

# MDS à configuração do 802.1Q MDS com FCIP

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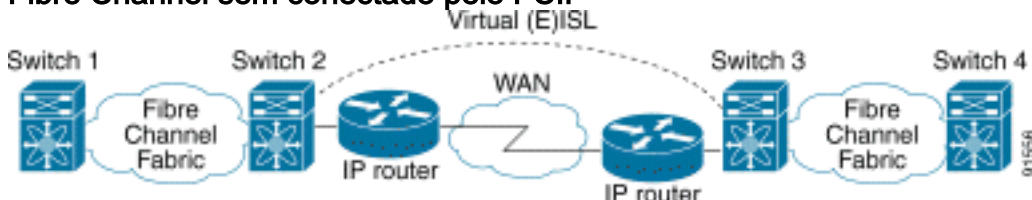
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## Introdução

Este documento fornece um exemplo de configuração para o Fibre Channel Over TCP/IP (FCIP) com 802.1Q Multilayer Director Switch (MDS) para MDS.

O FCIP descreve os mecanismos que permitem que a interconexão de ilhas de redes de área de armazenamento do Fibre Channel (FC) (sem) sobre redes baseada em IP forme um SAN unificado em uma única tela FC. O FCIP confia em serviços de rede baseada em IP para fornecer a Conectividade entre as ilhas SAN sobre redes de área local, redes da área metropolitana, ou redes de longa distância.

### Fibre Channel sem conectado pelo FCIP



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

## Pré-requisitos

## Requisitos

O backbone IP deve ser operacional e entregando a largura de banda requerida para apoiar os aplicativos que são executado através dos links FCIP — esta poderia ser uma camada 2 (L2) ou mergulhar 3 a topologia (L3). Se é uma topologia L3, os roteadores intermediários ou os switch multicamada devem estabelecer-se e ser configurados para enviar apropriadamente o tráfego IP entre endereços IP de origem e de destino dos túneis FCIP. Se o Qualidade de Serviço (QoS) ou o modelagem de tráfego são reforçados em qualquer dispositivo de rede no trajeto entre os pares FCIP, a gerente de rede que administra a infraestrutura de IP deve ser consultada para obter os detalhes necessários antes de configurar algum parâmetro TCP-relacionado e as características no diretor de multicamada comutam (MDS) perfis FCIP. Os Switch Ethernet que são junto às MDSes devem apoiar e ser configurados para o entroncamento do 802.1Q se as subinterfaces estão configuradas no Módulo de serviços do armazenamento IP MDS (IPS).

## Componentes Utilizados

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

- MDS9509 com versão running do módulo de serviço IPS (DS-X9308-SMIP) 1.2.(2a)
- MDS9216 com versão running do módulo de serviço IPS (DS-X9308-SMIP) 1.2.(2a)
- Catalyst 6509 que executa o OS do catalizador (Cactos) 7.4(3)
- Win2003 Server (HPQ Pro-Liant-P4) com Emulex LP9K HBA
- Arranjo de armazenamento IBM (ESS-2105-F20)

As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se a sua rede estiver ativa, certifique-se de que entende o impacto potencial de qualquer comando.

## Convenções

For more information on document conventions, refer to the [Cisco Technical Tips Conventions](#).

## Informações de Apoio

O FCIP consiste nestas especificações:

### ANSI T11

1. O FC-SW-2 descreve o funcionamento e a interação do Switches FC que inclui E\_Port e operação de fábrica.
2. O FC-BB-2 é um mapeamento que se refira a extensão de redes comutadas FC através de um backbone de rede TCP, e define os modelos de referência que apoiam E\_Port e B\_Port.

### Grupo em funcionamento do IETF IPS

1. O FC sobre o TCP cobre as exigências TCP/IP para transportar quadros FC sobre uma rede IP.
2. O encapsulamento do quadro FC define o formato de encapsulamento do filamento comum.

### Padrões do IEEE 802

O IEEE 802 LAN de todos os tipos pode ser conectado junto com pontes MAC, como especificado em ISO/IEC 15802-3. Este padrão define o funcionamento das pontes VLAN que permitem a definição, a operação, e a administração das topologias de vlan dentro de uma infraestrutura da LAN interligada.

