Exemplo de Configuração do Analisador FC e do SPAN para Switches MDS

Contents

Introduction

Semelhante ao recurso de depuração da linha de produtos do roteador Cisco, os switches de armazenamento Cisco MDS têm um analisador Fibre Channel (FC) para examinar pacotes. O analisador de FC examina pacotes de e para as entidades que o switch fornece. O analisador de FC é capaz de depurar quadros que o switch é responsável por receber ou enviar para um dispositivo de armazenamento. Os quadros entre estações finais não podem ser examinados pelo analisador FC.

Para examinar o fluxo da sessão, deve ser usada a funcionalidade do Switched Port Analyzer (SPAN) dos switches MDS. Assim como a função de SPAN em um switch Cisco Ethernet, o SPAN na linha de produtos MDS replica dados em portas de destino de SPAN, para que possam ser coletados por um dispositivo de terceiros.

Prerequisites

Requirements

Não existem requisitos específicos para este documento.

Componentes Utilizados

As informações neste documento são baseadas nestas versões de software e hardware:

- Switch Cisco MDS 9216
- Switch Cisco MDS 9509
- Ambos executam o Storage Area Networking Operating System (SAN-OS) 1.2.1a.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

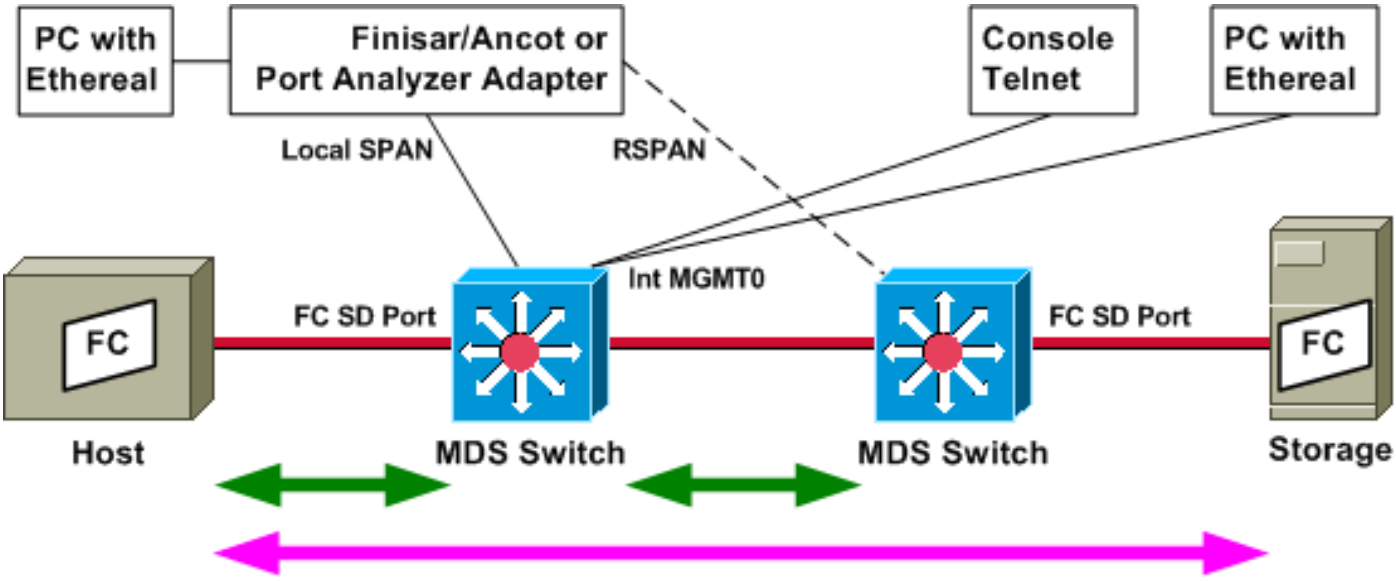
Material de Suporte

Você deve saber quando usar a ferramenta analisador FC e quando usar o recurso SPAN.

