslog] Alarm condition: id 321befb92b220001 (Minor): The Fabric & 2x200GB Storage Card in slot 15 is a single point of failure. Another Fabric & 2x200GB Storage Card of the same type is needed.
```

이 오류 로그가 표시되면

```
Aug 21 07:16:34 evlogd: [local-60sec34.188] [hdctrl 132016 error] [5/0/7135 <hdctrl:0> rl_fsm_mirror.c:3399] [software internal system critical-info syslog] Error detected on hd16a (STEC Z16IZF2E-200UCU E4TC STM000171E75), FSC16 SAD17160089: ioerr_cnt increased from 25 to 27  
스마트 테스트를 실행하고 이 문제가 고온과 관련이 없는지 확인하는 것이 좋습니다.
```

```
[local]# show hd smart hd16a
```

```
smartctl 6.1 2013-03-16 r3800 [x86_64-linux-2.6.38-staros-v3-hw-64] (local build)
```

```
Copyright (C) 2002-13, Bruce Allen, Christian Franke, www.smartmontools.org
```

```
=== START OF INFORMATION SECTION ===
```

```
Vendor:                STEC  
Product:               Z16IZF2E-200UCU  
Revision:              E4TC  
User Capacity:         200,049,647,616 bytes [200 GB]  
Logical block size:    512 bytes  
LU is resource provisioned, LBPRZ=1  
Rotation Rate:         Solid State Device  
Form Factor:           2.5 inches  
Logical Unit id:       0x5000a72030079304  
Serial number:         STM000171E75  
Device type:           disk  
Transport protocol:    SAS  
Local Time is:         Mon Aug 22 16:49:11 2016 AST  
SMART support is:      Available - device has SMART capability.  
SMART support is:      Enabled  
Temperature Warning:   Enabled
```

```
=== START OF READ SMART DATA SECTION ===
```

SMART Health Status: OK

SS Media used endurance indicator: 0%

Current Drive Temperature: 52 C

Drive Trip Temperature: 75 C

local]SAE-G168A-1# show hd smart hd16b

smartctl 6.1 2013-03-16 r3800 [x86_64-linux-2.6.38-staros-v3-hw-64] (local build)

Copyright (C) 2002-13, Bruce Allen, Christian Franke, www.smartmontools.org

=== START OF INFORMATION SECTION ===

Vendor: XXXX

Product: Z16IZF2E-200UCU

Revision: E4TC

User Capacity: 200,049,647,616 bytes [200 GB]

Logical block size: 512 bytes

LU is resource provisioned, LBPRZ=1

Rotation Rate: Solid State Device

Form Factor: 2.5 inches

Logical Unit id: 0x5000a7203007932c

Serial number: STM000171E8B

Device type: disk

Transport protocol: SAS

Local Time is: Mon Aug 22 16:49:21 2016 AST

SMART support is: Available - device has SMART capability.

SMART support is: Enabled

Temperature Warning: Enabled

=== START OF READ SMART DATA SECTION ===

SMART Health Status: OK

SS Media used endurance indicator: 0%

Current Drive Temperature: 50 C

Drive Trip Temperature: 75 C

스마트 테스트는 정상이므로 고온 문제와 관련이 없다고 결론지을 수 있습니다.

솔루션

단일 FSC의 드라이브에서 슈퍼콘덴서 장애

경우에 따라 단일 FSC의 드라이브 중 하나 또는 둘 다 Invalid Partition 또는 image 상태로 이동합니다.

단일 FSC의 드라이브에 있는 슈퍼 콘덴서가 실패할 경우 이 오류가 발생할 수 있습니다. 이 오류는 드라이브가 교체되거나 FSC에서 발생하는 영구 드라이브 오류이므로 복구할 수 없습니다.

자세한 내용은 Cisco TAC에 문의하십시오.

어떤 드라이브에서도 이것이 확인되면 해당 드라이브에 슈퍼 콘덴서 장애가 발생합니다.

이러한 로그는 활성 MIO(Management Input/Output Card)의 디버그 콘솔 로그에 표시됩니다.