Uma interconexão entre duas Switches SAN ou telas através do FCIP é chamada um link FCIP e pode conter umas ou várias conexões de TCP. Cada extremidade de um link FCIP é associada com uma porta virtual E (VE\_port) ou um B\_port, segundo a aplicação. O FC-BB e o FC-BB-2 estão descrevendo as diferenças entre ambas as aproximações. O modulo de serviços de IP (DS-X9308-SMIP) está suportando os dois modos, mas o padrão é VE-Port, que é também o modo recomendado para executar se todos os peers relevantes forem módulos DS-X9308-SMIP. A funcionalidade de VE\_Port em plataformas MDS igualmente está apoiando a funcionalidade de porta TE, que faz capaz do tráfego do entroncamento de virtual múltiplo sem (VSAN) através de um exemplo FCIP. As interfaces Gigabit Ethernet (GE), residentes nos módulos do Cisco X9308-SMIP, suportam 802.1Q a fim de reforçar a largura de banda de 1 Gbps entre dois ou mais túneis FCIP em situações nas quais existam requisitos de pequena largura de banda por túnel FCIP. Os usuários devem entender que a largura de banda de compartilhamento usando dot1q não estará fornecendo largura de banda determinista por túnel de FCIP quando os parâmetros de TCP do Perfil de FCIP forem deixados no estado padrão.

## [Configurar](#)

Nos MDSes, você precisa familiarizar-se com os guias de configuração do IP para as duas plataformas. A maioria de versão atual dos manuais pode ser encontrada em [configurar o armazenamento IP no cisco.com](#). No lado do Switch Ethernet, um precisa de ser familiar com os específicos da configuração de entroncamento do dot1q. Neste exemplo particular, um catalyst executando hybrid Cactos é distribuído; a configuração diferente pode aplicar-se a outros switch Cisco ou ao Switches dos outros fornecedores.

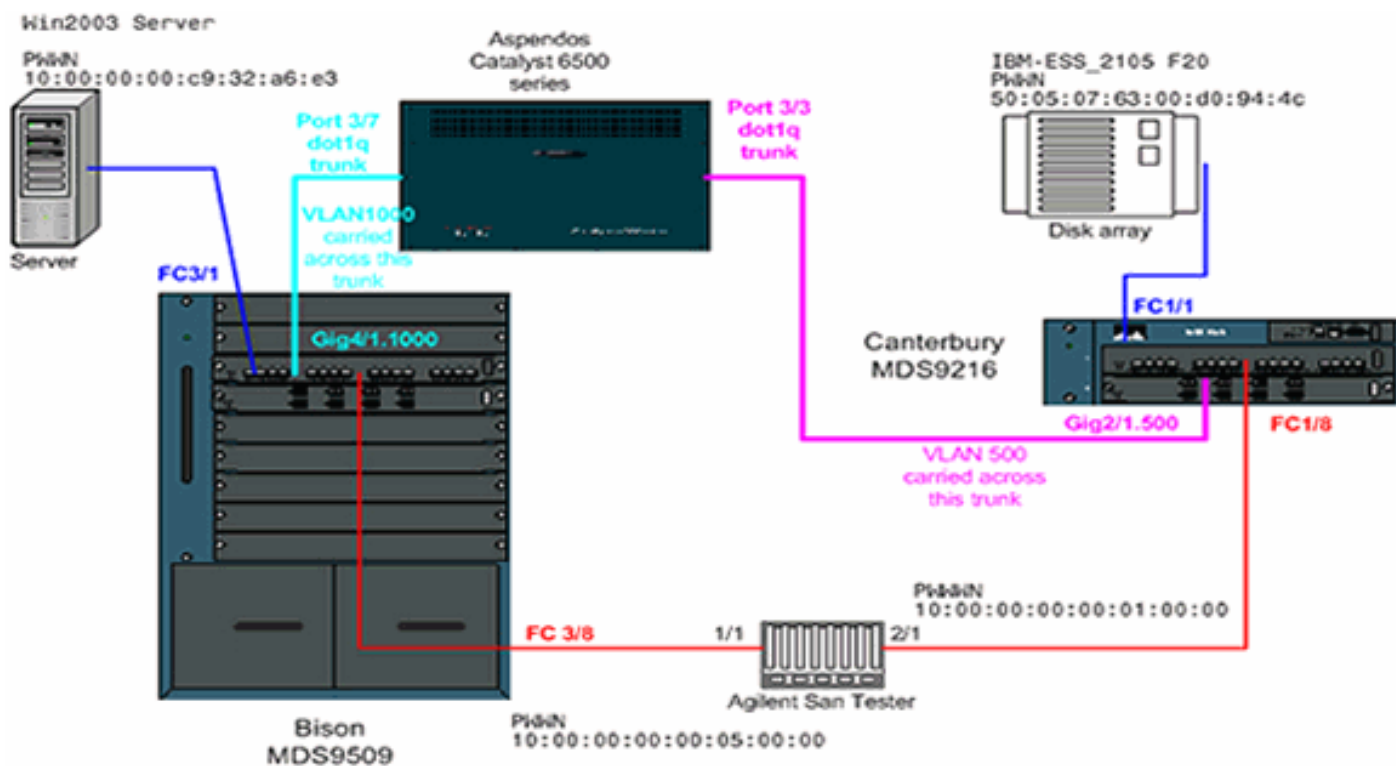
Para o Catalyst 6000 Series que executa o modo híbrido, refira [configurar troncos do vlan de Ethernet](#). Para o Native IOS, refira [configurar VLAN](#). Para o catalizador XL datilografe o Switches que executa o Native IOS, referem [configurar VLAN](#).

