IBM Systems and Technology Group – Central Region

Central Region Virtual Users Group

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Topas Recording Features

ON DEMAND BUSINESS™

9/25/2008

Topas recording - Agenda

- **What is topas vs. topas recording (topasout)**
- **Configuration**
  - Starting/Stopping
  - Filesystems/output
  - Pre-reqs/Known Issues
- **Usage**
- **Downloading data**
- **Pgraph (open source GUI for topas recording)**
- **Alternatives** (time permitting)
- **Wrapup**

What is Topas Recording (topasout)

- **topas**
  - Allows for CEC and Shared Processor monitoring
  - Can see multiple/all LPARS from single screen
- **xmwlm/xmtopas**
  - Agent(s) that provides for recording of CPU, memory, network, LPAR stats
  - Two processes usually running

```
# ps -ef | grep xm | grep -v grep
    root 110712      1   0   Sep 17      -  0:14 /usr/bin/xmwlm -L
    root 118990 200730   1   Sep 17      -  4:44 xmtopas -p3
```

- **topas –R**
  - Allows for collecting raw data in /etc/perf directory
  - Started with AIX 5.3 TL5
  - Entry in /etc/inittab

topasrec:2:once:/usr/bin/topas –R 2>&1 > /dev/null

Configuring Topas Recording

- **Enable**
  - **/usr/lpp/perfagent/config_topas.sh add**
  - Creates entry (topas –R) in /etc/inittab
  - Records every 5 minutes into topas_cec.<date> (YYMMDD)
  - Approx 2-8MB daily depending on # of partitions
  - Read data with **topasout –R** command
- **Output locations**
  - CEC Output located in **/etc/perf** directory (topas_cec.YYMMDD)
  - LOCAL recordings located in **/etc/perf/daily** (xmwlm.YYMMDD)
  - Consider SEPARATE filesystem for /etc/perf directory
- **Disabling**
  - **/usr/lpp/perfagent/config_topas.sh delete**
  - Removes /etc/inittab entry
  - **NOTE:** kill topas –R command in process table

(COMMAND LINE)

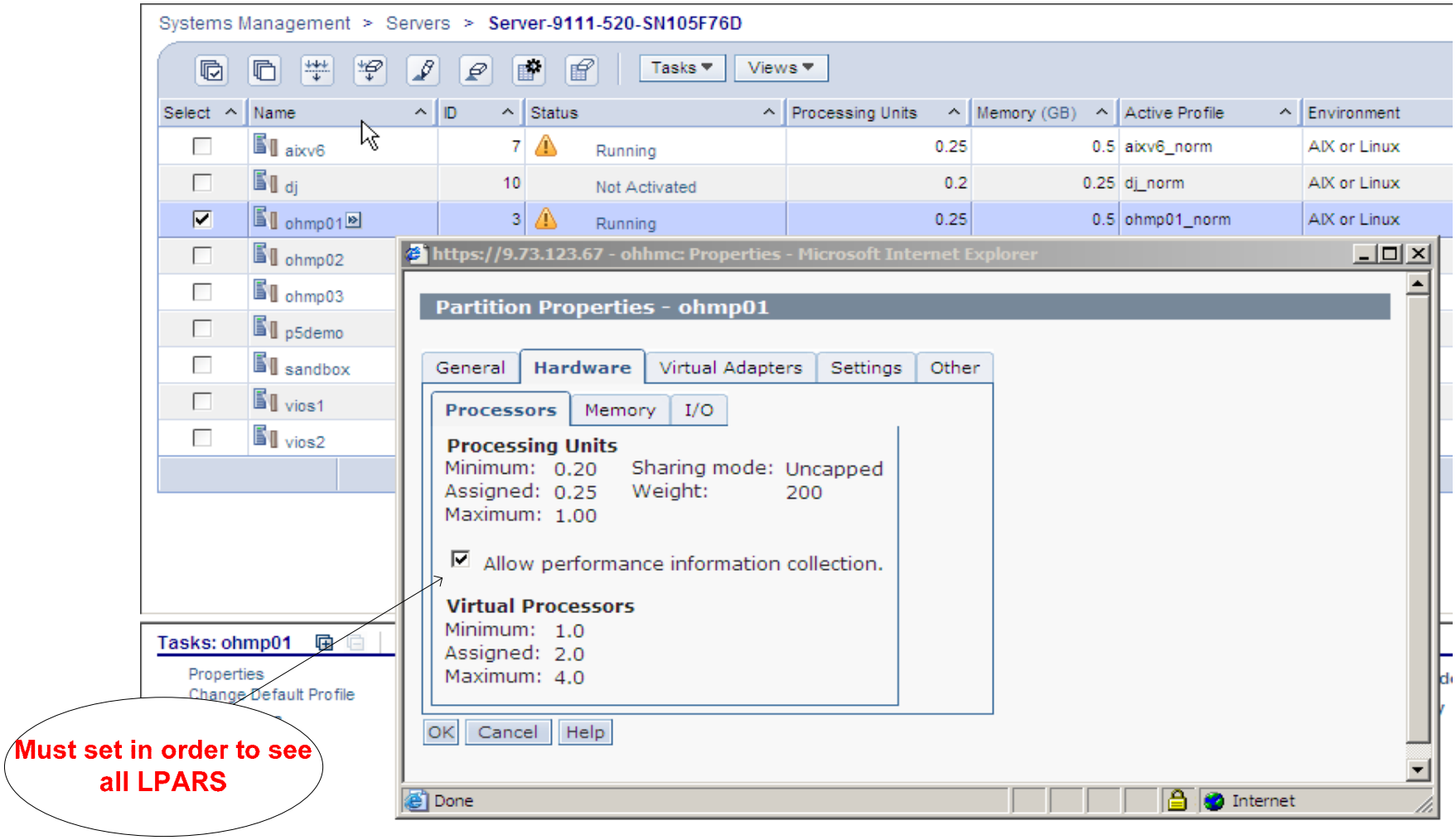
Pre-requisites/Issues to Topas Recording

