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
```

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