



Whole Machine Monitoring

This is a discussion
I want to find out what you use
and find interesting



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What is the difference between:
Performance monitoring

and Capacity Planning?



What is the difference between: Performance monitoring

- Large data volume
- Second by second
- Tuning focus and what is happening now
- Individual resources like each disk I/O

and Capacity Planning?

- Smaller data
- Hour by hour
- Capacity planning focus for the future
- Summarised data like total disk I/O

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Agenda

- Performance Management (PM) for Power Systems
- IBM Tivoli Monitoring (ITM)
- Topas -C and Topasrec
- LPAR2rrd from Pavel (ex-IBMer)
- HMCscanner from Frederico (IBMer)
- nmon2[rrd|web] from Nigel & Bruce (IBMer)
- Ganglia for POWER from Michael (IBMer)
- 3rd party and RDBMS tools
- HMC extract and generate

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PM for POWER Systems

Questionnaire

- Heard of it?
- Had a look?
- Tried it?
- Still using it?
- Paid for support?

- Know where it came from?

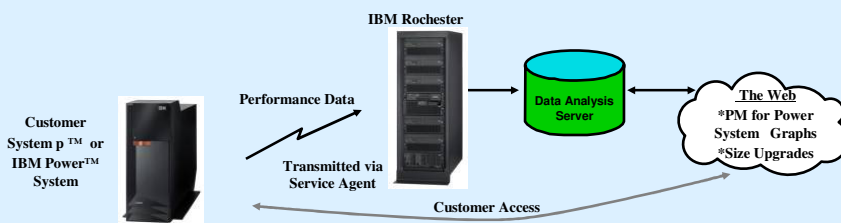
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IBM Performance Management for Power Systems

www.ibm.com/systems/power/support/perfmgmt/

Performance Monitoring as a Service



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IBM Performance Management for Power Systems

www.ibm.com/systems/power/support/perfmgmt/

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Whole Machine Monitoring

- No Charge service
 - Internet accessible one page summary graph showing key performance and growth data plus a projection of remaining growth of the system or partition
 - System must be under IBM warranty or on an IBM HW maintenance agreement
 - Available worldwide
 - Data can be merged with the IBM Workload Estimator to size upgrades
- Full function service
 - An IBM Global Technology Services (billable) report set available via Internet access that provides multiple detail reports on an ongoing basis depicting the growth and performance of the system
 - Available either as a stand alone fee offering or as part of an IBM premium service offering
 - Contact your IBM Representative to determine the availability, packaging, naming and pricing in your respective country

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Secure website for your data

- Portal for all your systems with password control

Server Information | Manage Groups
Currently Active Group: pntest (PMP) | Number of Servers: 5
Copy Servers | Add Servers | Remove Servers | Size Next Upgrade | BP Authorization | Search within Group | Sign Out
Refresh Group Data

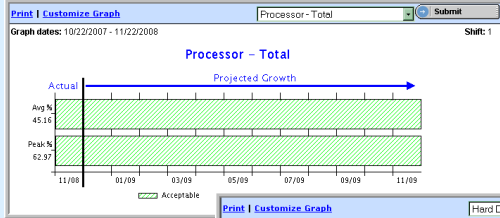
Actions	Company Name	Serial Number	LPAR	Mach Type	Model	Shift Hbr	O/S	System View	GTS Cust Contract	Server Name	Last Data Recv'd	Config Core
	IBM	06	0001	9133	55A	1	AIX			PH	2012-03-20	
	IBM	06	0001	9133	55A	2	AIX			PH	2012-03-20	
	IBM	10		7028	6E1	1	AIX			PH	2012-03-21	
	IBM	10		7028	6E1	2	AIX			PH	2012-03-21	
	CRD	65		9406	825	1	i5/OS			HO	2012-03-21	
	CRD	65		9406	825	2	i5/OS			HO	2012-03-21	

Company & machine names here

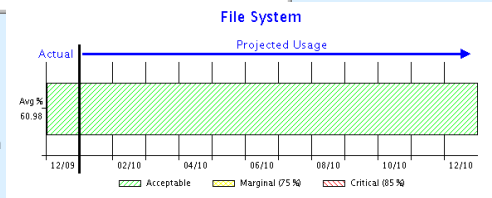
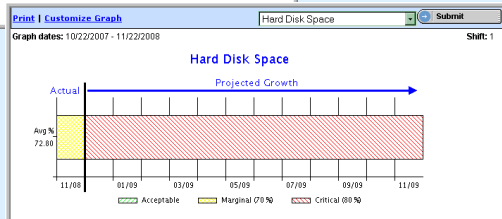
AIX and IBM i

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Interactive Management Summary Graphs



The No Additional Charge graphs



1. This data is available for no additional charge if the system is under warranty or on an IBM Hardware Maintenance Agreement.
2. The individual graphs are accessed interactively by the user and are then printable as individual graphs. A pdf version is also available.
3. The user does have the ability to go 'backwards in time' to select the month of interest. (up to 24 months.)

Full paid for Service 100's of graphs

- Let me know if you want the full presentation

Install briefly (and roughly)

- Setup Electronic Service Agent on HMC
 - IBM Call Home – should have this already
- Get Activation key for free or fee
- Start Service on AIX (is already pre-installed)
- Job Done
- Details from www.ibm.com/systems/power/support/perfmgmt

- IBM sends you Registration key to access your data
- Check the website later.

