Troubleshoot Buffer Leaks

Contents

Introduction

Buffer leaks are Cisco IOS® software bugs. There are two kinds of buffer leaks:

- Wedged interface buffer leaks.
- System buffer leaks.

In order to troubleshoot buffer leaks, you must identify the type of buffer leak you encounter. The **show interfaces** and **show buffers** commands are very helpful in this situation.

If you have the output of **show interfaces** and **show buffers** commands from your Cisco device, you can use Cisco CLI Analyzer to display potential issues and fixes. To use Cisco CLI Analyzer, you must be a registered customer, be logged in, and have JavaScript enabled.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

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. If your network is live, ensure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Wedged Interface Buffer Leaks

Wedged interface buffer leaks cause the input queue of an interface to fill up to the point where it can no longer accept packets. Under some specific traffic conditions, the input queue on an interface becomes wedged or, in other words, the input queue count is larger than the queue depth.

Here is an example of output from the **show interfaces** command, which shows that the interface is wedged:

<#root>

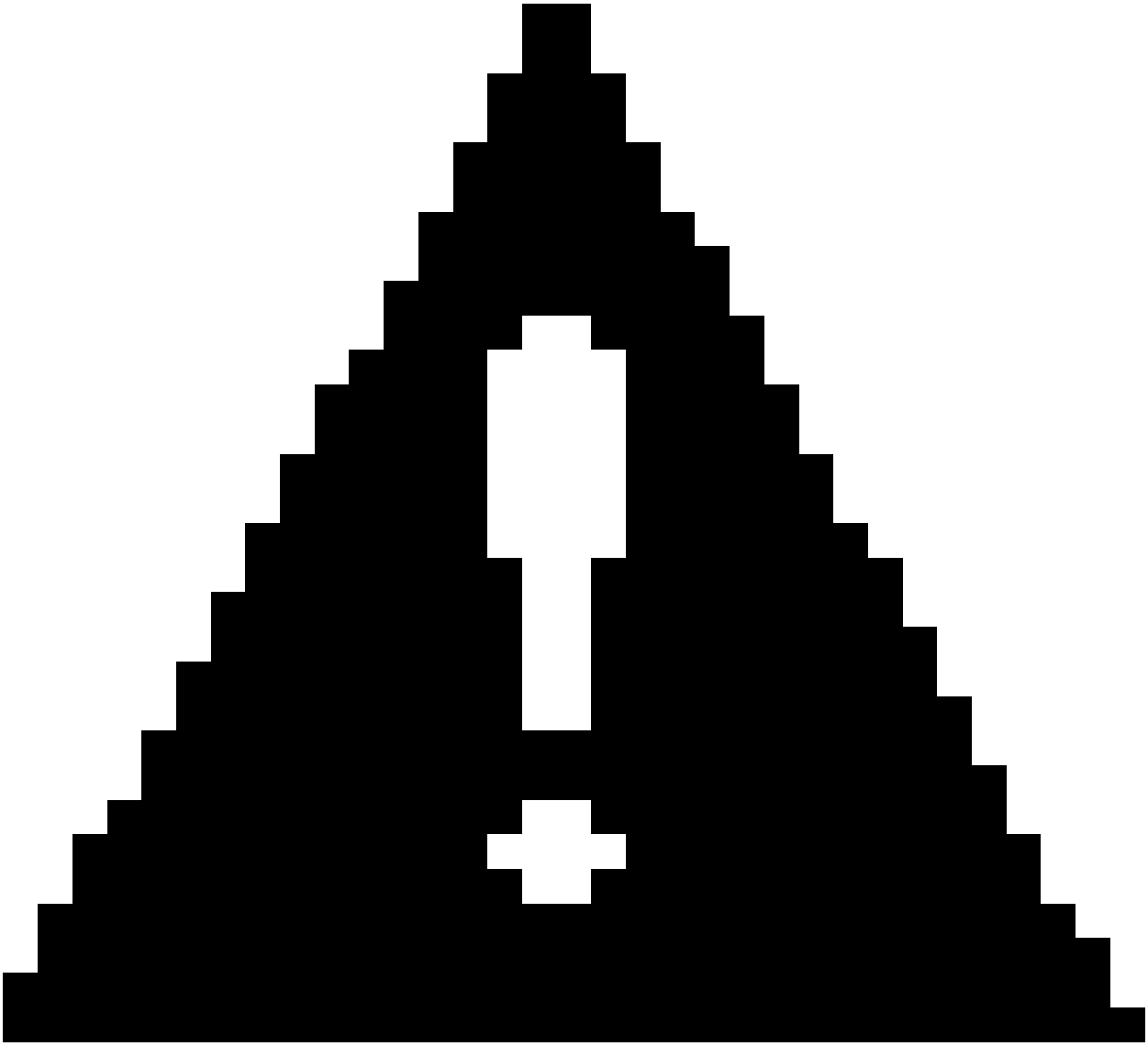
```
Ethernet0/0 is up, line protocol is up
Output queue 0/40, 0 drops; input queue
```

76/75

```
, 1250 drops
```

The symptom of such buffer leak is a full input queue (76/75). Here, the values 76 and 75 represent the number of packets in the input queue, and the maximum size of the input queue, respectively. In this case, the number of packets in the input queue is larger than the queue depth. This is called a "wedged interface". When an interface is wedged, the router no longer forwards traffic that comes from the affected interface.

Reload the router to free the input queue and restore traffic until the queue is full again. This can take anywhere between a few seconds and a few weeks, based on the severity of the leak.



Caution: Before you reload the router, ensure that you collect all the necessary information to identify the culprit.

Use these commands to identify the source of the buffer leak:

- **show buffers pool [pool name] [packet/header]**
- **show buffers old** (Use this command only if **debug sanity** is enabled.

