

# Introducing VIOS Investigator

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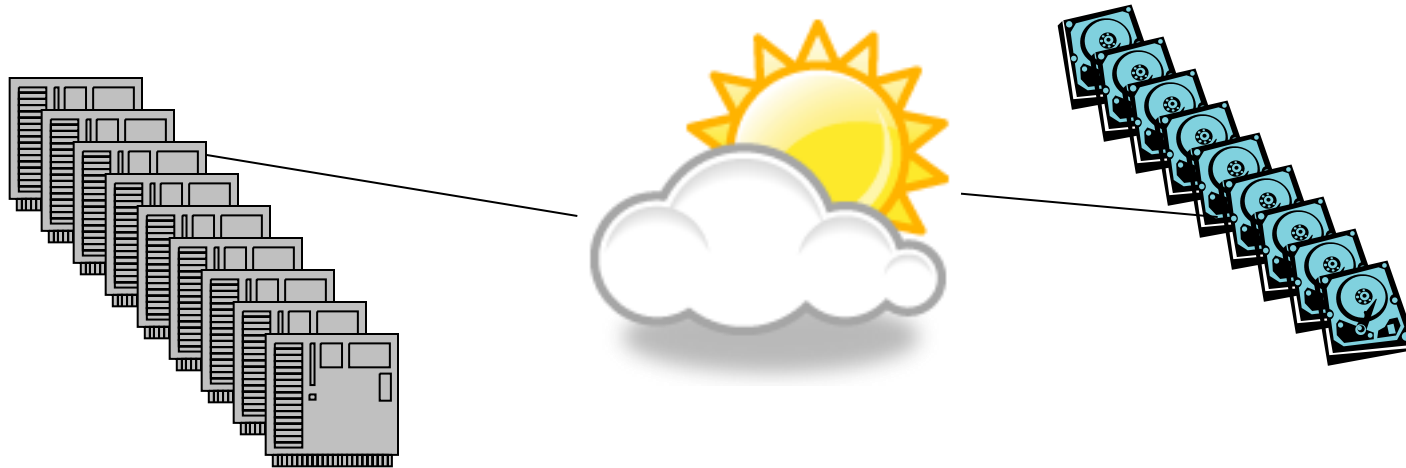
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# What we heard from the LUG We Want Flexibility



# Now a problem occurs

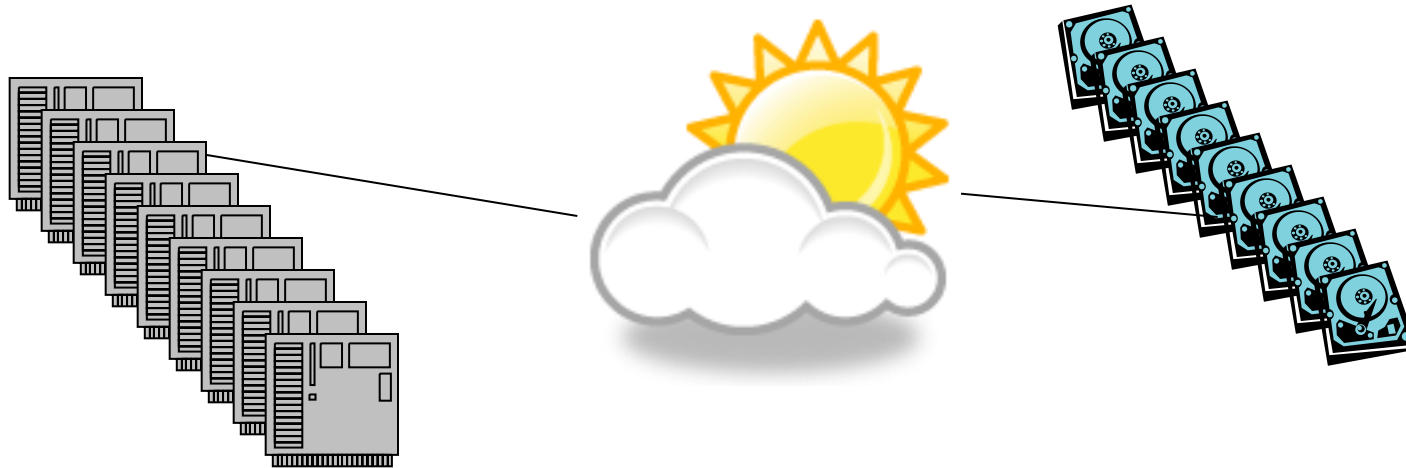


Complexity leaves us wondering  
Where is the problem? Which drive is which? What is going on?



What we heard from LUG  
We Want a Solution

# iDoctor VIOS Investigator





## Pieces of VIOS Investigator

- **Disk Mappings (Tom)**
  - Provides mappings from IBM i disks to VIOS disks
- **topas\_nmon data (Ron)**
  - Provides statistical data collection of VIOS disks
- **Analysis (Ron)**
  - Provides graphic analysis of statistical data mapped back to IBM i disks.

# VIOS Investigator: Disk Mappings

IBM iDoctor for IBM i C00935 [IDOCTOR.EXE 24/27448/65180 01:32768:11528] CA 710-SI44594

File Edit View Window Help

My Connections

- System
- Ctciha9v
- Idoc530
- Idoc540
- Idoc610
- Idoc710
- Lpdac710**
- Rchastri
- Za6bp18

iDoctor Components

Use this interface to work with the IBM iDoctor for IBM i components on your system. You may also apply access codes to your system that were given to you by IBM service to authorize use to a component.

Connected to system Lpdac710 with user MCBRIDE Change User

Component list for system Lpdac710:

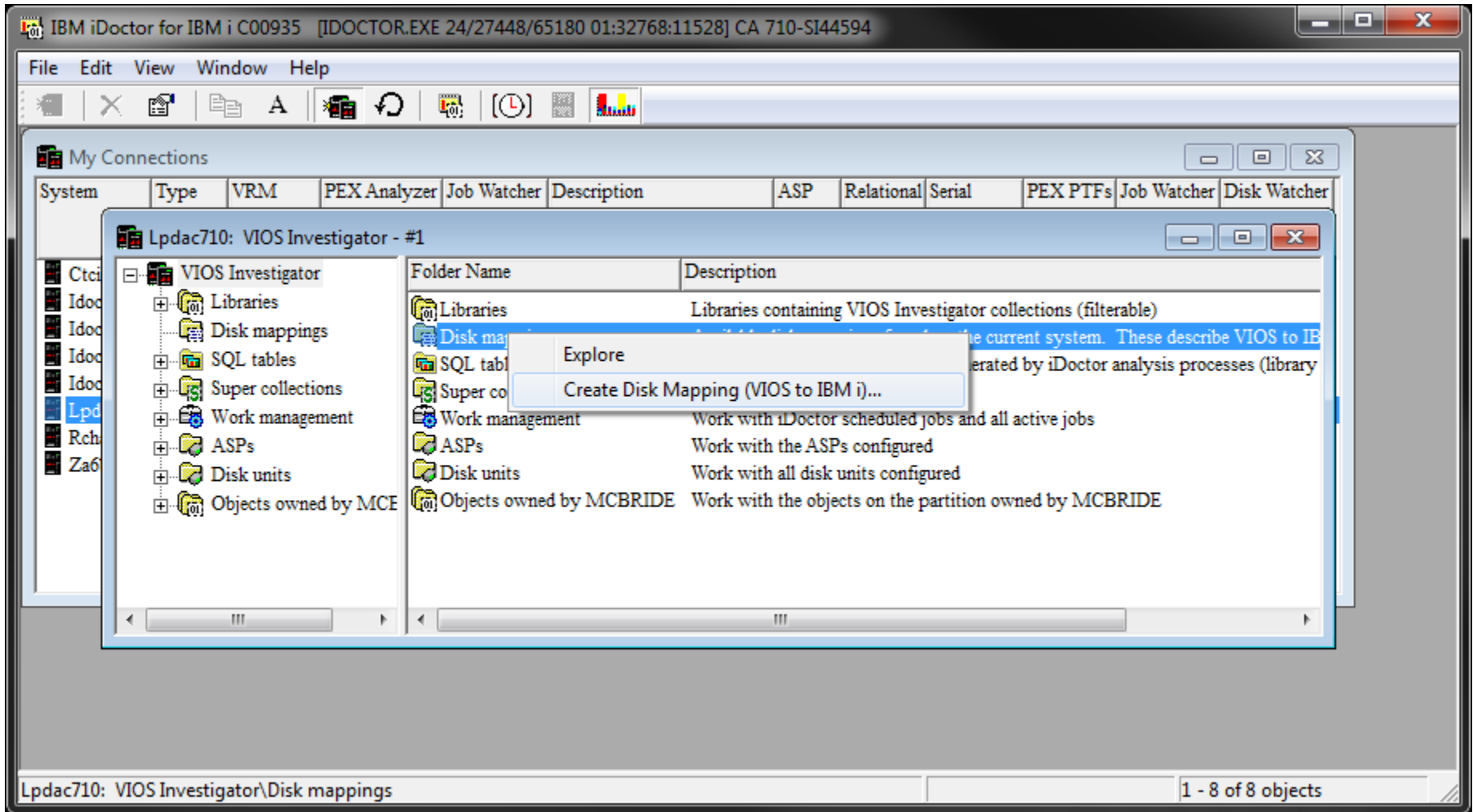
Component	Expires	Status
Job Watcher	Never	Available
Collection Services Investigator	Never	Available
Disk Watcher	Never	Available
Plan Cache Analyzer	Never	Available
PEX-Analyzer	Never	Available
<b>VIOS Investigator</b>		Available
Object Explorer		Available
Data Explorer		Available

Close window after clicking Launch Launch

To authorize use for a component, enter the access code below:

Access code:  Apply System serial:  Close

# VIOS Investigator: Disk Mappings



IBM iDoctor for IBM i C00935 [IDOCTOR.EXE 24/27448/65180 01:32768:11528] CA 710-SI44594

File Edit View Window Help

My Connections

System	Type	VRM	PEX Analyzer	Job Watcher	Description	ASP	Relational	Serial	PEX PTFs	Job Watcher	Disk Watcher
Lpdac710	VIOS Investigator - #1										

VIOS Investigator

Folder Name	Description
Libraries	Libraries containing VIOS Investigator collections (filterable)
Disk mappings	Disk mappings for the current system. These describe VIOS to IBM i mappings generated by iDoctor analysis processes (library)
SQL tables	SQL tables
Super collections	Super collections
Work management	Work with iDoctor scheduled jobs and all active jobs
ASPs	Work with the ASPs configured
Disk units	Work with all disk units configured
Objects owned by MCBRIDE	Work with the objects on the partition owned by MCBRIDE

Context Menu:

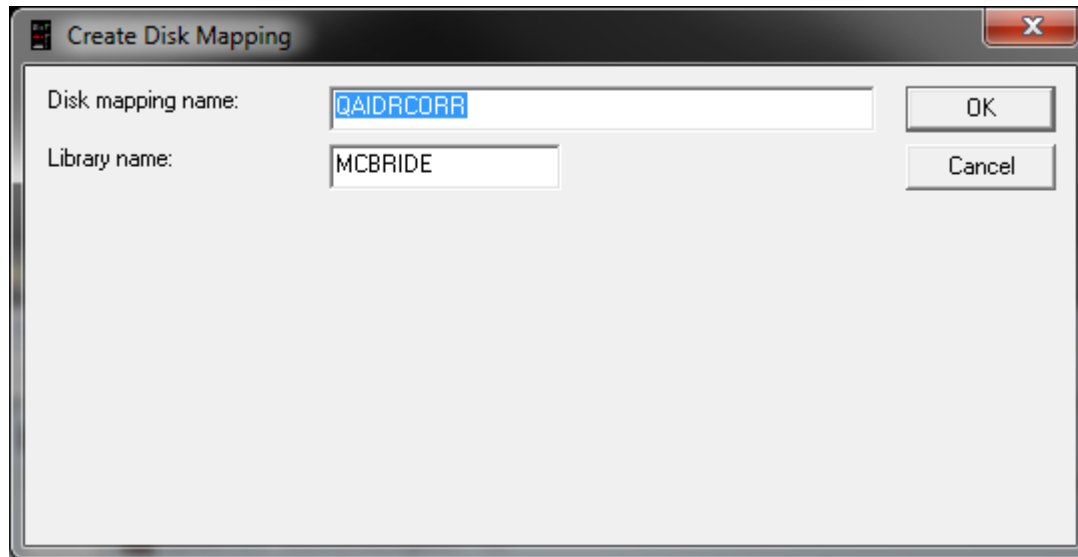
- Explore
- Create Disk Mapping (VIOS to IBM i)...

Lpdac710: VIOS Investigator\Disk mappings 1 - 8 of 8 objects



# VIOS Investigator: Disk Mappings

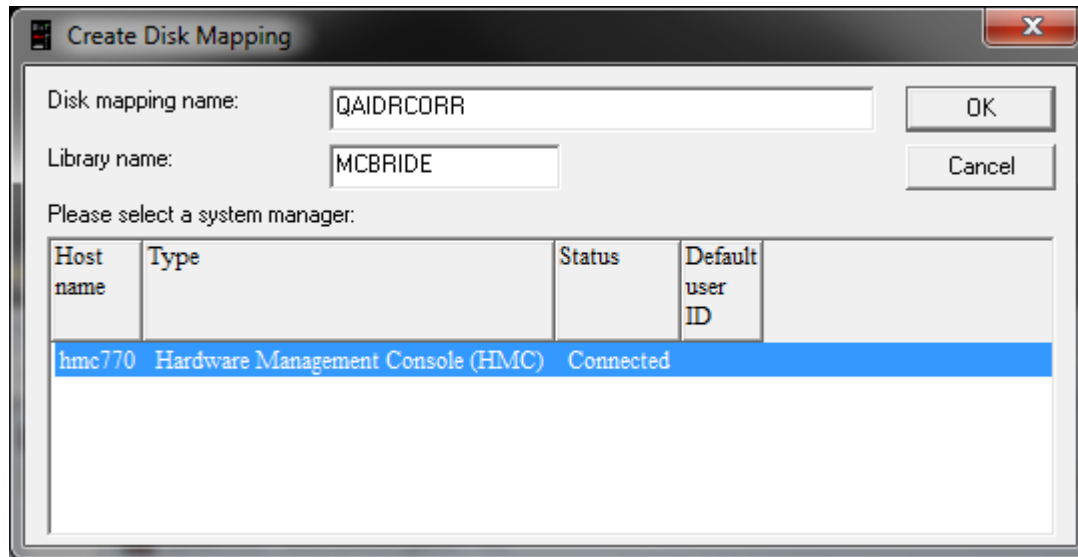
## Create Disk Mapping (VIOS to IBM i)...



Where to store?

## VIOS Investigator: Disk Mappings

### Create Disk Mapping (VIOS to IBM i)...



Disk mapping name: QAIDRCORR

Library name: MCBRIDE

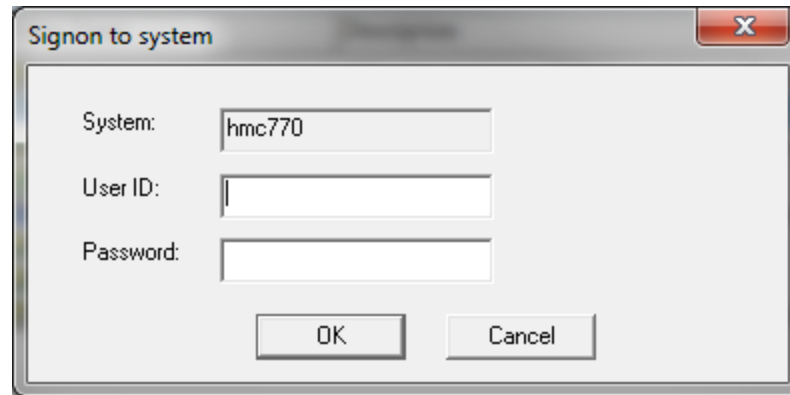
Please select a system manager:

Host name	Type	Status	Default user ID
hmc770	Hardware Management Console (HMC)	Connected	

Which HMC to use?

# VIOS Investigator: Disk Mappings

## Create Disk Mapping (VIOS to IBM i)...



A dialog box titled "Signon to system" with a close button (X) in the top right corner. It contains three input fields: "System:" with the value "hmc770", "User ID:" which is empty, and "Password:" which is empty. At the bottom, there are two buttons: "OK" and "Cancel".

Credentials for HMC?

# VIOS Investigator: Disk Mappings Explore

The screenshot shows the IBM iDoctor application window titled "IBM iDoctor for IBM i C00935 [IDOCTOR.EXE 24/27448/65180 01:32768:11528] CA 710-SI44594". The main window displays a tree view of "My Connections" with "Lpdac710: VIOS Investigator - #1" selected. The "Disk mappings" folder is expanded, showing a table of disk mappings.

System	Type	VRM	PEX Analyzer	Job Watcher	Description	ASP	Relational	Serial	PEX PTFs	Job Watcher	Disk Watcher
Lpdac710: VIOS Investigator - #1											
VIOS Investigator											
Libraries											
Disk mappings											
SQL tables											
Super collections											
Work management											
ASPs											
Disk units											
Objects owned by MCE											
Disk mapping	Library	Status	Created by	Created on	Description						
QAIDRCORR	NMON	Complete	MCCARGAR	2012-03-29	VIOS Correlation Table <V00.00.06:						
QAIDRCORR	MCBRIDE	Complete	MCBRIDE	2012-03-26	VIOS Correlation Table <V00.00.06:						
QAIDRCORR	MCCARGAR	Complete	MCCARGAR	2012-03-22	VIOS Correlation Table <V00.00.05:						
ABC	MCCARGAR	Complete	MCCARGAR	2012-03-20	VIOS Correlation Table <V00.00.04:						
QAIDRCORR	BSMENGES	Complete	BSMENGES	2012-03-08	VIOS Correlation Table <V00.00.04:						

The status bar at the bottom of the application window shows the path: "Lpdac710: VIOS Investigator\Disk mappings".

