



Power Advisors

VIOS, Java, PowerVM



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Would you like some advice on:

- A. VIOS Performance
- B. Java on POWER7 Performance
- C. PowerVM (LPAR) Performance



Questions like

- Have I missed something?
- Am I missing a trick?
- Is it about right?
- Is there a bottleneck?
- Are there spare resources?

Advisors on IBM DeveloperWorks



- <http://tinyurl.com/PowerAdvisor>

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

1. Virtual I/O Server Performance Advisor

- a. Downloadable
- b. New “part” VIOS command

2. Java Performance Advisor

3. PowerVM Virtualization Performance Advisor

(some times called the LPAR Performance Advisor)

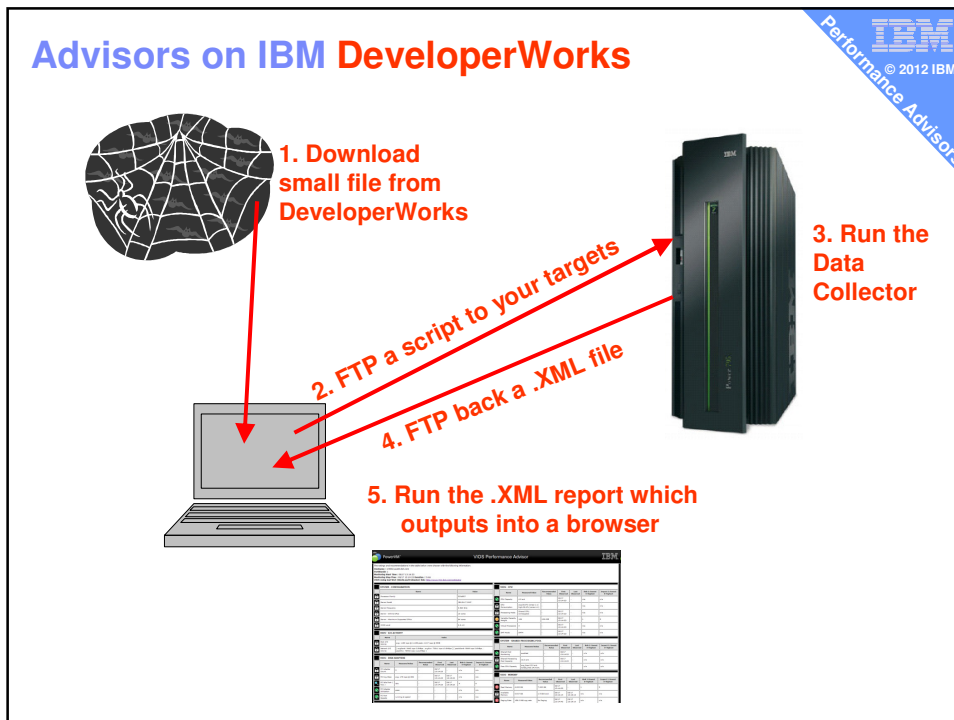
- a. LPAR mode = Runs on AIX
- b. System mode = Runs on AIX but will include all LPARs

Advisors on IBM DeveloperWorks



- Briefly:

- Popular - 1000's of downloads in a few months
- Being productised !
- Actively being development by the AIX development performance team
- Two movies from me
→ tinyurl.com/newAIXmovies

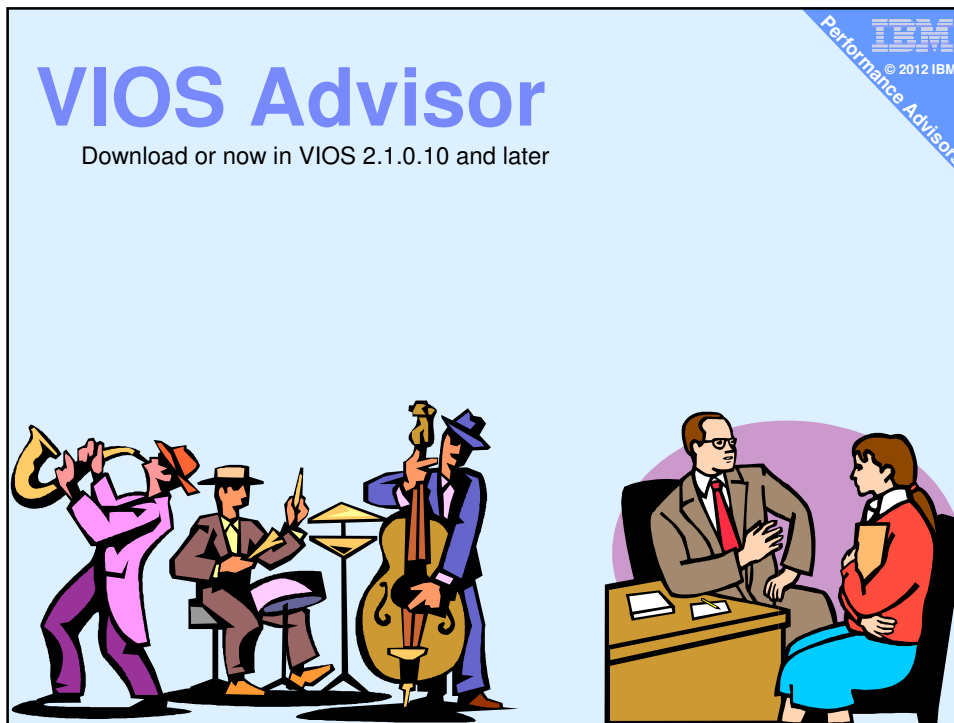


Key to the Output Report

- Values are fine enough
- Needs administrator's attention
- Needs administrator's immediate attention
- Values are information /configuration only
- Needs to be investigated further
- Click to expand hidden details
- Click to shrink to hid details

- Click the symbols → Pop-up info on tuneable
- Recommendations based on data collection period only

IBM Performance Advisors © 2012 IBM



The screenshot shows the 'VIOS Advisor website' with several sections highlighted by red boxes and arrows:

- Virtual I/O Server Advisor Overview:** Describes the application's purpose and goal.
- Setup:** Lists steps for downloading and running the advisor.
- Steps to run VIOS Advisor:** Provides the command `vios_advisor 30` and usage statement.
- Overhead:** States that overhead is minimal, with a CPU increase of 0.1 cores and 2MB-20MB of memory consumption.
- Applicability:** Notes that the advisor was built for VIOS 2.1.0.10 and later.
- Download:** Includes the link 'DOWNLOAD 111512A' and the latest version '111512A'.
- Contact:** Lists Sergio Reyes (padvisor@us.ibm.com) from the IBM Systems Performance Group.

A 'File Download' dialog box is shown, displaying the file `vios_advisor.zip` (396 KB) and an 'Example Report' (25 KB). A table below the dialog lists the files included in the zip:

Name	Date modified	Type	Size
images	12/02/2013 17:50	File folder	
style.css	12/02/2013 17:50	Cascading Style Sheet D...	1 KB
vios_advisor	12/02/2013 17:50	File	396 KB
vios_advisor.xsl	12/02/2013 17:50	XSL Stylesheet	23 KB
vios_advisor_example.xml	12/02/2013 17:50	XML Document	25 KB
vios_advisor.zip	12/02/2013 17:12	Compressed (zipped) Fo...	265 KB

Simple as 1 2 3 4

Name	Date modified	Type	Size
images	12/02/2013 17:50	File folder	
style.css	12/02/2013 17:50	Cascading Style Sheet D...	1 KB
vios_advisor	12/02/2013 17:50	File	396 KB
vios_advisor.xsl	12/02/2013 17:50	XSL Stylesheet	23 KB
vios_advisor_example.xml	12/02/2013 17:50	XML Document	25 KB
vios_advisor.zip	12/02/2013 17:12	Compressed (zipped) Fo...	265 KB

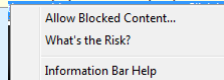
- 1 FTP to your VIOS(s)
- 2 Run while your VIOS is busy (here 2 hours)

```
$ oem_setup_env  
# chmod +x vios_advisor  
# ./vios_advisor 120          → 120 minutes
```
- 3 FTP the resulting vios_advisor.xml to
the same directory as above
- 4 Double click the .xml file and assuming your browser is
the default application for .xml you will see the report
Tip → rename the vios_advisor.xml (host + date)


Assuming Windows 7



- If browser set for .xml files
 - Double click the recently ftped .xml file
 - Firefox OK
 - Internet Explorer 8
You may get a warning “running scripts or ActiveX etc”
This is to allow pop-up help information

To help protect your security, Internet Explorer has restricted this webpage from running scripts or ActiveX controls that could access your computer. Click here for options...



