hmcScanner & pGraph

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In a nutshell...

- Personal projects, not an IBM product
  - Started over 20 years ago
  - Do not open IBM Case on them, send a mail to vagnini@it.ibm.com
  - Described on IBM Support site: http://ibm.biz/hmcScanner and https://ibm.biz/pGraph-perf
- hmcScanner
  - Collect to HMC and detect all managed systems
  - Download hardware configuration
  - Download CPU usage consumption
  - Generate XLS and HTM report
- Minimal requirements
  - Any operating system with Java 1.8 or higher
  - SSH connection and credentials to HMC for hmcScanner
- pGraph
  - Visualize performance data
  - Time zoom on data
  - Aggregate data

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hmcScanner

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Sample Excel reports

Managed systems

Managed System	Status	Type Model	Serial	GHz	CPU Type	Tot Cores	Act Cores	Deco nf Cores	Curr Avail Cores	Pend Avail Cores	Ded Cores	Pool Size	Virt Procs	#LPAR	Tot GB	Act GB	Deconf GB	Firm GB	Curr Avail GB	Pend Avail GB	Perf Sample Rate
L922-seg	Operating	9008-22L	7878B8A	2.50	PowerPC_POWER9	20	20	0	5.55	5.55	0	20	24	24	512.00	512.00	0.00	17.75	2.50	2.50	60
Server-8286-41A-SN7838FEX	Power Off	8286-41A	7838FEX								0		0	0	64.00	64.00	NaN	4.06	0.00	0.00	60
Server-8286-42A-SN2177CEV	Operating	8286-42A	2177CEV	4.16	PowerPC_POWER8	8	8	0	0.80	0.80	1	7	30	29	256.00	256.00	0.00	9.50	0.00	0.00	0
Server-9009-22A-SN78C3200	Operating	9009-22A	78C3200	2.50	PowerPC_POWER9	20	20	0	3.70	3.70	0	20	54	46	2,048.00	2,048.00	0.00	42.25	754.75	754.75	60

LPAR – CPU view

Name	Status	Mode	Min CPU	Curr CPU	Tgt CPU	Max CPU	Min Ent	Curr Ent	Tgt Ent	Max Ent	Weight	Sharing Mode	Pool Name	Managed System Name	Managed System Serial
tfv-rhel8	On	shared	1	2		8	0.25	0.50		4.00	128	uncap	DefaultPool	L922-seg	7878B8A
tfv-vinciotti	On	shared	1	1		4	0.05	0.10		2.00	128	uncap	DefaultPool	L922-seg	7878B8A
tfv-temp	On	shared	1	1		1	0.05	0.05		0.05	128	uncap	DefaultPool	L922-seg	7878B8A
tfb-sno	On	shared	1	2		4	0.10	0.50		1.00	128	uncap	DefaultPool	L922-seg	7878B8A
tfv-cassaedile	off	shared	1	0	2	4	0.05	0.00	0.50	2.00	0	uncap	DefaultPool	L922-seg	7878B8A
tfv-sno	On	shared	1	2		4	0.05	0.50		2.00	128	uncap	DefaultPool	L922-seg	7878B8A
tfv-gpfs2	On	shared	1	2		8	0.05	0.30		4.00	128	uncap	DefaultPool	L922-seg	7878B8A
tfv-gpfs1	On	shared	1	2		8	0.05	0.30		4.00	128	uncap	DefaultPool	L922-seg	7878B8A

Virtual Fibre channel view

LPAR name	Slot	State	Required	Type	Remote LPAR	Remote Slot	WWPN #1	WWPN #2	Physical FC Slot	Managed System Name	Managed System Serial
L922-vios1	31	On	False	server	tfv-rhel8	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	25	On	False	server	tfv-vinciotti	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	24	On	False	server	tfv-temp	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	23	On	False	server	tfb-sno	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	22	On	False	server	tfv-cassaedile	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	21	On	False	server	tfv-sno	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	20	On	False	server	tfv-gpfs2	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	19	On	False	server	tfv-gpfs1	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A

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Sample HTML view

Header
HMC
Service Agent
Systems
OnOff
OnOff Log
LPAR Summary
LPAR Profiles
LPAR CPU
LPAR Mem
Physical Slots
IO Children
Virtual Ethernet
Virtual SCSI

Managed System	Status	Type Model	Serial	GHz	CPU Type	Tot Cores	Act Cores	Deconf Cores	Curr Avail Cores	Pend Avail Cores	Ded Cores	Pool Size	Virt Procs	#LPAR	Tot GB	Act GB	Deconf GB	Firm GB	Curr Avail GB	Pend Avail GB	Perf Sample Rate	Mgr #1	Mgr #2	Prim SP	Sec SP	EC Number	IPL Level	Activated Level	Deferred Level
L922-seg	Operating	9008-22L	7878B8A	2.5	PowerPC_POWER9	20	20	0	5.55	5.55	0	20	24	24	512.0	512.0	0.0	17.75	2.5	2.5	60	172.17.251.91		172.17.251.168		01VL940	41	41	None
Server-8286-41A-SN7838FEX	Power Off	8286-41A	7838FEX								0		0	0	64.0	64.0	NaN	4.06	0.0	0.0	60	172.17.251.91		172.17.251.159		01SV860	NaN	245	None
Server-8286-42A-SN2177CEV	Operating	8286-42A	2177CEV	4.16	PowerPC_POWER8	8	8	0	0.8	0.8	1	7	30	29	256.0	256.0	0.0	9.5	0.0	0.0	0	172.17.251.91		172.17.251.152		01SV860	245	245	None
Server-9009-22A-SN78C3200	Operating	9009-22A	78C3200	2.5	PowerPC_POWER9	20	20	0	3.7	3.7	0	20	54	46	2048.0	2048.0	0.0	42.25	754.75	754.75	60	172.17.251.91		172.17.251.33		01VL940	61	61	None

Managed systems

OnOff
OnOff Log
LPAR Summary
LPAR Profiles
LPAR CPU
LPAR Mem
Physical Slots
IO Children
Virtual Ethernet
Virtual SCSI
VSCSI Map
Virtual Fibre
VIOS disks