  Note: The **debug sanity** command is hidden in most Cisco IOS software releases. With **debug sanity** enabled, every buffer that is used in the system is sanity-checked when it is allocated, and again when it is freed.

  Note: You must issue the **debug sanity** command in privileged EXEC mode (enable mode). Although this command uses some CPU capacity, it does not significantly affect the functionality of the router. Like other debug commands, **debug sanity** is not saved in the configuration. Therefore, this command will not survive a reboot of the system.

  Note: In order to disable sanity checking, use the privileged EXEC command **undebug sanity**.)

- **show buffer assigned**

System Buffer Leaks

This section discusses system buffer leaks.

Here is an example of output from the **show buffers** command, which indicates a buffer leak in one of the system buffer pools:

```
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)
```

This **show buffers** command output indicates a buffer leak in the middle buffers pool. There is a total of 20825 middle buffers in the router, and only 286 are in the free list. This implies that some process takes all the buffers, but does not return them.

Other symptoms of this type of buffer leak are "%SYS-2-MALLOCFAIL" error messages for the pool processor or the input/output (I/O), based on the platform.

Use these commands to identify the source of the buffer leak:

- **show buffers old** (Use this command only if **debug sanity** is enabled.

  Note: The **debug sanity** command is hidden in most Cisco IOS software releases. With **debug sanity** enabled, every buffer that is used in the system is sanity-checked when it is allocated, and again when it is freed.

  Note: You must issue the **debug sanity** command in privileged EXEC mode (enable mode). Although this command uses some CPU capacity, it does not significantly affect the functionality of the router. Like other debug commands, **debug sanity** is not saved in the configuration. Therefore, this command will not survive a reboot of the system.

  Note: In order to disable sanity checking, use the privileged EXEC command **undebug sanity**.)

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

- **show buffer assigned**

Tips to Troubleshoot

Buffer leaks are Cisco IOS software bugs. In order to fix known buffer leak bugs, upgrade to the latest version in your release train. For example, if you currently run Cisco IOS Software Release 11.2(14), upgrade to the latest 11.2(x) image. If this does not help, or if it is not possible to upgrade the router, contact the Cisco TAC, and provide the engineer with the output of the relevant **show buffers** commands, and the output of the **show tech-support** command.

Here are some tips to help you identify the packets that cause the buffer leak:

- When you detect a buffer leak, use the associated **show buffers** commands to find a pattern in the

packets that use so many buffers.

- When you identify the type of packets, try to come up with a solution to prevent the leak (for example, use an access-list to filter those packets).

Here are output examples from associated **show** commands:

```
<#root>

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
80FDFF6C   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
80FDFF6C	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
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  if_input 0x80F57BE0 (Ethernet0/0), if_output 0x0 (None)
  inputtime 0x4CE2BFC, outputtime 0x0, oqnumber 65535
  datagramstart 0x1B9DB6A, datagramsize 54, maximum size 260
  mac_start 0x1B9DB6A, addr_start 0x1B9DB6A, info_start 0x0
  network_start 0x1B9DB78, transport_start 0x0

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

01B9DB20: 00000000 00000000 00000000 00000000  ................
01B9DB30: 00000000 00000000 00000000 00000000  ................
01B9DB40: 00000000 00000000 00000000 00000000  ................
01B9DB50: 00000000 00000000 00000000 00000000  ................
01B9DB60: 00000000 00000000 0000FFFF FFFFFFFF  ................
01B9DB70: 006009C3 F9FE0028 FFFF0028 0001BE20  .`.Cy~.(...(..>
01B9DB80: 0040FFFF FFFFFFFF 0453BE20 00400060  .@.......S> .@.`
01B9DB90: 09C3F9FE 04530001 00000040 06000200  .Cy~.S.....@....
01B9DBA0: 00000000 00000000 00000000 00000000  ................
01B9DBB0: 00000000 00000000 00000000 00000000  ................
01B9DBC0: 00000000 00000000 00000000 00000000  ................
01B9DBD0: 00000000 00000000 00000000 00000000  ................
01B9DBE0: 00000000 00000000 00000000 00000000  ................
01B9DBF0: 00000000 00000000 00000000 00000000  ................
01B9DC00: 00000000 00000000 00000000 00000000  ................
01B9DC10: 00000000 00000000 00000000 00000000  ................
01B9DC20: 00000000 00                          .....

Router#
```

If you are unable to identify a pattern in the buffers, capture the output of the **show** commands (for example, **show buffers old**), and save it to a file (such as, buffers.log). Then, try to isolate the pattern with the help of the UNIX "grep" utility, or something similar.

<#root>

```
grep linktype buffers.log
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype  0   (None), enctype  0         (None), encsize  0, rxtype 0
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
```

```
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
  linktype 11 (NOVELL), enctype 11 (NOVELL-ETHER), encsize 14, rxtype 7
...

!--- Here you can clearly see a lot of NOVELL-related buffers.
!--- The problem seems to be with the IPX packets.
!--- You can check this through the
```

wc -l

```
 (to count lines) command on a UNIX system.
```

grep linktype buffers.log | wc -l

```
     175
```

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
...

!--- 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.
```

In summary:

- Verify whether you have a buffer leak.

  Buffer leaks are often misinterpreted as a burst of traffic (with many packets that go to process-switching due to an incorrect configuration or an unsupported feature), or as an attack.

- Buffer leaks are Cisco IOS software bugs. The best solution for this issue is to upgrade the Cisco IOS software to the latest version.

- If this fails, contact the Cisco TAC and provide the engineer with output of relevant **show buffers** and **show tech-support** commands.

Related Information

- **Buffer Tuning**
- **Troubleshooting Memory Problems**
- **Technical Support - Cisco Systems**