

FC MD Switches配置示例的分析器和SPAN

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简介

类似于Cisco路由器产品线的调试功能，Cisco MDS存储设备交换机有检查光纤信道(FC)的分析器数据包。FC分析器到/从该的实体检查数据包交换机提供。FC分析器能调试帧交换机对接收或发送负责对存储设备。在终端站之间的帧不可能由FC分析器检查。

要检查会话流，应该使用MD交换机的交换端口分析器(SPAN)功能。很象在思科以太网交换机的SPAN功能，在MD产品线的SPAN复制数据到SPAN目的地端口，因此可以由第三方设备收集。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco MDS 9216交换机
- Cisco MDS 9509交换机
- 两个运行存储局域网操作系统(SAN-OS) 1.2.1a。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

背景理论

您什么时候什么时候必须知道使用FC分析器工具和使用SPAN功能。

FC分析器是收集帧被注定向或起源于MD Supervisor的工具。节点到交换机或交换机对交换机流量能在此工具看到。

SPAN是允许帧是瞬变对将复制的交换机对分析的第二个端口的功能。节点对节点流量能在此方法看到。

参考图示的此图表：

可以用FC分析器工具跟踪的绿色箭头show traffic，而桃红色箭头显示可以捕获与SPAN方法的流量。从主机的流量到存储设备不可能由FC分析器观察。仅流量从主机到交换机或从在右边的交换机能被看到，当您运行在交换机的FC分析器在左边。

SPAN可以用于跟踪流量在(入口)和(出口)交换机的所有端口。远程SPAN (RSPAN)，如上一个图表所显示，可以用于收集帧进出在左边交换机的主机端口，当分析器附加对右侧交换机。

配置

本部分提供有关如何配置本文档所述功能的信息。

注意：要查找本文档所用命令的其他信息，请使用[命令查找工具](#)（[仅限注册用户](#)）。

配置本地FC分析器

注意：目的是收集请起源的FC帧，或者被注定向，9612 Supervisor。从主机的帧到JBOD没有用FC分析器工具收集。

FC分析器本地从命令行界面(CLI)运行通过控制台附件或Telnet。您可以运行一简要显示显示每帧仅小单元，或者您可以运行一详细的trace显示整个帧。

trace开始，当在配置模式时，并且被终止，当您按**ctrl-c**时。默认情况下，仅100帧捕获。要捕获超过100帧，请添加**limit-captured-frames**命令选项到您使用开始trace的命令。

