Validar o hardware da camada 2 nos switches Catalyst 9000 Series

Contents

Introdução

Este documento descreve como validar a programação e o encaminhamento de hardware de Camada 2 nos switches Catalyst 9400 Series.

Pré-requisitos

Requisitos

Não existem requisitos específicos para este documento.

Componentes Utilizados

As informações neste documento são baseadas no switch da série Catalyst 9400 (UADP 2.0).

Observação: a versão do software usada neste documento é a 16.6.1, mas isso continua sendo aplicável para versões posteriores do Cisco IOS®.

Observação: você pode usar este documento para outros tipos de switches Catalyst 9000, mas ignorar qualquer comando que faça referência a uma placa de linha.

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 rede estiver ativa, certifique-se de que você entenda o impacto potencial de qualquer comando.

Informações de Apoio

O Catalyst 9400 Supervisor1 (C9400-SUP-1) tem 3 ASICs de encaminhamento UADP 2.0 (0, 1, 2).

Cada ASIC de encaminhamento UADP 2.0 tem:

- Um dual core (0, 1) - isso não existia nas gerações anteriores do ASICS UADP 2.0.
- SIFs (Stack Interfaces, Interfaces de pilha) - usadas para se conectar a outros 2 ASICs UADP 2.0 por meio de um anel de pilha interno.
- NIFs (Interfaces de rede) - usadas para conectar a uma ou mais placas de linha através do painel traseiro.

- Todas as decisões de encaminhamento de pacotes para as placas de linha e as interfaces uplink do supervisor são feitas pelos 3 ASICs de encaminhamento UADP 2.0 no Supervisor ativo.
- As placas de linha usadas neste exemplo têm 1 ASIC de stub de núcleo único de placa de linha que não está envolvido em decisões de encaminhamento de pacotes.
- O ASIC de stub da placa de linha se conecta a um ou mais dos 3 ASICs de encaminhamento UADP 2.0 no Supervisor através do painel traseiro.
- Os 3 ASICs de encaminhamento UADP 2.0 no Supervisor tomam todas as decisões de encaminhamento de pacotes.

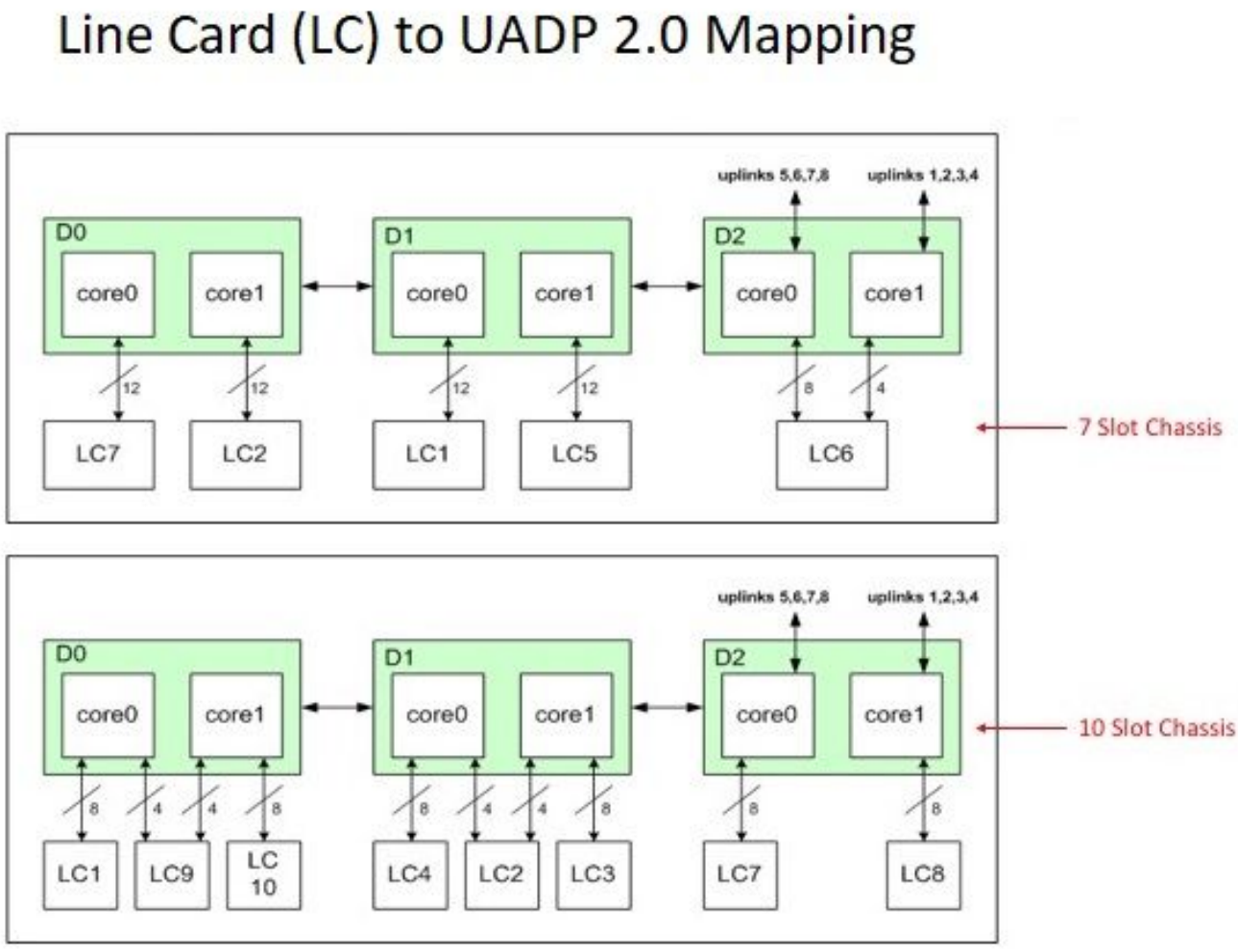
Terminologia

Acrônimo	Definição
RP	Processador de rota
FP	Processador de encaminhamento
FED	Forwarding Engine Driver (Driver do mecanismo de encaminhamento). O processo de software que programa o ASIC de Encaminhamento de Supervisor.
Gerenciador de objetos	Entradas MAC do software FP que são armazenadas como objetos assíncronos no banco de dados de objetos.
LSMPI	Linux Shared Memory Punt Interface (Interface de punt de memória compartilhada do Linux). O transporte entre o plano de dados (hardware-UADP 2.0) e o plano de controle (software-CPU).
IFM	Processo de software do gerenciador de interface.
IF_ID	Interface IDentifier é um valor exclusivo que representa uma interface específica. É usado durante a programação interna no switch.
Inst	Instância. Indica que a interface UADP 2.0 Asic/Core an está conectada a: 0=Asic0/Core0, 1=Asic0/Core1, 2=Asic1/Core0, 3=Asic1/Core1, 4=Asic2/Core0, 5=Asic2/Core1.
ASIC	Especifica a qual UADP 2.0 uma interface está associada: 0=UADP 2.0 #0, 1=UADP 2.0 #1, 2= UADP 2.0 #2.
Centro	Especifica a qual núcleo na interface UADP 2.0 está associado: 0=core0, 1=core1.
Porta	Número da instância ordinal de uma porta dentro de um slot. Dentro do mesmo slot, todos os números de porta são exclusivos.

SubPort	Identifica uma porta dentro de um grupo de portas (Cntx) para portas do painel frontal que são sub-portadas (Cntx e SubPort juntos identificam uma porta exclusiva que é Sub-portada).
Mac	Identificador de interface usado quando uma interface está executando MACsec (autenticação e criptografia de segurança).
Cntx	Contexto. Um número de grupo ao qual uma porta pertence quando uma interface do painel frontal tem uma sub-porta (o Cntx e a SubPort juntos identificam uma porta exclusiva que tem uma Sub-porta).
LPN	Logical Port Number (Número de Porta Lógica) associado a uma interface.
GPN	Número de porta global associado a uma interface.
Digite NIF	Interface de rede; NRU = uplink redundante de rede
IF_IS	Identificador de interface. É um valor exclusivo que representa uma interface específica. É usado durante várias programações internas no switch.
Port_LE	Port Logical Entity (Entidade lógica da porta). Esta é a configuração da interface.
AOM	Gerenciador de objetos assíncrono. O FP programa informações no banco de dados de objetos como um objeto.
VP	Porta virtual
MATM	Gerenciador de Tabelas de Endereços MAC
RP	Processador de rota
OM_PTR	Ponteiro do Gerenciador de Objetos
Tbl_ID	Identificador de Tabela = vlan
CMAN	Gerenciador de chassi

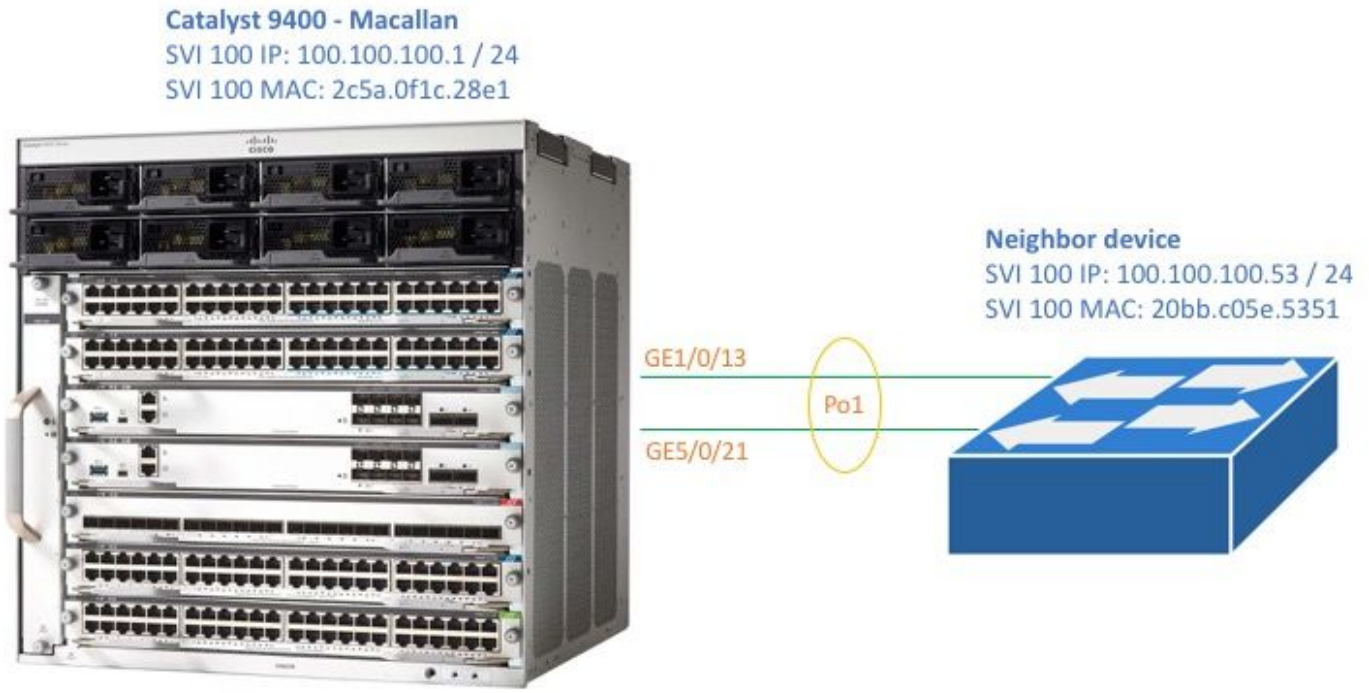
FP	Processador de encaminhamento
fp_port	As portas do painel frontal.
Sif	Interface de pilha (em direção a outros 2 ASICs de encaminhamento UADP 2.0 no Supervisor).
Nif	Interface de rede (em direção à interface do painel frontal)
IGR/EGR	Entrada / Saída
IQS	Agendador de fila de entrada
SQS	Agendador de Filas de Pilha
PBC	Complexo de buffer de pacote
AQM	Ative Queue Management (Gerenciamento de fila ativo). Isso faz verificações de gerenciamento de congestionamento.
AQMRed	Gerenciamento de fila ativo Detecção antecipada aleatória.
EQC	Controlador de fila de saída
ESM	Gerenciamento do Agendador de Saída
RWE	Rewrite Engine (Mecanismo de reescrita). Adiciona ou exclui informações de cabeçalho do pacote.
IOMD	Driver do módulo de saída de entrada
fp_port	A porta do painel frontal.
Nif	Interface de rede (em direção à interface do painel frontal)
SLI	System Link Interface (em direção ao Supervisor)

IGR/EGR =	Entrada / Saída
AQMRed	Gerenciamento de fila ativo Detecção antecipada aleatória.
OCI	Out-of-band Control Interface = canal de comunicação interna entre a placa de linha e o Supervisor ativo
MATM	Gerenciador de Tabelas de Endereços MAC
Contagem de Movimentação de MAC	Essa é a contagem para quando um endereço MAC se move (é aprendido) em uma nova interface. A contagem de movimentação pode ocorrer quando um host final é fisicamente movido de uma interface para outra, um host sem fio faz roaming de um Ponto de Acesso (AP) para outro AP conectado em uma interface diferente, ou as alterações de caminho de spanning tree ou loops.



