

Validar el hardware de capa 2 en los switches Catalyst serie 9000

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Introducción

Este documento describe cómo validar la programación de hardware de Capa 2 y el reenvío en switches Catalyst serie 9400.

Prerequisites

Requirements

No hay requisitos específicos para este documento.

Componentes Utilizados

La información de este documento se basa en el switch Catalyst serie 9400 (UADP 2.0).

Nota: La versión de software utilizada en este documento es 16.6.1, pero esto debería seguir siendo aplicable para versiones posteriores de Cisco IOS-XE.

Nota: Puede utilizar este documento para otros tipos de switches Catalyst 9000, pero ignorar cualquier comando que haga referencia a una tarjeta de línea.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. Si tiene una red en vivo, asegúrese de entender el posible impacto de cualquier comando.

Antecedentes

- El Catalyst 9400 Supervisor1 (C9400-SUP-1) tiene 3 ASIC de reenvío UADP 2.0 (0, 1, 2).
- Cada ASIC de reenvío UADP 2.0 tiene: Núcleo dual (0, 1): esto no existía en las generaciones anteriores de ASICS UADP 2.0. SIF (interfaces de pila): se utiliza para conectarse a los otros 2 ASIC UADP 2.0 mediante un anillo de pila interno. NIFs (Interfaces de red): se utiliza para conectarse a 1 o más tarjetas de línea a través de la placa de interconexiones.
- Todas las decisiones de reenvío de paquetes para las tarjetas de línea y las interfaces de link ascendente del supervisor son tomadas por los 3 ASIC de reenvío UADP 2.0 en el Supervisor activo.
- Las tarjetas de línea utilizadas en este ejemplo tienen 1 ASIC de stub de núcleo único de tarjeta de línea que no participa en las decisiones de reenvío de paquetes.
- El ASIC stub de tarjeta de línea en la tarjeta de línea se conecta a 1 o más de los 3 ASIC de reenvío UADP 2.0 en el Supervisor a través de la placa de interconexiones.
- Los 3 ASIC de reenvío UADP 2.0 en el Supervisor toman todas las decisiones de reenvío de paquetes.

