

IBM iDoctor for IBM i Power Connections

IBM iDoctor for IBM i Development Team

3 June 2022

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Abstract

Provides in-depth coverage of all major GUI functions for all components at 7.1, 7.2, 7.3 and 7.4. This covers the functions specific to VIOS and HMC. This is primarily for the analysis of nmon performance data.

Changes

3 June 2022 – Moved VIOS monitor setup document into this document. Also updated screens to match client 1543.

28 Jan 2022 – Created new document to separate the documentation into different documents for ease of maintenance. This is section 7 found in the previous version of the documentation.

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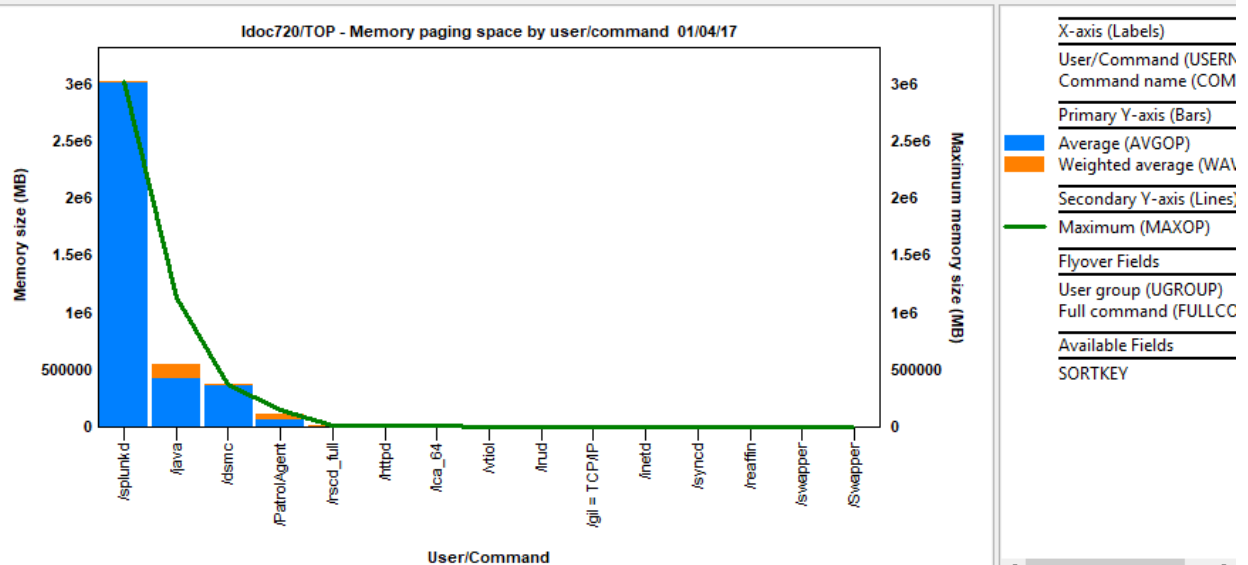
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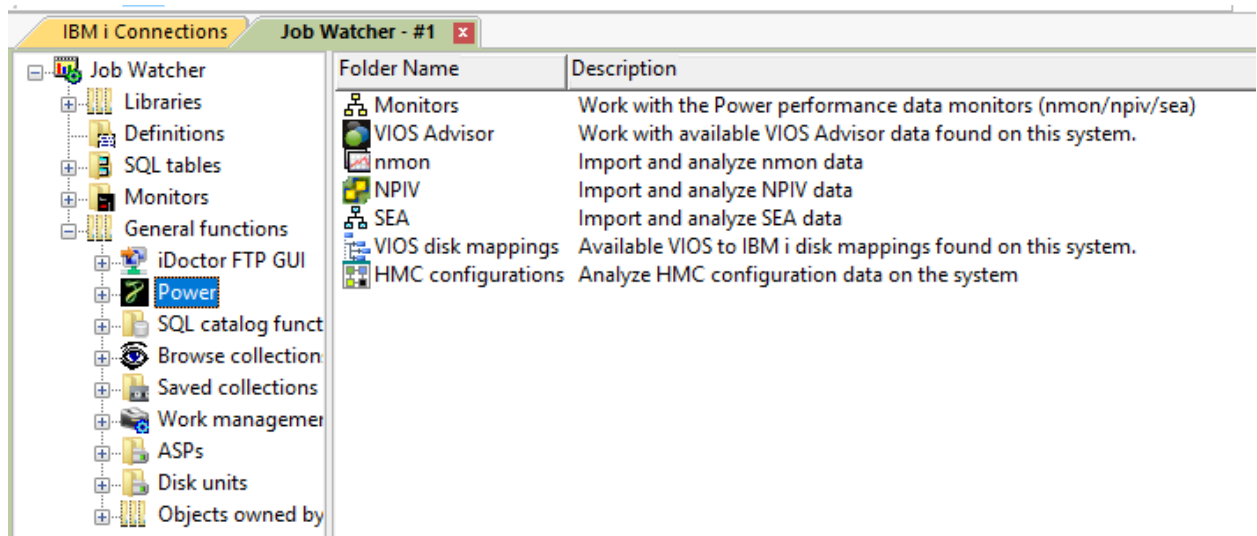
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1 Overview

This chapter covers the functions available that are not specific to IBM i. This includes several options available to view and analyze data on HMC or VIOS systems.

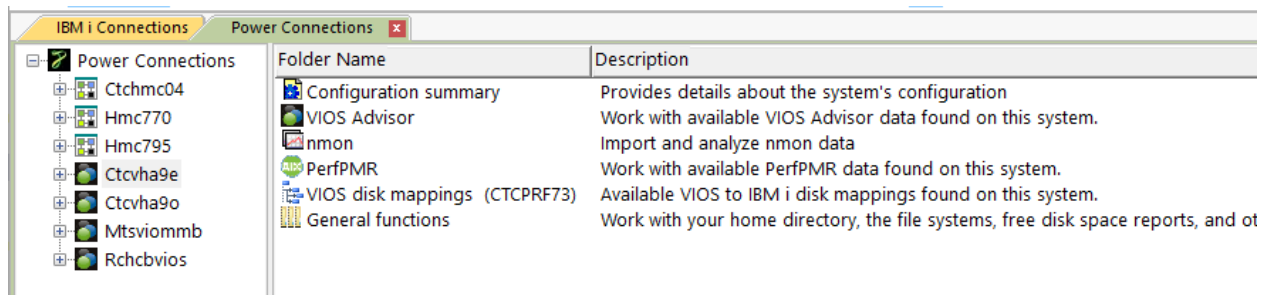
You can access these functions in multiple ways:

- 1) From an IBM i component, visit the **General functions -> Power** folder. The types of data you can work with are listed under this folder and data will need to be sent to the IFS (from other systems like VIOS) to use these options.



Job Watcher -> General functions -> Power

- 2) From the [Power Connections View](#), under a VIOS or HMC type connection each type of data will be listed in its own subfolder. In this environment, the raw performance data will reside on the remote server



Power Connections -> VIOS

Note: These functions rely heavily on the use of Java and .NET (on the PC) as well as SSH/FTP connections being available to the desired servers. The required level of Java or .NET must be installed on the PC (check the [PC Requirements](#) section for specific levels if necessary.) Also check the connection settings to configure the type of FTP connection to use for each server.

1.1 “As-is” / No Warranty

All features in this document are free but also offered **“as-is” with no warranty of any kind.**

If you have issues, feel free to contact us at idoctor@us.ibm.com but support for problems in this area of iDoctor is not guaranteed and only on a best effort basis.

1.2 Installation Notes

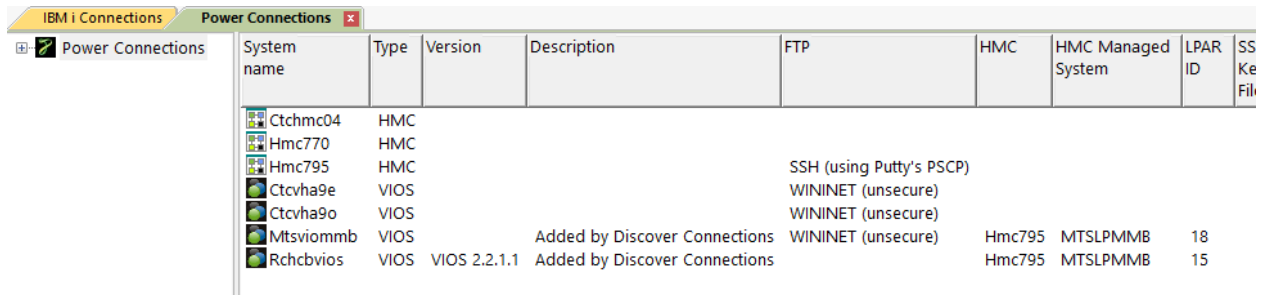
When you make a connection in the [Power Connections View](#) to a VIOS system, the 1st time iDoctor will attempt to FTP (transfer) several scripts to the system that are used for data collection and analysis purposes. If you refuse to allow this then most of the functions in this section will not work. This also requires a working FTP connection between the PC and the remote system.

For VIOS this requires the use of the padmin signon and most commands are executed via use of oem_setup_env. This is required to use these functions with the GUI.

These iDoctor scripts are installed to the /tmp/idoctor directory by default but this is configurable using the **Preferences -> Power -> VIOS Investigator – script directory** setting.

2 Power Connections View

The Power Connections view allows you to work with HMC or VIOS connections. The main purpose of this view is to provide a quick and easy way to launch iDoctor functionality for any system desired.



System name	Type	Version	Description	FTP	HMC	HMC Managed System	LPAR ID	SSH Key File
Ctchmc04	HMC							
Hmc770	HMC							
Hmc795	HMC							
Ctcvha9e	VIOS			SSH (using Putty's PSCP)				
Ctcvha9o	VIOS			WININET (unsecure)				
Mtscvmmmb	VIOS		Added by Discover Connections	WININET (unsecure)				
Rchcbvios	VIOS	VIOS 2.2.1.1	Added by Discover Connections	WININET (unsecure)	Hmc795	MTSLPMMB	18	
					Hmc795	MTSLPMMB	15	

Power Connections View

The top level of the tree/list contains several columns that represent settings for each connection. These values are based on the last known connection made to the system and may not reflect current system settings.

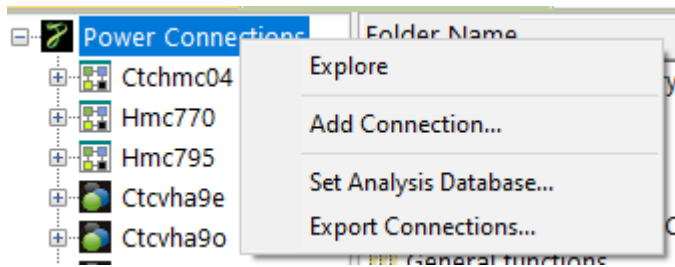
Note: When iDoctor connects to these systems it will primarily use SSH to make the connection but in some cases, FTP will also be used.

Column	Description
System	System/partition name or IP address.
Type	The type of system the connection applies to. The possible values are: - HMC - VIOS
Version	The version of the operating system for each connection (if known.)
Description	An optional description given to the connection within iDoctor.
FTP	This indicates the preferred FTP method to use for each connection.
HMC	This value identifies the managing HMC (if applicable) for the partition. This value is filled by iDoctor after connecting to the HMC and using the Discover Connections interface to find new connections.
HMC Managed System	This value identifies the HMC managed system for the partition.
LPAR ID	This column lists the LPAR ID as defined in the HMC for the partition.
SSH Putty Key File	An SSH key file can be used on a connection to help ensure a secure connection to this system. Typically, these have a passphrase that must be entered when making the connection. You must use the Putty tool to generate this: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
IP Address	The last known IP address of the system.

Since this interface is a tree and a list, there are different options available at each level of the tree. The top level of the tree contains a list of all your Power connections.

2.1 Root Folder Menu Options

When right-clicking the Power Connections (root) folder, the following options are shown:



Power Connections Popup-Menu

Power Connections Menu	Description
Add Connection	Use this menu to add an HMC or VIOS connection to the Power Connections View.
Set Analysis Database	This option allows you to configure which analysis database iDoctor should be using when analyzing non-IBM i performance data. This allows you to specify an IBM i to use to store the performance data on.
Export connections	Use this option to create a Windows registry file that contains a list of all your non-IBM i connections. This file can be used to restore all your connections at a later time or to another PC.

Each type of connection and the options they provide will be discussed in the next sections.

2.2 Add/Edit Power Connection

This window allows a user to add (or edit) a connection to the list.

Simply provide the system name or IP address, the type of connection, default user mode and an optional description and click OK to register the system on your PC and add it to the list.

