MDS到MDS詳細配置與FCIP

目錄

簡介

本檔案將提供透過TCP/IP傳輸的光纖通道(FCIP)多層次導向器交換器(MDS)到MDS的範例組態。

FCIP介紹的機制允許光纖通道(FC)儲存區域網路(SAN)的孤島透過基於IP的網路互連，以在單個FC網狀架構中形成整合SAN。FCIP依靠基於IP的網路服務在區域網、都會網路或廣域網上的SAN孤島之間提供連線。

圖1 — 通過FCIP連線的光纖通道SAN
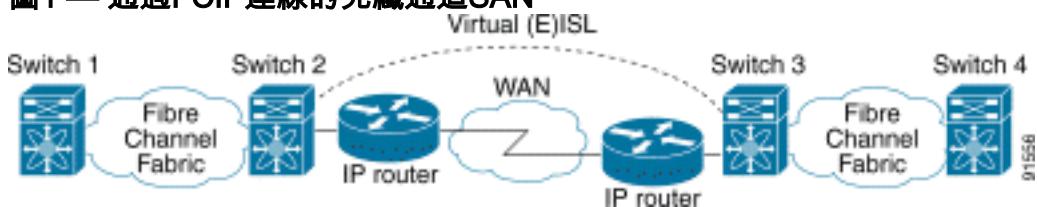
FCIP在連線埠3225上使用傳輸控制通訊協定(TCP)作為網路層傳輸。

必要條件

需求

嘗試此組態之前，請確保符合以下要求：

- IP骨幹必須可操作，並交付所需的頻寬，以支援跨FCIP鏈路運行的應用 — 這可以是第2層(L2)或第3層(L3)拓撲。
- 如果是L3拓撲，必須設定並配置中間路由器或多層交換機，以在FCIP隧道的源和目標IP地址之

間正確轉發IP流量。如果在FCIP對等點之間的路徑中的任何網路裝置上強制執行服務品質(QoS)或流量調節，則在多層導向器交換器(MDS)FCIP設定檔上設定任何TCP相關引數和功能之前，應徵詢管理IP基礎架構的網路管理員以取得必要的詳細資訊。

- 如果在MDS IP儲存(IPS)服務模組上配置了子介面，則與MDS相鄰的乙太網交換機必須支援並配置為802.1Q中繼。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- 運行1.2.(2a)版的MDS 9509和IPS服務模組(DS-X9308-SMIP)
- 運行1.2.(2a)版的MDS 9216，帶IPS服務模組(DS-X9308-SMIP)
- 執行Catalyst OS(CatOS)7.4(3)的Catalyst 6509
- 採用Emulex LP9K HBA的Win2003伺服器(HPQ Pro-Liant-P4)
- IBM儲存陣列(ESS-2105-F20)

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

如需文件慣例的詳細資訊，請參閱思科技術提示慣例。

背景資訊

FCIP由以下規範組成：

ANSI T11

1. FC-SW-2描述了FC交換機的操作和互動，包括E_Port和交換矩陣操作。
2. FC-BB-2對映屬於跨TCP網路骨幹網的FC交換網路擴展，並定義支援E_Port和B_Port的參考模型。

IETF IPS工作組

1. 使用TCP的FC涵蓋通過IP網路傳輸FC幀的TCP/IP要求。
2. FC幀封裝定義了常見的光纖封裝格式。

跨FCIP的兩個SAN交換器或網狀架構之間的互連稱為FCIP連結，且可包含一個或多個的TCP連線。FCIP連結的每個端都與一虛擬E連線埠(VE_port)或B_port相關聯，視實施而定。FC-BB和FC-BB-2描述了兩種方法的區別。IPS服務模組(DS-X9308-SMIP)支援這兩種模式，但預設情況下為VE_Port，如果所有相關對等體都是DS-X9308-SMIP模組，則此模式也是建議運行的模式。在此拓撲示例中，討論了PortChannel上的FCIP、要配置的TCP引數以及FSF（特殊幀）配置引數。