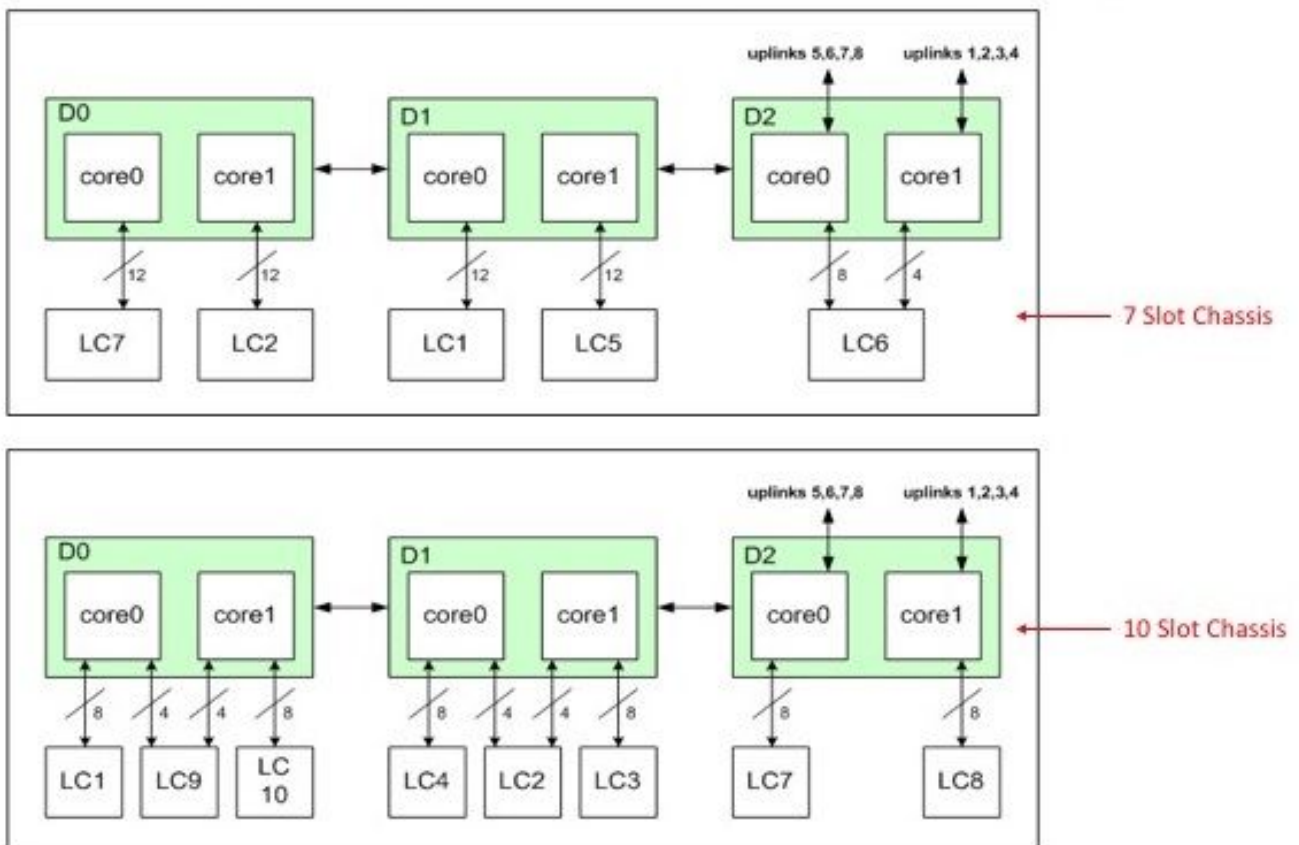
Terminology

Acrónimo	Definición
RP	Procesador de ruteo
FP	Procesador de reenvío
FED	Controlador del motor de reenvío. El proceso de software que programa el ASIC de reenvío supervisor.
Administrador de objetos	Entradas MAC de software FP que se almacenan como objetos asincrónicos en la base de datos de objetos.

LSMPI	Interfaz de punto de memoria compartida de Linux. El transporte entre el plano de datos (hardware-UADP 2.0) y el plano de control (software-CPU).
IFM	Proceso de software de Interface Manager.
IF_ID	Interface IDentifier es un valor único que representa una interfaz específica. Se utiliza durante la programación interna en el switch.
Inst	Instancia. Indica que la interfaz Asic/Core UADP 2.0 está conectada a: 0=Asic0/Core0, 1=Asic0/Core1, 2=Asic1/Core0, 3=Asic1/Core1, 4=Asic2/Core0, 5=Asic2/Core1.
ASIC	Especifica con qué UADP 2.0 se asocia una interfaz: 0=UADP 2.0 #0, 1=UADP 2.0 #1, 2=UADP 2.0 #2.
Núcleo	Especifica con qué núcleo de la interfaz UADP 2.0 se asocia: 0=core0, 1=core1.
Puerto	Número de instancia ordinal de un puerto dentro de una ranura. Dentro de la misma ranura todos los números de puerto son únicos.
SubPort	Identifica un puerto dentro de un grupo de puertos (Cntx) para los puertos del panel frontal que están sub-portados (Cntx y SubPort juntos identifican un puerto único que está sub-portado).
Mac	Identificador de interfaz que se utiliza cuando una interfaz ejecuta MACsec (autenticación de seguridad y cifrado).
Cntx	Contexto. Número de grupo al que pertenece un puerto cuando se subporta una interfaz del panel frontal (Cntx y SubPort juntos identifican un puerto único que se subporta).
LPN	Número de puerto lógico asociado a una interfaz.
GPN	Número de puerto global asociado a una interfaz.
Tipo NIF	Interfaz de Red; NRU = enlace ascendente redundante de red
IF_IS	Identificador de interfaz. Este es un valor único que representa una interfaz específica. Se utiliza durante la programación interna en el switch.
Port_LE	Entidad lógica de puerto. Ésta es la configuración de la interfaz.
AOM	Administrador de objetos asincrónicos. El FP programa la información en la base de datos de objetos como un objeto.
VP	Puerto virtual
MATM	Administrador de tabla de direcciones MAC
RP	Procesador de ruteo
OM_PTR	Puntero del gestor de objetos
Tbl_ID	Identificador de tabla = vlan
CMAN	Administrador de chasis
FP	Procesador de reenvío
fp_port	Los puertos del panel frontal.
Sif	Interfaz de pila (hacia los otros 2 ASIC de reenvío UADP 2.0 en el Supervisor).
Nif	Interfaz de red (hacia la interfaz del panel frontal)
IGR/EGR	Entrada/Salida
IQS	Planificador de cola de ingreso
SQS	Planificador de cola de pila
PBC	Complejo de búfer de paquetes
AQM	Administración de cola activa. Esto hace comprobaciones de administración de congestión
AQMRed	Administración de cola activa Detección temprana aleatoria.
EQC	Controlador de cola de salida
ESM	Administración del programador de egreso