- **HMC / LPAR Settings**
  - Allow partition monitoring (check for each LPAR to monitor)
  - Failure to do could skew PSz/App (Pool size/Avail Processors in Pool)

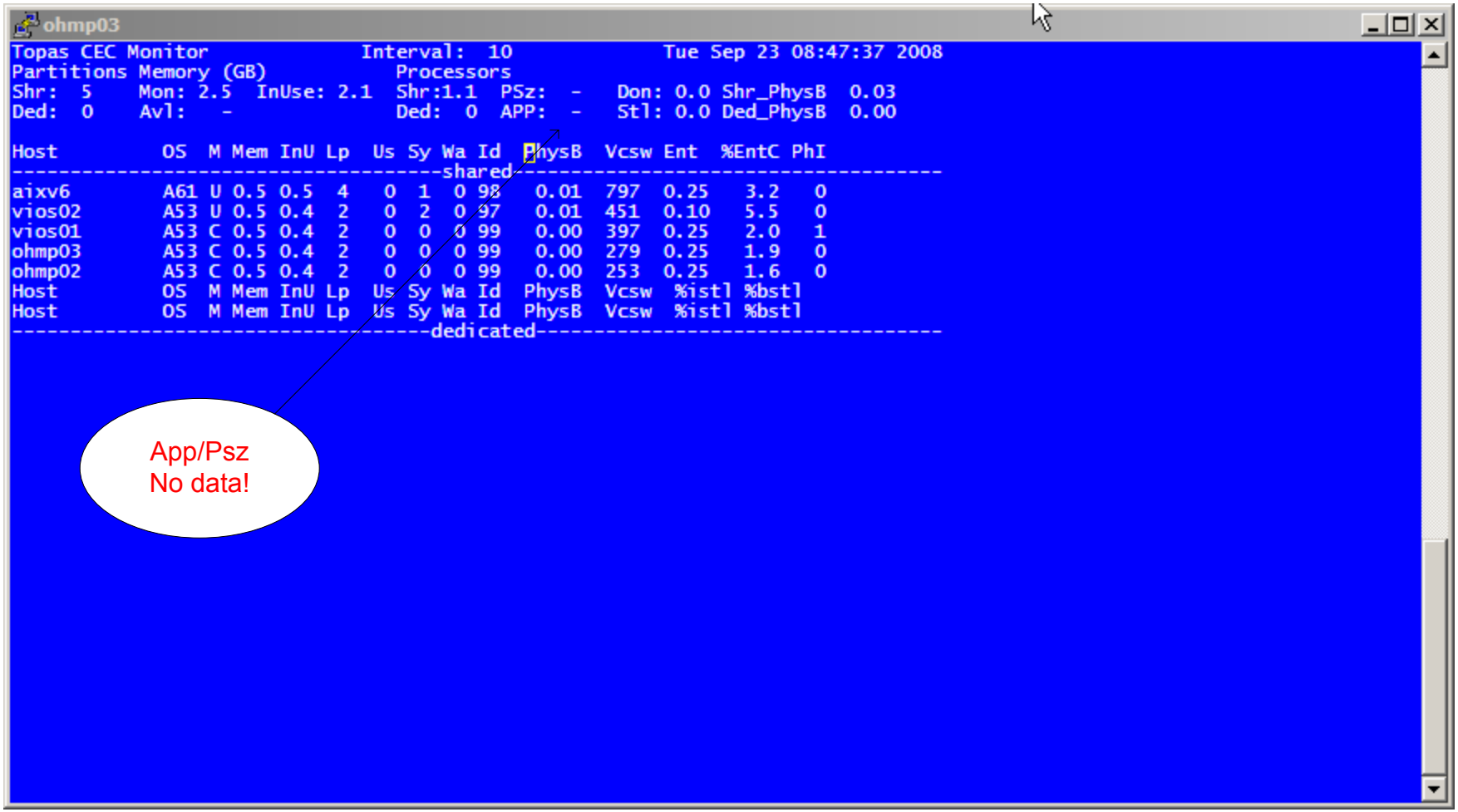
- **HINT: Consider creating separate filesystem for output (/etc/perf)**
  - Raw output can be quite voluminous (2-8MB each day)
  - Formatted output (via topasout) can also create **LARGE** files
  - Additional output (just as large) in /etc/perf/daily from xmwlm (LOCAL)
  - / (root) filesystem might fill up (not good)

```
# cd /etc/perf; tar –cvf /tmp/perfdir.tar; cd /tmp
# rm /etc/perf; crfs –a size=400M –A yes –m /etc/perf –v jfs2 –g rootvg
# mount /etc/perf;  cd /etc/perf;  tar –xvf /tmp/perfdir.tar
```

