

NCS 5500平台上的資料包丟棄故障排除

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簡介

本文檔介紹有關如何在Cisco NCS55XX平台中有效識別資料包丟包和對其進行故障排除的綜合指南。

必要條件

需求

本文件沒有特定需求。

採用元件

本文檔適用於使用Jericho1或Jericho2 ASIC架構的所有NCS 5500平台。

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

背景資訊

封包捨棄

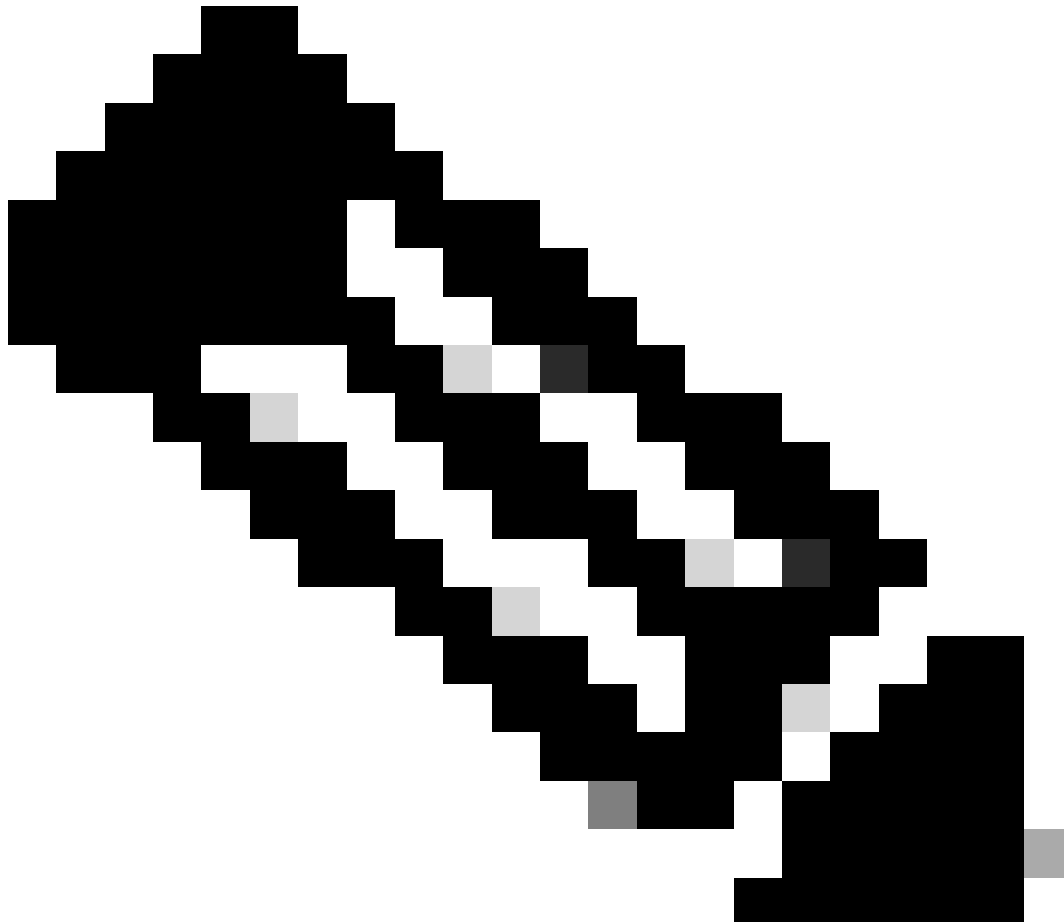
資料包丟棄是指裝置有意或無意地丟棄通過網路傳輸的資料包，使其無法到達其預期目的地的情況。