Example from the AIX wiki




VIOS Performance Advisor


The ratings and recommendations in the table below were chosen with the following information:
 Hostname : w1002.austin.ibm.com
 PartID: 1
 Monitoring Start Time : 08/17 13:14:23
 Monitoring Stop Time : 08/17 13:19:23 Duration : 5 min
 VIOS sizing tool WLE (WorkLoad Estimator) link: <http://www-912.ibm.com/estimator>

SYSTEM - CONFIGURATION	
Name	Value
Processor Family	POWER7
Server Model	IBM9117-MMC
Server Frequency	3.920 GHz
Server - Online CPUs	16 cores
Server - Maximum Supported CPUs	64 cores
VIOS Level	2.2.1.0

VIOS - I/O ACTIVITY	
Name	Value
Disk I/O Activity	avg: 1180 iops @ 111KB peak: 1217 iops @ 55KB
Network I/O Activity	[avgSend: 9442 iops 0.3Mbps , avgRcv: 73811 iops 10.8Mbps] [peakSend: 9949 iops 0.6Mbps , peakRcv: 78452 iops 112.2Mbps]

VIOS - DISK ADAPTERS						
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1:lowest S:highest	Impact 1:lowest S:highest
FC Adaptor Count	2	-	08/17 13:14:23	-	n/a	n/a
FC Avg IOPS	avg: 179 iops @ 3KB	-	08/17 13:14:23	08/17 13:19:23	n/a	n/a
FC Idle Ports (Max)	idle	-	08/17 13:14:23	08/17 13:19:23	4	4
FC Adaptor Utilization	pass	-	-	-	n/a	n/a
FC Port Speeds	running at speed	-	-	-	n/a	n/a

VIOS - CPU						
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1:lowest S:highest	Impact 1:lowest S:highest
CPU Capacity	4.0 ent	-	08/17 13:14:23	-	n/a	n/a
CPU Consumption	avg:26.0% (cores:1.1) high:26.4% (cores:1.1)	-	-	-	n/a	n/a
Processing Mode	Shared CPU (Uncapped)	-	08/17 13:14:23	-	n/a	n/a
Variable Capacity Weight	128	128-255	08/17 13:14:23	-	1	5
Virtual Processors	4	-	08/17 13:14:23	-	n/a	n/a
SMT Mode	SMT4	-	08/17 13:14:23	-	n/a	n/a

SYSTEM - SHARED PROCESSING POOL						
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1:lowest S:highest	Impact 1:lowest S:highest
Shared Pool Monitoring	enabled	-	08/17 13:14:23	-	n/a	n/a
Shared Processing Pool Capacity	16.0 ent.	-	08/17 13:14:23	-	n/a	n/a
Free CPU Capacity	avg_free:13.0 ent. lowest_free:14.8 ent.	-	-	-	n/a	n/a

VIOS - MEMORY						
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1:lowest S:highest	Impact 1:lowest S:highest
Real Memory	4,000 GB	7,000 GB	08/17 13:14:23	-	1	5
Available Memory	0.517 GB	1.5 GB Avail.	08/17 13:16:14	08/17 13:18:13	n/a	n/a
Paging Rate	158.0 MB/s pg rate	No Paging	08/17 13:14:23	08/17 13:19:23	n/a	n/a

Click for MORE

On any field click for a pop up with help info

Weight for VIOS should be more than default 128

What Is This?
Variable capacity weight is a number between 0-255, which represents the relative share of extra capacity that the partition is eligible to receive. The parameter applies only to uncapped partitions. A partitions share is computed by dividing its weight by the sum of the variable weights of all uncapped partitions.

Why Important?
The variable capacity weight is important for the VIOS when running in uncapped shared processing mode. Increasing the variable capacity weight value above that of its vSCSI client partitions weight allows the VIOS to have greater access to extra CPU capacity to service the client partitions.

How To Modify?
The variable capacity weight can be altered by modifying the partition profiles CPU attributes using the the (HMC) hardware management console.

VIOS memory never page + for physical adapters

What Is This?
Real Memory: This is the amount of memory (in GB) assigned to the VIOS partition through the HMC.

Why Important?
Increase the amount of memory allocated to the VIOS partition or reduce memory consumption. Failing to do so can lead to memory page-in/outs, which can impact overall performance. The VIOS may be limited in its capabilities to support additional I/O devices.

How To Modify?
DLPAR add memory to the VIOS partition using the HMC or change the VIOS partition's profile using the HMC and power off/on the VIOS partition.
Memory consumption can be reduced by lowering the amount of memory allocated for J2 inode caching. Run these commands with root authority:

```
lso -p -o j2_inodeCacheSize=200
and
lso -p -o j2_metadataCacheSize=200
```

VIOS Advisor Screen shots

Data Sample info – where and when

The ratings and recommendations in the table below were chosen with the following information:

Hostname : purplevio1.aixncc.uk.ibm.com
PartitionID: 3
Monitoring Start Time : 10/03 09:24:15 **Duration :** 5 min
Monitoring Stop Time : 10/03 09:29:15
IBM Systems Workload Estimator link: <http://ibm.com/systems/support/tools/estimator> (VIOS Sizings)
VIOS performance advisor version: 080612A

Check for latest version?

Key

LEGEND

Informative Optimal Warning Critical
 Investigate Expand Collapse

VIOS Advisor Screen shots

■ Config

SYSTEM - CONFIGURATION		
	Name	Value
	Processor Family	POWER7
	Serial Number	02100525P
	Server Model	IBM,9117-MMB
	Server Frequency	3.108 GHz
	Server - Online CPUs	32 cores
	Server - Maximum Supported CPUs	64 cores
	VIOS Level	2.2.1.3
	VIOS Advisor Release	080612A

VIOS Advisor Screen shots

- I/O
- Not busy in my sample

FC Adapter (Utilization(fcs0))	avg:0.1% util, peak:0.2%	-	10/03 09:24:34	10/03 09:29:06
FC Adapter (Utilization(fcs1))	idle	-	10/03 09:24:34	10/03 09:29:06
FC I/Os Blocked	optimal	-	-	-
FC Port Speeds (fc0)	4Gbit	Supported: 8Gbit	10/03 09:24:15	10/03 09:29:15

VIOS - I/O ACTIVITY							
Name	Value						
Disk I/O Activity	avg: 47 iops @ 4KB peak: 98 iops @ 4KB						
Network I/O Activity	[avgSend: 0.0MBps , avgRcv: 0.0MBps] [peakSend: 0.0MBps , peakRcv: 0.0MBps]						
VIOS - DISK ADAPTERS							
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest	
FC Adapter Count	2	-	10/03 09:24:15	-	n/a	n/a	
FC Avg I/Ops	avg: 43 iops @ 4KB		10/03 09:24:15	10/03 09:29:15	n/a	n/a	
FC Adapter Utilization			-	-	n/a	n/a	
FC I/Os Blocked	optimal	-	-	-	n/a	n/a	
FC Port Speeds (fcs0)	4Gbit	Supported: 8Gbit	10/03 09:24:15	10/03 09:29:15	n/a	n/a	
VIOS - DISK DRIVES							
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest	
Physical Drive Count	25	-	10/03 09:24:15	-	n/a	n/a	
I/Os Blocked	optimal	-	-	-	n/a	n/a	
Long I/O Latency	optimal	-	-	-	n/a	n/a	