HMC/Partition Attributes



topas –C (issue at TL5) Putting '-' in App/PSz



Pre-requisites/Issues to Topas Recording

- **AIX 5.3 TL7/TL8 APARS**
  - 5300-07 - use AIX APAR IZ21354
  - 5300-08 - use AIX APAR IZ25116

- **AIX 6.1 APARS**
  - 6100-00 - use AIX APAR IZ25848
  - 6100-01 - use AIX APAR IZ27046

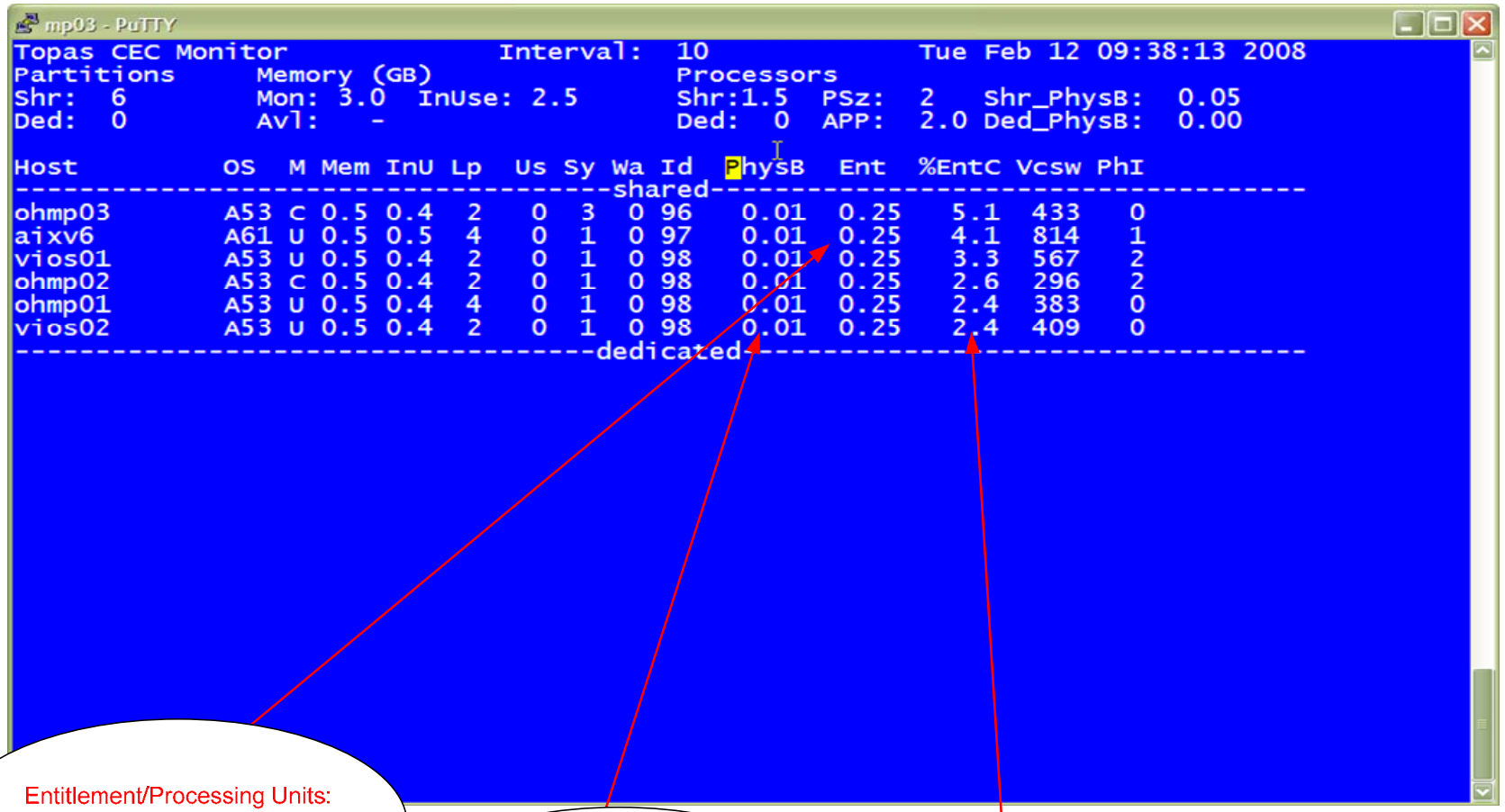
IZ25116: TOPAS -C COMMAND PUTS "-", NOT PROPER VALUES IN "PSZ" AND "APP" APPLIES TO AIX 5300-08