RWE	Motor de reescritura. Agrega o elimina la información del encabezado del paquete.
IOMD	Controlador del módulo de salida de entrada
fp_port	El puerto del panel frontal.
Nif	Interfaz de red (hacia la interfaz del panel frontal)
SLI	Interfaz de enlace del sistema (hacia el supervisor)
IGR/EGR =	Entrada/Salida
AQMRed	Administración de cola activa Detección temprana aleatoria.
OCI	Interfaz de control fuera de banda = canal de comunicación interno entre la tarjeta de línea supervisor activo
MATM	Administrador de tabla de direcciones MAC
Recuento de movimientos MAC	Este es el recuento para cuando una dirección MAC se mueve (se aprende) en una nueva interfaz. El conteo de traslados puede ocurrir cuando un host final se mueve físicamente de interfaz a otra, un host inalámbrico pasa de un punto de acceso (AP) a otro AP conectado a una interfaz diferente, o el trayecto del árbol de expansión cambia o se lanzan.

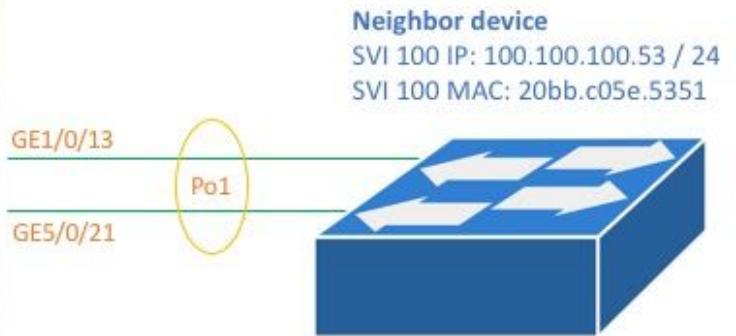
Line Card (LC) to UADP 2.0 Mapping



Tarjeta de línea a UADP

Topología

Catalyst 9400 - Macallan
 SVI 100 IP: 100.100.100.1 / 24
 SVI 100 MAC: 2c5a.0f1c.28e1



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 SOFTWARE (fc2)
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--
```

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

C9400#**show running-config interface port-channel 1**

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


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]

La máscara de grupo es un valor distinto de cero en este resultado. Se utiliza en el proceso de hash para determinar el link en el EtherChannel donde se dirige cualquier flujo de tráfico.

```
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-		

```
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 muestra la configuración para el canal de puerto 1:

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

```
Index[3] : 000000000000008f ---> 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, core 0)
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, core 1)
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

```

Este comando muestra la configuración para las interfaces de mapeo.

Acrónimo/instancia	Definición
IFM	Administrador de interfaces
Instancia	Gig1/0/13 está en ASIC instancia 2 (UADP 2.0 ASIC 1, núcleo 0) con ID de interfaz 0x13
Instancia	Gig5/0/21 está en ASIC instancia 3 (UADP 2.0 ASIC 1, núcleo 1) con ID de interfaz 0x8f

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 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--

```

Configuración global de EtherChannel

Gi2/0/11 Desg FWD 4 128.107 P2p Po1 Root FWD 3 128.2473 P2p Peer(STP)

C9400#**show etherchannel summary**

--snip--

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

Estos comandos muestran el estado de reenvío del árbol de expansión para el canal de puerto 1.

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
Port-channell1	748	0

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

Los siguientes comandos muestran el estado de reenvío de hardware del árbol de expansión para VLAN 100.

C9400#**show platform software fed active vp summary vlan 100**

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

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

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)
```

Compruebe la estabilidad del árbol de expansión. Asegúrese de que las notificaciones de cambio de topología (TCN) se ven con poca frecuencia.

```
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--
```

Programación de Reenvío de L2

```
C9400#show etherchannel summary
```

```
--snip--
```

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

```
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
```

```
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
```

Programación de software

En los siguientes ejemplos de salida, el RP programa el FP, el FP programa la FED y luego la FED finalmente programa el hardware ASIC de reenvío de Supervisor. Las entradas MAC del software RP se almacenan como objetos en la base de datos de objetos y las entradas MAC del software FP se almacenan como objetos asincrónicos en la base de datos de objetos.