放置位置

要調試任何型別的丟包，您需要執行以下步驟：

- 1.找出拓撲中的哪個路由器正在丟棄資料包。
- 2.查詢介面上遞增的輸入資料包計數器或丟棄計數器。

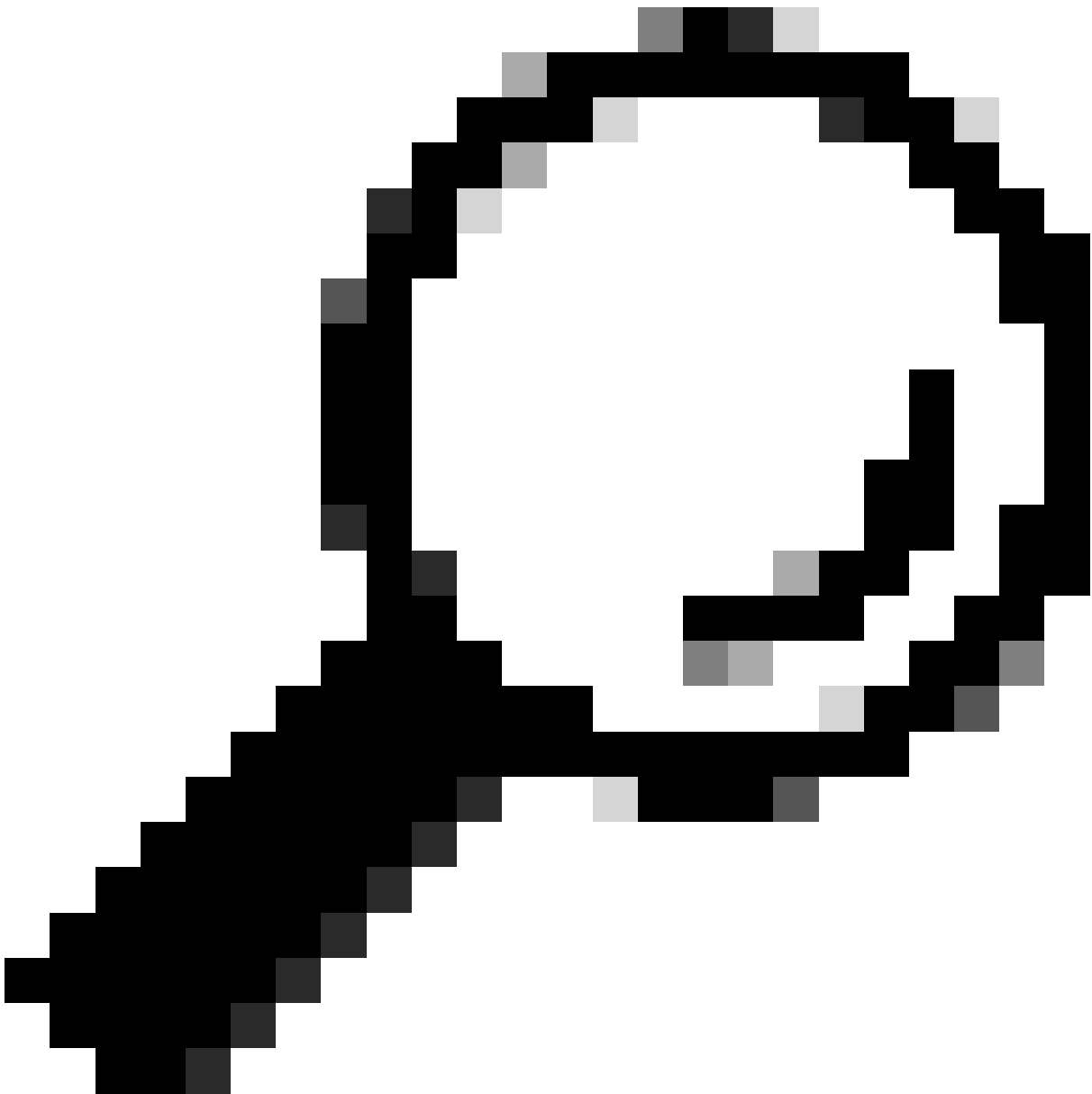
範例 `show interface <>`



附註：命令是在受控實驗室環境中的NCS 5500上執行的，用於測試和驗證目的。

```
RP/0/RP0/CPU0:NCS-5500#show interfaces TenGigE0/0/0/14
TenGigE0/0/0/14 is up, line protocol is up
Interface state transitions: 3
Hardware is TenGigE, address is fce4.f6ad.b038 (bia fce4.f6ad.b038)
Loopback not set,
Last link flapped 2w2d
ARP type ARPA, ARP timeout 04:00:00
Last input 00:00:00, output 00:00:17
Last clearing of "show interface" counters never
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
49129 packets input, 4286647 bytes, 153 total input drops    <<  drops
```

```
0 drops for unrecognized upper-level protocol
Received 0 broadcast packets, 49129 multicast packets
0 runts, 0 giants, 0 throttles, 0 parity
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
47637 packets output, 6144913 bytes, 0 total output drops
Output 4 broadcast packets, 47633 multicast packets
845 output errors, 0 underruns, 0 applique, 0 resets      <<<<  errors
0 output buffer failures, 0 output buffers swapped out
3 carrier transitions
RP/0/RP0/CPU0:NCS-5500#
```



提示：對於捆綁介面和子介面，請確保在捆綁介面、子介面和相應的物理介面上運行此命令。

3.一旦確認丟棄或錯誤計數器正在增加，下一步就是確定與受影響介面相關的網路處理單元

(NPU)。

範例： show controllers npu voq-usage interface all instance all location <>

```
RP/0/RP0/CPU0:NCS-5500#show controllers npu voq-usage interface all instance all location 0/0/cpu0
-----
Node ID: 0/0/CPU0
Intf      Intf      NPU  NPU  PP   Sys   VQ   Flow  VQ   Port
name      handle  #   core Port Port base base port speed
              (hex)
-----
Hu0/0/0/5      8         0    0    1     1   1272  8360 local 100G
Hu0/1/0/2     2000088    0    1   17    857  1528  7464 remote 100G
Te0/0/0/14    1088      2    1   17    297  1728  6568 local 10G  << NPU2, PP Port:17
```