A fix is available
Obtain fix for this APAR

APAR status
Closed as program error.

Error description
topas -C command shows "-" instead of proper values in
"Psz"
and "APP" fields.

Partition Resource Attributes (via topas –C)



Entitlement/Processing Units:
This is a 'guarantee'. Always get this if LPAR needs it, gives it up if not using it!!!

Physical Count:
Amount of a whole/physical processor ACTUALLY consuming (at this moment)

Entitlement PERCENT:
Percentage of LPAR's entitlment of Guarantee currently getting (NOTE: Can exceed 100% if UNCAPPED)

OUTPUT: topasout command

- **/etc/perf** (data/output)

```
Dir -> [/etc/perf] # ls -l
drwxr-xr-x   2 root     system          256 Sep 23 00:00 daily
drwxr-xr-x   2 root     system          256 Sep 17 12:16 lost+found
-rw-r--r--   1 root     system        38289 Sep 17 13:13 rlb.out
-rw-r--r--   1 root     system      2616488 Sep 17 23:59 topas_cec.080917
-rw-r--r--   1 root     system      5342224 Sep 18 23:59 topas_cec.080918
-rw-r--r--   1 root     system      5342224 Sep 19 23:59 topas_cec.080919
-rw-r--r--   1 root     system      5342224 Sep 20 23:59 topas_cec.080920
-rw-r--r--   1 root     system      5342224 Sep 21 23:59 topas_cec.080921   <------- (YYMMDD)  raw data
-rw-r--r--   1 root     system      5342224 Sep 22 23:59 topas_cec.080922
-rw-r--r--   1 root     system        55280 Sep 23 08:58 topas_cec.080923   <---- still recording for this day
drwxr-xr-x   2 root     system          256 Apr 04 14:25 wlm
-rw-r--r--   1 root     system        83827 Sep 23 08:58 xmservd.log1
-rw-r--r--   1 root     system       103034 Sep 23 08:55 xmservd.log2   <------  ASCII log data from xmtopas daemon
```

topasout examples: (CEC Summary report)

ohmp01

```
Dir -> [/etc/perf]
root@ohmp01
(1019)# topasout -R summary topas_cec.080920 | head -20
#Report: CEC Summary  --- hostname: ohmp01                          version:1.2
Start:09/20/08 00:00:49   Stop:09/20/08 23:59:49  Int: 5 Min  Range:1439 Min
Partition Mon:  6  UnM:  0  Shr:  6  Ded:  0  Cap:  3  UnC:  3
      --CEC-------------- -Processors----------------- --Memory (GB)------------
Time  ShrB DedB  Don  Stl  Mon  UnM  Shr Ded  PSz  APP  Mon  UnM  Avl  UnA  InU
00:05  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:10  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:15  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:20  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:25  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:30  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:35  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:40  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:45  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:50  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
00:55  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
01:00  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
01:05  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
01:10  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0
01:15  2.0  0.0   -    -   1.4  0.0  1.4   0  0.0  0.0  3.0  0.0  0.0  0.0  0.0


Dir -> [/etc/perf]
root@ohmp01
(1020)#
```

topasout examples: (CEC Detailed report)