O analisador de FC é uma ferramenta que coleta quadros destinados ou originados do supervisor MDS. O tráfego de nó para switch ou de switch para switch pode ser visto com essa ferramenta.

O SPAN é um recurso que permite que quadros que são transitórios para o switch sejam copiados para uma segunda porta para análise. O tráfego de nó para nó pode ser visto com este método.

Consulte este diagrama para obter uma ilustração:



As setas verdes mostram o tráfego que pode ser rastreado com a ferramenta analisador FC, enquanto a seta rosa mostra o tráfego que pode ser capturado com o método SPAN. O tráfego do host para o armazenamento não pode ser observado pelo analisador FC. Somente o tráfego do host para o switch ou do switch à direita pode ser visto quando você executa o analisador FC no switch à esquerda.

O SPAN pode ser usado para rastrear o tráfego de entrada (entrada) e saída (saída) de qualquer porta no switch. A SPAN remota (RSPAN), como mostrado no diagrama anterior, pode ser usada para coletar quadros dentro e fora da porta do host no switch esquerdo, com o analisador

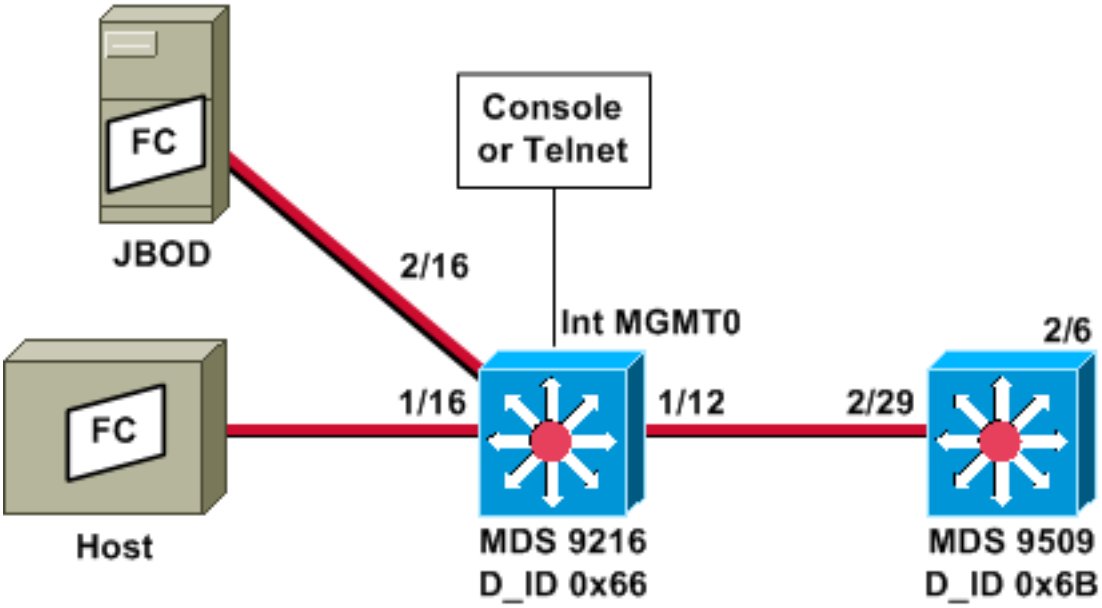
conectado ao switch do lado direito.

Configurar

Nesta seção, você encontrará informações para configurar os recursos descritos neste documento.

Observação: para encontrar informações adicionais sobre os comandos usados neste documento, use a ferramenta Command Lookup Tool (somente clientes registrados).

Configurando o analisador de FC local



Observação: a intenção é coletar quadros FC originados ou destinados ao supervisor 9612. Os quadros do host para o JBOD *não* são coletados com a ferramenta analisador FC.

O local do analisador FC é executado a partir da interface de linha de comando (CLI) através do anexo do console ou Telnet. Você pode executar uma breve exibição para mostrar apenas uma pequena parte de cada quadro ou pode executar um rastreamento detalhado para mostrar o quadro inteiro.