4.在承載介面的NPU上捕獲資料包。在輸出中找到PP埠，確保它與步驟1中識別的PP埠匹配。

範例： show controllers fia diagshell

```
"diag last" location

<#root>

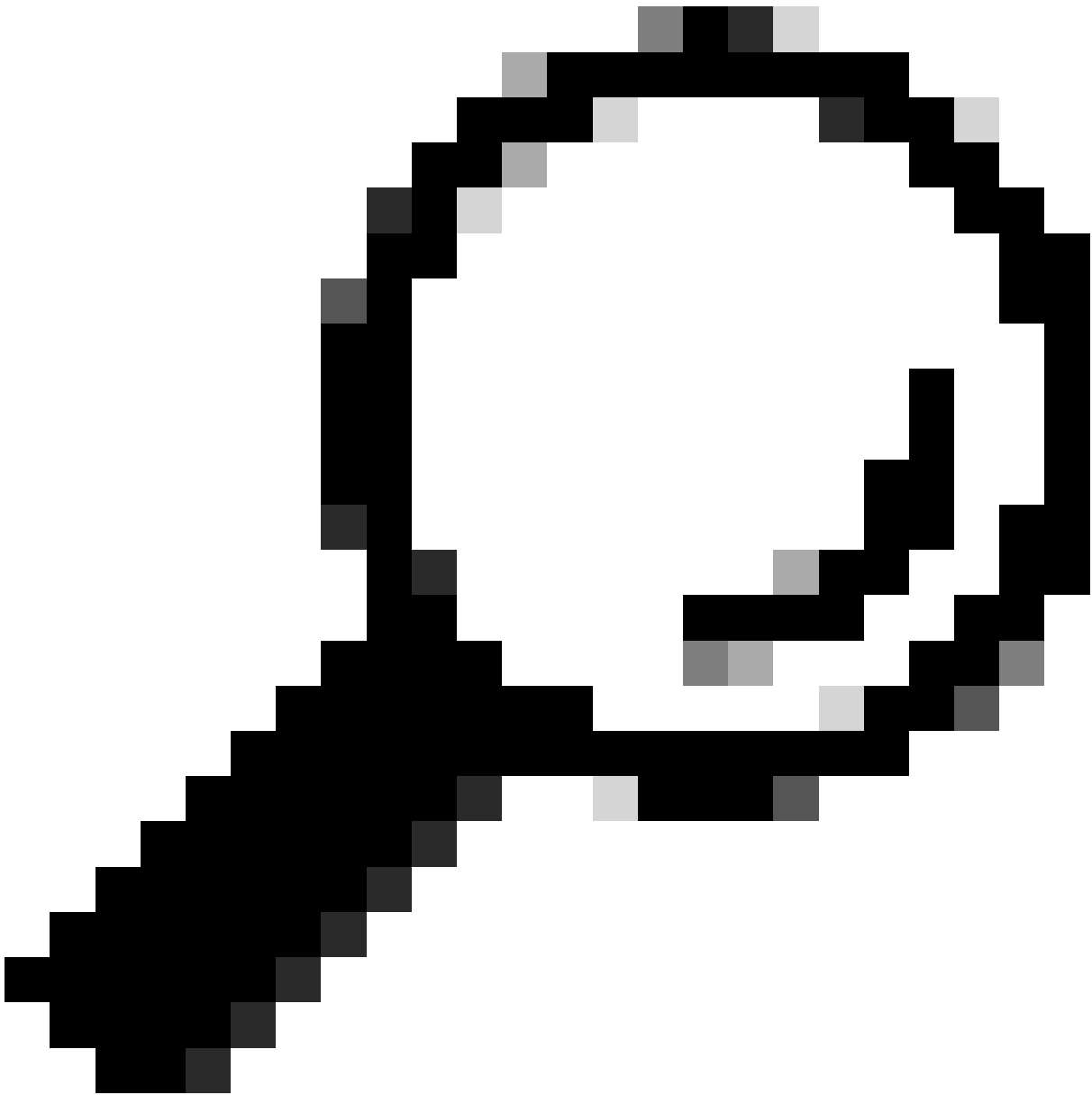
RP/0/RP0/CPU0:NCS-5500#show controllers fia diagshell 2 "diag last" location 0/0/CPU0
Node ID: 0/0/CPU0
R/S/I: 0/0/2

Core 0:
Last packet information: is_valid=0 tm_port=253
pp_port=240 src_syst_port=253 port_header_type=tm packet_size=0
Packet start, offset in bytes:
00: 4e415000 00134e41 50000001 8100e602 876f00fd 0606c00e 00000000 000180c2
20: 00000efc e4f6adb0 3888cc02 0704fce4 f6adb487 04100554 656e4769 6745302f
40: 302f302f 31340602 00780a0a 4e43532d 35353038 2d410c10 20372e39 2e322c20
60: 4e43532d 35353030 08000e04 00100010 100c0501 0a130101 02000000 d8001018
Core 1:
Last packet information: is_valid=1 tm_port=17
pp_port=17

src_syst_port=297 port_header_type=eth packet_size=83

<< pp_port: 17

Packet start, offset in bytes:
00: 0180c200 000e40a6 b79e2552 88cc0207 0440a6b7 9e255204 070340a6 b79e2552
20: 06020079 fe190080 c2098000 00000064 00000000 00000002 00000000 000000fe
40: 060080c2 0b8800fe 080080c2 0c006189 06000000 00000000 00000000 00000000
60: 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
```