您可以也使用显示过滤器对仅特定帧限制trace的输出。

```
!--- VSAN 13 (0xd) is used here as example. MDS9216# show fcdomain domain-list vsan 13 Number of
domains: 2 Domain ID WNN ----- 0x66(102) 20:0d:00:05:30:00:47:9f
[Local] [Principal] 0x6b(107) 20:0d:00:05:30:00:51:1f MDS9216# show fcns data vsan 13 VSAN 13: -
----- FCID TYPE PWWN
(VENDOR) FC4-TYPE:FEATURE -----
```

```
---- 0x6600dc NL 21:00:00:20:37:15:a2:49 (Seagate) scsi-fcp:target 0x6600e0 NL
21:00:00:04:cf:6e:4a:8c (Seagate) scsi-fcp:target 0x6600e1 NL 21:00:00:04:cf:6e:37:8b (Seagate)
scsi-fcp:target 0x660101 NL 10:00:00:01:73:00:81:82 (JNI) 0x660201 N 10:00:00:05:30:00:47:9f
(Cisco) ipfc 0x6b0001 N 10:00:00:05:30:00:51:23 (Cisco) ipfc Total number of entries = 6 !---
Configure FC analyzer for brief output. MDS9216# config t Enter configuration commands, one per
line. End with CNTL/Z. MDS9216(config)# fcanalyzer local brief display-filter mdshdr.vsan==0xd
Capturing on eth2 0.000000 ff.ff.fd -> ff.ff.fd SW_ILS HLO 0.000095 ff.ff.fd -> ff.ff.fd FC Link
Ctl, ACK1 18.721559 ff.ff.fd -> ff.ff.fd SW_ILS HLO 18.721879 ff.ff.fd -> ff.ff.fd FC Link Ctl,
ACK1 19.970287 ff.ff.fd -> ff.ff.fd SW_ILS HLO 19.970368 ff.ff.fd -> ff.ff.fd FC Link Ctl, ACK1
38.941558 ff.ff.fd -> ff.ff.fd SW_ILS HLO 38.941849 ff.ff.fd -> ff.ff.fd FC Link Ctl, ACK1
39.940546 ff.ff.fd -> ff.ff.fd SW_ILS HLO 39.940628 ff.ff.fd -> ff.ff.fd FC Link Ctl, ACK1
在下一个示例中，您有同一个数据。这时，然而，简要选项从命令，提供每数据包详细信息省略。
```

```
MDS9216(config)# fcanalyzer local display-filter mdshdr.vsan==0xd Capturing on eth2 Frame 1 (100
bytes on wire, 100 bytes captured) Arrival Time: Jul 4, 2003 12:31:18.310251000 Time delta from
previous packet: 0.000000000 seconds Time relative to first packet: 0.000000000 seconds Frame
Number: 1 Packet Length: 100 bytes Capture Length: 100 bytes Ethernet II, Src:
00:00:00:00:00:0a, Dst: 00:00:00:00:ee:00 Destination: 00:00:00:00:ee:00 (00:00:00:00:ee:00)
Source: 00:00:00:00:00:0a (00:00:00:00:00:0a) Type: Unknown (0xfcfc) Vegas (FC, SOFf/EOFn) Vegas
Header .000 .... = Version: 0 .... 0000 = Andiamo Type: Normal FC frame (0) #MPLS Labels: 0
Packet Len: 70 TTL: 255 0111 .... = User Priority: 7 .... 0000 0010 11.. = Dst Index: 0x000b
.... ..00 1111 1111 = Src Index: 0x00ff Ctrl Bits: Index Directed frame (0x01) Timestamp: 42678
.... .000 = Status: 0 (0) 0000 0... = Reason Code: 0 (0x00) .... 0000 0000 1101 = VSAN: 13
Checksum: 0 Vegas Trailer EOF: EOFn (3) CRC: 4022250974 Fibre Channel R_CTL: 0x02 Dest Addr:
ff.ff.fd CS_CTL: 0x00 Src Addr: ff.ff.fd Type: SW_ILS (0x22) F_CTL: 0x380000 (Exchange
Originator, Seq Initiator, Exchg First, Exchg Last, Seq Last, CS_CTL, Last Data Frame - No Info,
ABTS - Abort/MS, ) SEQ_ID: 0xe7 DF_CTL: 0x00 SEQ_CNT: 0 OX_ID: 0x1eb4 RX_ID: 0xffff Parameter:
0x00000000 SW_ILS Cmd Code: HLO (0x14) FSPF Header Version: 0x02 AR Number: 0x00 Authentication
Type: 0x00 Originating Domain ID: 102 Authentication: 0000000000000000 Options: 00000000 Hello
Interval (secs): 20 Dead Interval (secs): 80 Recipient Domain ID: 107 Originating Port Idx:
0x01000b Frame 2 (60 bytes on wire, 60 bytes captured) Arrival Time: Jul 4, 2003
12:31:18.310563000 Time delta from previous packet: 0.000312000 seconds Time relative to first
packet: 0.000312000 seconds Frame Number: 2 Packet Length: 60 bytes Capture Length: 60 bytes
Ethernet II, Src: 00:00:00:00:00:00, Dst: 00:00:00:00:00:00 Destination: 00:00:00:00:00:00
(00:00:00:00:00:00) Source: 00:00:00:00:00:00 (00:00:00:00:00:00) Type: Unknown (0x0000) Vegas
(FC, SOFf/EOFn) Vegas Header .000 .... = Version: 0 .... 0000 = Andiamo Type: Normal FC frame
(0) #MPLS Labels: 0 Packet Len: 30 TTL: 255 0111 .... = User Priority: 7 .... 0011 1111 11.. =
Dst Index: 0x00ff .... ..00 0000 1011 = Src Index: 0x000b Ctrl Bits: 0 (0x00) Timestamp: 42679
.... .000 = Status: 0 (0) 0000 0... = Reason Code: 0 (0x00) .... 0000 0000 1101 = VSAN: 13
Checksum: 241 Vegas Trailer EOF: EOFt (1) CRC: 1019832848 Fibre Channel R_CTL: 0xc0(ACK1) Dest
Addr: ff.ff.fd CS_CTL: 0x00 Src Addr: ff.ff.fd Type: Unknown (0x00) F_CTL: 0xf80000 (Exchange
Responder, Seq Recipient, Exchg First, Exchg Last, Seq Last, CS_CTL, Last Data Frame - No Info,
ABTS - Cont, ) SEQ_ID: 0xe7 DF_CTL: 0x00 SEQ_CNT: 0 OX_ID: 0x1eb4 RX_ID: 0x1e66 Parameter:
0x00000001 Frame 3 (100 bytes on wire, 100 bytes captured) Arrival Time: Jul 4, 2003
12:31:19.309559000 Time delta from previous packet: 0.998996000 seconds Time relative to first
packet: 0.999308000 seconds Frame Number: 3 Packet Length: 100 bytes Capture Length: 100 bytes
Ethernet II, Src: 00:00:00:00:00:00, Dst: 00:00:00:00:00:00 Destination: 00:00:00:00:00:00
(00:00:00:00:00:00) Source: 00:00:00:00:00:00 (00:00:00:00:00:00) Type: Unknown (0x0000) Vegas
(FC, SOFf/EOFn) Vegas Header .000 .... = Version: 0 .... 0000 = Andiamo Type: Normal FC frame
(0) #MPLS Labels: 0 Packet Len: 70 TTL: 255 0111 .... = User Priority: 7 .... 0011 1111 11.. =
Dst Index: 0x00ff .... ..00 0000 1011 = Src Index: 0x000b Ctrl Bits: 0 (0x00) Timestamp: 42779
.... .000 = Status: 0 (0) 0000 0... = Reason Code: 0 (0x00) .... 0000 0000 1101 = VSAN: 13
Checksum: 101 Vegas Trailer EOF: EOFn (3) CRC: 4200187557 Fibre Channel R_CTL: 0x02 Dest Addr:
ff.ff.fd CS_CTL: 0x00 Src Addr: ff.ff.fd Type: SW_ILS (0x22) F_CTL: 0x380000 (Exchange
Originator, Seq Initiator, Exchg First, Exchg Last, Seq Last, CS_CTL, Last Data Frame - No Info,
ABTS - Abort/MS, ) SEQ_ID: 0xe7 DF_CTL: 0x00 SEQ_CNT: 0 OX_ID: 0x1e67 RX_ID: 0xffff Parameter:
0x00000000 SW_ILS Cmd Code: HLO (0x14) FSPF Header Version: 0x02 AR Number: 0x00 Authentication
Type: 0x00 Originating Domain ID: 107 Authentication: 0000000000000000 Options: 00000000 Hello
Interval (secs): 20 Dead Interval (secs): 80 Recipient Domain ID: 102 Originating Port Idx:
0x01011c Frame 4 (60 bytes on wire, 60 bytes captured) Arrival Time: Jul 4, 2003
12:31:19.309646000 Time delta from previous packet: 0.000087000 seconds Time relative to first
packet: 0.999395000 seconds Frame Number: 4 Packet Length: 60 bytes Capture Length: 60 bytes
Ethernet II, Src: 00:00:00:00:00:0a, Dst: 00:00:00:00:ee:00 Destination: 00:00:00:00:ee:00
```

