

Power/Pure Systems Capacity Planning with

With

MPG's Navigator Family[®]

Agenda

- Performance vs Power Navigator
- VIOS/AIX/Linux/Solaris/HPUX
- Internal vs External disk
- IBM i SSD analysis
- Capacity Planning update – Live Demo



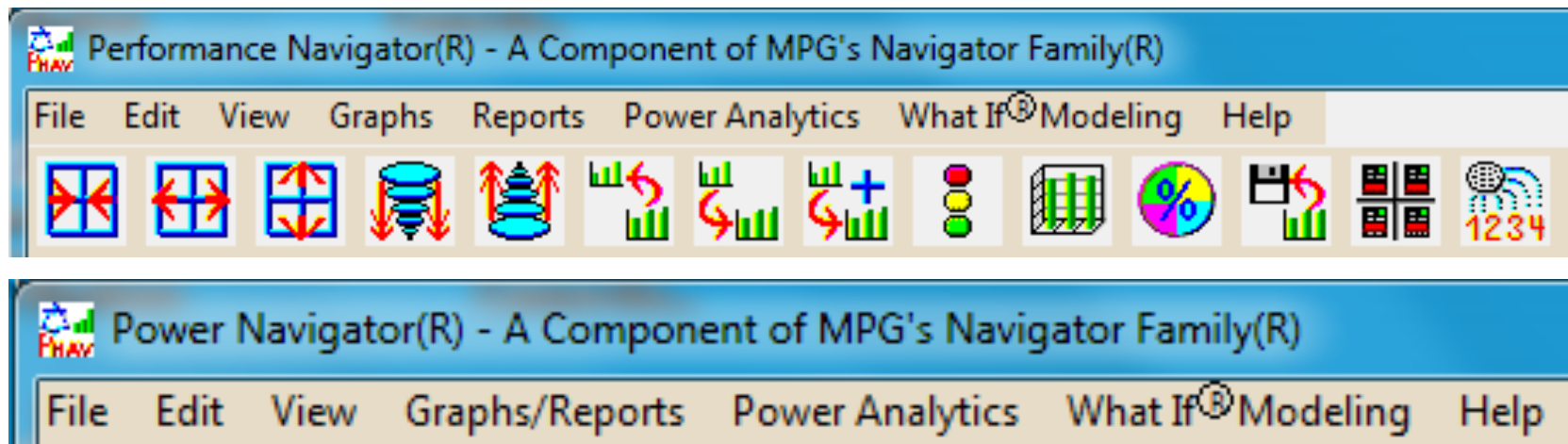
Agenda

Poll questions

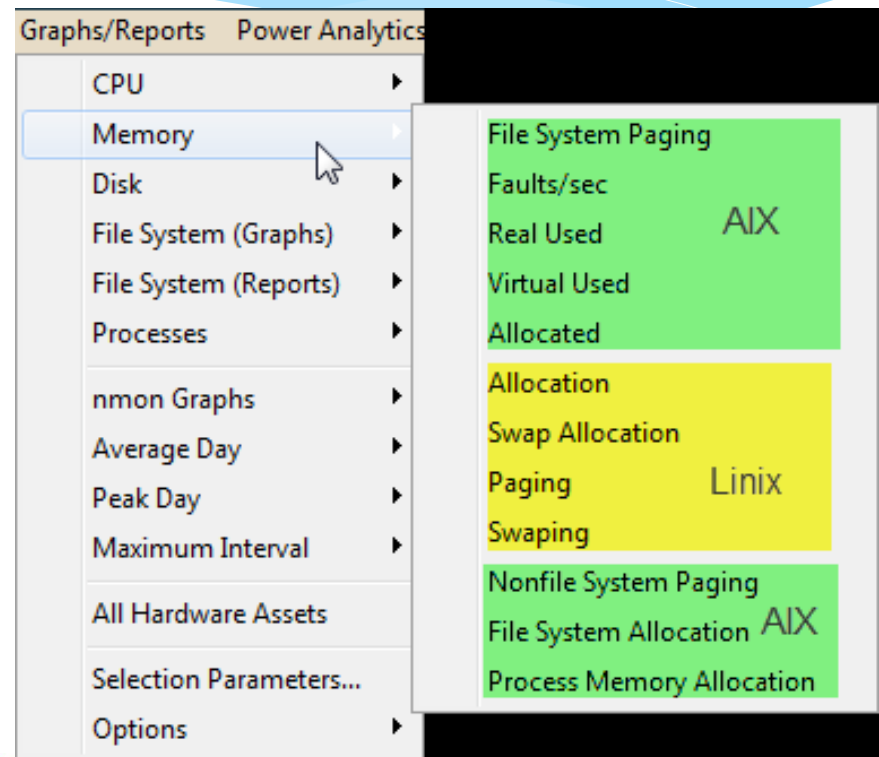
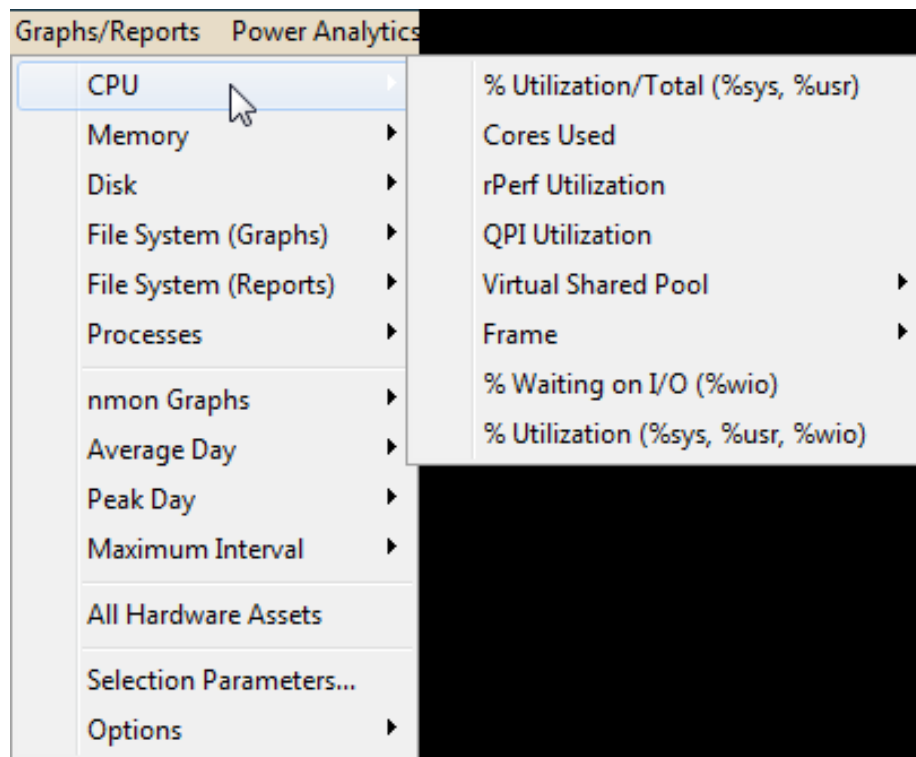


Performance vs Power Navigator

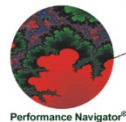
Same client different menu



Performance vs Power Navigator



MPG's Navigator Family™



Performance Navigator®

Power Navigator®

Performance vs Power Navigator

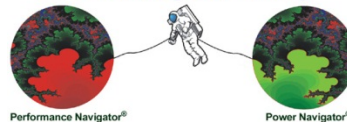
The image shows two overlapping screenshots of the Performance Navigator software interface. The left screenshot shows the 'Graphs/Reports' menu with 'Disk' selected, leading to a sub-menu with options like 'Arm Utilization', 'Service Time', 'MB/sec', 'I/Os / sec', 'Report', 'Total MB/sec', 'Total I/Os / sec', and 'I/O Adapters'. The right screenshot shows the 'Power Analytics' menu with 'Management Reporting' selected, leading to a sub-menu with options like 'Monthly Performance Summary', 'Weekly Performance Summary', 'Enterprise Performance Overview', 'Enterprise Hardware Summary', 'Frame Resource Summary', 'Hardware Specifications', 'EXecutive Performance Overview', and 'EXPO Reset'.

