

Configuração básica de MDS para MDS com FCIP

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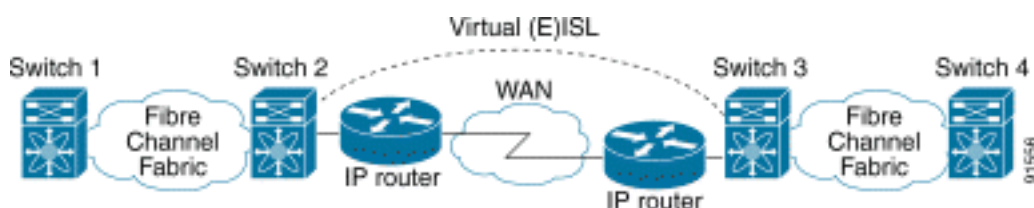
[Introduction](#)

Este documento fornece uma configuração de exemplo para a conexão básica do Fibre Channel Over TCP/IP (FCIP) Multilayer Director Switch (MDS) ao MDS.

Essa configuração de exemplo é relevante para as versões 1.2 e 1.3 do SAN-OS. Alguns parâmetros mudam na versão 2.0 do SAN-OS. Consulte o guia de configuração do SAN-OS 2.0 e as notas de versão.

O FCIP descreve os mecanismos que permitem a interconexão de ilhas de SANs (Storage Area Networks, redes de armazenamento) Fibre Channel (FC) em redes baseadas em IP para formar uma SAN unificada em uma única malha FC. O FCIP depende de serviços de rede baseados em IP para fornecer a conectividade entre as ilhas de SAN através de redes locais, redes de área metropolitana ou redes de longa distância.

SANs Fibre Channel conectadas por FCIP



O FCIP usa o Transmission Control Protocol (TCP) na porta 3225 como um transporte da camada de rede.

Prerequisites

Requirements

O backbone IP deve estar operacional e oferecer a largura de banda necessária para suportar os aplicativos executados nos enlaces FCIP - pode ser uma topologia de Camada 2 (L2) ou Camada 3 (L3). Se L3, os roteadores intermediários ou switches multicamada devem ser configurados e configurados para encaminhar o tráfego IP entre os endereços IP origem e destino dos túneis FCIP de forma adequada. Se a Qualidade de Serviço (QoS - Quality of Service) ou a modelagem de tráfego for aplicada em qualquer dispositivo de rede no caminho entre os correspondentes FCIP, o gerente de rede que administra a infraestrutura IP deve ser consultado para obter os detalhes necessários antes de configurar quaisquer parâmetros e recursos relacionados ao TCP no(s) perfil(s) MDS FCIP .

Componentes Utilizados

As informações deste documento são baseadas nas seguintes versões de software e de hardware:

- MDS 9509 com módulo de serviço IPS (IP Storage, armazenamento IP) (DS-X9308-SMIP) executando a versão 1.2.(2a)
- MDS 9216 com módulo de serviço IPS (DS-X9308-SMIP) executando a versão 1.2.(2a)
- Win2003 Server (HPQ Pro-Liant-P4) com Emulex LP9K HBA
- IBM Storage Array (ESS-2105-F20)

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](#).

Informações de Apoio

O FCIP consiste nas seguintes especificações:

ANSI T11

1. FC-SW-2 descreve a operação e a interação de switches FC, incluindo E_Port e operação de estrutura.
2. FC-BB-2 é um mapeamento que diz respeito à extensão de redes comutadas FC através de um backbone de rede TCP e define modelos de referência que suportam E_Port e B_Port.