An example of this interface is:

Add Power Connection Window

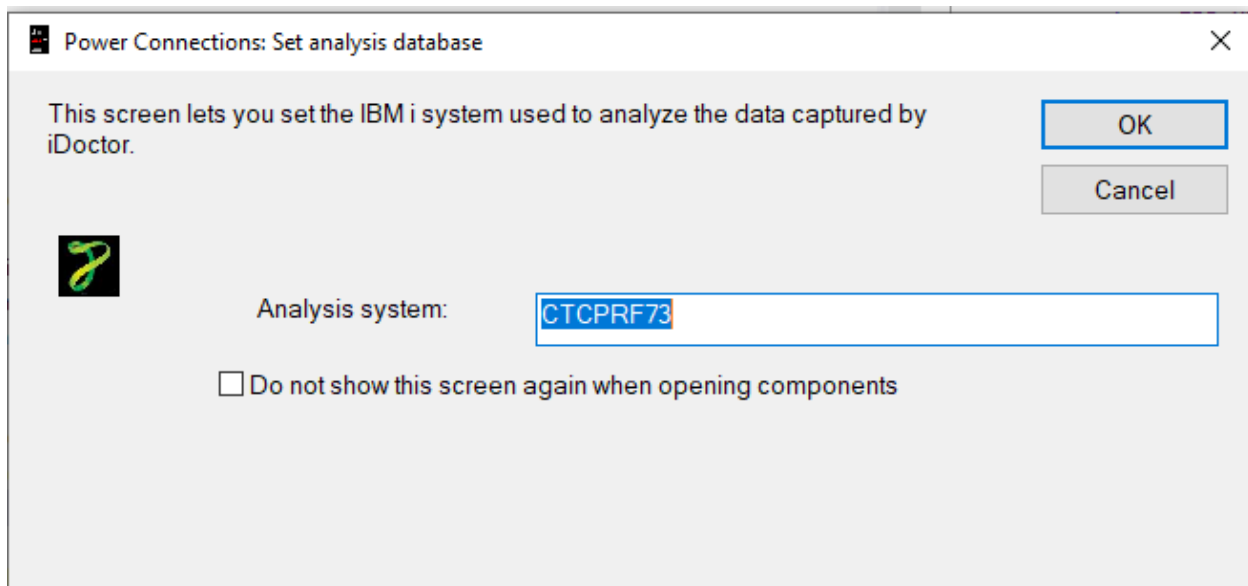
The options available on this screen are described in the following table:

Option	Description
System	System/partition name or IP address.
Connection type	This list provides the possible types of connections you can create which are: • HMC • VIOS
Default user mode	Indicates how the value for the user name to use when making connections to this system will be determined.
Description	An optional description given to the connection.
SSH Putty Private key file	An SSH key file can be used on a connection to help ensure a secure connection to this system. Typically, these have a passphrase that must be entered when making the connection. You can use the Putty tool to generate this: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
FTP method	This option lets you pick which FTP method is preferred when connecting to this system.

2.3 Set Analysis Database

This window allows a user to configure which IBM i to use to store performance data on for analysis purposes with iDoctor.

An example of this interface is:



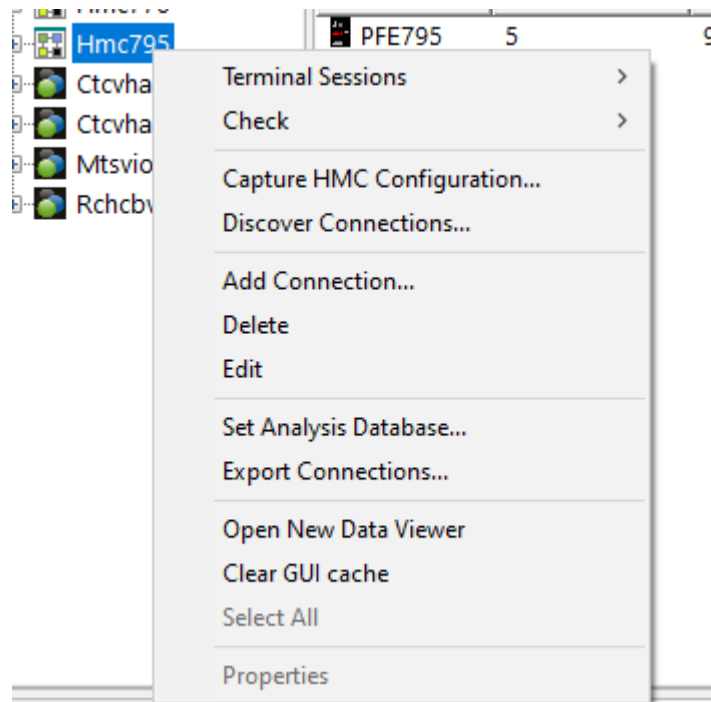
Set Analysis Database Window

3 HMC Connections

HMC connections in the [Power Connections View](#), provide access to the HMC, including the ability to drill down and view the managed systems and LPARs within each managed system. You can also utilize the [Discover Connections](#) function to look for and add the desired types of connections found on the HMC to iDoctor more easily.

3.1 Menu Options

When right-clicking on an HMC the following options are shown:



HMC Pop-up-Menu Options

Menu	Description
Terminal Sessions – Launch Putty (SSH)	If Putty is installed and preferences on the Power page are configured correctly to allow iDoctor to know its location, then this option will attempt to launch Putty using an SSH connection to the selected system.
Terminal Sessions – Launch Putty (Telnet)	If Putty is installed and preferences on the Power page are configured correctly to allow iDoctor to know its location, then this option will attempt to launch Putty using a telnet connection to the selected system.
Terminal Sessions – End all Putty sessions	This option will kill all open instances of Putty regardless of whether they were started by iDoctor or not.
Check – FTP Connections	This option will check each of the types of FTP Connections available with iDoctor to the selected system and indicate which methods work and which do not. Note: The GUI may appear to hang during this step, but this is currently normal.
Check – FTP Connections (verbose)	This is the same as the previous option but also provides additional debug information.
Check – Connection (show ping results)	This option will ping the selected system and displays the results.
Check – IP Address	This option will ping the selected system in order to determine the current IP address.
Capture HMC Configuration	This option will kick off the HMC configuration capture function and store the results in the currently specified analysis database on an IBM i.
Discover Connections	This option displays the Discover Connections function to look for and add the desired types of connections found on the HMC to iDoctor.
Add Connection	Use this menu to add a Power connection to the Power Connections View .
Delete	This will delete the selected connection(s) from the Power Connections View .
Edit	This option allows you to modify the selected connection's settings.
Set Analysis Database	This option allows you to configure which analysis database iDoctor should be using when analyzing non IBM i (Power) performance data.
Export connections	Use this option to create a Windows registry file that contains a list of all your Power connections. This file can be used to restore all your connections at a later time or to another system.
Open New Data Viewer	Opens a new Data Viewer window. This window is used to display tables and graphs on the system. You can open iDoctor-defined reports into this window or you can also open any database file or SQL table and display the results in graph or table form.
Clear GUI cache	Mainly intended for IBM use, this option clears everything loaded in the GUI's cache (like menus, graph definitions, query definitions, stored procedure versions installed, etc)
Select all	Selects all connections in the list.

3.2 Managed systems

Expanding an HMC will reveal the managed systems it contains. The ability to change the data collection settings for any of the managed systems is also available here.

For the purposes of analyzing data it is recommended to keep the sample rate the same for all managed systems that you wish to analyze within iDoctor.

Power Connections	Managed system	Utilization data sample rate (minutes)	Type-Model	Serial
Ctchmc04				
Hmc770				
Hmc795	PFE795	5	9119-FHB	026BB46
PFE795				
Ctcvha9e				
Ctcvha9e				

Power Connections View showing managed systems within an HMC

Right-clicking on a managed system provides the following options:

Managed System Menu	Description
Set Isparutil sample rate	This option provides the ability to set the Isparutil data collection sample rate for the selected managed systems. The possible values are: 1 minute, 5 minutes, 30 minutes, 1 hour or disable.

3.3 LPARs

Expanding a managed system will display basic information about the LPARs defined within it.

Power Connections	LPAR name	Type	Version	Description	FTP	HMC	HMC Managed System	LPAR ID	Allow perf collection?	SSH Putty Key File	IP Address
Ctchmc04	russ test	AIX		Not Activated		Hmc795	PFE795	3			
Hmc770	dummy	AIX		Not Activated		Hmc795	PFE795	2			
Hmc795	prvpas1b	IBM i		Not Activated		Hmc795	PFE795	1			
PFE795											
Ctcvha9e											

Power Connections View displaying LPARs within an HMC's managed system

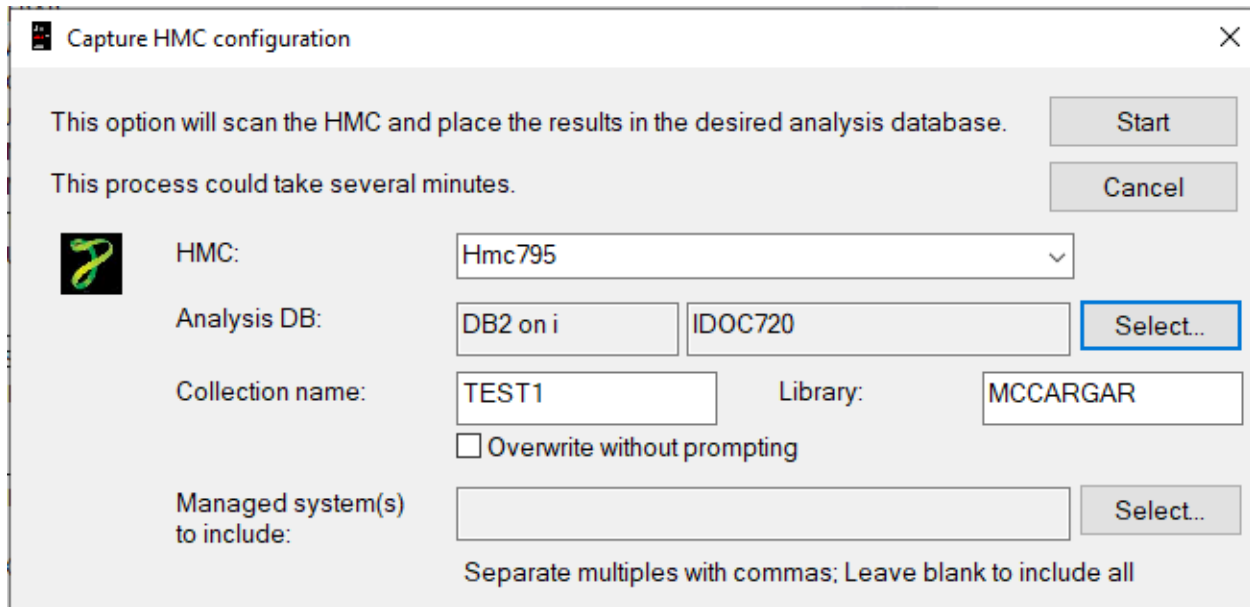
Right-clicking on an LPAR provides the following options:

LPAR Menu	Description
Enable performance collection	This option will set the allow performance collection flag to true for the selected LPARs.
Disable performance collection	This option will set the allow performance collection flag to false for the selected LPARs.

Note: Although AIX LPARs may be listed, they cannot be expanded further with iDoctor. IBM i LPARs may be expanded however which provides the same functions as IBM i Explorer's -> General Functions folder.

3.4 Capture HMC configuration

This option will kick off the HMC collection to capture configuration data and stores the results in the currently specified analysis database. This is a library and collection name on the desired IBM i.



Capture HMC configuration

This option will scan the HMC and place the results in the desired analysis database.

This process could take several minutes.