Placa de linha para UADP

Topologia



<#root>

C9400#

show version

```
Cisco IOS XE Software, Version 16.06.01
Cisco IOS Software [Everest], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 16.6.1, RELEASE SOFTWA
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2017 by Cisco Systems, Inc.
Compiled Sat 22-Jul-17 05:51 by mcpre
--snip--
```

<#root>

C9400#

show module

```
Chassis Type: C9407R

Mod Ports Card Type                                  Model          Serial No.
---+-----+--------------------------------------+--------------+--------------
1   48    48-Port 10/100/1000 (RJ-45)              C9400-LC-48T   JAE211703RC
2   48    48-Port UPOE 10/100/1000 (RJ-45)         C9400-LC-48U   JAE21150CGD
3   10    Supervisor 1 Module                      C9400-SUP-1    JAE21240235
4   10    Supervisor 1 Module                      C9400-SUP-1    JAE21240235
5   48    48-Port UPOE 10/100/1000 (RJ-45)         C9400-LC-48U   JAE21150CG9

Mod MAC addresses                     Hw    Fw           Sw                Status
```

```
---+--------------------------------+----+------------+------------------+--------
1   E4AA.5D54.C84C to E4AA.5D54.C87B 0.6  16.6.1r [FC  16.06.01           ok
2   E4AA.5D54.B430 to E4AA.5D54.B45F 0.6  16.6.1r [FC  16.06.01           ok
3   2C5A.0F1C.28EC to 2C5A.0F1C.28F5 0.6  16.6.1r [FC  16.06.01           ok
4   2C5A.0F1C.28F6 to 2C5A.0F1C.28FF 0.6  16.6.1r [FC  16.06.01           ok
5   E4AA.5D54.B658 to E4AA.5D54.B687 0.6  16.6.1r [FC  16.06.01           ok

Mod Redundancy Role     Operating Redundancy Mode Configured Redundancy Mode
---+------------------+------------------------+---------------------------
3   Active              sso                       sso
4   Standby             sso                       sso
```

<#root>

C9400#

show running-config interface port-channel 1

```
interface Port-channel1
switchport trunk allowed vlan 100
switchport mode trunk
```

<#root>

C9400#

show running-config interface gigabitEthernet 1/0/13

```
interface GigabitEthernet1/0/13
switchport trunk allowed vlan 100
switchport mode trunk
channel-group 1 mode active
```

<#root>

C9400#

show running-config interface gigabitEthernet 5/0/21

```
interface GigabitEthernet5/0/21
switchport trunk allowed vlan 100
switchport mode trunk
channel-group 1 mode active
```

<#root>

C9400#

show etherchannel summary

```
--snip--
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
1      Po1(SU)       LACP        Gi1/0/13(P) Gi5/0/21(P)
```

Observação: os comandos show platform podem exigir que o comando de configuração global service internal seja incluído na instrução.

Programação de interface

Interface para Mapeamento de Instância UADP 2.0

O comando de programação de interface exibe o mapeamento de interface do painel frontal de todas as placas de linha para um dos 3 ASIC de encaminhamento UADP 2.0 no Supervisor Ativo.

Exemplo de saída

Este exemplo mostra que:

- A interface Gig1/0/3 está conectada a: UADP 2.0 instância 2 (UADP 2.0 Asic 1, Core 0) no Supervisor.
- A interface Gig5/0/21 está conectada a: UADP 2.0 instância 3 (UADP 2.0 Asic 1, Core 1) no Supervisor.

<#root>

C9400#

show platform software fed active ifm mappings

```
Interface              IF_ID Inst Asic Core Port SubPort Mac Cntx LPN GPN  Type Active
GigabitEthernet1/0/1   0x7   2    1    0    0    0       4   4    1   101  NIF  Y
GigabitEthernet1/0/2   0x8   2    1    0    1    1       4   4    2   102  NIF  Y
--snip--
GigabitEthernet1/0/13  0x13  2    1    0    12   4       0   0    13  1105 NIF  Y
--snip--
GigabitEthernet5/0/21  0x8f  3    1    1    20   4       5   5    21  1104 NIF  Y
--snip--
```

Programação de interface física

O comando show platform exibe detalhes de configuração de software para Gig1/0/3 com base no valor IF_ID do exemplo de comando anterior.

<#root>

C9400#

show platform software fed active ifm if-id 0x13

```
Interface IF_ID : 0x0000000000000013
```

```
Interface Name : GigabitEthernet1/0/13
Interface Block Pointer : 0x7fe5c5aab7b8
Interface State : READY
Interface Status : ADD, UPD
Interface Ref-Cnt : 7
Interface Type : ETHER
      Port Type : SWITCH PORT
      Port Location : LOCAL
      Slot : 1
      Unit : 0
      Slot Unit : 13
      SNMP IF Index : 14
      GPN : 1105
      EC Channel : 1
      EC Index : 1
      Port Handle : 0x72000285
      LISP v4 Mobility : false
      LISP v6 Mobility : false
      QoS Trust Type : 0

      Port Information
      Handle ............ [0x72000285]
      Type .............. [Layer2]
      Identifier ........ [0x13]
      Slot .............. [1]
      Unit .............. [13]
      Port Physical Subblock
           Affinity .......... [local]
           Asic Instance ..... [2 (A:1,C:0)]
           AsicPort .......... [12]
           AsicSubPort ....... [4]
           MacNum ............ [0]
           ContextId ......... [0]
           LPN ............... [13]
           GPN ............... [113]
           Speed ............. [1GB]
           type .............. [NIF]
           PORT_LE ........... [0x7fe5c5aabc28]
           L3IF_LE ........... [0x0]
           EC GPN ............ [1105]
           EC L3IF_LE ........ [0x0]
           EC Port Mask ...... [0xaaaaaaaaaaaaaaaa]
           DI ................ [0x7fe5c5ab5c48]
      Port L2 Subblock
           Enabled ............. [Yes]


 Allow dot1q ......... [Yes] ---> interface Gig1/0/13 is configured as a trunk

           Allow native ........ [Yes]
           Default VLAN ........ [1]
           Allow priority tag ... [Yes]
           Allow unknown unicast [Yes]
           Allow unknown multicast[Yes]
           Allow unknown broadcast[Yes]
           Allow unknown multicast[Enabled]
           Allow unknown unicast [Enabled]
           IPv4 ARP snoop ....... [No]
           IPv6 ARP snoop ....... [No]
           Jumbo MTU ............ [1500]
           Learning Mode ........ [1]
      Port QoS Subblock
           Trust Type ..................... [0x2]
```

```
            Default Value ................. [0]
            Ingress Table Map ............. [0x0]
            Egress Table Map .............. [0x0]
            Queue Map ..................... [0x0]
      Port Netflow Subblock
      Port Policy Subblock
      List of Ingress Policies attached to an interface
      List of Egress Policies attached to an interface
Ref Count : 7 (feature Ref Counts + 1)
IFM Feature Ref Counts
      FID : 100, Ref Count : 1
      FID : 57, Ref Count : 1
      FID : 115, Ref Count : 1
      FID : 17, Ref Count : 1
      FID : 78, Ref Count : 1
      FID : 30, Ref Count : 1
IFM Feature Sub block information
      FID : 57, Private Data : 0x7fe5c685e748
      FID : 17, Private Data : 0x7fe5c5e85f38
      FID : 30, Private Data : 0x7fe5c5e85aa8
```

Esse comando exibe os detalhes de configuração de hardware para Gig1/0/3 com base no valor PORT_LE do comando anterior.

Valor	Definição
Valor 0	O valor não está definido.
Valor 1	O valor definido na maioria dos casos.

<#root>

```
C9400#

show platform hardware fed active fwd-asic abstraction print-resource-handle 0x7fe5c5aabc28 1

Handle:0x7fe5c5aabc28 Res-Type:ASIC_RSC_PORT_LE Res-Switch-Num:0 Asic-Num:2 Feature-ID:AL_FID_IFM Lkp-f
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index2:0xc mtu_index/l3u_ri_index2:0x4 sm handle

Detailed Resource Information (ASIC#2)
---------------------------------------

LEAD_PORT_ALLOW_BROADCAST value 1 Pass
LEAD_PORT_ALLOW_CAPWAP value 0 Pass
LEAD_PORT_ALLOW_CTS value 0 Pass
LEAD_PORT_ALLOW_DOT1Q_TAGGED value 1 Pass
LEAD_PORT_ALLOW_MULTICAST value 1 Pass
LEAD_PORT_ALLOW_NATIVE value 1 Pass
LEAD_PORT_ALLOW_NON_CTS value 0 Pass
LEAD_PORT_ALLOW_PRIORITY_TAGGED value 1 Pass
LEAD_PORT_ALLOW_UNICAST value 1 Pass
LEAD_PORT_ALLOW_UNKNOWN_ETHER_TYPE value 0 Pass
LEAD_PORT_ALLOW_UNKNOWN_UNICAST value 1 Pass
LEAD_PORT_ALLOW_VLAN_LOAD_BALANCE_GROUP value 15 Pass
```

```
LEAD_PORT_ALLOW_VRF value 0 Pass
LEAD_PORT_ARP_OR_ND_SNOOPING_ENABLED_IPV4 value 0 Pass
LEAD_PORT_ARP_OR_ND_SNOOPING_ENABLED_IPV6 value 0 Pass
LEAD_PORT_AUTH_MODE value 0 Pass
LEAD_PORT_CAPWAP_TUNNEL value 0 Pass
LEAD_PORT_CONTENT_MATCHING_ENABLED value 0 Pass
LEAD_PORT_CTS_ENABLED value 0 Pass
LEAD_PORT_CUSTOMER_PORT value 0 Pass
LEAD_PORT_DAI_OR_ND_TRUST_MODE_IPV4 value 0 Pass
LEAD_PORT_DAI_OR_ND_TRUST_MODE_IPV6 value 0 Pass
LEAD_PORT_DATA_GLEAN_LEARN_IPV4 value 0 Pass
--snip--
```

Programação Etherchannel

Nessas saídas de exemplo de programação Etherchannel, o RP programa o FP, o FP programa o FED, o FED programa o hardware ASIC de encaminhamento do supervisor. As entradas do software RP são armazenadas como objetos no banco de dados de objetos e as entradas do software FP são armazenadas como objetos assíncronos no banco de dados de objetos.

<#root>

C9400#

show etherchannel summary

```
--snip--
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
1      Po1(SU)       LACP        Gi1/0/13(P) Gi5/0/21(P)
```

Group Mask é diferente de zero nesta saída. É usado no processo de hash para determinar o link no etherchannel de onde qualquer fluxo de tráfego sai.

<#root>

C9400#

show platform software interface rp active brief

```
Forwarding Manager Interfaces Information

Name                               ID              QFP ID
-----------------------------------------------------------
Null0                              1                 0
GigabitEthernet1/0/1               7                 0
GigabitEthernet1/0/2               8                 0
GigabitEthernet1/0/3               9                 0
-snip-
GigabitEthernet1/0/13             19                 0
-snip-
GigabitEthernet5/0/21            143                 0
```

```
-snip-
Port-channel1                    748               0
-snip-
```

<#root>

```
C9400#

show platform software fed active etherchannel 1 group-mask


Group Mask Info
Aggport IIF Id: 00000000000002EC ---> hex 0x2EC = dec 748
Active Port: : 2 ------------------> 2 active interfaces in the etherchannel = the Member ports below

Member Ports
                 If Name             If Id  local        Group Mask
---------------------------------------------------------------------
   GigabitEthernet1/0/13  0000000000000013  true   5555555555555555 ---> hex 0x13 = dec 19
   GigabitEthernet5/0/21  000000000000008f  true   aaaaaaaaaaaaaaaa ---> hex 0x8f = dec 143
```

Este comando mostra a configuração para o canal de porta 1:

<#root>

```
C9400#

show platform software fed active ifm if-id 0x000002ec

Interface IF_ID : 0x00000000000002ec
Interface Name : Port-channel1
Interface Block Pointer : 0x7fe5c685df98
Interface State : READY
Interface Status : ADD, UPD
Interface Ref-Cnt : 5
Interface Type : ETHERCHANNEL
Port Type : SWITCH PORT
Channel Number : 1
SNMP IF Index : 720
Port Handle : 0x50002f6
#Of Active Ports : 2
Base GPN : 1104
Index[2] : 00000000000000

13 ---> Gig1/0/13 from previous command output

Index[3] : 00000000000000

8f ---> Gig5/0/21 from previous command output


Port Information
Handle ..... [0x50002f6]
Type ..... [L2-Ethchannel]
Identifier ..... [0x2ec]
Unit ..... [1]
Port Logical Subblock
L3IF_LE handle .... [0x0]
```

```
Num physical port . [2]
GPN Base .......... [1104]
Num physical port on asic [0] is [0]
DiBcam handle on asic [0].... [0x0]
Num physical port on asic [1] is [0]
DiBcam handle on asic [1].... [0x0]

Num physical port on asic [2] is [1] ------------> Gig1/0/13 is on ASIC instance 2 (Supervisor ASIC 1, c

DiBcam handle on asic [2].... [0x7fe5c6ae3608]

Num physical port on asic [3] is [1] ------------> Gig5/0/21 is on ASIC instance 3 (Supervisor ASIC 1, c

DiBcam handle on asic [3].... [0x7fe5c685d7e8]
Num physical port on asic [4] is [0]
DiBcam handle on asic [4].... [0x0]
Num physical port on asic [5] is [0]
DiBcam handle on asic [5].... [0x0]
Port L2 Subblock
Enabled ............. [No]
Allow dot1q ......... [No]
Allow native ........ [No]
Default VLAN ........ [0]
Allow priority tag ... [No]
Allow unknown unicast [No]
Allow unknown multicast[No]
Allow unknown broadcast[No]
Allow unknown multicast[Enabled]
Allow unknown unicast [Enabled]
IPv4 ARP snoop ....... [No]
IPv6 ARP snoop ....... [No]
Jumbo MTU ............ [0]
Learning Mode ........ [0]
Port QoS Subblock
Trust Type ..................... [0x7]
Default Value .................. [0]
Ingress Table Map .............. [0x0]
Egress Table Map ............... [0x0]
Queue Map ...................... [0x0]
Port Netflow Subblock
Port Policy Subblock
List of Ingress Policies attached to an interface
List of Egress Policies attached to an interface
Ref Count : 5 (feature Ref Counts + 1)
IFM Feature Ref Counts
FID : 115, Ref Count : 1
FID : 78, Ref Count : 1
No Sub Blocks Present
```

Esse comando mostra a configuração para o mapeamento de interfaces.