(00:00:00:00:ee:00) Source: 00:00:00:00:00:0a (00:00:00:00:00:0a) Type: Unknown (0xfcfc) Vegas (FC, SOFf/EOft) Vegas Header .000 = Version: 0 0000 = Andiamo Type: Normal FC frame (0) #MPLS Labels: 0 Packet Len: 30 TTL: 255 0111 = User Priority: 7 0000 0010 11.. = Dst Index: 0x000b00 1111 1111 = Src Index: 0x00ff Ctrl Bits: Index Directed frame (0x01) Timestamp: 42778000 = Status: 0 (0) 0000 0... = Reason Code: 0 (0x00) 0000 0000 1101 = VSAN: 13 Checksum: 0 Vegas Trailer EOF: EOft (1) CRC: 4022250974 Fibre Channel R_CTL: 0xc0(ACK1) Dest Addr: ff.ff.fd CS_CTL: 0x00 Src Addr: ff.ff.fd Type: Unknown (0x00) F_CTL: 0xf80000 (Exchange Responder, Seq Recipient, Exchg First, Exchg Last, Seq Last, CS_CTL, Last Data Frame - No Info, ABTS - Cont,) SEQ_ID: 0xe7 DF_CTL: 0x00 SEQ_CNT: 0 OX_ID: 0x1e67 RX_ID: 0x1eb5 Parameter: 0x00000001