- Sample report and graphs from
 - http://www.ibm.com/systems/resources/systems_power_support_pm_aix_sample_report.pdf

PM for POWER

Good

- AIX, IBM i supported (originally from IBM i team)
- No longer massive software installed
- Uses HMC to transfer data to IBM
- Works invisibly with no user interaction
- Lots of web based reports, graphs & projections

Not so good

- Costs money per machine
- Tricky to get a list price

Anyone using another web based service ?

IBM Tivoli Monitoring (ITM)

Questionnaire

- Heard of it?
- Had a look?
- Tried it?
- Still using it?
- Paid for support?

- Know where it came from?

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IBM Tivoli Monitoring from IBM

- Core part of the Tivoli complete range of Systems Management products
- Can be purchase:
 - Stand-a-alone
 - Part of **Systems Director Enterprise Edition** (with CapPlan)
 - Part of **AIX Enterprise Edition**
- There are add-on packages for Capacity Planning

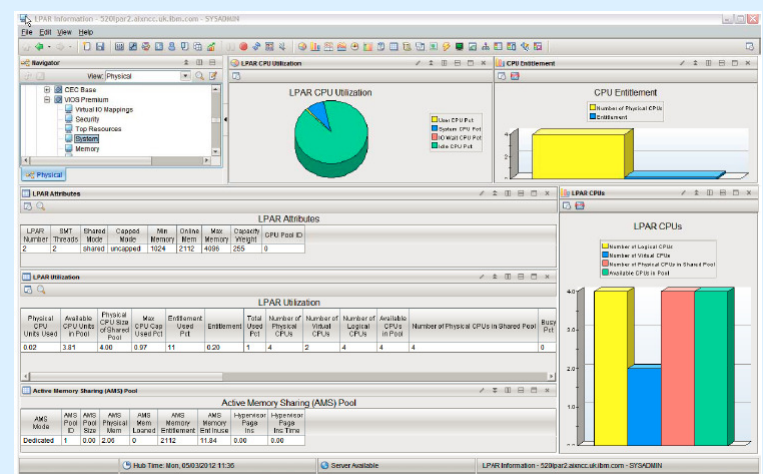
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ITM

- Briefly
 - Very high function tool & popular in its own right
 - Install the Tivoli Framework first
 - Includes embedded dedicated single function DB2 for historical data
 - Requires an extra 1 or 2 daemons per end-point:
 - AIX
 - VIOS
 - HMC
 - Up to date with new POWER/PowerVM technology
 - Multi-user and fully configurable user interface and design of screen layout and reports

A few screen shots - I stole from Andy Thomas

ITM Portal browser – collects everything to a RDBMS
 Very configurable for stats, styles, colours, aggregates



The screenshot displays the IBM Tivoli Whole Machine Monitoring (WMM) interface. It features several dashboards:

- Total CPU Utilization:** A line graph showing CPU usage over time.
- CPU Utilization Processor:** Three pie charts representing different processor components.
- LPAR CPU Utilization:** A pie chart showing CPU usage for a specific Logical Partition (LPAR).
- LPAR CPU:** A bar chart comparing CPU usage across different LPARs.
- Work with reports:** A section titled "System P: Top/Bottom N CECs by Physical CPU Utilization" showing a bar chart of the top CECs by CPU utilization. The chart shows several bars of varying heights, with the highest bar reaching approximately 14 on the y-axis.

Generated report

Would need another two day to cover this is any detail

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ITM

Good

- Current for new POWER/PowerVM features
- Covers everything and non-IBM machines too
- Extremely flexible in presenting data
- Automated report generator

Not so good

- Costs money per machine
- Needs own LPAR & resources to run
- Installing multiple daemons everywhere
- Needs time/training to get the full benefit because it is so flexibly (good)

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topas -c and topasrec

Questionnaire

- Heard of it?
- Had a look?
- Tried it?
- Still using it?
- Paid for support?

- Know where it came from?

topas -C and topasrec

- topas -C
 - Only online
 - Only AIX/VIOS

```

Topas CEC Monitor          Interval: 10          Thu Jul 28 17:04:57 2006
Partition Info            Memory (GB)          Processor
Monitored : 6            Monitored :24.6        Monitored :1.2        Shr Physical Busy: 0.30
UnMonitored: -          UnMonitored: -        UnMonitored: -        Ded Physical Busy: 2.40
Shared : 3              Available :24.6        Available : -
Dedicated : 3          UnAllocated: 0        UnAllocated: -        Hypervisor
Capped : 1             Consumed : 2.7        Shared : 1.5          Virt. Context Switch: 632
Uncapped : 1           Dedicated : 5          Dedicated : 5          Phantom Interrupts : 7
                          Pool Size : 3
                          Avail Pool :2.7
-----shared-----
Host      OS   M Mem InU Lp  Us Sy  Wa Id  PhysB  Ent  %EntC Vcsw Phi
-----
ptoolsl3 A53 c 4.1 0.4 2 14 1 0 94  0.08 0.50 15.0 208 0
ptoolsl2 A53 C 4.1 0.4 4 20 13 5 62  0.18 0.50 36.5 219 5
ptoolsl5 A53 U 4.1 0.4 4 5 0 0 95  0.08 0.50 7.6 205 2
-----dedicated-----
ptoolsl1 A53 S 4.1 0.5 4 20 10 0 70  0.30
ptoolsl4 A53 4.1 0.5 2 100 0 0 0  2.00
ptoolsl6 A52 4.1 0.5 1 5 5 12 88  0.10
    
```

