

# 排除緩衝區洩漏故障

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## 簡介

緩衝區洩漏是Cisco IOS<sup>®</sup>軟體錯誤。有兩種緩衝區洩漏：

- 楔形介面緩衝區洩漏。
- 系統緩衝區洩漏。

為了排除緩衝區洩漏故障，必須確定您遇到的緩衝區洩漏型別。**show interfaces**和**show buffers**命令在此情況下非常有用。

如果您的Cisco裝置輸出了**show interfaces**和**show buffers**命令，則可以使用[Cisco CLI Analyzer](#)顯示潛在問題和修復程式。要使用[Cisco CLI Analyzer](#)，您必須是[已註冊](#)的客戶，必須登入並啟用JavaScript。

## 必要條件

### 需求

本文件沒有特定需求。

### 採用元件

本文件所述內容不限於特定軟體和硬體版本。

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

### 慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

## 楔形介面緩衝區洩漏

楔形介面緩衝區洩漏會導致介面的輸入隊列達到無法再接受資料包的程度。在某些特定的流量條件下，介面上的輸入隊列會變得被楔形，或者換句話說，輸入隊列計數大於隊列深度。

以下是**show interfaces**命令輸出的範例，顯示介面已橋接：

```
Ethernet0/0 is up, line protocol is up  
Output queue 0/40, 0 drops; input queue 76/75, 1250 drops
```

這種緩衝器洩漏的症狀是完整的輸入隊列(76/75)。這裡，值76和75分別表示輸入隊列中的資料包數和輸入隊列的最大大小。在這種情況下，輸入隊列中的資料包數大於隊列深度。這稱為「楔形介面」。當介面被楔入時，路由器將不再轉送來自受影響介面的流量。

重新載入路由器以釋放輸入隊列並恢復流量，直到隊列再次滿。根據洩漏的嚴重性，這可能需要幾秒到幾週的時間。

**注意：**重新載入路由器之前，請確保收集所有必要資訊以識別罪魁禍首。

使用以下命令確定緩衝區洩漏的來源：

- **show buffers pool [pool name] [packet/header]**
- **show buffers old**(僅在啟用debug sanity時使用此命令。**注意：**debug sanity命令在大多數思科IOS軟體版本中隱藏。啟用debug sanity後，系統使用的每個緩衝區在分配時會進行健全性檢查，釋放時會再次進行檢查。**註：**您必須在特權EXEC模式(啟用模式)下發出debug sanity命令。雖然此命令使用一些CPU容量，但它不會顯著影響路由器的功能。與其他debug命令類似，debug sanity不會儲存在配置中。因此，此命令在重新啟動系統後將無法生效。**注意：**要禁用健全性檢查，請使用特權EXEC命令undebug sanity。)
- **show buffer assigned**

## 系統緩衝區洩漏

本節討論系統緩衝區洩漏。

以下是**show buffers**命令的輸出示例，指示其中一個系統緩衝池中出現緩衝區洩漏：

```
Middle buffers, 600 bytes (total 20825, permanent 180):  
 286 in free list (20 min, 400 max allowed)  
89122311 hits, 99597 misses, 133679 trims, 154324 created  
2247 failures (0 no memory)
```

此**show buffers**命令輸出表示中間緩衝區池中存在緩衝區洩漏。路由器上共有20825個中間緩衝區，而空閒清單中只有286個。這意味著某些進程會佔用所有緩衝區，但不會返回它們。

此型別緩衝區洩漏的其他症狀是池處理器或輸入/輸出(I/O)的「%SYS-2-MALLOCFAIL」錯誤消息(基於平台)。

使用以下命令確定緩衝區洩漏的來源：

- **show buffers old**(僅在啟用debug sanity時使用此命令。**注意：**debug sanity命令在大多數思科IOS軟體版本中隱藏。啟用debug sanity後，系統使用的每個緩衝區在分配時會進行健全性檢查，釋放時會再次進行檢查。**註：**您必須在特權EXEC模式(啟用模式)下發出debug sanity命令。雖然此命令使用一些CPU容量，但它不會顯著影響路由器的功能。與其他debug命令類似

，**debug sanity**不會儲存在配置中。因此，此命令在重新啟動系統後將無法生效。**注意**：要禁用健全性檢查，請使用特權EXEC命令**undebg sanity**。)