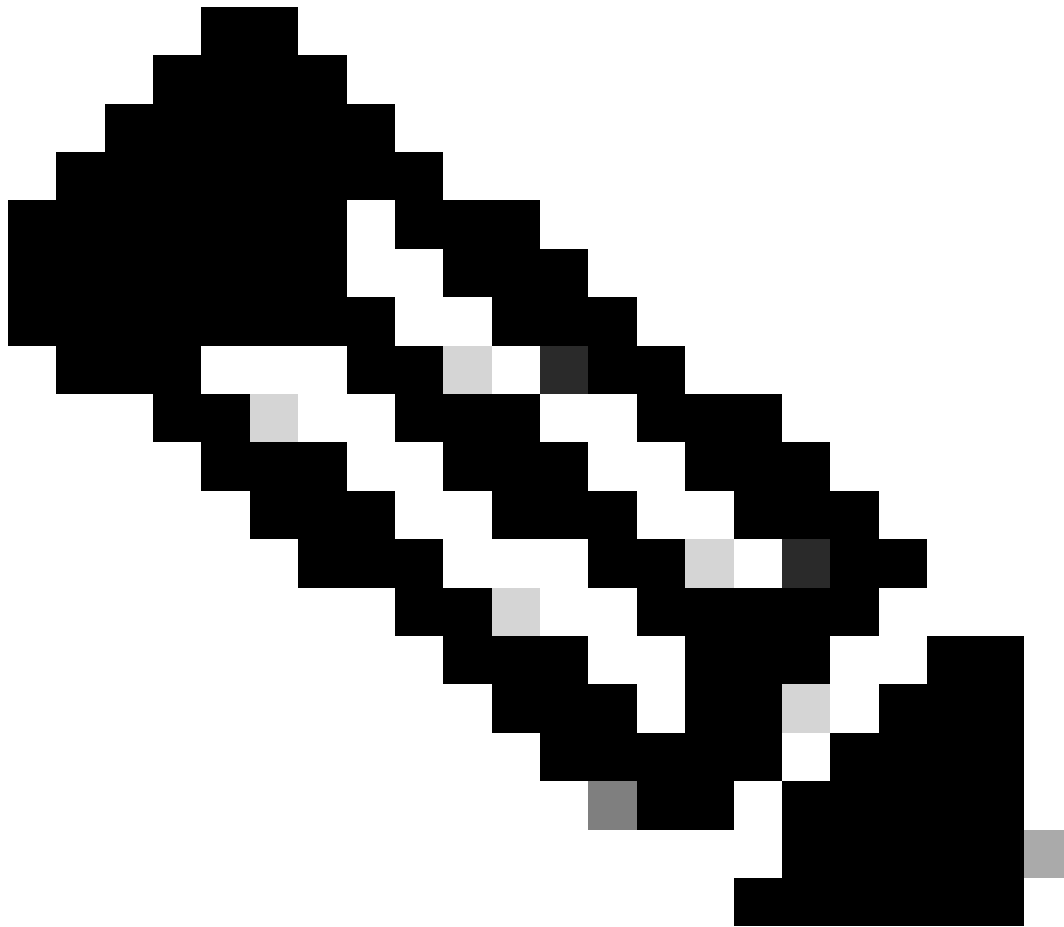
提示：您可以使用資料包解碼器工具解碼十六進位制資料，以徹底分析和解釋網路流量。

5.檢查NPU統計資訊：確定與傳出或傳入介面關聯的NPU編號，然後執行此命令以檢查資料路徑計數器

範例： `show controllers fia diagshell`

"diag counter g c" location

JERICHO NETWORK INTERFACE			
NBI			
RX_TOTAL_BYTE_COUNTER	= 0	TX_TOTAL_BYTE_COUNTER	= 0
RX_TOTAL_PKT_COUNTER	= 0	TX_TOTAL_PKT_COUNTER	= 0
RX_TOTAL_DROPPED_EOPS	= 0		
IRE		EPNI	
CPU_PACKET_COUNTER	= 0	EPE_BYTES_COUNTER	= 0
NIF_PACKET_COUNTER	= 0	EPE_PKT_COUNTER	= 0
OAMP_PACKET_COUNTER	= 0	EPE_DISCARD_PKT_CNT	= 0
OLP_PACKET_COUNTER	= 0		
RCY_PACKET_COUNTER	= 0		
IRE_FDT_INTERFACE_COUNTER	= 0		
		EGQ	
IDR		FQP_PACKET_COUNTER	= 0
MMU_IDR_PACKET_COUNTER	= 0	FQP_UNICAST_PKT_CNT	= 0
IDR_OCB_INTERFACE_COUNTER	= 0	FQP_DISCARD_UC_PKT_CNT	= 0
		FQP_UC_BYTES_CNT	= 0
		FQP_MC_PKT_CNT	= 0
		FQP_DISCARD_MC_PKT_CNT	= 0
IQM		FQP_MC_BYTES_CNT	= 0
ENQUEUE_PKT_CNT	= 0	EHP_UNICAST_PKT_CNT	= 0
DEQUEUE_PKT_CNT	= 0	EHP_MC_HIGH_PKT_CNT	= 0
DELETED_PKT_CNT	= 0	EHP_MC_LOW_PKT_CNT	= 0
ENQ_DISCARDED_PACKET_COUNTER	= 0	DELETED_PKT_CNT	= 0
		RQP_PKT_CNT	= 0
		RQP_DSCRD_PKT_CNT	= 0
		FDR	
IPT		CELLS_IN_CNT_P1	= 0
EGQ_PKT_CNT	= 0	CELLS_IN_CNT_P2	= 0
ENQ_PKT_CNT	= 0	CELLS_IN_CNT_P3	= 0
FDT_PKT_CNT	= 0	CELLS_IN_TDM_CNT	= 0
CRC_ERROR_CNT	= 0	CELLS_IN_MESHMC_CNT	= 0
		CELLS_IN_IPT_CNT	= 0
		EGQ_DROP_CNT	= 0
		EGQ_MESHMC_DROP_CNT	= 0
		EGQ_TDM_OVF_DROP_CNT	= 0
FDT		FDR	
IPT_DESC_CELL_COUNTER	= 0	P1_CELL_IN_CNT	= 0
IRE_DESC_CELL_COUNTER	= 0	P2_CELL_IN_CNT	= 0
		P3_CELL_IN_CNT	= 0
TRANSMITTED_DATA_CELLS_COUNTER	= 0	CELL_IN_CNT_TOTAL	= 0
JERICHO FABRIC INTERFACE			



附註：仔細監視是否有任何高亮顯示的計數器正在遞增。

6. 審查NPU每個處理階段的統計：

範例： show controller npu stats counters-all instance

loc

```
RP/0/RP0/CPU0:NCS-5500#show controllers npu stats counters-all instance 2 location 0/0/CPU0
FIA Statistics Rack: 0, Slot: 1, Asic instance: 0