- topasrec
 - topasout
 - CEC Analyser

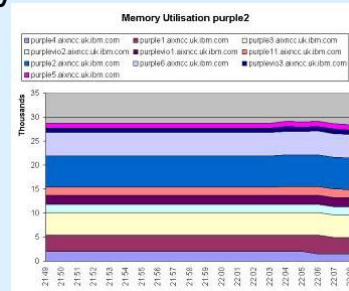
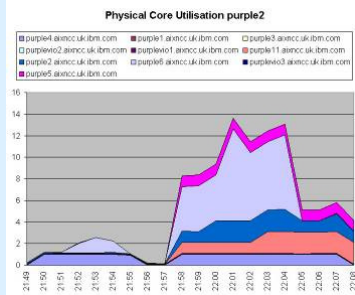
topas CEC recording

- https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Power%20Systems/page/topas_CEC_Analyser

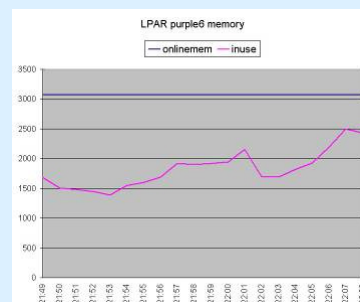
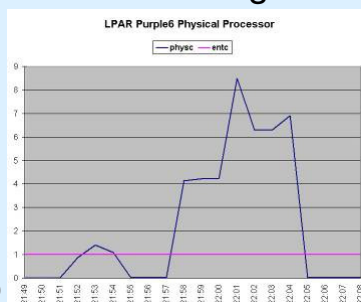
topas generally

- <https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Power%20Systems/page/Performance%20Monitoring%20with%20topas>

■ Whole machine summary



■ Drill down to Single LPAR stats



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topasrec - Good and bad

Good

- Single recording on one AIX/VIOS for the whole machine stats (remotely connects to xmtopas)
- Simple to create

Bad

- Post-mortem only - next day (not live)
- Excel - not web
- Has problems scaling
 - From my memory: above a few dozen LPARs Excel fails
 - Needs checking again!

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LPAR2RRD

LPAR  RRD

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Whole Machine Monitoring

Questionnaire

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- Tried it?
- Still using it?
- Paid for support?

- Know where it came from?

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LPAR2RRD

- <http://www.lpar2rrd.com/>
- <http://www.lpar2rrd.com/>

- LPAR2RRD offered as open source - free to use
- Can purchase support from \$1500 per customer
- Extracts the HMC data about LPARs via cron
- Then rrdtool used to save data & graph it
- New version can dynamically get update
- Updates add new features regularly

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LPAR  RRD

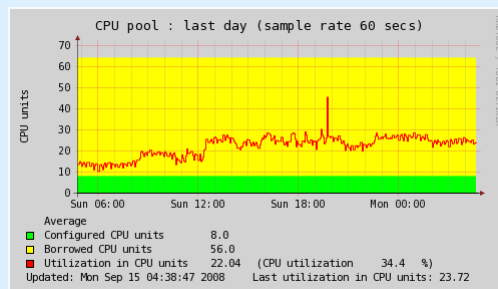
Major Advantages

- Install
 - Pretty good install details on the website (1-2 hour)
 - Needs its own LPAR + webserver (apache) and other open source packages
- Just connects to the HMC with read-only account
 - No massive install of agents on 100's of LPARs
- Includes history (unlike ISD without ITM)

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LPAR2RRD – uses rrdtool

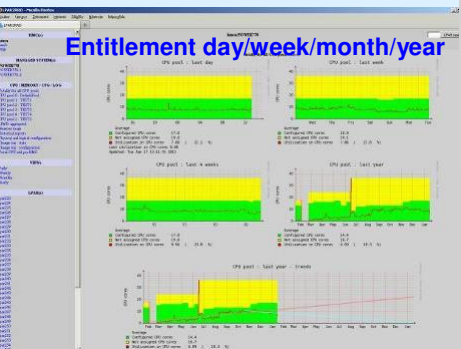
- rrdtool is an open source utility
- Fixed size “database”,
 - round robin,
 - Summarise & cascade
- Good for storing stats
 - Create your rrd
 - Regularly add stats
 - Extract any time period and it gets
 - Generates graph images ready for a website



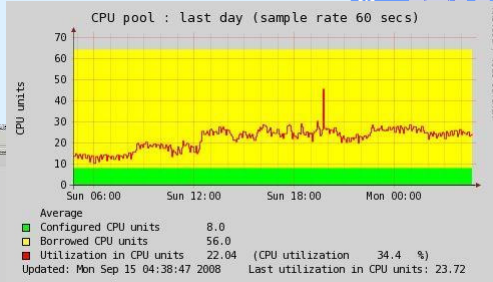
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LPAR2rrd Examples