ohmp01

```
root@ohmp01
(1022)# topasout -R detailed topas_cec.080920 | head -23
#Report: CEC Detailed --- hostname: ohmp01                    version:1.2
Start:09/20/08 00:00:49   Stop:09/20/08 23:59:49  Int: 5 Min  Range:1439 Min

Time: 00:05:48 ------------------------------------------------------------------
Partition Info   Memory (GB)        Processors          Avail Pool :  0.0
Monitored  :  6  Monitored  :  3.0  Monitored  :  1.4  Shr Physcl Busy:  1.99
UnMonitored:  0  UnMonitored:  0.0  UnMonitored:  0.0  Ded Physcl Busy:  0.00
Shared     :  6  Available  :  0.0  Available  :  0.0  Donated Phys. CPUs: 0.00
UnCapped   :  3  UnAllocated:  0.0  Unallocated:  0.0  Stolen Phys. CPUs : 0.00
Capped     :  3  Consumed   :  0.0  Shared     :  1.4  Hypervisor
Dedicated  :  0                    Dedicated  :  0.0  Virt Cntxt Swtch:  4592
Donating   :  0                    Donated    :  0    Phantom Intrpt  :     5
                                   Pool Size  :  0.0

Host         OS  M  Mem  InU Lp Us Sy Wa Id PhysB  Vcsw  Ent  %EntC PhI
-------------------------------------shared-----------------------------------
ohmp01       A53 U  0.5  0.3  4 16 83  0  0  1.95  2573  0.2 780.55   5
aixv6        A61 U  0.5  0.5  4  0  1  0 98  0.01   649  0.2   3.71   0
ohmp03       A53 C  0.5  0.4  2  0  0  0 98  0.01   295  0.2   2.53   0
vios02       A53 U  0.5  0.4  2  0  2  0 96  0.01   412  0.1   7.47   0
vios01       A53 C  0.5  0.4  2  0  0  0 98  0.01   391  0.2   2.62   0
ohmp02       A53 C  0.5  0.4  2  0  0  0 98  0.01   272  0.2   2.29   0



Dir -> [/etc/perf]
root@ohmp01
(1023)#
```

topasout examples: (CEC poolinfo)

ohmp01

```
Dir -> [/etc/perf]
root@ohmp01
(1036)# topasout -R poolinfo topas_cec.080921 | head -20
#Report: Topas Pool Detailed --- hostname: ohmp01                    version:1.0
Start:09/21/08 00:00:49   Stop:09/21/08 23:59:49  Int: 5 Min  Range:1439 Min

Time: 00:05:48 ----------------------------------------------------------------

pool  psize  entc  maxc  physb  app   mem   muse
0     2.0    0.0   0.0   2.0    0.0   3.0   2.4

Host         Pi  OS  M  Mem  InU Lp Us Sy Wa Id PhysB  Vcsw  Ent  %EntC PhI
-----------------------------------shared-----------------------------------
ohmp01       0   A53 U  0.5  0.4  4 17 82  0  0  1.95  2169  0.2 780.16   9
aixv6        0   A61 U  0.5  0.5  4  0  1  0 98  0.01   760  0.2   4.07   0
vios01       0   A53 C  0.5  0.4  2  0  1  0 98  0.01   419  0.2   2.97   0
vios02       0   A53 U  0.5  0.4  2  0  2  0 97  0.01   322  0.1   6.53   0
ohmp03       0   A53 C  0.5  0.4  2  0  0  0 98  0.01   260  0.2   2.24   0
ohmp02       0   A53 C  0.5  0.4  2  0  0  0 99  0.01   245  0.2   2.06   0

Host         OS  M  Mem  InU Lp Us Sy Wa Id PhysB  Vcsw  %istl %bstl
---------------------dedicated----------------------------------
Dir -> [/etc/perf]
root@ohmp01
(1037)#
```

Fully exploited POOL!

topasout examples:

- **CEC reports (file sizes/data collected)**

topasout –R summary topas_cec.080922 | wc –l

288 (every 5 minutes, 24 hours)….

topasout –R detailed topas_cec.080922 | wc –l

~6626 lines

ls –l topas*.01

(comma files topas_cec<date> *01 files can be ~2-3 times LARGER than raw files)

14,486,571 Sep 23 11:25 topas_cec.080922_01 (-c option)

(spreadsheet topas_cec<date> *01 files can be ½ size SMALLER than raw files)

1,700,454 Sep 23 11:25 topas_cec.080922_01 (-s option)

topasout examples: Additional options/commands

- **Local reports** (example from /etc/perf/daily/xmwlm.<YYMMDD>)

