

2779331 - HANA services use large SWAP memory

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Language	English	Master Language	English
Release Status	Released to Customer	Category	Problem
Component	HAN-DB (SAP HANA Database)	Released On	17.04.2019

Please find the original document at <https://launchpad.support.sap.com/#/notes/2779331>

Symptom

At OS level, there is sufficient memory for HANA database, but you find that the HANA services are using large Swap space.

Image/data in this KBA is from SAP internal systems, sample data, or demo systems. Any resemblance to real data is purely coincidental.

Environment

- SAP HANA Platform 1.0
- SAP HANA Platform 2.0

Cause

The SWAP is configured with a space size larger than the HANA recommended SWAP space of 2GB. Theoretically, the SWAP space should be only used when the memory is not sufficient for HANA DB, otherwise the system I/O performance will be impacted. But the situation can be different when the OS parameter `vm.swapiness` is configured with a high value.

Resolution

SAP recommends to configure SWAP for HANA DB as 2GB according to SAP note [1944799](#).

If you configure the SWAP with a larger value, it's very possible that HANA service will use SWAP space even though there is enough physical memory for HANA DB due the configured value of OS parameter `vm.swapiness`. The default value of `vm.swapiness` is 60%, which means that OS can assign SWAP space when there is 60% free RAM. In this situation, you can try to reduce the parameter value to a smaller value, like 10% to lower down the possibility of using SWAP space. At the same time, you can also monitor the system status with following OS command.

```
vmstat 1 20
```

You can monitor the column "SI" and "SO" in the result. If the value for "SI" and "SO" is "0", it means that there is no actual swapping activity, the impact to system should be the least.

```

>> vmstat 1 20
procs -----memory----- --swap--  -----io----- -system--  -----cpu-----
 r  b  swpd  free  buff  cache  si  so  bi  bo  in  cs  us  sy  id  wa  st
 1  0  3129340 404420 92748 4491132 0 0 968 127 0 0 3 2 90 5 0
 0  0  3129340 404412 92756 4491172 0 0 0 120 5672 9104 1 0 99 0 0
 2  0  3129340 404412 92756 4491144 0 0 0 204 6290 9306 1 2 97 0 0
 0  0  3129340 402684 92760 4492360 0 0 0 160 6150 9152 2 2 95 0 0
 1  0  3129340 402916 92760 4492128 0 0 0 1560 8435 12590 10 1 89 0 0
 0  0  3129340 403148 92760 4492128 0 0 0 256 5839 8980 1 0 99 0 0
 0  0  3129340 403048 92760 4492128 0 0 0 208 5820 9121 1 0 99 0 0
 1  0  3129340 402932 92760 4492136 0 0 0 120 5708 9086 1 0 99 0 0
 0  0  3129340 402544 92780 4492124 0 0 0 364 6305 10335 9 1 90 0 0
 0  0  3129340 402468 92780 4492136 0 0 0 112 5948 9182 1 0 99 0 0
 0  0  3129340 402756 92780 4492136 0 0 0 628 6125 9247 1 0 99 0 0
 0  0  3129340 402740 92780 4492124 0 0 0 124 5903 9103 1 0 99 0 0
 1  0  3129340 402740 92780 4492124 0 0 0 204 6241 9184 1 1 97 0 0
 0  0  3129340 401396 92796 4493316 0 0 0 200 6492 9344 2 2 95 0 0
 1  0  3129340 401508 92796 4493108 0 0 256 1484 5684 9098 1 0 99 0 0
 0  0  3129340 401944 92804 4493092 0 0 0 312 5841 8937 1 0 99 0 0
 0  0  3129340 401664 92804 4493100 0 0 0 208 5891 9116 1 0 99 0 0
 0  0  3129340 403648 92804 4493108 0 0 0 108 5861 9084 1 0 99 0 0
 0  0  3129340 403788 92824 4493088 0 0 0 560 5748 9258 0 0 99 0 0
 1  0  3129340 403896 92824 4493108 0 0 0 112 5958 9238 1 0 99 0 0
    
```

In case that you want to get more detail explanation about the OS swapping activities, you can raise incident to component "BC-OP-LNX".

See Also

- [1999997](#) - FAQ: SAP HANA Memory
- [1944799](#) - SAP HANA Guidelines for SLES Operating System Installation

Keywords

SWAP, Linux, HANA, memory, space, OS, swapiness

Products

- SAP HANA 1.0, platform edition
- SAP HANA, platform edition 2.0

Other Components

Component	Description
BC-OP-LNX	Linux

This document refers to

SAP Note/KBA	Title
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1999997	FAQ: SAP HANA Memory
1944799	SAP HANA Guidelines for SLES Operating System Installation

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