設定

本節提供用於設定本文件中所述功能的資訊。

在MDSes上，您需要熟悉兩個平台的IPS配置指南。您可以在Cisco.com上的配置IP儲存中找到最新

版本的手冊。

註：使用Command Lookup Tool(僅限註冊客戶)查詢有關本文檔中使用的命令的更多資訊。

網路圖表

本檔案會使用以下網路設定：

圖2 — 拓撲3
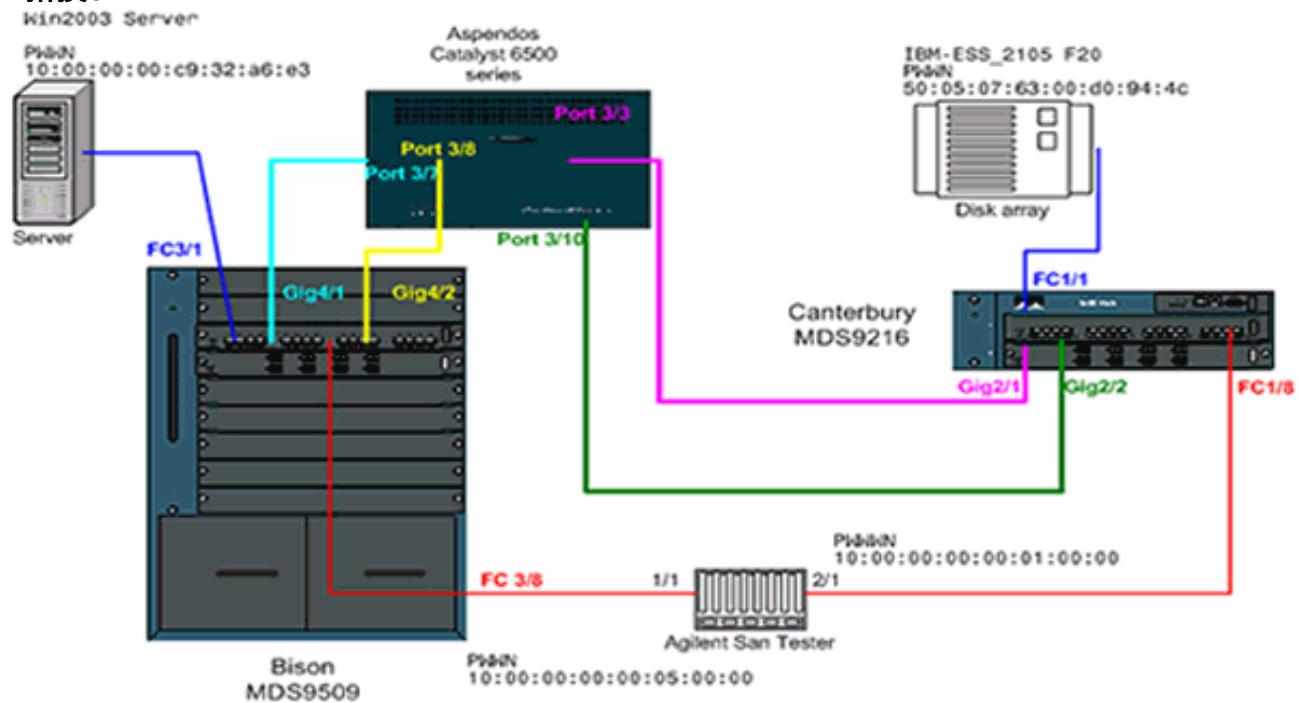
Topology 3 - PortChannel of two FCIP interfaces
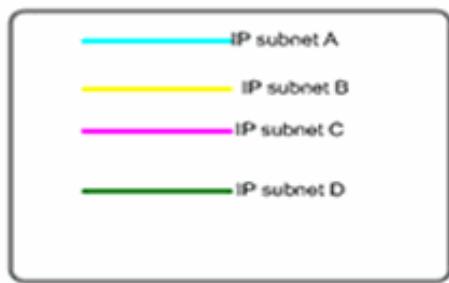
拓撲3描述由兩個單獨FCIP隧道構成的一個FCIP埠通道；對等介面通過IP雲。IP網雲被摺疊成一台多層交換機(Catalyst 6500)，該交換機將流量從子網A路由到子網C，從子網C路由到子網A（以及從子網B路由到子網D，從子網D路由到子網A）。 子網定義如下：

- 子網A :100.100.100.0/30 - Bison Gig4/1
- 子網B:100.100.100.4/30 - Bison Gig4/2
- 子網C:200.200.200.0/30-坎特伯里Gig2/1
- 子網D:200.200.200.4/30 - Canterbury Gig2/2

此拓撲提供已知的最大頻寬100 Mbps和最小頻寬100 Mbps，這是通過此IP雲為相關IP流量運行的配置檔案。初始配置顯示了基於FCIP的埠通道和TCP流量調節的各個方面。在後續各節中，將進一步說明FSF、被動TCP介面和FCIP時間戳。

組態

本檔案會使用以下設定：

- [採用IPS-8模組的MDS 9509(Bison)](#)
- [含IPS-8模組的MDS 9612(Canterbury)](#)

採用IPS-8模組的MDS 9509(Bison)

```
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.
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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
tcp max-bandwidth-mbps 100 min-available-bandwidth-mbps
100 round-trip-time-ms 10
!--- TCP bandwidth parameters defined specifically for
this FCIP tunnel. !--- Restricted to 100 Mbps max and
min. See the Note on TCP Parameters !--- comment section
in this table below for more details. fcip profile 2 ip
address 100.100.100.5 tcp max-bandwidth-mbps 100 min-
available-bandwidth-mbps 100 round-trip-time-ms 10 !---
TCP max and min bandwidth parameter are configured here
exactly the !--- same as for FCIP 1 because both tunnels
are combined in one PortChannel !--- interface and are
```

```
subject to the same bandwidth restrictions in the IP
core. vsan database vsan 600 vsan 601 fcdomain domain 1
preferred vsan 600 fcdomain domain 1 preferred vsan 601
interface port-channel 1 switchport trunk allowed vsan
600-601 interface fcip1 channel-group 1 force no
shutdown use-profile 1 peer-info ipaddr 200.200.200.1 !-
-- Interface FCIP 1 is a member of channel-group 1. The
force keyword makes it !--- adopt the specific settings
configured on interface port-channel 1. interface fcip2
channel-group 1 force no shutdown use-profile 2 peer-
info ipaddr 200.200.200.5 !--- Interface FCIP 2 is also
member of channel-group 1. boot system bootflash:/s122a
sup-1 boot kickstart bootflash:/k122a sup-1 boot system
bootflash:/s122a sup-2 boot kickstart bootflash:/k122a
sup-2 ip domain-name cisco.com ip name-server
144.254.10.123 ip route 200.200.200.0 255.255.255.252
100.100.100.2 distance 2 ip route 200.200.200.4
255.255.255.252 100.100.100.6 distance 2 !--- FCIP
interfaces are on separate IP subnets, so in order to
reach the FCIP !--- peer IP address, you need adequate
static routes to an L3 device that !--- knows how to
forward the packets to the final destination. Multiple
routes !--- to the same destination IP subnet are
allowed, and the distance parameter !--- can be used to
specify a preferred next hop. Multiple next hops would
!--- require a subnet mask providing for a larger number
of host; for example, !--- a 28-bit subnet mask. ssh key
dsa 768 force ssh server enable switchname bison zone
default-zone permit vsan 600-601 interface
GigabitEthernet4/1 ip address 100.100.100.1
255.255.255.252 switchport mtu 3000 no shutdown !--- MTU
size is defined as 3000 bytes. Make sure that all
intermediate network !--- devices between this interface
and the peer IP address are capable of !--- switching
and routing Jumbo frames. In order to avoid FC Frame
split, !--- an MTU value of 2300 is required; 3000 is
used in the configuration example !--- for simplicity.