再次，简要trace显示。这时，然而，拔掉在端口1/16的PC并且再插上强制登录。您看到帧到/从另一FC交换机和到/从附加的本地节点(PC)。

```
MDS9216(config)# fcanalyzer local brief display-filter mdshdr.vsan==0xd Capturing on eth2
0.000000 ff.ff.fd -> ff.ff.fd SW_ILS HLO 0.000310 ff.ff.fd -> ff.ff.fd FC Link Ctl, ACK1
0.999598 ff.ff.fd -> ff.ff.fd SW_ILS HLO 0.999684 ff.ff.fd -> ff.ff.fd FC Link Ctl, ACK1
19.990040 ff.ff.fd -> ff.ff.fd SW_ILS HLO 19.990295 ff.ff.fd -> ff.ff.fd FC Link Ctl, ACK1
20.990602 ff.ff.fd -> ff.ff.fd SW_ILS HLO 20.990682 ff.ff.fd -> ff.ff.fd FC Link Ctl, ACK1
26.028780 ff.fc.66 -> ff.fc.6b SW_ILS SW_RSCN 26.029087 ff.fc.6b -> ff.fc.66 FC Link Ctl, ACK1
26.029541 ff.fc.6b -> ff.fc.66 SW_ILS SW_ACC (SW_RSCN) 26.029596 ff.fc.66 -> ff.fc.6b FC Link
Ctl, ACK1 31.151197 00.00.01 -> ff.ff.fe FC ELS FLOGI 31.162809 ff.ff.fe -> 66.01.01 FC ELS ACC
(FLOGI) 31.162841 ff.ff.fe -> 66.01.01 FC ELS ACC (FLOGI) 31.163139 66.01.01 -> ff.ff.fd FC ELS
SCR 31.163583 ff.ff.fd -> 66.01.01 FC ELS ACC (SCR) 31.163603 ff.ff.fd -> 66.01.01 FC ELS ACC
(SCR) 31.163835 66.01.01 -> ff.ff.fc FC ELS PLOGI 31.163965 ff.ff.fc -> 66.01.01 FC ELS ACC
(PLOGI) 31.163985 ff.ff.fc -> 66.01.01 FC ELS ACC (PLOGI) 31.164186 66.01.01 -> ff.ff.fc dNS
GA_NXT 31.164305 ff.fc.66 -> ff.fc.6b SW_ILS SW_RSCN 31.164479 ff.fc.6b -> ff.fc.66 FC Link Ctl,
ACK1 31.164628 ff.fc.6b -> ff.fc.66 SW_ILS SW_ACC (SW_RSCN) 31.164670 ff.fc.66 -> ff.fc.6b FC
Link Ctl, ACK1 31.165030 ff.ff.fc -> 66.01.01 dNS ACC (GA_NXT) 31.165050 ff.ff.fc -> 66.01.01
dNS ACC (GA_NXT) 31.165125 ff.fc.6b -> ff.fc.66 dNS GE_ID 31.165193 ff.fc.66 -> ff.fc.6b FC Link
Ctl, ACK1 31.165419 66.01.01 -> ff.ff.fc dNS GA_NXT 31.165577 ff.fc.66 -> ff.fc.6b dNS ACC
(GE_ID) 31.165781 ff.ff.fc -> 66.01.01 dNS ACC (GA_NXT) 31.165804 ff.ff.fc -> 66.01.01 dNS ACC
(GA_NXT) 31.165943 ff.fc.6b -> ff.fc.66 FC Link Ctl, ACK1 31.166063 66.01.01 -> ff.ff.fc dNS
GA_NXT 31.166870 ff.ff.fc -> 66.01.01 dNS ACC (GA_NXT) 31.166892 ff.ff.fc -> 66.01.01 dNS ACC
(GA_NXT) 31.167268 66.01.01 -> ff.ff.fc dNS GA_NXT 31.167529 ff.ff.fc -> 66.01.01 dNS ACC
(GA_NXT) 31.167549 ff.ff.fc -> 66.01.01 dNS ACC (GA_NXT) 31.168704 66.01.01 -> ff.ff.fc dNS
GA_NXT 31.169272 ff.ff.fc -> 66.01.01 dNS ACC (GA_NXT) 31.169294 ff.ff.fc -> 66.01.01 dNS ACC
(GA_NXT) 31.169568 66.01.01 -> ff.ff.fc dNS GA_NXT 31.170453 ff.ff.fc -> 66.01.01 dNS ACC
(GA_NXT) 31.170473 ff.ff.fc -> 66.01.01 dNS ACC (GA_NXT) 31.170756 66.01.01 -> ff.ff.fc dNS
GA_NXT 31.170975 ff.ff.fc -> 66.01.01 dNS ACC (GA_NXT) 31.170994 ff.ff.fc -> 66.01.01 dNS ACC
(GA_NXT) 31.171400 66.01.01 -> 66.02.01 FC ELS PLOGI 31.171562 66.02.01 -> 66.01.01 FC ELS ACC
(PLOGI) 31.171581 66.02.01 -> 66.01.01 FC ELS ACC (PLOGI) 31.171752 66.01.01 -> 66.02.01 FC ELS
PRLI 31.171812 66.02.01 -> 66.01.01 FC ELS LS_RJT (PRLI) 31.171832 66.02.01 -> 66.01.01 FC ELS
LS_RJT (PRLI) 31.173863 66.01.01 -> ff.ff.fc FC ELS LOGO 31.175020 ff.ff.fc -> 66.01.01 FC ELS
ACC (LOGO) 31.175047 ff.ff.fc -> 66.01.01 FC ELS ACC (LOGO) 31.175182 66.01.01 -> ff.ff.fc FC
ELS PLOGI 31.175290 ff.ff.fc -> 66.01.01 FC ELS ACC (PLOGI) 31.175310 ff.ff.fc -> 66.01.01 FC
ELS ACC (PLOGI) 31.175632 66.01.01 -> ff.ff.fa FC ELS PLOGI 31.175753 ff.ff.fa -> 66.01.01 FC
ELS ACC (PLOGI) 31.175777 ff.ff.fa -> 66.01.01 FC ELS ACC (PLOGI) 32.460020 ff.fc.66 -> 66.01.01
FC ELS PLOGI 32.460050 ff.fc.66 -> 66.01.01 FC ELS PLOGI 32.460207 66.01.01 -> ff.fc.66 FC ELS
ACC (PLOGI) 32.460246 66.01.01 -> ff.fc.66 FC ELS ACC (PLOGI) 32.460340 ff.fc.66 -> 66.01.01 FC
ELS PRLI 32.460362 ff.fc.66 -> 66.01.01 FC ELS PRLI 32.460492 66.01.01 -> ff.fc.66 FC ELS LS_RJT
(PRLI) 32.460525 66.01.01 -> ff.fc.66 FC ELS LS_RJT (PRLI) 32.461839 ff.fc.66 -> 66.01.01 FC ELS
LOGO 32.461866 ff.fc.66 -> 66.01.01 FC ELS LOGO 32.462046 66.01.01 -> ff.fc.66 FC ELS ACC (LOGO)
32.462080 66.01.01 -> ff.fc.66 FC ELS ACC (LOGO) MDS9216(config)# ^C MDS9216(config)# exit
```

配置远程FC分析器的

注意：目的是收集请起源的FC帧，或者被注定对，9612 Supervisor。从主机的帧到JBOD没有用FC分析器工具收集。

FC分析器远程在使用[Ethereal 0.9\(9\)](#)或以后和[WinPcap](#)的PC运行。[PC的IP地址在发出开始在MD CLI的FC分析器跟踪的命令指定。在PC上，必须从line命令也开始Ethereal，并且在命令必须指定MD管理接口的IP地址。](#)