Name	Status	Mode	Min CPU	Curr CPU	Tgt CPU	Max CPU	Min Ent	Curr Ent	Tgt Ent	Max Ent	Weight	Sharing Mode	Pool Name	Pool Resv	Pool Max	VP:E %	Managed System Name	Managed System Serial
tfv-rhel8	On	shared	1	2		8	0.25	0.5		4.0	128	uncap	DefaultPool			400.0	L922-seg	7878B8A
tfv-vinciotti	On	shared	1	1		4	0.05	0.1		2.0	128	uncap	DefaultPool			MicroLPAR	L922-seg	7878B8A
tfv-temp	On	shared	1	1		1	0.05	0.05		0.05	128	uncap	DefaultPool			MicroLPAR	L922-seg	7878B8A
tfb-sno	On	shared	1	2		4	0.1	0.5		1.0	128	uncap	DefaultPool			400.0	L922-seg	7878B8A
tfv-cassaedile	off	shared	1	0	2	4	0.05	0.0	0.5	2.0	0	uncap	DefaultPool			Off	L922-seg	7878B8A
tfv-sno	On	shared	1	2		4	0.05	0.5		2.0	128	uncap	DefaultPool			400.0	L922-seg	7878B8A
tfv-gpfs2	On	shared	1	2		8	0.05	0.3		4.0	128	uncap	DefaultPool			666.67	L922-seg	7878B8A
tfv-gpfs1	On	shared	1	2		8	0.05	0.3		4.0	128	uncap	DefaultPool			666.67	L922-seg	7878B8A

LPAR CPU view

OnOff
OnOff Log
LPAR Summary
LPAR Profiles
LPAR CPU
LPAR Mem
Physical Slots
IO Children
Virtual Ethernet
Virtual SCSI
VSCSI Map
Virtual Fibre
VIOS disks
SEA

LPAR name	Slot	State	Required	Type	Remote LPAR	Remote Slot	WWPN #1	WWPN #2	Physical FC Slot	Managed System Name	Managed System Serial
L922-vios1	31	On	False	server	tfv-rhel8	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	25	On	False	server	tfv-vinciotti	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	24	On	False	server	tfv-temp	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	23	On	False	server	tfb-sno	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	22	On	False	server	tfv-cassaedile	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	21	On	False	server	tfv-sno	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	20	On	False	server	tfv-gpfs2	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	19	On	False	server	tfv-gpfs1	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A
L922-vios1	18	On	False	server	TMG_RHEL9-778bc363-00000039	3			U78D3.001.WZS008G-P1-C3-T1	L922-seg	7878B8A

Virtual Fibre channel view

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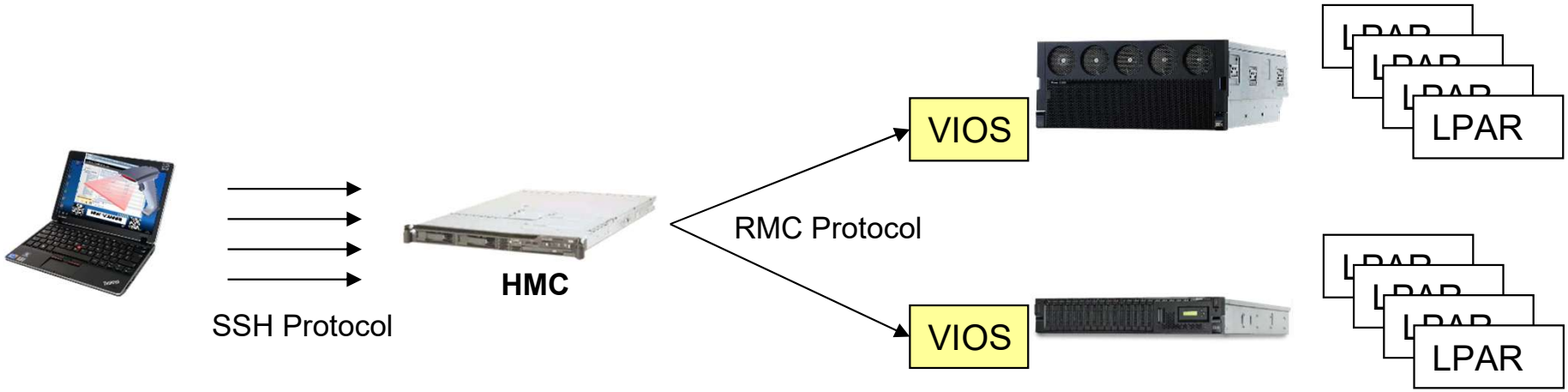
How the scanner works



hmcScannner only connects to HMC

- SSH protocol only
- HMC CLI is exploited
- Run commands that only query data (no changes)

No connection with LPARs

- No information from LPAR's OS

HMC CLI allows commands to be executed on VIOS

- A working RMC between HMC and VIOS is required
- These commands are exploited to scan VIOS
- padmin user access

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How to run the scanner

HMC_IP user password

```
PS C:\Federico\Eclipse-Workspace\HMC Scanner 0.11\src\hmcScanner\package\prove> .\hmcscanner.bat 172.17.251.91 hscroot -p abc123
C:\Federico\Eclipse-Workspace\HMC Scanner 0.11\src\hmcScanner\package\prove\
Detected Java version: 17.0.4.1
Available Java version is correct (Java 1.8 or higher).
hmcScanner version 0.11.54a2
Log file(s) available: hmcScanner-*-*.log
Detecting manager type: HMC
Looking for Enterprise System Pools: none detected
Detecting managed systems: 4 systems present.
Starting managed system configuration collection:
   Scanning L922-seg:                  ..............................vvvvvvvvvvvvvv DONE
   Scanning Server-8286-41A-SN7838FEX: ..............................  DONE
   Scanning Server-8286-42A-SN2177CEV: ..............................vvvvvvvvvvvvvvvvvvvvvvvvvvvvvv DONE
   Scanning Server-9009-22A-SN78C3200: ..............................vvvvvvvvvvvvvvvvvvvvvvvvvvvvvv DONE
   scanning service agent configuration   ............  DONE!
Collection successfully finished. Data is in C:\Federico\Eclipse-Workspace\HMC Scanner 0.11\src\hmcScanner\package\prove\172.17.251.91\
Performance data collection:
   Loading L922-seg:                  ........................... .....
   Loading Server-8286-41A-SN7838FEX: . .
   Loading Server-8286-42A-SN2177CEV: . .
   Loading Server-9009-22A-SN78C3200: ........................................... ........
............ DONE
Starting Excel file creation. Done: C:\Federico\Eclipse-Workspace\HMC Scanner
0.11\src\hmcScanner\package\prove\172.17.251.91_20250114_134826_scan.xls
```