VIOS Advisor Screenshots

CPU
It likes a high weight

VIOS - CPU							
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest	
CPU Capacity	1.0 ent	-	10/03 09:24:15	-	n/a	n/a	
CPU Consumption	avg:4.1% (cores:0.1) high:4.8% (cores:0.1)	-	-	-	n/a	n/a	
Processing Mode	Shared CPU, (UnCapped)	-	10/03 09:24:15	-	n/a	n/a	
Variable Capacity Weight	200	-	10/03 09:24:15	-	n/a	n/a	
Virtual Processors	2 vCPUs	-	10/03 09:24:15	-	n/a	n/a	
SMT Mode	SMT4	-	10/03 09:24:15	-	n/a	n/a	
SYSTEM - SHARED PROCESSING POOL							
Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest	
Shared Pool Monitoring	disabled	enable	10/03 09:24:15	-	n/a	n/a	
Shared Processing Pool Capacity	Unattainable (Enable Shared Pool Monitoring)	-	10/03 09:24:15	-	1	5	
Free CPU Capacity	Unattainable (Enable Shared Pool Monitoring)	-	-	-	1	1	

VIOS Advisor Screen shots

RAM

VIOS - MEMORY							
	Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
	Real Memory	2.000 GB	2.750 GB	10/03 09:24:15	-	1	2
	Available Memory	0.865 GB (free:0.642 + file:0.223)	1.5 GB Avail.	10/03 09:24:35	10/03 09:29:02	n/a	n/a
	PgSpace Paging Rate	0.0 MB/s pg rate	-	-	-	n/a	n/a
	Paging Space Size	1.500 GB	-	10/03 09:24:15	-	n/a	n/a
	Free Paging Space	1.491 GB free	-	-	-	n/a	n/a
	Pinned Memory	0.608 GB pinned	-	-	-	n/a	n/a

VIOS Advisor Screen shots

Shared Ethernet Adapter

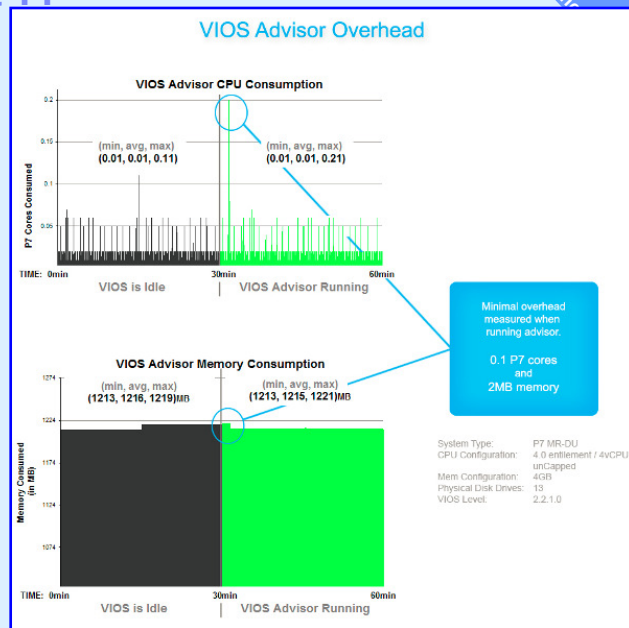
VIOS - SEA ADAPTERS							
	Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
	SEA Adapter Count	1	-	10/03 09:24:15	-	n/a	n/a
	SEA (ent3)	Mapping:Phy:(ent0), virt:(ent1)	-	10/03 09:24:15	-	n/a	n/a
	SEA ent3 LargeSend	Disabled	-	10/03 09:24:15	-	3	5
	SEA ent3 LargeReceive	Disabled	-	10/03 09:24:15	-	3	5
	SEA ent3 Thread	Enabled	-	10/03 09:24:15	-	le	n/a
	Phy ent0 FlowControl	Enabled	Enabled	10/03 09:24:15	-	n/a	n/a
	Phy ent0 LargeSend	Enabled	Enabled	10/03 09:24:15	-	n/a	n/a
	Phy ent0 LargeReceive	Enabled	Enabled	10/03 09:24:15	-	n/a	n/a
	Virt ent3 buffer alloc.	Optimal	-	10/03 09:24:15	-	n/a	n/a
	LPAR client buffer alloc.	Optimal	-	10/03 09:24:15	-	n/a	n/a

Nigel's To Do List

- Increase memory a bit
- Put Network Large send/receive on the SEA3
- Check my other Virtual I/O Servers

Performance hit ??

From the
AIX wiki page



VIOS Advisor – Next Generation

- To be included in the VIOS itself by default
- New command: **part**
- Full IBM product support
 - rather than informal “see what we can do” via the Wiki
- Why?
 - Zero install = easier to use
 - More often used
 - Can be used in problem diagnose
- Initial realise slightly behind the wiki version ☹
it is missing the SEA stats
but will take over on next release ☺

VIOS 2.2.2 comes with “part”

```
$ ioslevel
2.2.2.0
$
$ part
usage: part {-i INTERVAL | -f FILENAME} [-t LEVEL] [--help|-?]
      -i <minutes>   interval can range between 10-60
      -f <file>       any nmon recording
      -t <level>      1 - Basic logging, 2 - Detailed logging
      -?              usage message
$
$ part -i 10 -t 2 &
# Then ran commands to make the VIOS busy

# If you have a detailed nmon file already
$ part -f orangevios1_121010_2230.nmon -t 2
```

VIOS 2.2.2 comes with “part” Output files



```
$ ls -lR
total 184
drwxrwxr-- 2 root    staff    256 Jul 25 02:22 config
-rw-r--r-- 1 root    staff    1341 Oct 10 22:42 ioscli.log
-rw-r--r-- 1 padmin  staff    71680 Oct 10 22:41 orangevios1_121010_2230.tar
drwxr-xr-x 2 padmin  staff    256 Oct 10 22:35 orangevios1_121010_22_30_29
-rw-r--r-- 1 padmin  staff    3564 Oct 10 21:40 smit.log
-rw-r--r-- 1 padmin  staff    554 Oct 10 21:40 smit.script
-rw-r--r-- 1 padmin  staff    1085 Oct 10 21:40 smit.transaction
drwxr-xr-x 3 padmin  staff    256 Jul 31 18:10 tivoli
./config:
total 16
-rwxrw---- 1 root    staff    630 Jul 01 2007 ntp.conf
-rwxrw---- 1 root    staff     9 Jul 01 2007 ntp.drift
./orangevios1_121010_22_30_29:
total 264
-rw-r--r-- 1 root    staff     9 Oct 10 22:35 ioscli.log
-rw-r--r-- 1 padmin  staff   129341 Oct 10 22:40 orangevios1_121010_2230.nmon
$
```

VIOS 2.2.2 comes with “part” .tar file contents



```
$ tar tvf *tar
drwxr-xr-x 8 1 0 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/
drwxr-xr-x 8 1 0 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/
-r--r--r-- 8 1 902 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/Warning_icon.png
-r--r--r-- 8 1 125 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/bg.png
-r--r--r-- 8 1 614 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/close.jpg
-r--r--r-- 8 1 1336 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/correct.png
-r--r--r-- 8 1 316 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/headerLogo.png
-r--r--r-- 8 1 1241 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/investigate.png
-r--r--r-- 8 1 853 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/readonly.png
-r--r--r-- 8 1 1019 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/images/red-error.png
-r--r--r-- 8 1 5692 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/popup.js
-r--r--r-- 8 1 2869 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/style.css
-r--r--r-- 8 1 16871 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/vios_advisor.xsl
-rw-r--r-- 8 1 22843 Oct 10 22:41:38 2012 ./orangevios1_121010_2230/vios_advisor_report.xml
```

Copied to my Thinkpad then browse the .xml file



VIOS Performance Advisor

The ratings and recommendations in the table below were chosen with the following information:

Hostname : orangevios1

PartitionID: 1

Monitoring Start Time : 2012-10-10T22:30:30

Monitoring Stop Time : 2012-10-10T22:40:43 Duration : 10 min

IBM Systems Workload Estimator link: <http://ibm.com/systems/support/tools/estimator> (VIOS Sizings)

SYSTEM - CONFIGURATION

Config



SYSTEM - CONFIGURATION

Name	Value
Processor Family	Architecture PowerPC Implementation POWER6_COMPAT_mode 64 bit
Server Model	IBM 8203-E4A
Server Frequency	4204.0 MHz
Server - Online CPUs	2.0 cores
Server - Maximum Supported CPUs	4.0 cores
VIOS Level	2.2.2.0
AIX Version	6.1.8.0
AIX Build	07
VIOS Advisor Release	0.1