1. 要终止MD FC分析器跟踪，您必须从CLI按**ctrl-c**。MDS9216# `config t` Enter configuration commands, one per line. End with CNTL/Z. MDS9216(config)# `fcanalyzer remote 64.102.58.114`
MDS9216(config)# `^c` 请勿指定在前面的命令的**Active**选项，否则您将需要添加其它选项对在您的PC的line命令，当您开始Ethereal。添加活动关键字通常意味着您必须也配置TCP端口号。推荐您使用默认。
2. 在PC上，请验证IP地址，并且启动Ethereal远程捕获程序。d:\> `ipconfig` Windows 2000 IP Configuration Ethernet adapter wireless: Connection-specific DNS Suffix . : cisco.com IP Address. : 64.102.58.114 Subnet Mask : 255.255.255.128 Default Gateway : 64.102.58.1 Ethernet adapter builtinE: Connection-specific DNS Suffix . : cisco.com Autoconfiguration IP Address. . . : 169.254.219.141 Subnet Mask : 255.255.0.0 Default Gateway : d:\> `cd ethereal099` D:\Ethereal099> `ethereal099 -i rpcap://172.18.172.56/eth2`
3. 一旦程序开始，请选择**捕获**然后点击OK键启动信息包收集。收集的FC数据包出现作为在概略的显示。
4. 点击**终止**制止信息包收集和开始程序的trace视图部分。您可以使用过滤器对特定的流量限制显示。
5. 如果有与远程捕获开始的问题，您可以发现错误屏幕类似于那个在下镜像。FC分析器不是活跃的在MD，或者**活动**关键字使用了，不用指定的端口。

[配置本地SPAN的](#)

注意：目的是收集—用在端口1/15的FC分析器— FC帧到/从在端口1/16的主机9216。

在端口1/15的一个FC分析器显示指定集，但是在链路发生是SPANed不是的指定集。FC分析器设备可以是端口分析器适配器(PAA)和运行Ethereal的PC，类似于Finisar设备。

[MDS9216配置](#)

```
MDS9216# show run vsan 13 vsan 13 interface fc1/16 vsan 13 interface fc2/16 boot system
bootflash:/m9200-ek9-mzg.1.2.0.77.bin boot kickstart bootflash:/m9200-ek9-kickstart-
mzg.1.2.0.77.bin interface fc1/15 switchport mode SD switchport speed 2000 no shutdown interface
fc1/16 no shutdown interface mgmt0 ip address 172.18.172.56 255.255.255.0 span session 1
destination interface fc1/15 source interface fc1/16 rx source interface fc1/16 tx
```

[MDS9216显示](#)

```
MDS9216# show interface fc 1/15 fc1/15 is up Hardware is Fibre Channel Port WWN is
20:0f:00:05:30:00:47:9e Admin port mode is SD Port mode is SD Port vsan is 1 Speed is 2 Gbps
Beacon is turned off 5 minutes input rate 73704 bits/sec, 9213 bytes/sec, 13 frames/sec 5
minutes output rate 2275584 bits/sec, 284448 bytes/sec, 430 frames/sec 2839098 frames input,
1883173240 bytes 0 discards, 0 errors 0 CRC, 0 unknown class 0 too long, 0 too short 3049460
frames output, 2038253240 bytes 0 discards, 0 errors 0 input OLS, 0 LRR, 0 NOS, 0 loop inits 0
output OLS, 0 LRR, 0 NOS, 0 loop inits MDS9216# show interface fc 1/16 fc1/16 is up Hardware is
Fibre Channel Port WWN is 20:10:00:05:30:00:47:9e Admin port mode is auto, trunk mode is on Port
mode is FL, FCID is 0x660100 Port vsan is 13 Speed is 2 Gbps Transmit B2B Credit is 0 Receive
B2B Credit is 16 Receive data field Size is 2112 Beacon is turned off 5 minutes input rate
771568 bits/sec, 96446 bytes/sec, 171 frames/sec 5 minutes output rate 1503144 bits/sec, 187893
bytes/sec, 258 frames/sec 1238843 frames input, 691853044 bytes 0 discards, 0 errors 0 CRC, 0
unknown class 0 too long, 0 too short 1864744 frames output, 1357707740 bytes 0 discards, 0
errors 0 input OLS, 0 LRR, 0 NOS, 49 loop inits 10 output OLS, 0 LRR, 10 NOS, 14 loop inits
MDS9216# show interface fc 2/16 fc2/16 is up Hardware is Fibre Channel Port WWN is
20:50:00:05:30:00:47:9e Admin port mode is FX Port mode is FL, FCID is 0x660000 Port vsan is 13
Speed is 1 Gbps Transmit B2B Credit is 0 Receive B2B Credit is 12 Receive data field Size is
2112 Beacon is turned off 5 minutes input rate 1647552 bits/sec, 205944 bytes/sec, 283
frames/sec 5 minutes output rate 845624 bits/sec, 105703 bytes/sec, 188 frames/sec 1867680
frames input, 1361393600 bytes 0 discards, 0 errors 0 CRC, 0 unknown class 0 too long, 0 too
short 1241179 frames output, 694505284 bytes 0 discards, 0 errors 0 input OLS, 0 LRR, 0 NOS, 2
```

```

loop inits 0 output OLS, 0 LRR, 0 NOS, 2 loop inits MDS9216# show fcns data vsan 13 VSAN 13: ---
----- FCID TYPE PWWN (VENDOR)
FC4-TYPE:FEATURE -----
0x6600dc NL 21:00:00:20:37:15:a2:49 (Seagate) scsi-fcp:target 0x6600e0 NL
21:00:00:04:cf:6e:4a:8c (Seagate) scsi-fcp:target 0x6600e1 NL 21:00:00:04:cf:6e:37:8b (Seagate)
scsi-fcp:target 0x660101 NL 10:00:00:01:73:00:81:82 (JNI) Total number of entries = 4 MDS9216#
show span session brief ----- Session Admin
Oper Destination State State Interface -----
1 no suspend active fc1/15 MDS9216# show span session 1 Session 1 (active) Destination is fc1/15
No session filters configured Ingress (rx) sources are fc1/16, Egress (tx) sources are fc1/16,
MDS9216# show span internal info session 1 ===== Admin
Configuration for session [1] ===== Name: Destination port:
[100e000] [fc1/15] Flags [1] State: [0] not suspended Session Flags: [0] <> Session Filter rx:
none Session Filter tx: none Source interface - rx: fc1/16 Source interface - tx: fc1/16 Source
vsan (rx): none Session [1] is UNLOCKED txn[0] cfg[0] rid[80000000]
===== Runtime Data for session [1]
===== Status <active: 0 inactive 1> : [0] active State reason:[0]
Flags [6]rx_span_bit [0] tx_span_bit[1] ( 4s invalid) oper configured PHYSICAL ports fc1/16
PHYSICAL ports undergoing configuration none PHYSICAL ports in error state none PHYSICAL ports
(incl. dest) link status fc1/15, fc1/16