Grupo de Trabalho IPS IETF

1. FC sobre TCP cobre os requisitos de TCP/IP para transportar quadros FC através de uma rede IP.

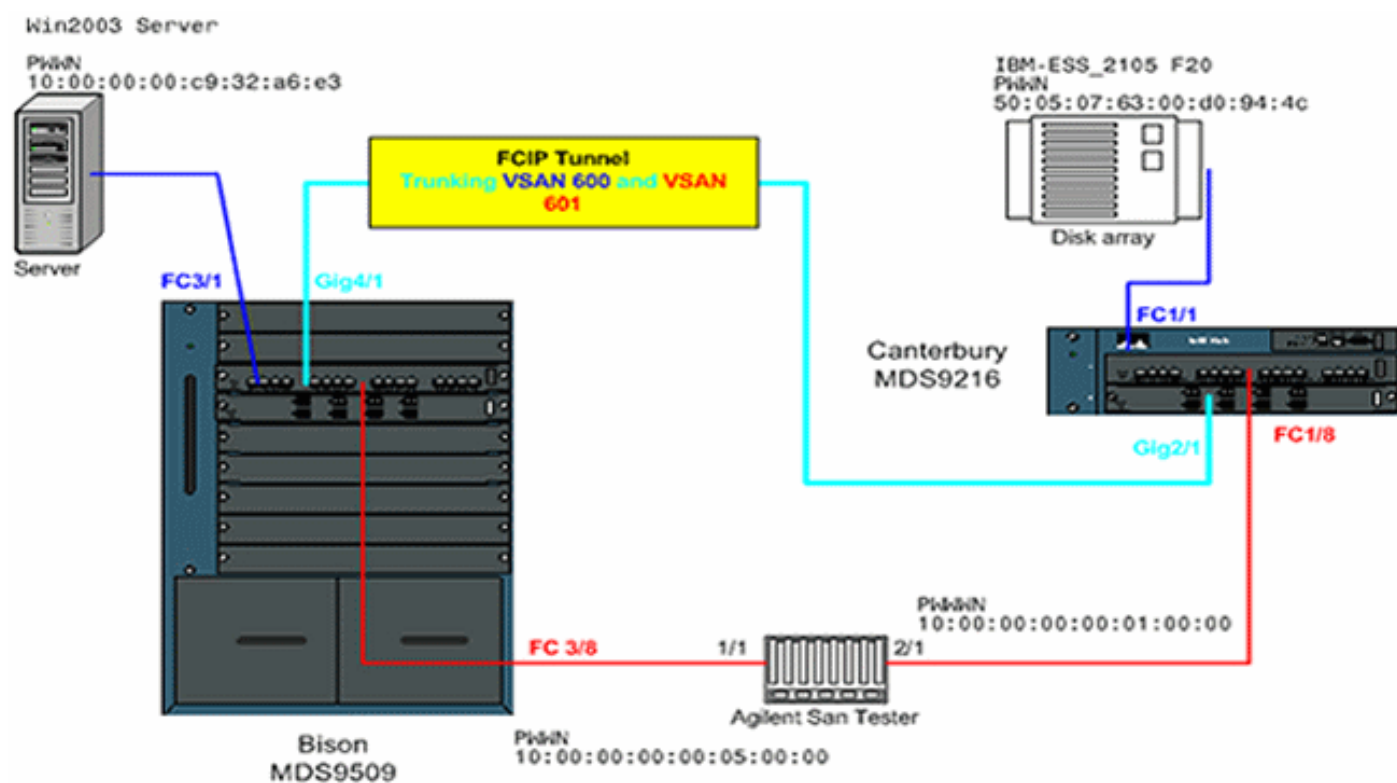
2. O encapsulamento de quadro FC define o formato comum de encapsulamento de fibra. Uma interconexão entre dois switches SAN ou malhas em FCIP é chamada de link FCIP e pode conter uma ou mais conexões TCP. Cada extremidade de um link FCIP é associada a uma porta E virtual (VE_port) ou a uma porta B_port, dependendo da implementação. FC-BB e FC-BB-2 estão descrevendo as diferenças entre as duas abordagens. O módulo de Serviços IP (DS-X9308-SMIP) suporta ambos os modos, mas assume como padrão o VE_Port, que também é o modo recomendado para ser executado se todos os correspondentes relevantes forem módulos DS-X9308-SMIP. A funcionalidade VE_Port em plataformas MDS também suporta a funcionalidade de porta TE, o que a torna capaz de truncar o tráfego de várias VSANs em uma instância FCIP.

Configurar

No MDS, você precisa se familiarizar com os guias de configuração do IPS para ambas as plataformas. A versão mais recente do manual é [Configuração do armazenamento IP](#).

Diagrama de Rede

Este documento utiliza a instalação de rede mostrada no diagrama abaixo.



Topology 1 - FCIP tunnel 1Gbps Back-to-back



Este diagrama mostra uma configuração típica de laboratório em que nenhum equipamento de rede adicional está conectado entre as interfaces Gigabit Ethernet (GE) de ambos os switches

MDS. Essa é a forma mais simples de uma instalação de FCIP MDS e é normalmente usada em laboratórios de clientes para verificar a funcionalidade básica. No VSAN 600, o HBA Emulex LightPulse 9000 conecta o servidor Windows 2003 ao MDS9509 chamado Bison e um storage Array IBM conectado ao MDS9216 chamado Canterbury, onde os LUNs para o servidor Windows 2003 são configurados.

O dispositivo de teste de SAN da Agilent é usado como um emulador para preencher o VSAN 601 com dois dispositivos, bem como para gerar tráfego substancial de segundo plano FC-2 não-FCP. Esse equipamento periférico é adicionado para tornar a configuração mais realista e para ter entradas substanciais no servidor de nomes distribuídos de ambos os switches participantes. O foco deste documento não é a conectividade fim-a-fim e nenhuma captura de tela do servidor ou da matriz de armazenamento está incluída. O equipamento periférico não tem conhecimento sobre o FCIP e se comporta como se o link EISL entre os dois MDSs estivesse sendo executado em um link FC normal.