Acrônimo/Instância	Definição
IFM	Gerenciador de interface
Instância	Gig1/0/13 está na instância 2 do ASIC (UADP 2.0 ASIC 1, núcleo 0)

	com ID de interface 0x13
Instância	Gig5/0/21 está na instância 3 do ASIC (UADP 2.0 ASIC 1, core 1) com ID de interface 0x8f

<#root>

C9400#

show platform software fed active ifm mappings

```
Interface              IF_ID Inst Asic Core Port SubPort Mac Cntx LPN GPN  Type Active
GigabitEthernet1/0/1   0x7   2    1    0    0    0       4   4    1   101  NIF  Y
GigabitEthernet1/0/2   0x8   2    1    0    1    1       4   4    2   102  NIF  Y
--snip--
GigabitEthernet1/0/13  0x13  2    1    0    12   4       0   0    13  1105 NIF  Y
--snip--
GigabitEthernet5/0/21  0x8f  3    1    1    20   4       5   5    21  1104 NIF  Y
--snip--
```

Configuração Global Do Etherchannel

<#root>

C9400#

show platform software ether-channel rp active global-config

```
Forwarding Manager EtherChannel Global Configuration Information

  Frame Dist Method:
```

Dest-IP-Address ---> distribution (hash) method: a packet's destination IP address is used to determine

<#root>

C9400#

show platform software ether-channel fp active global-config

```
Forwarding Manager EtherChannel Global Configuration Information

  Frame Dist Method: Dest-IP-Address
             AOM ID: 27
             Status:
```

Done ----------------> Programming in hardware is complete (FP received acknowlegement from FED)

<#root>

C9400#

show platform software object-manager fp active object 27

```
Object identifier: 27
  Description: EtherChannel global configuration object
  Status: Done, Epoch: 0, Client data: 0x792e6e28
```

Programação de VLAN

<#root>

C9400#

show platform software fed active vlan 100

VLAN Fed Information

```
Vlan Id IF Id              LE Handle          STP Handle      L3 IF Handle          SVI IF ID          I
-------------------------------------------------------------------------------------------------------
100     0x0000000000420011 0x00007fe5c4616ef8 0x00007fe5c4617778 0x00007fe5c50dac28 0x00000000000002ea 1
```

Este comando exibe detalhes da definição de configuração de hardware para a VLAN 100.

Valor	Definição
Valor 0	O valor não está definido.
Valor 1	O valor definido na maioria dos casos.

<#root>

C9400#

show platform hardware fed active fwd-asic abstraction print-resource-handle 0x00007fe5c4616ef8 1

```
Handle:0x7fe5c4616ef8 Res-Type:ASIC_RSC_VLAN_LE Res-Switch-Num:255 Asic-Num:255 Feature-ID:AL_FID_L2 Lk
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index0:0xa mtu_index/l3u_ri_index0:0x0 sm handle
Cookie length: 56
00 00 00 00 00 00 00 00 64 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0
```

Detailed Resource Information (ASIC#0)

---> ASIC instance 0 = Supervisor ASIC 0, core 0

```
--snip--
Detailed Resource Information (ASIC#1)
```

---> ASIC instance 1 = Supervisor ASIC 0, core 1

```
--snip--
Detailed Resource Information (ASIC#2)

---> ASIC instance 2 = Supervisor ASIC 1, core 0

---------------------------------------

LEAD_VLAN_ALLOW_SNOOPING_IGMP_OR_MLD_IPV4 value 0 Pass
LEAD_VLAN_ALLOW_SNOOPING_IGMP_OR_MLD_IPV6 value 0 Pass
LEAD_VLAN_ARP_OR_ND_SNOOPING_ENABLED_IPV4 value 0 Pass
LEAD_VLAN_ARP_OR_ND_SNOOPING_ENABLED_IPV6 value 0 Pass
LEAD_VLAN_BLOCK_L2_LEARN value 0 Pass
LEAD_VLAN_CONTENT_MATCHING_ENABLED value 0 Pass
LEAD_VLAN_DEST_MOD_INDEX_TVLAN_LE value 0 Pass
LEAD_VLAN_DHCP_SNOOPING_ENABLED_IPV4 value 0 Pass
LEAD_VLAN_DHCP_SNOOPING_ENABLED_IPV6 value 0 Pass
LEAD_VLAN_ENABLE_SECURE_VLAN_LEARNING_IPV4 value 0 Pass
LEAD_VLAN_ENABLE_SECURE_VLAN_LEARNING_IPV6 value 0 Pass
LEAD_VLAN_EPOCH value 0 Pass
LEAD_VLAN_L2_PROCESSING_STP_TCN value 0 Pass
LEAD_VLAN_L2FORWARD_IPV4_MULTICAST_PKT value 0 Pass
LEAD_VLAN_L2FORWARD_IPV6_MULTICAST_PKT value 0 Pass
LEAD_VLAN_L3_IF_LE_INDEX_PRIO value 1 Pass
LEAD_VLAN_L3IF_LE_INDEX value 111 Pass

LEAD_VLAN_LOOKUP_VLAN value 10 Pass ------------> MVID 10 = vlan 100

LEAD_VLAN_MCAST_LOOKUP_VLAN value 10 Pass
LEAD_VLAN_RIET_OFFSET value 1 Pass
LEAD_VLAN_SNOOPING_FLOODING_ENABLED_IGMP_OR_MLD_IPV4 value 0 Pass
LEAD_VLAN_SNOOPING_FLOODING_ENABLED_IGMP_OR_MLD_IPV6 value 1 Pass
LEAD_VLAN_SNOOPING_PROCESSING_STP_TCN_IGMP_OR_MLD_IPV4 value 0 Pass
LEAD_VLAN_SNOOPING_PROCESSING_STP_TCN_IGMP_OR_MLD_IPV6 value 0 Pass
LEAD_VLAN_VLAN_CLIENT_LABEL value 0 Pass
LEAD_VLAN_VLAN_CONFIG value 0 Pass
LEAD_VLAN_VLAN_FLOOD_ENABLED value 0 Pass
LEAD_VLAN_VLAN_ID_VALID value 1 Pass
LEAD_VLAN_VLAN_LOAD_BALANCE_GROUP value 15 Pass
LEAD_VLAN_VLAN_ROLE value 0 Pass
LEAD_VLAN_VLAN_FLOOD_MODE_BITS value 3 Pass
LEAD_VLAN_LVX_VLAN value 0 Pass
LEAD_VLAN_EGRESS_DEJAVU_CANON value 0 Pass
LEAD_VLAN_EGRESS_INGRESS_VLAN_MODE value 0 Pass
LEAD_VLAN_EGRESS_LOOKUP_VLAN value 0 Pass
LEAD_VLAN_EGRESS_SGACL_DISABLED value 3 Pass
LEAD_VLAN_EGRESS_VLAN_CLIENT_LABEL value 0 Pass
LEAD_VLAN_EGRESS_VLAN_ID_VALID value 1 Pass
LEAD_VLAN_EGRESS_VLAN_LOAD_BALANCE_GROUP value 15 Pass
LEAD_VLAN_EGRESS_INTRA_POD_BCAST value 0 Pass
LEAD_VLAN_EGRESS_INTER_POD_BCAST value 0 Pass
LEAD_VLAN_MAX value 0 Pass

Detailed Resource Information (ASIC#3)

 ---> ASIC instance 3 = Supervisor ASIC 1, core 1

--snip--
Detailed Resource Information (ASIC#4)

---> ASIC instance 4 = Supervisor ASIC 2, core 0

--snip-
Detailed Resource Information (ASIC#5)

---> ASIC instance 5 = Supervisor ASIC 2, core 1
```

```
--snip--
```

Programação Spanning Tree

<#root>

```
C9400#
```

show spanning-tree vlan 100

```
VLAN0100

   Spanning tree enabled protocol rstp
   Root ID   Priority    32868
             Address     20bb.c05e.5300
             Cost        4
             Port        2473 (Port-channel1)
             Hello Time  2 sec Max Age 20 sec Forward Delay 15 sec

   Bridge ID Priority    32868 (priority 32768 sys-id-ext 100)
             Address     2c5a.0f1c.28c0
             Hello Time  2 sec Max Age 20 sec Forward Delay 15 sec
             Aging Time  300 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi1/0/1             Desg FWD 19        128.1    Shr
Gi2/0/11            Desg FWD 4         128.107  P2p
Po1                 Root FWD 3         128.2473 P2p Peer(STP)
```

<#root>

```
C9400#
```

show etherchannel summary

```
--snip--

Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
1      Po1(SU)       LACP        Gi1/0/13(P) Gi5/0/21(P)
```

Esses comandos exibem o estado de encaminhamento do spanning tree para o canal de porta 1.

<#root>

```
C9400#
```

show platform software interface rp active brief

```
Forwarding Manager Interfaces Information

Name                               ID              QFP ID
-----------------------------------------------------------
Null0                              1                 0
GigabitEthernet1/0/1               7                 0
GigabitEthernet1/0/2               8                 0
GigabitEthernet1/0/3               9                 0
–snip–
Port-channel1                    748                 0
–snip–
```

<#root>

C9400#

show platform software fed active vp summary interface if_id 748

```
           if_id      vlan_id   pvlan_mode   pvlan_vlan   stp_state  vtp pruned          Untagged
-------------------------------------------------------------------------------------------------
             748          100        trunk            1  forwarding          No                No
```

Os próximos comandos exibem o estado de encaminhamento de hardware de spanning tree para a VLAN 100.

<#root>

C9400#

show platform software fed active vp summary vlan 100

```
           if_id      vlan_id   pvlan_mode   pvlan_vlan   stp_state  vtp pruned          Untagged
-------------------------------------------------------------------------------------------------
--snip--
             748 100        trunk           1  forwarding          No                No
--snip--
```

<#root>

C9400#

show platform hardware fed active vlan 100 ingress

```
VLAN STP State in hardware

vlan id is:: 100
Interfaces in forwarding state: : Gi2/0/11(Tagged), Gi1/0/1(Tagged), Gi1/0/13(Tagged), Gi5/0/21(Tagged)
flood list: : Gi2/0/11, Gi1/0/1, Gi1/0/13, Gi5/0/21
```

<#root>

C9400#

show platform hardware fed active vlan 100 egress

VLAN STP State in hardware

vlan id is:: 100
Interfaces in forwarding state: : Gi2/0/11(Tagged), Gi1/0/1(Tagged), Gi1/0/13(Tagged), Gi5/0/21(Tagged)

Verifique a estabilidade do spanning-tree. Certifique-se de que as TCN (Topology Change Notifications, Notificações de alteração de topologia) não sejam vistas com frequência.

<#root>

C9400#

show spanning-tree vlan 100 detail

```
 VLAN0100 is executing the rstp compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, sysid 10, address 2c5a.0f1c.28c0
  Configured hello time 2, max age 20, forward delay 15, transmit hold-count 6
  Current root has priority 32868, address 2c5a.0f1c.5300
  Root port is 2473 (Port-channel1), cost of root path is 4
  Topology change flag not set, detected flag not set
  Number of topology changes 1 last change occurred 2w6d ago
          from Port-channel1
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0, aging 300

--snip--
```

Programação de encaminhamento de L2

<#root>

C9400#

show etherchannel summary

```
--snip--
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
1      Po1(SU)       LACP        Gi1/0/13(P) Gi5/0/21(P)
```

<#root>

```
C9400#

ping 100.100.900.53

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 100.100.900.53, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/4/5 ms
```

<#root>

```
C9400#

show mac address-table dynamic vlan 100

Mac Address Table
-------------------------------------------

Vlan Mac Address     Type     Ports
---- -----------     -------- -----
100  0000.0200.0800  DYNAMIC  Gi1/0/1
100  20bb.c05e.5318  DYNAMIC  Po1
100  20bb.c05e.5351  DYNAMIC  Po1
Total Mac Addresses for this criterion: 3
```

Programação de software

Nos próximos exemplos de saída, o RP programa o FP, o FP programa o FED, o FED finalmente programa o Supervisor que encaminha o hardware ASIC. Software RPs entradas MAC são armazenadas como objetos no banco de dados de objetos e as entradas FP softwareMAC são armazenadas como objetos assíncronos no banco de dados de objetos.

<#root>

```
C9400#

show platform software matm rp active mac 20bb.c05e.5351 1 100 ---> 100 = vlan

Tbl_Type   Tbl_ID    MAC_Address  Type   Ports  AOM_ID/OM_PTR
MAT_VLAN      100 20bb.c05e.5351     1     1  OM: 0x3700860010
List of Ports: 748
```

<#root>

```
C9400#

show platform software interface rp active brief


Forwarding Manager Interfaces Information

Name                               ID              QFP ID
-----------------------------------------------------------------
```

```
Null0                          1               0
GigabitEthernet1/0/1           7               0
GigabitEthernet1/0/2           8               0
GigabitEthernet1/0/3           9               0
-snip-
Port-channel1                748               0
-snip-
```

<#root>

C9400#

show platform software matm fp active mac 20bb.c05e.5351

```
Tbl_Type   Tbl_ID    MAC_Address  Type   Ports  AOM_ID/OM_PTR
MAT_VLAN      100 20bb.c05e.5351     1     1  6567 created
  List of Ports: 748
```

<#root>

C9400#

show platform software object-manager fp active object 6567

```
Object identifier: 6567
  Description: matm mac entry type VLAN, id 100, 20bb.c05e.5351
Status: Done, Epoch: 0, Client data: 0x799633f8
```

Programação de hardware - Método 1

<#root>

C9400#

show platform softwarefed active matm macTable vlan 100

```
VLAN MAC
```

Type

```
  Seq#  macHandle      siHandle       diHandle      *a_time  *e_time   ports
100  2c5a.0f1c.28e1 0X8002 0    0x7fe5c5eaf1c8 0x7fe5c5924f38 0x0            0        0        Vlan100
100  20bb.c05e.5351
```

0X1

```
    589  0x7fe5c6b03d68 0x7fe5c6865f78 0x7fe51001b458 300      1        Port-channel1
100  0000.0200.0800 0X1    610  0x7fe5c6b07888 0x7fe5c6b076e8 0x7fe5c5972ce8 300      1        GigabitE
Total Mac number of addresses:: 3
```

```
*a_time=aging_time(secs) *e_time=total_elapsed_time(secs)

Type:

MAT_DYNAMIC_ADDR     0x1

       MAT_STATIC_ADDR

0x2 ---> Type = dynamically learned MAC address entry

MAT_CPU_ADDR          0x4       MAT_DISCARD_ADDR      0x8
MAT_ALL_VLANS         0x10      MAT_NO_FORWARD        0x20
MAT_IPMULT_ADDR       0x40      MAT_RESYNC            0x80
MAT_DO_NOT_AGE        0x100     MAT_SECURE_ADDR       0x200
MAT_NO_PORT           0x400     MAT_DROP_ADDR         0x800
MAT_DUP_ADDR          0x1000    MAT_NULL_DESTINATION  0x2000
MAT_DOT1X_ADDR        0x4000    MAT_ROUTER_ADDR       0x8000
MAT_WIRELESS_ADDR     0x10000   MAT_SECURE_CFG_ADDR   0x20000
MAT_OPQ_DATA_PRESENT  0x40000   MAT_WIRED_TUNNEL_ADDR 0x80000
MAT_DLR_ADDR          0x100000  MAT_MRP_ADDR          0x200000
MAT_MSRP_ADDR         0x400000  MAT_LISP_LOCAL_ADDR   0x800000
MAT_LISP_REMOTE_ADDR  0x1000000 MAT_VPLS_ADDR         0x2000000
```