 HMC:

Analysis DB:

Collection name: Library:

☐ Overwrite without prompting

Managed system(s) to include:

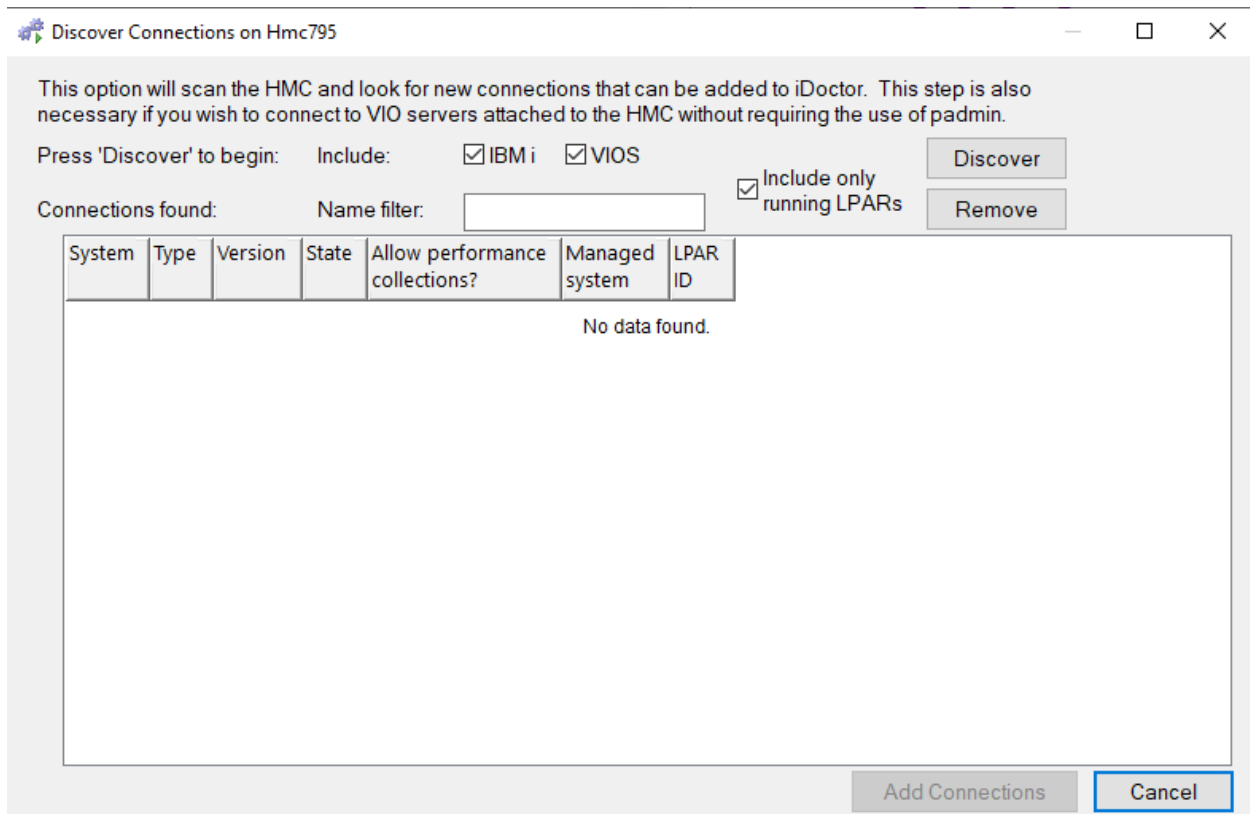
Separate multiples with commas; Leave blank to include all

Capture HMC configuration window

Note: When complete you will need to connect to the IBM i and use the IBM i Explorer -> General Functions -> Power -> HMC Configurations folder to view results.

3.5 Discover Connections

The Discover Connections interface allows HMC users the ability to browse or search for LPARs by name or type. The user will be presented with a list of LPARs matching the search criteria and if desired these connections can be added to the [Power Connections View](#) by pressing the Add Connections button.



Discover Connections on Hmc795

This option will scan the HMC and look for new connections that can be added to iDoctor. This step is also necessary if you wish to connect to VIO servers attached to the HMC without requiring the use of padmin.

Press 'Discover' to begin: Include: ☒ IBM i ☒ VIOS

Connections found: Name filter: ☒ Include only running LPARs

System	Type	Version	State	Allow performance collections?	Managed system	LPAR ID
No data found.						

Discover Connections Window

The options available on this screen are described in the following table:

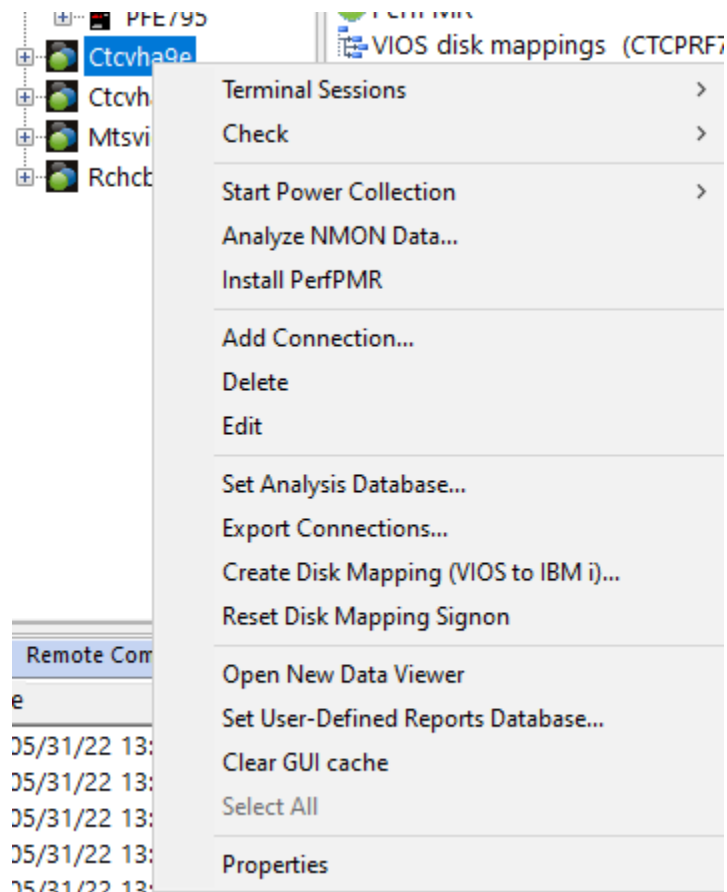
Option	Description
Include	These all you to include/exclude LPARs based on the type (IBM I or VIOS.)
Name filter	This option provides the ability to search for an LPAR based on name.
Include only running LPARs	This option gives the ability to only return LPARs that report a Running state from the HMC.
Discover button	Press this button to perform a search based on the criteria given.
Remove button	This button will remove all selected LPARs from the search results window.
Add Connections	This button will add the selected LPARs to the Power Connections View .

4 VIOS Connections

In the [Power Connections View](#) you will find the VIOS connections (if any exist.)
A VIOS connection can be used to drill down into the VIOS within the [Power Connections View](#).

4.1 Menu Options

When right-clicking on a VIOS the following options will be shown:

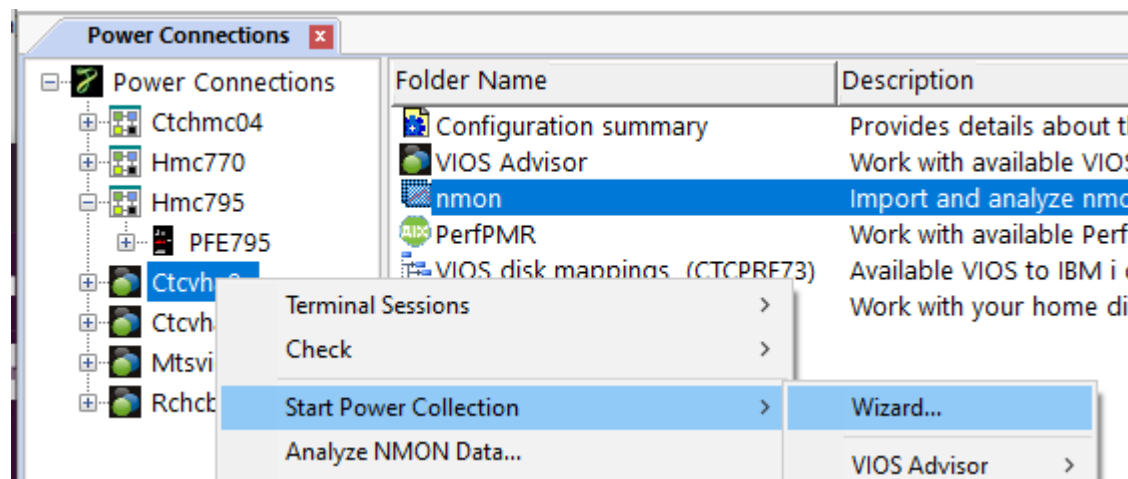


Note: Only the menu options that do NOT exist in the [HMC Menu Options](#) are covered here.

Menu	Description
Start Power Collection - Wizard	This will display the Power Collection Wizard where the user can determine which types of performance data to collect on the system.
Start Power Collection - VIOS Advisor	Use these options to collect a VIOS Advisor collection, on the desired VIOS. Note: This is done using the part command on the VIOS.
Start Power Collection – nmon	These options are used to kick off nmon collections on the desired VIOS. This includes NPIV and SEA data collection options.
Start Power Collection – PerfPMR	This option will kick off a PerfPMR collection which is typically need by AIX support to analyze problems.
Analyze NMON Data...	This is used to analyze .nmon files stored on the PC. The files will be sent to and analyzed on the currently specified analysis database.
Install PerfPMR	This option can be used to install the PerfPMR tool on this system.
Create Disk Mapping (VIOS to IBM i)	This option displays the Create Disk Mapping window which allows a user to add an IBM i to VIOS disk mapping to their analysis database IBM i .
Reset Disk Mapping Signon	This option removes the SysMgrs file from the IFS under the current user's home directory (if it exists.) This will reset the Create Disk Mapping process so the user can pick a different HMC or HMC user to create the next disk mapping with.
Properties	This option displays the properties for the system.

4.2 Power Collection Wizard

You can collect data using the Power Collection Wizard. To access this feature right-click a VIOS system in the Power Connections interface and use the Start Power Collection -> Wizard... menu option.



Start Power Collection -> Wizard menu

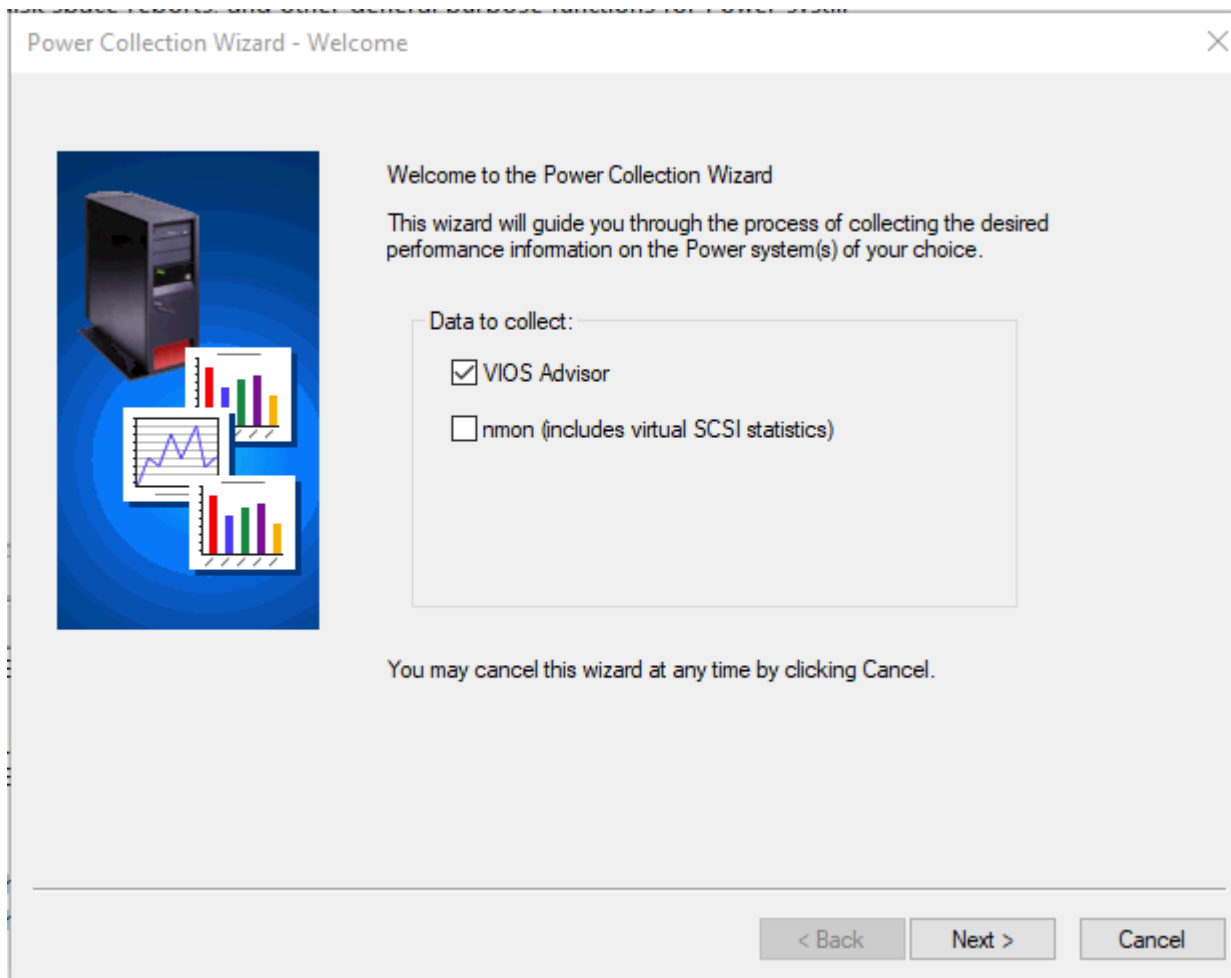
The Power Collection Wizard allows a user to start a collection of the desired type(s) against one or more VIOS systems. This will only work if SSH connection(s) to each system are available from the current PC.

The next section covers the interface:

4.2.1 Welcome

This screen gives the user the option to collect VIOS advisor and/or nmon data on one or more VIOS systems

Note: The nmon option by default will include virtual SCSI statistics.