Commands executed on HMC

Commands executed on VIOS

Detected managed systems

Performance data collection

Excel report in XLS format

Many other options are available

- Run the scanner with no options and look at help

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Example of hmcScanner usage

- Documentation of your infrastructure
  - Run the scanner periodically to keep a setup history
- Inspect system to check improvements or possible issues
  - Instant view of allocated and free resources (CPU, RAM, physical I/O)
  - Virtualization configuration (Eth, vSCSI, virtualFibre, NPIV vs physical resources)
  - Physical core usage during last months
- Capacity planning
  - Use collected data to evaluate your future
  - Quick look at data in the report or use the data with your own tools

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Simple approach – use Excel capabilities

- Browse sheets looking for the information you need
  - Enable filters, focus on selected systems, make sorting
  - Use excel to sum column’s value
- Search for unused resources
- Look for possible overcommitted resources
- Look at CPU consumption tabs
  - I personally prefer hourly data, I use daily only for trends
  - Look for yellow cells (usage >= 70%) and red cells (>90%)
  - Pay attention to bold cells: average usage above entitled capacity

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CPU usage example

Red	***Usage >= 90% of max allowed size***
Yellow	***Usage >= 70% of max allowed size***
Bold	***Usage > entitled capacity***
LPAR color	***Colored cells >= 25.0% of total (yellows include reds)***

Average LPAR Usage

	LPAR1	LPAR2	LPAR3	LPAR4	LPAR5
Hours	620	572	532	550	550
Reds %	3.71	0.00	99.81	0.00	2.18
Yellows %	28.71	0.00	100.00	0.00	41.27
Over Cap %	31.77	0.00	0.00	2.55	78.73
Max	2.84	0.72	2.94	2.45	7.59
Avg	1.69	0.18	2.81	0.73	5.32
90% <=	2.59	0.25	2.91	1.42	6.77
95% <=	2.66	0.28	2.92	1.86	7.00
Last Ent	2.00	3.00	3.00	2.00	4.50

Single LPAR statistics – colored statistics

Date					
2023/10/15 1	1.98	0.17	2.79	0.48	***4.87***
2023/10/15 2	***2.22***	0.15	2.78	0.56	***5.22***
2023/10/15 3	1.91	0.28	2.77	0.53	***5.21***
2023/10/15 4	1.70	0.19	2.81	0.54	3.86
2023/10/15 5	***2.50***	0.17	2.76	0.69	3.61
2023/10/15 6	***2.73***	0.15	2.75	0.50	3.84
2023/10/15 7	***2.51***	0.19	2.85	0.50	***4.99***
2023/10/15 8	***2.67***	0.23	2.82	0.49	3.59
2023/10/15 9	***2.51***	0.20	2.82	0.56	3.46
2023/10/15 10	1.42	0.15	2.81	0.46	3.39
2023/10/15 11	1.38	0.18	2.82	0.47	3.25
2023/10/15 12	0.87	0.15	2.81	0.48	3.67
2023/10/15 13	1.39	0.19	2.81	0.47	4.30

Yellow cell: load exceeds 70% of available resources (Virtual Processors **and** Processor Pool)

Red cell: load exceeds 90% of available resources (Virtual Processors **and** Processor Pool)

Bold font: load over entitled capacity

Plain font: load below entitled capacity

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Advanced usage

- I am a python language lover
  - I use a lot Pandas package and Jupyter Notebooks
- hmcScanner Excel can be easily read and loaded into data structures
  - If you know python, I can share some code snippets
- Data can be queried & manipulated for advanced scope
  - Consolidate only a subset of LPARs based on multiple conditions
  - Resize LPARs based on rPerf values to size a system with new Power technology
  - Simulate the load on consolidated system on multiple conditions

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Real advanced case: a complex sizing request

- Customer has an old POWER8/POWER9 infrastructure (12 systems)
  - Some LPARs will be decommissioned
  - 173 AIX 6.1 LPARs consolidated on POWER9 E950 systems
  - 108 AIX 7.x LPARs consolidated on POWER10 E1050 system
- Minimize target infrastructure
- LPARs are all uncapped and some often use more than entitled capacity
- Two site infrastructure with prod and no prod LPARs
  - Two nodes cluster can move workload between nodes, site must not be overloaded
- Customer has no workload history