  # topasout –R detailed xmwlm.080921

  # topasout –R summary xmwlm.080921

  # topasout –R lan xmwlm.080921

  # topasout –R disk xmwlm.080921

  # topasout –c xmwlm.080921 *(creates comma sep. file)(*_01)*

  # topasout –s xmwlm.080921 *(creates shreadsheet report) (also *_01)*

  # topasout –a xmwlm.080921 *(creates nmon analyzer report *.csv)*

- **CEC reports** (example from /etc/perf/topas_cec.<YYMMDD>)

  # topasout –c topas_cec.080921 *(creates comma sep. file)(*_01)*

  # topasout –s topas_cec.080921 *(creates shreadsheet report) (also *_01)*

  # topasout –a xmwlm.080921 *(creates nmon analyzer report *.csv)*

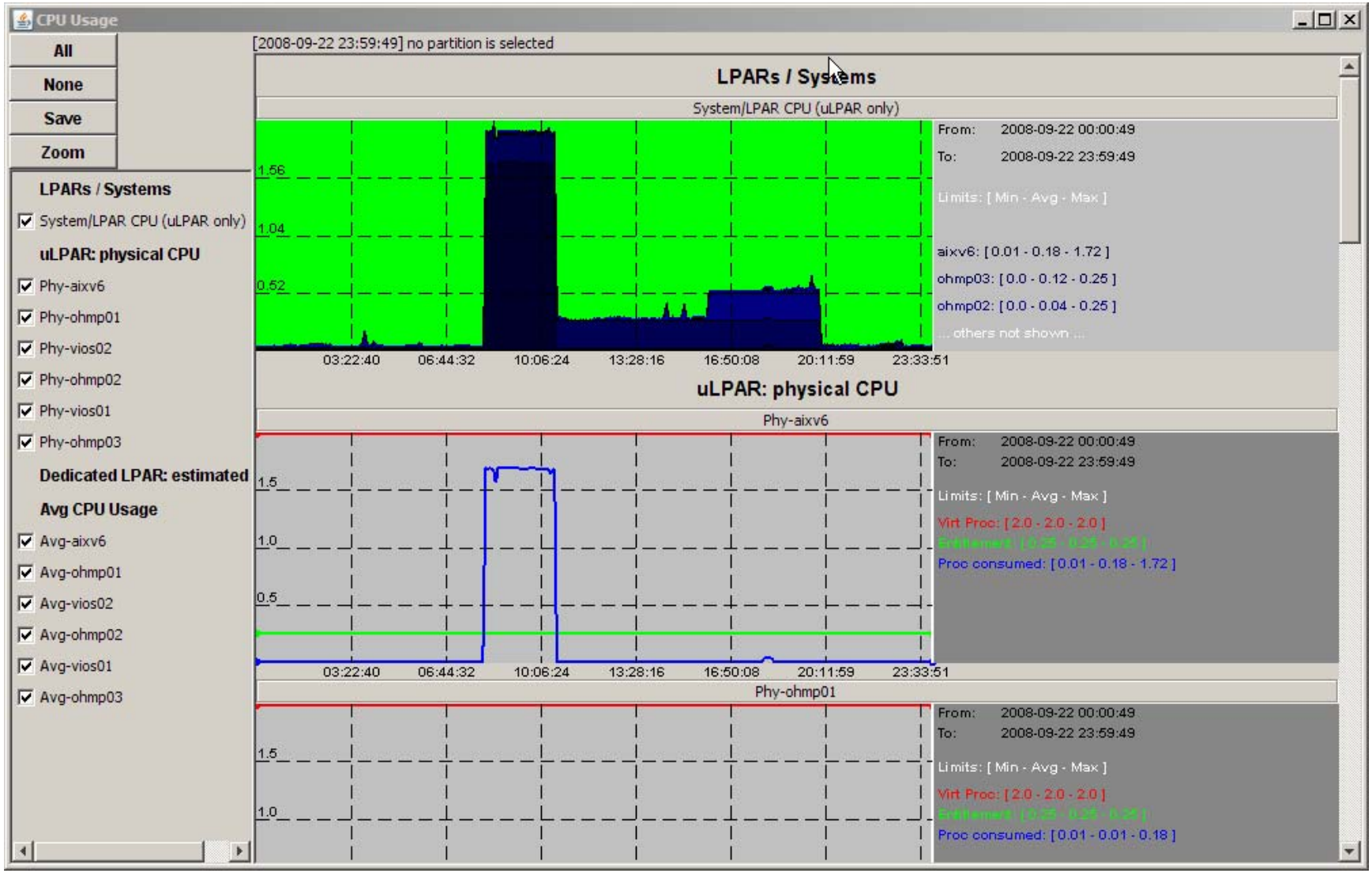
Using pgraph (GUI for output)