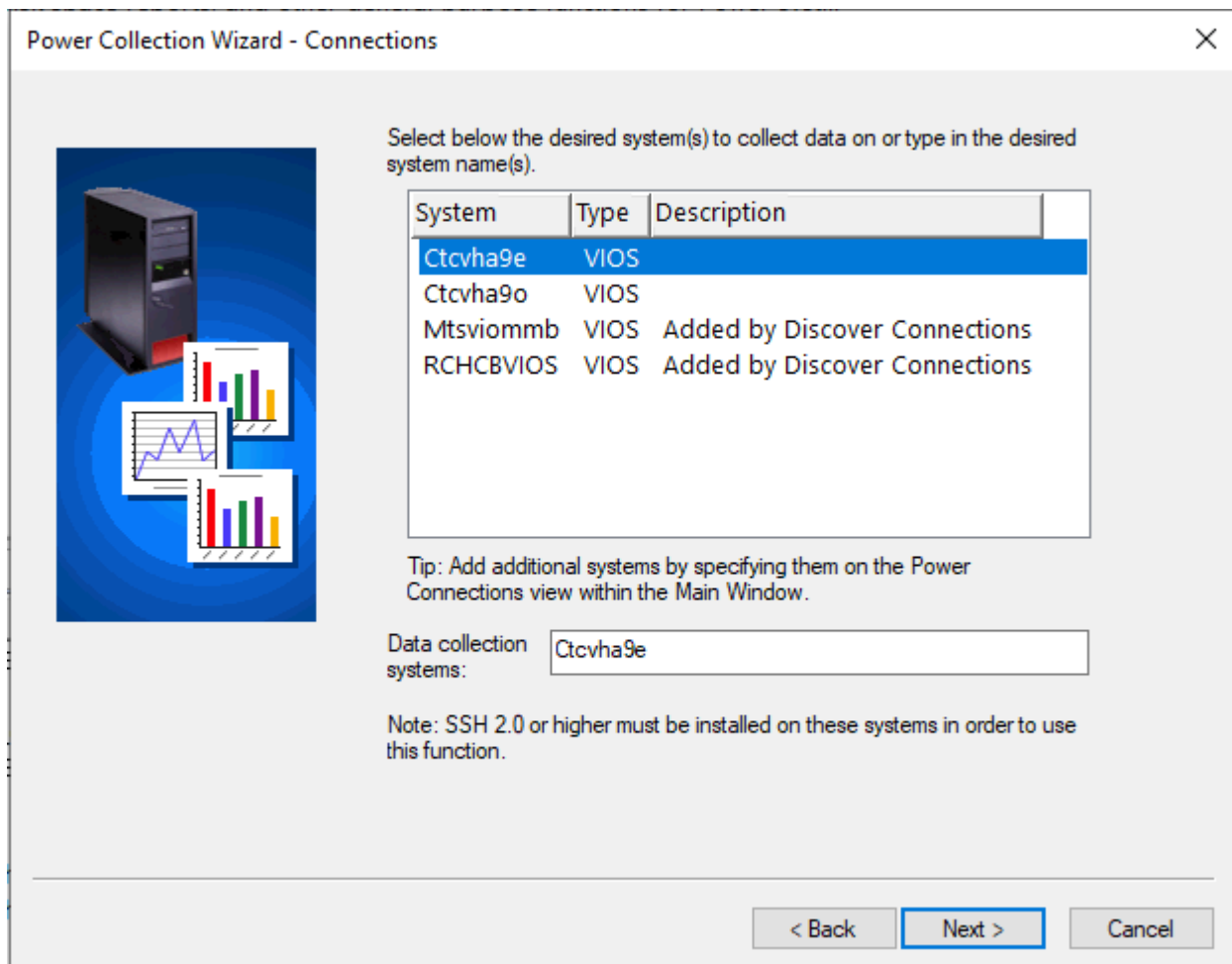
Power Collection Wizard - Welcome

4.2.2 Connections

The Connections panel asks the user to specify the VIOS system(s) to collect data on. You can select more than 1 system here by using the Ctrl key while clicking the mouse.

Note: SSH 2.0 or higher must be installed on these systems.

Note #2: The list of VIOS comes from the Power Connections View. Add or remove systems there to modify the systems that appear on this screen.

*Power Collection Wizard - Connections*

4.2.3 Basic Options

The Basic Options panel asks the user for key information about the data being collected such as the directory to create data in, interval duration and the number of intervals to collect.

You may also check the box to show additional nmon advanced options if desired.

Power Collection Wizard - Basic Options ✕



This screen allows you to work with the common options for all types of data being collected (except where indicated.)

The data directory will be created on each system where data is being collected. Each type of data will exist under a /advisor or /nmon subdirectories.

Data directory (will be created):

Collection duration: minutes ▾

nmon options:

Interval duration: 1 - 86,400 seconds

Description:

☒ Show advanced options

< Back
Next >
Cancel

Power Collection Wizard – Basic Options

Option	Description
Data directory	This is the root directory on each type of data created will be stored. Each type of data is stored in a subdirectory under this directory based on the type (/nmon or /advisor) created.
Collection duration	Indicates how long the collection(s) should run for. This setting can be entered in hours, minutes or seconds using the drop-down list. Note: Keep in mind if desired it is possible to analyze the data in these types of collections before the collection duration has been reached.
Interval duration	This value specifies how much of a delay there is between intervals (in seconds). Note: This option only appears and applies when nmon data is being created.
Description	A description to associate with the nmon collection(s) created.
Show advanced options	Check this box to see additional nmon data collection options. Note: This option only appears and applies when nmon data is being created.

4.2.4 nmon Advanced Options

This screen gives the user more control of how the nmon collection will be performed and the additional types of data to include.

Power Collection Wizard - nmon Advanced Options



Collection name: ☒ Generate using default format
☐

Command to use: topas_nmon or nmon (older version)

Top processes options:

Include:

CPU Filter: 0 - 50 %

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

< Back Next > Cancel

Power Collection Wizard – nmon Advanced Option

Option	Description
Collection name	This is the file name to use for the nmon collection. Using the "generate using default format" is recommended. That format will contain the system name and timestamp automatically within the name. If specifying your own collection name, the name must end with .nmon.
Command to use	By default 'nmon' is shown, but this could be changed to topas_nmon or another command if desired.
Top processes options: Include	These options indicate whether TOP processes will be included by NMON and which option to use. The options available are: None (-t) Includes top processes (-T) Includes top processes and saves command line arguments in the UARG section. (-Y) Includes top processes and adds together all commands with the same name.
Top processes options: CPU filter	Specifies the percentage of process threshold at which the command ignores the TOP processes statistics. The default percentage is .1%. The command does not save the TOP processes statistics if the process is using less processor than the given percentage.
Disk options: (-d) Include disk service times	If checked includes disk service times. Depending on the version of NMON used you may get read service time (DISKREADSERV) and write service time (DISKWRITESERV) separately or you may get them added together into 1 value (DISKSERV). iDoctor will attempt to utilize either appropriately. If you do NOT include this option in your collection then the graphs will not show response times and service times.
Disk options: (-V) Include disk volume group section	If checked includes the disk volume group section.
Disk options: (-k) Limit disk reported to	This value if used will filter the disk data to only include those disk names that match the comma separated list provided. For example, you could specify: hdisk1, hdisk2 in the text box next to this value to only include hdisk1 and hdisk2 in the disk graphs provided.
Disk options: (-g) Use disk groups defined in (remote) file	Specifies the file (on the remote system) that contains the user-defined disk groups, using the <i>filename</i> parameter. Each line in the file begins with a group name. The list of disks follows the group name and is separated with spaces. The file can contain a maximum of 64 disk groups. A disk can belong to various disk groups.

4.2.5 nmon Additional Advanced Options

The Advanced Options panel lets the user specify additional parameters when creating the NMON collection.

For more information on all the parameters available (in recording mode) visit this page:

<https://www.ibm.com/docs/en/aix/7.3?topic=n-nmon-command>

Power Collection Wizard - nmon Additional Advanced Options



Advanced Options:

- ☐ [-G] Use UTC/GMT standard time (not local time)
- ☐ [-K] Include RAW Kernel and LPAR sections
- ☐ [-P] Include paging space section
- ☐ [-M] Include MEMPAGES section - detailed stats per page size
- ☐ [-N] Include NFS section
- ☐ [-NN] Include NFS section with NFSv4 stats
- ☐ [-W] Include WLM sections
- ☐ [-S] Include WLM sections with SubClasses
- ☐ [-^] Include Fiber Channel (FC) sections
- ☐ [-O] Include Shared Ethernet Adapter (SEA) VIOS only sections
- ☐ [-L] Include LARGE page section
- ☐ [-A] Include Async I/O section

Power Collection Wizard – nmon Additional Advanced Options panel

4.2.6 Finish

This panel summarizes your selections and includes the remote command string(s) that will be issued on the remote system(s).

After hitting finish this should start the collections on the server(s) indicated and you will need to wait typically at least a minute or two for data to begin to appear in the specified locations.



Here is a summary of your selections.

You have selected to start a collection with the following options:

Data to collect:
NMON

Systems to collect on: Ctcvha9e
Data directory: /tmp/
Collection duration: 10 minute(s)
Interval duration: 15
Description: test 123

NMON-SPECIFIC ADVANCED OPTIONS
Collection name: <hostname>_YYYYMMDD_HHMM.nmon

Data collection options:
Include top processes with command arguments with min CPU filter of 0.1%
Include disk service times
Include FC section
Include SEA section (VIOS only)

To submit your request now click 'Finish'.

< Back Finish Cancel

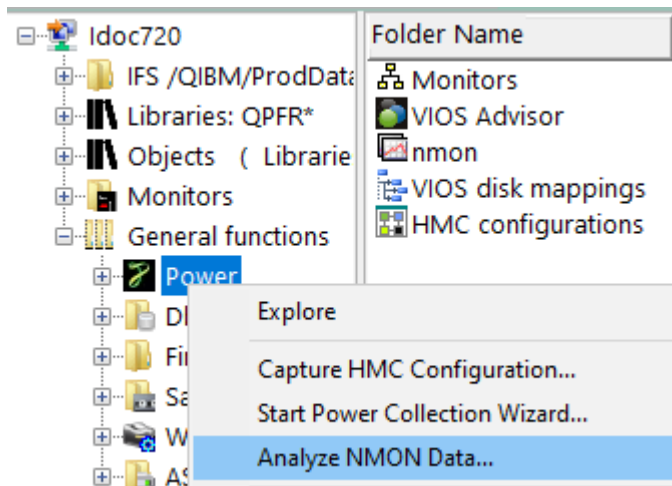
Finish panel

4.3 Analyze NMON Data

The Analyze NMON Data window is used to import already collected nmon data into the current analysis database. The analysis database is an IBM i.

This window is accessible using one of these methods:

- 1) From an IBM i component, right-click the General functions -> Power folder.



General functions -> Power (menu) -> Analyze NMON Data option

- 2) From an IBM i component, when viewing the IFS, and right-clicking a file with the extension of .nmon.
- 3) From the [Power Connections View](#), right click on a VIOS connection.

An example of this window is:

Analyze NMON Data on CTCPRF73

Use this option to import *.nmon files into your database for analysis purposes.

Data to analyze from PC

File

C:\nmon\Charlie\test.nmon

Add Files...

Remove

Mode:

☐ Normal

☐ Append new

☒ Merge

Collection name: CC Library: MCCARGAR2

Disk Mappings (VIOS to IBM i)

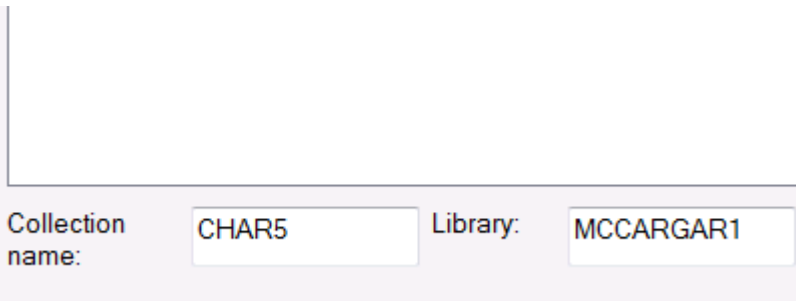
Select the disk mapping(s) that indicates the IBM i device resource names and disk unit numbers associated with each disk or fiber channel device on the VIOS.