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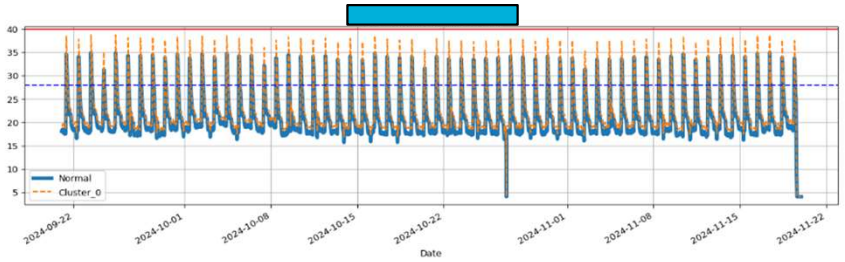
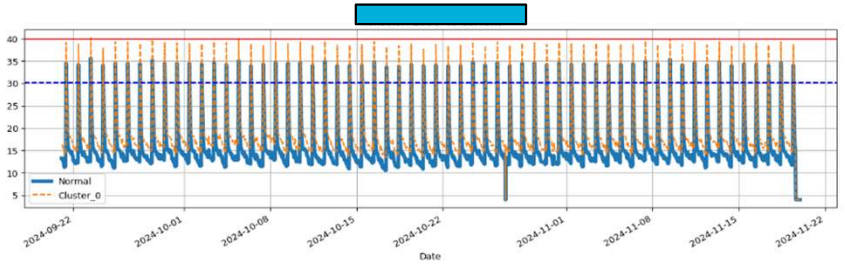
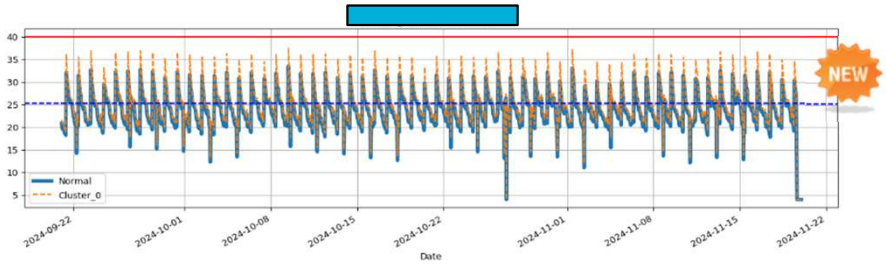
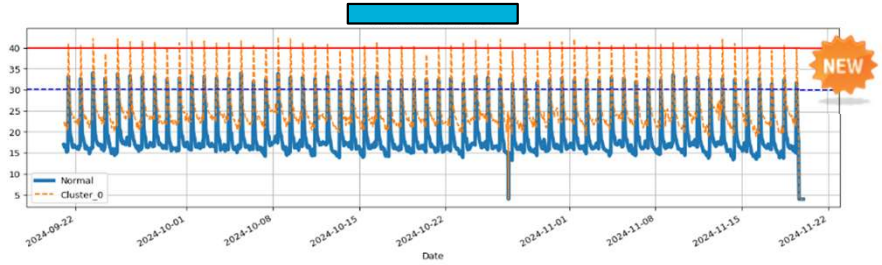
hmcScanner’s data used to forecast aggregated load on target solution









E950

E1050

SITE-A

SITE-B

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hmcScanner future

- I will try to keep current Java version working
  - New development with additional data may not be easy
- I am developing a new promising version
  - HMC REST API exploitation instead of SSH with selection of CLI commands
  - Much more information available and “automatic” discovery of new features
  - Python language and popular libraries with active community behind
  - Better Excel format
- Alpha code is ready. I need to decide how to share it efficiently
  - Keep looking at hmcScanner page on IBM Support for updates
  - DockerHub image (ppc64le & amd64): https://hub.docker.com/r/fvagnini/hmcscanner
- Call for data: please run the new scanner and share with me the results
  - Not all possible data is currently captured
  - Bug fixing may be needed
  - Scanner will generate a debug.zip file if unexpected data is found or issues arise

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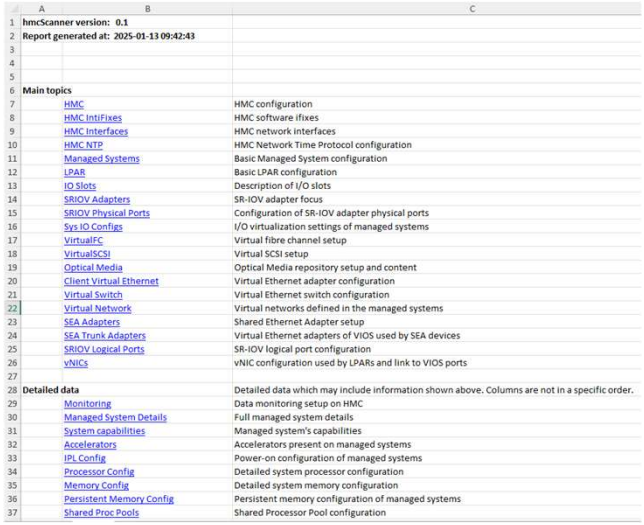
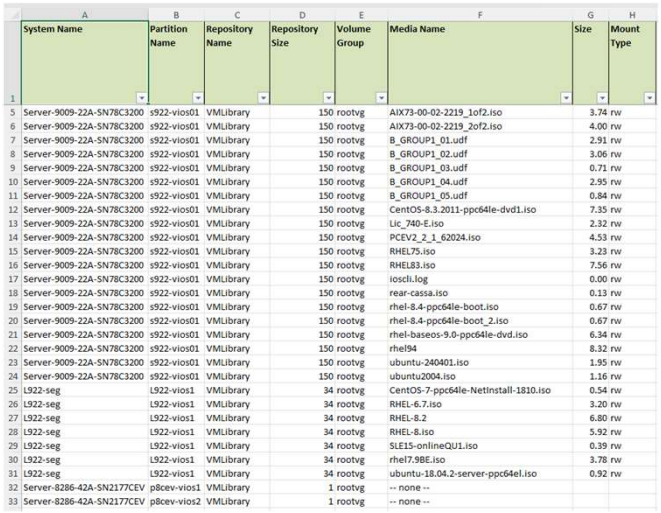
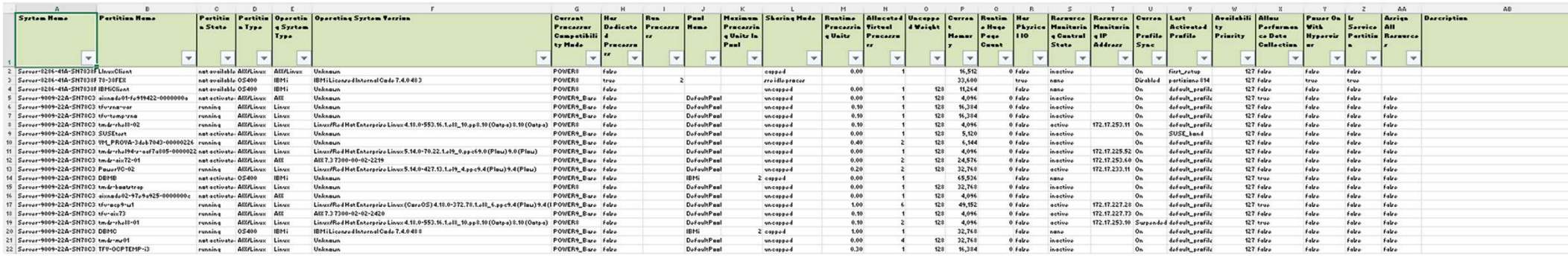
New Excel format (XLSX)