**Nota:** Para localizar informações adicionais sobre os comandos usados neste documento, utilize a Ferramenta Command Lookup (somente clientes [registrados](#)).

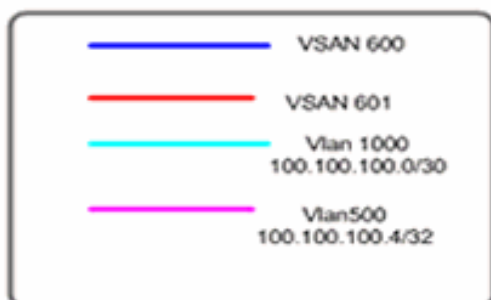
## [Diagrama de Rede](#)

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

### Topologia 2



## Topology 2 - FCIP tunnel across dot1q subinterface



A topologia 2 descreve um túnel FCIP que é executado através de um tronco 802.1Q em ambos os lados da nuvem IP. A nuvem IP é desmoronada em um switch multicamada (Catalyst 6500) que distribui o tráfego de VLAN 1000 a VLAN 500 e VLAN 500 a VLAN 1000. O VLAN 1000 traça conceptualmente à sub-rede 100.100.100.0/30 IP, e o VLAN 500 traça à sub-rede 100.100.100.4/30 IP. A maneira que o MDS traça e recupera quadros do dot1q se tornará claro na seção de configuração abaixo. Para a simplicidade, somente um túnel FCIP através de uma interface física em ambas as MDSes é definido; na realidade, um usaria somente o entroncamento do dot1q para compartilhar da largura de banda de uma interface de gigabit entre túneis múltiplos FCIP.

## Configurações

- [MDS9509 \(bisonte\) com o módulo IPS-8](#)
- [MDS9216 \(Canterbury\) com o módulo IPS-8](#)
- [Catalizador 6000 \(Aspendos\) com o módulo IPS-8](#)

<b>MDS9509 (bisonte) com o módulo IPS-8</b>
<pre>bison# sh ver</pre> <p>Cisco Storage Area Networking Operating System (SAN-OS)</p>