Per Block Statistics:
```

Ingress:

NBI RX:

RX_TOTAL_BYTE_COUNTER	= 987134
RX_TOTAL_PKT_COUNTER	= 7117

```

IRE:
  CPU_PACKET_COUNTER           = 0
  NIF_PACKET_COUNTER           = 7117
  OAMP_PACKET_COUNTER          = 16976
  OLP_PACKET_COUNTER           = 0
  RCY_PACKET_COUNTER           = 23081
  IRE_FDT_INTRFACE_CNT        = 0

IDR:
  MMU_IDR_PACKET_COUNTER       = 3037
  IDR_OCB_PACKET_COUNTER       = 0

IQM:
  ENQUEUE_PKT_CNT              = 52073
  DEQUEUE_PKT_CNT              = 52073
  DELETED_PKT_CNT              = 0
  ENQ_DISCARDED_PACKET_COUNTER = 0

IPT:
  EGQ_PKT_CNT                  = 35207
  ENQ_PKT_CNT                  = 52073
  FDT_PKT_CNT                  = 16976
  CFG_EVENT_CNT                = 49036
  CFG_BYTE_CNT                 = 5313772

FDT:
  IPT_DESC_CELL_COUNTER        = 16976
  IRE_DESC_CELL_COUNTER        = 0
  TRANSMITTED_DATA_CELLS_COUNTER = 16976

Egress:
FDR:
  P1_CELL_IN_CNT               = 17538
  P2_CELL_IN_CNT               = 0
  P3_CELL_IN_CNT               = 0
  CELL_IN_CNT_TOTAL            = 17538

FDA:
  CELLS_IN_CNT_P1              = 17538
  CELLS_IN_CNT_P2              = 0
  CELLS_IN_CNT_P3              = 0
  CELLS_IN_TDM_CNT             = 0
  CELLS_IN_MESHMC_CNT          = 0
  CELLS_IN_IPT_CNT              = 35317
  CELLS_OUT_CNT_P1             = 17538
  CELLS_OUT_CNT_P2             = 0
  CELLS_OUT_CNT_P3             = 0
  CELLS_OUT_TDM_CNT            = 0
  CELLS_OUT_MESHMC_CNT         = 0
  CELLS_OUT_IPT_CNT            = 35317
  EGQ_DROP_CNT                 = 0
  EGQ_MESHMC_DROP_CNT          = 0

EGQ:
  FQP_PACKET_COUNTER           = 52635
  PQP_UNICAST_PKT_CNT          = 52635
  PQP_DSCRD_UC_PKT_CNT         = 0
  PQP_UC_BYTES_CNT             = 5750183
  PQP_MC_PKT_CNT               = 0
  PQP_DSCRD_MC_PKT_CNT         = 0

