



IBM Systems and Technology Group – Central Region

Central Region Virtual Users Group

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Topas Recording Features



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 xmwlmm (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

Systems Management > Servers > Server-9111-520-SN105F76D

Select	Name	ID	Status	Processing Units	Memory (GB)	Active Profile	Environment
<input type="checkbox"/>	aixv6	7	Running	0.25	0.5	aixv6_norm	AIX or Linux
<input type="checkbox"/>	dj	10	Not Activated	0.2	0.25	dj_norm	AIX or Linux
<input checked="" type="checkbox"/>	ohmp01	3	Running	0.25	0.5	ohmp01_norm	AIX or Linux
<input type="checkbox"/>	ohmp02						
<input type="checkbox"/>	ohmp03						
<input type="checkbox"/>	p5demo						
<input type="checkbox"/>	sandbox						
<input type="checkbox"/>	vios1						
<input type="checkbox"/>	vios2						

Tasks: ohmp01

Properties
Change Default Profile

https://9.73.123.67 - ohmc: Properties - Microsoft Internet Explorer

Partition Properties - ohmp01

General Hardware Virtual Adapters Settings Other

Processors Memory I/O

Processing Units
 Minimum: 0.20 Sharing mode: Uncapped
 Assigned: 0.25 Weight: 200
 Maximum: 1.00

Allow performance information collection.

Virtual Processors
 Minimum: 1.0
 Assigned: 2.0
 Maximum: 4.0

OK Cancel Help

Done Internet

Must set in order to see all LPARS

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

Topas CEC Monitor Interval: 10 Tue Sep 23 08:47:37 2008

Partitions Memory (GB) Processors

Shr: 5 Mon: 2.5 InUse: 2.1 Shr:1.1 PSz: - Don: 0.0 Shr_PhysB 0.03
 Ded: 0 Avl: - Ded: 0 APP: - Stl: 0.0 Ded_PhysB 0.00

Host	OS	M	Mem	InU	Lp	Us	Sy	Wa	Id	PhysB	Vcsw	Ent	%EntC	PhI
-----shared-----														
aixv6	A61	U	0.5	0.5	4	0	1	0	98	0.01	797	0.25	3.2	0
vios02	A53	U	0.5	0.4	2	0	2	0	97	0.01	451	0.10	5.5	0
vios01	A53	C	0.5	0.4	2	0	0	0	99	0.00	397	0.25	2.0	1
ohmp03	A53	C	0.5	0.4	2	0	0	0	99	0.00	279	0.25	1.9	0
ohmp02	A53	C	0.5	0.4	2	0	0	0	99	0.00	253	0.25	1.6	0
Host	OS	M	Mem	InU	Lp	Us	Sy	Wa	Id	PhysB	Vcsw	%istl	%bstl	
Host	OS	M	Mem	InU	Lp	Us	Sy	Wa	Id	PhysB	Vcsw	%istl	%bstl	
-----dedicated-----														

Callout bubble: App/Psz No data!

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)

```

mp03 - PuTTY
Topas CEC Monitor          Interval: 10          Tue Feb 12 09:38:13 2008
Partitions                Memory (GB)          Processors
Shr: 6                    Mon: 3.0 InUse: 2.5  Shr:1.5 PSz: 2   Shr_PhysB: 0.05
Ded: 0                    Avl: -              Ded: 0  APP: 2.0  Ded_PhysB: 0.00

Host      OS  M Mem InU Lp  Us  Sy  wa  Id  PhysB  Ent  %EntC  Vcsw  PhI
-----
ohmp03    A53 C 0.5 0.4 2   0   3   0 96  0.01  0.25  5.1  433   0
aixv6     A61 U 0.5 0.5 4   0   1   0 97  0.01  0.25  4.1  814   1
vios01    A53 U 0.5 0.4 2   0   1   0 98  0.01  0.25  3.3  567   2
ohmp02    A53 C 0.5 0.4 2   0   1   0 98  0.01  0.25  2.6  296   2
ohmp01    A53 U 0.5 0.4 4   0   1   0 98  0.01  0.25  2.4  383   0
vios02    A53 U 0.5 0.4 2   0   1   0 98  0.01  0.25  2.4  409   0
-----
shared
dedicated
    
```

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 entitlement 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  Dedicated  : 0.0  Virt Cntxt Swtch: 4592
Donating    : 0  Donated    : 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
-----
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
-----
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**