Software  
TAC support: <http://www.cisco.com/tac>  
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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 200 name test 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 100.100.100.6 <!--- peer IP
address is the address on remote MDS Canterbury <!---
configured on interface Gig4/1.500. vsan database vsan
600 interface fc3/1 vsan 601 interface fc3/8 boot system
bootflash:/s122a sup-1 boot kickstart bootflash:/k122a
sup-1 boot system bootflash:/s122a sup-2 boot kickstart
bootflash:/k122a sup-2 boot asm-sfn bootflash:/ilcl.bin
module 4 ip domain-name cisco.com ip name-server
144.254.10.123 ip default-gateway 10.48.69.129 ip route
100.100.100.4 255.255.255.252 100.100.100.2 distance 2
!--- The next hop IP address is 100.100.100.2 !--- and
is owned by the intermediate !--- Ethernet multilayer
switch Aspendos. zone name z-fcip2 vsan 600 member pwnn
50:05:07:63:00:d0:94:4c member pwnn
10:00:00:00:c9:32:a6:e3 zone name Zone_a1 vsan 601
member pwnn 10:00:00:00:00:01:00:00 member pwnn
```

```
10:00:00:00:00:05:00:00 zone default-zone permit vsan 1
zone default-zone permit vsan 603 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 fc3/1 no shutdown !---
Output suppressed. interface fc3/8 no shutdown interface
mgmt0 ip address 10.48.69.151 255.255.255.192 interface
GigabitEthernet4/1 no shutdown interface
GigabitEthernet4/1.1000 ip address 100.100.100.1
255.255.255.252 switchport mtu 3000 no shutdown !---
Here the subinterface 1000 is configured, !--- which
ties into dot1q VLAN 1000 on the Ethernet switch. !---
The MTU size is changed from the default 1500 bytes to
3000, !--- because the intermediate switch supports
jumbo frames !--- on both L2 and L3.
```

## MDS9216 (Canterbury) com o módulo IPS-8

```
canterbury# sh run

Building Configuration ...
fcip profile 1
ip address 100.100.100.6

vsan database
vsan 600
vsan 601

fcdomain domain 2 preferred vsan 600
fcdomain domain 2 preferred vsan 601

interface fcip1
use-profile 1
peer-info ipaddr 100.100.100.1

vsan database
vsan 600 interface fc1/1
vsan 601 interface fc1/8

boot system bootflash:/s122a
boot kickstart bootflash:/k122a
fcalias name test vsan 1

ip domain-name cisco.com
ip name-server 144.254.10.123
ip default-gateway 10.48.69.129
ip route 10.61.0.0 255.255.0.0
ip route 10.61.0.0 255.255.0.0 10.48.69.200
ip route 100.100.100.0 255.255.255.252 100.100.100.5
distance 2
!--- Static IPS route required to reach the FCIP peer
address. line vty exec-timeout 0 switchname canterbury
system default switchport trunk mode auto zone name z-
fcip2 vsan 600 member pwnn 50:05:07:63:00:d0:94:4c
member pwnn 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 no shutdown
interface GigabitEthernet2/1.500 ip address
100.100.100.6 255.255.255.252 switchport mtu 3000 no
shutdown interface fc1/1 no shutdown interface fc1/8 no
```

```
shutdown interface mgmt0 ip address 10.48.69.156
255.255.255.128
```

## Catalizador 6000 (Aspendos) com o módulo IPS-8

```
Aspendos> (enable) sh vlan 500
```

VLAN Name	Status	IfIndex
Mod/Ports, Vlans		
-----		
500 VLAN0500	active	191
1/1		
<b>3/3</b>		
<b>15/1</b>		

VLAN Mode	Type	SAID	MTU	Parent	RingNo	BrdgNo	Stp	Brdg
500	enet	100	500	1500	-	-	-	-
0	0							

VLAN	MISTP-Inst	DynCreated	RSPAN
500	-	static	disabled

```
Aspendos> (enable) sh vlan 1000
```

VLAN Name	Status	IfIndex
Mod/Ports, Vlans		
-----		
1000 fcip-extra-hop	active	131
<b>3/7</b>		
<b>15/1</b>		

VLAN Mode	Type	SAID	MTU	Parent	RingNo	BrdgNo	Stp	Brdg
1000	enet	101	000	1500	-	-	-	-
0	0							

VLAN	MISTP-Inst	DynCreated	RSPAN
1000	-	static	disabled