```
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
```

```
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-		

```
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
```

```
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
```

Programación de hardware - Método 1

```
C9400#show platform software fed 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
GigabitEthernet1/0/1
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_MSRRP_ADDR	0x400000	MAT_LISP_LOCAL_ADDR	0x800000	
MAT_LISP_REMOTE_ADDR	0x1000000	MAT_VPLS_ADDR	0x2000000	

Programación de MACHandle

Acrónimo/término **Definición**

vlan:10 MVID 10. La VLAN 100 utiliza la ID de VLAN asignada (MVID) 10 internamente dentro del switch.
gpn:1104 Número de puerto global del canal de puerto 1.
mac:0x20bbc05e5351 MAC address 20bb.c05e.5351

Este es un ejemplo de resultado de la programación macHandle:

```
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 Lkp-ftr-id:LKP_FEAT_L2_SRC_MAC_VLAN ref_count:1
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: handle [ASIC: 0]: 0x7fe5c6aed898 handle
[ASIC: 1]: 0x7fe5c6b00fd8 handle [ASIC: 2]: 0x7fe5c6858208
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: 0 client_home_asic: 0 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_asic: 0 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 auth_state:0 auth_mode:0 auth_behavior_tag:0 traf_m:0 is_src_ce:0
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_mask_o:0 afd_cli_f:0 afd_lbl:0 prio:3 dest_mod_idx:0 destined_to_us:0 pv_trunk:1 smr:0
Detailed Resource Information (ASIC#1) --snip-- Detailed Resource Information (ASIC#2) --snip--
```

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
MVID					
100	0x0000000000420011	0x00007fe5c4616ef8	0x00007fe5c4617778	0x00007fe5c50dac28	0x00000000000002ea 10

C9400#show platform software fed active ifm mappings etherchannel

Mappings Table

Chan	Interface	IF_ID
1	Port-channel1	0x000002ec

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
```


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--

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)

cmil = 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)

cmil = 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--
```

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--												

C9400#**show etherchannel summary**

```
--snip--
```

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

```
-----+-----+-----+-----
```

No se espera información de reescritura MAC porque se trata de una entrada de reenvío MAC de Capa 2.

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--
```

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

Programación de diHandle

Acrónimo	Definición
diHandle	Identificador del índice de destino. Esta es la información de la interfaz saliente.

```
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-ftr-id:LKP_FEAT_INVALID ref_count:21
priv_ri/priv_si Handle: (nil)Hardware Indices/Handles: index0:0x51c2 mtu_index/l3u_ri_index0:0x0
index1:0x51c2 mtu_index/l3u_ri_index1:0x0 index2:0x51c2 mtu_index/l3u_ri_index2:0x0
index3:0x51c2 mtu_index/l3u_ri_index3:0x0 index4:0x51c2 mtu_index/l3u_ri_index4:0x0
index5:0x51c2 mtu_index/l3u_ri_index5:0x0
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--

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--
```

C9400#show etherchannel summary

--snip--

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

Programación de hardware - Método 2

Acrónimo/término	Definición
vlan:10	MVID 10. La VLAN 100 utiliza la ID de VLAN asignada (MVID) 10 internamente dentro del switch.
gpn:1104	Número de puerto global del canal de puerto 1.
mac:0x20bbc05e5351	MAC address 20bb.c05e.5351

Ejemplo de resultado del método de programación de hardware 2:

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_flood_en 0, client_home_asic 0
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_asic 0
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, auth_state 0, auth_mode 0, traf_mode 0, is_src_ce 0
DST_AD: si 0xc7, bridge 0, replicate 0, blk_fwd_o 0, v4_mac 0, v6_mac 0, catchall 0, ign_src_lrn
0, port_mask_o 0, afd_cli_f 0, afd_lbl 0, priority 3, dest_mod_idx 0, destined_to_us 0, pv_trunk
1
--snip--
```

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
MVID					
100	0x0000000000420011	0x00007fe5c4616ef8	0x00007fe5c4617778	0x00007fe5c50dac28	0x00000000000002ea 10

C9400#show platform software fed active ifm mappings etherchannel

Mappings Table

Chan	Interface	IF_ID
1	Port-channel1	0x000002ec

--snip--

```
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--
```

Nota: Si la interfaz en la que el mac aprendió fue una sola interfaz en lugar de un canal de puerto, el siguiente comando se utiliza para determinar el gpn a la asignación de interfaz:

```
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--
```

Utilización de TCAM

Verifique la utilización de TCAM para las entradas de dirección MAC en cada instancia de Supervisor ASIC para asegurarse de que el switch no se quede sin espacio TCAM para almacenar las entradas en el hardware.