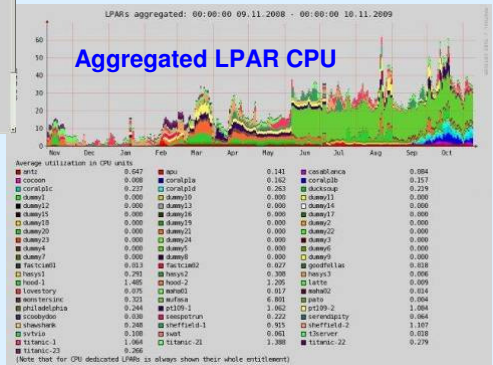
Entitlement day/week/month/year



Trend Prediction Graph



Aggregated LPAR CPU

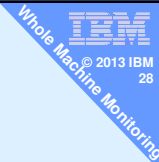


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LPAR2rrd

- Project website
 - <http://sourceforge.net/projects/lpar2rrd/?source=directory>
- LPAR2RRD Home Website
 - <http://lpar2rrd.com/>
- LAR2RRD Home Website demo
 - <http://demo.lpar2rrd.com/lpar2rrd/>
 - <http://demo.lpar2rrd.com/lpar2rrd/>
- Nigel's
 - <http://purple7.aixncc.uk.ibm.com/lpar2rrd/index.html>
 - <http://pi.aixncc.uk.ibm.com/lpar2rrd/index.html>

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LPAR2rrd

Good

- Simple setup to HMC read-only
- Web-based so freely viewable
- Free
- Growing popularity
- Once found by users they run it long term
- Could be run on Linux machine or LPAR

Bad

- Pre-reqs RPM's mean it's a dedicated LPAR for AIX
- Not full performance tuning detail level
(no disk, network, process, ... stats)

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HMCscanner

Questionnaire

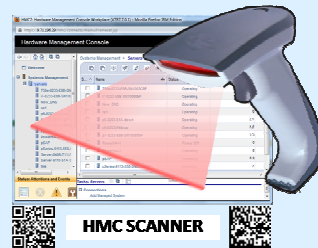
- Heard of it?
- Had a look?
- Tried it?
- Still using it?
- Paid for support?

- Know where it came from?

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HMC Scanner

- **Creates an Excel spreadsheet of your**
 - HMC, Power System Servers and LPAR and performance stats
- Another brilliant Java tool from Federico Vagnini (IBM Italy)
- Public website
 - <https://www.tinyurl.com/HMCscanner>
 - <https://www.tinyurl.com/HMCscanner>
- Just updated to version 0.9



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HMC Scanner

1. Just download to Windows 7 in a directory
2. Unzip it
3. Open "Command Prompt"
4. cd to the directory with the .bat file
5. Run:
hmcscanner.bat hmc.acme.com hscroot -p secretpassword -stats
6. Double click the file and be amazed
7. Then phone Federico's manager and suggest Federico deserves a pay rise



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Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

```
C:\Users\IBM_ADMIN>
C:\Users\IBM_ADMIN>
```


Volume in drive C is SSD
Volume Serial Number is 7EB1-E1E2

```
Directory of C:\Users\IBM_ADMIN\My Documents\HMCscanner\HMCscanner_08

08/03/2013 13:08 <DIR>          .
08/03/2013 13:08 <DIR>          ..
08/03/2013 13:08             1,116 BOUNCYCASTLE_LICENSE
08/03/2013 13:08             31,605 commons-logging.jar
08/03/2013 13:08             2,806 COMMONS_LICENSE
08/03/2013 13:08              352 hmcScanner.bat
08/03/2013 13:08             51,682 hmcScanner.jar
08/03/2013 13:08              486 hmcScanner.ksh
08/03/2013 13:05         4,527,182 hmcScanner_08.zip
08/03/2013 13:08             19,112 j2ssh-ant-0.2.9.jar
08/03/2013 13:08             341,207 j2ssh-common-0.2.9.jar
08/03/2013 13:08             355,141 j2ssh-core-0.2.9.jar
08/03/2013 13:08            110,582 j2ssh-daemon-0.2.9.jar
08/03/2013 13:08             956,106 jce-jdk13-119.jar
08/03/2013 13:08             1,053,392 jcl-2.6.12-ok_per_java5.jar
08/03/2013 13:08              1,053,392 jcl.jar
08/03/2013 13:08             17,987 LICENSE
08/03/2013 13:08             2,754 MERCES_LICENSE
08/03/2013 13:08             895,924 xercesImpl.jar
08/03/2013 13:08            123,795 xmlParserAPIs.jar
                18 File(s)          9,538,531 bytes
                2 Dir(s)          651,083,776 bytes free

C:\Users\IBM_ADMIN\My Documents\HMCscanner\HMCscanner_08>
```


