

NE40内存泄漏问题定位典型案例

组网情况:



问题描述:

xx地市NE40与省局NE80之间起mpls, 客户反馈前期几次出现地市NE40与省局NE80之间的ospf邻居无法建立, 重启后恢复。日志中提示memory exhausted, 即内存耗尽。

NE40版本: VRP3.30-0510.02

定位过程:

1. 查看日志发现如下信息,初步判定为内存耗尽:

```

06-02 02:13:52 Ticks 0x2eaa8c22 DEC 227623 slot 2 ASSERT(card_port_num == 1
6)fails! TaskIndex 0xe
1 Layer:0x1f96dc
2 Layer:0x267a54
3 Layer:0x3e0490
4 Layer:0x3ddda0
5 Layer:0x40fb50
6 Layer:0x40f934
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
ALERT: memory exhausted!! GATE1 detected!
Total:457034816 bytes
Free: 1870400 bytes
slot: 0
memory usage:
type 5 :
(0007, 130) (0012, 6) (0170, 87) (0171, 786) (dd35, 1) (0150, 35159)
(0175, 1326) (0050, 26) (0a80, 6) (0392, 10) (0880, 7) (0011, 13)
(0117, 6) (0400, 1) (0180, 68) (0119, 12) (0407, 3239) (0220, 43)
(0133, 6) (017d, 1) (00aa, 2) (0173, 36) (0135, 5) (001b, 1)
(0141, 200) (0100, 991) (0096, 1) (0000, 0) (0000, 0) (0000, 0)
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
type 6 :
(0171, 34) (0150, 46316) (dd35, 1) (0175, 1142) (0117, 6) (0050, 24)
(0119, 9) (0220, 9) (0133, 6) (017d, 1) (00aa, 22) (0407, 5)
(0880, 10) (fce7, 37) (0430, 1) (0173, 6) (0110, 1) (0000, 0)
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
type 7 :
(0061, 3) (0171, 86) (0150, 9825) (0110, 2114081) (0175, 524) (0140, 4)
(0351, 27) (0392, 18) (0050, 42) (0a80, 2) (00aa, 2) (0000, 1)
(0086, 1) (0402, 1) (0220, 4) (0181, 1) (0100, 4) (0000, 0)
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
type 8 :
(0171, 110) (dd35, 1) (0150, 1291) (0011, 1) (0175, 24) (fcf0, 3)
(0392, 24) (0181, 1) (0000, 1) (0a80, 2) (0880, 7) (fcf2, 1)
(0a50, 1) (0000, 0) (0000, 0) (0000, 0) (0000, 0) (0000, 0) (0000, 0)
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
type 9 :
(fcf0, 2) (0090, 26) (0171, 1) (dd35, 9) (0150, 71) (0118, 18)
(0110, 1) (dd4d, 1) (0880, 2) (0351, 2) (0a80, 2) (0a50, 1)
(0170, 1) (0141, 200) (0050, 5) (0010, 3) (0a90, 1) (0000, 0)
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
type 10 :
(0016, 200) (0150, 88) (0000, 2) (0430, 1) (0392, 2) (014d, 1)

```

```
(0090, 60) (0050, 23) (017d, 10) (0a90, 2) (fcf0, 3) (0402, 1)
(0010, 1) (0000, 0) (0000, 0) (0000, 0) (0000, 0) (0000, 0)
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
type 11 :
(0001, 2) (0061, 361) (0090, 6) (0150, 20) (0392, 11) (0000, 29)
(fce7, 4) (fcf4, 10) (0112, 2) (0402, 5) (0140, 49) (0050, 36)
(0085, 16) (0a80, 1) (0000, 0) (0000, 0) (0000, 0) (0000, 0)
%Jun 3 04:37:26 2006 NE40 MEM/5/WARNING:
type 12 :
(0010, 793) (0016, 2) (0150, 10) (0000, 2) (0090, 1032) (0163, 2)
(0392, 9) (0001, 1) (0407, 1) (0880, 1) (0402, 1) (0000, 0)
Memory allocation alarming at 2006-06-03 05:04:43 840 ms
Slot 0: Failed to allocate
memory(module:0x2200000,size:0x1000,error:0x2000039f,type:0x0,line:2208)
```