Configurações

Este documento utiliza as configurações mostradas abaixo.

- [MDS 9509 \(Bison\) com módulo IPS-8](#)
- [MDS 9216 \(Canterbury\) com módulo IPS-8](#)

MDS 9509 (Bison) com módulo IPS-8

```
bison# sh ver
Cisco Storage Area Networking Operating System (SAN-OS)
Software
TAC support: http://www.cisco.com/tac
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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 1.0.8
loader: version 1.2(2)
kickstart: version 1.2(2a)
system: version 1.2(2a)

BIOS compile time: 08/07/03
kickstart image file is: bootflash:/k122a
kickstart compile time: 9/23/2003 11:00:00
system image file is: bootflash:/s122a
system compile time: 10/8/2003 18:00:00

Hardware
RAM 1024584 kB

bootflash: 500736 blocks (block size 512b)
slot0: 0 blocks (block size 512b)

bison uptime is 1 days 15 hours 45 minute(s) 44
```

```

second(s)

Last reset
Reason: Unknown
System version: 1.2(2a)
Service:

bison# sh run

Building Configuration ...
fcip profile 1
ip address 100.100.100.1
!--- FCIP profile 1 is bound to the local relevant IPS
interface. In this !--- example, it is the IP address of
interface Gig4/1. vsan database vsan 600 vsan 601
fcdomain priority 1 vsan 1 fcdomain domain 1 preferred
vsan 1 fcdomain domain 1 preferred vsan 600 fcdomain
domain 1 preferred vsan 601 interface fcip1 no shutdown
switchport trunk allowed vsan 600-601 use-profile 1
peer-info ipaddr 100.100.100.2 !--- Interface FCIP 1 is
configured to act as an EISL port carrying traffic !---
for both VSAN 600 and VSAN 601 across the tunnel. The
FCIP interface, !--- in most respects, is configured
identical then any normal FC interface !--- acting as
ISL or EISL. Bind this interface to FCIP profile 1, and
define !--- the peer-ip address 100.100.100.2, which is
the address of the MDS9216's !--- Gig 2/1 interface in
the example. vsan database vsan 600 interface fc3/1 vsan
601 interface fc3/2 vsan 601 interface fc3/8 vsan 600
interface fc3/16 zone name z-fcip2 vsan 600 member pwwn
50:05:07:63:00:d0:94:4c member pwwn
10:00:00:00:c9:32:a6:e3 zone name Zone_a1 vsan 601
member pwwn 10:00:00:00:00:01:00:00 member pwwn
10:00:00:00:00:05:00:00 zoneset distribute full vsan 600
zoneset name zs-fcip2 vsan 600 member z-fcip2 zoneset
name Agilent_1 vsan 601 member Zone_a1 zoneset activate
name zs-fcip2 vsan 600 zoneset activate name Agilent_1
vsan 601 interface GigabitEthernet4/1 ip address
100.100.100.1 255.255.255.252 no shutdown !--- Note that
Gig4/1 in the default state is configured with an MTU
size of !--- 1500 bytes, if the network topology allows
for larger end-to-end frame !--- sizes known as jumbo
frames. !--- The default value may be changed to a
higher value. A good value is !--- 3000 bytes, because
this would avoid the fragmentation of full 2048 FC !---
frames into multiple TCP segments. Not all networking
equipment can handle !--- jumbo frames, so the default
value of 1500 bytes is a conservative !--- approach to
avoid connectivity issues while bringing up the FCIP
tunnel.