	A	B	C
1	hmcScanner version: 0.1		
2	Report generated at: 2025-01-13 09:42:43		
3			
4			
5			
6	Main topics		
7		HMC	HMC configuration
8		HMC IntiFixes	HMC software ifixes
9		HMC Interfaces	HMC network interfaces
10		HMC NTP	HMC Network Time Protocol configuration
11		Managed Systems	Basic Managed System configuration
12		LPAR	Basic LPAR configuration
13		IO Slots	Description of I/O slots
14		SRIOV Adapters	SR-IOV adapter focus
15		SRIOV Physical Ports	Configuration of SR-IOV adapter physical ports
16		Sys IO Configs	I/O virtualization settings of managed systems
17		VirtualFC	Virtual fibre channel setup
18		VirtualSCSI	Virtual SCSI setup
19		Optical Media	Optical Media repository setup and content
20		Client Virtual Ethernet	Virtual Ethernet adapter configuration
21		Virtual Switch	Virtual Ethernet switch configuration
22		Virtual Network	Virtual networks defined in the managed systems
23		SEA Adapters	Shared Ethernet Adapter setup
24		SEA Trunk Adapters	Virtual Ethernet adapters of VIOS used by SEA devices
25		SRIOV Logical Ports	SR-IOV logical port configuration
26		vNICs	vNIC configuration used by LPARs and link to VIOS ports
27			
28	Detailed data		Detailed data which may include information shown above. Columns are not in a specific order.
29		Monitoring	Data monitoring setup on HMC
30		Managed System Details	Full managed system details
31		System capabilities	Managed system's capabilities
32		Accelerators	Accelerators present on managed systems
33		IPL Config	Power-on configuration of managed systems
34		Processor Config	Detailed system processor configuration
35		Memory Config	Detailed system memory configuration
36		Persistent Memory Config	Persistent memory configuration of managed systems
37		Shared Proc Pools	Shared Processor Pool configuration



	A	B	C	D	E	F	G	H
1	System Name	Partition Name	Repository Name	Repository Size	Volume Group	Media Name	Size	Mount Type
5	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	AIX73-00-02-2219_1of2.iso	3.74	rw
6	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	AIX73-00-02-2219_2of2.iso	4.00	rw
7	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	B_GROUP1_01.udf	2.91	rw
8	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	B_GROUP1_02.udf	3.06	rw
9	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	B_GROUP1_03.udf	0.71	rw
10	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	B_GROUP1_04.udf	2.95	rw
11	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	B_GROUP1_05.udf	0.84	rw
12	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	CentOS-8.3.2011-ppc64le-dvd1.iso	7.35	rw
13	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	Lic_740-E.iso	2.32	rw
14	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	PCEV2_2_1_62024.iso	4.53	rw
15	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	RHEL75.iso	3.23	rw
16	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	RHEL83.iso	7.56	rw
17	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	ioscli.log	0.00	rw
18	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	rear-cassa.iso	0.13	rw
19	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	rhel-8.4-ppc64le-boot.iso	0.67	rw
20	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	rhel-8.4-ppc64le-boot_2.iso	0.67	rw
21	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	rhel-baseos-9.0-ppc64le-dvd.iso	6.34	rw
22	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	rhel94	8.32	rw
23	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	ubuntu-240401.iso	1.95	rw
24	Server-9009-22A-SN78C3200	s922-vios01	VMLibrary	150	rootvg	ubuntu2004.iso	1.16	rw
25	L922-seg	L922-vios1	VMLibrary	34	rootvg	CentOS-7-ppc64le-NetInstall-1810.iso	0.54	rw
26	L922-seg	L922-vios1	VMLibrary	34	rootvg	RHEL-6.7.iso	3.20	rw
27	L922-seg	L922-vios1	VMLibrary	34	rootvg	RHEL-8.2	6.80	rw
28	L922-seg	L922-vios1	VMLibrary	34	rootvg	RHEL-8.iso	5.92	rw
29	L922-seg	L922-vios1	VMLibrary	34	rootvg	SLE15-onlineQU1.iso	0.39	rw
30	L922-seg	L922-vios1	VMLibrary	34	rootvg	rhel7.9BE.iso	3.78	rw
31	L922-seg	L922-vios1	VMLibrary	34	rootvg	ubuntu-18.04.2-server-ppc64el.iso	0.92	rw
32	Server-8286-42A-SN2177CEV	p8cev-vios1	VMLibrary	1	rootvg	-- none --		
33	Server-8286-42A-SN2177CEV	p8cev-vios2	VMLibrary	1	rootvg	-- none --		