I/O

VIOS - I/O ACTIVITY

Name	Value
Disk I/O Activity	avg: 35 iops @ 9.98 KB peak: 219 iops @ 78KB
Network I/O Activity	[avgSend: 60 iops 13.3 MBps , avgRcv: 60 iops 55.2MBps] [peakSend: 148 iops 239.8MBps , peakRcv: 148 iops 51.6MBps]

VIOS - DISK ADAPTERS

Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
FC Adapter Count	0	-	2012-10-10T22:30:30	-	n/a	n/a
FC Avg IOps	avg: 0 iops @ 0KB	-	2012-10-10T22:30:30	2012-10-10T22:40:43	n/a	n/a
FC Adapter Utilization	optimal	-	-	-	n/a	n/a
FC Port Speeds	running at speed	-	-	-	n/a	n/a

VIOS - DISK DRIVES

Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
Physical Drive Count	7	-	2012-10-10T22:30:30	-	n/a	n/a
I/Os Blocked	pass	-	-	-	n/a	n/a
Long I/O Latency	pass	-	-	-	n/a	n/a

CPU

VIOS - CPU

Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
CPU Capacity	0.4 ent	-	2012-10-10T22:30:30	-	n/a	n/a
CPU consumption	avg:110.7% (cores:0.5) high:275.0% (cores:1.2)	-	-	-	n/a	n/a
Processing Mode	Shared CPU, (UnCapped)	-	2012-10-10T22:30:30	-	n/a	n/a
Variable Capacity Weight	128 129-255	129-255	2012-10-10T22:30:30	-	1	5
Virtual Processors	2	-	2012-10-10T22:30:30	-	n/a	n/a
SMT Mode	SMT2	-	2012-10-10T22:30:30	-	n/a	n/a

SYSTEM - SHARED PROCESSING POOL

Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
Shared Pool Monitoring	disabled	enabled	2012-10-10T22:30:30	-	n/a	n/a
Shared Processing Pool Capacity	Unattainable (Enable Shared Pool Monitoring)	-	2012-10-10T22:30:30	-	1	5
Free CPU Capacity	Unattainable (Enable Shared Pool Monitoring)	-	-	-	1	1


Memory

VIOS - MEMORY

	Name	Measured Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
✘	Real Memory	1.000 GB → 5.000 GB	5.000 GB	2012-10-10T22:30:30	-	1	5
i	Available Memory	0.041 GB	1.5 GB Avail.	2012-10-10T22:30:43	2012-10-10T22:40:43	n/a	n/a
✘	Paging Rate	67.5 MB/s Paging Rate	No Paging	2012-10-10T22:31:43	2012-10-10T22:33:28	n/a	n/a
✓	Paging Space Size	1.500 GB	-	2012-10-10T22:30:30	-	n/a	n/a
i	Free Paging Space	1.303 GB free	-	-	-	n/a	n/a
⚠	Pinned Memory	0.599 GB pinned	less than 0.500 GB pinned	2012-10-10T22:31:28	2012-10-10T22:40:43	1	4

Java Performance Advisor (JPA)





Java Performance Advisor (JPA)

Updated Thursday at 6:27 AM by HemaBt | Tags: None [Add tags](#)

[Edit](#) [Page Actions](#)

Overview

The JPA Tool provides recommendations to improve the performance of Java/WAS applications running on AIX. The recommendations are based on Java tuning best practices. JPA uses the following criteria as factors to determine the recommendations:

- Relative importance of the Java application
- Machine usage (Test/Production)
- User's expertise level

Detailed usage and command line options can be viewed with the help message ('-h' option).

Note
Only AIX version 6.1 and 7.1 is supported.

Setup

JPA will be packed in ".tar.gz" format. To install the JPA, run

```
$ gunzip JPA.tar.gz
```

```
$ tar -xvf JPA.tar
```

```
$ chmod +x jpa.pl *.pm
```

Download

The Beta Version of the tool can be downloaded by directly clicking the link below:
[JPA.tar.gz](#)

Contact

IBM Systems Performance Group:
[Hong Hua \(honghua@us.ibm.com\)](mailto:Hong.Hua@us.ibm.com)
[Preethi Narayan \(preetnar@in.ibm.com\)](mailto:Preethi.Narayan@in.ibm.com)

Note:
Only root user have privileges to run this tool.

Steps to run JPA


- Select the java pid which need to be tuned. To list the java process running in the system , run

```
$ ps -eaf | grep java
```

Note: Running the tool without any option generates the list of Java/WAS process running in the machine.

- Run the jpa tool against the required process by specifying the pid with appropriate settings as listed below.

```
$ jpa.pl [-e Beginner|Intermediate|Expert] [-u Test|Production] [-i Primary|Secondary] [-o OutputFile] pid
```



More complex command line

- On AIX


```
# gunzip JPA.tar.gz
# tar xvf JPA.tar
# cd JPA
# ./jpa.pl
```

Java Performance Advisor Tool version 1.0
 Usage: jpa.pl [[-y] [-e Beginner|Intermediate|Expert] [-u Test|Production] [-i Primary|Secondary] [-o OutputFile] [-d] pid]

Since a PID was not specified, the following list is the current JVMs active on this partition.

If the JVM is a WebSphere job, the Profile and Application Server names are shown. If this is not a WebSphere JVM, N/A is displayed.

PID	Class Name	WAS Profile	App Server Name
6815758	com.ibm.lwi.LaunchLW1	N/A	N/A
7143666	com.ibm.lwi.LaunchLW1	N/A	N/A
#			

Webpage has description – so does jpa.pl -h



Flag	Arguments	Description
-e	Beginner	Either the person running this tool is unfamiliar with this environment and the workloads running on it or is just starting to perform AIX administration. The recommendations that the tool will make will be conservative and will only recommend the lowest risk options, while flagging the more aggressive options as possibilities.
	Intermediate	The person that is running this tool is knowledgeable about the environment and being an AIX administrator. Recommendations will be more aggressive than the administrators in the Beginner category.
	Expert	The person running the tool is very knowledgeable about the environment and being an AIX administrator. All recommendations that the tool will make will be verified by the administrator before the setting is changed. Thus, the tool will be the most aggressive on making recommendations and expect the administrator to make judgment calls on each and every recommendation.
-u	Test	This partition is primarily a test partition, thus the performance recommendations can be more aggressive without affecting a production environment.
	Production	This partition is being used for production use, thus down-time is not an option. Our recommendations will be less aggressive on a Production environment.
-i	Primary	The job has paramount importance compared to the other jobs on the system. We should make recommendations that could affect other jobs running on the system, if it improves the speed.
	Secondary	Although this job is important, there are other jobs that have a higher priority. Any recommendations made should have a small chance of affecting other jobs on the system.
-d		Enables debug information. This option enables JPA to run in debug mode which generates enough information for troubleshooting issues with JPA.
-o	OutputFile	The output result file.
	pid	PID of the process which need to be tuned. if no pid is supplied, all JVMs will be shown along with their PIDs.
-h		Print help message
-v		Print version

More complex command line



```
jpa.pl [-e Beginner | Intermediate | Expert]
        [-u Test | Production]
        [-i Primary | Secondary]
        [-o OutputFile]
        pid
```

- Make your own mind up on the Java process
- # ps -ef | grep java ← to find the Java processes
- Or nmon then tU ←top with Command line
- # ./jpa.pl -e Expert -u Test -i Primary 1234567890

Warning:

Java environment. In addition, Java Performance Advisor may not consider all of the possible combinations of performance attributes and settings when making these performance tuning recommendations. As a result, accepting these recommendations may impact performance of other applications and other Java environments on this machine.

Note: Java Performance Advisor is a complimentary tool to Workload Estimator. Java Performance Advisor recommends values to tune the performance of your Java applications and environments. These recommendations are given without taking into account any specific runtime workloads on the system. Workload Estimator helps predict a system and the necessary physical resources for a given workload. Both tools may give different recommendations and may differ from the documented minimums. In addition, both tools attempt to ultimately provide the necessary information to best tune your Web environment and system performance. However, no representation is made by either tool that their corresponding recommendations will achieve a specific throughput, response time, or other performance measurement in any given installation environment. To use Workload Estimator to size your workload, see Workload Estimator.