```

MDS 9216 (Canterbury) com módulo IPS-8

```

canterbury# sh ver
Cisco Storage Area Networking Operating System (SAN-OS)
Software
TAC support: http://www.cisco.com/tac
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rights reserved.
The copyright for certain works contained herein are
owned by
Andiamo Systems, Inc. and/or other third parties and
are used and

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distributed under license.

Software

BIOS: version 1.0.8
loader: version 1.2(2)
kickstart: version 1.2(2a)
system: version 1.2(2a)

BIOS compile time: 08/07/03
kickstart image file is: bootflash:/k122a
kickstart compile time: 9/23/2003 11:00:00
system image file is: bootflash:/s122a
system compile time: 10/8/2003 18:00:00

Hardware

RAM 960072 kB

bootflash: 500736 blocks (block size 512b)
slot0: 0 blocks (block size 512b)

canterbury uptime is 6 days 22 hours 35 minute(s) 37 second(s)

Last reset at 995484 usecs after Wed Nov 5 15:05:04 2003
Reason: Reset by installer
System version: 1.2(1a)
Service:

canterbury# **sh run**

Building Configuration ...

fcip profile 1
ip address 100.100.100.2

!--- At this side of the tunnel, choose the same profile number that you !--- used on the peer to make management easier. This is not mandatory, !--- and you can choose another value between 1 and 255. vsan database vsan 600
vsan 601 fcdomain domain 2 preferred vsan 600 fcdomain domain 2 preferred vsan 601 interface fcip1 no shutdown
switchport trunk allowed vsan 600-601 use-profile 1
peer-info ipaddr 100.100.100.1 *!--- FCIP interface 1 is chosen for arbitrary reasons. You can choose another !--- FCIP number and still tunnel to the peer FCIP 1 instance. !--- It is important that you bind the correct profile-id to your FCIP interface !--- of choice. Allow the same VSANS that you allowed on the peer FCIP interface, !--- which is good practice in general for normal EISL trunks. The peer ip-address !--- is the IP address of the MDS9505s interface Gig4/1 !--- in the Network Diagram above.* vsan database vsan 600 interface fc1/1 vsan 601 interface fc1/8 vsan 600 interface fc1/16
zone name z-fcip2 vsan 600 member pwwn
50:05:07:63:00:d0:94:4c member pwwn
10:00:00:00:c9:32:a6:e3 zone default-zone permit vsan 777 zoneset distribute full vsan 600 zoneset name zs-fcip2 vsan 600 member z-fcip2 zoneset activate name zs-fcip2 vsan 600 zoneset activate name Agilent_1 vsan 601 interface GigabitEthernet2/1 ip address 100.100.100.255.255.255.252 no shutdown

Verificar

Esta seção fornece informações que você pode usar para confirmar se sua configuração está funcionando adequadamente.

- **show interface gig x/y**—Exibe o status da interface Gigabit relevante vinculada ao perfil FCIP.
- **show ips stats tcp int gig x/y**—Exibe as estatísticas do TCP e as conexões ativas para a interface Gigabit relevante.
- **show ips arp int gig x/y**—Exibe todas as entradas do Address Resolution Protocol (ARP) para a interface Gigabit relevante; o próximo salto ou peer deve estar presente nesta lista.
- **show ips ip route int gig x/y**—Exibe as rotas específicas que passam pela interface Gigabit relevante.
- **show interface fcip x**— Exibe o status da interface FCIP e todos os detalhes relacionados a este túnel FCIP.
- **show profile fcip x**— Exibe o endereço IP ao qual o perfil está vinculado e todos os parâmetros TCP configurados.
- **show int fcip x counters** —Usado para verificar se há algum quadro passando pelo túnel FCIP.
- **show fcdomain vsan x**— Lista todos os detalhes relacionados ao domínio; usado para verificar se a estrutura é formada através dos túneis FCIP.
- **show fcns da vsan x**— Exibe todos os tipos de pwwn, FC4 e FCIDs da VSAN relevante; usado para verificar se todas as entradas esperadas são distribuídas pelo(s) túnel(s) FCIP.

Troubleshoot

Emita os comandos **show** acima várias vezes para criar um histórico de contadores. Os contadores que não estão relacionados a um ponto no tempo e são coletados apenas uma vez são, em sua maioria, inúteis.

Utilize as configurações mostradas abaixo para mais Troubleshooting.

- [MDS 9509 \(Bison\)](#)
- [MDS 9216 \(Canterbury\)](#)

MDS 9509 (Bison)

```
GigabitEthernet4/1 is up
  Hardware is GigabitEthernet, address is
0005.3000.a85a
  Internet address is 100.100.100.1/30
  MTU 1500 bytes  !...default value
  Port mode is IPS
  Speed is 1 Gbps
  Beacon is turned off
  Auto-Negotiation is turned on
  5 minutes input rate 320 bits/sec, 40 bytes/sec, 0
frames/sec
  5 minutes output rate 312 bits/sec, 39 bytes/sec, 0
frames/sec
  933169199 packets input, 998306879592 bytes
  12 multicast frames, 0 compressed
```

```

    0 input errors, 0 frame, 0 overrun 0 fifo
    337209366 packets output, 214303313560 bytes, 0
underruns
    0 output errors, 0 collisions, 0 fifo
    0 carrier errors

bison# sh ips stats tcp int gig 4/1
TCP Statistics for port GigabitEthernet4/1
  Connection Stats
    272 active openings, 107 accepts
    206 failed attempts, 0 reset received, 163
established
  Segment stats
    932985717 received, 337201993 sent, 7
retransmitted
    0 bad segments received, 103 reset sent