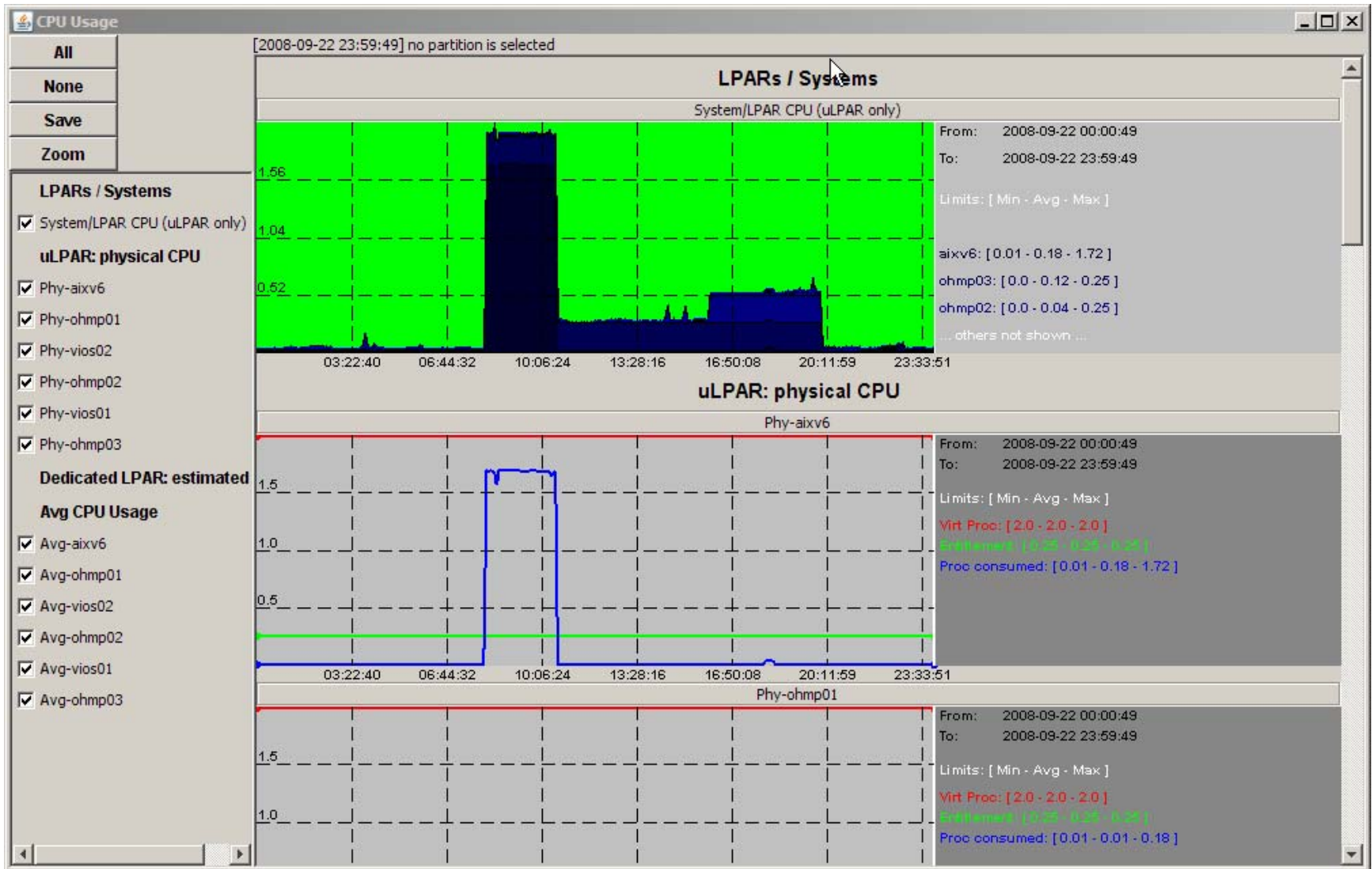
- See <http://www.ee.pw.edu.pl/~pileckip/aix/Graph.htm>
- Download

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

Change Utilization Frequency for Server-9111-520-SN105F76D

Change the utilization retrieval rate in seconds

- 0 - Disable
- 30
- 60
- 300
- 1800
- 3600

OK Cancel Help

Tasks: Sen Done

Properties

- [-] Operations
 - Power Off
 - [-] LED Status
 - Deactivate Attention LED
 - Identify LED
 - Test LED
 - Schedule Operations
 - Launch Advanced System Management (ASM)
 - [-] Utilization Data
 - Change Sampling Frequency
 - View
 - Rebuild
 - Change Password
 - [-] Configuration
- [-] Connections
 - Service Processor Status
 - Reset or Remove Connections
 - Disconnect Another HMC
 - Add Managed System
- [-] Hardware Information
 - View Hardware Topology
- [-] Updates
 - Change Licensed Internal Code for the current release
 - Upgrade Licensed Internal Code to a new release
 - Flash Side Selection
 - Check system readiness
 - View system information

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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