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	System Name	Partition Name	Partition State	Partition Type	Operating System Type	Operating System Version	Current Processor Compatibility Mode	Hardware Dedicated Processor	Run Processor	Pool Name	Maximum Processing Units in Pool	Sharing Mode	Runtime Processing Units	Allocated Virtual Processor	Uncapped Weight	Current Memory	Runtime Huge Page Count	Hardware Physical IO	Resource Monitoring Control State	Resource Monitoring IP Address	Current Profile Sync	Last Activated Profile	Availability Priority	Allow Performance Data Collection	Power On With Hypervisor	Ir Service Partition	Assign All Resources	Description
2	Server-8286-41A-SN7838F	LinuxClient	not available	AIX/Linux	AIX/Linux	Unknown	POWER8	false				capped	0.00	1		16,512	0	false	inactive		On	first_setup	127	false	false	false		
3	Server-8286-41A-SN7838F	T0-38FEX	not available	OS400	IBMi	IBMiLicensedInternalCode 7.4.0 48 3	POWER8	true	2			ziriddle pracer				33,600		true	none		Disabled	partizione 14	127	false	true	true		
4	Server-8286-41A-SN7838F	IBMiClient	not available	OS400	IBMi	Unknown	POWER8	false				uncapped	0.00	1	128	11,264		false	none		On	default_profile	127	false	false	false		
5	Server-9009-22A-SN78C3	aixnode01-fa919422-0000000a	not activated	AIX/Linux	AIX	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.00	1	128	4,096	0	false	inactive		On	default_profile	127	true	false	false	false	
6	Server-9009-22A-SN78C3	tfv-rna-ver	running	AIX/Linux	Linux	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.10	1	128	16,384	0	false	inactive		On	default_profile	127	false	false	false	false	
7	Server-9009-22A-SN78C3	tfv-tmp-rna	running	AIX/Linux	Linux	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.10	1	128	16,384	0	false	inactive		On	default_profile	127	false	false	false	false	
8	Server-9009-22A-SN78C3	tm-dr-rhel8-02	running	AIX/Linux	Linux	Linux/Red Hat Enterprise Linux 4.18.0-553.16.1.el8_10.ppc64le (Oatp) 8.10 (Oatp)	POWER8	false		DefaultPool		uncapped	0.10	1	128	4,096	0	false	active	172.17.253.11	On	default_profile	127	false	false	false	false	
9	Server-9009-22A-SN78C3	SUSEtest	not activated	AIX/Linux	Linux	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.00	1	128	5,120	0	false	inactive		On	SUSE_kvm	127	false	false	false	false	
10	Server-9009-22A-SN78C3	VM_PROVA-3deb7043-00000226	running	AIX/Linux	Linux	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.40	2	128	6,144	0	false	inactive		On	default_profile	127	false	false	false	false	
11	Server-9009-22A-SN78C3	tm-dr-rhel94-r-aef7a805-0000022	not activated	AIX/Linux	Linux	Linux/Red Hat Enterprise Linux 5.14.0-70.22.1.el9_0.ppc64 9.0 (Plau) 9.0 (Plau)	POWER9_Baro	false		DefaultPool		uncapped	0.00	1	128	4,096	0	false	inactive	172.17.225.52	On	default_profile	127	false	false	false	false	
12	Server-9009-22A-SN78C3	tm-dr-aix72-01	not activated	AIX/Linux	AIX	AIX 7.3 7200-00-02-2219	POWER9_Baro	false		DefaultPool		uncapped	0.00	2	128	24,576	0	false	inactive	172.17.253.60	On	default_profile	127	false	false	false	false	
13	Server-9009-22A-SN78C3	Power9C-02	running	AIX/Linux	Linux	Linux/Red Hat Enterprise Linux 5.14.0-427.13.1.el9_4.ppc64 9.4 (Plau) 9.4 (Plau)	POWER9_Baro	false		DefaultPool		uncapped	0.20	2	128	32,768	0	false	active	172.17.233.11	On	default_profile	127	false	false	false	false	
14	Server-9009-22A-SN78C3	DBMB	not activated	OS400	IBMi	Unknown	POWER9_Baro	false		IBMi	2	capped	0.00	1		65,536		false	none		On	default_profile	127	true	false	false	false	
15	Server-9009-22A-SN78C3	tm-dr-kmstrap	not activated	AIX/Linux	Linux	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.00	1	128	32,768	0	false	inactive		On	default_profile	127	false	false	false	false	
16	Server-9009-22A-SN78C3	aixnode02-97a9a925-0000000c	not activated	AIX/Linux	AIX	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.00	1	128	4,096	0	false	inactive		On	default_profile	127	false	false	false	false	
17	Server-9009-22A-SN78C3	tfv-ocp9-u1	running	AIX/Linux	Linux	Linux/Red Hat Enterprise Linux (CoreOS) 4.10.0-372.78.1.el8_6.ppc64 9.4 (Plau) 9.4 (P	POWER9_Baro	false		DefaultPool		uncapped	1.00	6	128	49,152	0	false	active	172.17.227.20	On	default_profile	127	true	false	false	false	
18	Server-9009-22A-SN78C3	tfv-aix73	running	AIX/Linux	AIX	AIX 7.3 7300-02-02-2420	POWER9_Baro	false		DefaultPool		uncapped	0.10	1	128	4,096	0	false	active	172.17.227.73	On	default_profile	127	false	false	false	false	
19	Server-9009-22A-SN78C3	tm-dr-rhel8-01	running	AIX/Linux	Linux	Linux/Red Hat Enterprise Linux 4.18.0-553.16.1.el8_10.ppc64 8.10 (Oatp) 8.10 (Oatp)	POWER8	false		DefaultPool		uncapped	0.10	2	128	4,096	0	false	active	172.17.253.10	Suspended	default_profile	127	true	false	false	false	
20	Server-9009-22A-SN78C3	DBP9C	running	OS400	IBMi	IBMiLicensedInternalCode 7.4.0 48 0	POWER9_Baro	false		IBMi	2	capped	1.00	1		32,768		false	none		On	default_profile	127	false	false	false	false	
21	Server-9009-22A-SN78C3	tm-dr-nw01	not activated	AIX/Linux	Linux	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.00	4	128	32,768	0	false	inactive		On	default_profile	127	false	false	false	false	
22	Server-9009-22A-SN78C3	TF9-OCPTEMP-i3	running	AIX/Linux	Linux	Unknown	POWER9_Baro	false		DefaultPool		uncapped	0.30	1	128	16,384	0	false	inactive		On	default_profile	127	false	false	false	false	