- **show buffers pool [pool name] [packet/header]**
- **show buffer assigned**

## 疑難排解提示

緩衝區洩漏是Cisco IOS軟體錯誤。若要修正已知的緩衝區洩漏錯誤，請升級至版本系列中的最新版本。例如，如果您目前執行Cisco IOS軟體版本11.2(14)，請升級至最新的11.2(x)映像。如果這不起作用，或無法升級路由器，請與Cisco TAC聯絡，並向工程師提供相關**show buffers**命令的輸出，以及**show tech-support**命令的輸出。

以下是幫助您識別導致緩衝區洩漏的資料包的一些提示：

- 當檢測到緩衝區洩漏時，請使用關聯的**show buffers**命令查詢使用這麼多緩衝區的資料包中的模式。
- 識別封包型別時，請嘗試提出解決方案以防止洩漏（例如使用存取清單過濾這些封包）。

以下是相關**show**命令的輸出示例：

```
Router#show interface ethernet 0/0
Ethernet0/0 is up, line protocol is up
  Hardware is AmdP2, address is 0050.3ee8.4060 (bia 0050.3ee8.4060)
  Internet address is 10.200.40.37/22
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:51, output 00:00:08, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 76/75, 1250 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    15686 packets input, 2872866 bytes, 0 no buffer
    Received 15342 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 input packets with dribble condition detected
    10352 packets output, 1031158 bytes, 0 underruns
    0 output errors, 0 collisions, 3 interface resets
    0 babbles, 0 late collision, 2 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
```

```
Router#show buffers old
```

Header	DataArea	Pool	Rcnt	Size	Link	Enc	Flags	Input	Output
80F09828	1A00084	Small	1	54	11	11	201	Et0/0	None
80F09A34	1A001C4	Small	1	54	11	11	201	Et0/0	None
80F09C40	1A00304	Small	1	54	11	11	201	Et0/0	None
80F09E4C	1A00444	Small	1	54	11	11	201	Et0/0	None
80F0A058	1A00584	Small	1	54	11	11	201	Et0/0	None
80F0A264	1A006C4	Small	1	54	11	11	201	Et0/0	None
80F0A470	1A00804	Small	1	54	11	11	201	Et0/0	None
80F0A67C	1A00944	Small	1	54	11	11	201	Et0/0	None
80F0A888	1A00A84	Small	1	54	11	11	201	Et0/0	None
80F0AA94	1A00BC4	Small	1	54	11	11	201	Et0/0	None

