

Configuration élémentaire MDS à MDS avec FCIP

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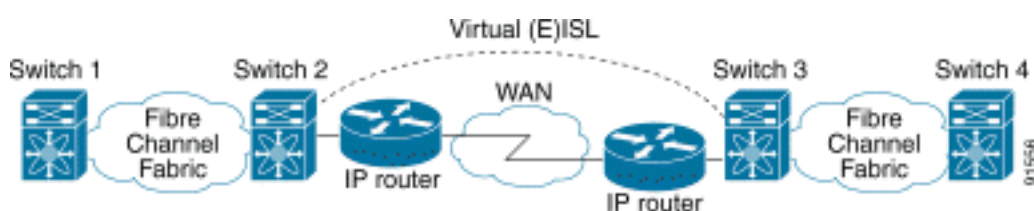
Introduction

Ce document fournit un exemple de configuration pour le commutateur MDS (Multilayer Director Switch) Fibre Channel Over TCP/IP (FCIP) de base vers MDS.

Cet exemple de configuration est pertinent pour les versions 1.2 et 1.3 de SAN-OS. Certains paramètres changent dans la version 2.0 de SAN-OS. Reportez-vous au guide de configuration et aux notes de version du SAN-OS 2.0.

FCIP décrit les mécanismes qui permettent l'interconnexion d'îlots de réseaux SAN Fibre Channel (FC) sur des réseaux IP pour former un SAN unifié dans une structure FC unique. FCIP s'appuie sur des services réseau IP pour fournir la connectivité entre les îlots SAN sur des réseaux locaux, métropolitains ou étendus.

SAN Fibre Channel connectés par FCIP



Le protocole FCIP utilise le protocole TCP (Transmission Control Protocol) sur le port 3225 comme transport de couche réseau.

Conditions préalables

Conditions requises

Le réseau fédérateur IP doit être opérationnel et fournir la bande passante requise pour prendre en charge les applications exécutées sur les liaisons FCIP. Il peut s'agir d'une topologie de couche 2 (L2) ou de couche 3 (L3). Si L3, les routeurs intermédiaires ou les commutateurs multicouches doivent être configurés et configurés pour transférer le trafic IP entre les adresses IP source et de destination des tunnels FCIP de manière appropriée. Si la qualité de service (QoS) ou le formatage du trafic est appliqué sur n'importe quel périphérique réseau sur le chemin entre les homologues FCIP, le gestionnaire de réseau administrant l'infrastructure IP doit être consulté pour obtenir les détails nécessaires avant de configurer les paramètres et fonctions TCP associés sur le ou les profils FCIP MDS.

Components Used

Les informations de ce document sont basées sur les versions logicielles et matérielles suivantes :

- MDS 9509 avec module de service IPS (IP Storage) (DS-X9308-SMIP) exécutant la version 1.2.(2a)
- MDS 9216 avec module de service IPS (DS-X9308-SMIP) exécutant la version 1.2.(2a)
- Serveur Win2003 (HPQ Pro-Liant-P4) avec adaptateur HBA Emulex LP9K
- Baie de stockage IBM (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](#).

Informations générales

Le FCIP comprend les spécifications suivantes :

ANSI T11

1. FC-SW-2 décrit le fonctionnement et l'interaction des commutateurs FC, y compris E_Port et le fonctionnement du fabric.
2. FC-BB-2 est un mappage qui se rapporte à l'extension des réseaux commutés FC sur un réseau fédérateur TCP et qui définit des modèles de référence qui prennent en charge E_Port et B_Port.

Groupe de travail IETF IPS

1. FC sur TCP couvre les exigences TCP/IP pour le transport des trames FC sur un réseau IP.
2. L'encapsulation de trame FC définit le format d'encapsulation de fibre commun.