I Agree (y/n) : █

- Up to you – I hit “y”

- Default output file is jpa_output.xml
- Or you could use: -o <your-name-here>.xml
 - To identify the processes
- The machine (LPAR) time & date are in the output file
- Only runs for a second or two
- FTP the .xml file to your workstation directory with the other JPA files & double click it.

Java Advisor Screen shots



User Stack size low



AIX					
	Name	Current Value	Recommended Value	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
	AIX Version	7.1 : 7100-01	More Details...	3	3
	TCP Buffer Size (Send)	16 KB	14 KB to 140 KB	1	1
	TCP Buffer Size (Receive)	16 KB	14 KB to 140 KB	1	1
	SMT Level	4	4	3	4
	RSET Information for job	Off	Off	5	5
	Reserved 16MB Large Pages	0		5	3
	Maximum Number File Descriptors	2000	2000 to Unlimited	1	1
	User Data Area Size	unlimited	Unlimited	3	3
	User Stack Size	4194304	Unlimited	3	3
	User Memory Size	unlimited	Unlimited	3	3
	LDR_CNTRL environment variable	Not Set		3	1
	EXTSHM environment variable	Not Set	Not Set	4	3
	MEMORY_AFFINITY environment variable	Not Set	Not Set	3	4
	SPINLOOPTIME environment variable	Not Set		3	1
	AIXTHREAD_SCOPE environment variable	S	S	2	3
	MALLOCOPTIONS environment variable	Not Set		3	1

Java Advisor Screen shots



Java internals



Java					
	Name	Current Value	Recommended Value	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
	JVM Version	1.6.0 SR9	More Details...	4	4
	JVM Type	64 bit	32 bit	4	4
	Enable Compressed Refs	On	On	2	3
	Initial Heap Size	512 MB	1 GB to 4 GB	2	3
	Maximum Heap Size	4 GB	4 GB	5	5
	JVM Debug	Off	Off	1	5
	Verbose Class Loading	Off	Off	1	2
	Verbose Garbage Collection	On	On	1	1
	QuickStart	Off	Off	3	3
	Java JVMPI	Off	Off	2	5
	Garbage Collection Policy	gencon	gencon	2	3
	Use 64K Medium Pages	Yes	Yes	2	3
	Use 16 MB Large Pages	No		4	3

Java Advisor Screen shots

- Interesting comments on the non-green items
- Memory

Why Important?
Java Virtual Machines are VERY sensitive if the amount of memory is inadequate on the partition. Since the garbage collector must examine the entire heap to determine if objects are in use, if there is not enough memory to house this heap, performance will be poor. Java Virtual Machines can only run optimally if there is enough memory available to fit the Java Heaps of all active JVMs on the system plus memory that is required for other jobs running on the system. If there is no free memory available on the AIX partition, it is likely that increasing the amount of memory for this partition would benefit Java performance.

How To Modify?
Either add additional memory to the machine, or give the current partition additional memory using the HMC interface used to manage this system.

- Initial Heap

Why Important?
The Initial Heap Size is allocated when the JVM starts up. This value should be at least 25% of the Max Heap Size. If this is a long running WebSphere instance, you may set to the Max Heap Size.

How To Modify?
The initial heap size can be set with the -Xms command line option in Java. For WebSphere, you can set this value in the Initial heap size parameter using the WebSphere Integrated Solutions Console.

Nigel's To Do List

- While I like poking fun at Systems Director & Java there is nothing badly wrong here
- If I had performance issues I might tweak these highlighted areas 1st & probably ask ISD Support for advice too
- Home grown Java programs or other ISV code might show a very different story

PowerVM Advisor

New version available 12th December 2012

IBM
© 2012 IBM
Performance Advisors



PowerVM Virtualization Performance Advisor

Updated Thursday at 6:28 AM by HemaBT | Tags: None [Add tags](#)
[Edit](#) [Page Actions](#)

PowerVM Virtualization Performance Advisor

The PowerVM Virtualization Performance Advisor diagnoses performance issues on PowerVM partitions/Power system. The capture tool has been developed by the IBM Power Systems Virtualization Performance team and is intended to help Systems Administrators, analysts, field engineers and anyone interested in diagnosing and addressing performance issues within the Power System.

From version 12102012 the tool is greatly extended to run in a new System level mode by using an additional parameter as explained

Warning: The latest version 02012013 expires on 28th Feb 2013. After this date the tool will stop and output a message asking you to update from this web page. This is to ensure that the latest improved PowerVM Advisor is used. Please remove the older version from your PC/workstation which is used to view the report to avoid any mismatch. If you make this mistake the report will look like it has configuration section and the title is incomplete.

The Advisor runs on the AIX partition, it collects performance metrics, analyzes performance and provides a health check report. The

- System configuration details (available/configured resources, firmware level and Virtualization capabilities)
- Partition configuration details (LPAR type, configured resources)
- Provides advisories to improve performance based on the analysis done.

The Advisor can be run in LPAR mode or System mode.

LPAR mode of PowerVM Advisor:

The Advisor runs within an AIX partition (dedicated or shared CPU). The tool runs with a default of 30 minutes (user requests for shorter duration).

- system configuration (available resources, hardware & software levels)
- partition (type, mode, available resources, software levels)
- partition settings and
- recommendations to improve performance (e.g. placement)

It is recommended to run the tool when the LPAR is busy as this tool collects performance metrics of the LPAR for the specified run time. The tool, lparstat, to collect performance data. The LPAR mode of this PowerVM Advisor covers optimization for:

- LPAR processor,
- LPAR memory and
- LPAR IO.

Download

To download the current Beta version(02012013) of the PowerVM Advisor, click below.

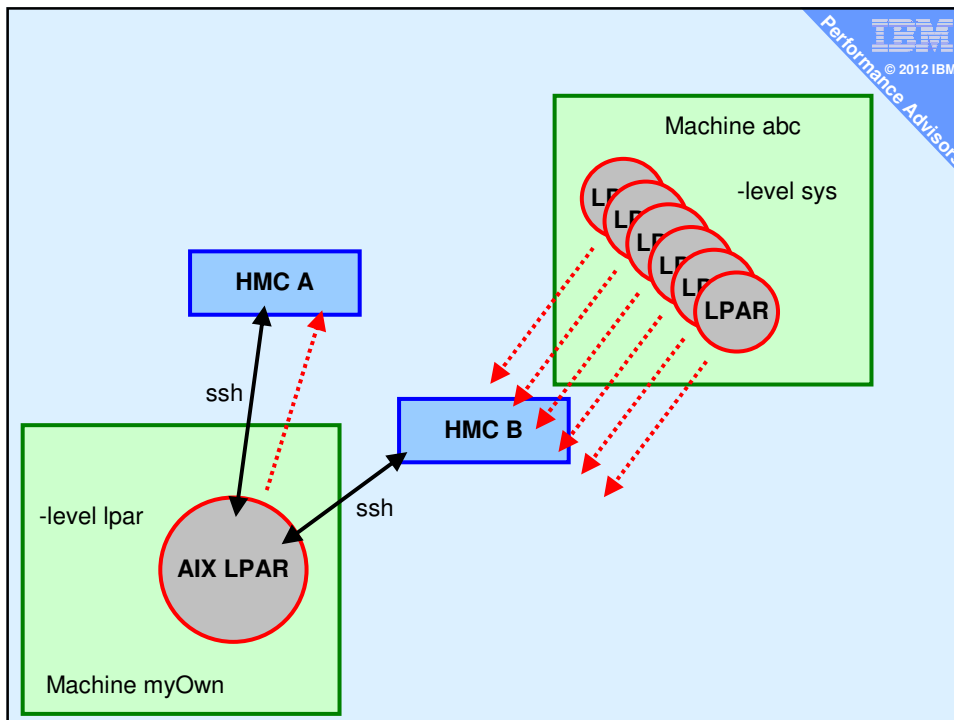
- [Download PowerVM Advisor 02012013](#) - File vpa.tar ~800KB in .tar format

To download the ssh source files in order to setup ssh connection with HMC, click below. If the AIX LPAR is old this will update your AIX to the latest ssh version.