O rastreamento é iniciado no modo de configuração e é interrompido quando você pressiona **Ctrl-C**. Por padrão, somente 100 quadros são capturados. Para capturar mais de 100 quadros, adicione a opção de comando **limit-captured-frames** ao comando que você usa para iniciar o rastreamento.

Você também pode usar um filtro de exibição para limitar a saída do rastreamento somente a quadros específicos.

```
!--- VSAN 13 (0xd) is used here as example. MDS9216# show fcdomain domain-list vsan 13

Number of domains: 2
Domain ID              WWN
---------    -----------------------
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
```

No próximo exemplo, você tem os mesmos dados. Desta vez, no entanto, a **breve** opção é omitida do comando para fornecer uma visão detalhada de cada pacote.

```
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/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
        .... 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
```

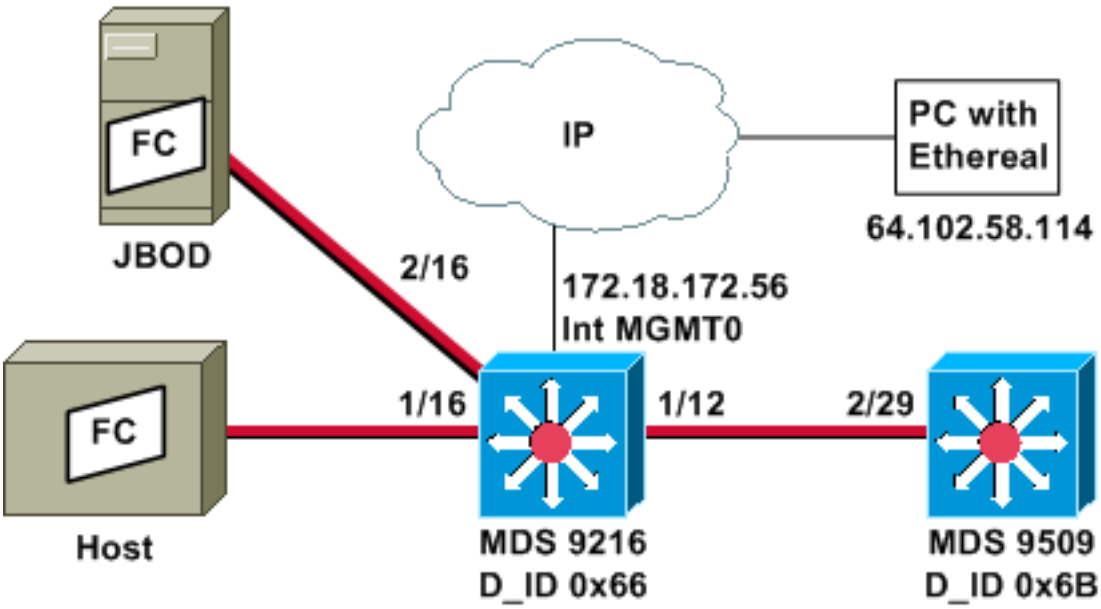
```
    Cmd Code: HLO (0x14)
    FSPF Header
        Version: 0x02
        AR Number: 0x00
        Authentication Type: 0x00
        Originating Domain ID: 107
        Authentication: 0000000000000000
    Options: 00000000
    Hello Interval (secs): 20
    Dead Interval (secs): 80
    Recipient Domain 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: 0x000b
        .... ..00 1111 1111 = Src Index: 0x00ff
        Ctrl Bits: Index Directed frame (0x01)
        Timestamp: 42778
        .... .000 = 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
```