# VIOS Investigator: Disk Mappings Results

iDoctor Data Viewer - #1 - [Lpdac710/MCBRIDE/QAIDRCORR/ - #1]

File Edit View Window Help

SQL [Chart] [Clock] [Refresh] [Zoom] [Filter] [Sort] [Position: 1] →Go Σ

System Name	System Serial Number	Partition Name	Partitin ID	Device resource Name	ASP number	Disk unit type	Disk unit model	Serial number	Disk unit number	RAID type	Disk protection type	Card Position	VIOS LPar Id	VIOS Slot	Unit Controller Address	Virtual SCSI Server Adaptor	Virtual Target Device	Virtual Backing Device	Harddisk Node Name	Harddisk Logical Unit Identifier
MTSLPMB	102709P	LPDAC710	3	DD012	1	6B22	0050	P4-VFDPYMY	8	0		4	18	19	1	vhost0	vtscsi0	hdisk8	200400A0B847438C	0006000000000000
MTSLPMB	102709P	LPDAC710	3	DD009	1	6B22	0050	7X-2B5L6YZ	9	0		4	18	19	2	vhost0	vtscsi1	hdisk9	200400A0B847438C	0007000000000000
MTSLPMB	102709P	LPDAC710	3	DD006	1	6B22	0050	P5-JWHV97A	2	0		4	18	19	3	vhost0	vtscsi2	hdisk10	200400A0B847438C	0008000000000000
MTSLPMB	102709P	LPDAC710	3	DD001	1	6B22	0050	XX-CUPT2HX	1	0		4	18	19	4	vhost0	vtscsi4	hdisk11	200400A0B847438C	0009000000000000
MTSLPMB	102709P	LPDAC710	3	DD013	1	6B22	0050	5Y-X6P8S54	7	0		4	18	19	5	vhost0	vtscsi5	hdisk12	200400A0B847438C	000A000000000000
MTSLPMB	102709P	LPDAC710	3	DD005	1	6B22	0050	ES-EW5ZR2E	10	0		4	18	19	6	vhost0	vtscsi6	hdisk13	200400A0B847438C	000B000000000000
MTSLPMB	102709P	LPDAC710	3	DD007	1	6B22	0050	2D-SUJD3B	3	0		4	18	19	7	vhost0	vtscsi7	hdisk14	200400A0B847438C	000C000000000000
MTSLPMB	102709P	LPDAC710	3	DD008	1	6B22	0050	H5-2X93YNK	12	0		4	18	19	8	vhost0	vtscsi8	hdisk15	200400A0B847438C	000D000000000000
MTSLPMB	102709P	LPDAC710	3	DD002	1	6B22	0050	E2-E5KK57L	5	0		4	18	19	9	vhost0	vtscsi9	hdisk16	200400A0B847438C	000E000000000000
MTSLPMB	102709P	LPDAC710	3	DD004	1	6B22	0050	C6-G2DEL6T	11	0		4	18	19	10	vhost0	vtscsi10	hdisk17	200400A0B847438C	000F000000000000
MTSLPMB	102709P	LPDAC710	3	DD010	1	6B22	0050	NA-A7PU442	4	0		4	18	19	11	vhost0	vtscsi11	hdisk18	200400A0B847438C	0010000000000000
MTSLPMB	102709P	LPDAC710	3	DD003	1	6B22	0050	M2-53CZW4D	13	0		4	18	19	12	vhost0	vtscsi12	hdisk19	200400A0B847438C	0011000000000000
MTSLPMB	102709P	LPDAC710	3	DD011	1	6B22	0050	SN-TKAAVMJ	6	0		4	18	19	13	vhost0	vtscsi13	hdisk20	200400A0B847438C	0012000000000000
MTSLPMB	102709P	LPDAC710	3	DD014	2	6B22	0050	PQ-RHNZKD6	14	0		4	18	19	14	vhost0	vtscsi14	hdisk21	200400A0B847438C	0013000000000000
MTSLPMB	102709P	LPDAC710	3	DD020	1	6B22	0050	4H-GWHUYFD	15	0		4	18	19	15	vhost0	vtscsi15	hdisk22	200400A0B847438C	0014000000000000
MTSLPMB	102709P	LPDAC710	3	DD022	1	6B22	0050	RB-4D9C9WX	23	0		4	18	19	16	vhost0	vtscsi32	hdisk2	200400A0B847438C	
MTSLPMB	102709P	LPDAC710	3	DD021	1	6B22	0050	GB-HS2TZTS	16	0		5	18	5	1	vhost3	vtscsi16	hdisk23	200400A0B847438C	0015000000000000
MTSLPMB	102709P	LPDAC710	3	DD015	1	6B22	0050	PR-ENZTCN9	17	0		5	18	5	2	vhost3	vtscsi17	hdisk24	200400A0B847438C	0016000000000000
MTSLPMB	102709P	LPDAC710	3	DD018	1	6B22	0050	EH-LHJ8ABQ	18	0		5	18	5	3	vhost3	vtscsi18	hdisk25	200400A0B847438C	0017000000000000
MTSLPMB	102709P	LPDAC710	3	DD017	1	6B22	0050	V7-6FT6NCU	19	0		5	18	5	4	vhost3	vtscsi19	hdisk26	200400A0B847438C	0018000000000000

Rows 1 - 19 of 38

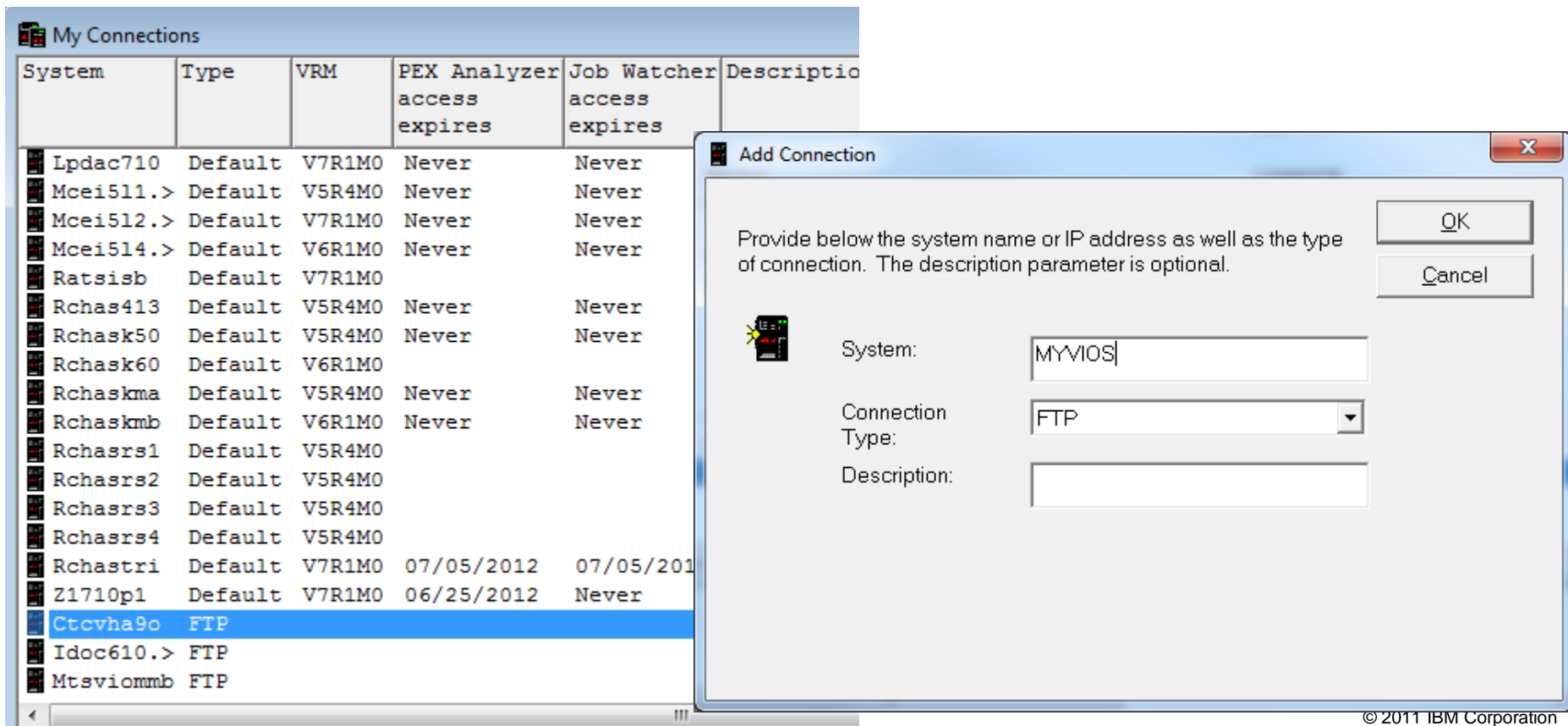


## VIOS Investigator GUI Overview

- **Collect data (NMON)**
- **Import data into DB2/IBM i**
- **Analyze**

## Collect Data – Step 1 – Add VIOS Connection

- Add your VIOS to iDoctor's Connection List
- Right-click Add Connection...
- Set the Connection Type to FTP

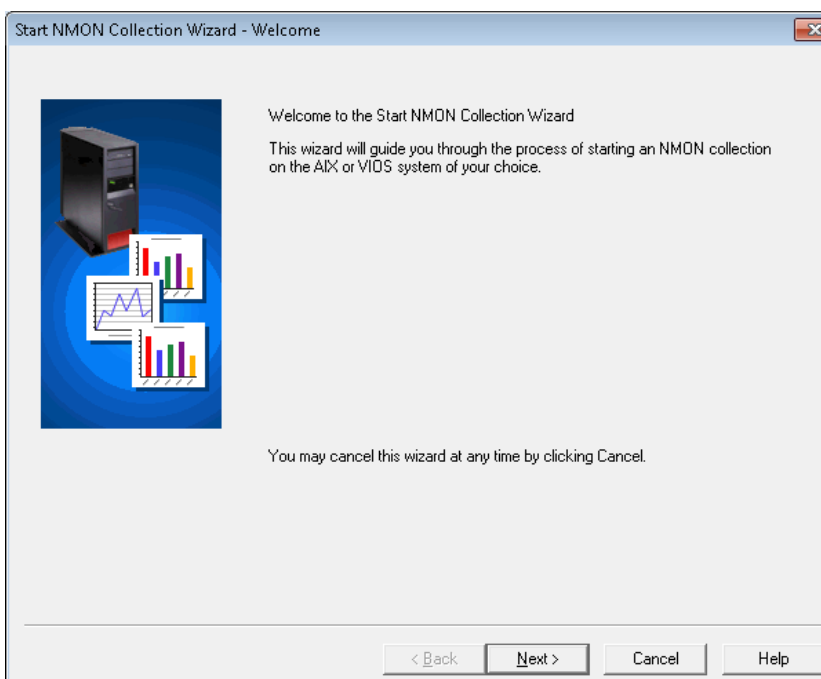
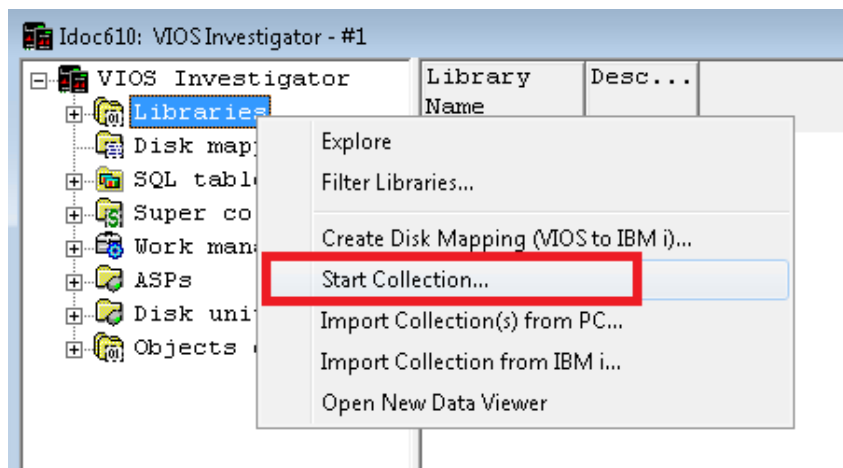


The screenshot shows the 'My Connections' window in iDoctor. A table lists various systems with their connection types and expiration dates. The 'Ctcvha9o' system is highlighted with a blue selection bar. An 'Add Connection' dialog box is open in the foreground, with the 'System' field containing 'MYVIOS', the 'Connection Type' dropdown set to 'FTP', and the 'Description' field empty. The dialog also includes 'OK' and 'Cancel' buttons.

System	Type	VRM	PEX Analyzer access expires	Job Watcher access expires	Description
Lpdac710	Default	V7R1M0	Never	Never	
Mcei511.>	Default	V5R4M0	Never	Never	
Mcei512.>	Default	V7R1M0	Never	Never	
Mcei514.>	Default	V6R1M0	Never	Never	
Ratsisb	Default	V7R1M0			
Rchas413	Default	V5R4M0	Never	Never	
Rchask50	Default	V5R4M0	Never	Never	
Rchask60	Default	V6R1M0			
Rchaskma	Default	V5R4M0	Never	Never	
Rchaskmb	Default	V6R1M0	Never	Never	
Rchasrs1	Default	V5R4M0			
Rchasrs2	Default	V5R4M0			
Rchasrs3	Default	V5R4M0			
Rchasrs4	Default	V5R4M0			
Rchastri	Default	V7R1M0	07/05/2012	07/05/2012	
Z1710p1	Default	V7R1M0	06/25/2012	Never	
Ctcvha9o	FTP				
Idoc610.>	FTP				
Mtsvionmb	FTP				

## Collect Data – Step 2 - Start Collection menu in GUI

- Use this to start an NMON collection via iDoctor GUI
- SSH 2.0+ must be installed on the VIOS.
- The user id must be authorized to run `topas_nmon`






## Collect Data – Step 3 – Select the VIOS

- **List of VIOS/AIX systems is the FTP type connections defined in iDoctor's connection list.**

Start NMON Collection Wizard - Connection Settings



Specify the desired system to run the collection on, and the preferred connection method below.

System name:

Tip: Add your VIOS systems as FTP type connections in iDoctor to have them appear in this list.

Connection method:

SSH (2.0 or higher must be installed)

REXEC (must be started, only works on Windows XP)

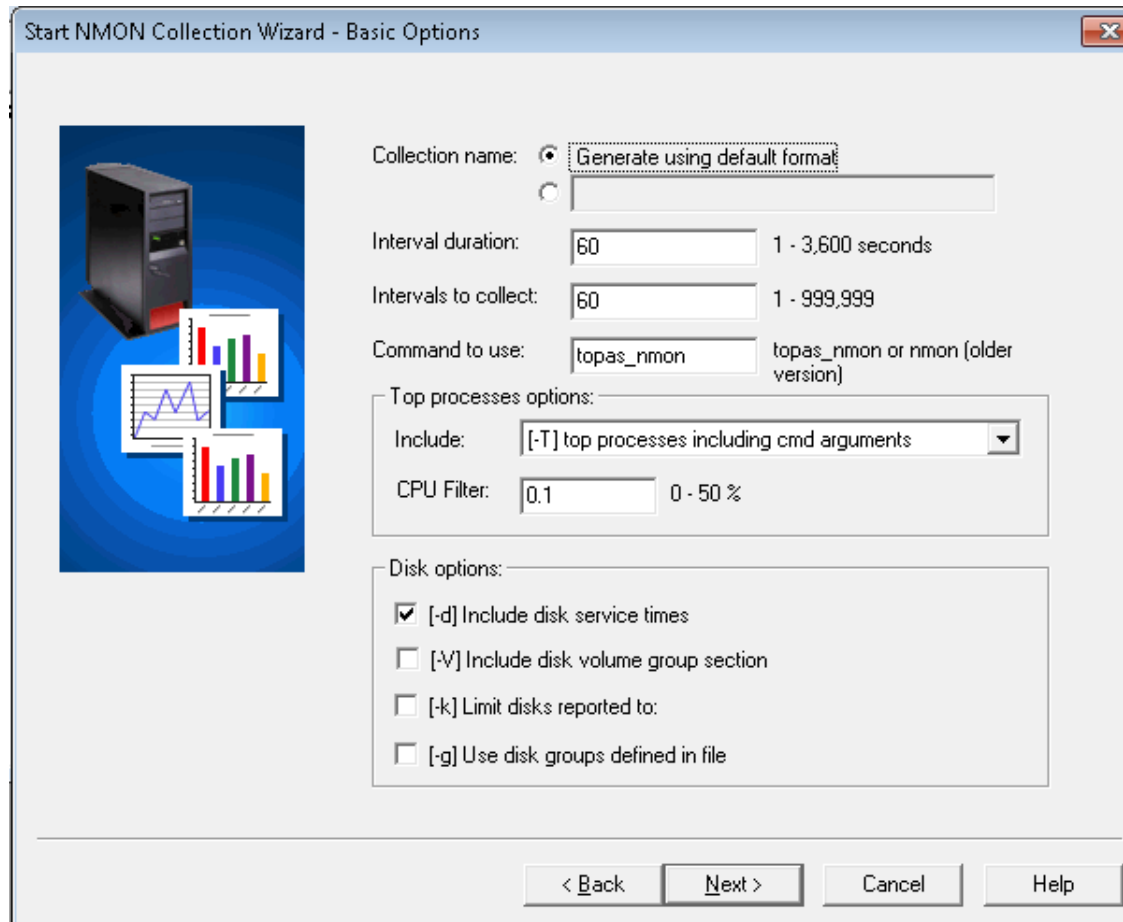
Note: SSH is the preferred method to use. It must be installed on the remote system.

REXEC will not work on Windows 7/Vista unless running in Windows XP mode and REXEC has been started. REXEC will not work if connecting to VIOS.

< Back   Next >   Cancel   Help

## Collect Data – Step 4 – Configure collection options

- Controls the key parameters on the command



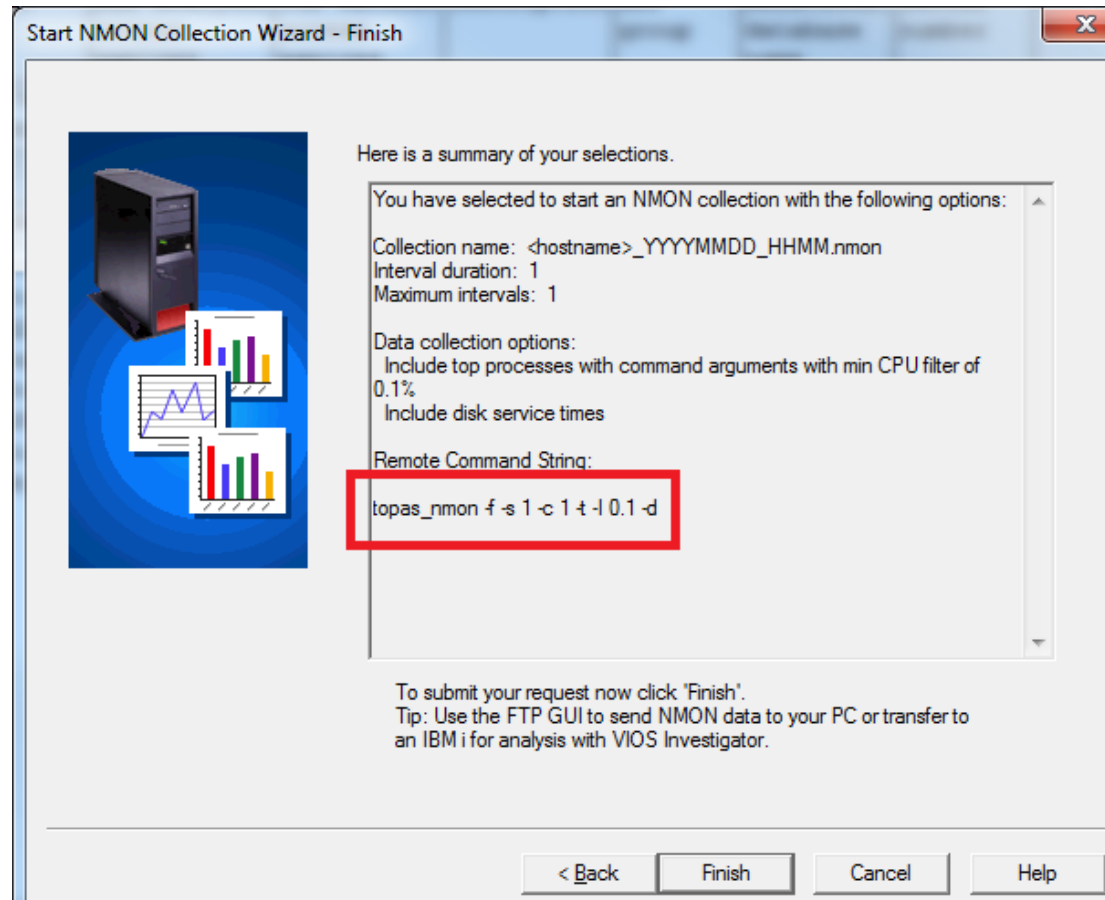
The image shows a screenshot of the 'Start NMON Collection Wizard - Basic Options' dialog box. On the left side, there is a graphic of a server tower with several charts (bar and line graphs) overlaid on it. The main area of the dialog contains the following configuration options:

