Table des matières

lpar2rrd

- http://www.lpar2rrd.com/

VP-to-entitlement ratio

Ideally the ratio should be 2.5 or less. Anything above 4.0 is performance unfriendly, especially on multi-node systems (770 and above).

How to estimate the number of virtual processors per uncapped shared LPAR:

The first step would be to monitor the utilization of each partition and for any partition where the average utilization is ~100%, then add one virtual)processors. (use capacity of the already configured virtual processors before adding more

If the peak utilization is well below 50%, then look at the ratio of virtual processors to configured entitlement and if the ratio is > 1, then consider reducing the ratio. (In any case if there are too many virtual processors configured, AIX can “fold” those processors.)

AIX monitors the utilization of each virtual processor and the utilization of an PLPAR, and if utilization goes below 50%, AIX will start folding down the virtual CPUs so that fewer virtual CPUs will be dispatched. (If utilization goes beyond 50% AIX starts unfolding virtual CPUs.)

Considerations for Virtual Processor (VP) and Entitled Capacity:

- Lpars that require high performance (such as critical database) can be forced to get the best resources by activating the critical LPAR first prior to activating any other LPARs including VIO Server.

- The best practice for LPAR entitlement would be setting entitlement close to average utilization and let the peak addressed by additional uncapped capacity. (exceptions could be LPARs with higher priority)

- For each shared LPAR the number of VPs must be less than (or equal) to the number of cores of the shared pool

- Shared uncapped LPARS with too low VPs will not cover Production Need (VP number is a limit for uncapped LPARs)

- When AIX folding is turned off it can happen that PhysC (physical cores used) is high, but AIX shows high percentage of idle time. (This is because unused Virtual Processors are also assigned to cores, but they are not doing any work at all.)

Checking how many Virtual Processors are active:

```
root@bb_lpar:/ # lparstat -i | grep Virt
Online Virtual CPUs                        : 2                              <--we have 2 virtual processors configured
Maximum Virtual CPUs                       : 8
Minimum Virtual CPUs                       : 1
Desired Virtual CPUs                       : 2

root@bb_lpar:/ # bindprocessor -q
The available processors are:  0 1 2 3 4 5 6 7                              <--this shows smt=4 active (4 threads/virtual processor)

root@bb_lpar:/ # echo vpm | kdb
...
   0     0  ACTIVE      0 AWAKE        0000000000000000  00000000  00
   1     0  ACTIVE      0 AWAKE        0000000000000000  00000000  00
   2     0  ACTIVE      0 AWAKE        0000000000000000  00000000  00
   3     0  ACTIVE      0 AWAKE        0000000000000000  00000000  00
   4     0  DISABLED    0 AWAKE        0000000000000000  00000000  00        <--4 lines are DISABLED, so 1 Virt. proc. is inactive (folding)
   5    11  DISABLED    0 SLEEPING     00000000515B4478  29DBE3CA  02
   6    11  DISABLED    0 SLEEPING     00000000515B4477  2C029174  02
   7    11  DISABLED    0 SLEEPING     00000000515B4477  2C0292A1  02
```

SMT

threads = VP x (SMT threads par processeur) = logical CPUs

Soit la partoche ci-dessous :

```
root@partoche:/root # lparstat -i |grep Virtual
Online Virtual CPUs                        : 3
Maximum Virtual CPUs                       : 6
Minimum Virtual CPUs                       : 1
Desired Virtual CPUs                       : 3
```

```
root@partoche:/root # smtctl

This system is SMT capable.
This system supports up to 4 SMT threads per processor.
SMT is currently enabled.
```

```
SMT boot mode is not set.
SMT threads are bound to the same virtual processor.

proc0 has 4 SMT threads.
Bind processor 0 is bound with proc0
Bind processor 1 is bound with proc0
Bind processor 2 is bound with proc0
Bind processor 3 is bound with proc0


proc4 has 4 SMT threads.
Bind processor 4 is bound with proc4
Bind processor 5 is bound with proc4
Bind processor 6 is bound with proc4
Bind processor 7 is bound with proc4


proc8 has 4 SMT threads.
Bind processor 8 is bound with proc8
Bind processor 9 is bound with proc8
Bind processor 10 is bound with proc8
Bind processor 11 is bound with proc8
```

```
Topas Monitor for host:    partoche            EVENTS/QUEUES    FILE/TTY
Fri Nov 27 15:50:05 2015   Interval:  2        Cswitch    1323  Readch  1815.1K
                                               Syscall    4913  Writech  612.6K
CPU  User%  Kern%  Wait%  Idle%  Physc         Reads       574  Rawin         0
0     81.9   16.7    1.2    0.2   0.41         Writes      363  Ttyout      356
2      0.0    1.0    0.0   99.0   0.08         Forks         6  Igets         0
3      0.0    1.0    0.0   99.0   0.08         Execs         7  Namei       469
4      0.0   43.4    0.0   56.6   0.00         Runqueue    1.0  Dirblk        0
5      0.0   31.7    0.0   68.3   0.00         Waitqueue   0.0
1      0.0    0.9    0.0   99.1   0.08                         MEMORY
6      0.0    0.3    0.0   99.7   0.00         PAGING           Real,MB   24576
11     0.0    0.0    0.0  100.0   0.01         Faults     1554  % Comp     90
7      0.0    0.3    0.0   99.7   0.00         Steals        0  % Noncomp   1
8      0.0   74.6    0.0   25.4   0.01         PgspIn        0  % Client    1
9      0.0    2.3    0.0   97.7   0.01         PgspOut       0
10     0.0    0.0    0.0  100.0   0.01         PageIn        0  PAGING SPACE
                                               PageOut       0  Size,MB   25600
Network  KBPS   I-Pack  O-Pack   KB-In  KB-Out  Sios          0  % Used      2
Total   218.6    346.0   329.9    92.1   126.5                  % Free     98
                                               NFS (calls/sec)
Disk    Busy%     KBPS     TPS KB-Read KB-Writ  SerV2         0  WPAR Activ     0
Total     2.4   2126.9   226.0  1640.6   486.4  CliV2         0  WPAR Total     0
                                               SerV3         0  Press: "h"-help
FileSystem        KBPS     TPS KB-Read KB-Writ  CliV3         0         "q"-quit
Total              2.2K  331.3    1.7K 486.3    SerV4         0
                                               CliV4         0
Name            PID  CPU%  PgSp Owner
oracle      9830502  15.1   6.7 orair3
oracle     14483686  13.9  14.0 orair3
oracle     26411184  10.0  10.6 orair3
oracle      6684822   8.6   6.7 orair3
enserver   29425668   1.3  56.3 ir3adm
oracle     16580828   0.6  26.8 ir3adm
oracle     27132004   0.4   8.0 ir3adm
bgscolle   11403318   0.2   3.3 bmcpor
sapstart   16187400   0.2  22.3 ir3adm
init              1   0.1   0.8 root
PatrolAg    8454164   0.0  15.7 patrol
syncd       3211376   0.0   0.6 root
lrud         262152   0.0   0.6 root
gil         1769526   0.0   0.9 root
getty       4194474   0.0   0.6 root
nfssync_    3604592   0.0   0.7 root
random      4587558   0.0   0.4 root
vmmd         458766   0.0   0.8 root
nfsd        4915360   0.0   1.8 root
bdaemon     7471354   0.0   1.8 root
```