Programação macHandle

Acrônimo /Termo	Definição
vlan:10	MVID 10 A VLAN 100 usa o ID de VLAN mapeado (MVID) 10 internamente dentro do switch.
gpn:1104	Número de porta global do canal de porta 1.
mac:0x20bbc05e5351	Endereço MAC 20bb.c05e.5351

Este é um exemplo de saída de programação macHandle:

<#root>

```
C9400#

show platform hardware fed active fwd-asic abstraction print-resource-handle 0x7fe5c6b03d68 1

Handle:0x7fe5c6b03d68 Res-Type:ASIC_RSC_HASH_TCAM Res-Switch-Num:0 Asic-Num:255 Feature-ID:AL_FID_L2 Lk
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: handle [ASIC: 0]: 0x7fe5c6aed898 handle [ASIC: 1
Features sharing this resource:Cookie length: 12
5e c0 bb 20 51 53 0a 80 07 00 00 00

Detailed Resource Information (ASIC#0)
---------------------------------------
Number of HTM Entries: 1

Entry 0: (handle 0x7fe5c6aed898)
```

```
Abs_hash_index: 294
KEY - vlan:10 mac:0x20bbc05e5351 l3_if:0 gpn:1104 epoch:0 static:0 flood_en: 0 vlan_lead_wless_flood_en
MASK - vlan:0 mac:0x0 l3_if:0 gpn:0 epoch:0 static:0 flood_en:0 vlan_lead_wless_flood_en: 0 client_home_
SRC_AD - need_to_learn:0 lrn_v:0 catchall:0 static_mac:0 chain_ptr_v:0 chain_ptr: 0 static_entry_v:0 au
DST_AD - si:0xcd bridge:0 replicate:0 blk_fwd_o:0 v4_rmac:0 v6_rmac:0 catchall:0 ign_src_lrn:0 port_mas

Detailed Resource Information (ASIC#1)
--snip--
Detailed Resource Information (ASIC#2)
--snip--
```

<#root>

```
C9400#

show platform software fed active vlan 100

VLAN Fed Information

Vlan Id IF Id              LE Handle          STP Handle      L3 IF Handle          SVI IF ID          I
-------------------------------------------------------------------------------------------------------
100     0x0000000000420011 0x00007fe5c4616ef8 0x00007fe5c4617778 0x00007fe5c50dac28 0x00000000000002ea 1
```

<#root>

```
C9400#

show platform software fed active ifm mappings etherchannel

Mappings Table

Chan    Interface        IF_ID
-----------------------------------------------------
1       Port-channel1

0x000002ec

--snip--
```

<#root>

```
C9400#

show platform software fed active ifm if-id 0x000002ec <-- IF_ID from previous output

Interface IF_ID : 0x00000000000002ec
Interface Name : Port-channel1
Interface Block Pointer : 0x7fe5c685df98
Interface State : READY
Interface Status : ADD, UPD
Interface Ref-Cnt : 5
Interface Type : ETHERCHANNEL
Port Type : SWITCH PORT
Channel Number : 1
SNMP IF Index : 720
Port Handle : 0x50002f6
```

```
#Of Active Ports : 2
Base GPN : 1104
Index[2] : 0000000000000013
Index[3] : 000000000000008f

Port Information
Handle ..... [0x50002f6]
Type ..... [L2-Ethchannel]
Identifier ..... [0x2ec]
Unit ..... [1]
Port Logical Subblock
L3IF_LE handle .... [0x0]
Num physical port . [2]
GPN Base ..... [1104]
--snip--
```

Observação: a interface na qual o mac aprendeu era uma única interface em vez de um canal de porta, esse comando é usado para determinar o GPN para o mapeamento de interface

<#root>

```
C9400#

show platform software fed active ifm mappings gpn

Mappings Table


GPN   Interface              IF_ID
------------------------------------------------------------
101   GigabitEthernet1/0/1   0x00000007
102   GigabitEthernet1/0/2   0x00000008
103   GigabitEthernet1/0/3   0x00000009
--snip--
```

Programação siHandle

Acrônimo /Termo	Definição
siHandle	station index Handle (Identificador de índice da estação). As informações de regravação do pacote (RI = Rewrite Index) e as informações da interface de saída (DI = Destination Index).
Bitmap de replicação para núcleo duplo em um único Supervisor ASIC:	

	Acrônimo/Termo	Definição
	ASIC local (LD = Dados locais)	Destino no mesmo ASIC, mesmo núcleo da origem.
	Cópia central (CD = Core Data)	Destino no mesmo ASIC, outro núcleo.
	ASIC remoto (RD = dados remotos)	Destino em outro ASIC.

<#root>

```
C9400#

show platform hardware fed active fwd-asic abstraction print-resource-handle 0x7fe5c6865f78 1

Handle:0x7fe5c6865f78 Res-Type:ASIC_RSC_SI Res-Switch-Num:255 Asic-Num:255 Feature-ID:AL_FID_L3_UNICAST_
priv_ri/priv_si Handle: 0x7fe5c6864938Hardware Indices/Handles: index0:0xcd mtu_index/l3u_ri_index0:0x0
Features sharing this resource:64 (1)]
55 (1)]
Cookie length: 56
00 00 00 00 00 00 00 00 64 00 00 00 00 00 00 00 00 00 00 00 07 00 20 bb c0 5e 53 51 00 00 00 00 00 00 0

Detailed Resource Information (ASIC#0)

---> ASIC instance 0 = Supervisor ASIC 0, core 0

----------------------------------------

Station Index (SI) [0xcd]

RI = 0x29   ------------------------------> Rewrite index (no MAC rewrite for L2 forwarding)


DI = 0x51c2 ------------------------------> Destination index = outgoing interface

stationTableGenericLabel = 0
stationFdConstructionLabel = 0
lookupSkipIdIndex = 0
rcpServiceId = 0
dejaVuPreCheckEn = 0x1
Replication Bitmap: LD RD CD

Detailed Resource Information (ASIC#1)

---> ASIC instance 1 = Supervisor ASIC 0, core 1

--snip--
Detailed Resource Information (ASIC#2)

---> ASIC instance 2 = Supervisor ASIC 1, core 0
```

```
--snip--
Detailed Resource Information (ASIC#3)
```

---> ASIC instance 3 = Supervisor ASIC 1, core 1

```
--snip--
Detailed Resource Information (ASIC#4)
```

---> ASIC instance 4 = Supervisor ASIC 2, core 0

```
--snip--
Detailed Resource Information (ASIC#5)
```

---> ASIC instance 5 = Supervisor ASIC 2, core 1

```
--snip--
```

<#root>

C9400#

show platform hardware fed active fwd-asic resource asic all destination-index range 0x51c2 0x51c2

```
ASIC#0:
--snip--
ASIC#1:
--snip--
```

ASIC#2: ------------------------> ASIC Instance 2 = Supervisor ASIC 1, core 0

```
Destination Index (DI) [0x51c2]
portMap =
```

0x00000000 00001000 ---> binary 0001 0000 0000 0000 = Port 12 (see next command output)

```
cmi1 = 0
```

(read right to left, zero based)

```
rcpPortMap = 0
CPU Map Index (CMI) [0]
ctiLo0 = 0
ctiLo1 = 0
ctiLo2 = 0
cpuQNum0 = 0
cpuQNum1 = 0
cpuQNum2 = 0
npuIndex = 0
stripSeg = 0
copySeg = 0
```

ASIC#3: ------------------------> ASIC instance 3 = Supervisor ASIC 1, core 1

```
Destination Index (DI) [0x51c2]
portMap =
```

0x00000000 00100000 ---> binary 0001 0000 0000 0000 0000 0000 = Port 20 (see next command output)

```
cmi1 = 0
```

(read right to left, zero based)

```
rcpPortMap = 0
CPU Map Index (CMI) [0]
ctiLo0 = 0
ctiLo1 = 0
ctiLo2 = 0
cpuQNum0 = 0
cpuQNum1 = 0
cpuQNum2 = 0
npuIndex = 0
stripSeg = 0
copySeg = 0

ASIC#4:
--snip--
ASIC#5:
--snip--
```

<#root>

C9400#

show platform software fed active ifm mappings

```
Interface              IF_ID Inst Asic Core Port SubPort Mac Cntx LPN GPN  Type Active
GigabitEthernet1/0/1   0x7   2    1    0    0    0       4   4    1   101  NIF  Y
GigabitEthernet1/0/2   0x8   2    1    0    1    1       4   4    2   102  NIF  Y
--snip--
GigabitEthernet1/0/13  0x13  2    1    0    12   4       0   0    13  1105 NIF  Y
--snip--
GigabitEthernet5/0/21  0x8f  3    1    1    20   4       5   5    21  1104 NIF  Y
--snip--
```

<#root>

C9400#

show etherchannel summary

```
--snip--
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
1      Po1(SU)       LACP        Gi1/0/13(P) Gi5/0/21(P)
```

Não há informações de regravação de MAC esperadas, pois essa é uma entrada de encaminhamento de MAC de Camada 2.

<#root>

C9400#

show platform hardware fed active fwd-asic resource asic all rewrite-index range 0x29 0x29 1

```
ASIC#0:
```

```
Rewrite Data Table Entry,
ASIC#:0, rewrite_type:1,
```

RI:41 ---> dec 41 = hex 0x29

```
MAC Addr:
MAC Addr: 20:bb:c0:5e:53:51,
 L3IF LE Index 111

ASIC#1:

Rewrite Data Table Entry,
ASIC#:1, rewrite_type:1, RI:41

MAC Addr:
MAC Addr: 20:bb:c0:5e:53:51,
 L3IF LE Index 111

ASIC#2:
--snip--
ASIC#3:
--snip--
ASIC#4:
--snip--
ASIC#5:
--snip--
```

<#root>

C9400#

show mac address-table address 20bb.c05e.5351

```
          Mac Address Table
-------------------------------------------

Vlan    Mac Address       Type        Ports
----    -----------       --------    -----
 100    20bb.c05e.5351    DYNAMIC     Po1
Total Mac Addresses for this criterion: 1
```

Programação de diHandle

Acrônimo	Definição
diHandle	Identificador de índice de destino. Essas são as informações da interface de saída.

<#root>

C9400#

show platform hardware fed active fwd-asic abstraction print-resource-handle 0x7fe51001b458 1

```
Handle:0x7fe51001b458 Res-Type:ASIC_RSC_DI Res-Switch-Num:0 Asic-Num:255 Feature-ID:AL_FID_INVALID Lkp-
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index0:0x51c2 mtu_index/l3u_ri_index0:0x0 index1
Features sharing this resource:Cookie length: 8
01 00 00 00 c2 51 00 00

Detailed Resource Information (ASIC#0)
--snip--
Detailed Resource Information (ASIC#1)
--snip--

Detailed Resource Information (ASIC#2)
```

---> ASIC Instance 2 = Supervisor ASIC 1, core 0

```
----------------------------------------
Destination Index (DI) [0x51c2]
portMap =
```

0x00000000 00001000 ------------> binary 0001 0000 0000 0000 = Port 12 (see next command output)

```
cmi1 = 0                                    (
```

read right to left, zero based)

```
rcpPortMap = 0
CPU Map Index (CMI) [0]
ctiLo0 = 0
ctiLo1 = 0
ctiLo2 = 0
cpuQNum0 = 0
cpuQNum1 = 0
cpuQNum2 = 0
npuIndex = 0
stripSeg = 0
copySeg = 0

Detailed Resource Information (ASIC#3)
```

---> ASIC Instance 3 = Supervisor ASIC 1, core 1

```
----------------------------------------
Destination Index (DI) [0x51c2]
portMap =
```

0x00000000 00100000 ---> binary 0001 0000 0000 0000 0000 0000 = Port 20 (see next command output)

```
cmi1 = 0
```

(read right to left, zero based)

```
rcpPortMap = 0
CPU Map Index (CMI) [0]
ctiLo0 = 0
ctiLo1 = 0
ctiLo2 = 0
cpuQNum0 = 0
cpuQNum1 = 0
cpuQNum2 = 0
npuIndex = 0
stripSeg = 0
copySeg = 0

Detailed Resource Information (ASIC#4)
```

```
--snip--
Detailed Resource Information (ASIC#5)
--snip--
```

<#root>

C9400#

show platform software fed active ifm mappings

```
Interface             IF_ID Inst Asic Core Port SubPort Mac Cntx LPN GPN  Type Active
GigabitEthernet1/0/1   0x7   2    1    0    0    0       4   4    1   101  NIF  Y
GigabitEthernet1/0/2   0x8   2    1    0    1    1       4   4    2   102  NIF  Y
--snip--
GigabitEthernet1/0/13  0x13  2    1    0    12   4       0   0    13  1105 NIF  Y
--snip--
GigabitEthernet5/0/21  0x8f  3    1    1    20   4       5   5    21  1104 NIF  Y
--snip--
```

<#root>

C9400#

show etherchannel summary

```
--snip--
Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
1      Po1(SU)       LACP        Gi1/0/13(P) Gi5/0/21(P)
```

Programação de hardware - Método 2

Acrônimo /Termo	Definição
vlan:10	MVID 10 A VLAN 100 usa o ID de VLAN mapeado (MVID) 10 internamente dentro do switch.
gpn:1104	Número de porta global do canal de porta 1.
mac:0x20bbc05e5351	Endereço MAC 20bb.c05e.5351

Exemplo de saída do método de programação de hardware 2:

<#root>

C9400#

show platform hardware fed active matm macTable vlan 100

```
--snip--
HEAD: MAC address 20bb.c05e.5351 in VLAN 100
KEY: vlan 10, mac 0x20bbc05e5351, l3_if 0, gpn 1104, epoch 0, static 0, flood_en 0, vlan_lead_wless_flo
MASK: vlan 0, mac 0x0, l3_if 0, gpn 0, epoch 0, static 0, flood_en 0, vlan_lead_wless_flood_en 0, clien
SRC_AD: need_to_learn 0, lrn_v 0, catchall 0, static_mac 0, chain_ptr_v 0, chain_ptr 0, static_entry_v
DST_AD: si 0xc7, bridge 0, replicate 0, blk_fwd_o 0, v4_mac 0, v6_mac 0, catchall 0, ign_src_lrn 0, por
--snip--
```