Novamente, o breve rastreamento é mostrado. Desta vez, no entanto, o PC na porta 1/16 é desconectado e reconectado para forçar o login. Você vê quadros de e para o outro switch FC e para e do nó local conectado (o 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
```

Configurando o Remote FC Analyzer



Observação: a intenção é coletar quadros FC originados ou destinados ao supervisor 9612. Os quadros do host para o JBOD *não* são coletados com a ferramenta analisador FC.

O controle remoto do analisador FC é executado em um PC que esteja usando Ethereal 0.9(9) ou mais recente e WinPcap . O endereço IP do PC é especificado no comando emitido para iniciar o rastreamento do analisador FC na CLI MDS. No PC, Ethereal também deve ser iniciado a partir da linha de comando e o endereço IP da interface de gerenciamento MDS deve ser especificado no comando.

1. Para interromper o rastreamento do analisador MDS FC, você deve pressionar **Ctrl-C** a partir da CLI.

```
MDS9216# config t

Enter configuration commands, one per line.  End with CNTL/Z.

MDS9216(config)# fcanalyzer remote 64.102.58.114
```

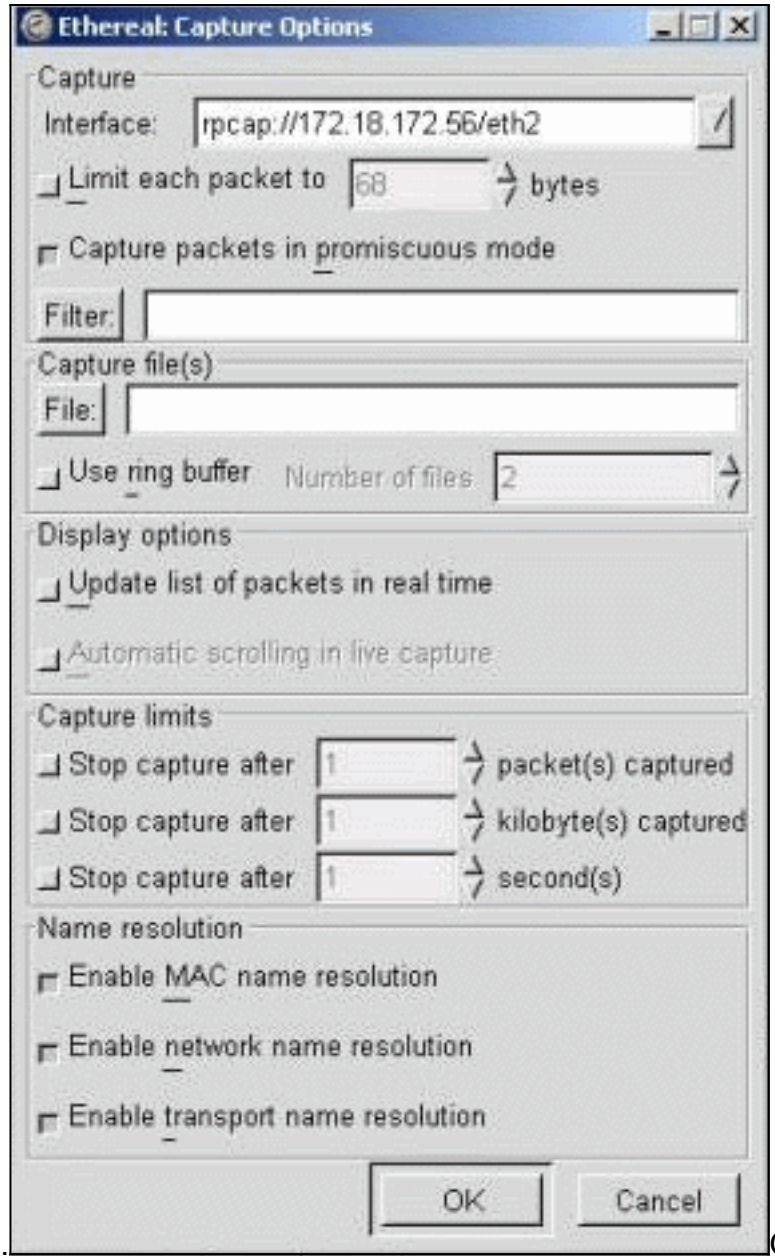
```
MDS9216(config)# ^C
```

Não especifique a opção **ativa** no comando anterior, ou você precisará adicionar opções adicionais à linha de comando em seu PC quando iniciar o Ethernet. Adicionar a palavra-chave **ativa** geralmente significa que você também precisa configurar o número da porta TCP. Recomenda-se que você use os padrões.

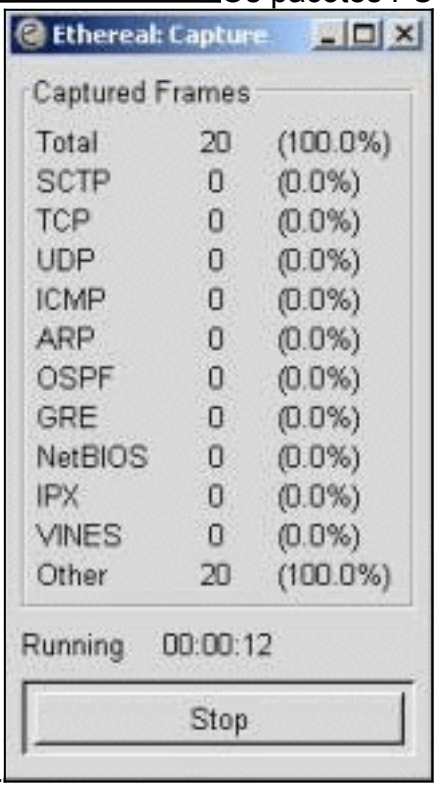
2. No PC, verifique o endereço IP e inicie o programa de captura remota Ethernet.