- [Download ssh for a better connection to HMC](#) - File ssh.tar ~20MB in .tar format

...
Much larger website for more complicated install

IBM
© 2012 IBM
Performance Advisors



PowerVM Advisor Download

- Two files: vpa.tar & ssh.tar
- Transferred both to the target VM (LPAR)
- Then followed the instructions
 - # tar xvf vpa.tar
 - # cd vpa
- It wants ssh connection to your HMC via the hscroot or other = needs user & password

See next page for what you want to see ...

Setup ssh to the HMC (good example)



```
# ./setup.pl -ssh ../ssh.tar -hmc hmc10.aixncc.uk.ibm.com -user nag
```

```
Please enter HMC password:SECRET
HMC : hmc10.aixncc.uk.ibm.com
*****
spawn scp nag@hmc10.aixncc.uk.ibm.com:/home/nag/.ssh/authorized_keys2 ./temp_hmc
Password:
authorized_keys2                                100% 0 0.0KB/s 00:00

spawn scp ./temp_hmc nag@hmc10.aixncc.uk.ibm.com:/home/nag/.ssh/authorized_keys2
Password:
temp_hmc                                         100% 412 0.4KB/s 00:00
spawn ssh hmc10.aixncc.uk.ibm.com -l nag
exit
Last login: Mon Jun 11 15:30:35 2012 from purple7.aixncc.uk.ibm.com
exit
hscpe@hmc10:~> exit
exit
Connection to hmc10.aixncc.uk.ibm.com closed.

passwordless ssh configured

#
```

Capture data for -level lpar (the default)



30 minutes HMC hostname

Server name as
seen on HMC

```
# ./virt_pa.pl -t 30 -hmc hmc10.aixncc.uk.ibm.com
-user nag -sys purple-9117-MMB-SN100525P -level lpar
```

Virtualization Performance Advisor.....

```
The Execution Environment for this run,
1.HMC Name:hmc10.aixncc.uk.ibm.com
2.HMC Username:nag
3.Power System Name:purple-9117-MMB-SN100525P
4.Power System ID:4127532364
5.Advisor Level:lpar
6.Execution Time(in mins):30      Stops here for 30 minutes
```

Note this was only 30 minutes (-t option)
1 hour (60 minutes) to 3 hours (180 minutes)
when busy would be much better

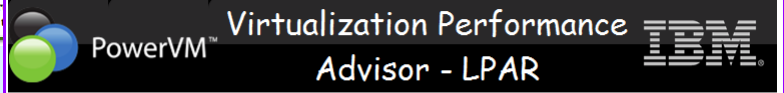
PowerVM Advisor Screen shots -level lpar



- When and where

The ratings and recommendations in the table below were chosen with the following information:

Hostname : purple7
 PartitionId : 17
 Start time : Thu Dec 13 16:53:22 2012
 End time : Thu Dec 13 17:23:46 2012



The ratings and recommendations in the table below were chosen with the following information:

CEC Name : purple-9117-MMB-SN100525P
 Current LPAR : purple7
 PartitionId : 17
 Start time : Thu Dec 13 16:53:22 2012
 End time : Thu Dec 13 17:23:46 2012

PowerVM Advisor Screen shots



- Whole Server System

SYSTEM CONFIGURATION		Name	Value
Server Model	IBM,9117-MMB	Power Architecture Model	IBM,9117-MMB
Processor Family	PowerPC_POWER7	Processor Family	PowerPC_POWER7
Server Frequency	3108 MHz	Server Frequency	3108 MHz
Installed System CPUs	32 cores	Available Processors	32 cores
Licensed System CPUs	32 cores	Activated Processors	32 cores
Installed System Memory	131072 MB	Available Memory	131072 MB
Licensed System Memory	131072 MB	Activated Memory	131072 MB
Physical Adapters on the System	Universal Serial Bus Serial Controller-2, no Dual Port Fibre Chan	Physical Adapters on the System	Universal Serial Bus UHC Spec-2 nos -SAS RAID Controller-2 nos -Quad 10/100/1000 Base-TX PCI-Express Adapter-2 nos -Generic XT-Compatible Serial Controller-2 nos -PCI-E SAS Controller-5 nos -RAID Controller-2 nos -Ethernet controller-1 nos -PCI-to-PCI bridge-1 nos -8 Gigabit PCI Express Dual Port Fibre Channel Adapter-5 nos :
Firmware Level	AM730_087	Firmware Version	AM730_087
Advance Virtualization Functions.	ActiveLPM Supported: ActiveMemoryExpansion Supported: ActiveMemorySharing Supported: SPPL set to MAX:	PowerVM advanced features	ActiveLPM Supported: ActiveMemorySharing Supported: SPPL set to MAX:
Shared Processor Pool	Total Shared pool = 1: Shared Pool Name Pool Size(Cores) DefaultPool ""	Shared Processor Pool	Total Shared pool = 1: Shared Pool Name Pool Size(Cores) DefaultPool ""

LPAR PROCESSOR OPTIMIZATION

Name	Current Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest								
Lpar Placement Optimization	Placement <table border="1"> <tr> <th>Global Domain</th> <th>Chip Domain</th> <th>Memory</th> <th>CPU</th> </tr> <tr> <td>0</td> <td>0</td> <td>1712.250</td> <td>0-3</td> </tr> </table>	Global Domain	Chip Domain	Memory	CPU	0	0	1712.250	0-3	-	-	-	NA	NA
Global Domain	Chip Domain	Memory	CPU											
0	0	1712.250	0-3											
SMT Effectiveness	SMT-4 is set	-	Thu Dec 13 16:53:22 2012	-	NA	NA								
Virtual Processor Folding Optimization	Virtual Processor Folding Threshold - 49%	Rerun when lpar is busy	Thu Dec 13 16:53:26 2012	-	NA	NA								
SPLPAR Configuration Optimization	%Entitlement Consumed: 5.31% Physical Processor Consumed: 0.03 %sys: 1.30% %usr: 1.73% %idle: 96.97% %wait: 0.00% Ent: 0.50 Vcpu: 1	-	Thu Dec 13 16:53:22 2012	Thu Dec 13 17:23:46 2012	NA	NA								
Shared resource capacity optimization	%Entitlement Consumed: 5.31% Physical Processor Consumed: 0.03 %sys: 1.30% %usr: 1.73% %idle: 96.97% %wait: 0.00% Ent: 0.50 Vcpu: 1 Shared Pool utilization: 7.66%	-	Thu Dec 13 16:53:22 2012	Thu Dec 13 17:23:46 2012	NA	NA								

PowerVM Advisor Screen shots

- VM Config

LPAR CONFIGURATION

Name	Value
Partition Type	SharedLpar, SMT-4
Partition Mode	Uncapped, Weight - 100
Partition Virtual Processor(s)	1
Partition Desired Processor(s)	0.5
Partition Memory	2048 MB
AIX Version	7.1.0.0
AIX Build	Apr 18 2012 1215C_71F

PowerVM Advisor Screen shots



VM Memory

LPAR MEMORY OPTIMIZATION							
Name	Current Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest	
Pinned Memory	Real memory - 2048.00 MB and Pinned memory - 946.28 MB	-	Thu Dec 13 16:53:22 2012	Thu Dec 13 17:23:46 2012	NA	NA	
Paging Space	Paging Space - 512.00 MB, Free Paging Space - 500.87 MB	-	Thu Dec 13 16:53:22 2012	Thu Dec 13 17:23:46 2012	NA	NA	
Paging Rate	Paging Rate - 0.00 MB/sec	-	Thu Dec 13 16:53:22 2012	Thu Dec 13 17:23:46 2012	NA	NA	

PowerVM Advisor

VM I/O

LPAR IO OPTIMIZATION							
Name	Current Value	Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest	
IOsBlocked	pass	-	Thu Dec 13 16:53:22 2012	Thu Dec 13 17:23:46 2012	NA	NA	
Long IO Latency	pass	-	Thu Dec 13 16:53:22 2012	Thu Dec 13 17:23:46 2012	NA	NA	
FC Adapter Count	-1	-	-	-	NA	NA	
FC Avg IOps	avg IOps0.000000 @ -1KB	-	-	-	NA	NA	
FC Port Speeds	optimal	-	-	-	NA	NA	
FC Port Speeds	running at speed	-	-	-	NA	NA	
Disk Queue depth	hdisk0:3 hdisk1:3	Check queue depth on VIOS and Change Qdepth to 10	Thu Dec 13 16:53:22 2012	-	0	3	