```
Aspendos> (enable) sh trunk 3/3
```

\* - indicates vtp domain mismatch

Port	Mode	Encapsulation	Status	Native vlan
3/3	on	dot1q	trunking	1

```
Port Vlans allowed on trunk
```

```
-----
```

```
3/3 1,500
```

Port Vlans allowed and active in management domain

-----  
3/3 1,500

Port Vlans in spanning tree forwarding state and not pruned

-----  
3/3 1,500

Aspendos> (enable) **sh trunk 3/7**

\* - indicates vtp domain mismatch

Port	Mode	Encapsulation	Status	Native vlan
------	------	---------------	--------	-------------

3/7	on	dot1q	trunking	1
-----	----	-------	----------	---

Port Vlans allowed on trunk

-----  
3/7 1,1000

Port Vlans allowed and active in management domain

-----  
3/7 1,1000

Port Vlans in spanning tree forwarding state and not pruned

-----  
3/7 1,1000

*!--- Note that VLAN 500 is trunked on port 3/3, which is physically connected !--- to MDS Canterbury while port 3/7 trunks for VLAN 1000 and is connected !--- to MDS Bison. The port 15/1 is an internal port and directs to the !--- multilayer entity in the switch.*

Aspendos> (enable) **sh port jumbo**

**Jumbo frames MTU size is 9216 bytes.**

Jumbo frames enabled on port(s) 1/2,3/1-16.

*!--- L2 Jumbo support must be enabled for all relevant ports.*

Aspendos> (enable) **sh spantree 3/3**

Port	Vlan	Port-State	Cost	Prio	Portfast	Channel_id
------	------	------------	------	------	----------	------------

3/3	1	forwarding	4	32	disabled	0
3/3	500	forwarding	4	32	disabled	0

Aspendos> (enable) **sh spantree 3/7**

Port	Vlan	Port-State	Cost	Prio	Portfast	Channel_id
------	------	------------	------	------	----------	------------

3/7	1	forwarding	4	32	disabled	0
3/7	1000	forwarding	4	32	disabled	0

Aspendos> (enable) **sh spantree 15/1**

Port	Vlan	Port-State	Cost	Prio	Portfast	Channel_id
------	------	------------	------	------	----------	------------

15/1	192	forwarding	4	32	enabled	0
15/1	500	forwarding	4	32	enabled	0



```

15/1 691 forwarding 4 32 enabled 0
15/1 1000 forwarding 4 32 enabled 0
!--- All relevant ports on the Catalyst are forwarding
!--- for their respective VLANs. Aspendos> (enable) ses
15

Trying Router-15...
Connected to Router-15.
Escape character is '^]'.

User Access Verification

Password:
Aspendos_MSFC2> en
Password:
Aspendos_MSFC2#

!
interface Vlan500
mtu 3000
ip address 100.100.100.5 255.255.255.252
end

Aspendos_MSFC2# sh run int vlan 1000
Building configuration...