Disk mapping	Library	Status	Created by	Created on	Description
QAIDRCORR_QAIDRCORR	NMON	Complete	MCCARGAR	2018-09-11-17.02.34.092000	VIOS-IBM i IDOC720

< >

Import Cancel

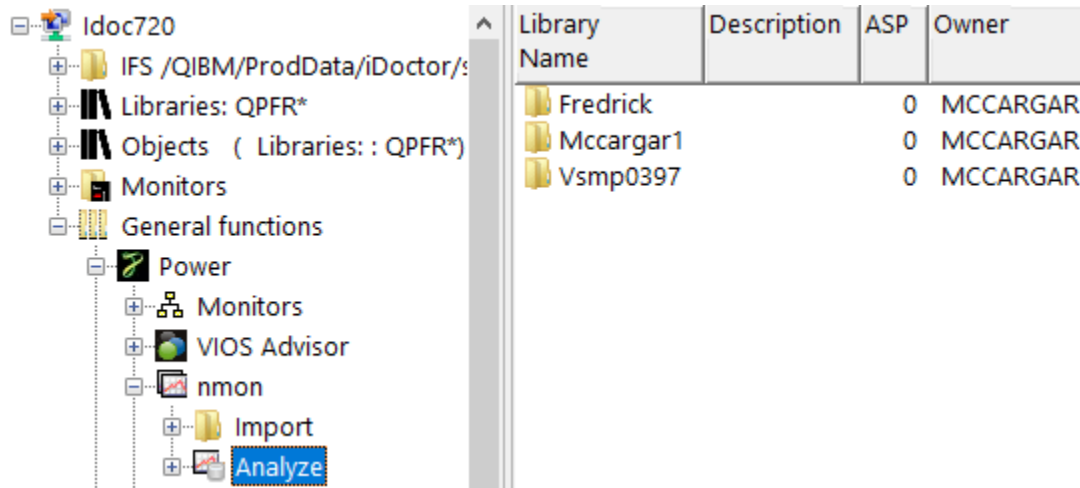
Analyze NMON Data Window

Option	Description
Data to analyze from PC list	This is the list of files that will be analyzed and imported into the analysis DB (specified in the title bar of the window.) Note: When this window is initiated from the IFS on an IBM i, then the contents of this list is preloaded based on the selections made prior to selecting the Analyze Data menu.
Add Files button	This button will allow the user to select 1 or more nmon, sea or npiv files to add to the list. Note: This button will not appear when this window is initiated by selecting one or more files from the IFS
Remove button	This button will remove any selections made from the data to analyze from PC list.
Mode	The mode controls the type of import to perform. These options are available: Normal: In this mode each file specified will cause a new collection to be created. The collection name prefix is used to determine the beginning of each collection name, and a number is added to the end of the name (from 001 to 999 and based on the starting index and overwrite values.) The number used is based on the names that are available in the database is overwrite is unchecked. Append new: This mode should only be used if you wish to reimport the same file you have imported previously, and it now contains additional data. With this option the collection name and library are used as is.  Merge: This mode is used to combine data from multiple files into a single collection. With this option the collection name and library are used as is. This method is recommended to merge many files that represent different sets of data from the same system/day together, so it can be analyzed more easily.
Collection name prefix: (IBM i only)	This option only appears when Mode is “normal.” This is the 1 st 7 characters of the collection name and the last 3 character will be a number from 001 to 999 based on the starting index value.
Collection name	This option only appears when the Mode is “append new” or “merge. It specifies the collection name to use when creating new performance data.
Library (IBM i only)	It specifies the IBM i library where the performance data will be stored.
Starting index	This index applies only to the normal mode and indicates the desired starting point when building the collection names (1 = 001, 50 = 050, etc.) If the 'Overwrite' box is checked the first collection will be based on this value given. Otherwise the first collection created will be the first name available without deleting existing data.
Overwrite	This option only appears when Mode is “normal.” This option indicates if any existing collections will be overwritten or not.
Description	This value is a description to give the collection(s) that are being created.
Disk mappings	This is a list of VIOS to IBM i disk mappings that have been previously create with iDoctor that you may associated with the data being imported. By specifying a disk mapping appropriate for the data being used it will provide additional analysis options

in some of the nmon and npiv graphs and reports.

After using this option, the data will be available within IBM I (as defined under Set analysis database) under General Functions -> Power -> nmon -> Analyze.

For example, the interface to view nmon collections on an IBM i looks like:



General Functions -> Power -> nmon -> Analyze (libraries with nmon data)

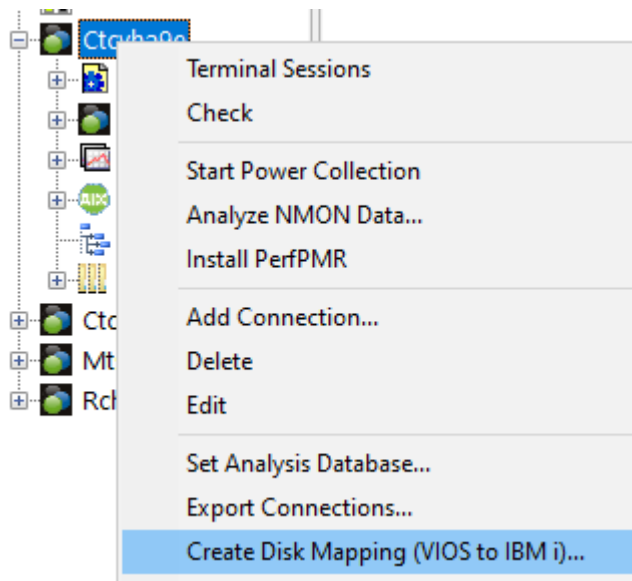
Expanding a library will reveal the list of nmon collections available.

Collection	Status	Mapping?	Import file	Description	Interval duration (seconds)	Total intervals	C
SQL tables							
CTC9E0408	Ready		/tmp/ctcvha9e_210408_0752.nmon		300	39	
CTC9E0407	Ready		/tmp/ctcvha9e_210407_1057.nmon		5	12	
CTC9E0816	Ready		/tmp/ctcvha9e_180816_1400.nmon		300	140	
CTC9E1026	Ready		/tmp/ctcvha9e_171026_0000.nmon		300	60	
CTC9E1025	Ready		/tmp/ctcvha9e_171025_1900.nmon		300	60	
CTC9E0417	Ready		/tmp/ctcvha9e_150417_0726.nmon		5	12	
CTC9O1111	Ready		/tmp/ctcvha9o_181111_0200.nmon		300	36	
CTC9O1110	Ready		/tmp/ctcvha9o_181110_2200.nmon		300	36	
CTC9O1102	Ready		/tmp/ctcvha9o_181102_2000.nmon		300	24	
CTC9O0420	Ready		/tmp/ctcvha9o_170420_1600.nmon		300	3	
CTC9O1212	Ready		/tmp/ctcvha9o_161212_2300.nmon		300	211	
CTC9O1114	Ready		/tmp/ctcvha9o_161114_0500.nmon		300	60	

General Functions -> Power -> nmon -> Analyze -> Library mccargar1

4.4 Create Disk Mapping

You can create a new disk mapping for a VIOS by right-clicking the General functions -> Power folder or right-clicking on a VIOS connection within the Power Connections view. Then use the Create Disk Mapping menu option to launch the interface.



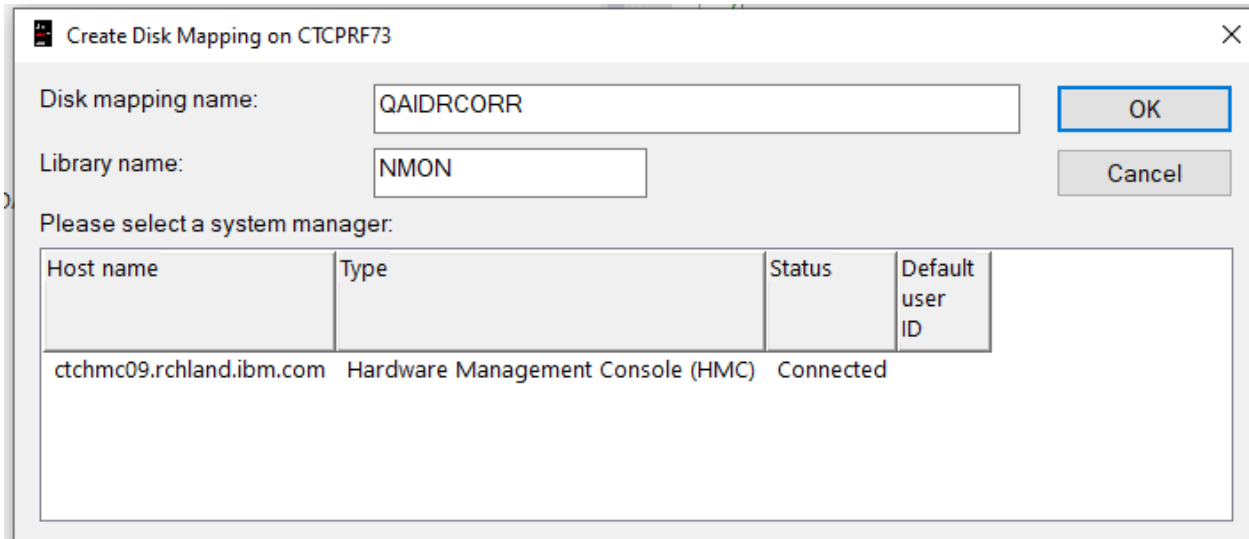
VIOS menu options

This window allows a user to add a new disk mapping to their system by using data from the HMC and the current IBM i you are working with. If you are connected to a VIOS within Power Connections, then this means the IBM i specified as the Analysis DB.

A screenshot of a dialog box titled 'Create Disk Mapping on CTCPRF73'. The dialog has a title bar with a close button (X). It contains two input fields: 'Disk mapping name:' with the value 'QAIDRCORR' and 'Library name:' with the value 'NMON'. To the right of the first field is an 'OK' button, and to the right of the second field is a 'Cancel' button.

Create Disk Mapping Window Step 1 (Specify table and library name)

First, this window prompts for the SQL table name and library name to create the new disk mapping table into. After clicking OK, the user will need to select the desired HMC (if more than one was detected) and sign on to the desired HMC to gather the disk information from.



Create Disk Mapping on CTCPRF73

Disk mapping name: OK

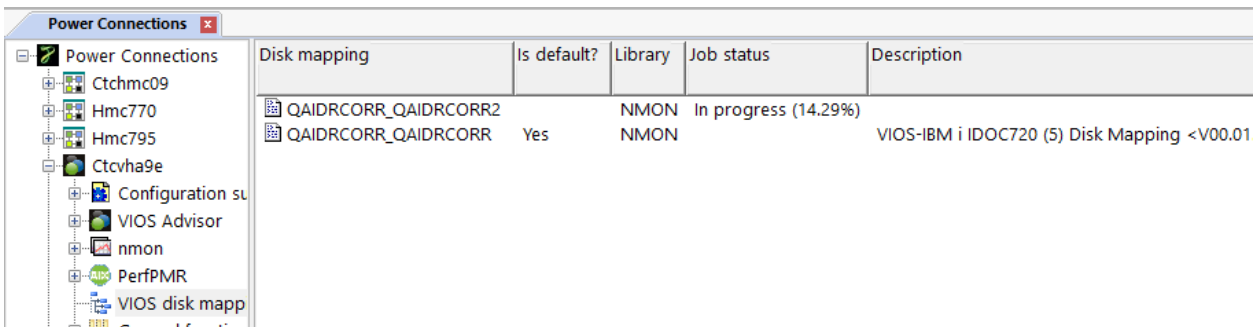
Library name: Cancel

Please select a system manager:

Host name	Type	Status	Default user ID
ctchmc09.rchland.ibm.com	Hardware Management Console (HMC)	Connected	

Create Disk Mapping Window Step 2 (Select the HMC if more than 1 choice exists and signon when prompted)

After signing on to the HMC successfully, information about the virtual disks are gathered. A batch job on the IBM i is started and will gather the necessary information and fill the SQL table. To view the progress of this batch job, expand the VIOS Disk mappings folder under the VIOS.



Power Connections	Disk mapping	Is default?	Library	Job status	Description
Ctchmc09	QAIDRCORR_QAIDRCORR2		NMON	In progress (14.29%)	
Hmc770	QAIDRCORR_QAIDRCORR	Yes	NMON		VIOS-IBM i IDOC720 (5) Disk Mapping <V00.01
Hmc795					
Ctcvha9e					
Configuration su					
VIOS Advisor					
nmon					
PerfPMR					
VIOS disk mapp					

VIOS -> VIOS disk mappings folder

Note: Successful signing on to the HMC using this interface will automatically create a text file called SysMgrs in the IFS under the directory /home/myuser/QIBM/iDoctor. This file keeps track of the system managers available and the user ID to connect with. The creation of this file will cause step 2 to be skipped next time, but if you wish to switch to use a different HMC (or if you have problems with the process) deleting this text file would reset the process. A menu option called "Remove Disk Mapping SysMgrs file from IFS" has been provided to do this.

Once the mappings have completed you can double-click them to view them. Also on the [Analyze NMON Data](#) window you will indicate the desired disk mapping(s) you wish to use when analyzing new .nmon data files.

4.4.1 Disk Mappings Folder

This folder contains the list of disk mappings on the current IBM i.

Note: If working with the Power Connections view and connected to a VIOS then this folder contains the disk mappings found on the (IBM i) analysis DB.

Disk mapping	Is default?	Library	Job status	Created by	Creation time	Description
QAIDRCORR_QAIDRCORR	Yes	NMON	*OUTQ	MCCARGAR	2018-09-11-17.02.34.092000	VIOS-IBM i IDOC720 (5) Disk Mapping <V00.01

VIOS Disk Mappings Folder

Double-click a disk mapping from the list to view it.