```
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. Quando o programa iniciar, escolha **Capture** e clique em **OK** para iniciar a coleta de

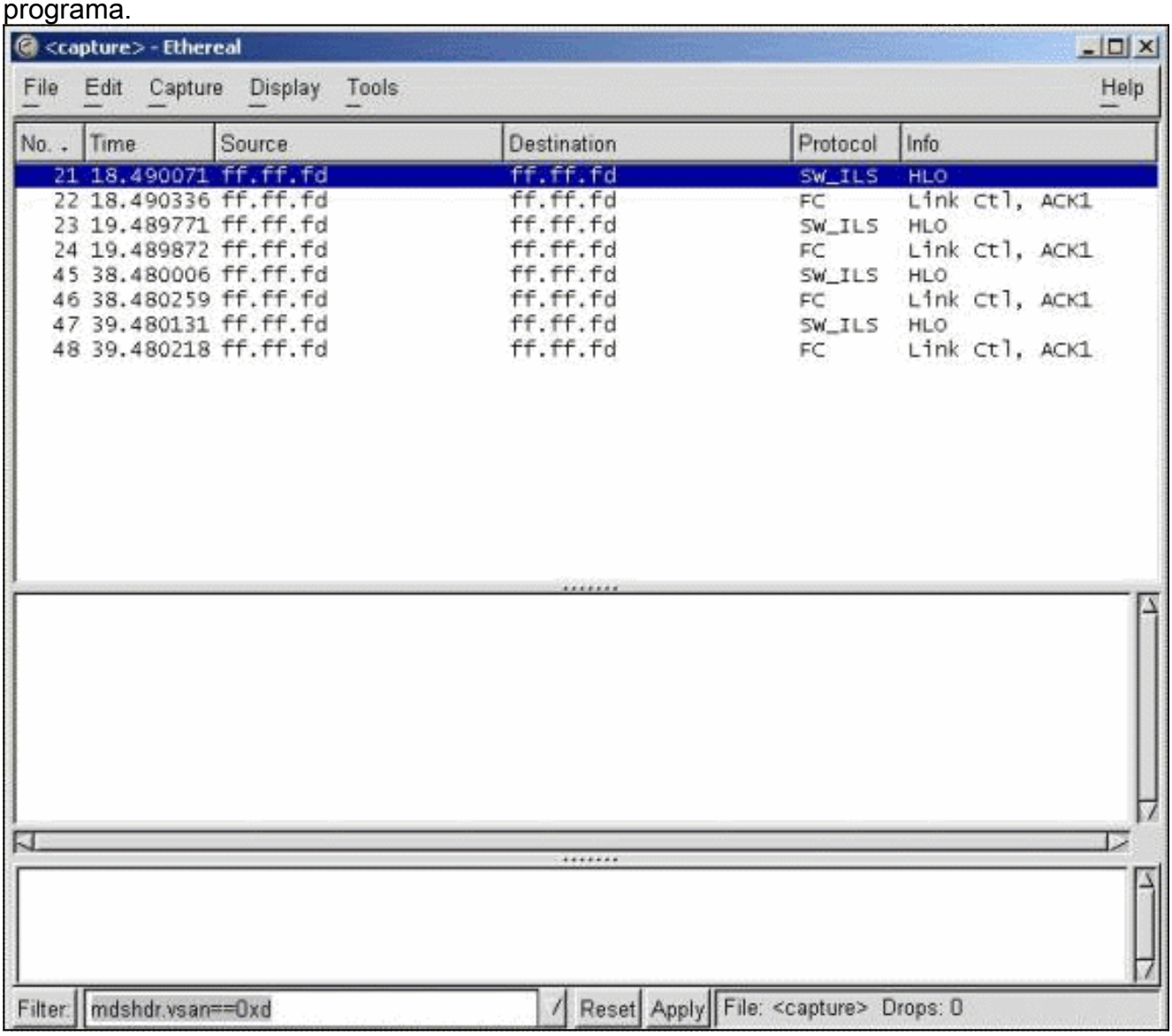


pacotes. Os pacotes FC coletados



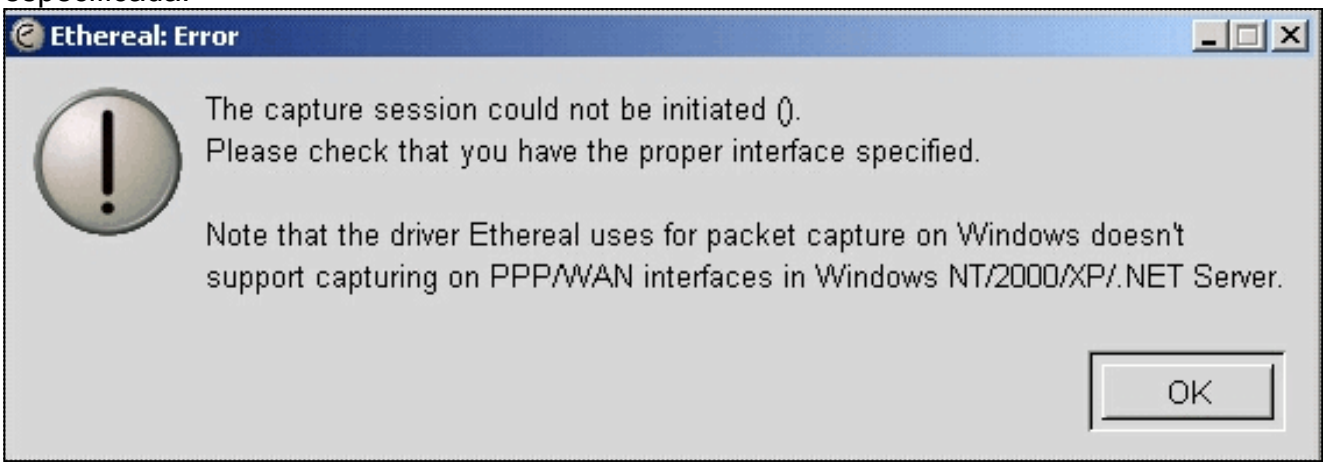
aparecem como `Outros` na exibição de resumo.