- Collection name:** A radio button is selected for 'Generate using default format'. An empty text box is also present.
- Interval duration:** A text box contains '60', with a range of '1 - 3,600 seconds' to its right.
- Intervals to collect:** A text box contains '60', with a range of '1 - 999,999' to its right.
- Command to use:** A text box contains 'topas\_nmon', with the text 'topas\_nmon or nmon (older version)' to its right.
- Top processes options:**
  - Include:** A dropdown menu is set to '[-T] top processes including cmd arguments'.
  - CPU Filter:** A text box contains '0.1', with a range of '0 - 50 %' to its right.
- Disk options:**
  - [-d] Include disk service times
  - [-V] Include disk volume group section
  - [-k] Limit disks reported to:
  - [-g] Use disk groups defined in file

At the bottom of the dialog, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

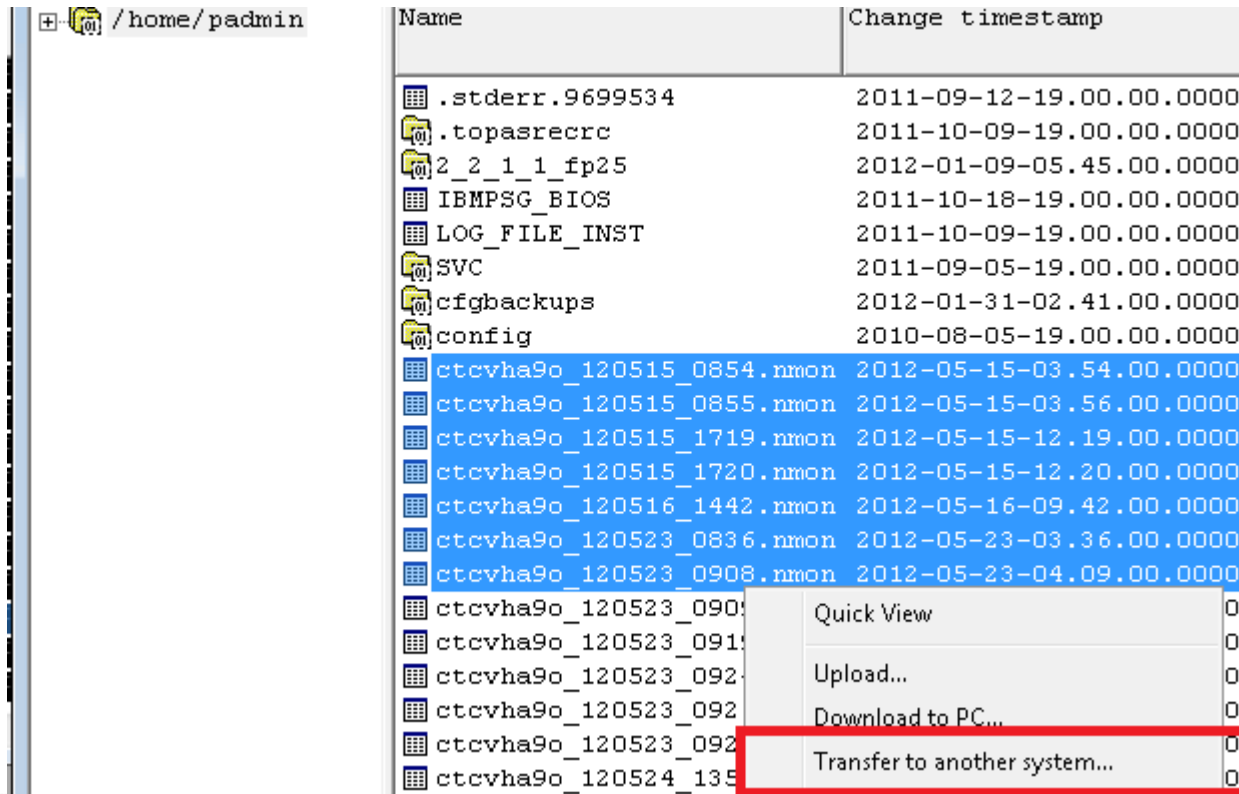
## Collect Data – Step 5 – Submit the command

- The final screen summarizes the parameters used and shows the command that will be executed on the VIOS.



## Import Data – Step 1 – Select the NMON files

- Start by creating a FTP type connection to the VIOS
- From My Connections (right-click Add Connection)
- Double-click the new connection to connect to VIOS using FTP
- Find and select desired .nmon files, right-click “Transfer to another system” menu



The screenshot shows a file manager window with the address bar set to `/home/padmin`. The file list includes various system files and directories. A group of .nmon files is selected, and a context menu is open over them. The menu options are: Quick View, Upload..., Download to PC..., and Transfer to another system... (highlighted with a red box).

Name	Change timestamp
.stderr.9699534	2011-09-12-19.00.00.00000
.topasrecrc	2011-10-09-19.00.00.00000
2_2_1_1_fp25	2012-01-09-05.45.00.00000
IBMP5G_BIOS	2011-10-18-19.00.00.00000
LOG_FILE_INST	2011-10-09-19.00.00.00000
SVC	2011-09-05-19.00.00.00000
cfgbackups	2012-01-31-02.41.00.00000
config	2010-08-05-19.00.00.00000
ctcvha9o_120515_0854.nmon	2012-05-15-03.54.00.00000
ctcvha9o_120515_0855.nmon	2012-05-15-03.56.00.00000
ctcvha9o_120515_1719.nmon	2012-05-15-12.19.00.00000
ctcvha9o_120515_1720.nmon	2012-05-15-12.20.00.00000
ctcvha9o_120516_1442.nmon	2012-05-16-09.42.00.00000
ctcvha9o_120523_0836.nmon	2012-05-23-03.36.00.00000
ctcvha9o_120523_0908.nmon	2012-05-23-04.09.00.00000
ctcvha9o_120523_0909.nmon	2012-05-23-04.10.00.00000
ctcvha9o_120523_0910.nmon	2012-05-23-04.11.00.00000
ctcvha9o_120523_0920.nmon	2012-05-23-04.12.00.00000
ctcvha9o_120523_0921.nmon	2012-05-23-04.13.00.00000
ctcvha9o_120523_0922.nmon	2012-05-23-04.14.00.00000
ctcvha9o_120523_0923.nmon	2012-05-23-04.15.00.00000
ctcvha9o_120523_0924.nmon	2012-05-23-04.16.00.00000
ctcvha9o_120524_1355.nmon	2012-05-24-13.55.00.00000

# Import Data – Step 2 – Transfer File(s) to IBM i window

**Files to send from VIOS to IBM i**

Upload file list

File
ctcvha9o_120515_0854.nmon
ctcvha9o_120515_0855.nmon
ctcvha9o_120515_1719.nmon
ctcvha9o_120515_1720.nmon
ctcvha9o_120516_1442.nmon
ctcvha9o_120523_0836.nmon
ctcvha9o_120523_0908.nmon

Target system: Lpdac710 - V7R1

Target library: NMON

Transfer type: Ascii

Analysis type: NMON Import

Collection name prefix: NEWDATA

Description:

Disk Mapping (VIOS to IBM i)

The optional disk mapping file indicates the IBM i device resource names and disk unit numbers associated with each disk in VIOS.

Library: File: Browse

**Files to send from VIOS to IBM i**

IBM i

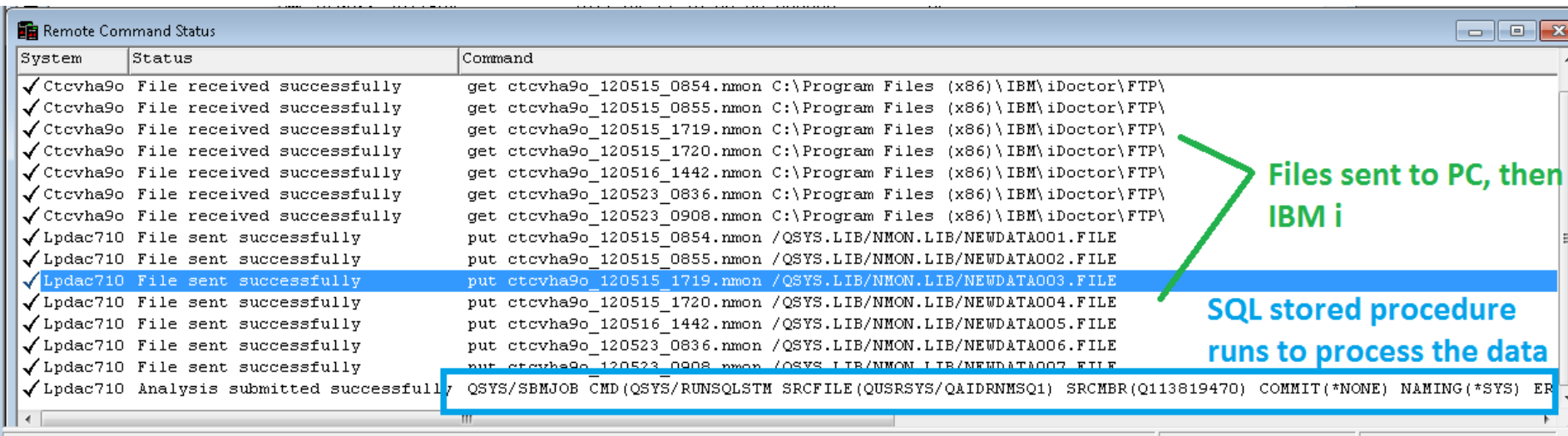
Use these values

Collection name begins with this, ends with numbers like 001

**If you want to include this, specify target system first, then use Browse**

## Import Data – Step 3 – Wait for analysis to complete

- Next the data is sent to the IBM i (via the PC)
- An SQL script is created and submitted to a batch job QIDRNMSUM that will run a stored procedure against each file to import the data.
  - Source file is QUSRSYS/QAIDRNMSQ1

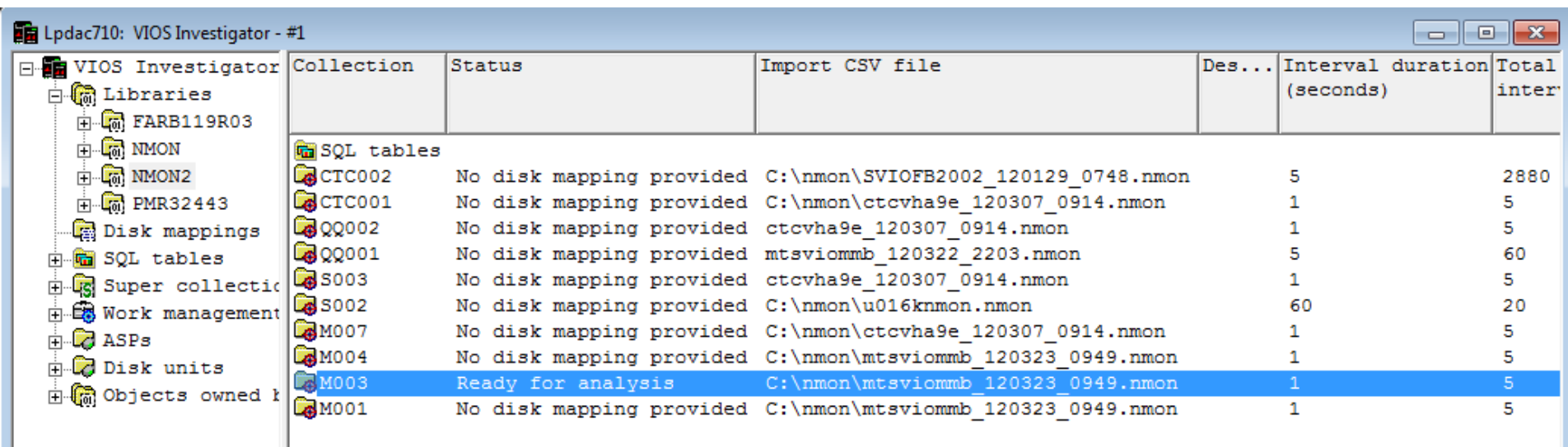


The screenshot shows a 'Remote Command Status' window with a table of system actions. The table has three columns: System, Status, and Command. The actions are performed on two systems: Ctcvha9o and Lpdac710. The first seven rows show file transfers from Ctcvha9o to Lpdac710. The next seven rows show files being sent from Lpdac710 to the IBM i system. The final row shows an analysis job being submitted to the IBM i system. A green arrow points from the text 'Files sent to PC, then IBM i' to the file transfer rows. A blue box highlights the final row, with text 'SQL stored procedure runs to process the data' pointing to it.

System	Status	Command
✓ Ctcvha9o	File received successfully	get ctcvha9o_120515_0854.nmon C:\Program Files (x86)\IBM\iDoctor\FTP\
✓ Ctcvha9o	File received successfully	get ctcvha9o_120515_0855.nmon C:\Program Files (x86)\IBM\iDoctor\FTP\
✓ Ctcvha9o	File received successfully	get ctcvha9o_120515_1719.nmon C:\Program Files (x86)\IBM\iDoctor\FTP\
✓ Ctcvha9o	File received successfully	get ctcvha9o_120515_1720.nmon C:\Program Files (x86)\IBM\iDoctor\FTP\
✓ Ctcvha9o	File received successfully	get ctcvha9o_120516_1442.nmon C:\Program Files (x86)\IBM\iDoctor\FTP\
✓ Ctcvha9o	File received successfully	get ctcvha9o_120523_0836.nmon C:\Program Files (x86)\IBM\iDoctor\FTP\
✓ Ctcvha9o	File received successfully	get ctcvha9o_120523_0908.nmon C:\Program Files (x86)\IBM\iDoctor\FTP\
✓ Lpdac710	File sent successfully	put ctcvha9o_120515_0854.nmon /QSYS.LIB/NMON.LIB/NEWDATA001.FILE
✓ Lpdac710	File sent successfully	put ctcvha9o_120515_0855.nmon /QSYS.LIB/NMON.LIB/NEWDATA002.FILE
✓ Lpdac710	File sent successfully	put ctcvha9o_120515_1719.nmon /QSYS.LIB/NMON.LIB/NEWDATA003.FILE
✓ Lpdac710	File sent successfully	put ctcvha9o_120515_1720.nmon /QSYS.LIB/NMON.LIB/NEWDATA004.FILE
✓ Lpdac710	File sent successfully	put ctcvha9o_120516_1442.nmon /QSYS.LIB/NMON.LIB/NEWDATA005.FILE
✓ Lpdac710	File sent successfully	put ctcvha9o_120523_0836.nmon /QSYS.LIB/NMON.LIB/NEWDATA006.FILE
✓ Lpdac710	File sent successfully	put ctcvha9o_120523_0908.nmon /QSYS.LIB/NMON.LIB/NEWDATA007.FILE
✓ Lpdac710	Analysis submitted successfully	QSYS/SBJJOB CMD(QSYS/RUNSQLSTM SRCFILE(QUSRSYS/QAIDRNMSQ1) SRCMBR(Q113819470) COMMIT(*NONE) NAMING(*SYS) ER

## Analysis – Listing Collections in a Library

- Open VIOS Investigator on the IBM i to work with the data under the Libraries folder.
- **Note:** A status of “invalid disk mapping” or “No disk mapping provided” is normal if a disk mapping was not specified on the transfer/import window.



Collection	Status	Import CSV file	Des...	Interval duration (seconds)	Total inter
SQL tables					
CTC002	No disk mapping provided	C:\nmon\SVIOFB2002_120129_0748.nmon		5	2880
CTC001	No disk mapping provided	C:\nmon\ctcvha9e_120307_0914.nmon		1	5
QQ002	No disk mapping provided	ctcvha9e_120307_0914.nmon		1	5
QQ001	No disk mapping provided	mtsviommb_120322_2203.nmon		5	60
S003	No disk mapping provided	ctcvha9e_120307_0914.nmon		1	5
S002	No disk mapping provided	C:\nmon\u016knmon.nmon		60	20
M007	No disk mapping provided	C:\nmon\ctcvha9e_120307_0914.nmon		1	5
M004	No disk mapping provided	C:\nmon\mtsviommb_120323_0949.nmon		1	5
M003	Ready for analysis	C:\nmon\mtsviommb_120323_0949.nmon		1	5
M001	No disk mapping provided	C:\nmon\mtsviommb_120323_0949.nmon		1	5

# Analysis Options Overview

- Graphs and reports are available under the Libraries folder in VIOS Investigator
- Expand the desired library/collection to work with them

The screenshot shows the VIOS Investigator interface. On the left, a tree view displays a hierarchy of folders. A red box highlights the 'Libraries' folder, which contains sub-folders like DIONO70RO2, FARBO70RO2, FARBO80RO2, FARB114RO2, and FARB119RO3. A black box highlights the 'Collections' folder, which contains sub-folders like N008, N007, N006, N005, N004, N003, N002, and N001. Another red box highlights the 'Libraries' folder at the bottom, containing sub-folders like NMON, PANDORA2, PANDORA3, PANDORA4, PAND272RO2, PAND274RO1, PAND275RO1, PANO60RO3, and PAN1. On the right, a table titled 'Report folder' and 'Description' lists various report types and their descriptions. A green box highlights this table. A green arrow points from the 'Collections' folder to the table, and a red arrow points from the 'Libraries' folder to the table.