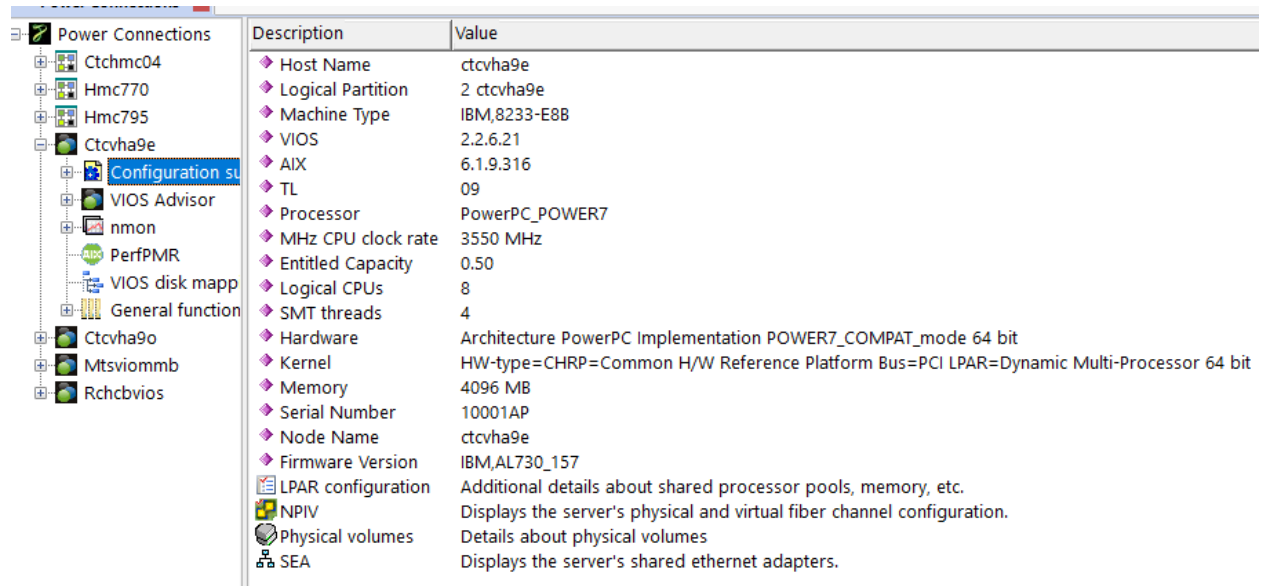
Column	Description
Disk mapping	This is the name of the SQL table / disk mapping.
Is default?	Indicates 'Yes' if this is the default disk mapping to use for the current system. You can right-click an entry and use the Set as default menu to set this.
Library	The library name that contains the SQL table.
Job status	This is the status of the job that created or is currently creating the disk mapping. *OUTQ status means the job has finished.
Created by	The user profile on the IBM i that created the disk mapping
Creation time	The time the job started that created the disk mapping.
Description	The description for the disk mapping.
File	The physical file object name (10 characters max) for the disk mapping.
Job creating disk mapping	This is the job name that created or is currently creating the disk mapping on the system. These jobs are named QIDRESCORR.

4.5 Configuration summary

This folder appears under a VIOS connection and provides general information about the system.

Tip: This information is built from a small nmon collection which can be replaced with more current information by right-clicking the configuration summary folder and using the Refresh configuration menu.

An example of the contents of this folder is:



Description	Value
Host Name	ctcvha9e
Logical Partition	2 ctcvha9e
Machine Type	IBM,8233-E8B
VIOS	2.2.6.21
AIX	6.1.9.316
TL	09
Processor	PowerPC_POWER7
MHz CPU clock rate	3550 MHz
Entitled Capacity	0.50
Logical CPUs	8
SMT threads	4
Hardware	Architecture PowerPC Implementation POWER7_COMPAT_mode 64 bit
Kernel	HW-type=CHRP=Common H/W Reference Platform Bus=PCI LPAR=Dynamic Multi-Processor 64 bit
Memory	4096 MB
Serial Number	10001AP
Node Name	ctcvha9e
Firmware Version	IBM,AL730_157
LPAR configuration	Additional details about shared processor pools, memory, etc.
NPIV	Displays the server's physical and virtual fiber channel configuration.
Physical volumes	Details about physical volumes
SEA	Displays the server's shared ethernet adapters.

VIOS -> Configuration summary

Additional subfolders appear at the bottom of this screen and can be expanded to provide more details about the VIOS.

4.6 VIOS Advisor

This folder contains any [VIOS advisor](#) data collections that have been created on the VIOS.

4.7 Nmon

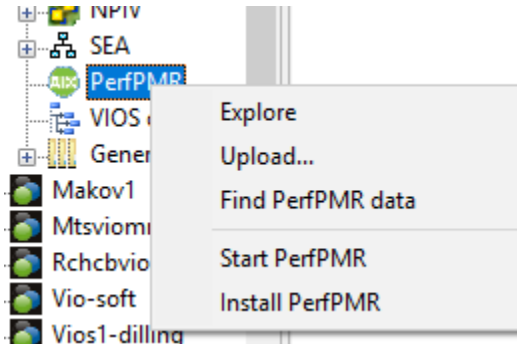
This folder allows the user to view [nmon](#) data on the VIOS or analyze nmon data stored on the IBM i analysis database.

4.8 PerfPMR

This folder lets you work with any PerfPMR data directories found on the current VIOS.

NOTE: This option is only available if you are working with a VIOS within the Power Connections interface.

Use the Find menu option to locate existing or new data not shown in the PerfPMR folder.



After the Find function completes refresh the PerfPMR folder to display any PerfPMR created data found on the VIOS.

Directory	Location	Partition collected on	Time	Partition Number	Type	Mode	Entitled Capacity	Online Virtual CPUs	Online Memory	Variable Capacity Weight	Data Directory	PerfPMR version
/tmp/perfdata/	MTSVIOMmb	MTSVIOMMB	Wed Nov 14 16:04:25 CST 2018	18	Shared-SMT-4	Uncapped	4.00	4	8192 MB	128	/tmp/idoctor	610

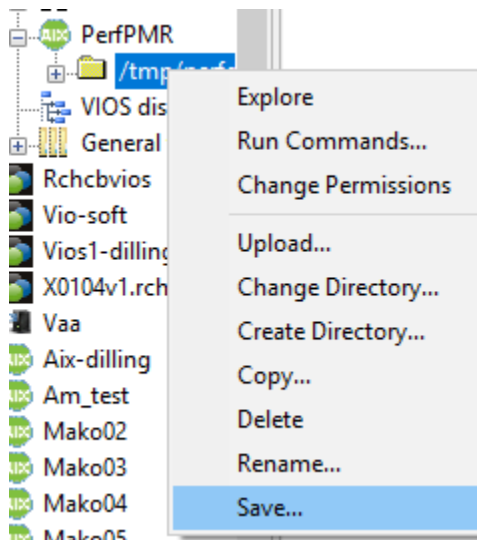
PerfPMR folder contents

Expand the folder to view the contents (if desired):

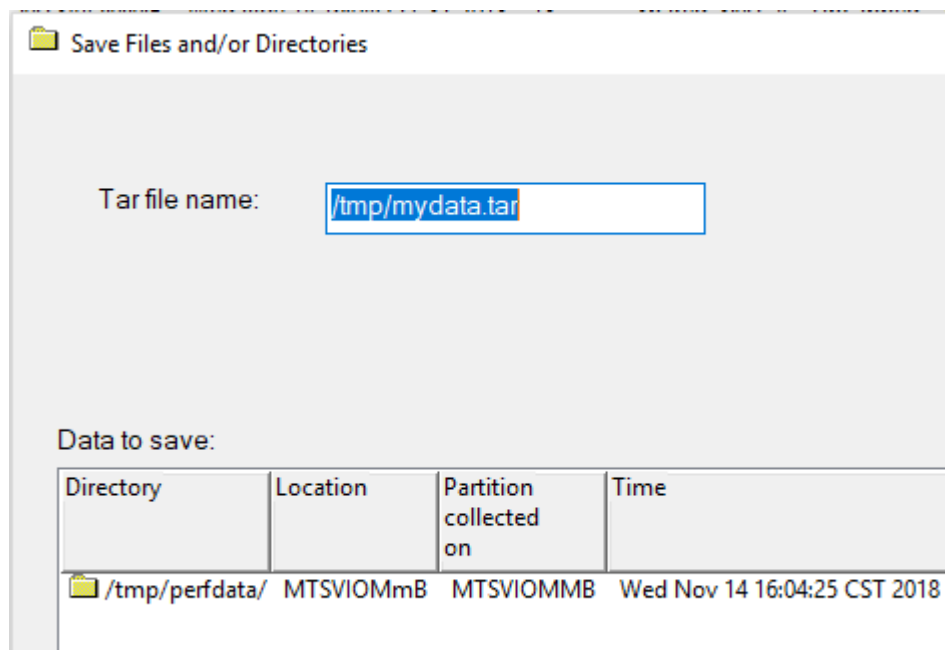
Name	Size (bytes)	File type	Modified date	Attributes	Owner
24x7count.csv	0	CSV	Nov 14 16:04	-rw-r--r--	root staff
24x7count.int	101	INT	Nov 14 16:04	-rw-r--r--	root staff
Linuxfindnmon.sh	861	SH	Jun 12 2015	-rwxrwx---	root staff
Linuxgetnmonlist.sh	92,160	SH	Sep 01 2015	-rw-rw----	root staff
Linuxwaitforpid.sh	1,255	SH	Jun 12 2015	-rwxrwx---	root staff
MTSVIOMmb_181108.topas	4,952,764	TOPAS	Nov 14 16:18	-rw-r--r--	root staff
MTSVIOMmb_181109.topas	4,952,764	TOPAS	Nov 14 16:18	-rw-r--r--	root staff
MTSVIOMmb_181110.topas	4,952,764	TOPAS	Nov 14 16:18	-rw-r--r--	root staff
MTSVIOMmb_181111.topas	4,952,764	TOPAS	Nov 14 16:18	-rw-r--r--	root staff
MTSVIOMmb_181112.topas	4,952,764	TOPAS	Nov 14 16:18	-rw-r--r--	root staff
MTSVIOMmb_181113.topas	4,952,764	TOPAS	Nov 14 16:18	-rw-r--r--	root staff
MTSVIOMmb_181114.topas	3,413,420	TOPAS	Nov 14 16:18	-rw-r--r--	root staff
ahafs.conf	954	CONF	Nov 14 16:19	-rw-r--r--	root staff
aiostat.int	54	INT	Nov 14 16:04	-rw-r--r--	root staff
alog.boot	131,052	BOOT	Nov 14 16:18	-rw-r--r--	root staff
alog.console	39,505	CONSOLE	Nov 14 16:18	-rw-r--r--	root staff
buildcfgsummary.sh	1,069	SH	Jun 01 2015	-rwxrwx---	root staff
comptrace_dir	16,384		Nov 14 16:03	drwxr-xr-x	root staff
config.sum	755,373	SUM	Nov 14 16:19	-rw-r--r--	root staff
...	...	...	...	...	...

PerfPMR /tmp/perfdata/ contents

To send the data to IBM, first use the Save function on the directory and give it a tar file name.

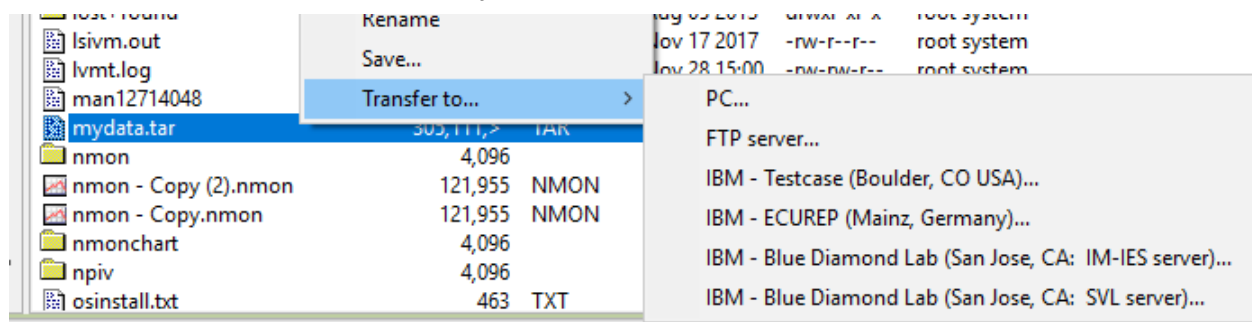


PerfPMR -> /tmp/perfdata/ -> Save menu option



Save Files and/or Directories

Then once the tar file has been created you can transfer that to IBM.



Transfer menu options for a .tar file

4.9 General Functions

This section covers additional options related to viewing directories and files on a VIOS within the Power Connections interface.

For example, under a VIOS, a General functions folder exists that provides these additional options.