- **Availability**
  - See http://www.ee.pw.edu.pl/~pileckip/aix/Graph.htm
  - Download

  http://www.941.ibm.com/collaboration/wiki/display/WikiPtype/Performance_Graph+Viewer

- **pgraph**
  - Accepts nmon data, xmwlm data or topas_cec data
  - Ex: topasout topas_cec.080922 (creates topas_cec.080922_01 file)
  - ftp to PC/other and view with pgraph tool

pgraph example



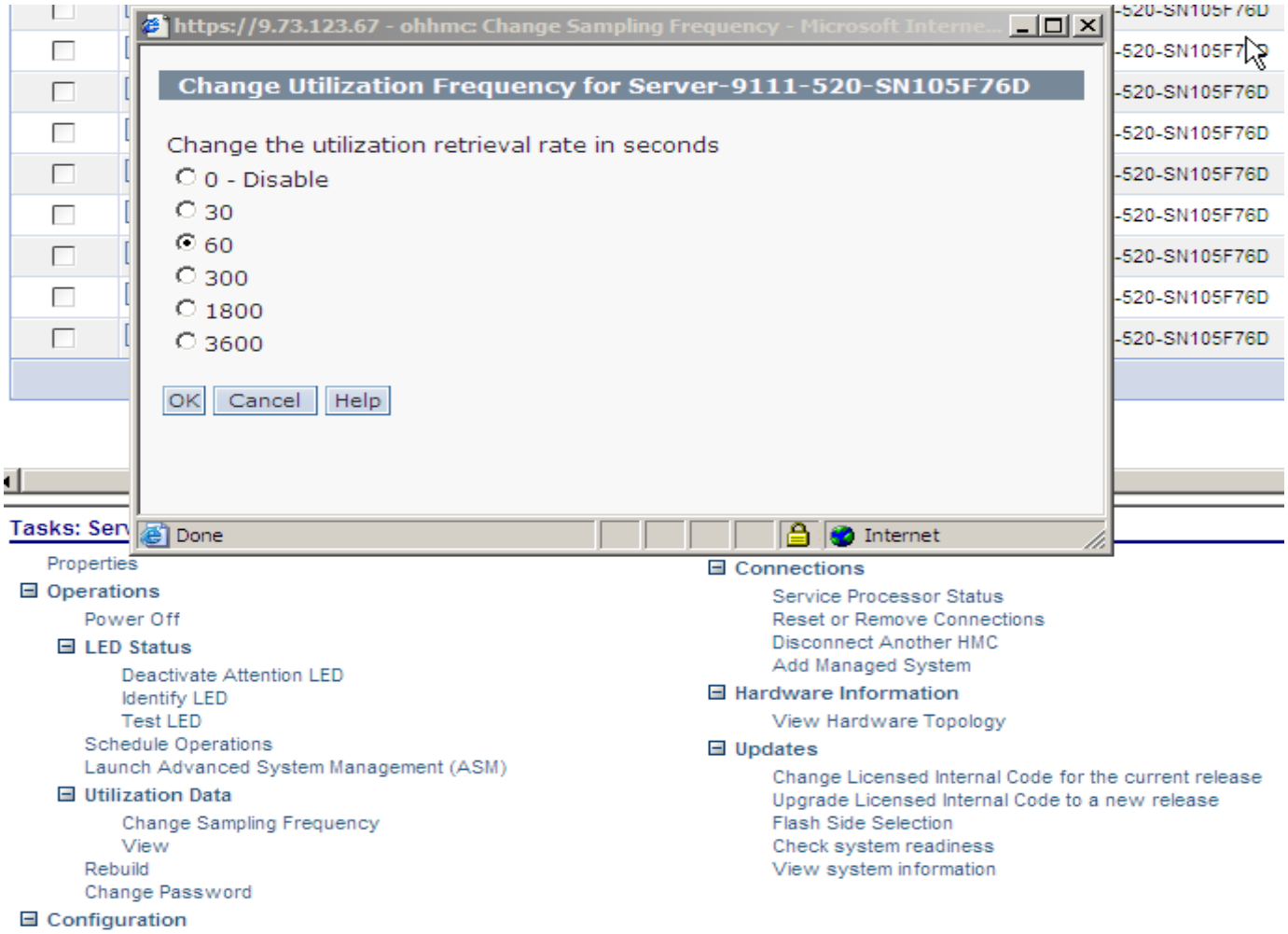
Show pgraph

- **Intentionally left blank**

Alternatives to topasout

- **HMC Utilization Data**
  - HMC 7.3.2 and below (1 hour intervals)
  - HMC 7.3.3 (< 1 minute intervals) (smallest = 30 seconds)
- **lpar2rrd tool**
  - Open Source/Freeware
  - Requires apache webserver and several RPMs
  - Can run from different server/system
  - Gets data from HMC Utilization Data (more granular at HMC 7.3.3)
  - Formatted webpages
- **nmon consolidator**