Report folder	Description
SQL tables	
System graphs	Reports displaying system overviews
System configuration	Reports displaying system configuration information
CPU graphs	Reports displaying CPU statistics
Disk graphs	Reports displaying disk statistics
TOP graphs	Reports displaying statistics for the TOP processes
Server-side output files	VIOS Investigator output files for this collection
User-defined queries	Reports defined previously over NMON data
User-defined graphs	Graphs defined previously over NMON data

**Graphing and reporting options**

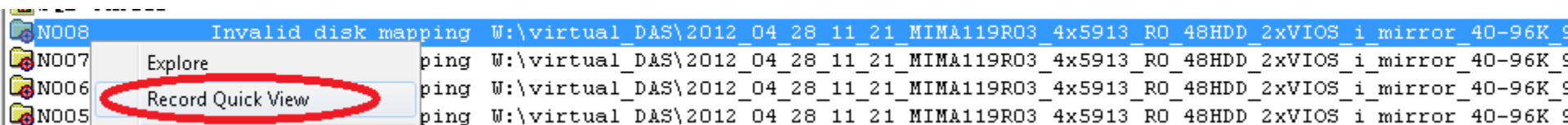
**Collections**

**Libraries**



## Analysis Options – Collection information

- This information is displayed in the library about each collection
- Right-click a collection -> Record Quick View to see in a vertical list

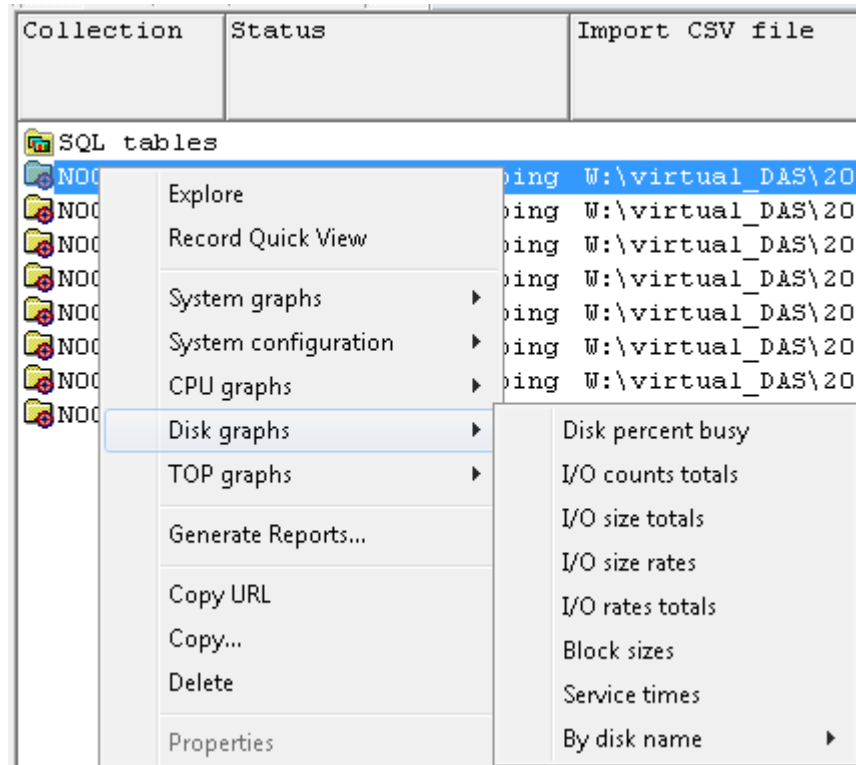


Record Quick View

Description	Record 1
System serial number	1026D2P
AIX	6.1.8.0
NMON command	/usr/bin/topas_nmon -F /tmp/nmon.nmon -s 60 -c 20 -t -I 0.1 -d -youtput_dir=/tmp/nmon.nmon -ystart_time=15:13:56
NMON build	AIX
User name	padmin
Node name	farbauti
Host name	farbauti
Start time	28-APR-2012 15:13:57
Import time	2012-04-30-07.11.13.560189
NMON version	TOPAS-NMON
Total intervals	20
Interval duration (seconds)	60
Description	
Import CSV file	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2xVIOS_i_mirror_40-96K_9600WHS_write_cache_on\u096k\...
Status	Invalid disk mapping
Collection	N008

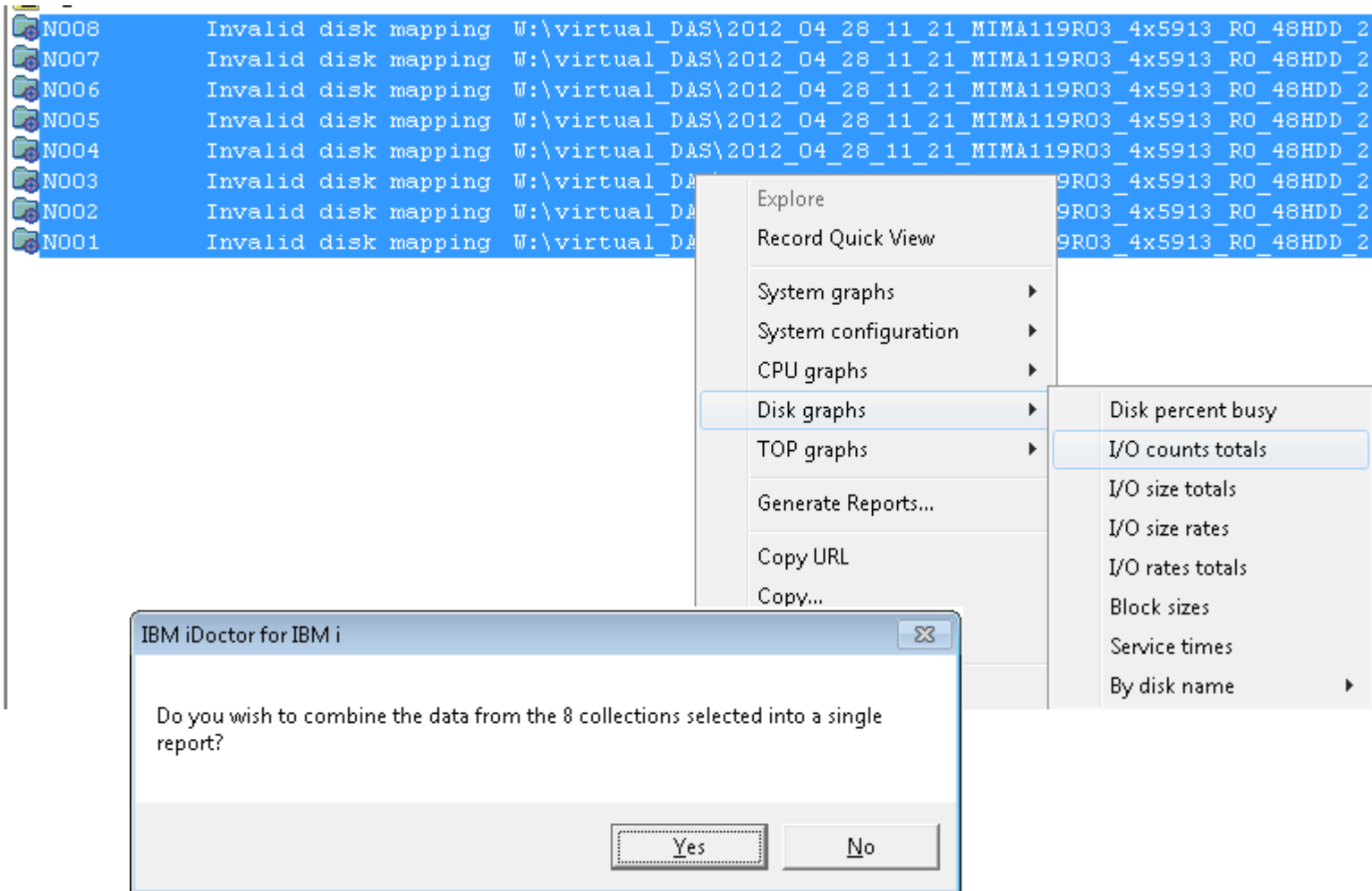
## Analysis Options – Open graph from collection menu

- You can also right-click a collection to launch graphs from the menu.



# Analysis Options – Graphing multiple collections

- Select all desired collections, right-click and pick the desired graph



The screenshot shows a list of 8 collections, all with the status 'Invalid disk mapping'. A context menu is open over the list, with 'Disk graphs' selected. A sub-menu is also open, showing 'I/O counts totals' as the selected option. In the foreground, a dialog box titled 'IBM iDoctor for IBM i' asks: 'Do you wish to combine the data from the 8 collections selected into a single report?'. The 'Yes' button is highlighted.

Collection ID	Status	Path
N008	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>
N007	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>
N006	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>
N005	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>
N004	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>
N003	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>
N002	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>
N001	Invalid disk mapping	W:\virtual_DAS\2012_04_28_11_21_MIMA119R03_4x5913_RO_48HDD_2>

Context Menu Options:

- Explore
- Record Quick View
- System graphs
- System configuration
- CPU graphs
- Disk graphs**
  - Disk percent busy
  - I/O counts totals**
  - I/O size totals
  - I/O size rates
  - I/O rates totals
  - Block sizes
  - Service times
  - By disk name
- TOP graphs
- Generate Reports...
- Copy URL
- Copy...

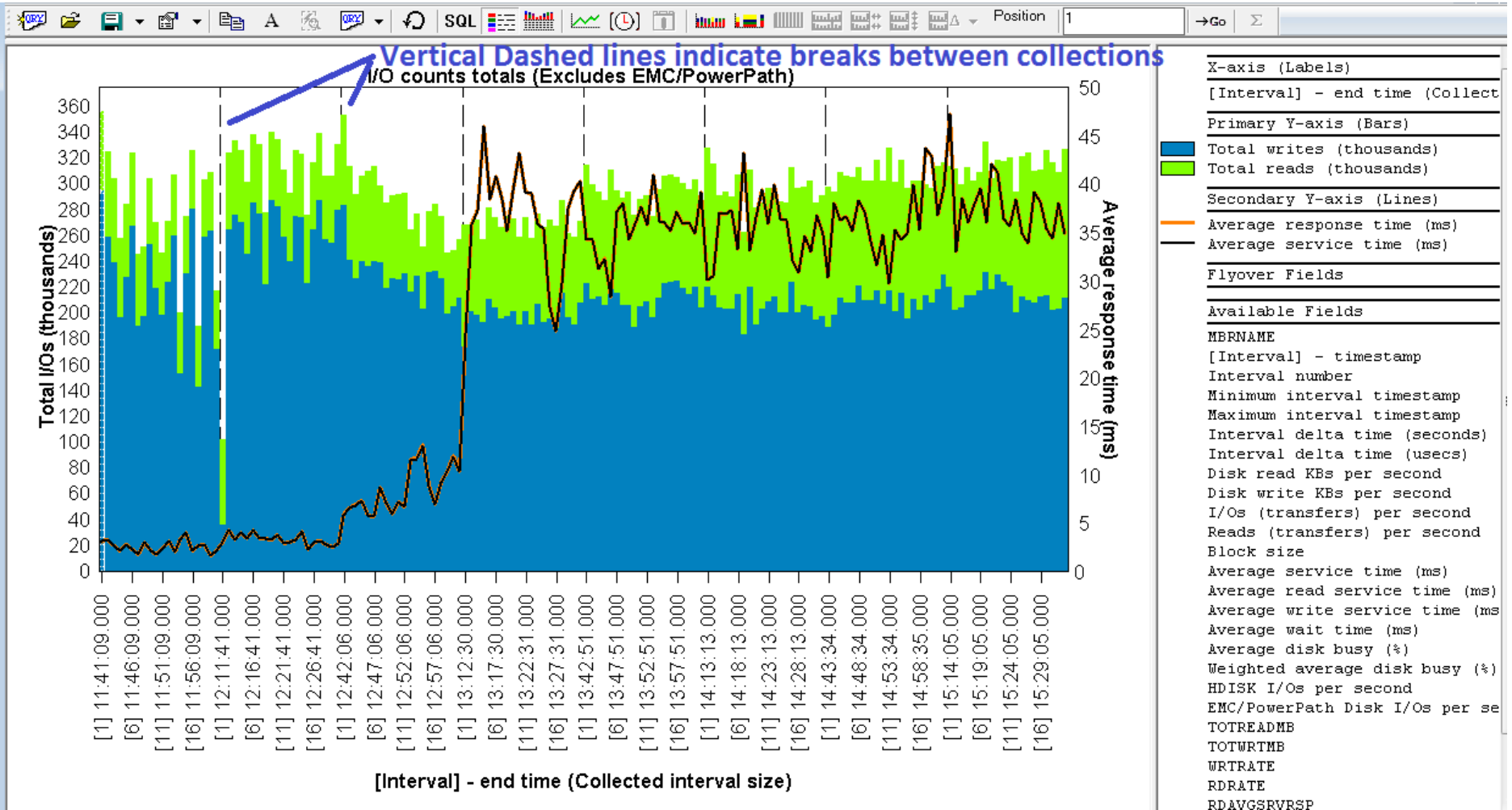
Dialog Box Content:

IBM iDoctor for IBM i

Do you wish to combine the data from the 8 collections selected into a single report?

Yes No

# Analysis Options – Graphing multiple collections



# Analysis Options – Same graph shown differently

iDoctor Data Viewer - #1 - [I101rats.rchland.ibm.com/FARB119R03/N001/I/O counts totals - #2]

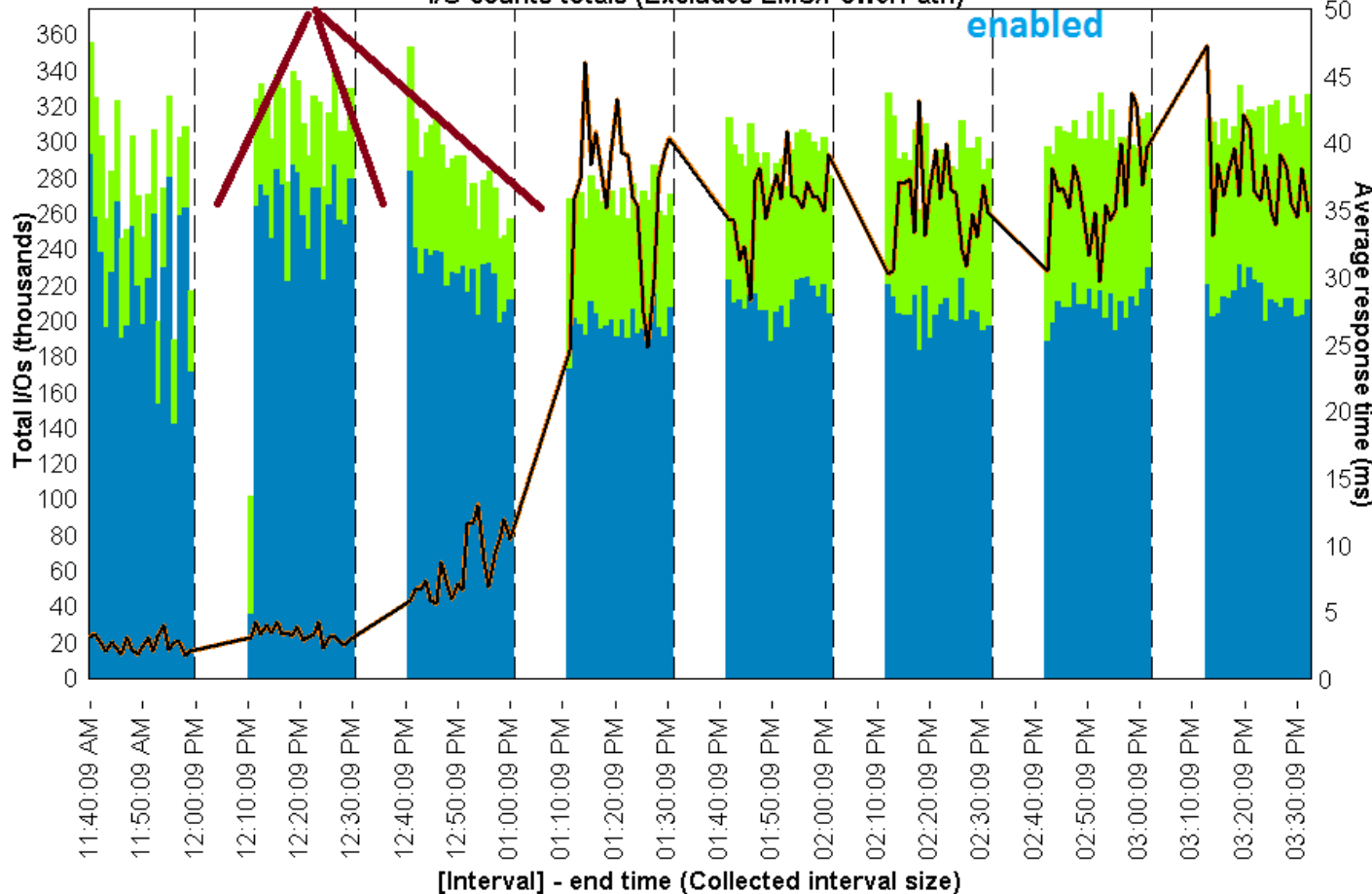
File Edit View Window Help

SQL [Chart icons] Position 1

No data collected here

I/O counts totals (Excludes EMC/PowerPath)

Variable width bar mode enabled



X-axis (Labels)	
[Interval] - end time (Collected interval size)	
Primary Y-axis (Bars)	
Total writes (thousands)	Blue
Total reads (thousands)	Green
Secondary Y-axis (Lines)	
Average response time (ms)	Orange
Average service time (ms)	Black
Flyover Fields	
Available Fields	
MBRNAME	
[Interval] - timestamp	
Interval number	
Minimum interval timestamp	
Maximum interval timestamp	
Interval delta time (seconds)	
Interval delta time (usecs)	
Disk read KBs per second	
Disk write KBs per second	
I/Os (transfers) per second	
Reads (transfers) per second	
Block size	
Average service time (ms)	
Average read service time (ms)	
Average write service time (ms)	
Average wait time (ms)	
Average disk busy (%)	
HDISK I/Os per second	
EMC/PowerPath Disk I/Os per second	
TOTREADMB	
TOTWRITMB	
WRTRATE	
RDRATE	
© 2007 IBM Corporation	

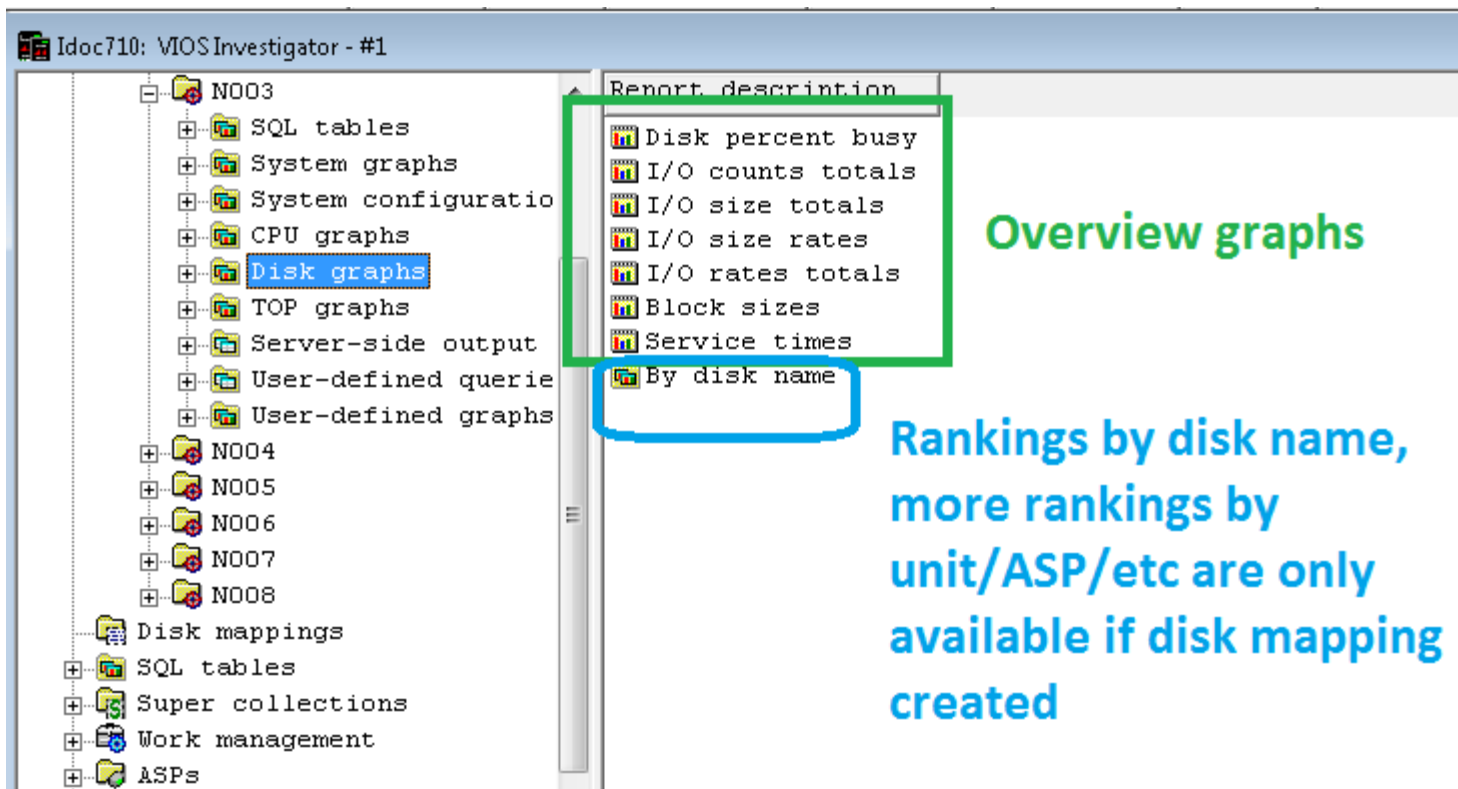
## Analysis Options – Disk statistics provided by iDoctor

- Under server-side output files -> QAIDRNMDISK\_COLNAME
- The descriptions used where possible match the terms used in Collection Services Investigator's Disk graphs

Field	Description	Record 4
INTERVAL	Interval number	1
DISKID	iDoctor disk ID	4
DISKNAME	Disk name	hdisk4
DISKBUSY	Percent busy	61.5000
DISKREAD	Read KBs per second	266.0100
DISKWRITE	Write KBs per second	1438.5000
DISKXFER	I/Os (transfers) per second	270.1300
DISKRXFER	Reads (transfers) per second	52.3400
DISKBSIZE	Block size	6.3300
DISKRIO	Reads per second	52.3000
DISKWIO	Writes per second	217.8000
DISKAVGRIO	DISKAVGRIO	3.6000
DISKAVGWIO	DISKAVGWIO	6.3800
DISKSERV	Average service time (ms)	1.5775
DISKREADSERV	Average read service time (ms)	1.9000
DISKWRITESERV	Average write service time (ms)	1.5000
DISKWAIT	Average wait time (ms)	0
INTENDSTR	Interval start time	2012-04-28-11.41.09.000000

## Analysis Options – Disk graphs available without a disk mapping

- Under the collection, expand the Disk Graphs folder
- The rankings graphs will include more options if a valid disk mapping has been used



The screenshot shows the VIOS Investigator interface. The left pane displays a tree view with 'Disk graphs' selected under the 'N003' collection. The right pane shows a list of report descriptions for disk graphs. A green box highlights the 'Overview graphs' section, which includes: Disk percent busy, I/O counts totals, I/O size totals, I/O size rates, I/O rates totals, Block sizes, and Service times. A blue box highlights the 'By disk name' option, which is only visible when a disk mapping is present.