FCIP TCP segments will normally never exceed 2264 bytes
for !--- TE ports or 2256 bytes for E ports, regardless
of the configured MTU size. interface GigabitEthernet4/2
ip address 100.100.100.5 255.255.255.252 switchport mtu
3000 no shutdown interface fc3/1 interface fc3/2
interface fc3/3 interface fc3/4 interface fc3/5
interface fc3/6 interface fc3/7 interface fc3/8
interface fc3/9 interface fc3/10 interface fc3/11
interface fc3/12 interface fc3/13 interface fc3/14
interface fc3/15 interface fc3/16 interface mgmt0 ip
address 10.48.69.151 255.255.255.128 !--- Note on TCP
Parameters !--- The following TCP parameters can be
individually configured per FCIP profile:

bison(config-profile)# tcp ?

cwm Enable congestion window monitoring
keepalive-timeout Set keep alive timeout in sec
max-bandwidth-kbps Configure maximum available path
bandwidth in Kbps
max-bandwidth-mbps Configure maximum available path
bandwidth in Mbps
max-retransmissions Maximum number of retransmissions
min-retransmit-time Set minimum retransmit time in
millisecond
pmtu-enable Enable PMTU Discovery
sack-enable Enable SACK option for TCP
```

```
send-buffer-size Send buffer size in KBytes
!--- The CWM parameter default value is 10K and should
be left untouched under !--- normal conditions.
Congestion window monitoring (CWM) is a way of !---
controlling burstiness after long idle times or loss of
Acks.

!--- The keepalive-timeout is the TCP keepalive timeout
value and is !--- set to 60 seconds by default, though
it can range between 1 and 7200 seconds.

!--- The max- and min-bandwidth parameters program the
TCP Maximum Window Size !--- (scaling factor) and
engages an internal "shaper" functionality. !--- These
values should be carefully chosen and requires
understanding of the !--- intermediate network's end-to-
end topology. The default values are to be !--- changed
according to the aforementioned requirements. !--- The
Round-trip-time can be derived once you have your FCIP
tunnel up and !--- running by issuing the following
command:

bison# ips measure 200.200.200.1 interface
gigabitethernet 4/1

Round trip time is 53 micro seconds (0.05 milliseconds )
!--- Always add an additional margin of at least a few
microseconds to this value. !--- The max-retransmissions
counter is set to 4 by default. In a healthy network !--
- environment, this value should be left unchanged.

!--- The max-retransmission timer is set to 200
milliseconds. If you experience !--- extremely high
retransmission counters, this value can be increased;
but, !--- in general, changing this parameter is not
required unless the RTT is !--- above 200 milliseconds.

!--- The PMTU (Path MTU discovery) is enabled by
default. Best practice is to know !--- what is the
maximum MTU size supported by all interfaces along the
logical !--- path between both peers.

!--- The SACK feature (Selective Acknowledgment) is not
enabled by default. !--- Consider enabling it when you
have a lot of retransmissions occurring between !--- the
two peers. SACK allows selective retransmissions of your
window, which is !--- beneficial if larger maximum
window sizes are configured and retransmissions !---
occur frequently. It is enabled in this sample
configuration; when you do so, !--- make sure that it is
enabled at both sides of the link.

!--- The send-buffer-size is the amount of buffers in
addition to the TCP window !--- that are allowed to be
transmitted out before starting to flow control the FC
!--- sources. The default value is set to 0.
```