TCP Active Connections
Local Address Remote Address State Send-Q Recv-Q
100.100.100.1:3225 100.100.100.2:65128 ESTABLISH 0 0
100.100.100.1:3225 100.100.100.2:65130 ESTABLISH 0 0
100.100.100.1:3225 0.0.0.0:0 LISTEN 0 0
!--- By default, MDS establishes two TCP connections per
FCIP tunnel instance. bison# sh ips stats tcp int gig
4/1 de
TCP Statistics for port GigabitEthernet4/1
  TCP send stats
    337202017 segments, 222637392068 bytes
    130562402 data, 205533417 ack only packets
    503 control (SYN/FIN/RST), 0 probes, 1105737
window updates
    7 segments retransmitted, 2208 bytes
    4 retransmitted while on ethernet send queue,
40061909 packets split
    250922624 delayed acks sent
  TCP receive stats
    932985742 segments, 921498012 data packets in
sequence,
                                936715052100 bytes in
sequence
    770241 predicted ack, 856752348 predicted data
    0 bad checksum, 0 multi/broadcast, 0 bad offset
    0 no memory drops, 0 short segments
    0 duplicate bytes, 16 duplicate packets
    0 partial duplicate bytes, 0 partial duplicate
packets
    53128 out-of-order bytes, 165 out-of-order
packets
    0 packet after window, 0 bytes after window
    5 packets after close
    76225562 acks, 192030009160 ack bytes, 0 ack
toomuch, 5851 duplicate acks
    0 ack packets left of snd_una, 0 non-4 byte
aligned packets
    9124012 window updates, 0 window probe
    1381 pcb hash miss, 984 no port, 103 bad SYN, 0
paws drops
  TCP Connection Stats
    272 attempts, 107 accepts, 163 established
    511 closed, 3 drops, 206 conn drops
    3 drop in retransmit timeout, 20 drop in
keepalive timeout
    0 drop in persist drops, 0 connections drained
  TCP Miscellaneous Stats

```



```

61792500 segments timed, 76225541 rtt updated
124 retransmit timeout, 0 persist timeout
5760 keepalive timeout, 5740 keepalive probes
TCP SACK Stats
0 recovery episodes, 0 data packets, 0 data bytes
0 data packets retransmitted, 0 data bytes
retransmitted
0 connections closed, 0 retransmit timeouts
TCP SYN Cache Stats
107 entries, 107 connections completed, 0 entries
timed out
0 dropped due to overflow, 0 dropped due to RST
0 dropped due to ICMP unreachable, 0 dropped due to
bucket overflow
0 abort due to no memory, 0 duplicate SYN, 0 no-
route SYN drop
0 hash collisions, 0 retransmitted

TCP Active Connections
Local Address Remote Address State Send-Q Recv-Q
100.100.100.1:3225 100.100.100.2:65128 ESTABLISH 0 0
100.100.100.1:3225 100.100.100.2:65130 ESTABLISH 0 0
100.100.100.1:3225 0.0.0.0:0 LISTEN 0 0
bison#

bison# sh ips stats tcp int gig 4/1 de
TCP Statistics for port GigabitEthernet4/1
TCP send stats
337202017 segments, 222637392068 bytes
130562402 data, 205533417 ack only packets
503 control (SYN/FIN/RST), 0 probes, 1105737
window updates
7 segments retransmitted, 2208 bytes
4 retransmitted while on ethernet send queue,
40061909 packets split
250922624 delayed acks sent
TCP receive stats
932985742 segments, 921498012 data packets in
sequence,
936715052100 bytes in
sequence
770241 predicted ack, 856752348 predicted data
0 bad checksum, 0 multi/broadcast, 0 bad offset
0 no memory drops, 0 short segments
0 duplicate bytes, 16 duplicate packets
0 partial duplicate bytes, 0 partial duplicate
packets
53128 out-of-order bytes, 165 out-of-order
packets
0 packet after window, 0 bytes after window
5 packets after close
76225562 acks, 192030009160 ack bytes, 0 ack
toomuch, 5851 duplicate acks
0 ack packets left of snd_una, 0 non-4 byte
aligned packets
9124012 window updates, 0 window probe
1381 pcb hash miss, 984 no port, 103 bad SYN, 0
paws drops
TCP Connection Stats
272 attempts, 107 accepts, 163 established
511 closed, 3 drops, 206 conn drops
3 drop in retransmit timeout, 20 drop in
keepalive timeout
0 drop in persist drops, 0 connections drained

```

```

TCP Miscellaneous Stats
  61792500 segments timed, 76225541 rtt updated
  124 retransmit timeout, 0 persist timeout
  5760 keepalive timeout, 5740 keepalive probes
TCP SACK Stats
  0 recovery episodes, 0 data packets, 0 data bytes
  0 data packets retransmitted, 0 data bytes
retransmitted
  0 connections closed, 0 retransmit timeouts
TCP SYN Cache Stats
  107 entries, 107 connections completed, 0 entries
timed out
  0 dropped due to overflow, 0 dropped due to RST
  0 dropped due to ICMP unreachable, 0 dropped due to
bucket overflow
  0 abort due to no memory, 0 duplicate SYN, 0 no-
route SYN drop
  0 hash collisions, 0 retransmitted