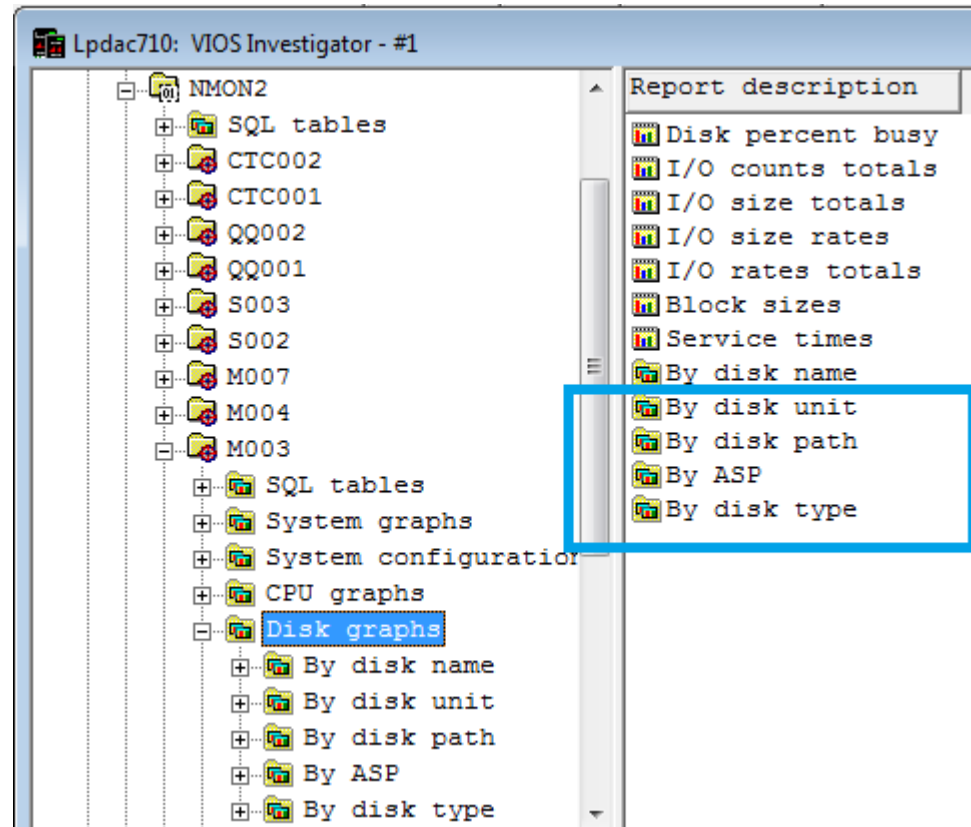
Report description
Disk percent busy
I/O counts totals
I/O size totals
I/O size rates
I/O rates totals
Block sizes
Service times
By disk name

**Overview graphs**

**Rankings by disk name, more rankings by unit/ASP/etc are only available if disk mapping created**

## Analysis Options – Disk graphs available WITH a disk mapping

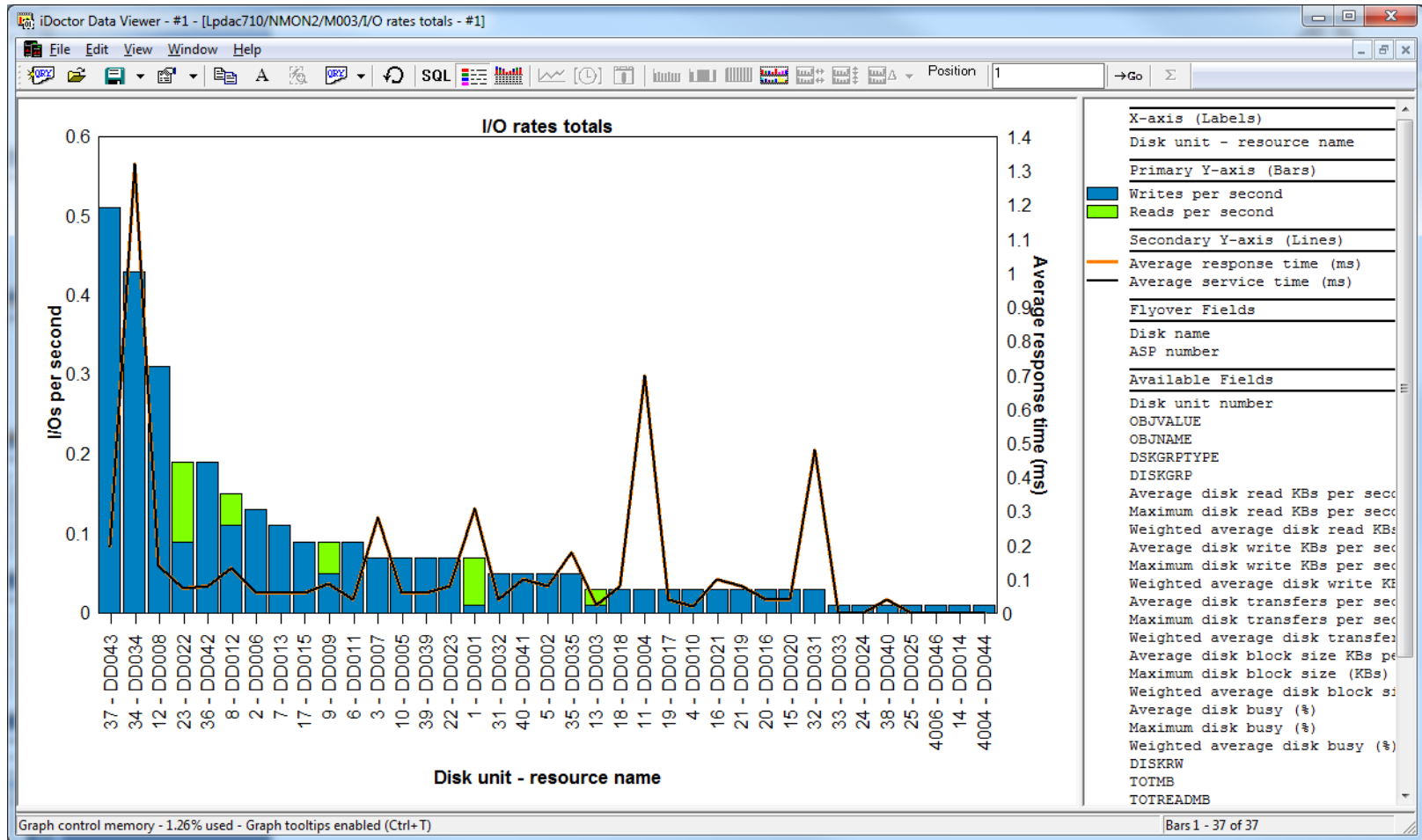
- Under the collection, expand the Disk Graphs folder





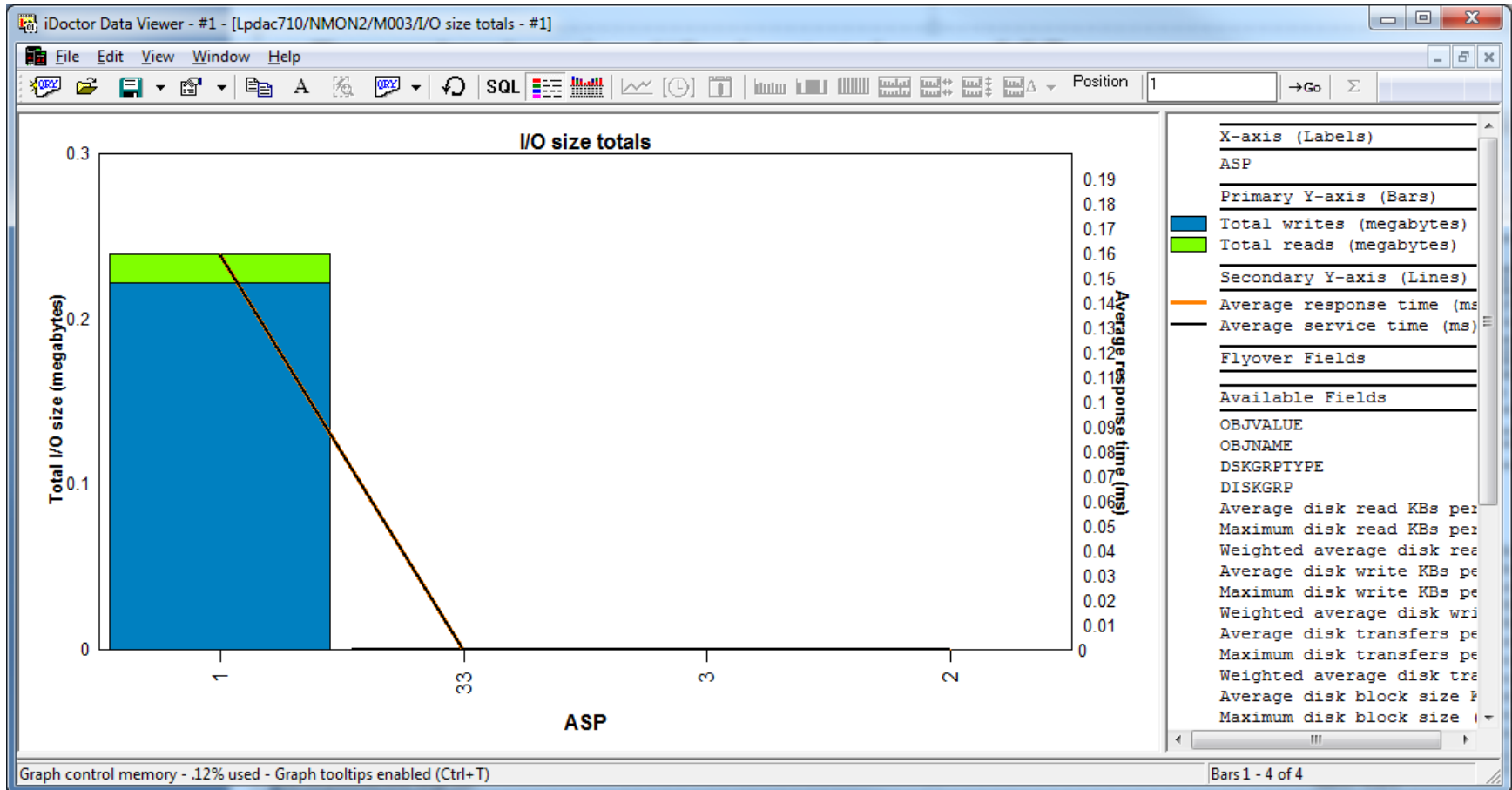
# Analysis Options – Disk path rankings graph (requires a Disk Mapping)

- Example showing I/O rates per IBM i unit/resource name.



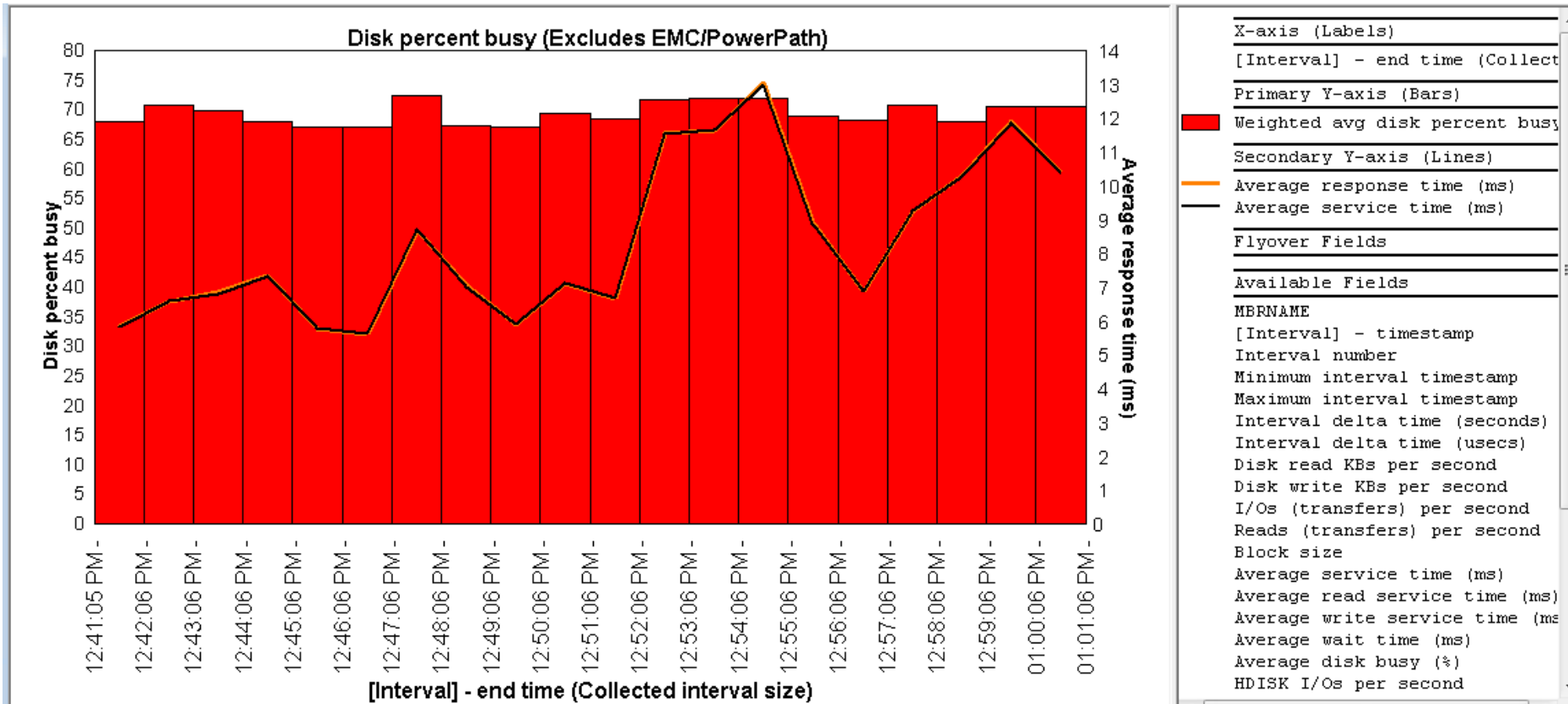
# Analysis Options – ASP rankings graph (requires a Disk Mapping)

- Example showing I/O size totals per ASP



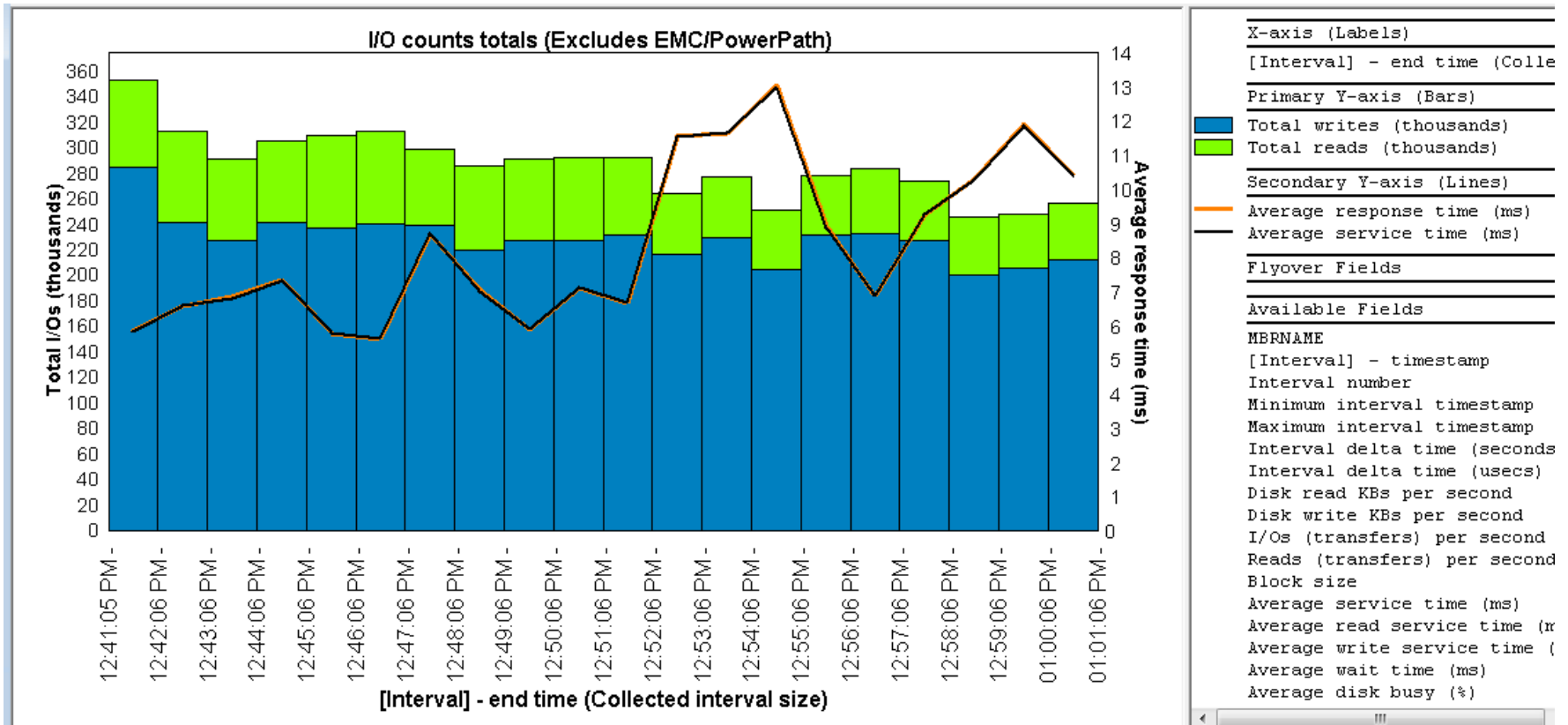
## Analysis Options – Disk percent busy (overview)

- This example graph shows “weighted average disk percent busy” and response times over 20 minutes (using 1 minute intervals.)