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```
C:\Users\IBM_ADMIN\My Documents\HMCscanner\HMCscanner_08>hmcscanner.bat hmc11.ai
xncc.uk.ibm.com hscroot -p -stats
hmcScanner version 0.8
Detecting manager type: HMC
Detecting managed systems: 15 systems present.
Starting managed system configuration collection:
Scanning bronze-8203-E4A-SN10E0A21: ..... DONE
Scanning brown-9115-505-SN6509E5A: ..... DONE
Scanning diamond-8233-E8B-SN100271P: ..... DONE
Scanning gold-8203-SN10E0A11: ..... DONE
Scanning green-8231-E2B-SN06FC44P: ..... DONE
Scanning grey-9117-MMA-p578-8P: ..... DONE
Scanning indigo-8231-E1C-SN0659FDR: ..... DONE
Scanning lime-9115-505-SN10E6DBF: ..... DONE
Scanning oldlace-65BD12E: ..... DONE
Scanning orange-8203-E4A-SN10E0A51: ..... DONE
Scanning pink-9115-505-SN65000EA: ..... DONE
Scanning plum-8204-E8A-SN105C0B0: ..... DONE
Scanning purple-9117-MMB-SN100525P: ..... DONE
Scanning red-8203-E4A-SN10E0A41: ..... DONE
Scanning silver-8203-SN10E0A31: ..... DONE
Collection successfully finished. Data is in C:\Users\IBM_ADMIN\My Documents\HMC
scanner\HMCscanner_08\hmc11.ai\xncc.uk.ibm.com\
Performance data collection:
Loading bronze-8203-E4A-SN10E0A21: ..... DONE
Loading brown-9115-505-SN6509E5A: ..... DONE
Loading diamond-8233-E8B-SN100271P: ..... DONE
Loading gold-8203-SN10E0A11: ..... DONE
Loading green-8231-E2B-SN06FC44P: ..... DONE
Loading grey-9117-MMA-p578-8P: ..... DONE
Loading indigo-8231-E1C-SN0659FDR: ..... DONE
Loading lime-9115-505-SN10E6DBF: ..... DONE
Loading oldlace-65BD12E: ..... DONE
Loading orange-8203-E4A-SN10E0A51: ..... DONE
Loading pink-9115-505-SN65000EA: ..... DONE
Loading plum-8204-E8A-SN105C0B0: ..... DONE
Loading purple-9117-MMB-SN100525P: ..... DONE
Loading red-8203-E4A-SN10E0A41: ..... DONE
Loading silver-8203-SN10E0A31: ..... DONE
Starting Excel file creation. Done: C:\Users\IBM_ADMIN\My Documents\HMCscanner\H
MCscanner_08\hmc11.ai\xncc.uk.ibm.com_scan.xls