TCP Active Connections
Local Address Remote Address State Send-Q Recv-Q
100.100.100.1:3225 100.100.100.2:65128 ESTABLISH 0 0
100.100.100.1:3225 100.100.100.2:65130 ESTABLISH 0 0
100.100.100.1:3225 0.0.0.0:0 LISTEN 0 0
bison#
!--- Most of the TCP details displayed above can be used
to determine the !--- health of your FCIP tunnel,
provided that there is a one-to-one relationship !---
between the FCIP tunnel and the physical interface. Note
that for this !--- particular FCIP instance, both TCP
connections were initiated from this peer, !--- which
you can derive from the local address x.x.x.x:3225
statement.
bison# sh ips arp interface gig 4/1
Protocol Address Age (min) Hardware Addr Type Interface
Internet 100.100.100.2 9 0005.3000.ade6 ARPA
GigabitEthernet4/1
bison#

bison# sh ips ip route int gig 4/1
Codes: C - connected, S - static

No default gateway

C 100.100.100.0/30 is directly connected,
GigabitEthernet4/1
bison#
!--- The FCIP tunnel is connected in a back-to-back
fashion. Issue the !--- sh ips ip route command to get
the directly connected IP subnet. !--- In a more
realistic situation, where you would need to configure a
!--- next-hop to reach the FCIP peer ip-address, this
command would show !--- the configured routes through
the relevant interfaces.

bison# sh fcip profile 1
FCIP Profile 1
Internet Address is 100.100.100.1 (interface
GigabitEthernet4/1)
Listen Port is 3225
TCP parameters
SACK is enabled
PMTU discovery is enabled, reset timeout is 3600 sec
Keep alive is 60 sec

```

```
Minimum retransmission timeout is 200 ms
Maximum number of re-transmissions is 4
Send buffer size is 0 KB
Maximum allowed bandwidth is 1000000 kbps
Minimum available bandwidth is 15000 kbps
Estimated round trip time is 1000 usec
Congestion window monitoring is enabled, burst size is
10 KB
!--- The profile parameters are an easy way to directly
verify your !--- configured TCP parameters per FCIP
instance. bison# sh int fcip 1
fcip1 is trunking
Hardware is GigabitEthernet
Port WWN is 20:c2:00:05:30:00:7a:de
Peer port WWN is 20:42:00:0c:30:6c:24:40
Admin port mode is auto, trunk mode is on
Port mode is TE
vsan is 1
Trunk vsans (allowed active) (600-601)
Trunk vsans (operational) (600-601)
Trunk vsans (up) (600-601)
Trunk vsans (isolated) ()
Trunk vsans (initializing) ()
Using Profile id 1 (interface GigabitEthernet4/1)
Peer Information
Peer Internet address is 100.100.100.2 and port is 3225
Special Frame is disabled
Maximum number of TCP connections is 2
Time Stamp is disabled
QOS control code point is 0
QOS data code point is 0
B-port mode disabled
TCP Connection Information
2 Active TCP connections
Control connection: Local 100.100.100.1:3225, Remote
100.100.100.2:65128
Data connection: Local 100.100.100.1:3225, Remote
100.100.100.2:65130
272 Attempts for active connections, 58 close of
connections
TCP Parameters
Path MTU 1500 bytes
Current retransmission timeout is 200 ms
Round trip time: Smoothed 2 ms, Variance: 1
Advertised window: Current: 118 KB, Maximum: 118 KB,
Scale: 1
Peer receive window: Current: 118 KB, Maximum: 118 KB,
Scale: 1
Congestion window: Current: 10 KB, Slow start
threshold: 112 KB
5 minutes input rate 120 bits/sec, 15 bytes/sec, 0
frames/sec
5 minutes output rate 120 bits/sec, 15 bytes/sec, 0
frames/sec
72182460 frames input, 135382910244 bytes
34626 Class F frames input, 3190588 bytes
72147834 Class 2/3 frames input, 135379719656 bytes
0 Error frames timestamp error 0
47823751 frames output, 97610768920 bytes
34632 Class F frames output, 3194464 bytes
47789119 Class 2/3 frames output, 97607574456 bytes
0 Error frames 373 reass frames