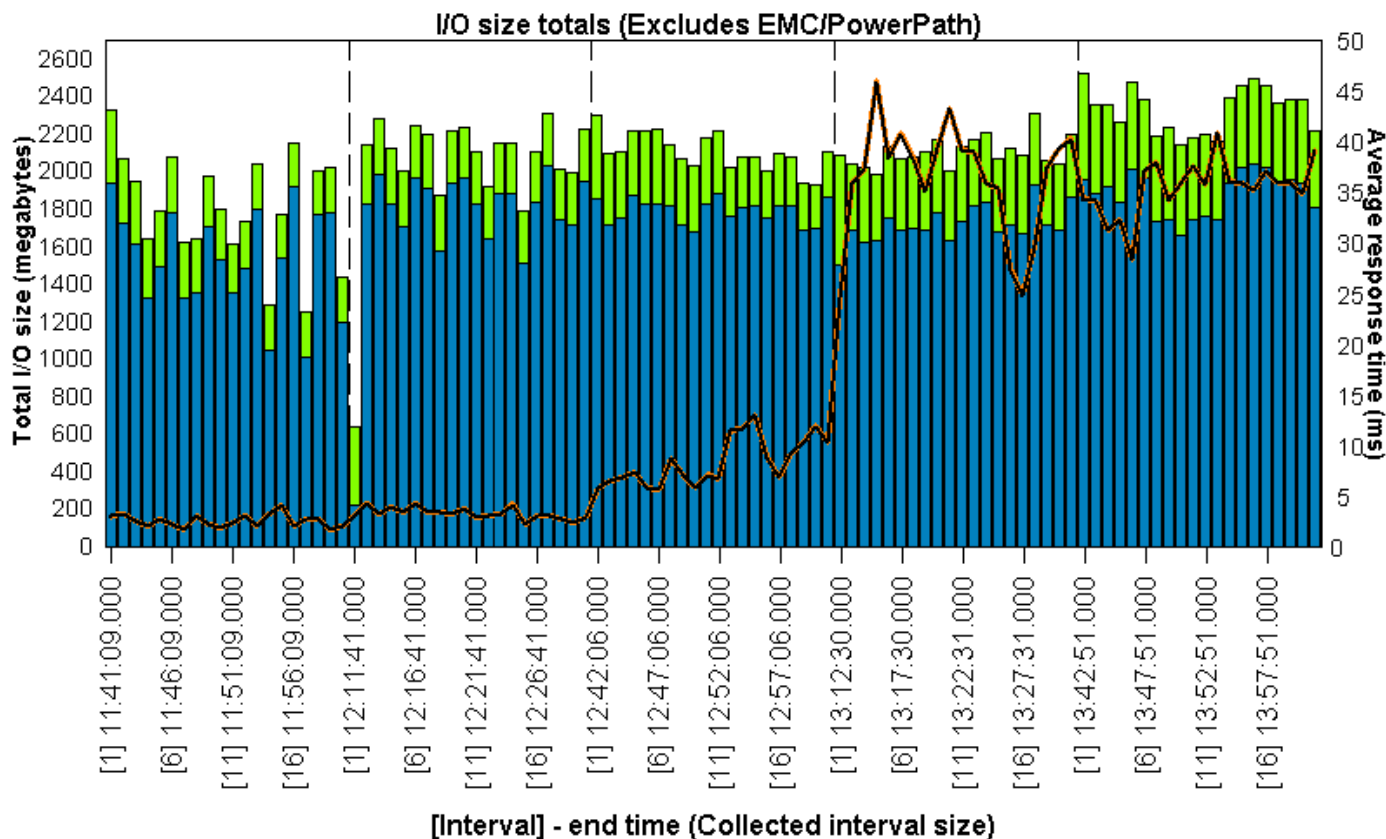
# Analysis Options – I/O counts totals (overview)

- This example graph shows total reads and writes with response times.



# Analysis Options – I/O size totals (overview)

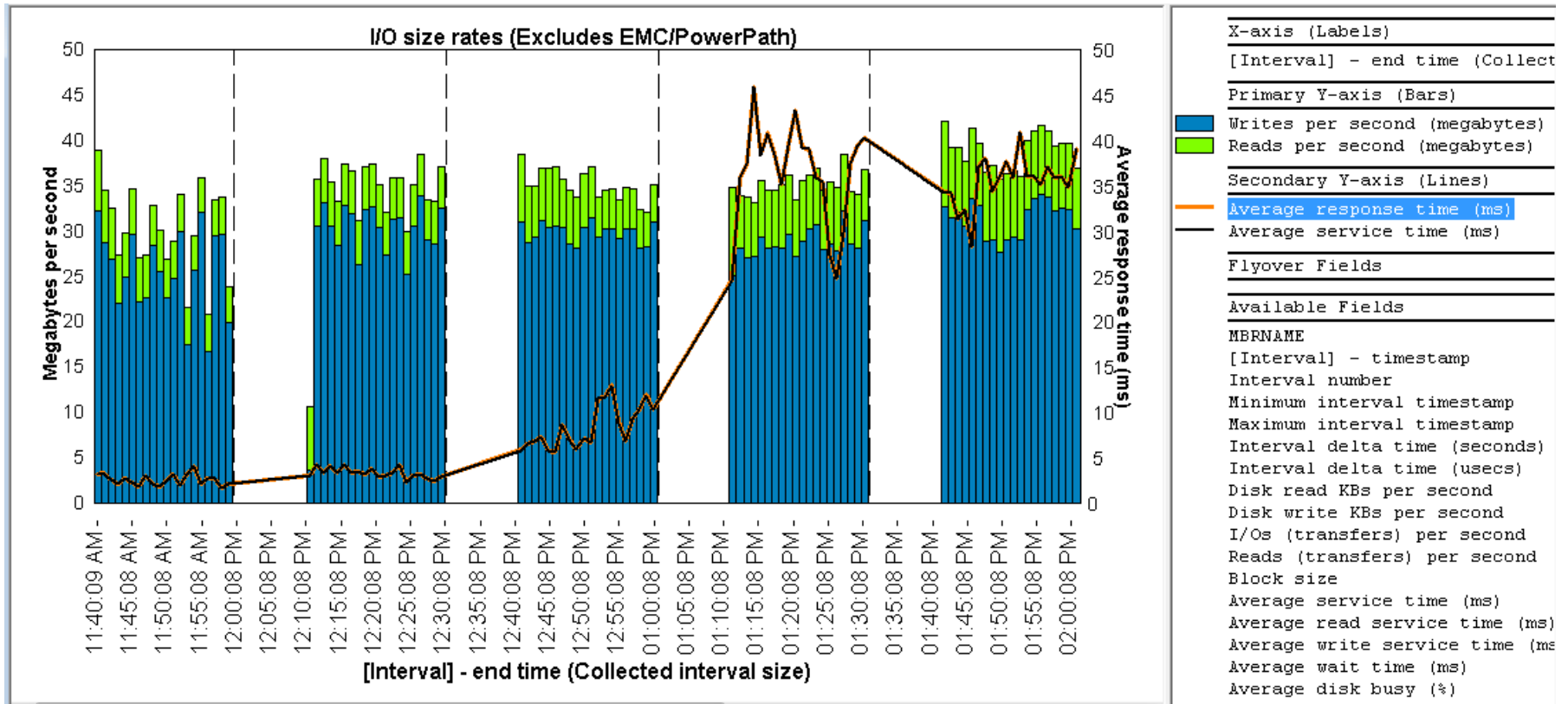
- This example graph shows total I/O sizes for reads and writes with response times (this one shows 5, 20 minute collections)



X-axis (Labels)	[Interval] - end time (Col
Primary Y-axis (Bars)	<ul style="list-style-type: none"> <li>Total writes (megabytes)</li> <li>Total reads (megabytes)</li> </ul>
Secondary Y-axis (Lines)	<ul style="list-style-type: none"> <li>Average response time (ms)</li> <li>Average service time (ms)</li> </ul>
Flyover Fields	
Available Fields	<ul style="list-style-type: none"> <li>MBRNAME</li> <li>[Interval] - timestamp</li> <li>Interval number</li> <li>Minimum interval timestamp</li> <li>Maximum interval timestamp</li> <li>Interval delta time (seconds)</li> <li>Interval delta time (usecs)</li> <li>Disk read KBs per second</li> <li>Disk write KBs per second</li> <li>I/Os (transfers) per second</li> <li>Reads (transfers) per second</li> <li>Block size</li> <li>Average service time (ms)</li> <li>Average read service time</li> <li>Average write service time</li> <li>Average wait time (ms)</li> <li>Average disk busy (%)</li> </ul>

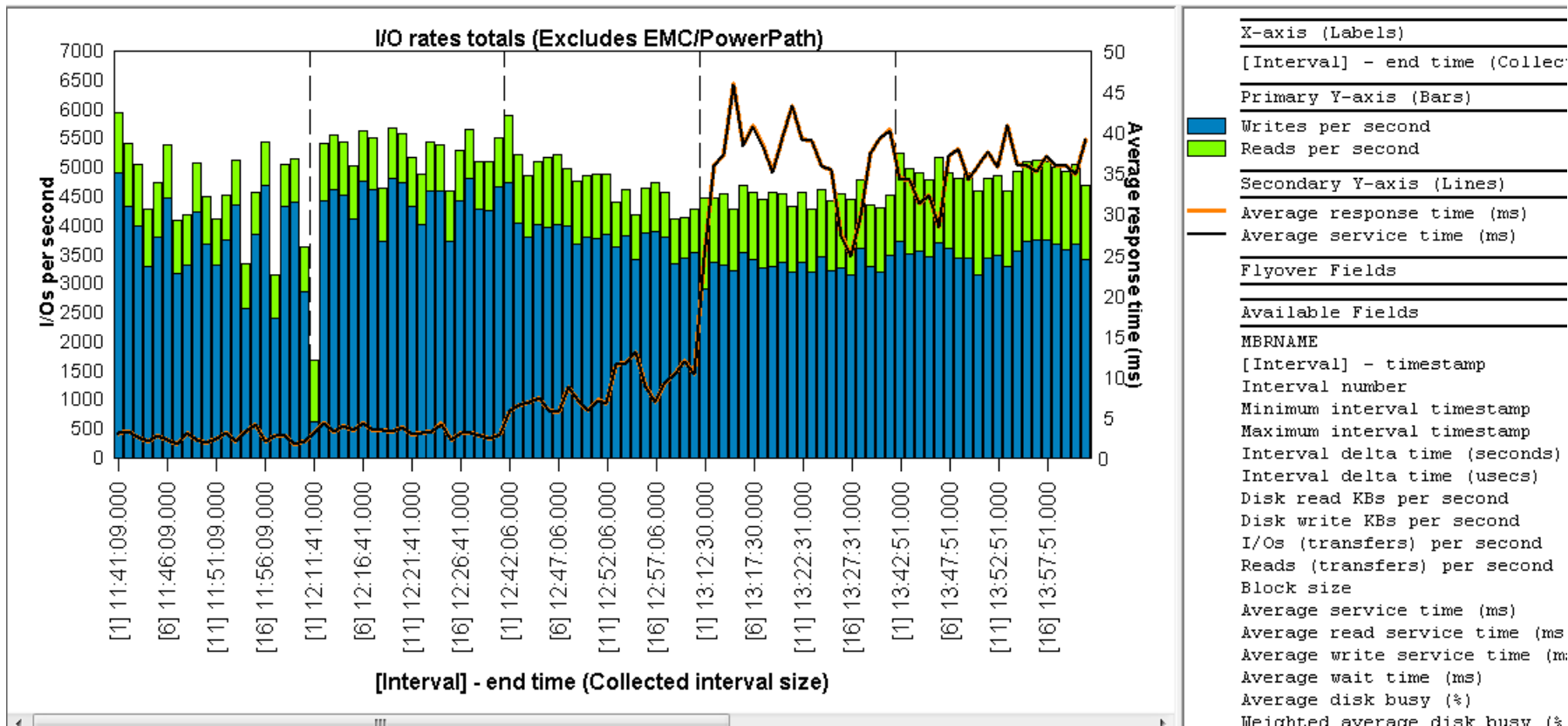
# Analysis Options – I/O size rates (overview)

- This example graph shows I/O size rates (in megabytes per second) and response times.



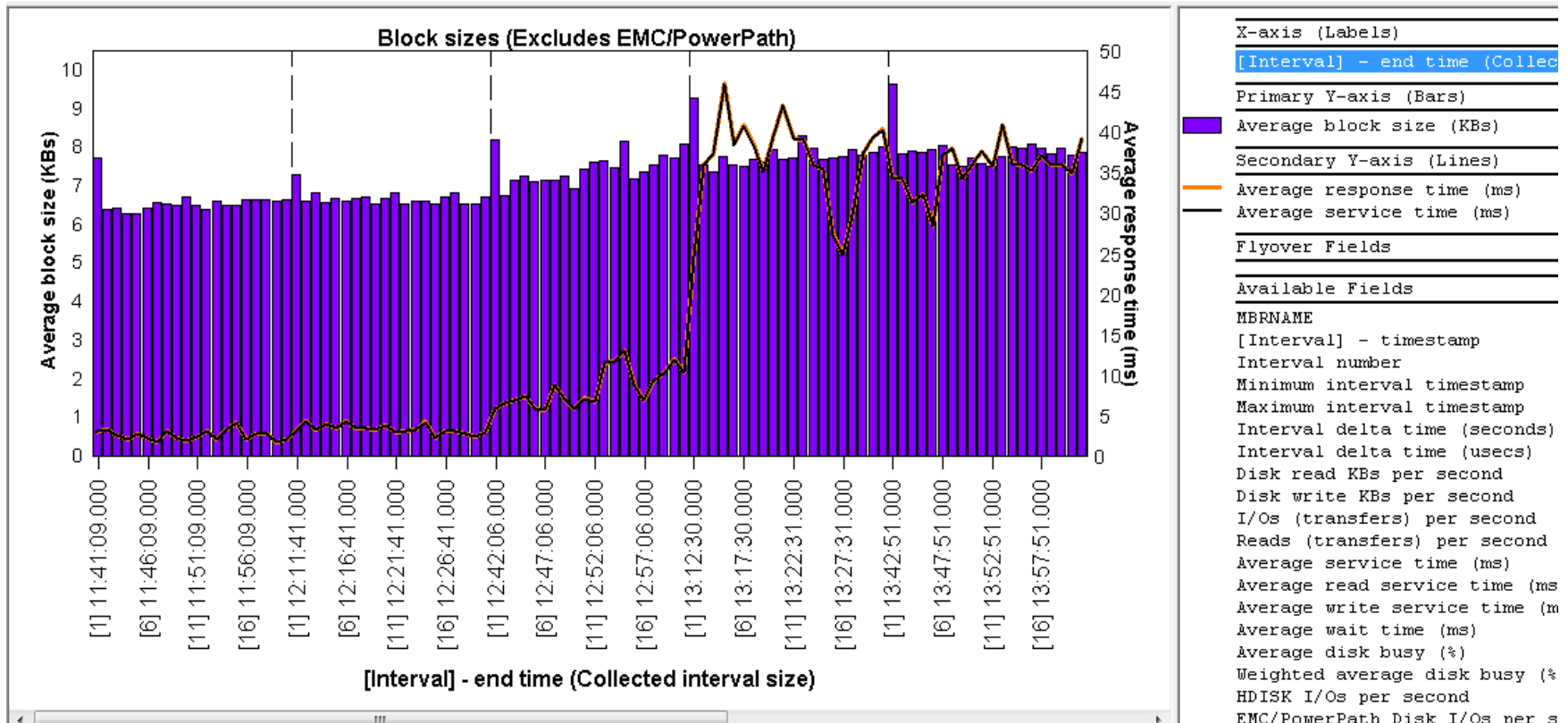
# Analysis Options – I/O rates totals (overview)

- The graph shows total reads and writes per second with average response times.



# Analysis Options – Block sizes (overview)

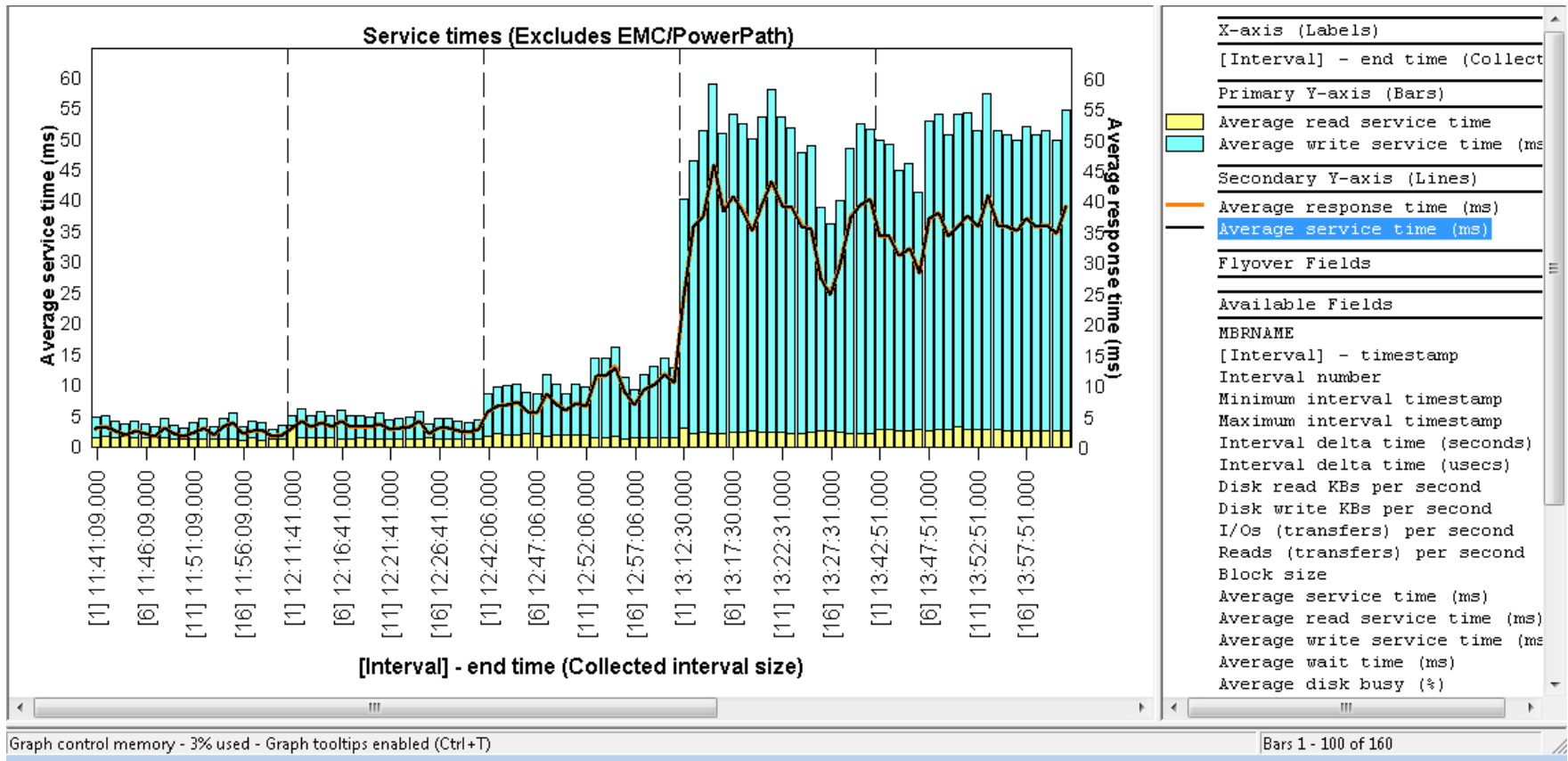
- This graph shows the average block size over time.