80F0ACA0	1A00D04	Small	1	54	11	11	201	Et0/0	None
80F0AEAC	1A00E44	Small	1	54	11	11	201	Et0/0	None
80F0B0B8	1A00F84	Small	1	54	11	11	201	Et0/0	None
80F0B2C4	1A010C4	Small	1	54	11	11	201	Et0/0	None
80F0B4D0	1A01204	Small	1	54	11	11	201	Et0/0	None
80F0B6DC	1A01344	Small	1	54	11	11	201	Et0/0	None
80F0B8E8	1A01484	Small	1	54	11	11	201	Et0/0	None
80F0BAF4	1A015C4	Small	1	54	11	11	201	Et0/0	None
80F0BD00	1A01704	Small	1	54	11	11	201	Et0/0	None
80F0BF0C	1A01844	Small	1	54	11	11	201	Et0/0	None
80F0C118	1A01984	Small	1	54	11	11	201	Et0/0	None
80F0C324	1A01AC4	Small	1	54	11	11	201	Et0/0	None
80F0C530	1A01C04	Small	1	54	11	11	201	Et0/0	None
80F0C73C	1A01D44	Small	1	54	11	11	201	Et0/0	None
80F5F644	1B9B0A4	Small	1	54	11	11	201	Et0/0	None
80FDF118	1B78604	Small	1	54	11	11	201	Et0/0	None
80FDF324	1B78744	Small	1	54	11	11	201	Et0/0	None
80FDF530	1B78884	Small	1	54	11	11	201	Et0/0	None
80FDF73C	1B789C4	Small	1	54	11	11	201	Et0/0	None
80FDF948	1B78B04	Small	1	54	11	11	201	Et0/0	None
80FDFB54	1B78C44	Small	1	54	11	11	201	Et0/0	None
80FDFD60	1B78D84	Small	1	54	11	11	201	Et0/0	None
80FDFE6C	1B78EC4	Small	1	54	11	11	201	Et0/0	None
80FE0178	1B79004	Small	1	54	11	11	201	Et0/0	None
80FE0384	1B79144	Small	1	54	11	11	201	Et0/0	None
80FE0590	1B79284	Small	1	54	11	11	201	Et0/0	None
80FE079C	1B793C4	Small	1	54	11	11	201	Et0/0	None
80FE09A8	1B79504	Small	1	54	11	11	201	Et0/0	None
80FE0BB4	1B79644	Small	1	54	11	11	201	Et0/0	None
80FE0DC0	1B79784	Small	1	54	11	11	201	Et0/0	None
80FE0FCC	1B798C4	Small	1	54	11	11	201	Et0/0	None
80FE11D8	1B79A04	Small	1	54	11	11	201	Et0/0	None
80FE13E4	1B79B44	Small	1	54	11	11	201	Et0/0	None
80FE15F0	1B79C84	Small	1	54	11	11	201	Et0/0	None
80FE17FC	1B79DC4	Small	1	54	11	11	201	Et0/0	None
80FE1A08	1B79F04	Small	1	54	11	11	201	Et0/0	None
80FE1C14	1B7A044	Small	1	54	11	11	201	Et0/0	None
80FE1E20	1B7A184	Small	1	54	11	11	201	Et0/0	None
80FE202C	1B7A2C4	Small	1	54	11	11	201	Et0/0	None
80FE2238	1B7A404	Small	1	54	11	11	201	Et0/0	None
81107F40	1B9B1E4	Small	1	54	11	11	201	Et0/0	None
8110814C	1B9B324	Small	1	54	11	11	201	Et0/0	None
81108358	1B9B464	Small	1	54	11	11	201	Et0/0	None
81108564	1B9B5A4	Small	1	54	11	11	201	Et0/0	None
8110897C	1B9B824	Small	1	54	11	11	201	Et0/0	None
81108B88	1B9B964	Small	1	54	11	11	201	Et0/0	None
81108D94	1B9BAA4	Small	1	54	11	11	201	Et0/0	None
81108FA0	1B9BBE4	Small	1	54	11	11	201	Et0/0	None
811093B8	1B9BE64	Small	1	54	11	11	201	Et0/0	None
811095C4	1B9BFA4	Small	1	54	11	11	201	Et0/0	None
811097D0	1B9C0E4	Small	1	54	11	11	201	Et0/0	None
811099DC	1B9C224	Small	1	54	11	11	201	Et0/0	None
81109DF4	1B9C4A4	Small	1	54	11	11	201	Et0/0	None
8110A000	1B9C5E4	Small	1	54	11	11	201	Et0/0	None
8110A20C	1B9C724	Small	1	54	11	11	201	Et0/0	None
8110A418	1B9C864	Small	1	54	11	11	201	Et0/0	None
81121364	1B9CC24	Small	1	54	11	11	201	Et0/0	None
81121570	1B9CD64	Small	1	54	11	11	201	Et0/0	None
81121988	1B9CFE4	Small	1	54	11	11	201	Et0/0	None
81121B94	1B9D124	Small	1	54	11	11	201	Et0/0	None
81121FAC	1B9D3A4	Small	1	54	11	11	201	Et0/0	None
811221B8	1B9D4E4	Small	1	54	11	11	201	Et0/0	None
811225D0	1B9D764	Small	1	54	11	11	201	Et0/0	None
811227DC	1B9D8A4	Small	1	54	11	11	201	Et0/0	None

```

811229E8  1B9D9E4  Small    1    54    11    11    201  Et0/0  None
81122BF4  1B9DB24  Small    1    54    11    11    201  Et0/0  None

```

Router#**show buffers old header**

Buffer information for Small buffer at 0x80F09828

```

data_area 0x1A00084, refcount 1, next 0x0, flags 0x201
linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
if_input 0x80F57BE0 (Ethernet0/0), if_output 0x0 (None)
inputtime 0x4CDFC58, outputtime 0x0, oqnumber 65535
datagramstart 0x1A000CA, datagramsize 54, maximum size 260
mac_start 0x1A000CA, addr_start 0x1A000CA, info_start 0x0
network_start 0x1A000D8, transport_start 0x0

source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01