<#root>

C9400#

show platform software fed active vlan 100

VLAN Fed Information

```
Vlan Id IF Id              LE Handle          STP Handle      L3 IF Handle          SVI IF ID          I
-------------------------------------------------------------------------------------------------------
100     0x0000000000420011 0x00007fe5c4616ef8 0x00007fe5c4617778 0x00007fe5c50dac28 0x00000000000002ea
```

<#root>

C9400#

show platform software fed active ifm mappings etherchannel

Mappings Table

```
Chan    Interface        IF_ID
-----------------------------------------------------
1       Port-channel1    0x000002ec
--snip--
```

<#root>

C9400#

show platform software fed active ifm if-id 0x000002ec

```
Interface IF_ID : 0x00000000000002ec
Interface Name : Port-channel1
Interface Block Pointer : 0x7fe5c685df98
Interface State : READY
Interface Status : ADD, UPD
Interface Ref-Cnt : 5
Interface Type : ETHERCHANNEL
Port Type : SWITCH PORT
Channel Number : 1
SNMP IF Index : 720
Port Handle : 0x50002f6
#Of Active Ports : 2
Base GPN : 1104
```

```
Index[2] : 0000000000000013
Index[3] : 000000000000008f

Port Information
Handle ............ [0x50002f6]
Type .............. [L2-Ethchannel]
Identifier ........ [0x2ec]
Unit .............. [1]
Port Logical Subblock
L3IF_LE handle .... [0x0]
Num physical port . [2]
GPN Base .......... [1104]
--snip--
```

Observação: se a interface na qual o mac aprendeu era uma única interface em vez de um canal de porta, o próximo comando é usado para determinar o gpn para o mapeamento de interface:

<#root>

C9400#

show platform software fed active ifm mappings gpn

Mappings Table

```
GPN   Interface              IF_ID
------------------------------------------------------------
101   GigabitEthernet1/0/1   0x00000007
102   GigabitEthernet1/0/2   0x00000008
103   GigabitEthernet1/0/3   0x00000009
--snip--
```

Utilização de TCAM

Verifique a utilização de TCAM para as entradas de endereço MAC em cada instância do Supervisor ASIC para garantir que o switch não fique sem espaço de TCAM para armazenar entradas no hardware.

<#root>

C9400

show platform hardware fed active fwd-asic resource tcam utilization

```
CAM Utilization for ASIC Instance [0]
--snip--
CAM Utilization for ASIC Instance [1]
 --snip--
CAM Utilization for ASIC Instance [2]
```

```
 --snip--
CAM Utilization for ASIC Instance [3]---> ASIC instance 3 = Supervisor ASIC 1, Core 1

 Table                                                  Max Values        Used Values
 ------------------------------------------------------------------------------------
 Unicast MAC addresses                                  65536/1024

 13/1 ------------> prefix/mask

 IGMP and Multicast groups                              16384/1024          0/7
 L2 Multicast groups                                    16384/1024          1/9
 Directly or indirectly connected routes                49152/65536          0/0
 NAT/PAT SA address and Port                               0                 0
 QoS Access Control Entries                             18432                34
 Security Access Control Entries                        18432                 0
 Ingress Netflow ACEs                                   1024                 0
 Policy Based Routing ACEs                              2048                 9
 Egress Netflow ACEs                                    2048                 8
 Input Microflow policer ACEs                              0                 0
 Output Microflow policer ACEs                             0                 0
 Flow SPAN ACEs                                         1024                13
 Control Plane Entries                                  1024                 0
 Tunnels                                                1024                 0
 Lisp Instance Mapping Entries                          1024                 0
 Input Security Associations                             512                 3
 Output Security Associations and Policies               512                 0
 SGT_DGT                                                8192/512           0/0
 CLIENT_LE                                              4096/256           2/0
 INPUT_GROUP_LE                                         1024                 0
 OUTPUT_GROUP_LE                                        1024                 0
 Macsec SPD                                              256                 0
CAM Utilization for ASIC Instance [4]
--snip--
CAM Utilization for ASIC Instance [5]
--snip--
```

Programação de hardware bem-sucedida

Todos os recursos (seja um endereço mac, uma interface, uma vlan etc.) são armazenados no banco de dados de objetos e programados no hardware como objetos.

O RP programa o FP, o FP programa o FED e o FED finalmente programa o hardware ASIC de encaminhamento do supervisor. As entradas do software RP são armazenadas como objetos no banco de dados de objetos e as entradas do software FP são armazenadas como objetos assíncronos no banco de dados de objetos.

Quando o FP programa o FED (que, por sua vez, programa o ASIC de encaminhamento do supervisor), o FED envia uma confirmação de volta ao FP. O FP então o encaminha ao RP para indicar que a programação de hardware foi concluída com êxito. Se a programação de hardware do FED estiver ausente ou incorreta, você poderá usar este próximo comando para verificar se há problemas e/ou confirmações.

<#root>

```
C9400#
```

show platform software object-manager fp active statistics

```
Forwarding Manager Asynchronous Object Manager Statistics

Object update: Pending-issue: 0, Pending-acknowledgement: 0
Batch begin:   Pending-issue: 0, Pending-acknowledgement: 0
Batch end:     Pending-issue: 0, Pending-acknowledgement: 0
Command:       Pending-acknowledgement: 0
Total-objects: 3269
Stale-objects: 0
Resolve-objects: 0
Error-objects: 0
Paused-types: 0
```

Se o comando anterior mostrar objetos diferentes de zero no estado de ocorrência pendente, use esse comando para localizar o número do objeto envolvido:

<#root>

```
C9400#
```

show platform software object-manager fp active pending-issue-update

Em seguida, use esse comando para determinar o processo preso associado ao número do objeto:

<#root>

```
C9400#
```

show platform software object-manager fp active object {object#}

No lado RP, use esse comando para verificar se há exclusão pendente (Del Pend) de um objeto que o FP não reconheceu.

<#root>

```
C9400#
```

show platform software object-manager rp active object-type-info

```
Object type           Name                       Count    Del Pend       Layer
-------------------------------------------------------------------------------
CC                    cc                             5           0           2
SPA                   spa                            0           0           4
PORT_DPIDB            port_dpidb                   164           0          10
CHANNEL_DPIDB         channel_dpidb                  0           0          12
```

```
VIRTUAL_DPIDB          virtual_dpidb                503           0           13
SW_DPIDB               sw_dpidb                       0           0           17
VLAN                   vlan                           0           0           19
--snip--
```

Verificação de integridade

Controle o tráfego plano e a política

Verifique se CoPP (Control Plane Policy) cai no hardware-UADP 2.0 para o tráfego apontado para o software-CPU. Isso pode afetar a aprendizagem de MAC e a estabilidade do Spanning-Tree.

<#root>

C9400#

show policy-map control-plane

```
 Control Plane

  Service-policy input: system-cpp-policy

--snip--

    Class-map: system-cpp-police-sw-forward (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0000 bps, drop rate 0000 bps
      Match: none
      police:
          rate 1000 pps, burst 244 packets
        conformed 1298 bytes; actions:
          transmit
        exceeded 0 bytes; actions:
          drop

--snip--

    Class-map: system-cpp-police-l2-control (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0000 bps, drop rate 0000 bps
      Match: none
      police:
          rate 500 pps, burst 122 packets
        conformed 239197001 bytes; actions:
          transmit
        exceeded 0 bytes; actions:
          drop

--snip--

    Class-map: system-cpp-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0000 bps, drop rate 0000 bps
      Match: none
      police:
```

```
          rate 1000 pps, burst 244 packets
        conformed 0 bytes; actions:
          transmit
        exceeded 0 bytes; actions:
          drop

    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0000 bps, drop rate 0000 bps
      Match: any
```

A mesma saída de CoPP do exemplo anterior é mostrada aqui em um formato mais granular e mais simples de ler (compactado).

<#root>

C9400#

show platform hardware fed active qos queue stats internal cpu policer

```
                          CPU Queue Statistics
============================================================================================
                                                (default) (set)      Queue         Queue
QId PlcIdx  Queue Name                 Enabled    Rate     Rate      Drop(Bytes)   Drop(Frames)
0    11     DOT1X Auth                   Yes      1000      1000     0             0
1    1      L2 Control                   Yes      2000      400      0             0
2    14     Forus traffic                Yes      1000      1000     0             0
3    0      ICMP GEN                     Yes      600       600      0             0
4    2      Routing Control              Yes      5400      1800     0             0
5    14     Forus Address resolution     Yes      1000      1000     0             0
6    0      ICMP Redirect                Yes      600       600      0             0
7    16     Unused                       Yes      1000      1000     0             0
8    4      L2 LVX Cont Pack             Yes      1000      1000     0             0
9    16     EWLC Control                 Yes      1000      1000     0             0
10   16     EWLC Data                    Yes      1000      1000     0             0
11   13     L2 LVX Data Pack             Yes      1000      1000     0             0
12   0      BROADCAST                    Yes      600       600      0             0
13   10     Learning cache ovfl          Yes      100       200      0             0
14   13     Sw forwarding                Yes      1000      1000     0             0
15   8      Topology Control             Yes      13000     13000    0             0
16   12     Proto Snooping               Yes      2000      2000     0             0
17   16     DHCP Snooping                Yes      1000      1000     0             0
18   9      Transit Traffic              Yes      500       400      0             0
19   10     RPF Failed                   Yes      100       200      0             0
20   15     MCAST END STATION            Yes      2000      2000     0             0
21   13     LOGGING                      Yes      1000      1000     0             0
22   7      Punt Webauth                 Yes      1000      1000     0             0
23   10     Crypto Control               Yes      100       200      0             0
24   10     Exception                    Yes      100       200      0             0
25   3      General Punt                 Yes      200       200      0             0
26   10     NFL SAMPLED DATA             Yes      100       200      0             0
27   2      Low Latency                  Yes      5400      1800     0             0
28   10     EGR Exception                Yes      100       200      0             0
29   5      Stackwise Virtual Control    No       8000      8000     0             0
```

```
30   9      MCAST Data                  Yes     500       400      0            0
31   10     Gold Pkt                    Yes     100       200      0            0

* NOTE: CPU queue policer rates are configured to the closest hardware supported value

                      CPU Queue Policer Statistics
=============================================================================
Policer    Policer Accept   Policer Accept  Policer Drop  Policer Drop
  Index         Bytes           Frames         Bytes           Frames
-----------------------------------------------------------------------------
0          3132             36              0             0
1          239197001        721952          0             0
2          123004776        978818          0             0
3          0                0               0             0
4          0                0               0             0
5          0                0               0             0
6          0                0               0             0
7          0                0               0             0
8          1024             16              0             0
9          0                0               0             0
10         13600            200             0             0
11         0                0               0             0
12         0                0               0             0
13         1298             3               0             0
14         80520            9158            0             0
15         2189268          23733           0             0
16         0                0               0             0
17         0                0               0             0

                        CPP Classes to queue map
================================================================================================
PlcIdx CPP Class                                 :  Queues
------------------------------------------------------------------------------------------------
0      system-cpp-police-data                    :  ICMP GEN/BROADCAST/ICMP Redirect/
10     system-cpp-police-sys-data                :  Learning cache ovfl/Crypto Control/Exception/EGR Exc
13     system-cpp-police-sw-forward              :  Sw forwarding/LOGGING/L2 LVX Data Pack/
9      system-cpp-police-multicast               :  Transit Traffic/MCAST Data/
15     system-cpp-police-multicast-end-station   :  MCAST END STATION /
7      system-cpp-police-punt-webauth            :  Punt Webauth/
1      system-cpp-police-l2-control              :  L2 Control/
5      system-cpp-police-stackwise-virt-control  :  Stackwise Virtual Control/
2      system-cpp-police-routing-control         :  Routing Control/Low Latency/
3      system-cpp-police-control-low-priority    :  General Punt/
4      system-cpp-police-l2lvx-control           :  L2 LVX Cont Pack/
8      system-cpp-police-topology-control        :  Topology Control/
11     system-cpp-police-dot1x-auth              :  DOT1X Auth/
12     system-cpp-police-protocol-snooping       :  Proto Snooping/
14     system-cpp-police-forus                   :  Forus Address resolution/Forus traffic/
5      system-cpp-police-stackwise-virt-control  :  Stackwise Virtual Control/
16     system-cpp-default                        :  DHCP Snooping/Unused/EWLC Control/EWLC Data/
```

Verifique as estatísticas do caminho de punt da CPU (hardware-UADP 2.0 em direção ao software-CPU) de uma perspectiva do software (CPU).

<#root>

```
C9400#
```

show platform software infrastructure lsmpi

```
LSMPI interface internal stats:
enabled=0, disabled=0, throttled=0, unthrottled=0, state is ready
Input Buffers = 8801257
Output Buffers = 5506129
rxdone count = 8801257
txdone count = 5506128
Rx no particletype count = 0
Tx no particletype count = 0
Txbuf from shadow count = 0
No start of packet = 0
No end of packet = 0
Punt drop stats:
Bad version 0
Bad type 0
Had feature header 0
Had platform header 0
Feature header missing 0
Common header mismatch 0
Bad total length 0
Bad packet length 0
Bad network offset 0
Not punt header 0
Unknown link type 0
No swidb 0
Bad ESS feature header  0
No ESS feature 0
No SSLVPN feature 0
No PPP bridge feature 0
Punt For PPP bridge type packets 0
Punt For Us type unknown 0
EPC CP RX Pkt cleansed 0
Punt cause out of range 0
IOSXE-RP Punt packet causes:
       42879 Layer2 control and legacy packets
     3644168 ARP request or response packets
        7584 For-us data packets
        1794 Mcast Directly Connected Source packets
        1573 Mcast PIM signaling packets
      750076 For-us control packets
38058 Layer2 bridge domain data packet packets
     3823736 Layer2 control protocols packets

   FOR_US Control IPv4 protcol stats:
         750076 [proto=0] packets
Packet histogram(500 bytes/bin), avg size in 125, out 126:
 Pak-Size      In-Count        Out-Count
      0+:       8228322          5207592
    500+:         41355             1717
   1000+:          4331             2402
   1500+:         35860            20017
```

Lsmpi11/3 is up, line protocol is up

<-- CPU interface

```
  Hardware is LSMPI
```

```
  MTU 1500 bytes, BW 1000000 Kbit/sec, DLY 10 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not set
  Unknown, Unknown, media type is unknown media type
  output flow-control is unsupported, input flow-control is unsupported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/1500/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     8309868 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 IP multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 watchdog, 0 multicast, 0 pause input
     5231728 packets output, 659535525 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 unknown protocol drops
     0 output buffer failures, 0 output buffers swapped out
```

<#root>

```
C9400#
```

show platform software infrastructure lsmpi punt

```
LSMPI punt statistics
    Total packets consumed:             876
    Total packets forwarded:            8468766
    First frag packets:                 0
    Total packets consumed & forwarded: 0

Cause                           Total          Total          Length         Dot1q encap    Other
                                consumed       forwarded      error          exceeded       linktype
MPLS ICMP Can't Fragment        0              0              0              0              0
IPv4 Options                    0              0              0              0              0
Layer2 control and legacy       0              0              0              0              0
PPP Control                     0              0              0              0              0
CLNS IS-IS Control              0              0              0              0              0
HDLC keepalives                 0              0              0              0              0
--snip--
```

Verifique as estatísticas do caminho de injeção da CPU (software-CPU em direção ao hardware-Supervisor) de uma perspectiva do software (CPU).

