MDS a la configuración básica MDS con el FCIP

Contenido

Introducción

Este documento suministra un ejemplo de configuración para Canal de Fibra por TCP/IP (FCIP) básico con Switch de Director de Capas Múltiples (MDS) a MDS.

Esta configuración de muestra es relevante para 1.2 y 1.3 versiones de SAN-OS. Algunos parámetros cambian en la versión 2.0 del SAN-OS. Refiérase a la guía de configuración y a los Release Note de 2.0 SAN-OS.

El FCIP describe los mecanismos que permiten que la interconexión de islas de las Redes de área de almacenamiento del Fibre Channel (FC) (sin) sobre las redes basadas en IP forme un SAN unificado en una sola tela FC. El FCIP confía en red basada en IP los servicios para proporcionar la Conectividad entre las islas SAN sobre las redes de área local, las redes de la área metropolitana, o las redes de área extensa.

Fibre Channel sin conectado por el FCIP

El FCIP utiliza el Transmission Control Protocol (TCP) en el puerto 3225 como transporte de la capa de red.

prerrequisitos

Requisitos

La estructura básica IP debe ser operativa y entregando el ancho de banda necesario para soportar las aplicaciones que se ejecutaban a través del vínculo FCIP ésta podría ser una capa 2 (L2) o acodar 3 la topología (L3). Si el L3, los routeres intermedios o los switches multicapas se deben poner y configurar para remitir el tráfico IP entre los IP Address de origen y de destino de los túneles FCIP apropiadamente. Si el Calidad de Servicio (QoS) o el modelado de tráfico se aplica en cualquier dispositivo de red en la trayectoria entre los pares FCIP, el administrador de la red que administra la infraestructura IP debe ser consultado para conseguir los detalles necesarios antes de configurar cualesquiera parámetros relacionados y las características TCP en los perfiles MDS FCIP.

Componentes Utilizados

La información que contiene este documento se basa en las siguientes versiones de software y hardware.

- MDS9509 con la versión corriente del módulo de servicio del (IPS) del almacenamiento IP (DS-X9308-SMIP) 1.2.(2a)
- MDS9216 con la versión corriente del módulo de servicio IPS (DS-X9308-SMIP) 1.2.(2a)
- Win2003 Server (HPQ Pro-Liant-P4) con Emulex LP9K HBA
- Conjunto de almacenamiento de IBM (ESS-2105-F20)

La información que contiene este documento se creó a partir de los dispositivos en un ambiente de laboratorio específico. Todos los dispositivos que se utilizan en este documento se pusieron en funcionamiento con una configuración verificada (predeterminada). Si la red está funcionando, asegúrese de haber comprendido el impacto que puede tener cualquier comando.

Convenciones

Para obtener más información sobre las convenciones del documento, consulte las Convenciones de Consejos Técnicos de Cisco.

Antecedentes

El FCIP consiste en las especificaciones siguientes:

ANSI T11

1. El FC-SW-2 describe la operación y la interacción del Switches FC incluyendo E_Port y el funcionamiento de la estructura.
2. El FC-BB-2 es una asignación que pertenece a la extensión de las redes de switch FC a través de una estructura básica de red TCP, y define los modelos de referencia que soportan E_Port y B_Port.

