

知 Troubleshooting methods for user state memory leaks

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Network Topology

Not involving

Problem Description

Under normal circumstances, the system memory usage should be below 80%, otherwise it is abnormal. 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, first-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 kernel 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 statistics 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      Head      Free      Shared      Buffers      Cached      FreeRatio
Mem:  972360    400868    571492      0           0           122108      58.8%
-/+ Buffers/Cache: 278760    693600
Swap:  0
```

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, 558M 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     0K  00:02:24  1.21% [bc.0]
 23   23  120   D     0     0K  00:02:13  0.60% [TMTH]
 31   31  130   D     0     0K  00:01:55  0.60% [L2X0]
 35   35  116   D     0     0K  00:01:09  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     0K  00:00:00  0.00% [kthreadd]
Unknown command - try '?' or 'h' for help.
```

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) command 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 dynamic 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.

```
[H3C-hidecmd]dis process memory
JID  Text  Data  Stack  Dynamic  Name
  1   100  2692   24     112    scmd
  2    0    0    0      0     [kthreadd]
  3    0    0    0      0     [migration/0]
  4    0    0    0      0     [ksoftirqd/0]
  5    0    0    0      0     [watchdog/0]
... ..
 89   12   416    8      4     ciocld
 90  108 42968   20    284     fsd
 91   92  1492   24    400     dbmd
 92   52 11496   16    420     diagd
 94  100   484   12     12     had
 95   84 26204   20    116     syslogd
 96  100 17188   32     12     devd
101   36 83164   12     88     ifmgr
103   40  8932   12     12     edev
110    0    0    0      0     [NETM]
115   72   552   12     20     13vpnd
117    8   536    8      4     drvptd
118  100   748    8     20     dnsd
119   60   876   60     20     sysmand
```

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
Solution: 91.69% idle, 2.42% user, 5.53% kernel, 0.34% interrupt
Memory: 949M total, 557M available, page size 4K
Use 'display process memory heap job 101' to view the consumption profile of the
spec325 process to determine whether the heap space allocation is reasonable.
ion of the process (physical memory usage) to determine the display process
s memory heap (no verbose) to view the heap usage information, you
u can analyze the heap consumption.
121 121 120 s 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
[H3C-hidecmd]display process memory heap job 101 verbose
Heap usage:
Size Free Used Total Free Ratio
16 1 23 24 4.2%
24 2 169 171 1.2%
32 1 1 2 50.0%
40 0 12 12 0.0%
48 1 4 5 20.0%
56 0 5 5 0.0%
64 0 1 1 0.0%
72 0 1 1 0.0%
96 1 0 1 100.0%
104 2 0 2 100.0%
144 0 20 20 0.0%
152 0 1 1 0.0%
160 0 1 1 0.0%
328 0 3 3 0.0%
520 0 1 1 0.0%
1416 1 0 1 100.0%
1544 0 1 1 0.0%
3168 1 0 1 100.0%
6152 0 1 1 0.0%
12296 0 2 2 0.0%
Large Memory Usage:
Used Blocks : 2
Used Memory(in bytes): 139264
Free Blocks : 1
Free Memory(in bytes): 34360
Summary:
Total virtual memory heap space(in bytes) : 221184
Total physical memory heap space(in bytes) : 90112

```

consumption profile of the
 heap space allocation
 use the display process
 information, you
 and cannot be re
 process
 to further check t