Stolen from a large machine



PowerVM™ Virtualization Performance Advisor - LPAR

The ratings and recommendations in the table below were chosen with the following information:
 Hypervisor: 3
 PartitionId: 1
 Start time: Tue Mar 6 20:14:28 2012
 End time: Tue Mar 6 20:44:38 2012

SYSTEM CONFIGURATION	
Name	Value
Server Model	PowerPC_POWER7
Processor Family	PowerPC_POWER7
Server Frequency	3500 MHz
Installed System CPU's	48 cores
Licensed System CPU's	48 cores
Installed System Memory	524288 MB
Licensed System Memory	524288 MB
Physical Adapters on the System	Universal Serial Bus UHCI SPC-4 nos; Generic XT-Compatible Serial Controller-4 nos; PCI-E SAS Controller-8 nos; RAID Controller-4 nos; Ethernet controlAdapters
Firmware Level	AMT50_02P
Advanced Virtualization Functions	Active/PM Supported; ActiveMemoryExpansion Supported; ActiveMemorySharing Supported; SPPL set to MAX
Shared Processor Pools	Total Shared pool = 3 Shared Pool Name Pool Size(Cores) pasW1M1 3.0 pasW2M2 3.0

LPAR CONFIGURATION	
Name	Value
Partition Type	1 Lpar, SMT-4
Partition Mode	Capped
Partition Virtual Processor(s)	8.0
Partition Memory	50556 MB
AIX Version	7.1.0.0
AIX Build	Apr 4 2011 1314A_71B

LPAR MEMORY OPTIMIZATION						
Name	Current Value	Recommended Value	First Observed	Last Observed	Risk I=lowest S=highest	Impact I=lowest S=highest
Placed Memory	Read memory - 204556.00 MB Free memory - 20295.07 MB	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA
Paging Space	Paging Space - 212.00 MB Free Paging Space - 482.75 MB	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA
Paging Rate	Paging Rate - 0.00 MB/sec	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA

LPAR PROCESSOR OPTIMIZATION																																										
Name	Current Value	Recommended Value	First Observed	Last Observed	Risk I=lowest S=highest	Impact I=lowest S=highest																																				
Placement	<table border="1"> <thead> <tr> <th>Global Domain</th> <th>Chip Domain</th> <th>Memory</th> <th>CPU</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>63228.560</td><td>0-11</td></tr> <tr><td>0</td><td>6</td><td>60756.000</td><td></td></tr> <tr><td>1</td><td>1</td><td>63246.000</td><td>12-15</td></tr> <tr><td>1</td><td>2</td><td>63246.000</td><td>16-19</td></tr> <tr><td>2</td><td>3</td><td>63223.000</td><td>20-23</td></tr> <tr><td>2</td><td>4</td><td>63478.690</td><td>24-27</td></tr> <tr><td>3</td><td>5</td><td>61503.000</td><td>28-31</td></tr> <tr><td>3</td><td>7</td><td>52539.000</td><td></td></tr> </tbody> </table> Only memory assigned from 0 Global Domain 6 Chip Domains Only memory assigned from 3 Global Domain 7 Chip Domains	Global Domain	Chip Domain	Memory	CPU	0	0	63228.560	0-11	0	6	60756.000		1	1	63246.000	12-15	1	2	63246.000	16-19	2	3	63223.000	20-23	2	4	63478.690	24-27	3	5	61503.000	28-31	3	7	52539.000		Imbalanced resource allocation. Check System level advisor for recommendation.	Tue Mar 6 20:14:28 2012	-	NA	NA
Global Domain	Chip Domain	Memory	CPU																																							
0	0	63228.560	0-11																																							
0	6	60756.000																																								
1	1	63246.000	12-15																																							
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2	4	63478.690	24-27																																							
3	5	61503.000	28-31																																							
3	7	52539.000																																								
Local Memory access	Local Memory access - 0.00 and Remote memory access - 1210.84	Local Memory access is high. Distant memory access is high.	Tue Mar 6 20:14:28 2012	-	NA	NA																																				
SMT Effectiveness	SMT-4 is set	-	Tue Mar 6 20:14:28 2012	-	NA	NA																																				
Virtual Processor Folding Optimization	Virtual Processor Folding Threshold -49%	Rerun when lpar is busy	Tue Mar 6 20:14:33 2012	-	NA	NA																																				

LPAR IO OPTIMIZATION						
Name	Current Value	Recommended Value	First Observed	Last Observed	Risk I=lowest S=highest	Impact I=lowest S=highest
IOs Blocked	pass	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA
Long IO Latency	pass	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA
FC Adapter Count	2	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA
FC AVE IOPS	avg 30pps @ 0.000000 @ 0KB	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA
FC Post Speeds	optimal	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA
FC Post Speeds	running at speed	-	Tue Mar 6 20:14:28 2012	Tue Mar 6 20:44:38 2012	NA	NA

VM (LPAR) spread across a machine



Power 770
 LPAR:
 VP=8
 500GB RAM

Not pretty =
 LPAR spread across
 ALL four CEC's due
 to memory needs

LPAR PROCESSOR OPTIMIZATION																																										
Name	Current Value	Recommended Value	First Observed	Last Observed	Risk I=lowest S=highest	Impact I=lowest S=highest																																				
Placement	<table border="1"> <thead> <tr> <th>Global Domain</th> <th>Chip Domain</th> <th>Memory</th> <th>CPU</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>63228.560</td><td>0-11</td></tr> <tr><td>0</td><td>6</td><td>60756.000</td><td></td></tr> <tr><td>1</td><td>1</td><td>63246.000</td><td>12-15</td></tr> <tr><td>1</td><td>2</td><td>63246.000</td><td>16-19</td></tr> <tr><td>2</td><td>3</td><td>63223.000</td><td>20-23</td></tr> <tr><td>2</td><td>4</td><td>63478.690</td><td>24-27</td></tr> <tr><td>3</td><td>5</td><td>61503.000</td><td>28-31</td></tr> <tr><td>3</td><td>7</td><td>52539.000</td><td></td></tr> </tbody> </table> Only memory assigned from 0 Global Domain 6 Chip Domains Only memory assigned from 3 Global Domain 7 Chip Domains	Global Domain	Chip Domain	Memory	CPU	0	0	63228.560	0-11	0	6	60756.000		1	1	63246.000	12-15	1	2	63246.000	16-19	2	3	63223.000	20-23	2	4	63478.690	24-27	3	5	61503.000	28-31	3	7	52539.000		Imbalanced resource allocation. Check System level advisor for recommendation.	Tue Mar 6 20:14:28 2012	-	NA	NA
Global Domain	Chip Domain	Memory	CPU																																							
0	0	63228.560	0-11																																							
0	6	60756.000																																								
1	1	63246.000	12-15																																							
1	2	63246.000	16-19																																							
2	3	63223.000	20-23																																							
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3	5	61503.000	28-31																																							
3	7	52539.000																																								
Local Memory access	Local Memory access - 0.00 and Remote memory access - 1210.84	Local Memory access is high. Distant memory access is high.	Tue Mar 6 20:14:28 2012	-	NA	NA																																				
SMT Effectiveness	SMT-4 is set	-	Tue Mar 6 20:14:28 2012	-	NA	NA																																				
Virtual Processor Folding Optimization	Virtual Processor Folding Threshold -49%	Rerun when lpar is busy	Tue Mar 6 20:14:33 2012	-	NA	NA																																				

Nigel's To Do List

- Actually this would be good on all my busy LPARs

Second mode **-level sys** (whole machine)

```
# ./virt_pa.pl -t 30 -hmc hmc10.aixncc.uk.ibm.com  
-user nag -sys purple-9117-MMB-SN100525P -level sys
```

```
System Level Advisor is invoked
```

```
Virtualization Performance Advisor.....
```

```
The Execution Environment for this run,
```