C:\Users\IBM_ADMIN\My Documents\HMCscanner\HMCscanner_08>
```

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Demo: See website for an example

C:/.../My Documents/HMCscanner/HMCscanner_09

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Output →

.bat ugh!

.ksh ☺

Name	Date modified	Type	Size
hmc11.aixncc.uk.ibm.com_scan.xls	08/03/2013 13:23	Microsoft Excel W...	470 KB
BOUNCYCASTLE.LICENSE	08/03/2013 13:08	LICENSE File	2 KB
COMMONS.LICENSE	08/03/2013 13:08	LICENSE File	3 KB
commons-logging.jar	08/03/2013 13:08	Executable Jar File	31 KB
hmcScanner.bat	08/03/2013 13:08	Windows Batch File	1 KB
hmcScanner.jar	08/03/2013 13:08	Executable Jar File	51 KB
hmcScanner.ksh	08/03/2013 13:08	KSH File	1 KB
jzssh-ant-0.2.9.jar	08/03/2013 13:08	Executable Jar File	19 KB
jzssh-common-0.2.9.jar	08/03/2013 13:08	Executable Jar File	334 KB
jzssh-core-0.2.9.jar	08/03/2013 13:08	Executable Jar File	347 KB
jzssh-daemon-0.2.9.jar	08/03/2013 13:08	Executable Jar File	108 KB
jce-jdk13-119.jar	08/03/2013 13:08	Executable Jar File	928 KB
jxl.jar	08/03/2013 13:08	Executable Jar File	1,029 KB
jxl-2.6.12-ok_per_java5.jar	08/03/2013 13:08	Executable Jar File	1,029 KB
LICENSE	08/03/2013 13:08	File	18 KB
XERCES.LICENSE	08/03/2013 13:08	LICENSE File	3 KB
xercesImpl.jar	08/03/2013 13:08	Executable Jar File	875 KB
xmlParserAPIs.jar	08/03/2013 13:08	Executable Jar File	121 KB
hmcScanner_08.zip	08/03/2013 13:05	Compressed (zipp...	4,422 KB
hmc11.aixncc.uk.ibm.com	08/03/2013 13:20	File folder	
hmc11.uk.ibm.com	08/03/2013 13:17	File folder	

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HMC Scanner

- <http://tinyurl.com/HMCscanner>
- Information is organized in tabs:
 - System summary: name, serial #, cores, RAM, service processor IP for each server
 - LPAR Summary: all LPAR by server, status, environment, version, processor mode
 - LPAR CPU: processor configuration of each LPAR
 - LPAR MEM: memory configuration of each LPAR
 - Physical Slots: with LPAR assignment, description, physical location & drc_index
 - Virtual Ethernet: network configuration of each virtual switch and each LPAR
 - Virtual SCSI: config of all virtual SCSI adapters, both client and server
 - VSCSI Map: devices mapped by each VIOS to partitions
 - Virtual Fibre: vFC config of client & server with id of physical adapter assigned
 - SW Cores: LPAR & VP pool config matrix to # of software licenses.
 - CPU Pool Usage: easy to read history of CPU usage of each system. **
 - Sys RAM Usage: easy to read history of physical RAM assignment to each LPAR.**
 - LPAR CPU Usage: easy to read history of CPU usage of each LPAR.
 - ** Based on last 12 months of Islparutil data.

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HMCscanner

Good

- Simple setup
- Only needs a HMC password
- 100% Accurate configuration data
- Perfect for whole machine settings/tuning
 - E too low, VP too high, Virtual to Physical CPU ratio
- Rapidly improving – so make a suggestion



Bad

- Excel - perhaps daily save to a website to allow simple sharing
- Perhaps next release will have some basic graphs

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nmon2rrd or nmon2web

Questionnaire

- Heard of it?
- Had a look?
- Tried it?
- Still using it?
- Paid for support?

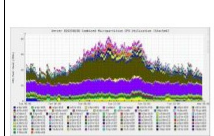
- Know where it came from?

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nmon2[rrd|web]

- <https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Power%20Systems/page/Other%20Performance%20Tools>
- Or <http://tinyurl.com/newAIXwiki> then click "Other Performance tools"

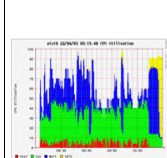
nmon2web- Bruce Spencer's Perl tools to generate web pages from multiple nmon files via rrdtool



nmon files are used to aggregate performance across a shared server and display as a web page

- The nmon data from many AIX or Linux machines can be automatically used to generate web pages
- The web pages include the configuration and performance graphs, non-standard AIX settings and change history
- Setting up the nmon2web tool is trivial. However, it requires a web server with Apache, PHP and rrdtool.
- Take this link for downloading nmon2web [nmon2web](#) Note:This is a link to Open Source website not on MyDeveloperWorks
- Take this link for the [nmon2web README](#) Note:This is a link to Open Source website not on MyDeveloperWorks