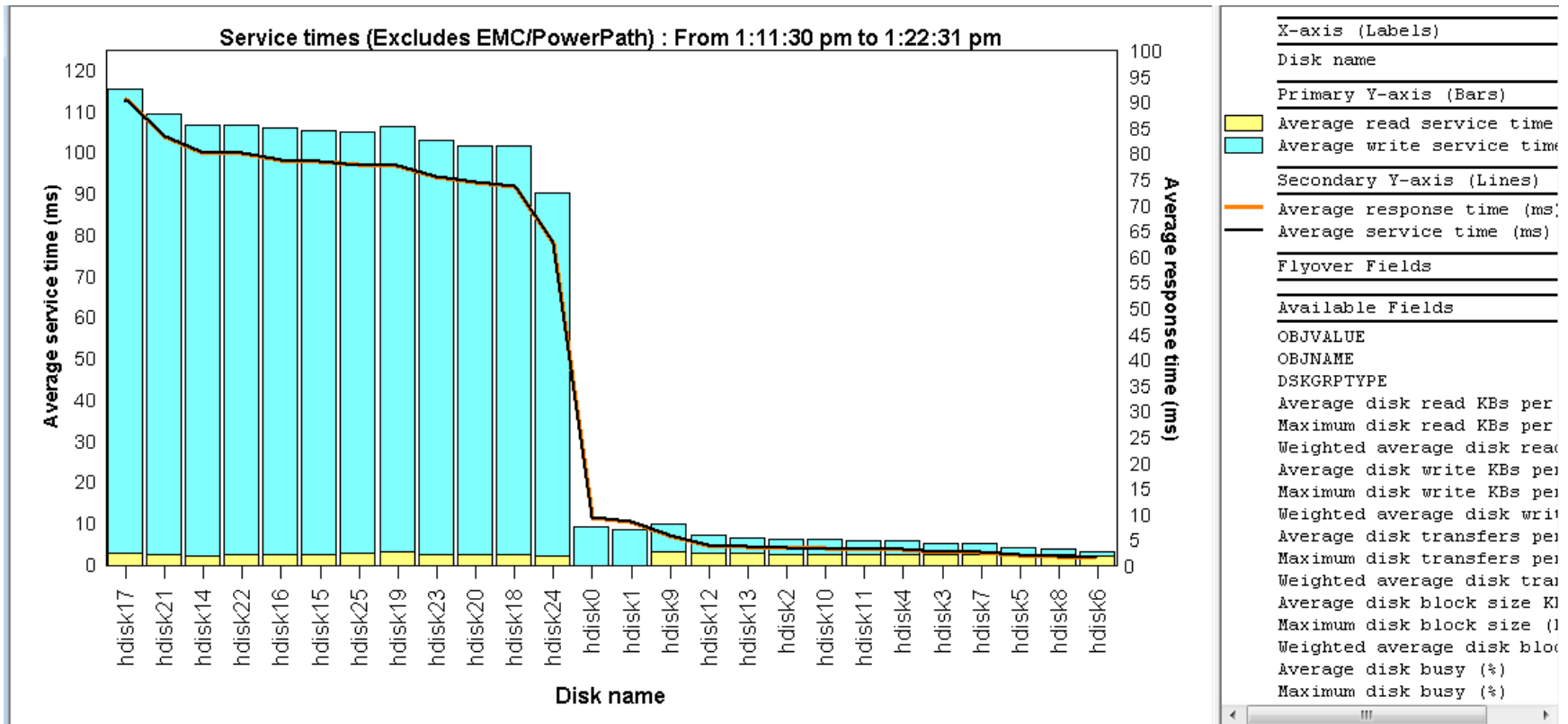
# Analysis Options – Service times (overview)

- This graph shows the average read and write service times



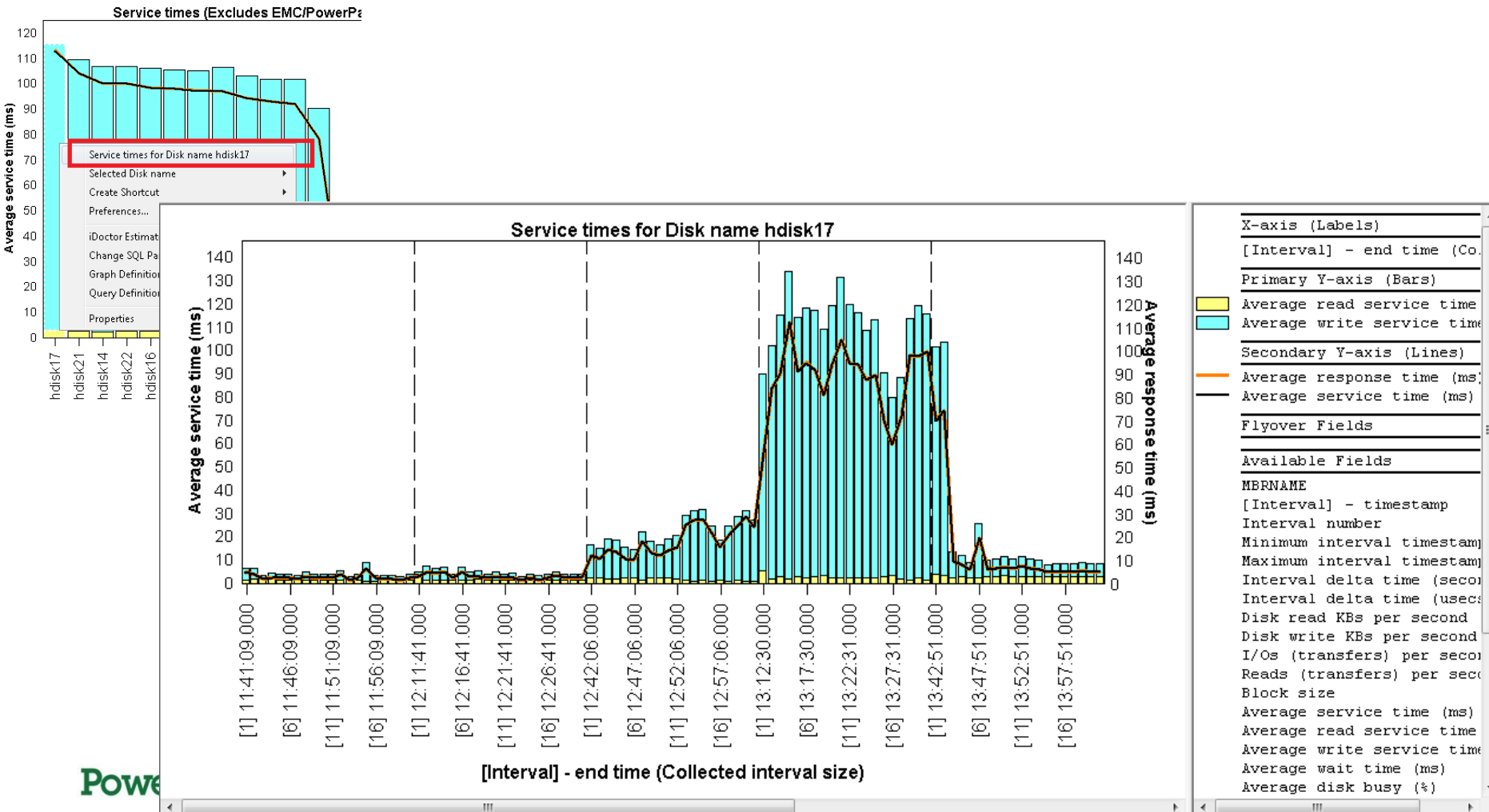
# Analysis Options – Drilling down into rankings (from overview charts)

- From the overview, select a time period, right-click and drill down using Disk graphs -> by disk name menu



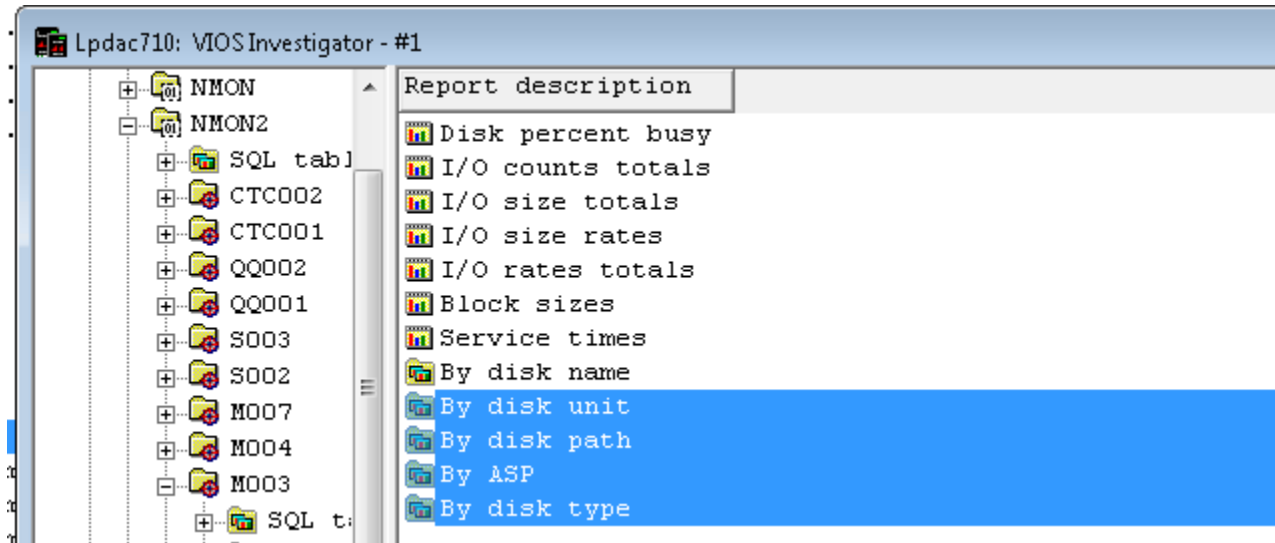
# Analysis Options – Drilling down into rankings

- Next if you wish to see a single disk over time, right-click it and drill down again.



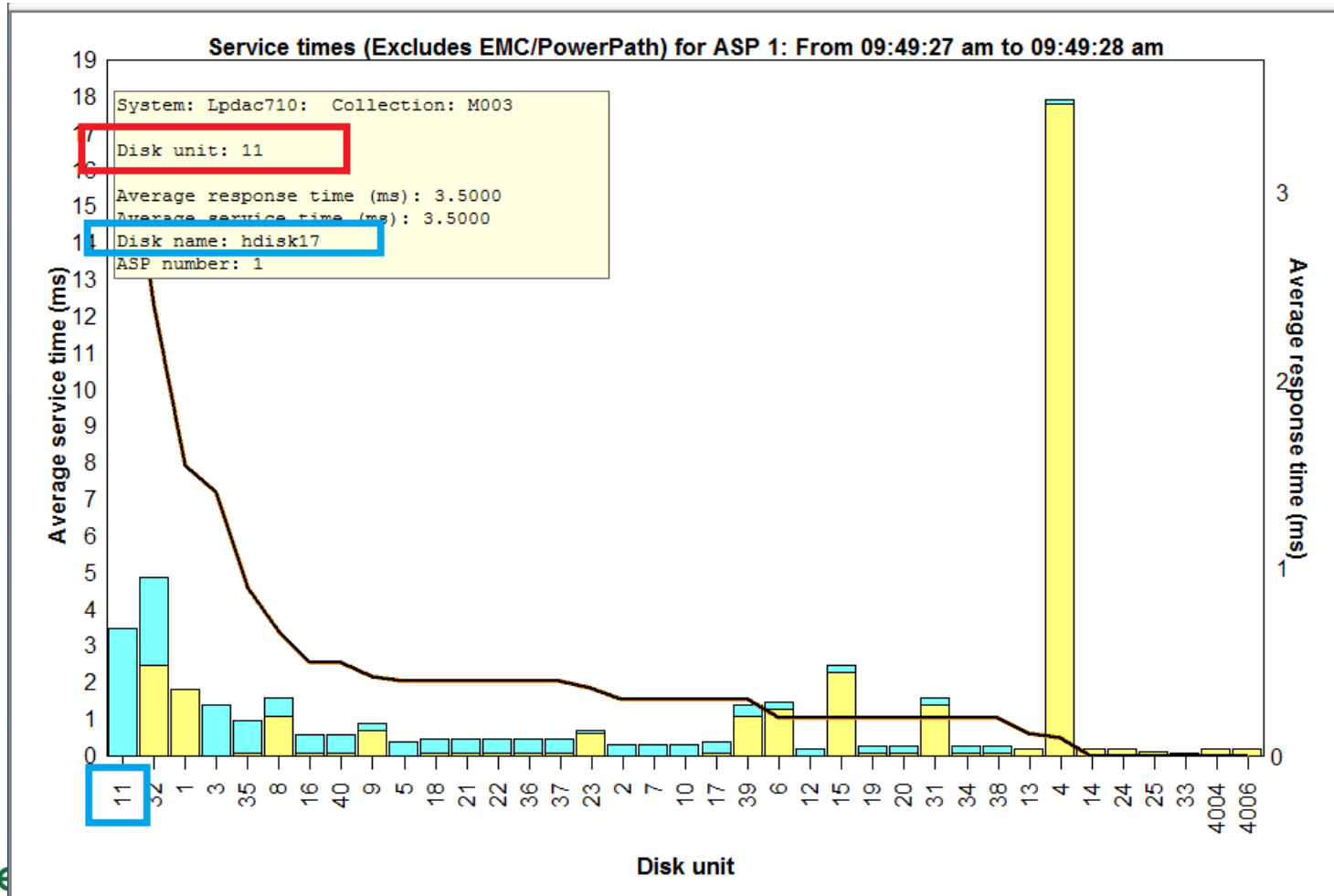
## Analysis Options – Disk mappings benefits

- **But what device resource name / disk unit on IBM i is “hdisk17”?**
  - We can’t tell from this data alone. This is why we need the disk mapping discussed previously.
  - We also get these additional disk rankings graphs to group the data in additional ways (disk unit, path, ASP, disk type)



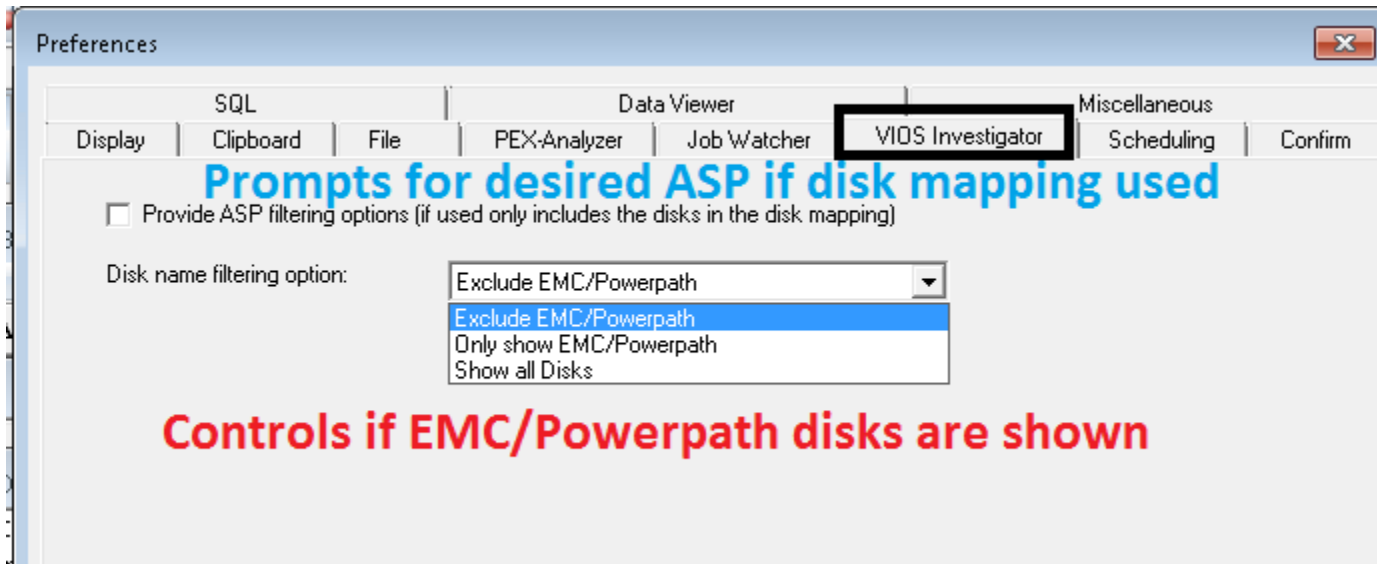
# Analysis Options – Disk mappings benefits – using the flyover

- If disk mapping is included, you can use the flyover to tell the disk correlated with the logical disk unit number on IBM i.



## Analysis Options – VIOS Investigator Preferences

- Under Preferences -> VIOS Investigator tab



# Analysis Options – Server-side output files

This contains the iDoctor generated SQL tables from the .NMON file.