```
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--

Programación de hardware correcta

Todas las funciones (ya sean una dirección mac, una interfaz, una vlan, etc.) se almacenan en la base de datos de objetos y se programan en el hardware como objetos.

El RP programa el FP, el FP programa la FED y la FED finalmente programa el hardware ASIC de reenvío de Supervisor. Las entradas de software RP se almacenan como objetos en la base de datos de objetos y las entradas de software FP se almacenan como objetos asincrónicos en la base de datos de objetos.

Cuando el FP programa la FED (que a su vez programa el ASIC de reenvío del supervisor), la FED envía un reconocimiento de vuelta al FP. El FP luego lo reenvía al RP para indicar que la programación de hardware se completó correctamente. Si falta la programación de hardware FED o es incorrecta, puede utilizar este siguiente comando para comprobar si hay problemas o confirmaciones.

```
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
```

Si el comando anterior muestra objetos que no son cero en estado de problema pendiente, utilice

este comando para encontrar el número de objeto involucrado:

```
C9400#show platform software object-manager fp active pending-issue-update
```

A continuación, utilice este comando para determinar el proceso atascado asociado con el número de objeto:

```
C9400#show platform software object-manager fp active object {object#}
```

En el lado RP, utilice este comando para comprobar si hay eliminación pendiente (Del Pend) para un objeto que el FP no reconoció.

```
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_dpodb 164 0 10 CHANNEL_DPIDB  
channel_dpodb 0 0 12 VIRTUAL_DPIDB virtual_dpodb 503 0 13 SW_DPIDB sw_dpodb 0 0 17 VLAN vlan 0 0  
19  
--snip--
```

Comprobación de estado

Tráfico y política del plano de control

Verifique las caídas de CoPP (Control Plane Policy) en el hardware-UADP 2.0 para el tráfico dirigido a la CPU de software. Esto puede afectar al aprendizaje de MAC y a la estabilidad del árbol de expansión.

```
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
```

Aquí se muestra el mismo resultado de CoPP que el ejemplo anterior en un formato más granular y más sencillo de leer (comprimido).

C9400#show platform hardware fed active qos queue stats internal cpu policer

CPU Queue Statistics

```
=====
```

QId	PlcIdx	Queue Name	Enabled	(default) Rate	(set) Rate	Queue Drop (Bytes)	Queue 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 Exception/NFL
SAMPLED DATA/Gold Pkt/RPF Failed/ 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 las estadísticas de trayectoria de punt de CPU (hardware-UADP 2.0 hacia software-CPU) desde una perspectiva de software (CPU).

```
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

Lsmpl11/3 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

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 SKB	consumed	forwarded	error	exceeded
linktype invalid				
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 las estadísticas de la ruta de inyección de la CPU (software-CPU hacia hardware-Supervisor) desde una perspectiva de software (CPU).

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 las estadísticas de la ruta de inserción/punt de la CPU desde la perspectiva de la FED (UADP 2.0).

```
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 la ruta de punt de la CPU (hardware-Supervisor hacia las estadísticas del software-CPU) desde una perspectiva FED (Supervisor).

```
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

Compruebe el estado de las 31 colas de espera de CPU individuales desde la perspectiva de FED (Supervisor).

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

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 Supervisor forwarding ASICs
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 las estadísticas de la ruta de inyección de la CPU (software-CPU hacia hardware-Supervisor) desde una perspectiva FED (Supervisor).