Folder	Description
/home/padmin/	Work with the files and directories on Ctcvha9e
File systems	Work with the file systems on Ctcvha9e
Disk free space	Displays a disk free space report against system Ctcvha9e. Collections by default go into /tmp.
/tmp/idoctor/	Work with the iDoctor build directory

VIOS -> General Functions folder

Folder	Description
/home/padmin	Allows the user to browse the file system and defaults to the user's home directory. Since VIOS connections require the use of padmin this will be /home/padmin.
File systems	Displays the file systems for the current VIOS and allows the user to work with them.
Disk free space	Displays disk free space report for the current system.
/tmp/idoctor	This lets the user work with the iDoctor build directory. This is where all the scripts that iDoctor loads when first connecting to the system are stored.

4.9.1 /home/padmin

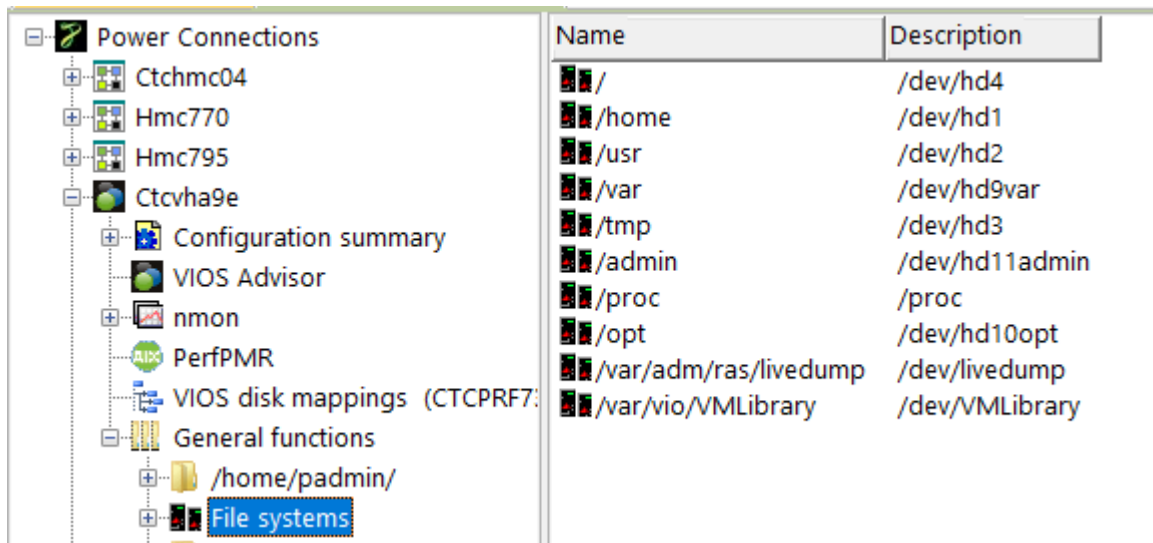
This option displays the contents of the user's /home/padmin folder on the VIOS.

Name	Size (KBs)	Modified date	Type	Owner	Symbolic link
..					
cfgbackups	.25	May 31 14:00		padmin staff	
ctcvha9e_220531_1321.nmon	261.87	May 31 13:49	NMON	root staff	
Users	.25	May 31 13:21		501 staff	
config	.25	May 31 13:21		padmin staff	
crontabs	.25	May 31 13:21		root staff	
ifix	.25	May 31 13:21		padmin staff	
mem_details_dir	4	May 31 13:21		root staff	
objrepos	4	May 31 13:21		root staff	
oldidrscrip	.25	May 31 13:21		root staff	
rules	.25	May 31 13:21		padmin staff	
sshtest	.25	May 31 13:21		padmin staff	
tivoli	.25	May 31 13:21		padmin staff	
update	48	May 31 13:21		padmin staff	
ctcvha9e_210408_0738.nmon	167.93	Apr 08 2021	NMON	root staff	
ctcvha9e_210407_1042.nmon	160.60	Apr 07 2021	NMON	root staff	
lparstat.sum	2.28	Apr 07 2021	SUM	root staff	

VIOS -> General functions -> /home/padmin folder

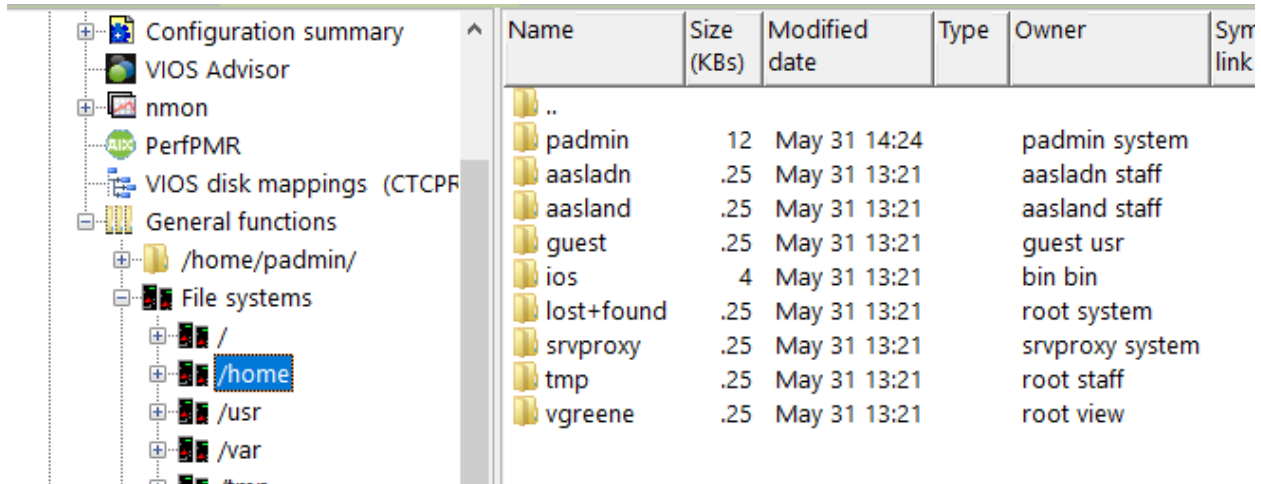
4.9.2 File Systems

The General functions -> File systems folder provides a graphical interface for the lsfs command on the VIOS system. This will display all file systems defined on the current system and allows you to work with each one.



VIOS -> General functions -> File systems folder

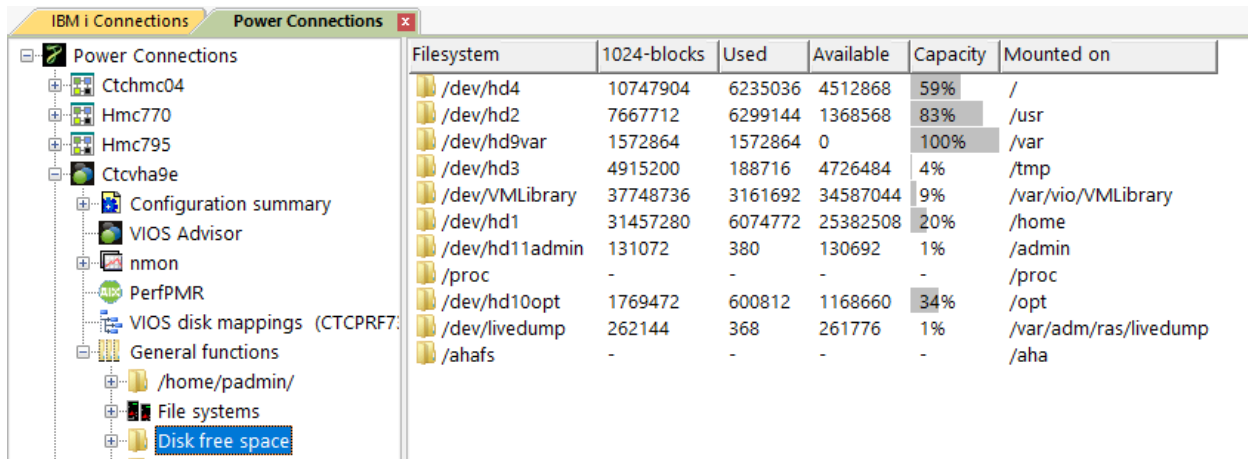
Expanding a file system will show its contents and the data within can be worked with using the features discussed in the previous section.



VIOS -> General functions -> File systems -> /home

4.9.3 Disk free space

This option will display the disk free space for each file system on the server. The view is produced by running `df -kP` command. Expanding any of these file systems will display its contents.



Filesystem	1024-blocks	Used	Available	Capacity	Mounted on
/dev/hd4	10747904	6235036	4512868	59%	/
/dev/hd2	7667712	6299144	1368568	83%	/usr
/dev/hd9var	1572864	1572864	0	100%	/var
/dev/hd3	4915200	188716	4726484	4%	/tmp
/dev/VMLibrary	37748736	3161692	34587044	9%	/var/vio/VMLibrary
/dev/hd1	31457280	6074772	25382508	20%	/home
/dev/hd11admin	131072	380	130692	1%	/admin
/proc	-	-	-	-	/proc
/dev/hd10opt	1769472	600812	1168660	34%	/opt
/dev/livedump	262144	368	261776	1%	/var/adm/ras/livedump
/ahafs	-	-	-	-	/aha

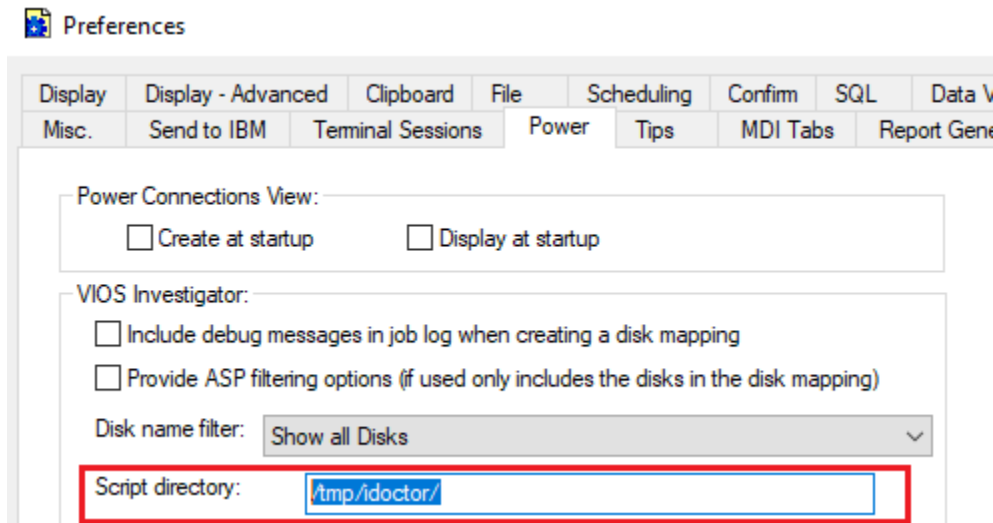
Disk free space folder

4.9.4 /tmp/idoctor

This folder is created by the iDoctor GUI the first time you make a connection to the VIOS from the Power Connections interface. This folder contains the scripts that are needed to find, view and collect nmon statistics. Typically, this folder is for IBM use only.

Note: The version information for the scripts in this folder are stored in file qidrvrm.txt.

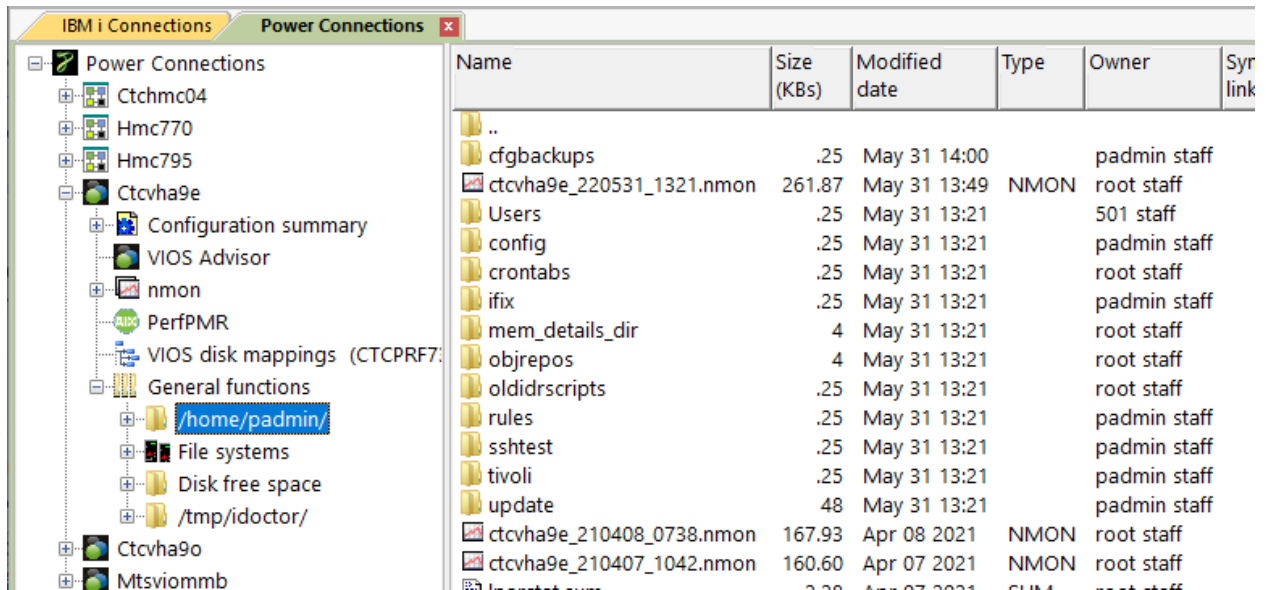
Tip: The value for this folder's name is a preference that can be changed in the **Preferences -> Power -> Script directory** setting.