Menu Item	Sub-menu Item
Graphs/Reports	CPU
	Memory
	Disk
	File System (Graphs)
	File System (Reports)
	Processes
	nmon Graphs
	Average Day
	Peak Day
	Maximum Interval
All Hardware Assets	
Selection Parameters...	
Options	

Menu Item	Sub-menu Item
Power Analytics	Management Reporting
	File Systems
	Analytical Tools
	Recent
	Before vs After Analysis

Sub-menu Item
Monthly Performance Summary
Weekly Performance Summary
Enterprise Performance Overview
Enterprise Hardware Summary
Frame Resource Summary
Hardware Specifications
EXecutive Performance Overview
EXPO Reset

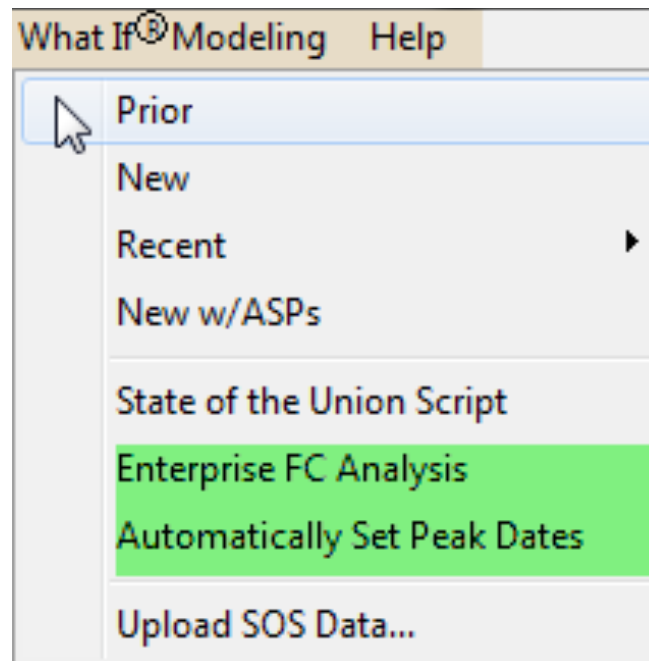
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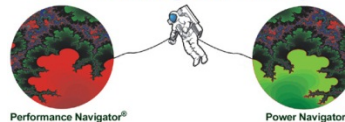
Performance vs Power Navigator

What-If automation

IBM i = < 10
AIX = 100+
Linux = 250+



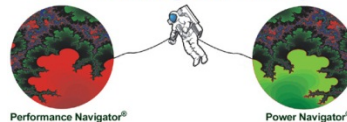
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Performance vs Power Navigator

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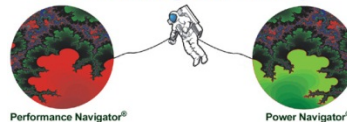
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Performance vs Power Navigator

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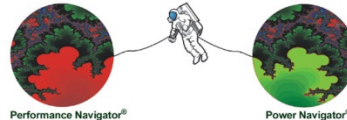


Power Capacity Planning VIOS/AIX/Linux

Navigator Enhancements

Reports	LPAR
Systems	Graph
MPG520P	
MPG520D	
MPGAIX	
MPG720	
mpgrh	
MPGSUSE	
vios1	
AIX720	
unitrin8	
unitrin9	
unitrin10	

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Power Capacity Planning Internal vs External

- More about HA/DR than performance
- First configure internal – see demo
 - Models minimum number of external arms (not luns)
- Produce External Disk Analysis Report
 - Analyzes up to a year of data
 - Selects Peak Day, Peak Interval, Avg 1st and 2nd shift
 - Peak Interval input to Disk Magic



Power Capacity Planning Internal vs External

Power Systems External Disk Analysis

By: Midrange Performance Group

System Analyzed: MPG520P

ASP Analyzed: ASP #1

*Data Range 1/24/2013 - 1/24/2014 - Peak Date: 1/3/2014 -- Peak Time: 21:05
Total Capacity(GB) = 917.35 - % Full - 72.4 - # of Devices = 16 - Expert Cache(MB) = 6144*