```
2016-Aug-21+07:16:34.038 card 5-cpu0: [974499.606697] sd 0:0:2:0: [sde] Unhandled sense code^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.611565] sd 0:0:2:0: [sde] Result: hostbyte=DID_OK
driverbyte=DRIVER_SENSE^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.618877] sd 0:0:2:0: [sde] Sense Key : Data
Protect [current] ^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.625214] sd 0:0:2:0: [sde] Add. Sense: Write
protected^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.630840] sd 0:0:2:0: [sde] CDB: Write(10): 2a 00 00
00 08 08 00 00 08 00^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.638173] end_request: I/O error, dev sde, sector
2056^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.643558] md: super_written gets error=-5,
uptodate=0^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.648872] md/raid:md0: Disk failure on md16,
disabling device.^M
2016-Aug-21+07:16:34.139 card 5-cpu0: [974499.648873] md/raid:md0: Operation continuing on 3
devices.^M
2016-Aug-21+07:16:34.238 card 5-cpu0: [974499.712047] sd 0:0:2:0: [sde] Sense Key : Recovered
Error [current] ^M
2016-Aug-21+07:16:34.238 card 5-cpu0: [974499.718637] sd 0:0:2:0: [sde] <<vendor>> ASC=0x80
ASCQ=0x0ASC=0x80 ASCQ=0x0^M
2016-Aug-21+07:21:37.112 card 5-cpu0: [974802.605115] sd 0:0:2:0: [sde] Sense Key : Recovered
Error [current] ^M
```

```
2016-Aug-21+07:21:37.112 card 5-cpu0: [974802.611712] sd 0:0:2:0: [sde] <<vendor>> ASC=0x80
ASCQ=0x0ASC=0x80 ASCQ=0x0^M
```

```
2016-Aug-21+07:26:37.099 card 5-cpu0: [975102.612464] sd 0:0:2:0: [sde] Sense Key : Recovered
Error [current] ^M
```

특정 오류 로그를 확인하십시오.

1. 활성 MIO 카드의 콘솔 출력 디버그
2. 디버그 hdctrl 매핑
3. 디버그 hdctrl 기록

그러면 슈퍼커패시터 오류가 확인됩니다.

```
**** debug console card <Active MIO card> cpu 0 tail 10000 only ****
```

```
[sde] <> ASC=0x80 ASCQ=0x0ASC=0x80 ASCQ=0x0
```

```
***** debug hdctrl history *****
```

```
Thursday March 31 02:29:03 EDT 2016
```

```
Primary HDCTRL:
```

```
2016-Mar-31+02:13:38.632 move fsm=hd15#6 src=DISK_CHECK dst=DISK_FAILED arg=disk I/O error #
hdctrl/hdctrl_fsm_disk.c : 4354 @ disk_fsm_enter()
```

```
Below is the mapping of the disks to device name:
```

```
***** debug hdctrl mapping ***** Local card (5): Disk Device Number SCSI Size ----- --
----- ----- hd14a sdb 8:16 0:0:0:0 186 GB hd15a sdd 8:48 0:0:1:0 186 GB hd16a sde
8:64 0:0:2:0 186 GB hd17a sdg 8:96 0:0:3:0 186 GB hd14b sda 8:0 1:0:0:0 186 GB hd15b sdc 8:32
1:0:1:0 186 GB hd16b sdf 8:80 1:0:2:0 186 GB hd17b sdh 8:112 1:0:3:0 186 GB
```

```
Below highlited logs indicating a failure of the super capacitor on the solid state drive of FSC
card disk 16a.
```

```
hd16a <==>sde
```

```
-----
```

```
2016-Aug-21+07:21:37.112 card 5-cpu0: [974802.611712] sd 0:0:2:0: [sde] <<vendor>> ASC=0x80
ASCQ=0x0ASC=0x80 ASCQ=0x0^M
```

```
2016-Aug-21+07:26:37.099 card 5-cpu0: [975102.612464] sd 0:0:2:0: [sde] Sense Key : Recovered
Error [current] ^M
```