```

Buffer information for Small buffer at 0x80F09A34

```

data_area 0x1A001C4, refcount 1, next 0x0, flags 0x201
linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
if_input 0x80F57BE0 (Ethernet0/0), if_output 0x0 (None)
inputtime 0x4CDFAA0, outputtime 0x0, oqnumber 65535
datagramstart 0x1A0020A, datagramsize 54, maximum size 260
mac_start 0x1A0020A, addr_start 0x1A0020A, info_start 0x0
network_start 0x1A00218, transport_start 0x0

source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01

```

Buffer information for Small buffer at 0x80F09C40

```

data_area 0x1A00304, refcount 1, next 0x0, flags 0x201
linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
if_input 0x80F57BE0 (Ethernet0/0), if_output 0x0 (None)
inputtime 0x4CDF8D7, outputtime 0x0, oqnumber 65535
datagramstart 0x1A0034A, datagramsize 54, maximum size 260
mac_start 0x1A0034A, addr_start 0x1A0034A, info_start 0x0
network_start 0x1A00358, transport_start 0x0

source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01

```

....

Router#**show buffers input-interface ethernet 0/0**

Header	DataArea	Pool	Rcnt	Size	Link	Enc	Flags	Input	Output
80F09828	1A00084	Small	1	54	11	11	201	Et0/0	None
80F09A34	1A001C4	Small	1	54	11	11	201	Et0/0	None
80F09C40	1A00304	Small	1	54	11	11	201	Et0/0	None
80F09E4C	1A00444	Small	1	54	11	11	201	Et0/0	None
80F0A058	1A00584	Small	1	54	11	11	201	Et0/0	None
80F0A264	1A006C4	Small	1	54	11	11	201	Et0/0	None
80F0A470	1A00804	Small	1	54	11	11	201	Et0/0	None
80F0A67C	1A00944	Small	1	54	11	11	201	Et0/0	None
80F0A888	1A00A84	Small	1	54	11	11	201	Et0/0	None
80F0AA94	1A00BC4	Small	1	54	11	11	201	Et0/0	None
80F0ACA0	1A00D04	Small	1	54	11	11	201	Et0/0	None
80F0AEAC	1A00E44	Small	1	54	11	11	201	Et0/0	None
80F0B0B8	1A00F84	Small	1	54	11	11	201	Et0/0	None
80F0B2C4	1A010C4	Small	1	54	11	11	201	Et0/0	None
80F0B4D0	1A01204	Small	1	54	11	11	201	Et0/0	None
80F0B6DC	1A01344	Small	1	54	11	11	201	Et0/0	None
80F0B8E8	1A01484	Small	1	54	11	11	201	Et0/0	None