Current configuration : 113 bytes
!
interface Vlan1000
description "test-vlan-fcip-1000"
mtu 3000
ip address 100.100.100.2 255.255.255.252
end
!--- The VLANs 500 and 1000 are configured properly on
the MSFC !--- of the Catalyst 6000. !--- Both subnets
are directly connected to the same Ethernet !--- switch,
so no additional routes are needed here. Also note !---
that the MTU size is changed accordingly on the MDS
Gigabit !--- interfaces to 3000 bytes. This change is
required to support !--- jumbo multilayer switching.

```

## Verificar

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

A [Output Interpreter Tool](#) ([somente clientes registrados](#)) oferece suporte a determinados comandos show, o que permite exibir uma análise da saída do comando show.

- *x/y do show interface gig* — Indica o estado da interface de gigabit relevante limitada ao perfil FCIP.
- *mostre o x/y do int gig tcp dos ips stat* — Estatísticas e conexões ativa dos indicadores TCP para a interface de gigabit relevante.
- *mostre o x/y do ips arp int gig* — Indica todas as entradas do Address Resolution Protocol (ARP) para a interface de gigabit relevante; o salto seguinte ou o par estar presente nesta lista.
- *mostre o x/y do int gig da rota IP IP* — Indica as rotas específicas que vão através da interface de gigabit relevante.

- **mostre o fcip x da relação** — Indica o status de interface de FCIP e tudo detalha relacionado a este túnel FCIP.
- **mostre o fcip x do perfil** — Indica o endereço IP de Um ou Mais Servidores Cisco ICM NT a que o perfil é parâmetros TCP encadernados e todos os configurados.
- **mostre contadores do fcip x int** — Usado para verificar se há algum quadro que atravessa o túnel FCIP.
- **mostre a fcdomain x vsan** — Alista todos os detalhes domínio-relacionados; usado para verificar que a tela está formada através dos túneis FCIP.
- **mostre aos fcns a Dinamarca x vsan** — Indica todo o pwwn, FC4-Types, e FCID do VSAN relevante; usado para verificar que todas as entradas previstas estão distribuídas através dos túneis FCIP.

**Nota:** A interface dot1q age como um interface física normal para o FCIP. Não há requisito específico para verificar a operação adequada além o comando show interface gig x/y.z, em que z representa a subinterface. Segundo o dispositivo conectado às interfaces de gigabit locais MDS, você deve consultar a documentação relacionada para verificar que as relações e as portas estão configuradas corretamente.

## Troubleshooting

Seja certo emitir os tempos múltiplos dos **comandos show** construir uma história contrária. Os contadores que não são relacionados a um ponto a tempo e são recolhidos apenas somente são uma vez na maior parte inúteis.

Utilize as configurações mostradas abaixo para mais Troubleshooting.

- [MDS9509 \(bisonte\)](#)
- [MDS9216 \(Canterbury\)](#)
- [Note na incompatibilidade de VLAN nativa](#)

```

MDS9509 (bisonte)

bison# sh int gig 4/1.1000

GigabitEthernet4/1.1000 is up
  Hardware is GigabitEthernet, address is
0005.3000.a85a
  Internet address is 100.100.100.1/30
  MTU 3000 bytes
!--- Configured to 3000 bytes. 5 minutes input rate 488
bits/sec, 61 bytes/sec, 0 frames/sec 5 minutes output
rate 488 bits/sec, 61 bytes/sec, 0 frames/sec 1785
packets input, 996030 bytes 0 multicast frames, 0
compressed 0 input errors, 0 frame, 0 overrun 0 fifo
1812 packets output, 354152 bytes, 0 underruns 0 output
errors, 0 collisions, 0 fifo 0 carrier errors !--- MTU
is configured to 3000 bytes to avoid unnecessary !---
TCP segmentation and limit overhead. 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

100.100.100.1:64860 100.100.100.6:3225 ESTABLISH 0 0
100.100.100.1:64862 100.100.100.6:3225 ESTABLISH 0 0
100.100.100.1:3225 0.0.0.0:0 LISTEN 0 0
!--- No specific counters are maintained per
subinterface. !--- All stats for all subinterfaces on
Gig 4/1 are seen here. bison# sh ips arp interface gig
4/1

Protocol Address Age (min) Hardware Addr Type Interface
Internet 100.100.100.2 13 0008.e21e.c7bc ARPA
GigabitEthernet4/1.1000
!--- No specific ARP table is maintained per
subinterface. !--- All entries for all subinterface on

```

```
Gig4/1 are seen here. bison# sh ips ip route int gig 4/1
```

```
Codes: C - connected, S - static
```

```
No default gateway
```

```
S 100.100.100.4/30 via 100.100.100.2,
```

```
GigabitEthernet4/1.1000
```

```
C 100.100.100.0/30 is directly connected,
```

```
GigabitEthernet4/1.1000
```

```
!--- IPS routes are derived from the main-interface, !--  
- not specifically per subinterface. The next hop is  
verified here. bison# sh cdp ne int gig 4/1
```