```

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

Compruebe el estado de las 2 colas de inyección individuales de CPU desde una perspectiva FED (UADP 2.0).

```

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
-----
```

Estadísticas de eventos de tabla MAC

```
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
```

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



```
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
```

```
C9400#show mac address-table notification mac-move
MAC Move Notification:  enabled
```

```
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 -----
```

Excepciones descartadas de UADP 2.0

Este comando detalla cualquier razón por la que un ASIC de reenvío UADP 2.0 descarta un paquete:

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


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:

iCount 0
iCount 0

PbcCreditCount:

creditCount 64
rwePbcStall 0

PbcEgressErrorDropCount:

eS0Count 0
eS1Count 0

PbcEnqFcErrorDropCount:

fCount 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:

SifRacInsertedCnt[0] 2295051
SifRacInsertedCnt[1] 1738892
SifRacInsertedCnt[2] 1666479
SifRacInsertedCnt[3] 2773364
SifRacInsertedCnt[4] 3126116
SifRacInsertedCnt[5] 2066567

SifRacCopiedCnt:

SifRacCopiedCnt[0] 35850468
SifRacCopiedCnt[1] 19265491
SifRacCopiedCnt[2] 23814855
SifRacCopiedCnt[3] 32727259
SifRacCopiedCnt[4] 38376676
SifRacCopiedCnt[5] 22176467

=====

For Sif 1 Switching:

SifSifPbcCnt0:

Count 40956521

SifSifPbcCnt1:

Count 40956521

SifRacInsertedCnt:

SifRacInsertedCnt[0] 11713808
SifRacInsertedCnt[1] 8319576
SifRacInsertedCnt[2] 8816344
SifRacInsertedCnt[3] 15404080
SifRacInsertedCnt[4] 16161715
SifRacInsertedCnt[5] 9745420

SifRacCopiedCnt:

SifRacCopiedCnt[0] 8615615
SifRacCopiedCnt[1] 7489596
SifRacCopiedCnt[2] 7608895
SifRacCopiedCnt[3] 8717898
SifRacCopiedCnt[4] 9685735
SifRacCopiedCnt[5] 7866174

Verifique el estado del control de flujo desde una perspectiva del Supervisor para la interfaz del panel frontal. Esto ayuda a identificar si hay alguna congestión en la interfaz.

```
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 que el tráfico de control esté fluyendo desde una perspectiva ASIC de reenvío de Supervisor entre el ASIC de reenvío de Supervisor en el Supervisor activo y el ASIC stub de tarjeta de línea en la tarjeta de línea a través de las interfaces OCI.

```
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
588911286106332

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
588917607864892

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
588915422236932

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
```

Estadísticas de tarjeta de línea - Ruta de datos de supervisor a tarjeta de línea

Verifique las estadísticas ASIC stub de tarjeta de línea asociadas a una interfaz específica del panel frontal. En este ejemplo, la interfaz Gig1/0/13 es el foco.

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 agmRedQueueStats for asic port 12:

---> Output queue (Agm = Active queue management)	AgmRedQueueStats:	(sum of all queues)
	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 el estado del control de flujo desde una perspectiva de tarjeta de línea para la interfaz del panel frontal. Esto ayuda a identificar cualquier congestión en la interfaz.

- Los valores son "-" cuando no hay ningún control de flujo, de lo contrario se indica el número de cola que experimenta control de flujo (congestión).
- El control de flujo recibido por la interfaz se pasa de la tarjeta de línea ASIC en la tarjeta de línea al Supervisor ASIC en el Supervisor donde las caídas de AQM se suelen ver en el Supervisor ASIC. El OCI (interfaz de control fuera de banda) es el canal de comunicación interno entre la tarjeta de línea y el supervisor activo que se utiliza para indicar el control de flujo de la tarjeta de línea al supervisor.

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 que el tráfico de control esté fluyendo desde una perspectiva ASIC stub de tarjeta de línea entre el ASIC stub de tarjeta de línea en la tarjeta de línea y el ASIC de reenvío del supervisor en los Supervisores activos y en espera a través de las interfaces OCI.

- OCI = Interfaz de control fuera de banda = canales de comunicación interna entre la tarjeta de línea y supervisores activos y en espera

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 qué interfaces en la tarjeta de línea forman parte del mismo grupo de puertos que comparte 8 Gbps de ancho de banda del ASIC stub de tarjeta de línea en la tarjeta de línea hacia el ASIC de reenvío del supervisor en el Supervisor activo. Cada grupo de puertos se asocia con una de las SLI (interfaz de enlace del sistema) en el ASIC stub de tarjeta de línea hacia el supervisor.

```
C9400#show platform hardware iomd 1/0 portgroups ---> slot 1
```

```
Port Interface Status Interface Group Max <-- aggregate bandwidth for 8 ports
Group Bandwidth Bandwidth
```

Port	Interface	Status	Interface	Group	Max	<-- aggregate bandwidth for 8 ports
Group	Bandwidth	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