```

```
PQP_MC_BYTES_CNT = 0
EHP_UNICAST_PKT_CNT = 52635
EHP_MC_HIGH_PKT_CNT = 0
EHP_MC_LOW_PKT_CNT = 0
DELETED_PKT_CNT = 0
EHP_MC_HIGH_DSCRD_CNT = 0
EHP_MC_LOW_DSCRD_CNT = 0
ERPP_LAG_PRUNING_DSCRD_CNT = 0
ERPP_PMF_DISCARDS_CNT = 0
ERPP_VLAN_MBR_DSCRD_CNT = 0

EPNI:
EPE_BYTES_COUNTER = 5459532
EPE_PKT_COUNTER = 52635
EPE_DSCRD_PKT_CNT = 0

NBI TX:
TX_TOTAL_BYTE_COUNTER = 2315363
TX_TOTAL_PKT_COUNTER = 15053
RP/0/RP0/CPU0:NCS-5500#
```

7.請參閱陷阱統計資訊，以確定資料包是否已丟棄或重定向到CPU。

範例： show controllers npu stats traps-all instance

loc

```
RP/0/RP0/CPU0:NCS-5500#show controllers npu stats traps-all instance 2 location 0/0/CPU0
```

Trap Type	NPU	Trap	TrapStats	Policer	Packet	Packet
	ID	ID	ID		Accepted	Dropped
RxTrapMimDiscardMacsaDrop (IRB)	2	1	0x1	32045	0	0
RxTrapMimDiscardMacsaSnoop(dot1x)	2	3	0x3	32020	0	53
RxTrapMimSaMove(CFM_DOWM_MEP_DMM)	2	6	0x6	32039	0	0

```
RP/0/RP0/CPU0:NCS-5500#
```

8.對於在陷阱計數器中未標籤為丟棄的資料包，請檢視SPP計數器以檢查是否有任何可能的丟棄。

範例： show spp node-counters loc

```

RP/0/RP0/CPU0:NCS-5500#show spp node-counters location 0/0/CPU0
socket/rx
    ether raw pkts:          4098990
-----
socket/tx
    ce pkts:                923918
-----
fretta/classify
    forwarded NPU packet to NetIO: 3536836
    forwarded CPU packet to NetIO:  102051
    forwarded NPU packet to SPI0:   360025
    dropped in classify node:        1638 <<<
    lnx 12 drop in classify node:    1637
    port-mapper drop:               1
-----

client/inject
    pkts injected into spp:        923728
    NetIO->NPU injected into spp:  461604
    NetIO->CPU injected into spp:   102132
-----

    LACP:                      128529
    LLDP:                       231463
-----
cfm_off_tx_node
    Hostname updated:            1
-----
pkt_classrx
    Other punt traffic to XR:     3998476
    LPTS: ICMPv4 to XR:           119
    LPTS: ARP request:            127
    Total Pkts to XR:             3998912
    Total Pkts punted to RP Lnx:   190
    LPTS: ARP reply:              190
    Total Pkts to both dests:     190
-----
client/punt
    punted to client:             3998861
    no client found - send to defa: 51
-----
RP/0/RP0/CPU0:NCS-5500#

```

9.如果未觀察到陷阱遞增，則繼續檢查虛擬輸出隊列(VOQ)統計資訊。

範例：

show controllers npu voq-usage interface

instance

loc

show controllers npu stats voq base

instance

location

RP/0/RP0/CPU0:NCS-5500#show controllers npu voq-usage interface tenGigE 0/0/0/14 instance 2 location 0/