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pGraph

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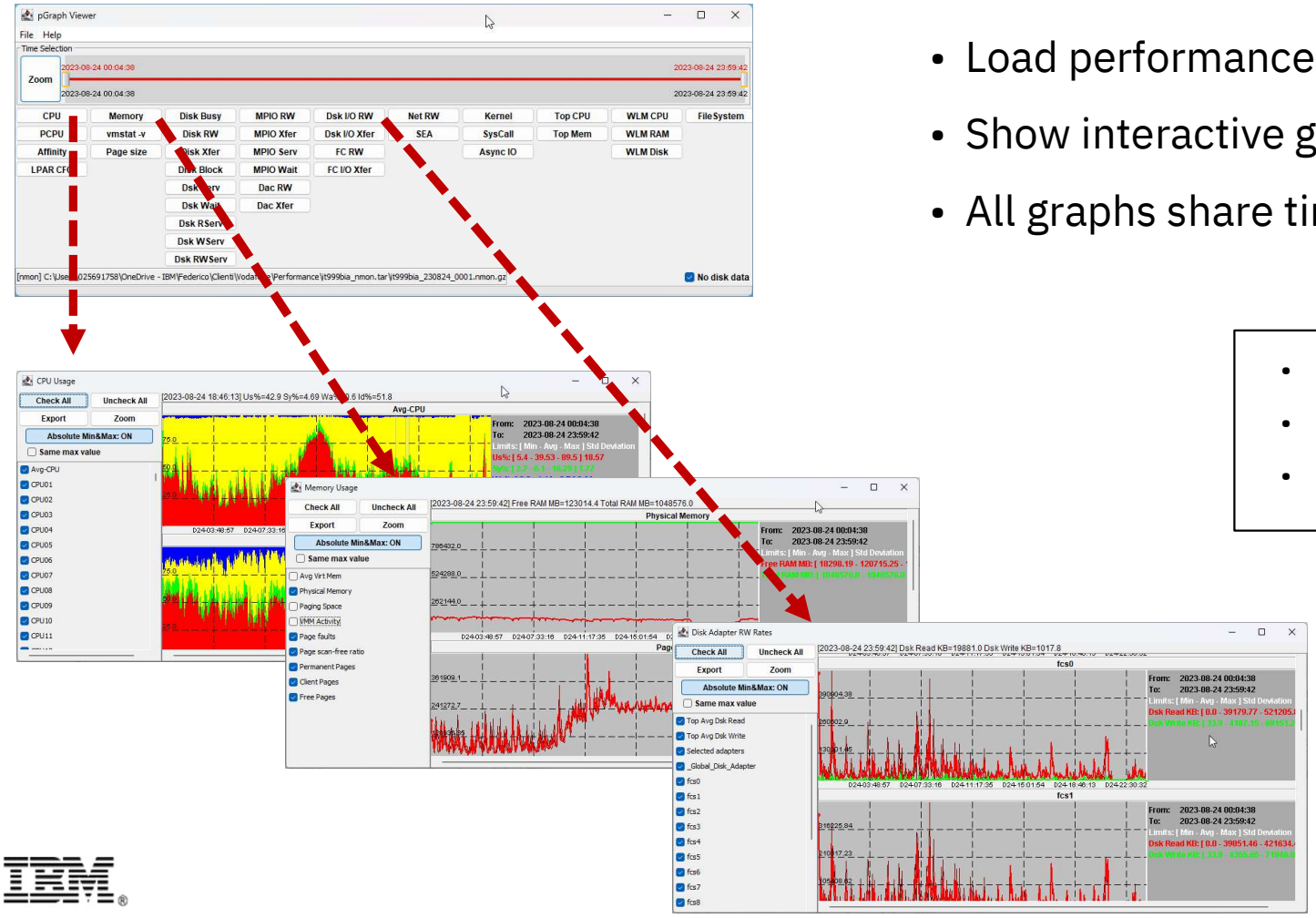
Interactive viewer of performance data



- Load performance data
- Show interactive graphs
- All graphs share time scale

- nmon
- lslparutil
- vmstat -a
- topasout
- iostat –alRDT
- sar -A

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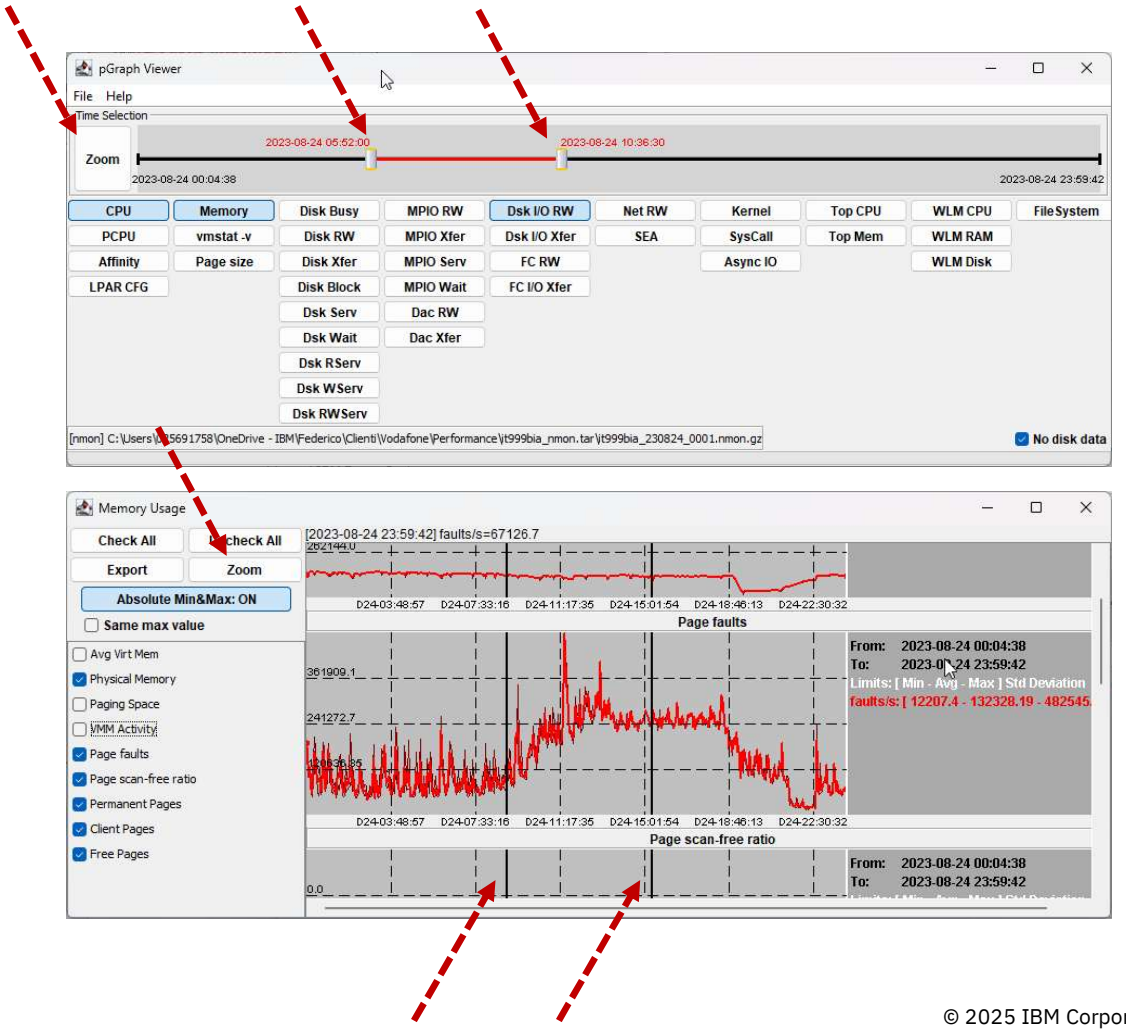
Time zoom