Grupo de trabajo del IPS IETF

1. El FC sobre el TCP cubre los requisitos TCP/IP para transportar las tramas FC sobre una red del IP.

2. La encapsulación de la trama FC define el formato de encapsulado de la fibra típica.

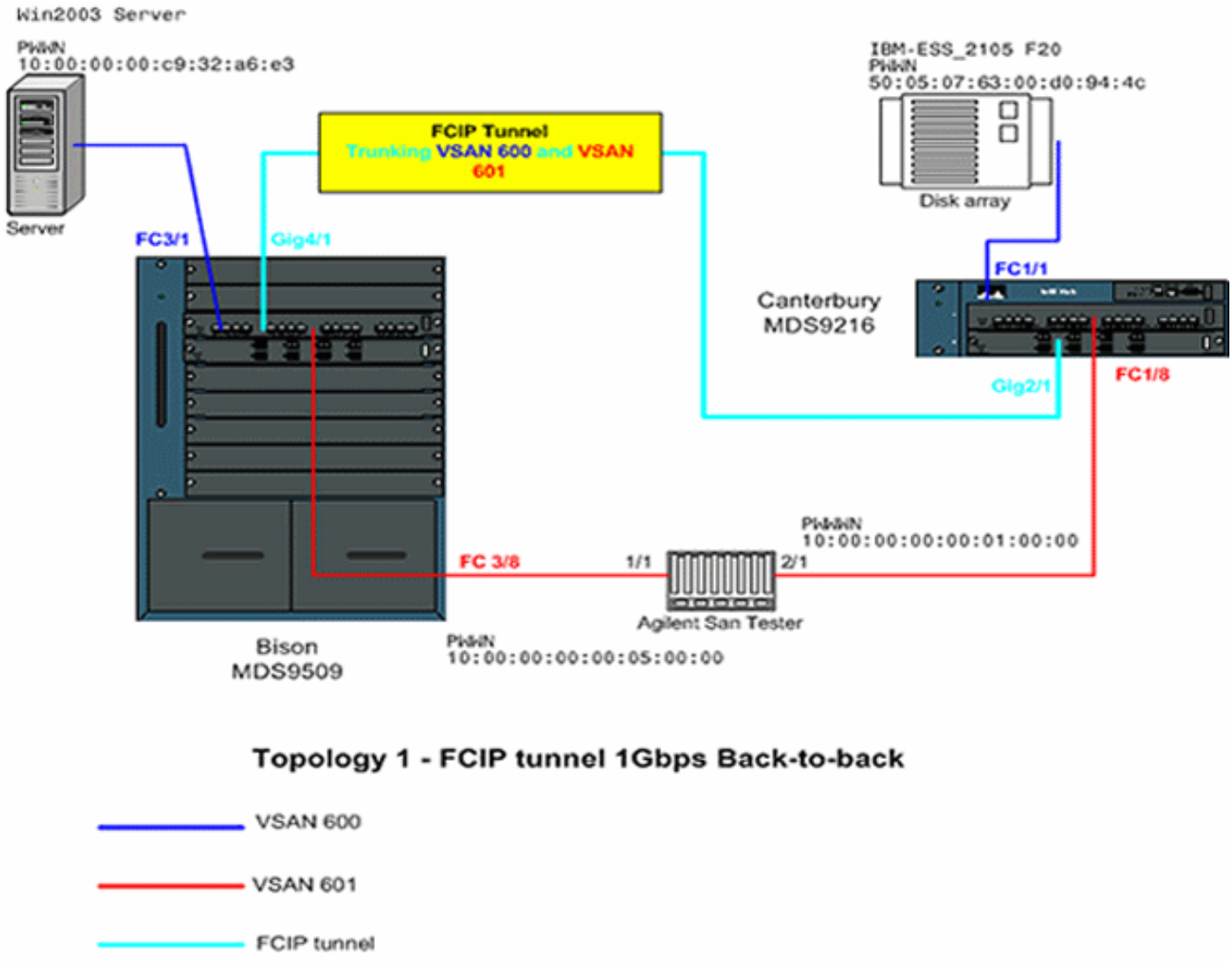
Una interconexión entre dos Switches SAN o telas a través del FCIP se llama un link FCIP, y puede contener una o más conexiones TCP. Cada extremo de un link FCIP se asocia a un puerto virtual E (VE_port) o a un B_port, dependiendo de la implementación. El FC-BB y el FC-BB-2 están describiendo las diferencias entre ambos acercamientos. El módulo de los Servicios IP (DS-X9308-SMIP) apoya a los modos Both, pero omite el VE_Port, que es también el modo recomendado a ejecutarse si todos los pares relevantes son módulos DS-X9308-SMIP. Las funciones de VE_Port en las plataformas MDS también soportan la funcionalidad de puerto TE, que hace capaz del tráfico del enlace de los VSAN múltiples a través de un caso FCIP.

Configurar

En el MDS, usted necesita familiarizarse con las guías de configuración IPS para ambas Plataformas. La mayoría de la versión actual del manual está configurando el almacenamiento IP.