Output file	Description	Rec...
Qaidrnmcor_m003	Disk mapping (VIOS to IBM i)	38
Qaidrnmdb_m003	Raw data records	1417
Qaidrnmdb_m003	Disk statistics	265
Qaidrnmdb_m003	Raw disk data records	3233
Qaidrnmdb_m003	Disk information	53
Qaidrnmdb_m003	Interval timestamps	5
Qaidrnmdb_m003	Interval summary	5
Qaidrnmdb_m003	VIOS Investigator collections	26
Qaidrnmdb_m003	TOP processes interval summary	0
Qaidrnmdb_m003	Logical volumes	15

# Analysis Options – System configuration folder

This contains reports over the NMON BBB\* records

The screenshot shows the VIOSInvestigator interface. In the left pane, the 'System configuration' folder is highlighted with a red rectangle. The right pane shows a list of reports under the heading 'Report description':

- Disk configuration
- Logical volumes
- I/O adapters (BBBC)
- Network adapters (BBBN)
- Command output (BBBP)
- Volume groups (BBBV)

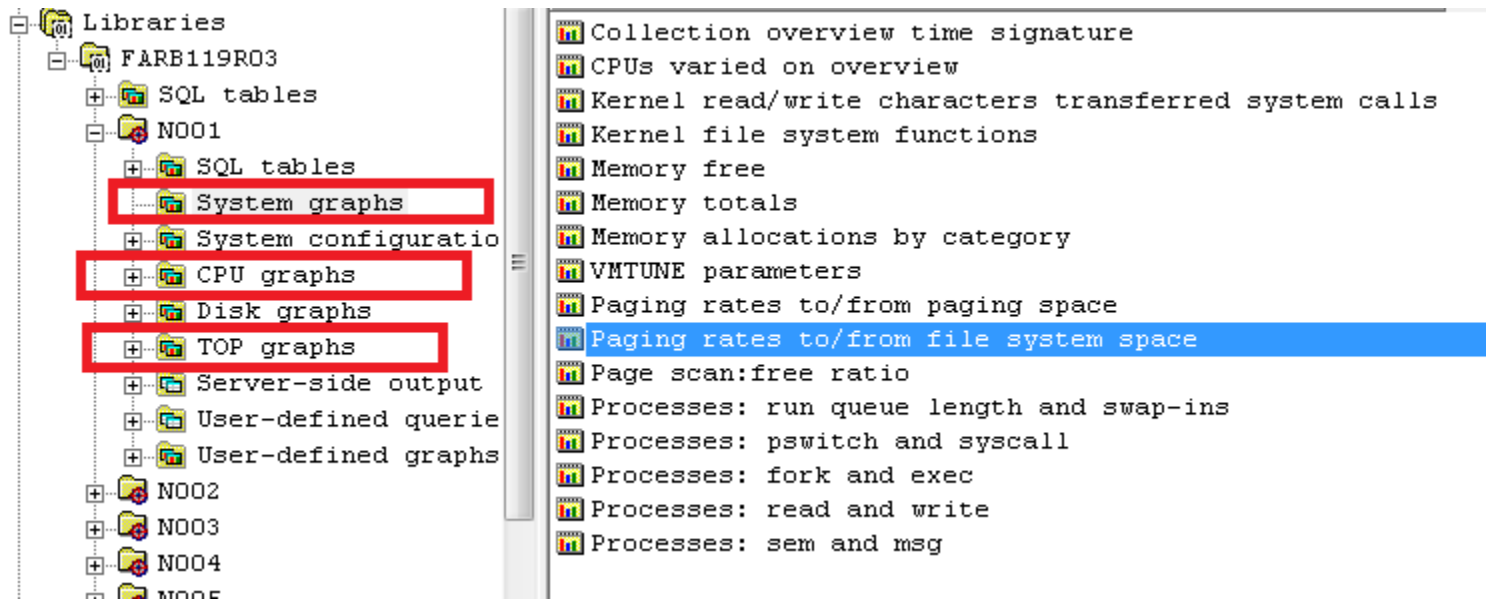
Below the interface is a table showing disk configurations:

Disk name (DISKNAME)	Logical volume name (LVNAME)	Logical partitions (LPS)	Physical partitions (PPS)	Distributions (DISTRIBUTION)	Mount point (MOUNTPOINT)
hdisk0	hd1	20	20	00..00..20..00..00	/home
hdisk0	hd10opt	6	6	00..00..06..00..00	/opt
hdisk0	hd11admin	1	1	00..00..01..00..00	/admin
hdisk0	hd2	12	12	00..00..12..00..00	/usr
hdisk0	hd3	7	7	00..00..07..00..00	/tmp
hdisk0	hd4	1	1	00..00..01..00..00	/
hdisk0	hd5	1	1	01..00..00..00..00	N/A
hdisk0	hd6	1	1	00..01..00..00..00	N/A
hdisk0	hd8	1	1	00..00..01..00..00	N/A
hdisk0	hd9var	2	2	00..00..02..00..00	/var
hdisk0	lg_dumplv	2	2	00..02..00..00..00	N/A
hdisk0	livedump	1	1	00..01..00..00..00	/var/adm/ras/livedump
hdisk0	paging00	2	2	00..00..02..00..00	N/A
hdisk1	test	1	1	00..01..00..00..00	N/A
hdisk1	VMLibrary	40	40	00..40..00..00..00	/var/vio/VMLibrary



## Analysis Options – More graphs available

- Lots more graphs under System graphs, TOP graphs, CPU graphs
- Keep in mind you can use this tool for analyzing any system that can run NMON (AIX/Linux/VIOS)



The screenshot displays a monitoring tool interface. On the left, a tree view shows the following structure:

- Libraries
  - FARB119R03
    - SQL tables
    - N001
      - SQL tables
      - System graphs**
      - System configuratio
      - CPU graphs**
      - Disk graphs
      - TOP graphs**
      - Server-side output
      - User-defined querie
      - User-defined graphs
    - N002
    - N003
    - N004
    - N005

On the right, a list of analysis options is shown, with the following items highlighted in blue:

- Collection overview time signature
- CPUs varied on overview
- Kernel read/write characters transferred system calls
- Kernel file system functions
- Memory free
- Memory totals
- Memory allocations by category
- VMTUNE parameters
- Paging rates to/from paging space
- Paging rates to/from file system space**
- Page scan:free ratio
- Processes: run queue length and swap-ins
- Processes: pswitch and syscall
- Processes: fork and exec
- Processes: read and write
- Processes: sem and msg

## Introduction – Power is Performance Redefined

- For the past 10 years, through sustained investment in the Power Systems platform, IBM has gone head-to-head with our competitors in the UNIX market segment, and we won. Today, according to IDC, IBM commands a 47 percent share of the worldwide UNIX market segment.<sup>1</sup> The next 10 years, however, will be about helping our clients implement smarter computing. And for the Power Systems platform, that battle will center on our alternative value proposition to Linux and Microsoft Windows technology on x86 servers. To do that, we need to move beyond talking about pure system performance and industry benchmarks to placing a sharper focus on the performance of our clients' businesses and the business benefits of the IBM Power Systems platform.
- Industry benchmarks and our IBM POWER® processor technology are, and always will be, important. In the past they have enabled us to clearly and succinctly demonstrate our leadership position in terms of POWER processor performance versus our competitors. And we will continue to set those leadership benchmarks for the industry. But today the conversation must go beyond the performance of our systems and be framed in the broader context of smarter computing. *Power is performance redefined* sets out how we intend to shift the conversation with our clients. It defines how the Power Systems platform, and our associated software and services, can enable our clients to embrace smarter computing and derive business benefits from implementing big data, workload optimized infrastructure and cloud projects. In this messaging guide, you will learn that smarter computing isn't a product we sell; it isn't something clients can buy. Smarter computing is something our clients can implement through projects on the Power Systems platform to achieve better business outcomes. And it is smarter computing, enabled by IBM Power Systems servers, that will help our clients deliver services faster, with higher quality and with superior economics.



1 – IDC, "UNIX Server Rolling Four Quarter Average Revenue Share," Worldwide Quarterly Server Tracker, 2Q2011.



## Smarter Computing – The Next Era of IT

- But this radical change is placing enormous pressure on businesses of practically every size, in just about every industry. The barriers of entry for competitors are lower. Companies can be blindsided by competitors that appear seemingly out of nowhere and seize market share by the handful. The need to be proactive, which requires an agile, flexible human and IT infrastructure, is critical. New ways of working, such as social media and mobile technologies, must be embraced ahead of the curve. Even customers are changing. Newly empowered by information, their expectations and the number of influencers that must be marketed to are rising. External forces such as compliance, regulations, privacy and security threats have to be addressed to survive. Ubiquitous mobile devices and instrumented, intelligent objects are creating unimaginable amounts of data volumes every day—data that must be analyzed to reveal systemic patterns, trends and insights that in turn inform the decisions businesses must make to stay competitive. And to deal with these changes, IT architectures must move from heterogeneous silos to flexible, workload optimized infrastructures. All of these forces must be dealt with in an era of tighter budgets and the directive to do more with less.
- But smarter companies are thinking differently about computing and how to deal with data that is growing exponentially and can become stagnant and unexploited simply because of its sheer volume. These smarter companies are breaking the vicious cycle of untrustworthy data, inflexibility and sprawl. They are reversing the always-guessing, reactive, costly IT conundrum by embracing what we call smarter computing. What smarter computing entails is the creation of an IT infrastructure that is **designed for data** and that harnesses enterprise information to unlock insights and make better, more informed choices. Organizations embracing smarter computing are creating IT infrastructures that are **tuned to the task** of the business, helping reduce costs by driving greater efficiency and performance for virtually every workload. And smarter computing is **managed with cloud technologies**, speeding delivery of services and creating an IT environment that has practically no boundaries, enabling the reinvention of processes and driving innovation.
- But to be clear, smarter computing isn't just a catch phrase or a lofty idea. It's not a metaphor, intro paragraph or headline. It's what the IBM Power Systems platform enables our clients to do. And this is the basis for our new brand identity *Power is performance redefined*. It's about how we believe clients measure IT performance – focusing less on processor performance and more on business performance. It's about our clients' ability to react more quickly to change, to innovate faster, and to seize new opportunities as they arise. It's about their ability to handle rapid growth and combat emerging competitors while responding to demands to meet increasingly higher service levels. And it's about doing more with less and delivering services within constrained IT budgets. We believe that with a new focus on business performance, we will enable our clients to deliver services faster, with higher quality and superior economics. Our message to clients is that, with Power Systems solutions, we can help them achieve these goals as they deploy smarter computing projects.

# Power is Performance Redefined



- In this new smarter computing era for business and IT, forward-thinking companies consider more than server performance, existing skills and ease of management when choosing a platform for new application workloads. They also evaluate how well the platform will help them achieve three core business objectives: delivering services faster, with higher quality and superior economics.
- By implementing smarter computing projects on an IBM Power Systems platform, businesses can outpace their competitors by delivering services faster. They can differentiate their offerings from the competition by delivering higher quality services. And they can turn operational cost into investment opportunity by delivering services with superior economics.



# Power is Performance Redefined

## ▪ Deliver services faster

- A key measure of performance for IT today is around agility and the ability of IT to help the business gain a competitive edge and capitalize on emerging opportunities. Businesses need to simplify and integrate their IT infrastructure to *deliver services faster*.
- The IBM Power Systems platform features deep integration and optimization across operating systems, databases and middleware for simpler, and more flexible, service delivery. Optimized with PowerVM virtualization for rapid cloud provisioning, clients can speed the delivery and deployment of new applications and processes to support their strategic business initiatives.

## ▪ Deliver services with higher quality

- Today's IT departments are also measured on their ability to provide an infrastructure that can address demands for increased application service levels while at the same time balancing rapid change with managing business risk. Businesses need an integrated approach to managing security, resiliency and business risk to *deliver higher quality services*.
- The IBM Power Systems platform, storage and software provide a highly secure and resilient infrastructure foundation for smarter computing. In addition to the built-in reliability, availability and serviceability (RAS) characteristics of Power Systems servers and blades, our IBM System Storage® DS8000® and IBM Storwize® V7000 Unified storage systems, and IBM PowerHA SystemMirror clustering software is tightly integrated with our operating systems to provide a system-wide solution for business resilience.

## ▪ Deliver services with superior economics

- IT performance today is also measured on its ability to maintain existing services and deliver services within tight budget constraints. In order to do more with less, businesses need to *deliver services with superior economics*.
- The Power Systems platform with PowerVM virtualization is central to our differentiation when compared to x86 servers. PowerVM technology is designed to offer more secure and scalable virtualization than VMware on x86, enabling cost-effective control of server and virtual image sprawl. PowerVM technology also is designed to help Power Systems servers deliver higher server utilization rates than VMware on x86. We believe that the superior economic model for workload consolidation on POWER7 servers with PowerVM software has been the key driver behind migrations from Oracle Sun and HP to Power Systems technology.





## Special notices

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IBM benchmark results can be found in the IBM Power Systems Performance Report at [http://www.ibm.com/systems/p/hardware/system\\_perf.html](http://www.ibm.com/systems/p/hardware/system_perf.html).

All performance measurements were made with AIX or AIX 5L operating systems unless otherwise indicated to have used Linux. For new and upgraded systems, the latest versions of AIX were used. All other systems used previous versions of AIX. The SPEC CPU2006, LINPACK, and Technical Computing benchmarks were compiled using IBM's high performance C, C++, and FORTRAN compilers for AIX 5L and Linux. For new and upgraded systems, the latest versions of these compilers were used: XL C for AIX v11.1, XL C/C++ for AIX v11.1, XL FORTRAN for AIX v13.1, XL C/C++ for Linux v11.1, and XL FORTRAN for Linux v13.1.

For a definition/explanation of each benchmark and the full list of detailed results, visit the Web site of the benchmark consortium or benchmark vendor.

TPC	<a href="http://www.tpc.org">http://www.tpc.org</a>
SPEC	<a href="http://www.spec.org">http://www.spec.org</a>
LINPACK	<a href="http://www.netlib.org/benchmark/performance.pdf">http://www.netlib.org/benchmark/performance.pdf</a>
Pro/E	<a href="http://www.proe.com">http://www.proe.com</a>
GPC	<a href="http://www.spec.org/gpc">http://www.spec.org/gpc</a>
VolanoMark	<a href="http://www.volano.com">http://www.volano.com</a>
STREAM	<a href="http://www.cs.virginia.edu/stream/">http://www.cs.virginia.edu/stream/</a>
SAP	<a href="http://www.sap.com/benchmark/">http://www.sap.com/benchmark/</a>
Oracle, Siebel, PeopleSoft	<a href="http://www.oracle.com/apps_benchmark/">http://www.oracle.com/apps_benchmark/</a>
Baan	<a href="http://www.ssaglobal.com">http://www.ssaglobal.com</a>
Fluent	<a href="http://www.fluent.com/software/fluent/index.htm">http://www.fluent.com/software/fluent/index.htm</a>
TOP500 Supercomputers	<a href="http://www.top500.org/">http://www.top500.org/</a>
Ideas International	<a href="http://www.ideasinternational.com/benchmark/bench.html">http://www.ideasinternational.com/benchmark/bench.html</a>
Storage Performance Council	<a href="http://www.storageperformance.org/results">http://www.storageperformance.org/results</a>

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IBM benchmark results can be found in the IBM Power Systems Performance Report at [http://www.ibm.com/systems/p/hardware/system\\_perf.html](http://www.ibm.com/systems/p/hardware/system_perf.html).

All performance measurements were made with AIX or AIX 5L operating systems unless otherwise indicated to have used Linux. For new and upgraded systems, the latest versions of AIX were used. All other systems used previous versions of AIX. The SPEC CPU2006, LINPACK, and Technical Computing benchmarks were compiled using IBM's high performance C, C++, and FORTRAN compilers for AIX 5L and Linux. For new and upgraded systems, the latest versions of these compilers were used: XL C for AIX v11.1, XL C/C++ for AIX v11.1, XL FORTRAN for AIX v13.1, XL C/C++ for Linux v11.1, and XL FORTRAN for Linux v13.1. Linpack HPC (Highly Parallel Computing) used the current versions of the IBM Engineering and Scientific Subroutine Library (ESSL). For Power7 systems, IBM Engineering and Scientific Subroutine Library (ESSL) for AIX Version 5.1 and IBM Engineering and Scientific Subroutine Library (ESSL) for Linux Version 5.1 were used.

For a definition/explanation of each benchmark and the full list of detailed results, visit the Web site of the benchmark consortium or benchmark vendor.

SPEC	<a href="http://www.spec.org">http://www.spec.org</a>
LINPACK	<a href="http://www.netlib.org/benchmark/performance.pdf">http://www.netlib.org/benchmark/performance.pdf</a>
Pro/E	<a href="http://www.proe.com">http://www.proe.com</a>
GPC	<a href="http://www.spec.org/gpc">http://www.spec.org/gpc</a>
STREAM	<a href="http://www.cs.virginia.edu/stream/">http://www.cs.virginia.edu/stream/</a>
Fluent	<a href="http://www.fluent.com/software/fluent/index.htm">http://www.fluent.com/software/fluent/index.htm</a>
TOP500 Supercomputers	<a href="http://www.top500.org/">http://www.top500.org/</a>
AMBER	<a href="http://amber.scripps.edu/">http://amber.scripps.edu/</a>
FLUENT	<a href="http://www.fluent.com/software/fluent/fl5bench/index.htm">http://www.fluent.com/software/fluent/fl5bench/index.htm</a>
GAMESS	<a href="http://www.msg.chem.iastate.edu/gamess">http://www.msg.chem.iastate.edu/gamess</a>
GAUSSIAN	<a href="http://www.gaussian.com">http://www.gaussian.com</a>
ANSYS	<a href="http://www.ansys.com/services/hardware-support-db.htm">http://www.ansys.com/services/hardware-support-db.htm</a>
ABAQUS	Click on the "Benchmarks" icon on the left hand side frame to expand. Click on "Benchmark Results in a Table" icon for benchmark results. <a href="http://www.simulia.com/support/v68/v68_performance.php">http://www.simulia.com/support/v68/v68_performance.php</a>
ECLIPSE	<a href="http://www.sis.slb.com/content/software/simulation/index.asp?seq=geoquest&amp;">http://www.sis.slb.com/content/software/simulation/index.asp?seq=geoquest&amp;</a>
MM5	<a href="http://www.mmm.ucar.edu/mm5/">http://www.mmm.ucar.edu/mm5/</a>
MSC.NASTRAN	<a href="http://www.mssoftware.com/support/prod%5Fsupport/nastran/performance/v04_sngl.cfm">http://www.mssoftware.com/support/prod%5Fsupport/nastran/performance/v04_sngl.cfm</a>
STAR-CD	<a href="http://www.cd-adapco.com/products/STAR-CD/performance/320/index/html">www.cd-adapco.com/products/STAR-CD/performance/320/index/html</a>
NAMD	<a href="http://www.ks.uiuc.edu/Research/namd">http://www.ks.uiuc.edu/Research/namd</a>
HMMER	<a href="http://hmmer.janelia.org/">http://hmmer.janelia.org/</a> <a href="http://powerdev.osuosl.org/project/hmmerAltivecGen2mod">http://powerdev.osuosl.org/project/hmmerAltivecGen2mod</a>

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## Notes on performance estimates

### rPerf for AIX

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- rPerf estimates are calculated based on systems with the latest levels of AIX and other pertinent software at the time of system announcement. Actual performance will vary based on application and configuration specifics. The IBM eServer pSeries 640 is the baseline reference system and has a value of 1.0. Although rPerf may be used to approximate relative IBM UNIX commercial processing performance, actual system performance may vary and is dependent upon many factors including system hardware configuration and software design and configuration. Note that the rPerf methodology used for the POWER6 systems is identical to that used for the POWER5 systems. Variations in incremental system performance may be observed in commercial workloads due to changes in the underlying system architecture.

All performance estimates are provided "AS IS" and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, and application sizing guides to evaluate the performance of a system they are considering buying. For additional information about rPerf, contact your local IBM office or IBM authorized reseller.

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### CPW for IBM i

Commercial Processing Workload (CPW) is a relative measure of performance of processors running the IBM i operating system. Performance in customer environments may vary. The value is based on maximum configurations. More performance information is available in the Performance Capabilities Reference at: [www.ibm.com/systems/i/solutions/perfmgmt/resource.html](http://www.ibm.com/systems/i/solutions/perfmgmt/resource.html)

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