```
Capability Codes: R - Router, T - Trans-Bridge, B -
```

```
Source-Route-Bridge
```

```
S - Switch, H - Host, I - IGMP, r - Repeater
```

```
Device ID Local Intrfce Hldtme Capability Platform
```

```
Port ID
```

```
-----  
----
```

```
TBM06033144 (Aspe Gig4/1 136 T S WS-C6506 3/7
```

```
!--- Use this command if the neighbor supports it to
```

```
verify !--- physical connectivity. bison# sh fcip
```

```
profile 1
```

```
FCIP Profile 1
```

```
Internet Address is 100.100.100.1 (interface
```

```
GigabitEthernet4/1.1000)
```

```
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 !--- the configured TCP/IP 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) (1,600-601)
```

```
Trunk vsans (operational) (1,600-601)
```

```
Trunk vsans (up) (1,600-601)
```

```
Trunk vsans (isolated) ()
```

```
Trunk vsans (initializing) ()
```

```
Using Profile id 1 (interface GigabitEthernet4/1.1000)
```

```
Peer Information
```

```
Peer Internet address is 100.100.100.6 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 100.100.100.1:64860, Remote
100.100.100.6:3225
Data connection: Local 100.100.100.1:64862, Remote
100.100.100.6:3225
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 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 200 bits/sec, 25 bytes/sec, 0
frames/sec
5 minutes output rate 200 bits/sec, 25 bytes/sec, 0
frames/sec
1306 frames input, 891212 bytes
472 Class F frames input, 46972 bytes
834 Class 2/3 frames input, 844240 bytes
0 Error frames timestamp error 0
867 frames output, 252424 bytes
470 Class F frames output, 48860 bytes
397 Class 2/3 frames output, 203564 bytes
0 Error frames 0 reass frames
!--- Here, the specific details per FCIP interface are
shown !--- 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
-----	-----	-----
<b>fcip1</b>	<b>Downstream</b>	<b>Disabled</b>
-----	-----	-----

```
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
-----	-----	-----
<b>fcip1</b>	<b>Downstream</b>	<b>Disabled</b>
-----	-----	-----

```
!--- Similar to normal (E)ISL troubleshooting, verify !-  
-- that the 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 (Canterbury)

```
canterbury# sh int gig 2/1.500
```

```
GigabitEthernet2/1.500 is up
  Hardware is GigabitEthernet, address is
0005.3000.ade6
  Internet address is 100.100.100.6/30
  MTU 3000 bytes
  5 minutes input rate 2248 bits/sec, 281 bytes/sec, 0
frames/sec
  5 minutes output rate 696 bits/sec, 87 bytes/sec, 0
frames/sec
  2263 packets input, 482038 bytes
    0 multicast frames, 0 compressed
    0 input errors, 0 frame, 0 overrun 0 fifo
  2479 packets output, 1077822 bytes, 0 underruns
    0 output errors, 0 collisions, 0 fifo
    0 carrier errors
```

```
canterbury# sh cdp ne int gig 2/1
```

```
Capability Codes: R - Router, T - Trans-Bridge, B -
Source-Route-Bridge
                  S - Switch, H - Host, I - IGMP, r -
Repeater
```

```
Device ID    Local Intrfce Hldtme Capability Platform
Port ID
-----
```

```
TBM06033144 (Aspe Gig2/1 165 T S WS-C6506 3/3
```

```
!--- If the neighbor supports CDP, use this command !---
to verify physical connectivity. canterbury# sh fcip
```

```
profile 1
```

```
FCIP Profile 1
```

```
Internet Address is 100.100.100.6 (interface
GigabitEthernet2/1.500)
```

```
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 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
```

```
Trunk vsans (allowed active) (1,600-601)
```

```
Trunk vsans (operational) (1,600-601)
```

```
Trunk vsans (up) (1,600-601)
```

```
Trunk vsans (isolated) ()
```

```
Trunk vsans (initializing) ()
```

```
Using Profile id 1 (interface GigabitEthernet2/1.500)
```

```
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 100.100.100.6:3225, Remote
100.100.100.1:64860
Data connection: Local 100.100.100.6:3225, Remote
100.100.100.1:64862
0 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 184 bits/sec, 23 bytes/sec, 0
frames/sec
5 minutes output rate 184 bits/sec, 23 bytes/sec, 0
frames/sec
1163 frames input, 336700 bytes
722 Class F frames input, 72176 bytes
441 Class 2/3 frames input, 264524 bytes
0 Error frames timestamp error 0
1588 frames output, 917216 bytes
724 Class F frames output, 70288 bytes
864 Class 2/3 frames output, 846928 bytes
0 Error frames 0 reass frames
```