80F0BAF4	1A015C4	Small	1	54	11	11	201	Et0/0	None
80F0BD00	1A01704	Small	1	54	11	11	201	Et0/0	None
80F0BF0C	1A01844	Small	1	54	11	11	201	Et0/0	None
80F0C118	1A01984	Small	1	54	11	11	201	Et0/0	None
80F0C324	1A01AC4	Small	1	54	11	11	201	Et0/0	None
80F0C530	1A01C04	Small	1	54	11	11	201	Et0/0	None
80F0C73C	1A01D44	Small	1	54	11	11	201	Et0/0	None
80F5F644	1B9B0A4	Small	1	54	11	11	201	Et0/0	None
80FDF118	1B78604	Small	1	54	11	11	201	Et0/0	None
80FDF324	1B78744	Small	1	54	11	11	201	Et0/0	None
80FDF530	1B78884	Small	1	54	11	11	201	Et0/0	None
80FDF73C	1B789C4	Small	1	54	11	11	201	Et0/0	None
80FDF948	1B78B04	Small	1	54	11	11	201	Et0/0	None
80FDFB54	1B78C44	Small	1	54	11	11	201	Et0/0	None
80FDFD60	1B78D84	Small	1	54	11	11	201	Et0/0	None
80FDFDF6C	1B78EC4	Small	1	54	11	11	201	Et0/0	None
80FE0178	1B79004	Small	1	54	11	11	201	Et0/0	None
80FE0384	1B79144	Small	1	54	11	11	201	Et0/0	None
80FE0590	1B79284	Small	1	54	11	11	201	Et0/0	None
80FE079C	1B793C4	Small	1	54	11	11	201	Et0/0	None
80FE09A8	1B79504	Small	1	54	11	11	201	Et0/0	None
80FE0BB4	1B79644	Small	1	54	11	11	201	Et0/0	None
80FE0DC0	1B79784	Small	1	54	11	11	201	Et0/0	None
80FE0FCC	1B798C4	Small	1	54	11	11	201	Et0/0	None
80FE11D8	1B79A04	Small	1	54	11	11	201	Et0/0	None
80FE13E4	1B79B44	Small	1	54	11	11	201	Et0/0	None
80FE15F0	1B79C84	Small	1	54	11	11	201	Et0/0	None
80FE17FC	1B79DC4	Small	1	54	11	11	201	Et0/0	None
80FE1A08	1B79F04	Small	1	54	11	11	201	Et0/0	None
80FE1C14	1B7A044	Small	1	54	11	11	201	Et0/0	None
80FE1E20	1B7A184	Small	1	54	11	11	201	Et0/0	None
80FE202C	1B7A2C4	Small	1	54	11	11	201	Et0/0	None
80FE2238	1B7A404	Small	1	54	11	11	201	Et0/0	None
81107F40	1B9B1E4	Small	1	54	11	11	201	Et0/0	None
8110814C	1B9B324	Small	1	54	11	11	201	Et0/0	None
81108358	1B9B464	Small	1	54	11	11	201	Et0/0	None
81108564	1B9B5A4	Small	1	54	11	11	201	Et0/0	None
8110897C	1B9B824	Small	1	54	11	11	201	Et0/0	None
81108B88	1B9B964	Small	1	54	11	11	201	Et0/0	None
81108D94	1B9BAA4	Small	1	54	11	11	201	Et0/0	None
81108FA0	1B9BBE4	Small	1	54	11	11	201	Et0/0	None
811093B8	1B9BE64	Small	1	54	11	11	201	Et0/0	None
811095C4	1B9BFA4	Small	1	54	11	11	201	Et0/0	None
811097D0	1B9C0E4	Small	1	54	11	11	201	Et0/0	None
811099DC	1B9C224	Small	1	54	11	11	201	Et0/0	None
81109DF4	1B9C4A4	Small	1	54	11	11	201	Et0/0	None
8110A000	1B9C5E4	Small	1	54	11	11	201	Et0/0	None
8110A20C	1B9C724	Small	1	54	11	11	201	Et0/0	None
8110A418	1B9C864	Small	1	54	11	11	201	Et0/0	None
81121364	1B9CC24	Small	1	54	11	11	201	Et0/0	None
81121570	1B9CD64	Small	1	54	11	11	201	Et0/0	None
81121988	1B9CFE4	Small	1	54	11	11	201	Et0/0	None
81121B94	1B9D124	Small	1	54	11	11	201	Et0/0	None
81121FAC	1B9D3A4	Small	1	54	11	11	201	Et0/0	None
811221B8	1B9D4E4	Small	1	54	11	11	201	Et0/0	None
811225D0	1B9D764	Small	1	54	11	11	201	Et0/0	None
811227DC	1B9D8A4	Small	1	54	11	11	201	Et0/0	None
811229E8	1B9D9E4	Small	1	54	11	11	201	Et0/0	None
81122BF4	1B9DB24	Small	1	54	11	11	201	Et0/0	None

Router#show buffers address 81122BF4 dump

Buffer information for Small buffer at 0x81122BF4  
data\_area 0x1B9DB24, refcount 1, next 0x0, flags 0x201



```
grep linktype buffers.log | grep NOVELL-ETHER | wc -l
153
```

*!--- 153 out of 175 old buffers are IPX packets. Try to find out what  
!--- type of packets they are with another grep command:*

```
grep socket buffers.log
```

```
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
destination: BE200040.ffff.ffff.ffff socket 0453 protocol 01
source:BE200040.0060.09c3.f9fe socket 0453
```

...

*!--- There are Broadcasts to socket 453, protocol 01...*

*!--- Those are IPX RIP packets.*

*!--- Disable IPX RIP, or use IPX EIGRP instead, until a bug fix is available.*

總而言之：

- 驗證是否有緩衝區洩漏。緩衝區洩漏通常被誤解為突發流量（許多資料包由於配置不正確或功能不受支援而進入進程交換）或攻擊。
- 緩衝區洩漏是Cisco IOS軟體錯誤。此問題的最佳解決方案是將Cisco IOS軟體升級到最新版本。
- 如果失敗，請與Cisco TAC聯絡，並向工程師提供相關show buffers和show tech-support命令的輸出。

## 相關資訊

- [緩衝區調整](#)
- [記憶體問題故障排除](#)
- [技術支援 - Cisco Systems](#)