<#root>

```
C9400#
```

show platform software infrastructure inject

```
Statistics for L3 injected packets:
 5233473 total inject pak, 3 failed
 0 sent, 859329 prerouted
 0 non-CEF capable, 855296 non-unicast
 859826 IP, 0 IPv6
 0 MPLS, 0 Non-IP Tunnel
 0 UDLR tunnel, 0 P2MP replicated mcast
 0 Non-IP Fastswitched over Tunnel, 4373497 legacy pak path
 0 Other packet
 0 IP fragmented
 644 normal, 391 nexthop
 858788 adjacency, 150 feature
 0 undefined
 3 pak find no adj, 0 no adj-id
 137322 sb alloc, 856085 sb local
 0 p2mcast failed count 0 p2mcast enqueue fail
 0 unicast dhc
 0 mobile ip
 0 IPv6 NA
 0 IPv6 NS
 0 Transport failed cases
 0 Grow packet buffer
 per feature packet inject statistics
 150 Feature multicast
 0 Feature Edge Switching Service
 0 Feature Session Border Controller
 0 Feature interrupt level
 0 Feature use outbound interface
 0 Feature interrupt level with OCE
 0 Feature ICMPv6 error message
 0 Feature Session Border Controller media packet injection
 0 Feature Tunnel Ethernet over GRE
 0 Feature Secure Socket Layer Virtual Private Network
 0 Feature EPC Wireshark injecting packets

Statistics for L2 injected packets:
 0 total L2 inject pak, 0 failed
 0 total BD  inject pak, 0 failed
 0 total EFP inject pak, 0 failed
 0 total VLAN inject pak, 0 failed
```

Verifique as estatísticas de caminho de inserção/derivação da CPU a partir de uma perspectiva FED (UADP 2.0).

<#root>

C9400#

show platform software fed active lsmpi stat

```
LSMPI Statistics

----------------------------------------
Transmit: ----------------------------------> FED transmit = FED (Supervisor) punt to CPU
     Packet Count        : 8469445
     Bytes Count         : 1055390613
```

```
     particle Count      : 8951009
     particle with App   : 7258
     Ring Full Error     : 0
     No Buff Error       : 0
     TX Ring Free        : 2047
     TX Ring Busy        : 0
     TX Ring Size        : 2048
     TXDone Ring Free    : 6816
     TXDone Ring Busy    : 9567
     TXDone Ring Size    : 16384
Receive: ---------------------------------> FED receive = CPU inject to FED (Supervisor)
     Packet Count        : 5450099
     Bytes Count         : 675084903
     Particle Count      : 5695697
     Particles with App  : 4294966854
     RX Done Count       : 5696139
     No SOP              : 0
     No EOP              : 0
     Not Enough Buf      : 0
     Max Not Enough Buf  : 0
     RX Ring Free        : 4095
     RX Ring Busy        : 0
     RX Ring Size        : 4096
     RXDone Ring Free    : 8191
     RXDone Ring Busy    : 0
     RXDone Ring Size    : 8192

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

Verifique as estatísticas do caminho de punt da CPU (hardware-Supervisor em direção a software-CPU) de uma perspectiva FED (Supervisor).

<#root>

```
C9400#
```

show platform software fed active punt cause summary

```
Statistics for all causes

Cause    Cause Info                                          Rcvd         Dropped
-------------------------------------------------------------------------------
7        ARP request or response                             3644168      0
11       For-us data                                         1524         0
12       Mcast Directly Connected Source                     1794         0
25       Mcast PIM signaling                                 1573         0
55       For-us control                                      750461       0
58       Layer2 bridge domain data packet                    38058        0
96       Layer2 control protocols                            3825228      0
-------------------------------------------------------------------------------
```

Verifique a integridade das 31 filas individuais de punt da CPU de uma perspectiva do FED (Supervisor).

<#root>

C9400#

show platform software fed active cpu-interface

queue	retrieved	dropped	invalid	hol-block
Routing Protocol	790844	0	0	0
L2 Protocol	2774488	0	0	0
sw forwarding	0	0	0	0
broadcast	0	0	0	0
icmp	0	0	0	0
icmp redirect	0	0	0	0
logging	0	0	0	0
rpf-fail	1573	0	0	0
DOT1X authentication	0	0	0	0
Forus Traffic	1524	0	0	0
Forus Resolution	3644192	0	0	0
Wireless q5	0	0	0	0
Wireless q1	0	0	0	0
Wireless q2	0	0	0	0
Wireless q3	0	0	0	0
Wireless q4	0	0	0	0
Learning cache	0	0	0	0
Topology control	1198807	0	0	0
Proto snooping	0	0	0	0
BFD Low latency	0	0	0	0
Transit Traffic	0	0	0	0
Multi End station	38058	0	0	0
Health Check	0	0	0	0
Health Check	0	0	0	0
Crypto control	0	0	0	0
Exception	0	0	0	0
General Punt	0	0	0	0
NFL sampled data	0	0	0	0
STG cache	0	0	0	0
EGR exception	0	0	0	0
FSS	0	0	0	0
Multicast data	1794	0	0	0

<#root>

C9400#

show platform software fed active punt cpuq all

Punt CPU Q Statistics
==========

–snip–

CPU Q Id : 1
CPU Q Name : CPU_Q_L2_CONTROL

Packets received from ASIC : 2669864 ----------> Packets received by the FED process from the Super

```
Send to IOSd total attempts    : 2669864 ----------> Packets sent from the FED process to IOSd

Send to IOSd failed count      : 0
RX suspend count               : 0
RX unsuspend count             : 0
RX unsuspend send count        : 0
RX unsuspend send failed count : 0
RX consumed count              : 0
RX dropped count               : 0
RX non-active dropped count    : 0
RX conversion failure dropped  : 0
RX INTACK count                : 2243784
RX packets dq'd after intack   : 5074
Active RxQ event               : 2243785
RX spurious interrupt          : 322266

CPU Q Id                       : 2
CPU Q Name                     : CPU_Q_FORUS_TRAFFIC
Packets received from ASIC     : 1524
Send to IOSd total attempts    : 1524
Send to IOSd failed count      : 0
RX suspend count               : 0
RX unsuspend count             : 0
RX unsuspend send count        : 0
RX unsuspend send failed count : 0
RX consumed count              : 0
RX dropped count               : 0
RX non-active dropped count    : 0
RX conversion failure dropped  : 0
RX INTACK count                : 1347
RX packets dq'd after intack   : 8
Active RxQ event               : 1347
RX spurious interrupt          : 38

–snip–
```

Verifique as estatísticas do caminho de injeção da CPU (software-CPU em direção ao hardware-Supervisor) de uma perspectiva do FED (Supervisor).

<#root>

```
C9400#

show platform software fed active inject cause summary


Statistics for all causes

Cause    Cause Info                                        Rcvd         Dropped
-------------------------------------------------------------------------------
1        L2 control/legacy                                 4331682      0
2        QFP destination lookup                            290          0
3        QFP IPv4/v6 nexthop lookup                        391          0
7        QFP adjacency-id lookup                           859393       265
8        Mcast specific inject packet                      150          0
12       ARP request or response                           601          0
-------------------------------------------------------------------------------
```

Verifique a integridade das 2 filas de injeção individuais da CPU a partir de uma perspectiva de FED (UADP 2.0).

<#root>

C9400#

show platform software fed active inject cpuq all

```
Inject CPU Q Statistics
=======================================

CPU Q Id                        : 0
CPU Q Name                      : TX_CPUQ_PRIO_LOW ---> low priority CPU inject queue

Packets received from IOSd      : 168342
Enq to pkt driver total attempts : 168277
Enq to pkt driver failed count   : 0
Count of TX CMPL received        : 168277
TX suspend count                 : 0
TX unsuspend count               : 0
TX dropped count                 : 265
TX punted count                  : 0
TX App enq failed                : 0

CPU Q Id                        : 7
CPU Q Name                      : TX_CPUQ_PRIO_HI ---> high priority CPU inject queue

Packets received from IOSd      : 5024664
Enq to pkt driver total attempts : 5024664
Enq to pkt driver failed count   : 0
Count of TX CMPL received        : 5024664
TX suspend count                 : 0
TX unsuspend count               : 0
TX dropped count                 : 0
TX punted count                  : 0
TX App enq failed                : 0

Stats for all txq:
-------------------------------------------
TX chunk malloc fail count       : 0
-------------------------------------------
```

Estatísticas de Evento da Tabela MAC

<#root>

C9400#

show platform software fed active matm stats

```
MATM counters
```

```
Total non-cpu mac entries       : 10
Mac Learn SPI Msg Count         : 0
Mac Learn SPI Err Count         : 0
Mac Delete SPI Msg Count        : 0
Mac Delete SPI Err Count        : 0
Mac Learn Count                 : 967
Mac Add Count                   : 989
Mac AL add Count                : 971
Mac Del Count                   : 957
Mac AL Del Count                : 961

Mac Move Count                  : 2 ---> MAC moves between interfaces (see details above)

Mac AL Move Count               : 0
Mac Clear Count                 : 0
Mac Del all count               : 6
Mac table create Count          : 9
Mac VP event Count              : 5
Mac Update info Count           : 0
Mac Vlan age config Event Count : 0
Mac Vlan Link Event Count       : 6
Mac SVI linkEvent Count         : 3
Mac Bsync Event Count           : 0
Mac Isync Event Count           : 0
Mac Recon Start Count           : 0
Mac Recon Event Count           : 0
Mac IFM event Count             : 75
Mac FEC Event Count             : 0
Mac Aging Tick Count            : 0
Mac Retry event Count           : 0
Mac Hw Update Err Count         : 0
Mac In retryQ Count             : 0
```

<#root>

```
C9400#

configure terminal


C9400(config)#

mac address-table notification ?

  change     Enable/Disable MAC Notification feature on the switch
  mac-move   Enable Mac Move Notification
  threshold  Configure L2 Table monitoring

C9400(config)#C9400(config)#

mac address-table notification mac-move ---> enabled by default, syslog generated for any MAC move (show


C9400(config)#

mac address-table notification change ?

  history-size  Number of MAC notifications to be stored
  interval      Interval between the MAC notifications
  <cr>          <cr>
```

```
C9400(config)#
mac address-table notification change ---> disabled by default
```

<#root>

```
C9400#
show mac address-table notification mac-move

MAC Move Notification:
enabled
```

<#root>

```
C9400#
show mac address-table notification change

MAC Notification Feature is Enabled on the switch
Interval between Notification Traps : 1 secs
Number of MAC Addresses Added : 0
Number of MAC Addresses Removed : 0
Number of Notifications sent to NMS : 0
Maximum Number of entries configured in History Table : 1
Current History Table Length : 0
MAC Notification Traps are Disabled
History Table contents
----------------------
```

Quedas de Exceção UADP 2.0

Este comando detalha todos os motivos pelos quais um ASIC de encaminhamento UADP 2.0 descarta um pacote:

<#root>