Diagrama de la red

Este documento utiliza la instalación de red que se muestra en el siguiente diagrama.



Este diagrama muestra a configuración de laboratorio típica donde no se conecta ningún equipo de interconexión de redes adicional entre ambas interfaces del Gigabit Ethernet (GE) de ambo Switches MDS. Ésta es la forma más simple de un MDS FCIP instala, y se utiliza típicamente en

los laboratorios del cliente para verificar la funcionalidad básica. En VSAN 600, el Emulex LightPulse 9000 HBA conecta el servidor de Windows 2003 con el Bison llamado MDS9509, y un conjunto de almacenamiento de IBM conectado con el MDS9216 llamó Cantorbery, en donde los LUN para el servidor de Windows 2003 se configuran.

El dispositivo de prueba Agilent SAN se utiliza como emulador para poblar VSAN 601 con dos dispositivos, así como para generar el tráfico de fondo sustancial FC-2 NON-FCP. Este equipo periférico se agrega para hacer la configuración más realista y para tener entradas importantes en el Servidor de nombres distribuido de ambos Switches participante. El foco de este documento no es conectividad de extremo a extremo, y no hay capturas de pantalla del servidor o del conjunto de almacenamiento incluidas. El equipo periférico no está bien informado sobre el FCIP, y se comporta como si el link EISL entre ambos MDS se ejecutara a través de un link normal FC.

Configuraciones

Este documento usa las configuraciones detalladas a continuación.

- MDS9509 (bisonte) con el módulo IPS-8
- MDS9216 (Cantorbery) con el módulo IPS-8

MDS9509 (bisonte) con el módulo 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.
```

MDS9216 (Cantorbery) con el módulo 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. 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 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
```

Verificación

En esta sección encontrará información que puede utilizar para confirmar que su configuración esté funcionando correctamente.

- *x/y del* **show interface gig** — Visualiza el estatus de la interfaz Gigabit relevante limitada al perfil FCIP.
- **muestre el** *x/y* **tcp de las estadísticas de ips int gig** — Estadísticas y conexiones activas de las visualizaciones TCP para la interfaz Gigabit relevante.
- *x/y de la* **demostración ips arp int gig** — Visualiza todas las entradas del Address Resolution Protocol (ARP) para la interfaz Gigabit relevante; el salto siguiente o el par debe estar presente en esta lista.
- **muestre el** *x/y de la* **ruta de IP IPS int gig** — Visualiza las rutas específicas que van a través de la interfaz Gigabit relevante.
- **muestre el fcip** *x de la* **interfaz** — Visualiza el estado de la interfaz FCIP y todo detalla relacionado a este túnel FCIP.
- **muestre el fcip** *x del* **perfil** — Visualiza la dirección IP a la cual el perfil es parámetros TCP encuadernados y todos los configurados.
- **muestre los contadores del fcip** *x* **internacional** — Utilizado para marcar si hay algunas tramas que pasan a través del túnel FCIP.
- **muestre el vsan** *x del* **fcdomain** — Enumera todos los detalles relacionados al dominio; utilizado para verificar que la tela está formada a través de los túneles FCIP.
- **muestre el vsan** *x* **DA del fcns** — Visualiza todo el pwwn, FC4-Types, y FCID del VSAN relevante; utilizado para verificar que todas las entradas previstas están distribuidas a través de los túneles FCIP.

Troubleshooting

Esté seguro de publicar los **comandos show** sobre las épocas múltiples de construir un historial contrario. Los contadores que no se relacionan con una punta a tiempo y se recogen solamente son una vez sobre todo inútiles.

Utilice las configuraciones que se ilustran a continuación para la resolución de otros problemas.

- MDS9509 (bisonte)
- MDS9216 (Cantorbery)

MDS9509 (bisonte)

```
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
unreach, 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 unreach, 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
```

MDS9216 (Cantorbery)

```
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 unreach, 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#
```

Información Relacionada

- RFC 3821 – Canal de fibra por TCP/IP (FCIP)
- Página de inicio de T11
- Soporte Técnico - Cisco Systems