!--- You can see the specific details per FCIP
```

interface, as they are taken !--- into account by a running FCIP instance. You can also derive the TCP !--- parameters of the peer with this output. bison# **sh**

fcdomain vsan 600

The local switch is the Principal Switch.

Local switch run time information:

State: Stable
Local switch WWN: 22:58:00:05:30:00:7a:df
Running fabric name: 22:58:00:05:30:00:7a:df
Running priority: 2
Current domain ID: 0x01(1)

Local switch configuration information:

State: Enabled
FCID persistence: Disabled
Auto-reconfiguration: Disabled
Contiguous-allocation: Disabled
Configured fabric name: 20:01:00:05:30:00:28:df
Configured priority: 128
Configured domain ID: 0x01(1) (preferred)

Principal switch run time information:

Running priority: 2

Interface Role RCF-reject

fcip1 Downstream Disabled

bison# **sh fcdomain vsan 601**

The local switch is the Principal Switch.

Local switch run time information:

State: Stable
Local switch WWN: 22:59:00:05:30:00:7a:df
Running fabric name: 22:59:00:05:30:00:7a:df
Running priority: 2
Current domain ID: 0x01(1)

Local switch configuration information:

State: Enabled
FCID persistence: Disabled
Auto-reconfiguration: Disabled
Contiguous-allocation: Disabled
Configured fabric name: 20:01:00:05:30:00:28:df
Configured priority: 128
Configured domain ID: 0x01(1) (preferred)

Principal switch run time information:

fcip1 Downstream Disabled

bison# **sh fcdomain vsan 601**

The local switch is the Principal Switch.

Local switch run time information:

State: Stable
Local switch WWN: 22:59:00:05:30:00:7a:df
Running fabric name: 22:59:00:05:30:00:7a:df
Running priority: 2
Current domain ID: 0x01(1)

```
Local switch configuration information:
State: Enabled
FCID persistence: Disabled
Auto-reconfiguration: Disabled
Contiguous-allocation: Disabled
Configured fabric name: 20:01:00:05:30:00:28:df
Configured priority: 128
Configured domain ID: 0x01(1) (preferred)
```

```
Principal switch run time information:
Running priority: 2
```

```
Interface Role RCF-reject
```

```
-----
fcip1 Downstream Disabled
-----
```

```
bison#
!--- Similar to normal (E)ISL troubleshooting, verify
that !--- your fabric is formed as expected. bison# sh
fcns da vsan 600-601
```

```
VSAN 600:
```

```
-----
FCID TYPE PWWN (VENDOR) FC4-TYPE:FEATURE
-----
```

```
0x010001 N 10:00:00:00:c9:32:a6:e3 (Emulex) scsi-
fcp:init
0x020001 N 50:05:07:63:00:d0:94:4c (IBM) scsi-
fcp:target fc..
```

```
Total number of entries = 2
```

```
VSAN 601:
```

```
-----
FCID TYPE PWWN (VENDOR) FC4-TYPE:FEATURE
-----
```

```
0x010001 N 10:00:00:00:c9:32:a6:e2 (Emulex) scsi-
fcp:init
0x010100 N 10:00:00:00:00:05:00:00
0x020100 N 10:00:00:00:00:01:00:00
```

```
Total number of entries = 3
```

MDS 9216 (Canterbury)

```
canterbury# sh int gig 2/1
GigabitEthernet2/1 is up
  Hardware is GigabitEthernet, address is
0005.3000.ade6
  Internet address is 100.100.100.2/30
  MTU 1500 bytes
  Port mode is IPS
  Speed is 1 Gbps
  Beacon is turned off
  Auto-Negotiation is turned on
  5 minutes input rate 312 bits/sec, 39 bytes/sec, 0
frames/sec
  5 minutes output rate 312 bits/sec, 39 bytes/sec, 0
frames/sec
```

```

337277325 packets input, 214308964948 bytes
  12 multicast frames, 0 compressed
  0 input errors, 0 frame, 0 overrun 0 fifo
932989688 packets output, 998294817662 bytes, 0
underruns
  0 output errors, 0 collisions, 0 fifo
  0 carrier errors

canterbury# sh ips arp int gig 2/1
Protocol          Address   Age (min)   Hardware Addr
Type   Interface
Internet  100.100.100.1      7         0005.3000.a85a
ARPA GigabitEthernet2/1
canterbury#

canterbury# sh ips ip route int gig 2/1
Codes: C - connected, S - static

No default gateway

C 100.100.100.0/30 is directly connected,
GigabitEthernet2/1
canterbury#

canterbury# sh ips stats tcp int gig 2/1 de
TCP Statistics for port GigabitEthernet2/1
TCP send stats
932982227 segments, 1022389174048 bytes
921498559 data, 11061499 ack only packets
401 control (SYN/FIN/RST), 0 probes, 421342 window
updates
454 segments retransmitted, 972180 bytes
291 retransmitted while on ethernet send queue,
223642028 packets split
76162595 delayed acks sent
TCP receive stats
337204879 segments, 130561386 data packets in sequence,
192030387428 bytes in sequence
156457374 predicted ack, 65996627 predicted data
0 bad checksum, 0 multi/broadcast, 0 bad offset
0 no memory drops, 0 short segments
48 duplicate bytes, 3542 duplicate packets
48 partial duplicate bytes, 1 partial duplicate packets
4336 out-of-order bytes, 131 out-of-order packets
0 packet after window, 0 bytes after window
0 packets after close
268794983 acks, 936715866930 ack bytes, 0 ack toomuch,
4152 duplicate acks
0 ack packets left of snd_una, 0 non-4 byte aligned
packets
50179371 window updates, 0 window probe
1251 pcb hash miss, 1061 no port, 0 bad SYN, 0 paws
drops
TCP Connection Stats
204 attempts, 73 accepts, 155 established
357 closed, 64 drops, 70 conn drops
4 drop in retransmit timeout, 10 drop in keepalive
timeout
0 drop in persist drops, 0 connections drained
TCP Miscellaneous Stats
233047332 segments timed, 268794618 rtt updated
105 retransmit timeout, 0 persist timeout
105 keepalive timeout, 94 keepalive probes

```