```
C9400#
show platform hardware fed active fwd-asic drops exceptions

****EXCEPTION STATS ASIC INSTANCE 0 (asic/core 0/0)****
=============================================================================
 Asic/core |               NAME                  |   prev   |  current  |  delta
=============================================================================
0  0  NO_EXCEPTION                                    0          0           0
```

0	0	IPV4_CHECKSUM_ERROR	0	0	0
0	0	ROUTED_AND_IP_OPTIONS_EXCEPTION	0	0	0
0	0	CTS_FILTERED_EXCEPTION	0	0	0
0	0	SIA_TTL_ZERO	0	0	0
0	0	ALLOW_NATIVE_EXCEPTION_COUNT	0	0	0
0	0	ALLOW_DOT1Q_EXCEPTION_COUNT	0	0	0
0	0	ALLOW_PRIORITY_TAGGED_EXCEPTION_COUNT	0	0	0
0	0	ALLOW_UNKNOWN_ETHER_TYPE_EXCEPTION	0	0	0
0	0	IP_SOURCE_GUARD_VIOLATION	0	0	0
0	0	SECURE_L3IF_LEARNING_VIOLATION	0	0	0
0	0	AUTH_DRIVEN_DROP	0	0	0
0	0	VLAN_LOADBALANCE_GROUP_DENY	0	0	0
0	0	RPF_UNICAST_FAIL	0	0	0
0	0	RPF_UNICAST_FAIL_SUPPRESS	0	0	0
0	0	RPF_UNICAST_CHECK_INCOMPLETE	0	0	0
0	0	RPF_MULTICAST_FAIL	0	0	0
0	0	PKT_DROP_COUNT	0	0	0
0	0	SOURCE_ROUTE_EXCEPTION	0	0	0
0	0	IGR_MISC_FATAL_ERROR	0	0	0
0	0	BLOCK_FORWARD	0	0	0
0	0	POLICER_DROP	0	0	0
0	0	DENY_ROUTE	0	0	0
0	0	DENY_BRIDGE	0	0	0
0	0	STATIC_MAC_VIOLATION	0	0	0
0	0	STATIC_IP_VIOLATION	0	0	0
0	0	FPM_DROP_PACKET	0	0	0
0	0	IGR_EXCEPTION_L4_ERROR	0	0	0
0	0	IGR_EXCEPTION_L5_ERROR	0	0	0
0	0	IGR_EXCEPTION_HARDWARE_PARSE_EXCEPTION	0	0	0
0	0	IGR_EXCEPTION_INVALID_VLAN_DROP	0	0	0
0	0	IGR_EXCEPTION_31	0	0	0
0	0	FRAGMENTING_IPV4_WITH_OPTIONS	0	0	0
0	0	FRAGMENTING_IPV6_WITH_EXTENSIONS	0	0	0
0	0	ICMP_REDIRECT	0	0	0
0	0	MTU_FAIL_PUNT_TO_CPU_NO_IP_UNREACHABLE	0	0	0
0	0	LINK_LOCAL_CHECK_FAIL_NO_IP_UNREACHABLE	0	0	0
0	0	IP_UNICAST_TTL_REACHED_ZERO	0	0	0
0	0	MISC_FATAL_ERROR	0	0	0
0	0	STP_OR_FLEXLINK_DROP	0	0	0
0	0	PROTECTED_PORT_DROP	0	0	0
0	0	PVLAN_ISOLATED_CHECK_FAILED	0	0	0
0	0	PVLAN_COMMUNITY_CHECK_FAILED	0	0	0
0	0	DEJA_VU_CHECK_FAILED	0	0	0
0	0	NOT_VLAN_LOAD_BALANCE_GROUP_ALLOWED	0	0	0
0	0	RSPAN_DROP	0	0	0
0	0	SPLIT_HORIZON_DROP	0	0	0
0	0	SYSTEM_TTL_DROP	0	0	0
0	0	PRUNED	0	0	0
0	0	DENY_NO_IP_UNREACHABLE	0	0	0
0	0	IP_MULTICAST_TTL_REACHED_ZERO	0	0	0
0	0	MTU_FAIL_DROP_BRIDGED	0	0	0
0	0	MTU_FAIL_DROP_BRIDGED_IP_ROUTED	0	0	0
0	0	MTU_FAIL_ERSPAN	0	0	0
0	0	LINK_LOCAL_CHECK_FAIL_L3M_VALID	0	0	0
0	0	DENY_NOT_NO_IP_UNREACHABLE	0	0	0
0	0	MTU_FAIL_PUNT_TO_CPU_NOT_NO_IP_UNREACHABLE	0	0	0
0	0	LINK_LOCAL_CHECK_FAIL_NOT_NO_IP_UNREACHABLE	0	0	0
0	0	COPY_TO_CPU	0	0	0
0	0	EGR_L3_ERROR	0	0	0
0	0	EGR_L4_ERROR	0	0	0
0	0	EGR_L5_ERROR	0	0	0
0	0	EGR_HARDWARE_PARSE_EXCEPTION	0	0	0

```
0  0  EGR_SHOW_FORWARD_DROP                          0          0          0

****EXCEPTION STATS ASIC INSTANCE 1 (asic/core 0/1)****
=================================================================================
 Asic/core |               NAME                  |   prev   |  current  |  delta
=================================================================================
0  1  NO_EXCEPTION                                 13168      16679       3511
0  1  IPV4_CHECKSUM_ERROR                          0          0           0
0  1  ROUTED_AND_IP_OPTIONS_EXCEPTION              81         103         22
--snip--
```

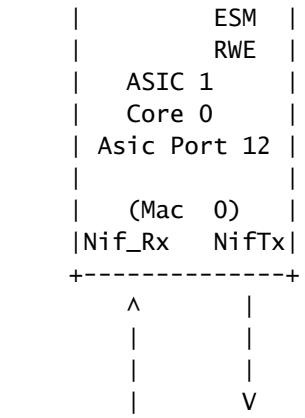
Estatísticas do supervisor - Caminho de dados do Supervisor para a placa de linha

Verifique as estatísticas ASIC de encaminhamento do Supervisor UADP 2.0 ativas que estão associadas a uma interface específica do painel frontal. Neste exemplo, a interface Gig1/0/13 é usada.

Exemplo de saída:

- Verifique quais interfaces na placa de linha fazem parte do mesmo grupo de portas.
- Cada grupo de portas compartilhou 8 Gbps de largura de banda do ASIC de stub da placa de linha em direção ao ASIC de encaminhamento do supervisor.
- Cada grupo de portas é associado a um dos SLI (System Link Interface) no ASIC de stub da placa de linha em direção ao ASIC de encaminhamento do supervisor.

```
<#root>

C9400#

show platform hardware cman fp active data-path 1 13 detail ---> Slot 1, interface 13


showing cman data-path for frontpanel 1/0/13


fp_portmap.xml: ---> Supervisor ASIC 1, core 0 is associated with front panel (fp) interface Gig1/0/13

id 13 asic 1 core 0 port 12 mac 0 subport 4 contextid 0 maxspeed DEV_PORT_SPEED_1G gpn 113 active 1

data path:


slot 3


    +- ACTIVE_SUP --+
    |   Sif 0      |
    | IQS     SQS  |

---> Supervisor ASIC 1, core 0 on the slot 3 active Supervisor associated with interface Gig1/0/13

    |     PBC      |
    |         AQM  |
    |         EQC  |
```




```
================================================
Nif MAC 0 Inforation:
NifRxByteGroupStats:                          NifTxByteGroupStats:
 rxBytes                    4495494            txBytes                    6499427
NifRxByteDestinationGroupStats:               NifTxByteDestinationGroupStats:
 rxUnicastBytes             1174628            txUnicastBytes             1175536
 rxMulticastBytes           3320866            txMulticastBytes           5298482
 rxBroadcastBytes           0                  txBroadcastBytes           25409
NifRxPortStatusGroupStats:                    NifTxFrameDestinationGroupStats:
 rxUnicastFrames            18326              txUnicastFrames            18330
 rxMulticastFrames          21387              txMulticastFrames          24834
 rxBroadcastFrames          0                  txBroadcastFrames          51
 rxPauseFrames              0                  txPauseFrames              0
 rxCos0PauseFrames          0                  txCos0PauseFrames          0
 rxCos1PauseFrames          0                  txCos1PauseFrames          0
 rxCos2PauseFrames          0                  txCos2PauseFrames          0
 rxCos3PauseFrames          0                  txCos3PauseFrames          0
 rxCos4PauseFrames          0                  txCos4PauseFrames          0
 rxCos5PauseFrames          0                  txCos5PauseFrames          0
 rxCos6PauseFrames          0                  txCos6PauseFrames          0
 rxCos7PauseFrames          0                  txCos7PauseFrames          0
 rxOamProcessedFrames       0                  txOamFrames                0
NifRxPortStatusGroupStats:                    NifTxPortStatusGroupStats:
 rxCollisionFragments       0                  txLateCollisionFrames      0
 rxFcsErrorFrames           0                  txsystemFcsErrorFrames     0
 rxInvalidOversizeFrames    0                  txOversizeFrames           0
 rxMacOverrunFrames         0                  txMacUnderrunFrames        0
 rxIpgViolationFrames       0                  txDeferredFrames           0
 rxOamDroppedFrames         0                  txExcessiveDeferralFrames  0
 rxSymbolErrorFrames        0                  txOkMultipleCollisionFrames  0
 rxValidOversizeFrames      0                  txOkSingleCollisionFrames  0
 rxValidUndersizeFrames     0                  goldFramesTruncated        0
NifRxSizeGroupStats:                          NifTxSizeGroupStats:
 rx32768toMtuFrames         0                  tx32768toMtuFrames         0
 rx16384to32767ByteFrames   0                  tx16384to32767ByteFrames   0
 rx8192to16383ByteFrames    0                  tx8192to16383ByteFrames    0
 rx4096to8191ByteFrames     0                  tx4096to8191ByteFrames     0
 rx2048to4095ByteFrames     0                  tx2048to4095ByteFrames     0
 rx1519to2047ByteFrames     51                 tx1519to2047ByteFrames     0
 rx1024to1518ByteFrames     15                 tx1024to1518ByteFrames     0
 rx512to1023ByteFrames      17                 tx512to1023ByteFrames      187
 rx256to511ByteFrames       3406               tx256to511ByteFrames       9407
 rx128to255ByteFrames       6567               tx128to255ByteFrames       6580
 rx65to127ByteFrames        11295              tx65to127ByteFrames        8583
 rx64ByteFrames             18362              tx64ByteFrames             18458
================================================

-------------------------------------------------> Input queue (Igr = Ingress)
```

```
IgrPacketCounters:                              EgrPacketCounters:
 packetsIn                  97777                packetsIn                  580324
 packetsOut                 97777                packetsEnqueueFcd_val      0
 packetsDropped             3383                 packetsMarkedForDrop       278
 fpsSourcedPadErrorCount    0                    padErrorPacketsIn          0
 igrSourcedPadErrorCount    0                    padErrorPacketsOut         0
================================================
For RWE for core 0:
                                                RweTotalEnqStats:
                                                 packetCount                580324
                                                RweTotalDeqStats:
                                                 packetCount                580046
                                                 FragmentCount              580046
================================================
For EQC for core 0:
                                                EqcTotalEnqStats:
                                                 Count                      580704
                                                EqcTotalDeqStats:
                                                 Count                      580324
================================================
For aqmRedQueueStats for asic port 12:

AqmRedQueueStats:          (sum of all queues) ---> Output queue (Aqm = Active queue management)

                                                 acceptByteCnt0             0
                                                 acceptFrameCnt0            0
                                                 acceptByteCnt1             6407742
                                                 acceptFrameCnt1            43070
                                                 acceptByteCnt2             39609
                                                 acceptFrameCnt2            395
                                                 dropByteCnt0               0
                                                 dropFrameCnt0              0
                                                 dropByteCnt1               0
                                                 dropFrameCnt1              0
                                                 dropByteCnt2               0
                                                 dropFrameCnt2              0
                                                 outOfSoftBufDropByteCnt    0
                                                 outOfSoftBufDropFrameCnt   0
                                                 maxQebDropByteCnt          0
                                                 maxQebDropFrameCnt         0
================================================
For PBC for core 0:
PbcIngressErrorDropCount:                       PbcEgressErrorDropCount:
 iCount                     0                    eS0Count                   0
 iCount                     0                    eS1Count                   0
PbcCreditCount:                                 PbcEnqFcErrorDropCount:
 creditCount                64                   fCount                     0
 rwePbcStall                0
================================================
For local/core 0 Switching:
                                                SqsCumulativeStatistics
                                                 totalEnqStat               1368200
                                                 totalDeqStat               1368200
                                                 totalDropStat              0
                                                SqsCumulativeStatisticsB
                                                 totalEnqStat               173449513
                                                 totalDeqStat               173449513
                                                 totalDropStat              0
================================================
For local/core 1 Switching:
                                                SqsCumulativeStatistics
                                                 totalEnqStat               890114
```

```
                                                 totalDeqStat                890114
                                                 totalDropStat               0
                                                SqsCumulativeStatisticsB
                                                 totalEnqStat                105061923
                                                 totalDeqStat                105061923
                                                 totalDropStat               0
================================================
For Sif 0 Switching:
                                                SifSifPbcCnt0:
                                                 Count                       81302675
                                                SifSifPbcCnt1:
                                                 Count                       58187651
SifRacInsertedCnt:                              SifRacCopiedCnt:
 SifRacInsertedCnt[0]       2295051              SifRacCopiedCnt[0]          35850468
 SifRacInsertedCnt[1]       1738892              SifRacCopiedCnt[1]          19265491
 SifRacInsertedCnt[2]       1666479              SifRacCopiedCnt[2]          23814855
 SifRacInsertedCnt[3]       2773364              SifRacCopiedCnt[3]          32727259
 SifRacInsertedCnt[4]       3126116              SifRacCopiedCnt[4]          38376676
 SifRacInsertedCnt[5]       2066567              SifRacCopiedCnt[5]          22176467
================================================
For Sif 1 Switching:
                                                SifSifPbcCnt0:
                                                 Count                       40956521
                                                SifSifPbcCnt1:
                                                 Count                       40956521
SifRacInsertedCnt:                              SifRacCopiedCnt:
 SifRacInsertedCnt[0]       11713808             SifRacCopiedCnt[0]          8615615
 SifRacInsertedCnt[1]       8319576              SifRacCopiedCnt[1]          7489596
 SifRacInsertedCnt[2]       8816344              SifRacCopiedCnt[2]          7608895
 SifRacInsertedCnt[3]       15404080             SifRacCopiedCnt[3]          8717898
 SifRacInsertedCnt[4]       16161715             SifRacCopiedCnt[4]          9685735
 SifRacInsertedCnt[5]       9745420              SifRacCopiedCnt[5]          7866174
```

Verifique o status do controle de fluxo de uma perspectiva do Supervisor para a interface do painel frontal. Isso ajuda a identificar se há algum congestionamento na interface.

<#root>

C9400#

show platform hardware cman fp active flowcontrol status

```
slot  1:Port 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
           EsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           IqsC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           Port 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
           EsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           IqsC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -

slot  2:   Port 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
           EsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           IqsC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           Port 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
           EsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           IqsC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -

slot  3:   Port 01 02 03 04 05 06 07 08 09 10
           EsmF  -  -  -  -  -  -  -  -  -  -
```

```
          IqsC 01  -  -  -  -  -  -  -  -  -

slot  4:  Port 01 02 03 04 05 06 07 08 09 10
          EsmF  -  -  -  -  -  -  -  -  -  -
          IqsC  -  -  -  -  -  -  -  -  -  -

slot  5:  Port 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
          EsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
          IqsC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  - 01  -  -  -
          Port 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
          EsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
          IqsC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -

slot  6:  Possibly linecard is not inserted

slot  7:  Possibly linecard is not inserted
```

Verifique se o tráfego de controle está fluindo de uma perspectiva ASIC de encaminhamento do Supervisor entre o ASIC de encaminhamento do Supervisor no Supervisor ativo e o ASIC de stub da placa de linha na placa de linha através das interfaces OCI.

<#root>

C9400#

show platform hardware cman fp active oci status