- 有關PMTU的詳細資訊，請參閱RFC 1191 — 路徑MTU探索 。
- 有關SACK的詳細資訊，請參閱RFC 2018 - TCP選擇性確認選項 和RFC 2883 - TCP選擇性確認(SACK)選項的擴展

含IPS-8模組的MDS 9216(Canterbury)

```
canterbury# sh run

Building Configuration ...
fcip profile 200
ip address 200.200.200.1
tcp max-bandwidth-mbps 100 min-available-bandwidth-mbps
100 round-trip-time-ms 10

fcip profile 201
ip address 200.200.200.5
tcp max-bandwidth-mbps 100 min-available-bandwidth-mbps
100 round-trip-time-ms 10
!--- The TCP parameters are identical to what is
configured on the peering !--- FCIP interfaces. Only in
very specific cases should different values be !---
considered, for example, if the return-path(s) are
running across a different !--- part of the network or
if the application dictates asymmetrical values. vsan
database vsan 600 vsan 601 fcdomain domain 2 preferred
vsan 600 fcdomain domain 2 preferred vsan 601 interface
port-channel 2 switchport trunk mode auto switchport
trunk allowed vsan 600-601 interface fcip1 channel-group
2 force no shutdown use-profile 200 peer-info ipaddr
100.100.100.1 interface fcip2 channel-group 2 force no
shutdown use-profile 201 peer-info ipaddr 100.100.100.5
!--- Both FCIP 1 and FCIP 2 are bound to the same
channel-group 2. Also note that !--- there is no strict
relationship between profile-id and FCIP interface !---
numbering here, as this is not a requirement. From a
management and !--- troubleshooting perspective,
however, a "strict" relationship of both values !--- is
recommended. vsan database vsan 600 interface fc1/1 vsan
601 interface fc1/8 boot system bootflash:/s122a boot
kickstart bootflash:/k122a ip domain-name cisco.com ip
name-server 144.254.10.123 ip default-gateway
10.48.69.129 ip route 100.100.100.0 255.255.255.252
200.200.200.2 distance 2 ip route 100.100.100.4
255.255.255.252 200.200.200.6 distance 2 !--- IP routes
are defined for both FCIP peer IP addresses. The next
hop must be !--- aware of the best route to the peer's
addresses or to the relevant IP subnets. ssh key dsa 768
force ssh server enable switchname canterbury system
default switchport trunk mode auto username admin
password 5 $1$KcCrqxlu$mtU03/60PRUIfjl.aeEEc0 role
network-admin zone default-zone permit vsan 600-601
zoneset distribute full vsan 1-4093 interface
GigabitEthernet2/1 ip address 200.200.200.1
255.255.255.252 switchport mtu 3000 no shutdown
interface GigabitEthernet2/2 ip address 200.200.200.5
255.255.255.252 switchport mtu 3000 no shutdown
interface GigabitEthernet2/3 interface
GigabitEthernet2/4 interface GigabitEthernet2/5
interface GigabitEthernet2/6 interface
GigabitEthernet2/7 interface GigabitEthernet2/8
interface fc1/1 interface fc1/2 interface fc1/3
interface fc1/4 interface fc1/5 interface fc1/6
interface fc1/7 interface fc1/8 interface fc1/9
interface fc1/10 interface fc1/11 interface fc1/12
interface fc1/13 interface fc1/14 interface fc1/15
interface fc1/16 interface mgmt0 ip address 10.48.69.156
255.255.255.128 interface iscsi2/1 interface iscsi2/2
interface iscsi2/3 interface iscsi2/4 interface iscsi2/5
```

```
interface iscsi2/6 interface iscsi2/7 interface iscsi2/8
```