4. Clique em **Parar** para interromper a coleta de pacotes e iniciar a parte da exibição de rastreamento do programa.

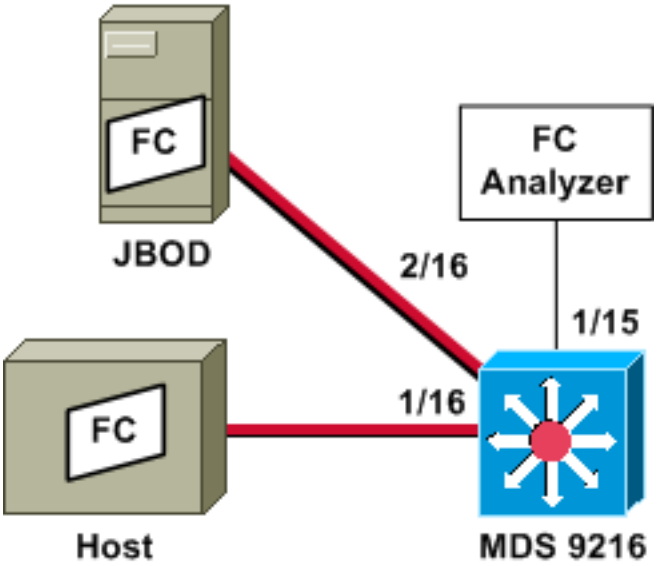


Você pode usar filtros para limitar a exibição a um fluxo de tráfego específico.

5. Se houver um problema com a iniciação da captura remota, você poderá ver uma tela de erro semelhante à da próxima imagem. O analisador FC não está ativo no MDS ou a palavra-chave **ativa** foi usada sem uma porta especificada.



Configurando para SPAN local



Observação: o objetivo é coletar quadros FC—com o analisador FC na porta 1/15—FC de e para o host na porta 1/16 do 9216.

Um analisador de FC na porta 1/15 mostra conjuntos ordenados, mas não os conjuntos ordenados que ocorrem no link que está sendo SPANed. O dispositivo analisador FC pode ser um Adaptador analisador de portas (PAA - Port Analyzer Adapter) e um PC que esteja executando o Ethereal, semelhante a um dispositivo Finisar.

Configuração do MDS 9216

```
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
```

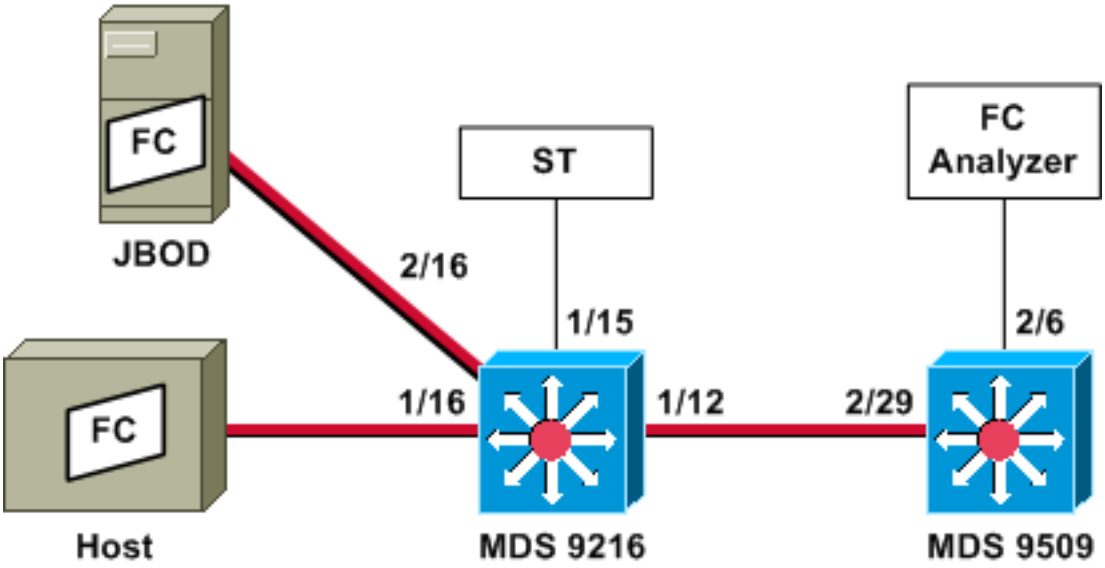
Exibições do MDS 9216

```
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
```