```
processing oci information:
 chassis_type:       1
 sup slot:           4
 sup num oci ports:  8

slot_id 1 : oci_enable Enabled    Link Status 0 (UP)
            asic_id 1 core_id 0 oci_port 3 mac_id 0
            NruRxByteGroupStats:  rxBytes 417829462717812        NruTxByteGroupStats:  txBytes 58891128

slot_id 2 : oci_enable Enabled    Link Status 0 (UP)
            asic_id 0 core_id 0 oci_port 1 mac_id 1
            NruRxByteGroupStats:  rxBytes 417938235716344        NruTxByteGroupStats:  txBytes 58891760

slot_id 5 : oci_enable Enabled    Link Status 0 (UP)
            asic_id 1 core_id 0 oci_port 4 mac_id 1
            NruRxByteGroupStats:  rxBytes 53195855717244         NruTxByteGroupStats:  txBytes 58891542

slot_id 6 : oci_enable Enabled    Link Status 1 (DOWN)
            asic_id 2 core_id 0 oci_port 6 mac_id 0
            NruRxByteGroupStats:  rxBytes 0                      NruTxByteGroupStats:  txBytes 0

slot_id 7 : oci_enable Enabled    Link Status 1 (DOWN)
            asic_id 0 core_id 0 oci_port 2 mac_id 2
            NruRxByteGroupStats:  rxBytes 0                      NruTxByteGroupStats:  txBytes 0
```

Estatísticas da placa de linha - Supervisor para caminho de dados da placa de linha

Verifique as estatísticas ASIC de stub da placa de linha da placa de linha que estão associadas a uma interface específica do painel frontal. Neste exemplo, a interface Gig1/0/13 é o foco.

Exemplo de saída:

- Os pacotes recebidos de Gig 1/0/13, entram na porta de recebimento da interface de rede e avançam através do IQS para a interface da pilha.
- A partir daí, um pacote sai da interface da pilha para outro Supervisor ASIC ou volta através de SQS, AQM, EQC, ESM, RWE e, em seguida, sai da transmissão da interface de rede Gig 1/0/13.
- Os pacotes enviados de outras interfaces ASICs do supervisor que saem do Gig 1/0/13 entram no Sif e depois passam pelo SQS, AQM, EQC, ESM, RWE e depois saem do NifTx do Gig 1/0/13.
- Para o AQM, há 8 filas Tx. Se você vir descartes dessas filas, poderá usar esse comando para determinar qual das filas está passando por descartes: show platform hardware fed ative goes queue stats interface Gig 1/0/13

<#root>

C9400#

show platform hardware iomd 1/0 data-path 13 detail ----> slot 1, interface 13

lcportmap.xml: ---> Line Card (lc) ASIC instance 0 is associated with interface Gig1/0/13

id 13 asic 0 asicport 12 mac 23 contextid 12 intl_port_sup0 9 intl_port_sup1 1 maxspeed DEV_PORT_SPEED_

fp_portmap.xml: ---> Supervisor ASIC 1, core 0 is associated with front panel (fp) interface Gig1/0/13

id 13 asic 1 core 0 port 12 mac 0 subport 4 contextid 0 maxspeed DEV_PORT_SPEED_1G gpn 113 active 1
data path:
slot 3

```
           +--ACTIVE SUP--+
           |              |
```

---> Supervisor ASIC 1, core 0 on the slot 3 active Supervisor associated with interface Gig1/0/13

```
           |   ASIC 1     |
           |   Core 0     |
           | Asic Port 12 |
           |              |
           |   (Mac  0)   |
           |Nif_Rx   NifTx|
           +--------------+
                 |      |
                 |      |
```

```
 SLI MAC  9      |      |
           +---------------+
           | SLI_Tx  SLI_Rx|
```

---> Line Card 1. The statistic output below is only for this Line card ASIC

```
           |               |
           |    ASIC 0     |
           | Asic  Port 12 |
           |               |
           |   (Mac 23)    |
           | NIF_Rx  NIF_Tx|
           +---------------+
```

Front Port 1/0/13

```
               ^       |
               |       |
               |       |
               |       V
```

```
==============================================
Nif MAC 23 Inforation:
NifRxByteGroupStats:                          NifTxByteGroupStats:
 rxBytes                    4457854            txBytes                    6440428
NifRxByteDestinationGroupStats:               NifTxByteDestinationGroupStats:
 rxUnicastBytes             1163684            txUnicastBytes             1164528
 rxMulticastBytes           3294170            txMulticastBytes           5250491
 rxBroadcastBytes           0                  txBroadcastBytes           25409
NifRxPortStatusGroupStats:                    NifTxFrameDestinationGroupStats:
 rxUnicastFrames            18155              txUnicastFrames            18158
 rxMulticastFrames          21235              txMulticastFrames          24625
 rxBroadcastFrames          0                  txBroadcastFrames          51
 rxPauseFrames              0                  txPauseFrames              0
 rxCos0PauseFrames          0                  txCos0PauseFrames          0
 rxCos1PauseFrames          0                  txCos1PauseFrames          0
 rxCos2PauseFrames          0                  txCos2PauseFrames          0
 rxCos3PauseFrames          0                  txCos3PauseFrames          0
 rxCos4PauseFrames          0                  txCos4PauseFrames          0
 rxCos5PauseFrames          0                  txCos5PauseFrames          0
 rxCos6PauseFrames          0                  txCos6PauseFrames          0
 rxCos7PauseFrames          0                  txCos7PauseFrames          0
 rxOamProcessedFrames       0                  txOamFrames                0
NifRxPortStatusGroupStats:                    NifTxPortStatusGroupStats:
 rxCollisionFragments       0                  txLateCollisionFrames      0
 rxFcsErrorFrames           0                  txsystemFcsErrorFrames     0
 rxInvalidOversizeFrames    0                  txOversizeFrames           0
 rxMacOverrunFrames         0                  txMacUnderrunFrames        0
 rxIpgViolationFrames       0                  txDeferredFrames           0
 rxOamDroppedFrames         0                  txExcessiveDeferralFrames  0
 rxSymbolErrorFrames        0                  txOkMultipleCollisionFrames  0
 rxValidOversizeFrames      0                  txOkSingleCollisionFrames  0
 rxValidUndersizeFrames     0                  goldFramesTruncated        0
NifRxSizeGroupStats:                          NifTxSizeGroupStats:
 rx32768toMtuFrames         0                  tx32768toMtuFrames         0
 rx16384to32767ByteFrames   0                  tx16384to32767ByteFrames   0
 rx8192to16383ByteFrames    0                  tx8192to16383ByteFrames    0
 rx4096to8191ByteFrames     0                  tx4096to8191ByteFrames     0
 rx2048to4095ByteFrames     0                  tx2048to4095ByteFrames     0
 rx1519to2047ByteFrames     51                 tx1519to2047ByteFrames     0
 rx1024to1518ByteFrames     15                 tx1024to1518ByteFrames     0
```

```
 rx512to1023ByteFrames      17                    tx512to1023ByteFrames      186
 rx256to511ByteFrames       3374                  tx256to511ByteFrames       9318
 rx128to255ByteFrames       6505                  tx128to255ByteFrames       6518
 rx65to127ByteFrames        11237                 tx65to127ByteFrames        8526
 rx64ByteFrames             18191                 tx64ByteFrames             18286
================================================

-------------------------------------------------> Input queue (Igr = Ingress)

IgrPacketCounters:                               EgrPacketCounters:
 packetsIn                  97078                 packetsIn                  576307
 packetsOut                 97078                 packetsEnqueueFcd_val      0
 packetsDropped             0                     packetsMarkedForDrop       0
 fpsSourcedPadErrorCount    0                     padErrorPacketsIn          0
 igrSourcedPadErrorCount    0                     padErrorPacketsOut         0
================================================
For aqmRedQueueStats for asic port 12:


AqmRedQueueStats:         (sum of all queues) ---> Output queue (Agm = Active queue management)

                                                  acceptByteCnt0             0
                                                  acceptFrameCnt0            0
                                                  acceptByteCnt1             0
                                                  acceptFrameCnt1            0
                                                  acceptByteCnt2             6440428
                                                  acceptFrameCnt2            42834
                                                  dropByteCnt0               0
                                                  dropFrameCnt0              0
                                                  dropByteCnt1               0
                                                  dropFrameCnt1              0
                                                  dropByteCnt2               0
                                                  dropFrameCnt2              0
                                                  outOfSoftBufDropByteCnt    0
                                                  outOfSoftBufDropFrameCnt   0
                                                  maxQebDropByteCnt          0
                                                  maxQebDropFrameCnt         0
================================================
SLI MAC 9 - SUP 0: ( an ACTIVE sup in slot 3 )
SliTxByteGroupStats:                             SliRxByteGroupStats:
 txBytes                    4457854               rxBytes                    6440428

SLI MAC 1 - SUP 1:
SliTxByteGroupStats:                             SliRxByteGroupStats:
 txBytes                    0                     rxBytes                    0
```

Verifique o status do controle de fluxo de uma perspectiva da placa de linha para a interface do painel frontal. Isso ajuda a identificar qualquer congestionamento na interface.

- Os valores são "-" quando não há controle de fluxo; caso contrário, o número da fila que está passando por controle de fluxo (congestionamento) é indicado.
- O controle de fluxo recebido pela interface é passado do ASIC da placa de linha para o ASIC de supervisor no Supervisor, onde o AQM cai, normalmente visto no ASIC de supervisor. A OCI (Out-of-band Control Interface) é o canal de comunicação interna entre a placa de linha e o Supervisor ativo que é usado para sinalizar o controle de fluxo da placa

de linha para o Supervisor.

<#root>

C9400#

show platform hardware iomd 1/0 flowcontrol status ---> slot 1

```
Slot 1 - number of ports 48

slot  1:   Port 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
           IsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           IqmC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           Port 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
           IsmF  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
           IqmC  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
```

Verifique se o tráfego de controle está fluindo de uma perspectiva do ASIC de stub da placa de linha entre o ASIC de stub da placa de linha na placa de linha e o ASIC de encaminhamento do Supervisor nos Supervisores ativo e em espera através das interfaces OCI.

- OCI = Out-of-band Control Interface = canais de comunicação interna entre a placa de linha e os supervisores ativo e standby

<#root>

C9400#

show platform hardware iomd 1/0 oci status ---> slot 1

```
Asic 0, Mac 10, Tx OCI Config 0, OCI Merge FALSE, OCI Enabled, Link Status 0 (UP)
Network Port Range 0---47, Local Port Range 0---47
NifRxByteGroupStats:  rxBytes 177402572782108        NifTxByteGroupStats:  txBytes 141925777717156

Asic 0, Mac 11, Tx OCI Config 0, OCI Merge FALSE, OCI Enabled, Link Status 0 (UP)
Network Port Range 0---47, Local Port Range 0---47
NifRxByteGroupStats:  rxBytes 963489284              NifTxByteGroupStats:  txBytes 770809988
```

Verifique quais interfaces na placa de linha fazem parte do mesmo grupo de portas que compartilha 8 Gbps de largura de banda do ASIC de stub da placa de linha na placa de linha em direção ao ASIC de encaminhamento do supervisor no Supervisor ativo. Cada grupo de portas é associado a um dos SLI (System Link Interface) no ASIC de stub da placa de linha em direção ao Supervisor.

<#root>

C9400#

show platform hardware iomd 1/0 portgroups ---> slot 1

Port Interface   Status   Interface

Group Max <-- aggregate bandwidth for 8 ports

Group   Bandwith

Bandwidth

1   TenGigabitEthernet1/0/1   up   1G
1   TenGigabitEthernet1/0/2   down   1G
1   TenGigabitEthernet1/0/3   admindown 1G
1   TenGigabitEthernet1/0/4   down   1G
1   TenGigabitEthernet1/0/5   down   1G   8G
1   TenGigabitEthernet1/0/6   down   1G
1   TenGigabitEthernet1/0/7   down   1G
1   TenGigabitEthernet1/0/8   down   1G

2   TenGigabitEthernet1/0/9   down   1G
2   TenGigabitEthernet1/0/10   down   1G
2   TenGigabitEthernet1/0/11   down   1G
2   TenGigabitEthernet1/0/12   down   1G
2   TenGigabitEthernet1/0/13   up   1G   8G
2   TenGigabitEthernet1/0/14   down   1G
2   TenGigabitEthernet1/0/15   down   1G
2   TenGigabitEthernet1/0/16   down   1G

3   TenGigabitEthernet1/0/17   down   1G
3   TenGigabitEthernet1/0/18   down   1G
3   TenGigabitEthernet1/0/19   down   1G
3   TenGigabitEthernet1/0/20   down   1G
3   TenGigabitEthernet1/0/21   down   1G   8G
3   TenGigabitEthernet1/0/22   down   1G
3   TenGigabitEthernet1/0/23   down   1G
3   TenGigabitEthernet1/0/24   down   1G

4   TenGigabitEthernet1/0/25   down   1G
4   TenGigabitEthernet1/0/26   down   1G
4   TenGigabitEthernet1/0/27   down   1G
4   TenGigabitEthernet1/0/28   down   1G
4   TenGigabitEthernet1/0/29   down   1G   8G
4   TenGigabitEthernet1/0/30   down   1G
4   TenGigabitEthernet1/0/31   down   1G
4   TenGigabitEthernet1/0/32   down   1G

5   TenGigabitEthernet1/0/33   down   1G
5   TenGigabitEthernet1/0/34   down   1G
5   TenGigabitEthernet1/0/35   down   1G
5   TenGigabitEthernet1/0/36   down   1G
5   TenGigabitEthernet1/0/37   down   1G   8G
5   TenGigabitEthernet1/0/38   down   1G
5   TenGigabitEthernet1/0/39   down   1G
5   TenGigabitEthernet1/0/40   down   1G

6	TenGigabitEthernet1/0/41	down	1G	
6	TenGigabitEthernet1/0/42	down	1G	
6	TenGigabitEthernet1/0/43	down	1G	
6	TenGigabitEthernet1/0/44	down	1G	
6	TenGigabitEthernet1/0/45	down	1G	8G
6	TenGigabitEthernet1/0/46	down	1G	
6	TenGigabitEthernet1/0/47	down	1G	
6	TenGigabitEthernet1/0/48	up	1G	

Sobre esta tradução
A Cisco traduziu este documento com a ajuda de tecnologias de tradução automática e humana para oferecer conteúdo de suporte aos seus usuários no seu próprio idioma, independentemente da localização.

Observe que mesmo a melhor tradução automática não será tão precisa quanto as realizadas por um tradutor profissional.

A Cisco Systems, Inc. não se responsabiliza pela precisão destas traduções e recomenda que o documento original em inglês (link fornecido) seja sempre consultado.