驗證

使用本節內容，確認您的組態是否正常運作。

輸出直譯器工具(僅供已註冊客戶使用)(OIT)支援某些show命令。使用OIT檢視show命令輸出的分析。

- show interface gig *x/y* — 顯示繫結到FCIP配置檔案的相關Gigabit介面的狀態。
- show ips stats tcp int gig *x/y* — 顯示相關Gigabit介面的TCP統計資訊和活動連線。
- show ips arp int gig *x/y* — 顯示相關Gigabit介面的所有位址解析通訊協定(ARP)專案；下一個躍點或對等點應位於此清單中。
- show ips ip route int gig *x/y* — 顯示通過相關Gigabit介面的特定路由。
- show interface fcip *x* — 顯示FCIP介面狀態及與此FCIP通道相關的所有詳細資訊。
- show profile fcip *x* — 顯示將配置檔案繫結到的IP地址和所有配置的TCP引數。
- show int fcip *x* counters — 用於檢查是否有任何訊框通過FCIP通道。
- show fcdomain vsan *x* — 列出所有與域相關的詳細資訊；用於驗證是否已在FCIP通道中形成交換矩陣。
- show fcns da vsan *x* — *顯示相關VSAN的所有pwwn*、*FC4-Types和FCID;*用於驗證是否所有期望的條目都通過FCIP隧道分發。

疑難排解

使用本節內容，對組態進行疑難排解。

確保多次發出show命令以構建計數器歷史記錄。與某個時間點無關且僅收集一次的計數器基本上是無用的。

使用以下配置進行進一步的故障排除。

- MDS 9509（野牛）
- MDS 9216（坎特伯里）
- 特殊訊框組態(Bison)
- 特殊幀配置(Canterbury)
- 來自拜森和坎特伯雷的顯示器 — 坎特伯雷被動
- 從Bison和Canterbury顯示 — 時間戳設定

MDS 9509（野牛）

```
bison# sh int gig 4/1

GigabitEthernet4/1 is up
    Hardware is GigabitEthernet, address is
0005.3000.a85a
    Internet address is 100.100.100.1/30
    MTU 3000 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
    8685 packets input, 976566 bytes
      0 multicast frames, 0 compressed
      0 input errors, 0 frame, 0 overrun 0 fifo
    8679 packets output, 972382 bytes, 0 underruns
      0 output errors, 0 collisions, 0 fifo
      0 carrier errors


bison# sh int gig 4/2

GigabitEthernet4/2 is up
    Hardware is GigabitEthernet, address is
0005.3000.a85b
    Internet address is 100.100.100.5/30
    MTU 3000 bytes
    Port mode is IPS
    Speed is 1 Gbps
    Beacon is turned off
    Auto-Negotiation is turned on
    5 minutes input rate 16 bits/sec, 2 bytes/sec, 0
frames/sec
    5 minutes output rate 16 bits/sec, 2 bytes/sec, 0
frames/sec
    590 packets input, 46496 bytes
      0 multicast frames, 0 compressed
      0 input errors, 0 frame, 0 overrun 0 fifo
    547 packets output, 30898 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
      14 active openings, 4 accepts
      4 failed attempts, 0 reset received, 14
established
    Segment stats
      8897 received, 8505 sent, 0 retransmitted
      0 bad segments received, 0 reset sent

TCP Active Connections
    Local Address       Remote Address      State
Send-Q  Recv-Q
    100.100.100.1:65480  200.200.200.1:3225  ESTABLISH
0       0
    100.100.100.1:65482  200.200.200.1:3225  ESTABLISH
0       0
    100.100.100.1:3225   0.0.0.0:0           LISTEN
0       0


bison# sh ips stats tcp int gig 4/2

TCP Statistics for port GigabitEthernet4/2
    Connection Stats
      2 active openings, 0 accepts
      0 failed attempts, 0 reset received, 2 established
    Segment stats
      598 received, 43 sent, 0 retransmitted
      0 bad segments received, 0 reset sent
```

```
TCP Active Connections
    Local Address      Remote Address      State
Send-Q  Recv-Q
    100.100.100.5:65531  200.200.200.5:3225  ESTABLISH
0       0
    100.100.100.5:65533  200.200.200.5:3225  ESTABLISH
0       0
    100.100.100.5:3225   0.0.0.0:0           LISTEN
0       0


bison# sh int fcip1-2

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
    Belongs to port-channel 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 200.200.200.1 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 100.100.100.1:65480,
Remote 200.200.200.1:3225
      Data connection: Local 100.100.100.1:65482, Remote
200.200.200.1:3225
      28 Attempts for active connections, 7 close of
connections
    TCP Parameters
      Path MTU 3000 bytes
      Current retransmission timeout is 200 ms
      Round trip time: Smoothed 5 ms, Variance: 6
      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: 118 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
        4077 frames input, 379836 bytes
          4071 Class F frames input, 379100 bytes
          6 Class 2/3 frames input, 736 bytes
          0 Error frames timestamp error 0
        4077 frames output, 381064 bytes
          4071 Class F frames output, 380364 bytes
```

```
              6 Class 2/3 frames output, 700 bytes
              0 Error frames 0 reass frames


fcip2 is trunking
    Hardware is GigabitEthernet
    Port WWN is 20:c6:00:05:30:00:7a:de
    Peer port WWN is 20:46:00:0c:30:6c:24:40
    Admin port mode is auto, trunk mode is on
    Port mode is TE
    vsan is 1
    Belongs to port-channel 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 2 (interface GigabitEthernet4/2)
    Peer Information
      Peer Internet address is 200.200.200.5 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 100.100.100.5:65531,
Remote 200.200.200.5:3225
      Data connection: Local 100.100.100.5:65533, Remote
200.200.200.5:3225
      2 Attempts for active connections, 0 close of
connections
    TCP Parameters
      Path MTU 3000 bytes
      Current retransmission timeout is 200 ms
      Round trip time: Smoothed 0 ms, Variance: 0
      Advertized window: Current: 118 KB, Maximum: 118
KB, Scale: 1
      Peer receive window: Current: 118 KB, Maximum: 118
KB, Scale: 1
      Congestion window: Current: 8 KB, Slow start
threshold: 118 KB
      5 minutes input rate 32 bits/sec, 4 bytes/sec, 0
frames/sec
      5 minutes output rate 32 bits/sec, 4 bytes/sec, 0
frames/sec
        8 frames input, 1232 bytes
          8 Class F frames input, 1232 bytes
          0 Class 2/3 frames input, 0 bytes
          0 Error frames timestamp error 0
        8 frames output, 1228 bytes
          8 Class F frames output, 1228 bytes
          0 Class 2/3 frames output, 0 bytes
          0 Error frames 0 reass frames


bison# sh fcip pro 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 100000 kbps
        Minimum available bandwidth is 100000 kbps
        Estimated round trip time is 10000 usec
        Congestion window monitoring is enabled, burst size
is 10 KB


bison# sh fcip pro 2

FCIP Profile 2
        Internet Address is 100.100.100.5 (interface
GigabitEthernet4/2)
        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 100000 kbps
        Minimum available bandwidth is 100000 kbps
        Estimated round trip time is 10000 usec
        Congestion window monitoring is enabled, burst size
is 10 KB

bison# sh int port-channel 1

port-channel 1 is trunking
        Hardware is Fibre Channel
        Port WWN is 24:01:00:05:30:00:7a:de
        Admin port mode is auto, trunk mode is on
        Port mode is TE
        Port vsan is 1
        Speed is 2 Gbps
        Trunk vsans (admin allowed and active) (600-601)
        Trunk vsans (up)                       (600-601)
        Trunk vsans (isolated)                 ()
        Trunk vsans (initializing)             ()
        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
            3969 frames input, 369812 bytes
              3963 Class F frames input, 369076 bytes
              6 Class 2/3 frames input, 736 bytes
              0 Error frames timestamp error 0
            3969 frames output, 371040 bytes
              3963 Class F frames output, 370340 bytes
              6 Class 2/3 frames output, 700 bytes
              0 Error frames 0 reass frames
        Member[1] : fcip1
        Member[2] : fcip2

bison# sh ips ip route interface gigabitethernet 4/1

Codes: C - connected, S - static
No default gateway
```

```
S 200.200.200.0/30 via 100.100.100.2, GigabitEthernet4/1
C 100.100.100.0/30 is directly connected,
GigabitEthernet4/1

bison# sh ips ip route interface gigabitethernet 4/2

Codes: C - connected, S - static
No default gateway

S 200.200.200.4/30 via 100.100.100.6, GigabitEthernet4/2
C 100.100.100.4/30 is directly connected,
GigabitEthernet4/2

bison# sh ips arp int gig 4/1

Protocol        Address    Age (min)   Hardware Addr
Type   Interface
Internet   100.100.100.2      8      0008.e21e.c7bc
ARPA  GigabitEthernet4/1
!--- Verify that the hardware address listed belongs to
the !--- next hop networking device. bison# sh ips arp
int gig 4/2

Protocol        Address    Age (min)   Hardware Addr
Type   Interface
Internet   100.100.100.6      5      0008.e21e.c7bc
ARPA  GigabitEthernet4/2

bison# sh int port-channel 1 trunk vsan 600-601

port-channel 1 is trunking
    Vsan 600 is up, FCID is 0x010000
    Vsan 601 is up, FCID is 0x010000

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
    ---------------- ------------- ------------
    port-channel 1   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
    ---------------- ------------- ------------
    port-channel 1   Downstream     Disabled
    ---------------- ------------- ------------
```