- Take this link to learn more about [rrdtool](#) Note:This is a link to Open Source website not on MyDeveloperWorks

nmon2rrd - Nigel Griffiths' C tools to show convert nmon files ready for rrdtool



This tool is written in C and the source code provided to allow user fixes and learning

- nmon2rrd generates from a single nmon output file
 - a script to create suitable rrdtool databases
 - a script to load the rrdtool databases from reformatted nmon data
 - a script to extract the data in graph file ready for a website
 - a index.html web file which pulls in the graphs and configurations information

This can be used as the basis for writing your own automating nmon file to a website but operates on a single file

- You have to handle the transport of nmon files to the web server, scripting to run nmon2rrd and the web server itself.

Take a look at nmon2web from Bruce (above), if you want more automation from the tool itself as a start point

- Take this link to the nmon page a search for "nmon2rrd" section [nmon2rrd](#)
- Take this link to learn more about [rrdtool](#) Note:This is a link to Open Source website not on MyDeveloperWorks

3

nmon2rrd

- Simple C filter program
- `nmon2rrd -f <nmonfile> -d <directory> -x`
- Generates
 - Script to create rrd files
 - Script to load rrd
 - Script to create performance graphs
 - Runs these script (-x)
 - Web server index.html with some config & graphs
- Demo Sample (internal to IBM)
 - <http://w3.aixncc.uk.ibm.com/nmon2rrd/>
 - <http://w3.aixncc.uk.ibm.com/nmon2rrd>

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nmon2rrd Good and Bad

Good

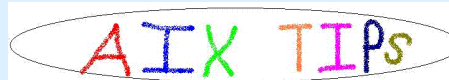
- All processing on AIX
- Creates a website for all to access
- Code released as a sample so C programs can do what ever they like.

Bad

- Its just the filter
- You have to collect the nmon files, organise hierarchy of machines and days, script etc.
- Post-mortem only

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nmon2web



- IBMer Bruce Spencer
- Currently difficult to find the download
 - Apparently the web server failed
- Has a very committed user base
- German customer with 20+ large Power 795 & wall-to-wall nmon2web with 500 LPARs
- Includes regular adding of nmon data to permanent RRD files to build up history
- Then web front-end allows any stats over any time graphing and comparing different times

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nmon2web



- Temporary website

<http://ca.astound.net/~baspence/AIXtip/nmon2web.htm>

- Current version nmon2web_20120727.tar.gz

- aixtipshead.gif
- index.html
- nmon2web_20120730.pl
- nmon2web.cgi
- readme.html

User interface – sorry no sample graphs

Automating "nmon" to Track Aggregated Utilization of a Partitioned Server

This tip provides a way to track and display aggregate utilization of partitioned servers on a centralized web server. It also displays daily and long term performance charts for individual hosts, as well as change control logs for AIX tuning and server hardware configuration.

The setup uses `nmon`, `rdtool` and the files provided in this tip. The `nmon` utility gathers performance data over one or more AIX hosts (micropartitions, LPAR or standalone servers). The resulting `nmon` output files are collected on a central web server, where the `nmon2web.pl` script automatically creates web pages for new hosts, sorts the data by host/physical server, loads the performance data into "rdtool" databases and creates the daily and long term performance charts for individual partitions. Aggregated performance charts are created dynamically using the `nmon2web.cgi` CGI program that runs on the web server. The `index.html` (this page) is the entry point for accessing the data on the web server.

The provided Perl scripts are provided as-is, and are not supported by IBM. I will support as time permits. Send bug reports to baspence@us.ibm.com. See the [readme.html](#) for setup instructions.

Updates:
4/27/2009 - changed index.html to display unique host-serial number (for partition mobility)

Display a Daily Performance Chart for a Host
Server Name
Date

Display Long Term Performance Trends for a Host
Server Name

Display the Aggregate Utilization on a Partitioned System
System Serial Number
Start Date
End Date