Node ID: 0/0/CPU0									
Intf name	Intf handle (hex)	NPU #	NPU core	PP Port	Sys Port	VOQ base	Flow base	VOQ port type	Port speed
Te0/0/0/14	1088	2	1	17	297	1728	6568	local	10G

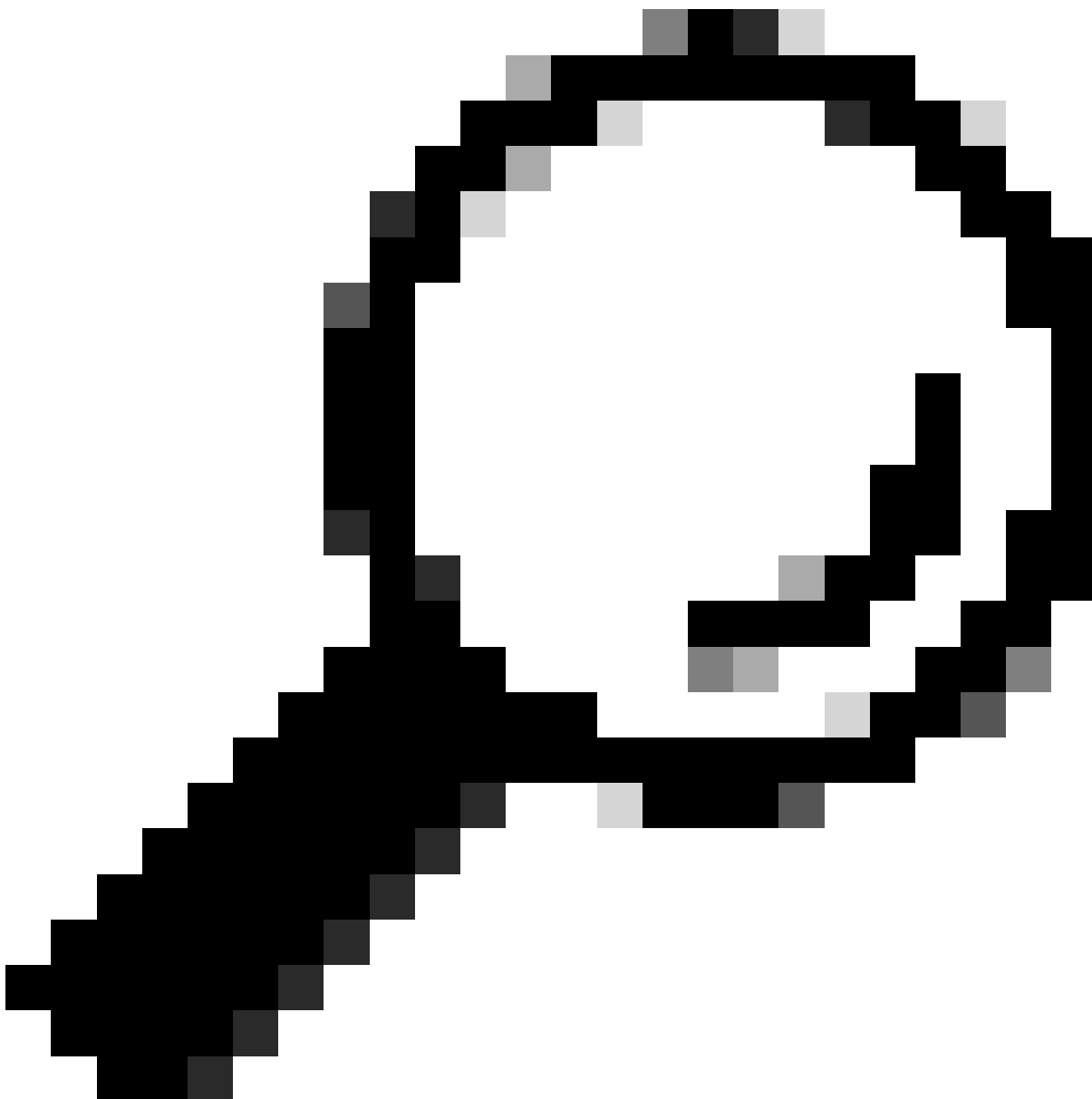
RP/0/RP0/CPU0:NCS-5500#

RP/0/RP0/CPU0:NCS-5500#show controllers npu stats voq base 1728 instance 2 loc 0/0/cpu0
Fri Jun 13 01:45:30.348 UTC

Location	=	0/0/CPU0			
Asic Instance	=	2			
VOQ Base	=	1728			
	ReceivedPkts	ReceivedBytes	DroppedPkts	DroppedBytes	