MDS 9216 (坎特伯里)

```
canterbury# sh int gig 2/1-2

GigabitEthernet2/1 is up
    Hardware is GigabitEthernet, address is
0005.3000.ade6
    Internet address is 200.200.200.1/30
    MTU 3000 bytes
    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 320 bits/sec, 40 bytes/sec, 0
frames/sec
    8844 packets input, 993118 bytes
      0 multicast frames, 0 compressed
      0 input errors, 0 frame, 0 overrun 0 fifo
    8855 packets output, 994686 bytes, 0 underruns
      0 output errors, 0 collisions, 0 fifo
      0 carrier errors

GigabitEthernet2/2 is up
    Hardware is GigabitEthernet, address is
0005.3000.ade7
    Internet address is 200.200.200.5/30
    MTU 3000 bytes
    Port mode is IPS
    Speed is 1 Gbps
    Beacon is turned off
    Auto-Negotiation is turned on
    5 minutes input rate 16 bits/sec, 2 bytes/sec, 0
frames/sec
    5 minutes output rate 8 bits/sec, 1 bytes/sec, 0
frames/sec
```

```
      634 packets input, 39538 bytes
        0 multicast frames, 0 compressed
        0 input errors, 0 frame, 0 overrun 0 fifo
      610 packets output, 47264 bytes, 0 underruns
        0 output errors, 0 collisions, 0 fifo
        0 carrier errors

canterbury# sh ips stats tcp int gig 2/1

TCP Statistics for port GigabitEthernet2/1
    Connection Stats
      18 active openings, 10 accepts
      14 failed attempts, 0 reset received, 8
established
    Segment stats
      8919 received, 8923 sent, 0 retransmitted
      0 bad segments received, 0 reset sent

TCP Active Connections
    Local Address        Remote Address        State
Send-Q  Recv-Q
    200.200.200.1:3225  100.100.100.1:65480  ESTABLISH
0       0
    200.200.200.1:3225  100.100.100.1:65482  ESTABLISH
0       0
    200.200.200.1:3225  0.0.0.0:0             LISTEN
0       0

canterbury# sh ips stats tcp int gig 2/2

TCP Statistics for port GigabitEthernet2/2
    Connection Stats
      498 active openings, 2 accepts
      498 failed attempts, 0 reset received, 2
established
    Segment stats
      556 received, 579 sent, 0 retransmitted
      0 bad segments received, 0 reset sent

TCP Active Connections
    Local Address        Remote Address        State
Send-Q  Recv-Q
    200.200.200.5:3225  100.100.100.5:65531  ESTABLISH
0       0
    200.200.200.5:3225  100.100.100.5:65533  ESTABLISH
0       0
    200.200.200.5:3225  0.0.0.0:0             LISTEN
0       0

canterbury# sh int fcip 1-2

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
    Belongs to port-channel 2
    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 200 (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 200.200.200.1:3225,
Remote 100.100.100.1:65480
      Data connection: Local 200.200.200.1:3225, Remote
100.100.100.1:65482
      18 Attempts for active connections, 2 close of
connections
    TCP Parameters
      Path MTU 3000 bytes
      Current retransmission timeout is 200 ms
      Round trip time: Smoothed 5 ms, Variance: 6
      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 136 bits/sec, 17 bytes/sec, 0
frames/sec
      5 minutes output rate 136 bits/sec, 17 bytes/sec,
0 frames/sec
      4189 frames input, 391368 bytes
        4183 Class F frames input, 390668 bytes
        6 Class 2/3 frames input, 700 bytes
        0 Error frames timestamp error 0
      4189 frames output, 390140 bytes
        4183 Class F frames output, 389404 bytes
        6 Class 2/3 frames output, 736 bytes
        0 Error frames 0 reass frames

fcip2 is trunking
    Hardware is GigabitEthernet
    Port WWN is 20:46:00:0c:30:6c:24:40
    Peer port WWN is 20:c6:00:05:30:00:7a:de
    Admin port mode is auto, trunk mode is auto
    Port mode is TE
    vsan is 1
    Belongs to port-channel 2
    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 201 (interface GigabitEthernet2/2)
    Peer Information
      Peer Internet address is 100.100.100.5 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 200.200.200.5:3225,
Remote 100.100.100.5:65531
      Data connection: Local 200.200.200.5:3225, Remote
100.100.100.5:65533
      498 Attempts for active connections, 0 close of
connections
    TCP Parameters
      Path MTU 3000 bytes
      Current retransmission timeout is 200 ms
      Round trip time: Smoothed 10 ms, Variance: 5
      Advertized window: Current: 118 KB, Maximum: 118
KB, Scale: 1
      Peer receive window: Current: 118 KB, Maximum: 118
KB, Scale: 1
      Congestion window: Current: 8 KB, Slow start
threshold: 112 KB
      5 minutes input rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      5 minutes output rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      8 frames input, 1228 bytes
        8 Class F frames input, 1228 bytes
        0 Class 2/3 frames input, 0 bytes
        0 Error frames timestamp error 0
      8 frames output, 1232 bytes
        8 Class F frames output, 1232 bytes
        0 Class 2/3 frames output, 0 bytes
        0 Error frames 0 reass frames

canterbury# sh int port 2

port-channel 2 is trunking
    Hardware is Fibre Channel
    Port WWN is 24:02:00:0c:30:6c:24:40
    Admin port mode is auto, trunk mode is auto
    Port mode is TE
    Port vsan is 1
    Speed is 2 Gbps
    Trunk vsans (admin allowed and active) (600-601)
    Trunk vsans (up) (600-601)
    Trunk vsans (isolated) ()
    Trunk vsans (initializing) ()
    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
    4213 frames input, 394068 bytes
      4207 Class F frames input, 393368 bytes
      6 Class 2/3 frames input, 700 bytes
      0 Error frames timestamp error 0
    4213 frames output, 392844 bytes
      4207 Class F frames output, 392108 bytes
      6 Class 2/3 frames output, 736 bytes
      0 Error frames 0 reass frames
    Member[1] : fcip1
    Member[2] : fcip2

canterbury# sh ips ip route interface gig 2/1

Codes: C - connected, S - static
No default gateway
```

```
S 100.100.100.0/30 via 200.200.200.2, GigabitEthernet2/1
C 200.200.200.0/30 is directly connected,
GigabitEthernet2/1

canterbury# sh ips ip route interface gig 2/2

Codes: C - connected, S - static
No default gateway

S 100.100.100.4/30 via 200.200.200.6, GigabitEthernet2/2
C 200.200.200.4/30 is directly connected,
GigabitEthernet2/2

canterbury# sh fcns da

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
-------------------------------------------------------
------------------
0x010100  N     10:00:00:00:00:05:00:00
0x020100  N     10:00:00:00:00:01:00:00
```
!--- Always verify that the fabric has formed with the
expected neighbor(s) !--- through FCIP E or TE port when
the configuration is completed.