Slice Memory Usage:

```
Block Size 32Free 5Used 42171Total 42176
Block Size 64Free 149Used 47624Total 47773
Block Size 128Free 0Used 2124626Total 2124626
Block Size 256Free 320Used 1478Total 1798
Block Size 512Free 47Used 343Total 390
Block Size 1024Free 18Used 395Total 413
Block Size 2048Free 5Used 547Total 552
Block Size 4096Free 0Used 1854Total 1854
```

-----Summary-----

```
Used(Byte)286022240Free 544Used 2219038Total 2219582
Total Slice Allocated Size: 365632960 bytes Used Ratio: 78
```

Total Slice Memory(Include Control Data and Free Slice): 365632960 bytes

Raw Slice Memory Usage:

```
Total Used Size: 90593356 bytes Num: 16174
Total Raw Slice Size (Include Control Data and Free Slice): 91398592 bytes Used
Ratio: 99
```

System Total Memory(bytes): 457034816

Largest available(bytes):

```
slice: 2048
raw Block: 4000
```

System Total Free Memory(bytes): 8630756

Memory slice not available, new slice is allocated from RAW free slices.

2. 用display memory 看一下是否是哪个块内存不正常, 也就是申请过多。
可以看到128字节块使用达到了256M左右了, 可见该内存块应该存在内存泄漏。

[NE40]display memory

Slice Memory Usage:

```
Block Size 32 Free 5 Used 42171 Total 42176
Block Size 64 Free 149 Used 47624 Total 47773
Block Size 128 Free 0 Used 2124626 Total 2124626
Block Size 256 Free 320 Used 1478 Total 1798
Block Size 512 Free 47 Used 343 Total 390
Block Size 1024 Free 18 Used 395 Total 413
Block Size 2048 Free 5 Used 547 Total 552
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3.针对问题内存块, 查看是哪个MID申请内存过多导致。以这个问题为例, 用display


```
[PZH_C_NE40-hidecmd]dis memory-dump 05678804 100
0565DD64: EF EF EF EF 05 65 BD C0 00 01 00 7C 01 10 02 23 .....e.....|#
0565DD74: 01 1F E6 0C 00 00 0D 77 00 00 00 EE 00 00 07 01 .....w.....
0565DD84: 00 02 00 00 0A 44 80 0A FF FF FF FF 0A 44 80 0A .....D.....D..
0565DD94: 00 00 00 00 00 00 00 00 00 00 04 05 0C 00 02 81 .....
0565DDA4: 00 00 00 00 00 00 00 03 00 00 00 00 00 00 00 .....
0565DDB4: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0565DDC4: 00 00 00 00
```

6.然后用display memory-dump 01d651d0 500 看内存信息，01d651d0在上面显示的第二行，如果顺利就能找到具体哪个模块狂申请内存而没有释放。(但是中间提示执行此命令可能导致重启，进行这个操作时建议谨慎。)