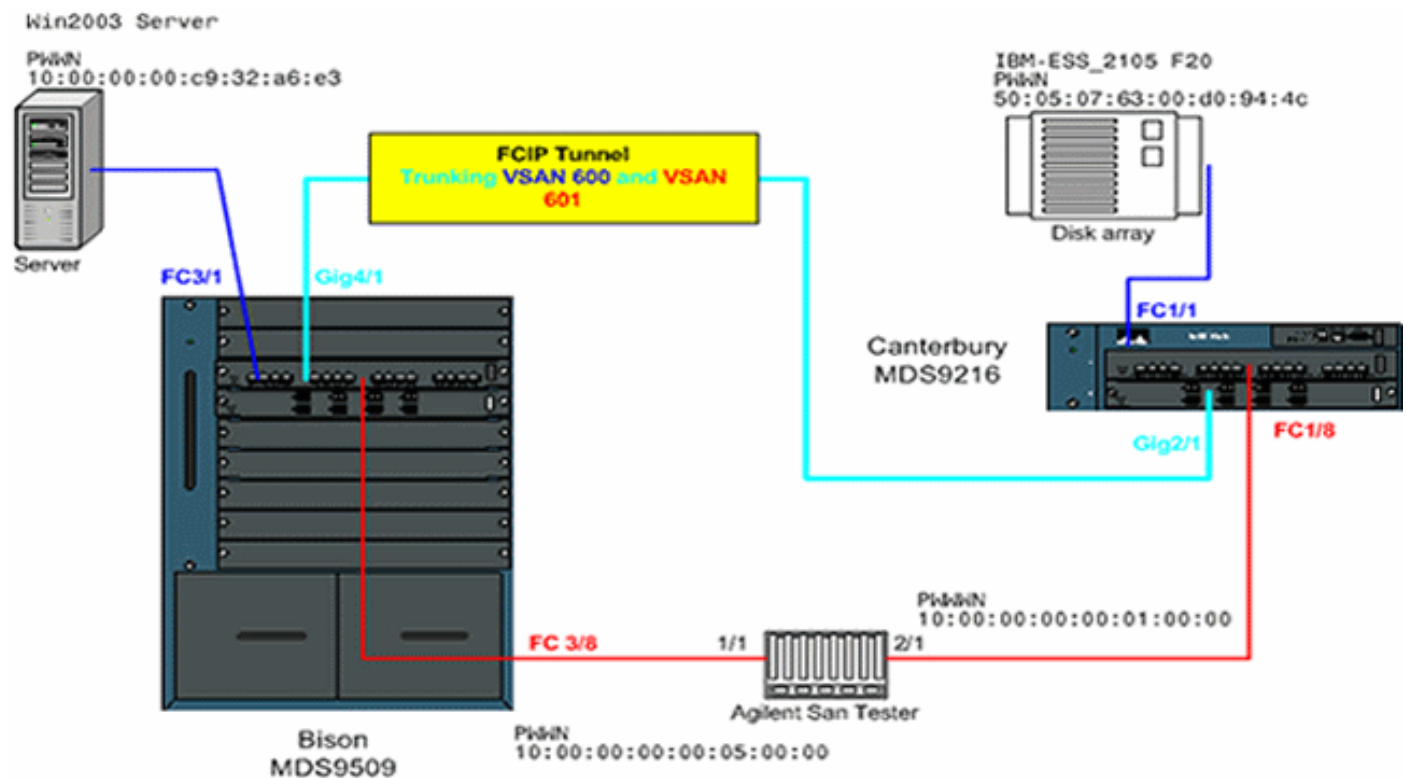
Une interconnexion entre deux commutateurs ou fabrics SAN à travers FCIP est appelée liaison FCIP et peut contenir une ou plusieurs connexions TCP. Chaque extrémité d'une liaison FCIP est associée à un port E virtuel (VE_port) ou B_port, selon la mise en oeuvre. FC-BB et FC-BB-2 décrivent les différences entre les deux approches. Le module IP Services (DS-X9308-SMIP) prend en charge les deux modes, mais prend par défaut la valeur VE_Port, qui est également le mode recommandé à exécuter si tous les homologues concernés sont des modules DS-X9308-SMIP. La fonctionnalité VE_Port sur les plates-formes MDS prend également en charge la fonctionnalité de port TE, ce qui la rend capable d'agréger le trafic de plusieurs VSAN sur une instance FCIP.