Configuração de SPAN remoto



Observação: a intenção é coletar—com o analisador FC conectado aos quadros 9509—FC de e para o host no 9216. A interface ST deve ter um conversor de interface Gigabit (GBIC - Gigabit Interface Converter) instalado e a velocidade deve corresponder à porta de destino de expansão (SD - Span Destination) no 9509.

Antes de tentar configurar o RSPAN, certifique-se de que estes pontos sejam abordados:

- Todos os switches devem estar executando o código MDS 1.2 ou posterior.
- Nenhum cabo deve ser conectado à SFP (Small Form Fator Pluggable) na porta do Terminal de Abrangência (ST).
- Certifique-se de que o túnel FC esteja UP antes de começar a coletar quadros.
- O analisador de FC pode ser um PAA e um PC que esteja executando Ethereal, semelhante a um dispositivo Finisar.

Se houver algum switch intermediário entre a origem de SPAN e o switch de destino de SPAN, siga este procedimento:

1. Crie uma interface VSAN ativa na mesma sub-rede que a origem e o destino do túnel.
2. Ative o roteamento IP.
3. Ative o encapsulamento FC.
4. Usar SAN-OS 1.2 ou posterior.

Configuração do MDS 9216

```
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.
```

Exibições do MDS 9216

```
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
```

Configuração do MDS 9509

```
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-sf1ek9-mzg.1.2.0.77.bin sup-1
boot kickstart bootflash:/m9500-sf1ek9-kickstart-mzg.1.2.0.77.bin sup-1
boot system bootflash:/m9500-sf1ek9-mzg.1.2.0.77.bin sup-2
boot kickstart bootflash:/m9500-sf1ek9-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
```

Exibições do MDS 9509

```
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
```

Notas para dispositivos de adaptador do analisador de porta

A porta Ethernet é de cobre e detecta automaticamente velocidades de 1 Gbps ou 100 Mbps. Ethereal 0.9(9) ou posterior e WinPcap devem ser instalados no PC.

A porta FC requer um SFP e um cabo LC-to-LC para conexão ao MDS.

Estas são as configurações do switch no PAA:

- As posições do switch são numeradas de 1, 2, 3 e 4 da esquerda para a direita.
- Na próxima lista, um `1` indica que o interruptor dip está LIGADO ou UP. A `0` indica que o interruptor dip está desativado ou desligado.

```
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.
```

- O switch 4 determina a velocidade (on = 1G, off = 2G). Os switches 1, 2 e 3 ditam o modo de truncamento. Qualquer alteração exige um ciclo de energia.

Estes são os modos:

- No Truncate Mode (NTM)—Os quadros FC são passados sem nenhuma modificação.
- Ethernet Truncate Mode (ETM)—Reduz o tamanho da carga útil de 528 linhas para 368 linhas, para truncar o quadro FC para um máximo de 1.496 bytes.
- Shallow Truncate Mode (STM)—Reduz o tamanho da carga útil de 528 linhas para 58 linhas, para truncar o quadro FC para um máximo de 256 bytes.
- Deep Truncate Mode (DTM)—Reduz o tamanho da carga útil de 528 linhas para 10 linhas, para truncar o quadro FC para um máximo de 64 bytes.

Verificar

No momento, não há procedimento de verificação disponível para esta configuração.

Troubleshoot

Atualmente, não existem informações disponíveis específicas sobre Troubleshooting para esta configuração.

Informações Relacionadas

- Suporte de hardware para switches multicamada MDS 9000
- Suporte a produtos de rede de armazenamento
- Suporte Técnico - Cisco Systems