```
TCP SACK Stats
 3 recovery episodes, 25938540 data packets, 71110030772
data bytes
 180 data packets retransmitted, 272884 data bytes
retransmitted
 1 connections closed, 388 retransmit timeouts
TCP SYN Cache Stats
 93 entries, 73 connections completed, 0 entries timed
out
 0 dropped due to overflow, 18 dropped due to RST
 0 dropped due to ICMP unreachable, 0 dropped due to bucket
overflow
 0 abort due to no memory, 6 duplicate SYN, 0 no-route
SYN drop
 0 hash collisions, 8 retransmitted

TCP Active Connections
Local Address Remote Address State Send-Q Recv-Q
100.100.100.2:65128 100.100.100.1:3225 ESTABLISH 0 0
100.100.100.2:65130 100.100.100.1:3225 ESTABLISH 0 0
100.100.100.2:3225 0.0.0.0:0 LISTEN 0 0
0.0.0.0:3260 0.0.0.0:0 LISTEN 0 0
canterbury#
!--- This MDS initiated both TCP connections for FCIP 1.
Although no passive !--- statement was configured on the
peer MDS, MDS9216 Canterbury has the !--- highest IP
address configured on the tunnel. This makes the other
side !--- disconnect its TCP connection. canterbury# sh
fcip profile 1
FCIP Profile 1
Internet Address is 100.100.100.2 (interface
GigabitEthernet2/1)
Listen Port is 3225
TCP parameters
SACK is enabled
PMTU discovery is enabled, reset timeout is 3600 sec
Keep alive is 60 sec
Minimum retransmission timeout is 200 ms
Maximum number of re-transmissions is 4
Send buffer size is 0 KB
Maximum allowed bandwidth is 1000000 kbps
Minimum available bandwidth is 15000 kbps
Estimated round trip time is 1000 usec
Congestion window monitoring is enabled, burst size is
10 KB

canterbury# sh interface fcip 1
fcip1 is trunking
Hardware is GigabitEthernet
Port WWN is 20:42:00:0c:30:6c:24:40
Peer port WWN is 20:c2:00:05:30:00:7a:de
Admin port mode is auto, trunk mode is auto
Port mode is TE
vsan is 1
Trunk vsans (allowed active) (600-601)
Trunk vsans (operational) (600-601)
Trunk vsans (up) (600-601)
Trunk vsans (isolated) ()
Trunk vsans (initializing) ()
Using Profile id 1 (interface GigabitEthernet2/1)
Peer Information
Peer Internet address is 100.100.100.1 and port is 3225
Special Frame is disabled
Maximum number of TCP connections is 2
```

```
Time Stamp is disabled
QOS control code point is 0
QOS data code point is 0
B-port mode disabled
TCP Connection Information
2 Active TCP connections
Control connection: Local 100.100.100.2:65128, Remote
100.100.100.1:3225
Data connection: Local 100.100.100.2:65130, Remote
100.100.100.1:3225
204 Attempts for active connections, 72 close of
connections
TCP Parameters
Path MTU 1500 bytes
Current retransmission timeout is 200 ms
Round trip time: Smoothed 2 ms, Variance: 1
Advertized window: Current: 118 KB, Maximum: 118 KB,
Scale: 1
Peer receive window: Current: 118 KB, Maximum: 118 KB,
Scale: 1
Congestion window: Current: 10 KB, Slow start
threshold: 112 KB
5 minutes input rate 120 bits/sec, 15 bytes/sec, 0
frames/sec
5 minutes output rate 120 bits/sec, 15 bytes/sec, 0
frames/sec
91063905 frames input, 192030052404 bytes
41991 Class F frames input, 3931568 bytes
91021914 Class 2/3 frames input, 192026120836 bytes
0 Error frames timestamp error 0
753551524 frames output, 936716093696 bytes
42028 Class F frames output, 3909128 bytes
753509496 Class 2/3 frames output, 936712184568 bytes
0 Error frames 40061908 reass frames

canterbury#
```

[Informações Relacionadas](#)

- [RFC 3821 – Canal de fibra por TCP/IP \(FCIP\)](#)
- [Página principal T11](#)
- [Suporte Técnico - Cisco Systems](#)