

Troubleshooting methods for user state memory leaks

Switches 周天 2021-06-16 Published

Network Topology

Not involving

Problem Description

Under normal circumstances, the system memory usage should be below 80%, otherwise it is abnor mal. If the system memory utilization is stable and high, but there is no continuous increase, you need to confirm which process has high memory utilization and whether it is normal. If a pre-alarm, fir st-level, second-level, or third-level memory threshold alarm is generated on the device, and the remaining free memory continues to decrease and cannot be recovered, you need to confirm whether there is a memory leak, and you need to confirm whether there is a user state memory leak or the ker nel State memory leak problem.

Process Analysis

Commands used:

display memory

monitor process

display process memory

display process memory heap job jobid

display process memory heap job jobid verbose

(1) The display memory or monitor process commands are used to query the system memory stati stics many times. Both commands support specific slot query:

display memroy, observe that if there is no change in the used/free data, you can confirm that there is no leak.

```
[H3C-hidecmd]display memory
The statistics about memory is measured in KB:
slot 1:
Total
Mem: 972360 400868 571492 0 0 122108 58.8%
-/+ Buffers/Cache: 693600 693600 0 122108 58.8%
```

Monitor process and observe that if there is no change in the available data, you can confirm that there is no leakage.

```
The statistics about memory is measured in KB:

121 processes; 158 threads; 1035 fds

Thread states: 1 running, 157 sleeping, 0 stopped, 0 zombie

CPU states: 40.32% idle, 30.64% user, 24.19% kernel, 4.83% interrupt

Memory: 949M total, 589M available page size 4K

JID PID PRI State FDS MEM HH:MM:SS CPU Name

92 92 120 S 15 13032K 00:02:50 51.15% diagd

1 1 120 S 16 4216K 00:00:05 3.65% scmd

32 32 130 D 0 0 0K 00:02:24 1.21% [bc.0]

23 23 120 D 0 0 0K 00:02:24 1.21% [bc.0]

23 23 120 D 0 0 0K 00:01:55 0.60% [TMTH]

31 31 130 D 0 0 0K 00:01:55 0.60% [TMTH]

35 35 116 D 0 0 0K 00:01:55 0.60% [bLK0]

77 77 105 S 0 0K 00:01:33 0.60% [sock/1]

96 96 120 S 21 20264K 00:00:58 0.60% devd

474 474 120 S 9 2620K 00:00:00 0.60% top

2 2 115 S 0 0 0K 00:00:00 0.00% [kthreadd]
```

If there are changes, continue to analyze.

(2) Use the display process memory or monitor process (to exit the display by q or Ctrl+C) comman d to view the occupancy of each process in the user mode:

Display process memory, text, and data are listed as the virtual memory space occupied, stack and d ynamic are the actual physical memory occupied. Generally, when viewing memory leaks, we need to pay attention to the last dynamic column, and pay attention to whether the heap memory usage continues to increase.

```
100
                                 2692
                                                                                          [kthreadd]
                                                                                         [migration/0] [ksoftirqd/0]
90
91
92
94
95
                  12
108
                                                                                          cioctld
                                                          20
24
16
12
20
32
12
12
                                                                                          fsd
                                                                                          diagd
                                                                                          had
                                                                                           syslogd
                                                                                           ifmgr
                    40
                                                                                          [NETM]
                                     552
536
748
                                                                                            3vpn
```

Monitor process, supports sorting and viewing according to memory usage (interactive command'm'), which can easily observe the growth of memory. It should be noted that the memory here is the size of the virtual memory space of the process.

```
121 processes; 158 threads; 1035 fds
Thread states: 1 running, 157 sleeping, 0 stopped, 0 zombie
SOUTHOMATES: 91.69% idle, 2.42% user, 5.53% kernel, 0.34% interrupt
Memory; 949M total, 557M available) page size 4K
Use JID PID PRI State FDS MEN HH:MM:SS CPU Name
101 101 120 $ 26 16600K 00:00:04 0.00% ifmgr
102 spec325 00:325 1200m shell3 10:9056% 00:00:04 0.00% officemshell
90 90 120 $ 26 16024K 00:00:00 0.00% fsd
125 125 120 sms 12 4472K 00:00:02 0.00% officemshell
130 130 110 yes 32 19432K 00:00:02 0.00% officemshell
130 130 110 yes 32 19432K 00:00:00 0.00% laggd
124 124 120 $ 29 3804K 00:00:00 0.00% syslogd
124 124 120 $ 29 3804K 00:00:00 0.00% routed
[H3C-hidecmd]display process memory heap job 101
Total virtual memory heap space(in bytes): 221184
Total physical memory heap space(in bytes): 90112
Total allocated memory(in bytes): 181792
[H3C-hidecmd]display process memory heap job 101 ve
                                                                                                                                                                                                               ion profile of the
                                                                                                                                                                                                               neap space alloca
                                                                                                                                                                                                              he display proces
                                                                                                                                                                                                              n information, yo
    leap usage:
  Size
                                   Free
                                                                         Used
                                                                                                         Total
                                                                                                                                                      Free Ratio
                                                                                                                                                                                                              and cannot be re
                                                                                                                                                     4.2%
1.2%
50.0%
0.0%
                                                                                                             24
171
                                                                         169
                                                                                                                                                                                                              orocess
  32
                                                                                                              12
  40
                                                                         12
                                                                                                                                                                                                              to further check t
                                                                                                                                                      20.0%
                                                                         4 5
  48
  56
                                     0
   64
72
96
                                                                                                                                                      0.0%
                                                                                                                                                      100.0%
                                                                  0 2
20 20
1 1
1 3
3 3
1 1
0 1
1 1
1 1
     04
                                                                                                                                                      0.0%
0.0%
0.0%
     60
    328
                                     0
                                                                                                                                                      0.0%
  520
                                                                                                                                                      0.0%
                                                                                                                                                      100.0%
     416
                                     ō
    544
                                                                                                                                                      0.0%
                                                                                                                                                      100.0%
  3168
   5152
                                                                                                                                                      0.0%
     2296
                                                                                                                                                      0.0%
     arge Memory Usage:
  Jsed Blocks
    Jsed Memory(in bytes):
                                                                                        139264
     ree Blocks
     ree Memory(in bytes): 34360
  Summary:
Total virtual memory heap space(in bytes) : 221184
Total physical memory heap space(in bytes) : 90112
```