特殊訊框組態(Bison)

!--- Special frames are used to improve security. !---
Before user-data is transmitted across an FCIP tunnel,
FSF verifies that !--- the peer is defined on the
configured wwn. interface fcip1 channel-group 1 force no
shutdown use-profile 1 peer-info ipaddr 200.200.200.1
special-frame **peer-wwn 20:00:00:0c:30:6c:24:40** profile-
id 200

```
interface fcip2
channel-group 1 force
no shutdown
use-profile 2
peer-info ipaddr 200.200.200.5
special-frame peer-wwn 20:00:00:0c:30:6c:24:40 profile-
id 201
```

!--- The peer-wwn is derived from the peer MDS by
issuing the following command: canterbury# **sh wwn switch**

```
Switch WWN is 20:00:00:0c:30:6c:24:40
!--- This value is significant per peer switch, so it is
used for all tunnels !--- towards this switch. This
configuration shows the following: bison# sh int fcip 1-
2

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
    Belongs to port-channel 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 200.200.200.1 and port is
3225
      Special Frame is enabled
      Peer switch WWN is 20:00:00:0c:30:6c:24:40
      Peer profile id is 200
      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 100.100.100.1:65372,
Remote 200.200.200.1:3225
      Data connection: Local 100.100.100.1:65374, Remote
200.200.200.1:3225
      82 Attempts for active connections, 9 close of
connections
    TCP Parameters
      Path MTU 3000 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: 106 KB, Slow start
threshold: 118 KB
      5 minutes input rate 46128 bits/sec, 5766
bytes/sec, 19 frames/sec
      5 minutes output rate 194867736 bits/sec, 24358467
bytes/sec, 20732 frames/sec
      5841 frames input, 1729836 bytes
        4575 Class F frames input, 429444 bytes
        1266 Class 2/3 frames input, 1300392 bytes
        0 Error frames timestamp error 0
      6339146 frames output, 7447938520 bytes
        4576 Class F frames output, 431800 bytes
        6334570 Class 2/3 frames output, 7447506720
bytes
        0 Error frames 0 reass frames
```

```
fcip2 is trunking
    Hardware is GigabitEthernet
    Port WWN is 20:c6:00:05:30:00:7a:de
    Peer port WWN is 20:46:00:0c:30:6c:24:40
    Admin port mode is auto, trunk mode is on
    Port mode is TE
    vsan is 1
    Belongs to port-channel 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 2 (interface GigabitEthernet4/2)
    Peer Information
      Peer Internet address is 200.200.200.5 and port is
3225
      Special Frame is enabled
      Peer switch WWN is 20:00:00:0c:30:6c:24:40
      Peer profile id is 201
      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 100.100.100.5:3225,
Remote 200.200.200.5:64535
      Data connection: Local 100.100.100.5:3225, Remote
200.200.200.5:64537
      58 Attempts for active connections, 1 close of
connections
    TCP Parameters
      Path MTU 3000 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: 106 KB, Slow start
threshold: 112 KB
      5 minutes input rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      5 minutes output rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      415 frames input, 398160 bytes
        16 Class F frames input, 2460 bytes
        399 Class 2/3 frames input, 395700 bytes
        0 Error frames timestamp error 0
      6078322 frames output, 7147327176 bytes
        16 Class F frames output, 2460 bytes
        6078306 Class 2/3 frames output, 7147324716
bytes
        0 Error frames 0 reass frames
```

特殊幀配置(Canterbury)

```
interface fcip1
channel-group 2 force
no shutdown
use-profile 200
```

```
peer-info ipaddr 100.100.100.1
special-frame peer-wwn 20:00:00:05:30:00:7a:de profile-
id 1

interface fcip2
channel-group 2 force
no shutdown
use-profile 201
peer-info ipaddr 100.100.100.5
special-frame peer-wwn 20:00:00:05:30:00:7a:de profile-
id 2

canterbury# sh int 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
    Belongs to port-channel 2
    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 200 (interface GigabitEthernet2/1)
    Peer Information
      Peer Internet address is 100.100.100.1 and port is
3225
      Special Frame is enabled
      Peer switch WWN is 20:00:00:05:30:00:7a:de
      Peer profile id is 1
      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 200.200.200.1:3225,
Remote 100.100.100.1:65372
      Data connection: Local 200.200.200.1:3225, Remote
100.100.100.1:65374
      2 Attempts for active connections, 0 close of
connections
    TCP Parameters
      Path MTU 3000 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 94347400 bits/sec, 11793425
bytes/sec, 10031 frames/sec
      5 minutes output rate 144 bits/sec, 18 bytes/sec,
0 frames/sec
      3985861 frames input, 4685834196 bytes
        219 Class F frames input, 25228 bytes
        3985642 Class 2/3 frames input, 4685808968 bytes
```

```
          0 Error frames timestamp error 0
        1043 frames output, 866780 bytes
          218 Class F frames output, 23448 bytes
          825 Class 2/3 frames output, 843332 bytes
          0 Error frames 0 reass frames


canterbury# sh int fcip 2

fcip2 is trunking
    Hardware is GigabitEthernet
    Port WWN is 20:46:00:0c:30:6c:24:40
    Peer port WWN is 20:c6:00:05:30:00:7a:de
    Admin port mode is auto, trunk mode is auto
    Port mode is TE
    vsan is 1
    Belongs to port-channel 2
    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 201 (interface GigabitEthernet2/2)
    Peer Information
      Peer Internet address is 100.100.100.5 and port is
3225
      Special Frame is enabled
      Peer switch WWN is 20:00:00:05:30:00:7a:de
      Peer profile id is 2
      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 200.200.200.5:64535,
Remote 100.100.100.5:3225
      Data connection: Local 200.200.200.5:64537, Remote
100.100.100.5:3225
      500 Attempts for active connections, 0 close of
connections
    TCP Parameters
      Path MTU 3000 bytes
      Current retransmission timeout is 300 ms
      Round trip time: Smoothed 10 ms, Variance: 5
      Advertized window: Current: 118 KB, Maximum: 118
KB, Scale: 1
      Peer receive window: Current: 118 KB, Maximum: 118
KB, Scale: 1
      Congestion window: Current: 8 KB, Slow start
threshold: 118 KB
      5 minutes input rate 94399712 bits/sec, 11799964
bytes/sec, 10034 frames/sec
      5 minutes output rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      9769115 frames input, 11486944196 bytes
        16 Class F frames input, 2460 bytes
        9769099 Class 2/3 frames input, 11486941736
bytes
        0 Error frames timestamp error 0
      415 frames output, 398160 bytes
        16 Class F frames output, 2460 bytes
        399 Class 2/3 frames output, 395700 bytes
        0 Error frames 0 reass frames
```