```

[配置远程SPAN的](#)

注意：目的是收集—当FC分析器附加到9509—FC帧到/从在9216的主机。ST接口必须有(GBIC)安装的千兆位接口转换器，并且速度必须匹配9509的间距目的地(SD)端口。

在您尝试配置RSPAN前，请保证这些点寻址：

- 所有交换机一定运行MD代码1.2或以上。
- 不应该附加电缆到小的尺寸可插入的(SFP)在间距终端(ST)端口。
- 确保FC通道是UP，在您开始收集帧前。
- FC分析器可以是PAA和运行Ethereal的PC，类似于Finisar设备。

如果有在SPAN来源和SPAN目的地交换机之间的任何中间交换机，请遵从此步骤：

1. 创建在相同子网的一个活动VSAN接口作为隧道源及目的地。
2. 启用IP路由。
3. 启用FC隧道。
4. 请使用SAN-OS 1.2或以上。

[MDS9216配置](#)

```

MDS9216# show version Cisco Storage Area Networking Operating System (SAN-OS) Software TAC
support: http://www.cisco.com/tac Copyright (c) 2002-2003 by Cisco Systems, Inc. All rights
reserved. The copyright for certain works contained herein are owned by Andiamo Systems, Inc.
and/or other third parties and are used and distributed under license. Software BIOS: version
1.0.7 loader: version 1.0(3a) kickstart: version 1.2(1) [build 1.2(0.77)] [gdb] system: version
1.2(1) [build 1.2(0.77)] [gdb] BIOS compile time: 03/20/03 kickstart image file is:
bootflash:/m9200-ek9-kickstart-mzg.1.2.0.77.bin kickstart compile time: 6/29/2003 0:00:00 system
image file is: bootflash:/m9200-ek9-mzg.1.2.0.77.bin system compile time: 6/29/2003 0:00:00
Hardware RAM 963108 kB bootflash: 503808 blocks (block size 512b) slot0: 0 blocks (block size
512b) MDS9216 uptime is 0 days 21 hours 28 minute(s) 20 second(s) Last reset at 50030 usecs
after Thu Jul 3 13:09:31 2003 Reason: Reset Requested by CLI command reload System version:
1.2(0.45c) MDS9216# show run Building Configuration ... interface fc-tunnel 13 destination
10.0.0.2 source 10.0.0.1 no shutdown vsan database vsan 13 interface vsan13 ip address 10.0.0.1
255.255.255.0 no shutdown vsan 13 interface fc1/16 vsan 13 interface fc2/16 boot system
bootflash:/m9200-ek9-mzg.1.2.0.77.bin boot kickstart bootflash:/m9200-ek9-kickstart-
mzg.1.2.0.77.bin fc-tunnel enable ip routing zone default-zone permit vsan 13 interface fc1/12
no shutdown interface fc1/15 switchport mode ST switchport speed 1000 rspan-tunnel interface fc-

```

tunnel 13 no shutdown interface fc1/16 no shutdown interface fc2/16 no shutdown interface mgmt0
ip address 172.18.172.56 255.255.255.0 span session 1 destination interface fc-tunnel 13 source
interface fc1/16 rx source interface fc1/16 tx !--- Output suppressed.