HMC Utilization Data – Interval Setting

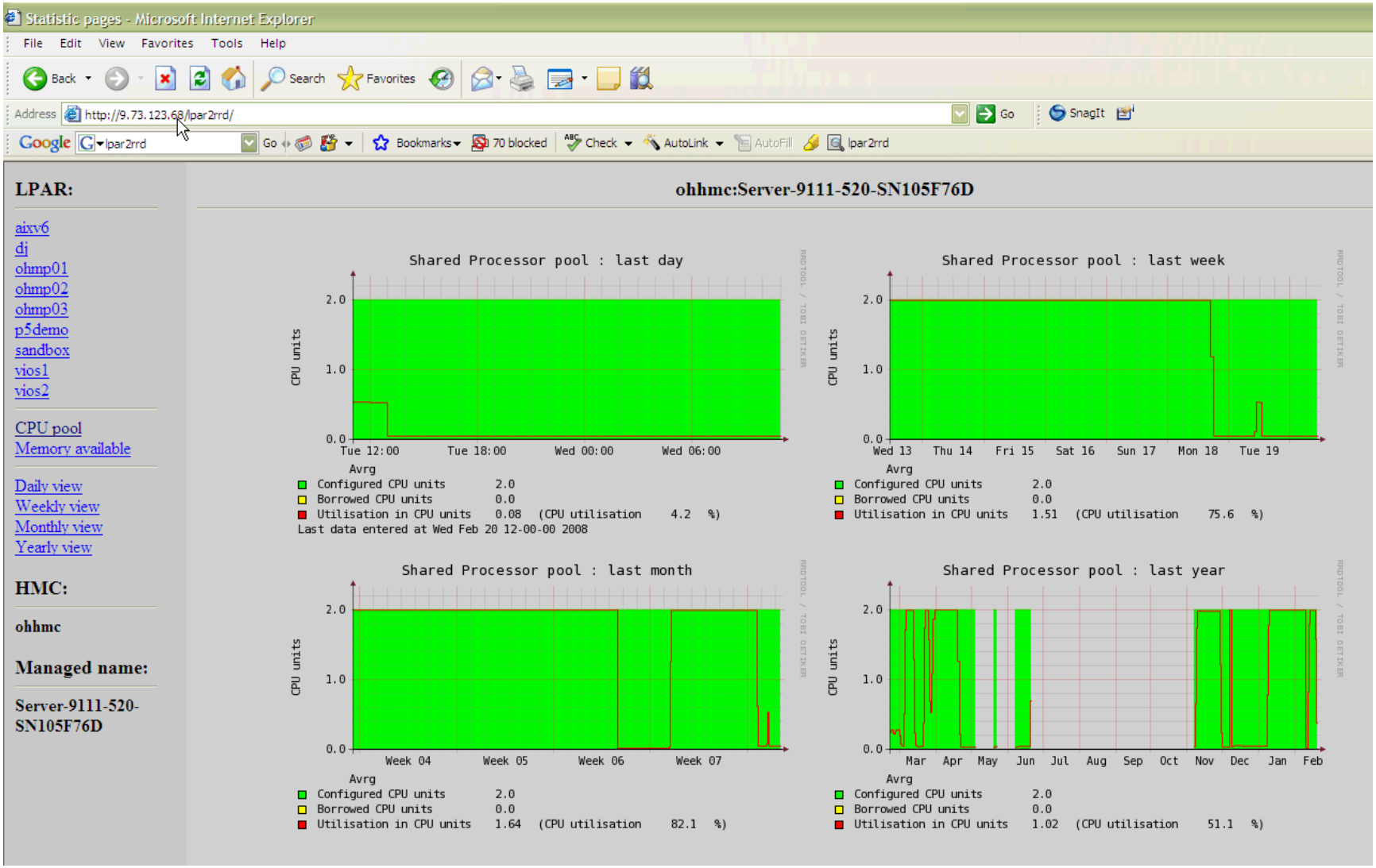


lpar2rrd tool

- **Micro-partition Tool**
  - Historical graphing/GUI for SPLARS
  - Developed by → **Pavel Hampl, IBM Czech Republic**

- **Available on IBM Developer Works PowerVM Wiki**
  - http://www.ibm.com/developerworks/wikis/display/virtualization/lpar2rrd+tool
  - **Requires additional RPMS (listed in website)**

lpar2rrd tool



Q&A / Wrap up

- **Thank You**
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