來自拜森和坎特伯雷的顯示器 — 坎特伯雷被動

```
interface fcip1
channel-group 2 force
no shutdown
use-profile 200
passive-mode
peer-info ipaddr 100.100.100.1
special-frame peer-wwn 20:00:00:05:30:00:7a:de profile-
id 1

interface fcip2
channel-group 2 force
no shutdown
use-profile 201
passive-mode
peer-info ipaddr 100.100.100.5
special-frame peer-wwn 20:00:00:05:30:00:7a:de profile-
id 2

canterbury# sh ips stats tcp int gig 2/1

TCP Statistics for port GigabitEthernet2/1
    Connection Stats
      20 active openings, 14 accepts
      14 failed attempts, 0 reset received, 14
established
    Segment stats
      12042719 received, 3181301 sent, 0 retransmitted
      0 bad segments received, 0 reset sent

TCP Active Connections
    Local Address       Remote Address        State
Send-Q  Recv-Q
    200.200.200.1:3225  100.100.100.1:65368   ESTABLISH
0       0
    200.200.200.1:3225  100.100.100.1:65370   ESTABLISH
0       0
    200.200.200.1:3225  100.100.100.1:65372   TIME_WAIT
0       0
    200.200.200.1:3225  0.0.0.0:0             LISTEN
0       0
!--- Both FCIP interfaces for Canterbury are configured
to be passive; this !--- results in the above TCP
statistics where Canterbury, despite being !---
configured with the highest IP addresses for both
tunnels, did not !--- initiate the TCP connections. Its
peer, Bison, initiates.


canterbury# sh ips stats tcp int gig 2/2

TCP Statistics for port GigabitEthernet2/2
    Connection Stats
      500 active openings, 4 accepts
      498 failed attempts, 0 reset received, 6
established
    Segment stats
      11933351 received, 3144627 sent, 0 retransmitted
      0 bad segments received, 0 reset sent

TCP Active Connections
    Local Address       Remote Address        State
```

```
Send-Q  Recv-Q
    200.200.200.5:3225  100.100.100.5:65415  ESTABLISH
0       0
    200.200.200.5:3225  100.100.100.5:65417  ESTABLISH
0       0
    200.200.200.5:64535 100.100.100.5:3225   TIME_WAIT
0       0
    200.200.200.5:3225  0.0.0.0:0            LISTEN
0       0
```

從Bison和Canterbury顯示 — 時間戳設定

```
!--- FCIP Time Stamp is enabled to allow the peer to
drop FCIP userdata if it !--- exceeds the specified
time-difference. The time difference is the maximum !---
value in transit of user data frames between two peer
FCIP entities. bison(config-if)# time-stamp acceptable-
diff 1000

Please enable NTP with a common time source on both MDS
Switches that are on
either side of the FCIP link
!--- Note that the value specified is in milliseconds
and, because a !--- time difference is specified, both
ends of the FCIP tunnel must have access !--- to the
same clock source through NTP. interface fcip1 channel-
group 1 force no shutdown use-profile 1 peer-info ipaddr
200.200.200.1 time-stamp acceptable-diff 1000
special-frame peer-wwn 20:00:00:0c:30:6c:24:40 profile-
id 200

interface fcip2
channel-group 1 force
no shutdown
use-profile 2
peer-info ipaddr 200.200.200.5
time-stamp acceptable-diff 1000
special-frame peer-wwn 20:00:00:0c:30:6c:24:40 profile-
id 201

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
    Belongs to port-channel 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 200.200.200.1 and port is
3225
      Special Frame is enabled
      Peer switch WWN is 20:00:00:0c:30:6c:24:40
      Peer profile id is 200
```

```
      Maximum number of TCP connections is 2
      Time Stamp is enabled, acceptable time difference
1000 ms
      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 100.100.100.1:65368,
Remote 200.200.200.1:3225
      Data connection: Local 100.100.100.1:65370, Remote
200.200.200.1:3225
      84 Attempts for active connections, 10 close of
connections
   TCP Parameters
      Path MTU 3000 bytes
      Current retransmission timeout is 200 ms
      Round trip time: Smoothed 2 ms, Variance: 3
      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: 118 KB
      5 minutes input rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      5 minutes output rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      5988 frames input, 1743840 bytes
        4719 Class F frames input, 443184 bytes
        1269 Class 2/3 frames input, 1300656 bytes
        0 Error frames timestamp error 0
      15337275 frames output, 18028320932 bytes
        4720 Class F frames output, 445544 bytes
        15332555 Class 2/3 frames output, 18027875388
bytes
        0 Error frames 0 reass frames

canterbury(config-if)# time-stamp acceptable-diff 1000

Please enable NTP with a common time source on both MDS
Switches that are on
either side of the FCIP link

interface fcip1
channel-group 2 force
no shutdown
use-profile 200
passive-mode
peer-info ipaddr 100.100.100.1
time-stamp acceptable-diff 1000
special-frame peer-wwn 20:00:00:05:30:00:7a:de profile-
id 1

interface fcip2
channel-group 2 force
no shutdown
use-profile 201
passive-mode
peer-info ipaddr 100.100.100.5
time-stamp acceptable-diff 1000
special-frame peer-wwn 20:00:00:05:30:00:7a:de profile-
id 2
```

```
canterbury# sh int 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
    Belongs to port-channel 2
    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 200 (interface GigabitEthernet2/1)
    Peer Information
      Peer Internet address is 100.100.100.1 and port is
3225
      Passive mode is enabled
      Special Frame is enabled
      Peer switch WWN is 20:00:00:05:30:00:7a:de
      Peer profile id is 1
      Maximum number of TCP connections is 2
      Time Stamp is enabled, acceptable time difference
1000 ms
      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 200.200.200.1:3225,
Remote 100.100.100.1:65368
      Data connection: Local 200.200.200.1:3225, Remote
100.100.100.1:65370
      2 Attempts for active connections, 0 close of
connections
    TCP Parameters
      Path MTU 3000 bytes
      Current retransmission timeout is 200 ms
      Round trip time: Smoothed 6 ms, Variance: 6
      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 0 bits/sec, 0 bytes/sec, 0
frames/sec
      5 minutes output rate 0 bits/sec, 0 bytes/sec, 0
frames/sec
      9427366 frames input, 11084654892 bytes
        295 Class F frames input, 32716 bytes
        9427071 Class 2/3 frames input, 11084622176
bytes
        145359 Error frames timestamp error 145359
      1122 frames output, 874528 bytes
        294 Class F frames output, 30932 bytes
        828 Class 2/3 frames output, 843596 bytes
        0 Error frames 0 reass frames
```

相關資訊

- [T11首頁](#)
- [TCP閒置後慢啟動重新啟動中的問題](#)
- [RFC 1191 — 路徑MTU探索](#)
- [RFC 1323 — 適用於高效能的TCP擴充模組](#)
- [RFC 2018 - TCP選擇性確認選項](#)
- [RFC 2883 - TCP選擇性確認(SACK)選項的擴展](#)
- [RFC 3821 — 透過TCP/IP傳輸的光纖通道(FCIP)](#)
- [技術支援與文件 - Cisco Systems](#)