

ASR5500 FSC因超级电容器故障而失败

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简介

本文档介绍思科集成多业务路由器(ASR)5500上交换矩阵和存储卡(FSC)上的特定硬件问题。

问题：客户报告FSC 16故障，FSC 16的Hd-RAID性能下降

```
***** 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
------	-----------	------------	------	--------

1: DPC Data Processing Card Active No

2: DPC Data Processing Card Active No

3: DPC Data Processing Card Active No


```
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)
```

故障排除

使用syslog启动故障排除时，会报告这些错误。

```
[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.
```

如果您看到以下错误日志：

```
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
始终建议运行智能测试并检查此问题是否与高温无关。
```

```
[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

由于智能测试正常，您可以断定它与高温问题无关。

解决方案

单片FSC驱动器超级电容故障

有时，单个FSC上的一个或两个驱动器都会变为无效分区或映像状态。

如果超级电容器在单个FSC的驱动器中发生故障，则可能会发生这种情况。此故障无法恢复，因为它是永久驱动器故障，其中更换了驱动器或FSC。

请联系思科TAC获取进一步帮助。

如果发现任何驱动器出现此情况，则该驱动器上出现超级电容器故障。

这些日志在活动管理输入/输出卡(MIO)的调试控制台日志中可见。

```
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
```

请检查特定错误登录

1. 调试活动MIO卡的控制台输出
2. 调试hdctrl映射
3. 调试hdctrl历史记录

这证实了超级电容器的故障。

```
**** 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
```