## [Note na incompatibilidade de VLAN nativa](#)

Sob algumas circunstâncias, os clientes podem ver o mensagem de erro de incompatibilidade de vlan nativo no log de sistema do Switch Ethernet adjacente (do catalizador). Isto indica uma configuração incorreta no trunkport daquele Switches. Se uma subinterface de .1000 é configurada em uma das interfaces principal no módulo dos Serviços IP MDS, a porta de switch adjacente no Catalyst Switch precisa de ser entroncamento para esse mesmo ID de VLAN de 1000. Se, por qualquer motivo, o catalizador está executando VLAN 1000 como o **vlan da porta** ou o **VLAN nativo**, a seguir os Mensagens de Erro são gerados e a Conectividade é quebrada, porque os frames encapsulado do dot1q do lado MDS não são compreendidos pelo interruptor e serão rejeitados. Um exemplo de erros vlan nativos da má combinação é mostrado abaixo.

```
canterbury# sh int gig 2/1.500
```

```
GigabitEthernet2/1.500 is up
  Hardware is GigabitEthernet, address is 0005.3000.ade6
  Internet address is 100.100.100.6/30
  MTU 3000 bytes
  5 minutes input rate 2248 bits/sec, 281 bytes/sec, 0 frames/sec
  5 minutes output rate 696 bits/sec, 87 bytes/sec, 0 frames/sec
  2263 packets input, 482038 bytes
```



```
0 multicast frames, 0 compressed
0 input errors, 0 frame, 0 overrun 0 fifo
2479 packets output, 1077822 bytes, 0 underruns
0 output errors, 0 collisions, 0 fifo
0 carrier errors
```

```
canterbury# sh cdp ne int gig 2/1
```

```
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater
```

```
Device ID   Local Infrfce Hldtme Capability Platform Port ID
-----
TBM06033144 (Aspe Gig2/1 165   T S           WS-C6506 3/3
```

```
!--- If the neighbor supports CDP, use this command !--- to verify physical connectivity.
```

```
canterbury# sh fcip profile 1
```

```
FCIP Profile 1
Internet Address is 100.100.100.6 (interface GigabitEthernet2/1.500)
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 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
Trunk vsans (allowed active) (1,600-601)
Trunk vsans (operational) (1,600-601)
Trunk vsans (up) (1,600-601)
Trunk vsans (isolated) ()
Trunk vsans (initializing) ()
Using Profile id 1 (interface GigabitEthernet2/1.500)
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 100.100.100.6:3225, Remote 100.100.100.1:64860
Data connection: Local 100.100.100.6:3225, Remote 100.100.100.1:64862
0 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 184 bits/sec, 23 bytes/sec, 0 frames/sec  
5 minutes output rate 184 bits/sec, 23 bytes/sec, 0 frames/sec  
1163 frames input, 336700 bytes  
722 Class F frames input, 72176 bytes  
441 Class 2/3 frames input, 264524 bytes  
0 Error frames timestamp error 0  
1588 frames output, 917216 bytes  
724 Class F frames output, 70288 bytes  
864 Class 2/3 frames output, 846928 bytes  
0 Error frames 0 reass frames

## [Informações Relacionadas](#)

- [RFC 3821 – Canal de fibra por TCP/IP \(FCIP\)](#)
- [Página principal T11](#)
- [Obtenha o programa da IEEE 802™](#)
- [Suporte Técnico - Cisco Systems](#)