1st Shift Average		2nd Shift Average		Peak Day Maximum		Peak Interval Time	
Reads Per Second	8.55	Reads Per Second	49.0	Reads Per Second	63.3	Reads Per Second	63.3
Writes Per Second	9.79	Writes Per Second	14.0	Writes Per Second	138	Writes Per Second	138
Avg KB Per IO	14.1	Avg KB Per IO	30.7	Avg KB Per IO	30.7	Avg KB Per IO	30.7
I/Os Per Second	18.3	I/Os Per Second	63.0	I/Os Per Second	202	I/Os Per Second	202
Read %	46.6%	Read %	77.7%	Read %	31.4%	Read %	31.4%
Disk Response Time	1.87	Disk Response Time	5.07	Disk Response Time	10.63	Disk Response Time	4.65
Service Time	1.75	Service Time	4.41	Service Time	4.96	Service Time	0.03
Wait Time	0.12	Wait Time	0.66	Wait Time	5.67	Wait Time	4.63



Power Capacity Planning SSD Analysis

- Set customer expectations
 - Clearly define issue customer is trying to solve
- Profile current disk performance
 - Average disk response time (SSDs about .5-1ms)
 - Read to write ratio (SSDs only help with read misses)
 - Cache hit ratios (Cache faster than SSDs)
- Produce SSD Job analysis report (read miss analysis)



Power Capacity Planning SSD Analysis

- Produce Library detail report (determine space requirements)
 - Determine # of SSDs (2-3 minimum)
- Explain customer has to manage
 - <http://www-01.ibm.com/support/docview.wss?uid=nas8N1011666>
- Use What-If to determine HHD / SSD configuration
 - See demo

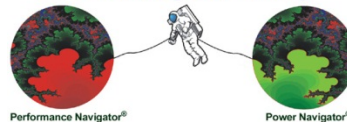


Power Capacity Planning SSD Analysis

Library & Object Summary MPG520P 2Mar2014

Library	Size (1000000s)	Prior Size	Size Change	Object 1	Size	Object 2	Size	Object 3	Size
*TDSKSPC	917345	917345	0		0		0		0
*UNUSED	276711	280429	-3718		0		0		0
*STMF	123351	122913	438		0		0		0
QGGL	117895	117005	890	MPGLIB	37798	QMPGDATA	30403	HMC_UPDATE	2468
PFRHBL	43903	43903	0	QAPMJOBOS	20317	QAPMJOBMI	12839	QAPMJOBWT	5867
MPGLIB	41960	41912	48	MPGINT	17309	MPGJIN	6877	MPGJOB	5786
*TMPSPACE	29913	29057	856		0		0		0

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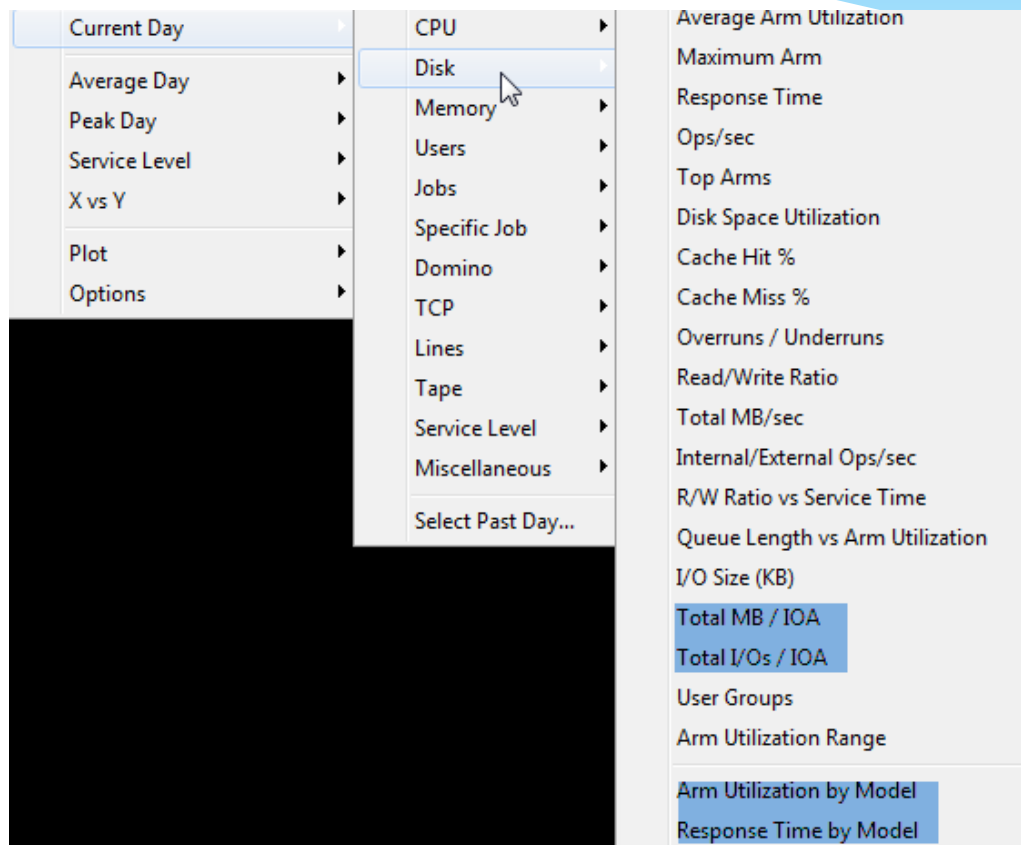