Configuration

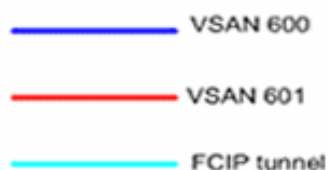
Sur le MDS, vous devez vous familiariser avec les guides de configuration IPS des deux plates-formes. La version la plus récente du manuel est [Configuration du stockage IP](#).

Diagramme du réseau

Ce document utilise la configuration réseau indiquée dans le diagramme suivant :



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



Ce schéma présente une configuration de TP type où aucun équipement réseau supplémentaire n'est connecté entre les deux interfaces Gigabit Ethernet (GE) des deux commutateurs MDS. Il s'agit de la forme la plus simple d'une installation FCIP MDS, généralement utilisée dans les

laboratoires du client pour vérifier les fonctionnalités de base. Dans le VSAN 600, l'adaptateur HBA Emulex LightPulse 9000 connecte le serveur Windows 2003 au MDS9509 appelé Bison et une baie de stockage IBM connectée au MDS9216 appelé Canterbury, où sont configurées les LUN du serveur Windows 2003.

Le périphérique de test Agilent SAN est utilisé comme émulateur pour remplir VSAN 601 avec deux périphériques, ainsi que pour générer un trafic de fond FC-2 non FCP important. Cet équipement périphérique est ajouté pour rendre la configuration plus réaliste et pour avoir des entrées substantielles dans le serveur de noms distribué des deux commutateurs participants. Ce document n'est pas axé sur la connectivité de bout en bout et aucune capture d'écran du serveur ou de la baie de stockage n'est incluse. L'équipement périphérique ne connaît pas le protocole FCIP et se comporte comme si la liaison EISL entre les deux MDS fonctionnait sur une liaison FC normale.

Configurations

Ce document utilise les configurations présentées ci-dessous.

- [MDS 9509 \(Bison\) avec module IPS-8](#)
- [MDS 9216 \(Canterbury\) avec module IPS-8](#)

MDS 9509 (Bison) avec module IPS-8

```
bison# sh ver
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 1.0.8
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) avec module IPS-8

```
canterbury# sh ver
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.
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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 100.100.100.2
255.255.255.252 no shutdown

Vérification

Cette section présente des informations que vous pouvez utiliser pour vous assurer que votre configuration fonctionne correctement.

- **show interface gig x/y** - Affiche l'état de l'interface Gigabit pertinente liée au profil FCIP.
- **show ips stats tcp int gig x/y** - Affiche les statistiques TCP et les connexions actives pour l'interface Gigabit appropriée.
- **show ips arp int gig x/y** - Affiche toutes les entrées ARP (Address Resolution Protocol) pour l'interface Gigabit appropriée ; le prochain saut ou homologue doit être présent dans cette liste.
- **show ips ip route int gig x/y** - Affiche les routes spécifiques traversant l'interface Gigabit appropriée.
- **show interface fcip x** : affiche l'état de l'interface FCIP et tous les détails relatifs à ce tunnel FCIP.
- **show profile fcip x** : affiche l'adresse IP à laquelle le profil est lié et tous les paramètres TCP configurés.
- **show int fcip x counters** - Permet de vérifier si des trames traversent le tunnel FCIP.
- **show fcdomain vsan x** : répertorie tous les détails relatifs au domaine ; utilisé pour vérifier que le fabric est formé à travers le ou les tunnels FCIP.
- **show fcns da vsan x** : affiche tous les types pwwn, FC4-Types et FCID du VSAN concerné ; utilisé pour vérifier que toutes les entrées attendues sont distribuées à travers le ou les tunnels FCIP.

Dépannage

Veillez à exécuter plusieurs fois les commandes **show** ci-dessus pour créer un historique de compteur. Les compteurs qui ne sont pas liés à un point dans le temps et qui ne sont collectés qu'une seule fois sont pour la plupart inutiles.

Utilisez les configurations ci-dessous pour plus de dépannage.

- [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
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  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-
fcip:init
0x020001 N 50:05:07:63:00:d0:94:4c (IBM) scsi-
fcip: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-
fcip: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#
```

[Informations connexes](#)

- [RFC 3821 - Fibre Channel over TCP/IP \(FCIP\)](#)
- [Page d'accueil T11](#)
- [Support technique - Cisco Systems](#)