[MDS9216显示](#)

```
MDS9216# show interface fc 1/16 fc1/16 is up Hardware is Fibre Channel Port WWN is
20:10:00:05:30:00:47:9e Admin port mode is auto, trunk mode is on Port mode is FL, FCID is
0x660100 Port vsan is 13 Speed is 2 Gbps Transmit B2B Credit is 0 Receive B2B Credit is 16
Receive data field Size is 2112 Beacon is turned off 5 minutes input rate 1480080 bits/sec,
185010 bytes/sec, 331 frames/sec 5 minutes output rate 2907712 bits/sec, 363464 bytes/sec, 498
frames/sec 574444 frames input, 320246452 bytes 0 discards, 0 errors 0 CRC, 0 unknown class 0
too long, 0 too short 865170 frames output, 629303788 bytes 0 discards, 0 errors 0 input OLS, 0
LRR, 0 NOS, 10 loop inits 5 output OLS, 0 LRR, 5 NOS, 9 loop inits MDS9216# show interface fc
2/16 fc2/16 is up Hardware is Fibre Channel Port WWN is 20:50:00:05:30:00:47:9e Admin port mode
is FX Port mode is FL, FCID is 0x660000 Port vsan is 13 Speed is 1 Gbps Transmit B2B Credit is 0
Receive B2B Credit is 12 Receive data field Size is 2112 Beacon is turned off 5 minutes input
rate 2905056 bits/sec, 363132 bytes/sec, 498 frames/sec 5 minutes output rate 1480184 bits/sec,
185023 bytes/sec, 330 frames/sec 867932 frames input, 632889576 bytes 0 discards, 0 errors 0
CRC, 0 unknown class 0 too long, 0 too short 576681 frames output, 322771132 bytes 0 discards, 0
errors 0 input OLS, 0 LRR, 0 NOS, 2 loop inits 0 output OLS, 0 LRR, 0 NOS, 2 loop inits MDS9216#
show interface fc 1/15 fc1/15 is up Hardware is Fibre Channel Port WWN is
20:0f:00:05:30:00:47:9e Admin port mode is ST Port mode is ST Port vsan is 1 Speed is 1 Gbps
Rspan tunnel is fc-tunnel 13 Beacon is turned off 5 minutes input rate 4391896 bits/sec, 548987
bytes/sec, 827 frames/sec 5 minutes output rate 4391896 bits/sec, 548987 bytes/sec, 820
frames/sec 1431232 frames input, 941079708 bytes 0 discards, 0 errors 0 CRC, 0 unknown class 0
too long, 0 too short 1406853 frames output, 941079708 bytes 0 discards, 0 errors 0 input OLS, 0
LRR, 0 NOS, 0 loop inits 0 output OLS, 0 LRR, 0 NOS, 0 loop inits MDS9216# show interface fc
1/12 fc1/12 is trunking Hardware is Fibre Channel Port WWN is 20:0c:00:05:30:00:47:9e Peer port
WWN is 20:5d:00:05:30:00:51:1e Admin port mode is auto, trunk mode is on Port mode is TE Port
vsan is 1 Speed is 2 Gbps Transmit B2B Credit is 12 Receive B2B Credit is 255 Receive data field
Size is 2112 Beacon is turned off Trunk vsans (admin allowed and active) (1-5,13,20,777) Trunk
vsans (up) (1,13) Trunk vsans (isolated) (2-5,20,777) Trunk vsans (initializing) () 5 minutes
input rate 384 bits/sec, 48 bytes/sec, 0 frames/sec 5 minutes output rate 4458296 bits/sec,
557287 bytes/sec, 827 frames/sec 19865 frames input, 2220112 bytes 0 discards, 0 errors 0 CRC, 0
unknown class 0 too long, 0 too short 1468709 frames output, 971064244 bytes 0 discards, 0
errors 0 input OLS, 2 LRR, 0 NOS, 0 loop inits 2 output OLS, 2 LRR, 0 NOS, 2 loop inits MDS9216#
show interface fc-tunnel 13 fc-tunnel 13 is up Dest IP Addr: 10.0.0.2 Tunnel ID: 13 Source IP
Addr: 10.0.0.1 LSP ID: 1 Explicit Path Name: Outgoing interface: fc1/12 Outgoing Label(s) to
Insert: 10005:0:1:ff'h Record Routes: 10.0.0.2 MDS9216# show interface vsan 13 vsan13 is up,
line protocol is up WWPN is 10:00:00:05:30:00:47:9f, FCID is 0x660201 Internet address is
10.0.0.1/24 MTU 1500 bytes, BW 1000000 Kbit 2207 packets input, 170332 bytes, 0 errors, 0
multicast 14952 packets output, 2225444 bytes, 0 errors, 0 dropped MDS9216# show span session 1
Session 1 (active) Destination is fc-tunnel 13 No session filters configured Ingress (rx)
sources are fc1/16, Egress (tx) sources are fc1/16, MDS9216# show fc-tunnel internal states
number of sessions : 1 Sess: 10.0.0.2 Tunnel-ID 13 Ext-Tunnel-ID 10.0.0.1 MDS9216# show fc-
tunnel internal data vsan interfaces: vsan 13: 10.0.0.1/255.255.255.0 [2] vsan 2:
15.0.0.4/255.255.255.0 [2] next hop switch information: 10.0.0.2 {vsan (13), 0x6b0001/8}: [4]
fc1/12 layer 2 interfaces: fc1/12: Trunking, Up
```