Core-0:					
TC_0 = 0	0		0	0	
TC_1 = 0	0		0	0	
TC_2 = 0	0		0	0	
TC_3 = 0	0		0	0	
TC_4 = 0	0		0	0	
TC_5 = 0	0		0	0	
TC_6 = 0	0		0	0	
TC_7 = 47929	7570783		0	0	

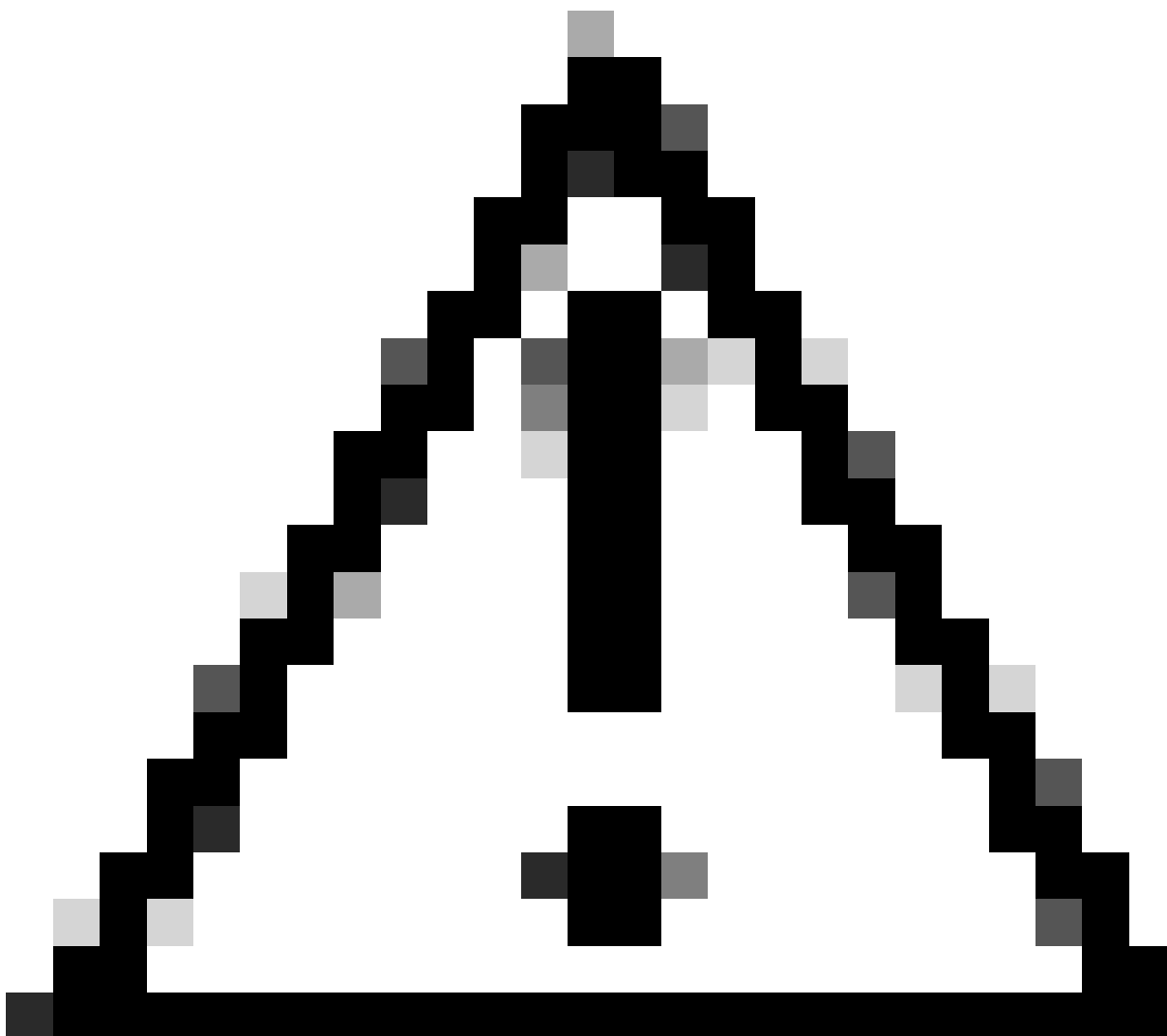
RP/0/RP0/CPU0:NCS-5500#



提示：定期多次運行上述命令，以主動監視並確定是否有計數器（如錯誤、丟棄或溢位）遞增。

請收集本文中提到的所有命令，以及這些額外的命令，以進行全面的故障排除：

`show drops all ongoing location`



注意： For certain versions of Jericho1, the command used is **show drops-all ongoing location**

show tech -support

show captured packets ingress location

相關資訊

[NCS 5500:封包的壽命 \(傳輸、點選/注入、Ping路徑 \)](#)

[思科技術支援與下載](#)

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。