- 1.HMC Name:hmc10.aixncc.uk.ibm.com
- 2.HMC Username:nag
- 3.Power System Name:purple-9117-MMB-SN100525P
- 4.Power System ID:4127532364
- 5.Advisor Level:sys
- 6.Execution Time(in mins):30

```
Warning only(continuing execution):
```

```
To collect processor utilization data on  
purplevio1,xmtopas agent has to be enabled on LPAR  
purplevio1.
```

```
Warning only(continuing execution):
```

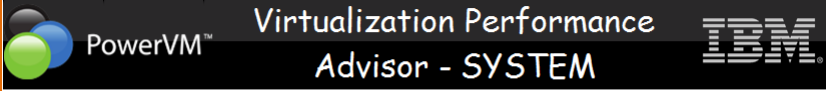
```
To collect processor utilization data on  
purplevio2,xmtopas agent has to be enabled on LPAR  
purplevio2.
```

```
#
```

PowerVM Advisor Screen shots -level sys



- When and where



The ratings and recommendations in the table below were chosen with the following information:

CEC Name : purple-9117-MMB-SN100525P
Current LPAR : purple6
PartitionId : 16
Start time : Sun Dec 16 08:22:40 2012
End time : Sun Dec 16 08:53:35 2012

SYSTEM CONFIGURATION					
Name	Value				
Power Architecture Model	IBM,9117-MMB				
Processor Family	PowerPC_POWER7				
Server Frequency	3108 MHz				
Available Processors	32 cores				
Activated Processors	32 cores				
Available Memory	131072 MB				
Activated Memory	131072 MB				
Physical Adapters on the System	Universal Serial Bus UHC Spec-2 nos ;SAS RAID Controller-2 nos ;Quad 10/100/1000 Base-TX PCI-Express Adapter-2 nos ;Generic XT-Comptable Serial Controller-2 nos ;PCI-E SAS Controller-5 nos ;RAID Controller-2 nos ;Ethernet controller-1 nos ;PCI-to-PCI bridge-1 nos ;8 Gigabit PCI Express Dual Port Fibre Channel Adapter-5 nos ;				
Firmware Version	AM730_087				
PowerVM advanced features	ActiveLPM Supported: ActiveMemorySharing Supported: SPPL set to MAX:				
Shared Processor Pool	Total Shared pool = 1: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Shared Pool Name</th> <th>Pool Size(Cores)</th> </tr> </thead> <tbody> <tr> <td>DefaultPool</td> <td>""</td> </tr> </tbody> </table>	Shared Pool Name	Pool Size(Cores)	DefaultPool	""
Shared Pool Name	Pool Size(Cores)				
DefaultPool	""				
Affinity Lpar(s)	No Affinity Groups on the system				

SPLPAR Optimization								
Name	Current Value			Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
SPLPAR Resource Optimization	Lpar name	Avg Util %	Peak Util %	Physc Con (PC) > Entitlement ?				
	purple1-Blue-Wiki	0.65	1.07	No				
	purple2-ISD63	48.47	55.90	No				
	purple3 Repository	2.62	4.69	No				
	purple4-ISD63-NIM	0.59	0.74	No	Sun Dec 16 08:22:40 2012	Sun Dec 16 08:53:35 2012	NA	NA
	purple6	4.05	4.70	No				
	purple7-AIX7_TL1_WPAR	29.18	50.18	No				
	** purplevio1.purplevio2: Check if xntopas agent is running on all lpars. # purple10_RH55:purple11-AIX7sp1:purple12 IBMi:purple5-AIX5:purple8 SLES11:purple9 fresh:purplevio3: Lpar not active							
SPLPAR Configuration Optimization	Same as above			-	Sun Dec 16 08:22:40 2012	Sun Dec 16 08:53:35 2012	NA	NA
Shared Processor Pool Optimization	Sum of all Lpars entitlement = 20.80 Pool Capacity = 32.00			- Increase the Entitlement of lpars to match the pool capacity	Sun Dec 16 08:22:40 2012	Sun Dec 16 08:53:35 2012	1	4

Shared Pool Optimization								
Name	Current Value			Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
Shared pool capacity optimization	Pool Util = 17.72. Peak Pool Util = 24.88			-			NA	NA

LPAR Resource Configuration					
Lpar Name	VCpu(Shared)/ Procs(Dedicated)	Entl	Memory(GB)	SharingMode	State
mmapfull	0	0.00	0.00	ded, share_idle_procs	Not Activated
purple-hpc	6	0.00	32.00	ded, share_idle_procs	Not Activated
purple1-Blue-Wiki	4	2.00	8.00	shared, uncap	Running
purple10_RH55	1	0.50	2.00	shared, uncap	Not Activated
purple11-AIX7sp1	2	0.50	2.00	shared, uncap	Not Activated
purple12 IBMfi	0	0.00	6.38	shared, cap	Not Activated
purple2-ISD63	4	2.00	9.00	shared, uncap	Running
purple3 Repository	3	2.00	4.00	shared, uncap	Running
purple4-ISD63-NIM	2	0.80	2.00	shared, uncap	Running
purple5-AIX5	1	0.50	2.00	shared, uncap	Not Activated
purple6	1	0.50	2.00	shared, uncap	Running
purple7-AIX7_TL1_WPAR	10	9.00	2.00	shared, uncap	Running
purple8 SLES11	1	0.50	2.00	shared, uncap	Not Activated
purple9 fresh	0	0.00	2.00	shared, uncap	Not Activated
purplevio1	2	1.00	2.00	shared, uncap	Running
purplevio2	2	1.00	2.00	shared, uncap	Running
purplevio3	2	0.50	2.00	shared, uncap	Not Activated

Memory Optimization												
Name	Current Value							Recommended Value	First Observed	Last Observed	Risk 1=lowest 5=highest	Impact 1=lowest 5=highest
	Lpar Name	RealMem (GB)	Memory Util %	Paging Rate (bps)	Pinned Mem %	Paging space (GB)	Free PgSp (%)					
Memory Utilization	purple1-Blue-Wiki	8.000	99.87	0.00	22.89	1.25	99.10%	-	Sun Dec 16 08:22:40 2012	Sun Dec 16 08:53:35 2012	NA	NA
	purple2-ISD63	13.500	44.81	0.00	46.13	3.50	99.57%					
	purple3 Repository	4.000	99.79	0.00	32.15	0.50	97.99%					
	purple4-ISD63-NIM	3.000	54.62	0.00	59.56	0.50	98.59%					
	purple6	2.000	66.45	0.00	21.05	0.50	98.62%					
	purple7-AIX7_TL1_WPAR	2.000	89.42	0.00	50.31	0.50	97.81%					
Memory Utilization Optimization	- purple1-Blue-Wiki- 99.87% purple3 Repository- 99.79%							LPAR(s) utilizing high memory. increasing desired memory issuggested.	Sun Dec 16 08:22:40 2012	Sun Dec 16 08:53:35 2012	1	4
Paging	Pass							-	-	-	NA	NA
Free Page Space	Pass							-	Sun Dec 16 08:22:40 2012	Sun Dec 16 08:53:35 2012	NA	NA
Pinned Memory	- purple4-ISD63-NIM- 59.56% purple7-AIX7_TL1_WPAR- 50.31%							Increase memory to partition or reduce memory consumption.	Sun Dec 16 08:22:40 2012	Sun Dec 16 08:53:35 2012	1	4

VIOS, Java, PowerVM Advisor Summary

1. Perfect cost:benefit ratio
2. Regular new releases
3. Simple to use and understand
4. Very low impact on systems
5. Valuable Advice to help you make improvements

My systems are small & simple

- Output for larger, complex, busy productions systems
→ more interesting & worth the time investment

In the future: POWER/AIX support may ask you to run an Advisor during problem determinations as a quick check

- If that helps, next time, you can run it yourself
- That is SmarterPlanet ☺



Other info worth knowing about

▪ Java Performance on Power7 – Best Practice

- <http://public.dhe.ibm.com/common/ssi/ecm/en/pow03066usen/POW03066USEN.PDF>

▪ Oracle Architecture and Tuning on AIX v2.20

- <http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP100883>

▪ Power7 Virtualization Best Practice Guide

- https://www.ibm.com/developerworks/wikis/download/attachments/53871915/P7_virtualization_bestpractice.doc

▪ Give it a try today:

<http://tinyurl.com/PowerAdvisor>