Servers Ordered by Serial Number (Click Server Name for configuration)

Serial Number	Server Name	Partition Type	First Record Date	Last Record Date
			mm/dd/yyyy	mm/dd/yyyy
02062DCB5	chiwool1	Dedicated	05/09/2010	05/04/2010

nmon2rdd / nmon2web

Good

- nmon2web better for a website repository and building historic data for graphing
- Free

Bad

- You have to sort out transporting nmon files
- Tells you what happened yesterday or longer ago

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Ganglia for POWER Systems

Questionnaire

- Heard of it?
- Had a look?
- Tried it?
- Still using it?
- Paid for support?

- Know where it came from?

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Ganglia



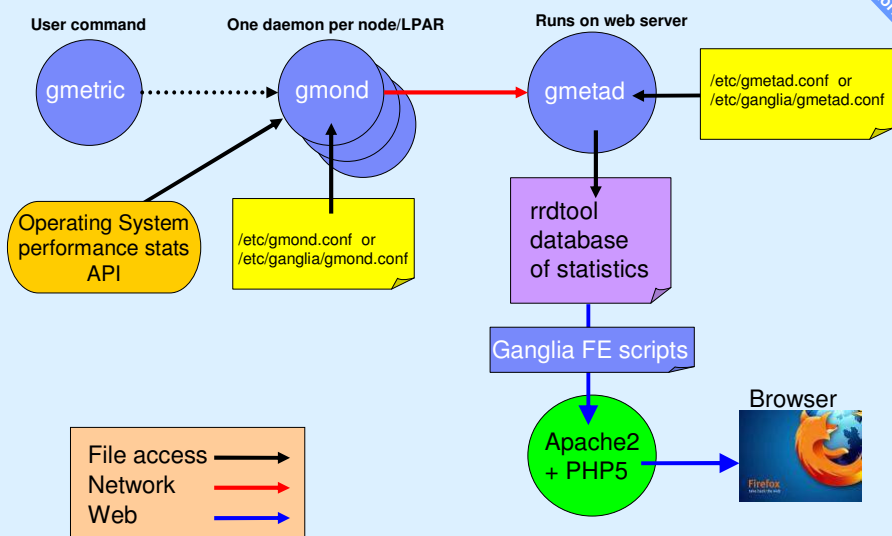
- Ganglia - open source monitoring solution
- Supports many operating systems
- Light weight highly scalable to 1000's of nodes
- Data stored in rrdtool
- Display via website
- Extremely flexible whole machine, node and drill down with time ranges and aggregation



Dr. Michael Perzl (mperzl@de.ibm.com)

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Ganglia – Data Flow



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Ganglia additional Power5/6/7 Metrics

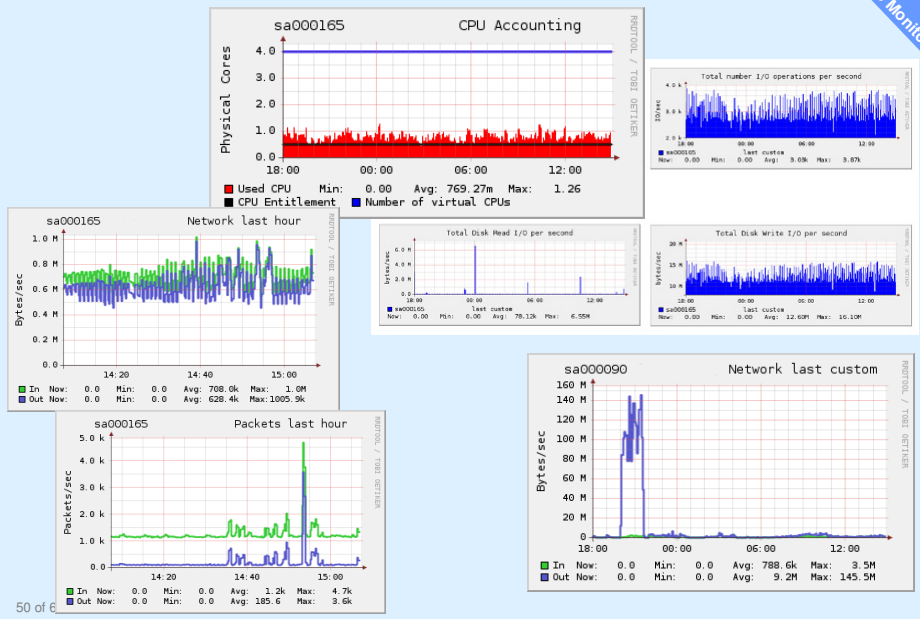
22 additional metrics for AIX & PowerLinux:



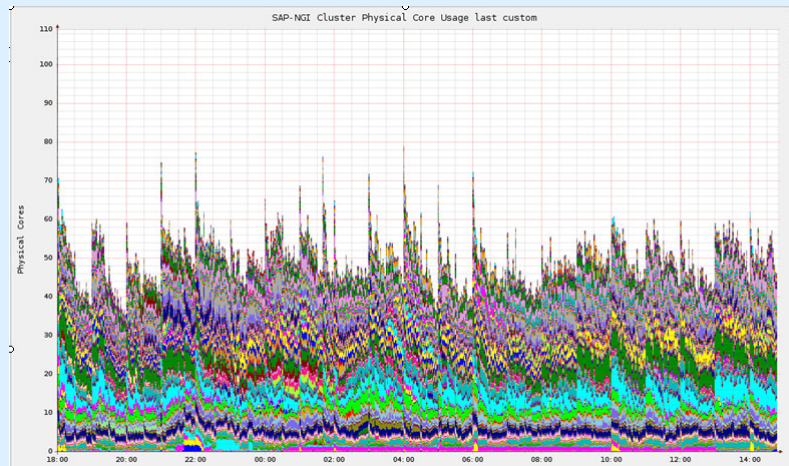
- | | |
|--------------------|-----------------|
| 1. capped | 11. fwversion |
| 2. cpu_entitlement | 12. kernel64bit |
| 3. cpu_in_lpar | 13. lpar |
| 4. cpu_in_machine | 14. lpar_name |
| 5. cpu_in_pool | 15. lpar_num |
| 6. cpu_pool_idle | 16. modelname |
| 7. cpu_used | 17. oslevel |
| 8. disk_read | 18. serial_num |
| 9. disk_write | 19. smt |
| 10. disk_iops | 20. splpar |
| | 21. weight |

- For Power6/7 only (at least AIX V5.3 TL07 required):
- cpu_in_syspool (on a Power5 system: same value as cpu_in_pool)

Ganglia sample graphs



Ganglia aggregate LPARs



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Ganglia

Good

- Free
- Very efficient
- Aggregate LPAR view and drill down to LPAR
- Popular
- Any UNIX operating system and Linux
- Flexible period graphs etc.
- Once found by users they run it long term

Bad

- Not full performance tuning
 - no individual disks or network adapter or processes

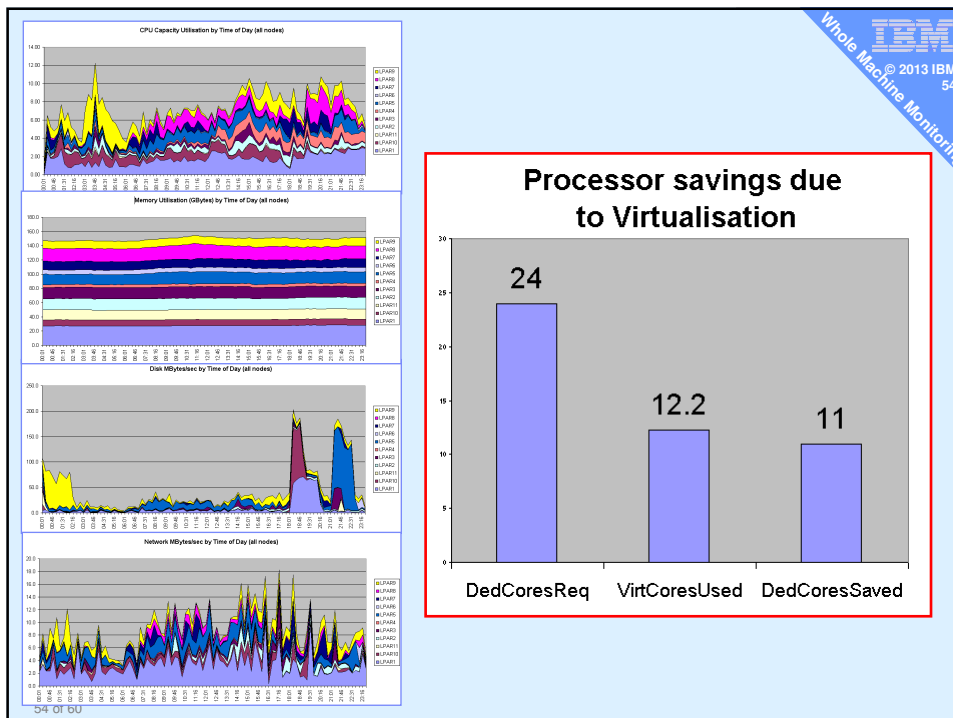
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nmon Consolidator v1.4.1



- Produces overview charts for CPU, Memory, Network, Disk
 - Fast & simple code, pre-generated charts
 - 150 snapshot limit ←
- Multiple nmon/topasout files for:
 - ALL LPARs of one machine
 - Clustered system – Oracle RAC / HPC
 - Modelling changes from Dedicated to Shared CPU LPARs
 - Server consolidation Modelling
 - Reporting actual or potential savings from virtualisation
- Trend charts - processing multiple files from 1 LPAR

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nmon Consolidator

Good

- For one time study or consolidation estimate
- Good at doing the maths
- Aggregate LPAR view

Bad

- Have to collect lots of nmon files
- Maximum numbers of snapshots in nmon files (150)
- Manually run Excel = man-power intensive
- No shared access to the graphs

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3rd party tools and RDBMS tools

There are loads of advanced products out there
Examples, I have come across:

- BMC
- Teamquest
- Mid-range Performance Group (MRG)
- Galileo Explorer

Offer data collection, historic database, overview and
drill down, aggregate & trending/prediction
... at a cost

- Others add nmon data to a RDBMS
 - Then use tools to report data / generate graphs
- And many more methods

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Raw HMC extract commands + generate report/website

- Anyone doing this?
- Anyone NOT doing this?

- Seems every script-jockey loves this challenge!
 - ssh on to the HMC and run commands
 - lshwres
 - lsiparutil

- Our output is here:
 - <http://w3.aixncc.uk.ibm.com/ats-systems/today.html>

- Should we develop a repository of scripts?

Summary – Whole Machine Monitoring

- Tools
 - Performance Management (PM) for Power Systems
 - IBM Tivoli Monitoring (ITM)
 - Topas –C and Topasrec
 - LPAR2rrd
 - HMCscanner
 - nmon2[rrd|web]
 - Ganglia for POWER
 - 3rd party Advanced tools
 - HMC extract and generate

- I hope 1 or 2 are new to you & you will give them a try very soon