Power Capacity Planning SSD Analysis

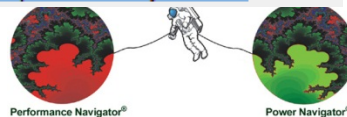
Solid State Disk (SSD) Data Analysis Summary

Job Name	Job User	Job Number	Total CPU Seconds	Disk Read Wait Total Seconds	Total Disk Reads	Disk Read Wait (Avg ms)	Disk Read Wait / CPU	SSD Status
QPFRADJ	QSYS	901940	6.738	33.649	1,977	17.02	5	Is a Good Candidate For SSD
CATALOG	QNOTES	926986	3.440	44.008	8,230	5.35	13	Is a Good Candidate For SSD
DESIGN	QNOTES	926987	19.240	22.444	4,369	5.14	1	Is a Good Candidate For SSD
QYMEPFRCVT	QSYS	926970	2.946	17.510	3,590	4.88	6	Is a Good Candidate For SSD
AMGR	QNOTES	902550	50.344	17.773	3,930	4.52	0	Is a Good Candidate For SSD
QZDASOINIT	QUSER	926916	3.148	6.183	1,378	4.49	2	Is a Good Candidate For SSD
DESIGN	QNOTES	926985	10.050	34.973	7,931	4.41	3	Is a Good Candidate For SSD
STATLOG	QNOTES	927031	3.834	69.125	15,732	4.39	18	Is a Good Candidate For SSD
CATALOG	QNOTES	926984	4.294	141.389	32,354	4.37	33	Is a Good Candidate For SSD
RUNJAVA	QNOTES	927026	31.465	5.866	1,354	4.33	0	Is a Good Candidate For SSD
QYIVRIPS	RWATSON	927096	25.840	36.711	8,681	4.23	1	Is a Good Candidate For SSD
BACKUPMPG	JCAMILLI	926992	18.330	632.352	149,595	4.23	34	Is a Good Candidate For SSD
UPDALL	QNOTES	926996	3.967	32.219	7,947	4.05	8	Is a Good Candidate For SSD
MTC	QNOTES	902585	35.787	11.559	2,881	4.01	0	Is a Good Candidate For SSD
QSQSRVR	QUSER	927110	1.024	5.475	1,405	3.90	5	Is a Good Candidate For SSD
QZDASOINIT	QUSER	926915	6.282	27.095	7,489	3.62	4	Is a Good Candidate For SSD
UPDALL	QNOTES	926995	3.493	5.288	1,469	3.60	2	Is a Good Candidate For SSD
QZRCRSVS	QUSER	927091	2.516	3.705	1,045	3.55	1	Is a Good Candidate For SSD
ADMINP	QNOTES	902574	75.000	25.301	7,269	3.48	0	May Be a Good Candidate For SSD
STATLOG	QNOTES	927032	3.187	57.273	16,472	3.48	18	May Be a Good Candidate For SSD
UPDATE	QNOTES	927013	49.388	45.708	13,187	3.47	1	May Be a Good Candidate For SSD

Power Capacity Planning SSD Analysis



SSD Post Analysis



Power Capacity Planning Capacity Planning

Update - Demo