- Move sliders to select time
- Press “Zoom” button

- Move mouse and press mouse button
  - Left button = start
  - Right button = end
- Press “Zoom” button



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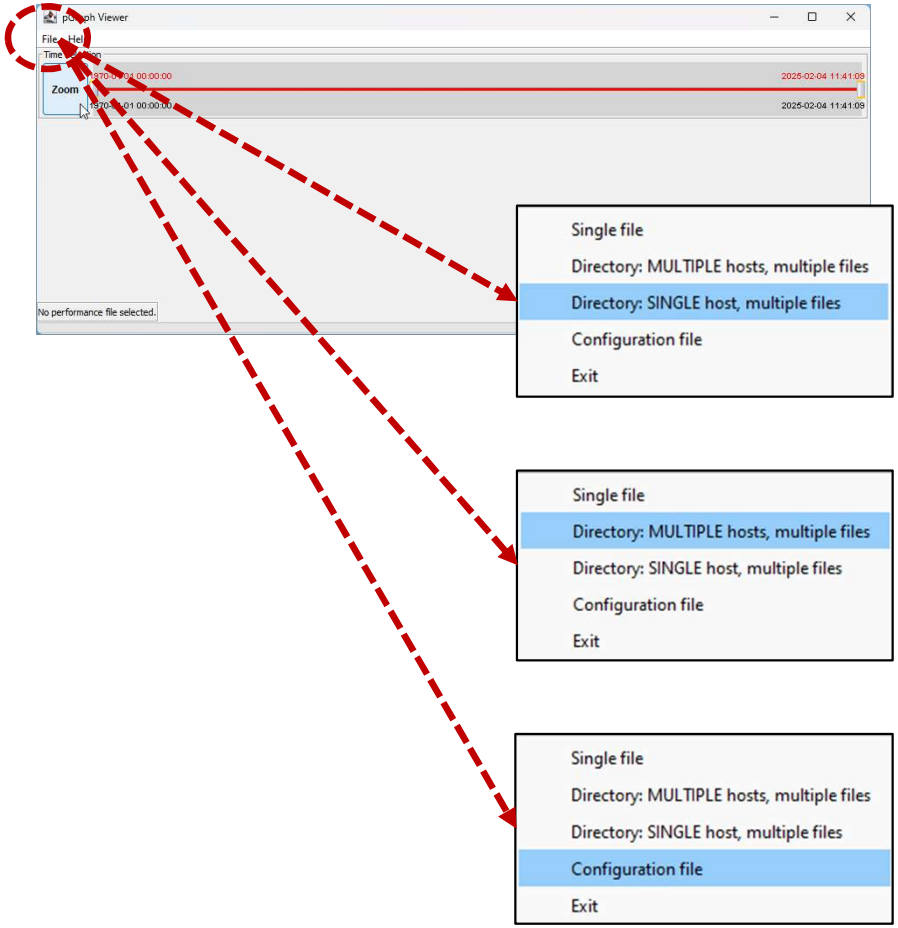
Aggregate nmon data



Every file in directory is treated as belonging to the same operating system

Every file in directory belongs to an independent operating system
(not all data will be merged)

Custom mix & match of files

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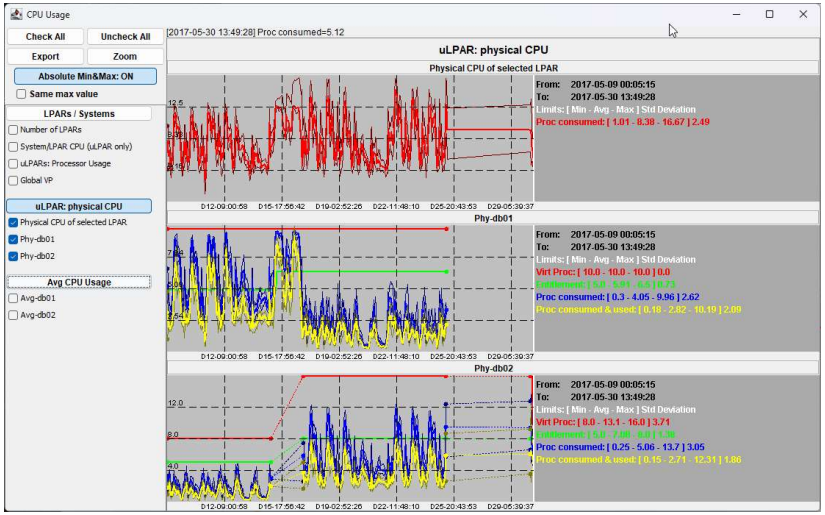
File → Configuration file

SH_DIR = C:\tmp\customer\db01
SH_DIR = C:\tmp\customer\db02

Two directories, each containing nmon data for a single operating system
Aggregate and compare data



SH_DIR = C:\tmp\customer\db01 @ 0.3
SH_DIR = C:\tmp\customer\db02 @ 0.5

Same as above but:
- CPU usage of first system is multiplied by 0.3
- CPU usage of first system is multiplied by 0.5

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Conclusions

- Two personal projects, developed in spare time
  - Developed to solve personal needs and to manage complex environments
- pGraph was the first project
  - Stable code, no new development
  - Configuration file management was last enhancement, may be buggy
- hmcScanner is the most recent project
  - Java code stable with some adjustments from time to time
  - Python version may be the future development target

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