```
[PZH_C_NE40-hidecmd]dis memory-dump 011fe60c 500
011FE60C: 2E 2E 5C 2E 2E 5C 2E 2E 5C 2E 2E 5C 2E 2E 5C 2E...\\.\\.\\.\\.
011FE61C: 2E 2F 70 72 6F 64 75 63 74 2F 72 74 38 30 31 31 ./product/rt8011
011FE62C: 2F 72 70 73 2F 61 70 70 2F 61 64 70 2F 61 64 70 /rps/app/adp/adp
011FE63C: 5F 69 70 2E 63 00 00 00 0D 0A 5B 46 49 42 5D 3A _ip.c.....[FIB]:
011FE64C: 20 52 54 53 59 4E 5F 54 69 6D 65 72 44 6F 77 6E RTSYN_TimerDo
wn
011FE65C: 6C 6F 61 64 2D 2D 2D 20 49 50 43 20 73 65 6E 64 load--- IPC send
011FE66C: 20 66 61 69 6C 00 00 00 0D 0A 5B 52 54 53 59 4E fail.....[RTSYN
011FE67C: 5F 54 69 6D 65 72 44 6F 77 6E 6C 6F 61 64 5D 3A _TimerDownload]:
011FE68C: 20 44 6F 77 6E 6C 6F 61 64 20 25 64 20 66 69 62 Download %d fib
011FE69C: 20 73 75 63 63 65 73 73 2E 20 54 6F 74 61 6C 20 success. Total
011FE6AC: 64 6F 77 6E 6C 6F 61 64 20 66 69 62 3A 20 25 6C download fib: %l
011FE6BC: 75 00 00 00 0D 0A 5B 52 6F 75 74 65 49 6E 53 79 u.....[RouteInSy
011FE6CC: 6E 63 51 75 65 5D 3A 20 4F 72 69 67 6E 20 6D 65 ncQue]: Orign me
011FE6DC: 73 73 61 67 65 20 74 79 70 65 3A 20 25 64 2C 20 ssage type: %d,
011FE6EC: 52 6F 75 74 65 4E 6F 64 65 3A 20 30 78 25 78 00 RouteNode: 0x%x.
011FE6FC: 0D 0A 5B 52 6F 75 74 65 49 6E 53 79 6E 71 5D 3A ..[RouteInSynq]:
011FE70C: 20 50 61 72 61 6D 20 65 72 72 6F 72 3A 20 52 6F Param error: Ro
011FE71C: 75 74 65 4E 6F 64 65 20 69 73 20 4E 55 4C 4C 28 uteNode is NULL(
011FE72C: 4D 73 67 74 79 70 65 20 69 73 20 3A 20 25 64 29 Msgtype is : %d)
011FE73C: 00 00 00 00 0D 0A 5B 52 6F 75 74 65 49 6E 53 79 .....[RouteInSy
011FE74C: 6E 71 5D 3A 20 4D 65 73 73 61 67 65 20 74 79 70 nq]: Message typ
011FE75C: 65 3A 20 25 64 2C 20 52 6F 75 74 65 54 6F 38 30 e: %d, RouteTo80
011FE76C: 31 31 45 6E 74 72 79 20 70 72 6F 63 65 73 73 20 11Entry process
011FE77C: 66 61 69 6C 65 64 2E 20 0D 0A 20 44 2F 4D 2F 47 failed. ... D/M/G
011FE78C: 2F 4F 75 74 49 66 3A 20 30 78 25 78 2F 30 78 25 /OutIf: 0x%x/0x%
011FE79C: 78 2F 30 78 25 78 2F 30 78 25 78 2C 20 52 65 74 x/0x%x/0x%x, Ret
011FE7AC: 75 72 6E 20 63 6F 64 65 20 69 73 3A 20 25 6C 75 urn code is: %lu
011FE7BC: 00 00 00 00 0D 0A 5B 52 6F 75 74 65 53 79 6E 63 .....[RouteSync
011FE7CC: 5D 3A 20 52 45 46 52 45 53 48 2C 20 52 6F 75 74 ]: REFRESH, Rout
011FE7DC: 65 54 6F 38 30 31 31 45 6E 74 72 79 20 66 61 69 eTo8011Entry fai
011FE7EC: 6C 65 64 2E 20 44 2F 4D 3A 20 30 78 25 78 2F 30 led. D/M: 0x%x/0
011FE7FC: 78 25 78 2C
```

解决方法:

由于VRP3.30-0510.02版本较老，其中arp触发的主机路由模块不停的申请内存,内存不释放导致，正常主机下线或者arp振荡都可能触发此现象。

研发提供补丁VRP3.30-0510.03解决该问题。