[MDS9509配置](#)

```
RTP-9509-1# show run Building Configuration ... vsan database vsan 13 interface vsan13 ip
address 10.0.0.2 255.255.255.0 no shutdown vsan 13 interface fc2/16 boot system
bootflash:/m9500-sflek9-mzg.1.2.0.77.bin sup-1 boot kickstart bootflash:/m9500-sflek9-kickstart-
mzg.1.2.0.77.bin sup-1 boot system bootflash:/m9500-sflek9-mzg.1.2.0.77.bin sup-2 boot kickstart
bootflash:/m9500-sflek9-kickstart-mzg.1.2.0.77.bin sup-2 fc-tunnel enable fc-tunnel tunnel-id-
map 13 interface fc2/6 ip routing switchname RTP-9509-1 interface fc2/6 switchport mode SD
switchport speed 1000 no shutdown interface fc2/29 switchport mode E no shutdown interface mgmt0
ip address 172.18.172.57 255.255.255.0
```

[MDS9509显示](#)

```

RTP-9509-1# show interface fc 2/29 fc2/29 is trunking Hardware is Fibre Channel Port WWN is
20:5d:00:05:30:00:51:1e Peer port WWN is 20:0c:00:05:30:00:47:9e Admin port mode is E, trunk
mode is on Port mode is TE Port vsan is 501 Speed is 2 Gbps Transmit B2B Credit is 255 Receive
B2B Credit is 12 Receive data field Size is 2112 Beacon is turned off Trunk vsans (admin allowed
and active) (1,13,86,100,501) Trunk vsans (up) (1,13) Trunk vsans (isolated) (86,100,501) Trunk
vsans (initializing) ( ) 5 minutes input rate 4497752 bits/sec, 562219 bytes/sec, 835 frames/sec
5 minutes output rate 344 bits/sec, 43 bytes/sec, 0 frames/sec 1934604 frames input, 1285716656
bytes 0 discards, 0 errors 0 CRC, 0 unknown class 0 too long, 0 too short 16903 frames output,
932076 bytes 0 discards, 0 errors 1 input OLS, 1 LRR, 2 NOS, 0 loop inits 3 output OLS, 1 LRR, 2
NOS, 0 loop inits RTP-9509-1# show interface fc 2/6 fc2/6 is up Hardware is Fibre Channel Port
WWN is 20:46:00:05:30:00:51:1e Admin port mode is SD Port mode is SD Port vsan is 1 Speed is 1
Gbps Beacon is turned off 5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec 5 minutes
output rate 4421448 bits/sec, 552681 bytes/sec, 835 frames/sec 0 frames input, 0 bytes 0
discards, 0 errors 0 CRC, 0 unknown class 0 too long, 0 too short 1912319 frames output,
1263982444 bytes 0 discards, 0 errors 0 input OLS, 0 LRR, 0 NOS, 0 loop inits 0 output OLS, 0
LRR, 0 NOS, 0 loop inits RTP-9509-1# show interface fc-tunnel 13 ^ % invalid interface range
detected at '^' marker. !--- This is because the tunnel is not defined on the 9509. RTP-9509-1#
show interface vsan 13 vsan13 is up, line protocol is up WWPN is 10:00:00:05:30:00:51:23, FCID
is 0x6b0001 Internet address is 10.0.0.2/24 MTU 1500 bytes, BW 1000000 Kbit 15071 packets input,
2243728 bytes, 0 errors, 1 multicast 2342 packets output, 185864 bytes, 0 errors, 0 dropped RTP-
9509-1# show fc-tunnel tunnel-id-map tunnel id egress interface 13 fc2/6 14 RTP-9509-1# show fc-
tunnel internal states number of sessions : 1 Sess: 10.0.0.2 Tunnel-ID 13 Ext-Tunnel-ID 10.0.0.1
RTP-9509-1# show fc-tunnel internal data vsan interfaces: vsan 13: 10.0.0.2/255.255.255.0 [2]
next hop switch information: layer 2 interfaces: fc2/6: Non-Trunking, Up

```

端口分析程序适配器设备的笔记

以太网端口是铜的，并且有自动查出速度1 Gbps或100 Mbps。在PC必须安装Ethereal 0.9(9)或以后和WinPcap。

FC端口要求SFP和一个LC到LC电缆附件的对MD。

这些是在PAA的交换机设置：

- 交换机位置从左到右第1，2，3和4。
 - 在下列表中，1表明DIP开关开或向上。0指示DIP开关下降或OFF。0001 1G NTM
- ```

1001 1G ETM
0101 1G STM
0011 1G DTM

0000 2G NTM
1000 2G ETM
0100 2G STM
0010 2G DTM

1111 1G MNM
!--- Used for diagnostics only.

```

- Switch4指明速度(在= 1G，= 2G)。交换机1，2和3个命令截断的模式。所有更改要求重新通电。

这些是模式：

- 没有截断的模式(NTM) — FC帧通过，不用任何修改。
- 以太网截断的模式(ETM) —使从528条线路的有效负载大小降低到368条线路，对削FC帧对最多1496个字节。
- 浅截断的模式(STM) —使从528条线路的有效负载大小降低到58条线路，对削FC帧对最多256个字节。
- 深刻的截断的模式(DTM) —使从528条线路的有效负载大小降低到10条线路，对削FC帧对最多64个字节。



## 验证

当前没有可用于此配置的验证过程。

## 故障排除

目前没有针对此配置的故障排除信息。

## 相关信息

- [MDS 9000多层交换机硬件支持](#)
- [存储联网产品技术支持](#)
- [技术支持 - Cisco Systems](#)