Preferences -> Power -> Remote script directory setting

4.10 Working with file systems

Many folders exist in the Power Connections interface that let users work with directories and files on the current system they are using. For example, expanding the /home/padmin/ folder will show a view like this with files and subdirectories that you can work with.

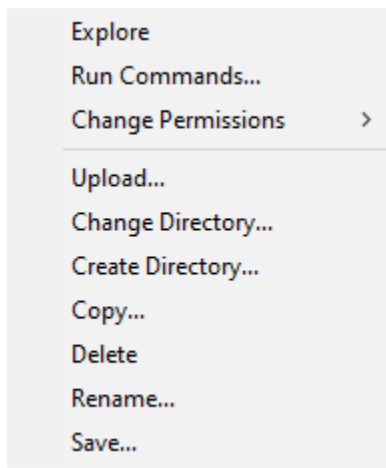


/home/padmin folder's contents

This section describes the various options available when working with VIOS file systems.

4.10.1 Directory menu options

The default right-click menu options available for the /home/padmin folder or any folder / subfolder in the Power Connections view are:

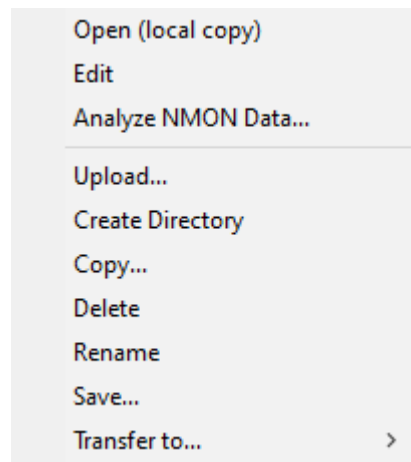


Directory menu options

Menu	Description
Run commands...	This lets you run one or more commands on the system you are working with. The results of running these commands will be shown in notepad on the PC.
Change Permissions	Several sub menu options exist to either grant or revoke authorities on the current folder. Note: This will only work if the currently connected user can do this.
Upload	This will present an interface to transfer one or more files from the PC to the remote system.
Change Directory	This option allows the user to change the directory they are working with by default. Note: This option only applies to the /home/padmin folder under the General functions folder.
Create Directory	This command will issue a mkdir command on the remote system to create the desired directory.
Copy...	This will present an interface that allows the user to copy the directory and all of its contents to another location on the system.
Delete	This will delete the directory from the system.
Rename	This option will rename the directory.
Save	Use this option to save the directory and its contents to a tar file.

4.10.2 File menu options

The default menu options for a file in the Power Connections view are:

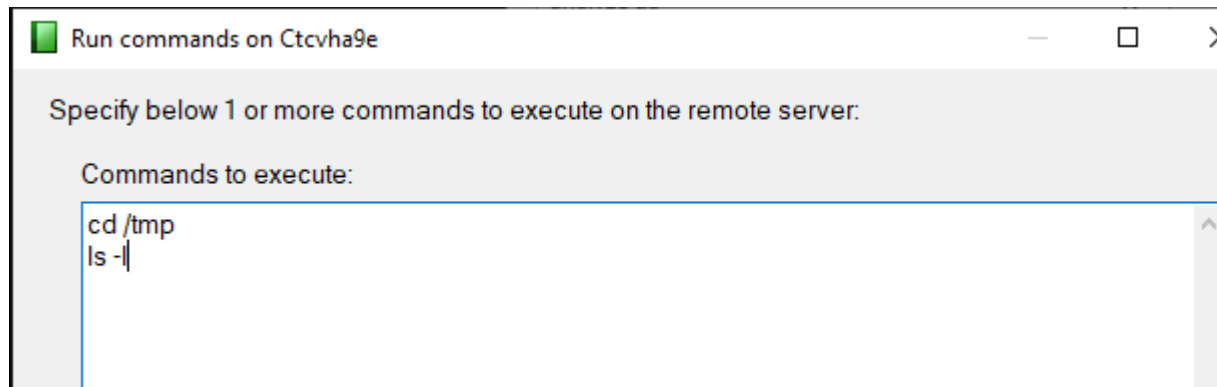


File menu options

Menu	Description
Open (local copy)	This option will first download the file to the PC and then attempt to open it using the default program for the current file type.
Edit	This option will download the file to the PC and then present an interface that lets you edit the results. When finished the file is sent back to the remote system. Tip: Only use this option for text files
Analyze NMON Data	This option will display the Analyze NMON Data window which allows .nmon files to be analyzed and sent to IBM I analysis database.
Upload	This will present an interface to transfer one or more files from the PC to the remote system.
Create Directory	This option allows the user to create a directory on the system.
Copy...	This will present an interface that allows the user to copy the selection to another location on the system.
Delete	This will delete the selection from the system.
Rename	This option will rename the currently selected file.
Save	Use this option to save the selection to a tar file.
Transfer to	This option presents an interface that allows the user to transfer the current file(s) to another system, to IBM or to the PC.

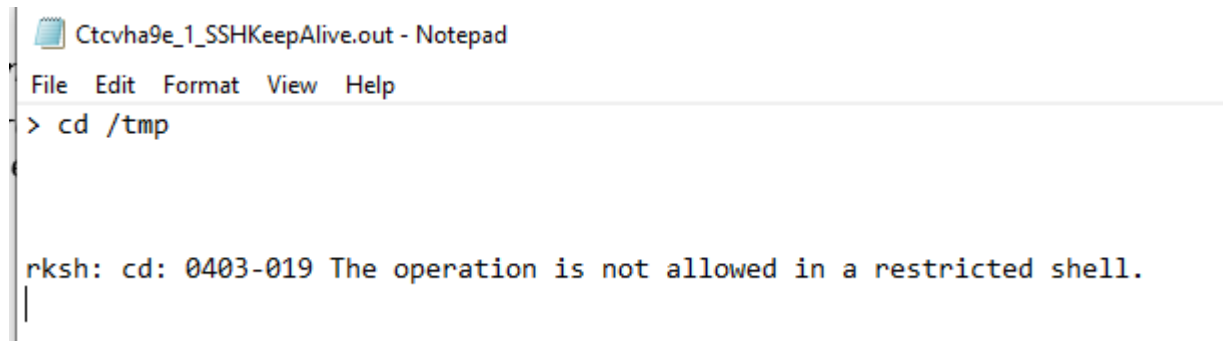
4.10.3 Run Commands

This interface simply allows a user to run 1 or more commands on the remote system using the current SSH connection. Keep in mind that these commands will only work if the syntax is correct and applicable for the type of system currently being used. On VIOS the commands run in a restricted shell state, so some commands cannot be used here.



Run commands on <system> window

Each command will run and the results of each will be displayed in a notepad window. For example, the above commands will result in the following:



```

Ctcvha9e_1_SSHKeepAlive.out - Notepad
File Edit Format View Help
> ls -l

total 1860624
-rw-r--r--  1 root    staff      740 Jun  3 2017  1
drwxr-xr-x  3 501    staff      256 Feb  9 2016 Users
-rw-r--r--  1 root    staff         0 Apr 16 2015 advisor.err
-rw-r--r--  1 root    staff       74 Apr 16 2015 advisor.out
-rw-r--r--  1 root    staff        53 Oct  4 2017 aiostat.int
-rw-r--r--  1 root    staff    131052 Oct  4 2017 alog.boot
-rw-r--r--  1 root    staff   36506 Oct  4 2017 alog.console
drwxr-xr-x  3 padmin  staff       256 May 15 2019 cfgbackups
drwxrwxr--  2 padmin  staff       256 Apr  7 2014 config
-rw-r--r--  1 root    staff   607547 Oct  4 2017 config.sum
-rw-r--r--  1 root    staff     2684 Oct  4 2017 crontab_1
drwxr-xr-x  2 root    staff       256 Oct  4 2017 crontabs

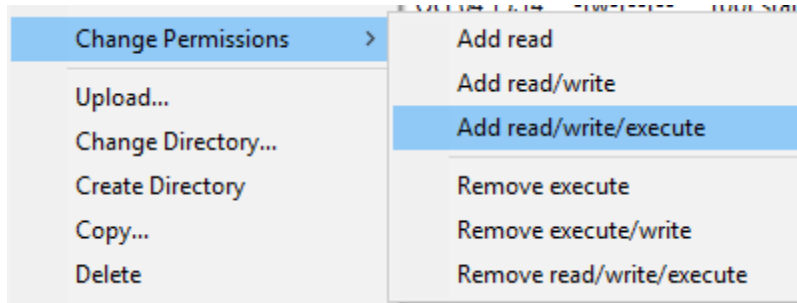
```

Result of running 2 commands

Note: On VIOS many commands such as “cd” are not allowed in the restricted shell. In this situation the command would need to be written as `ls -l /tmp/`

4.10.4 Change Permissions

These options allow the user to add or more permissions for the current file(s) or directory(ies) selected.



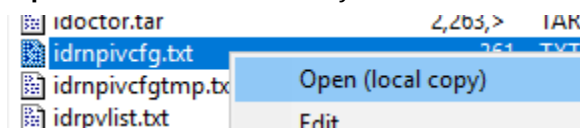
Change Permissions menu

This will issue the appropriate `chmod` command in the Remote Command Status view.

4.10.5 Open (local copy)

This option is used to download and then execute the default Windows program for the file type being opened. For example, using this option on a .txt file would probably open the file in Notepad.

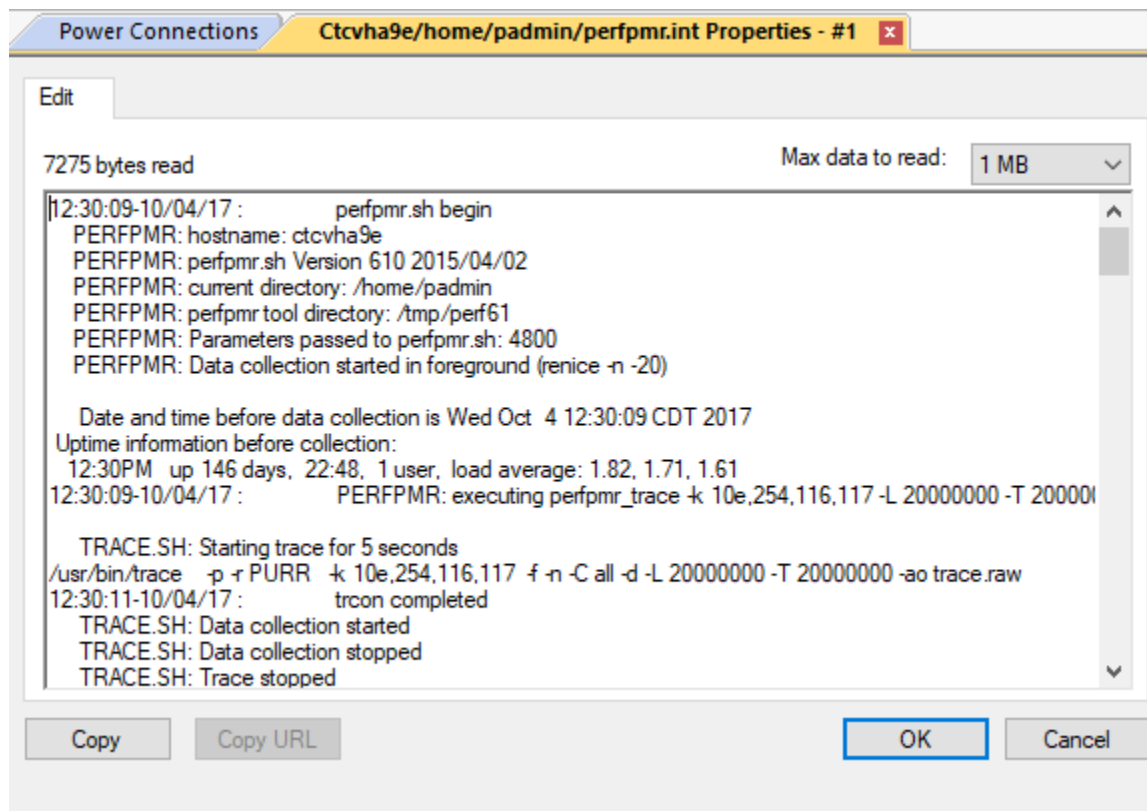
Tip: Files are downloaded by default into the iDoctor temp directory.



Open (local copy) menu

4.10.6 Edit

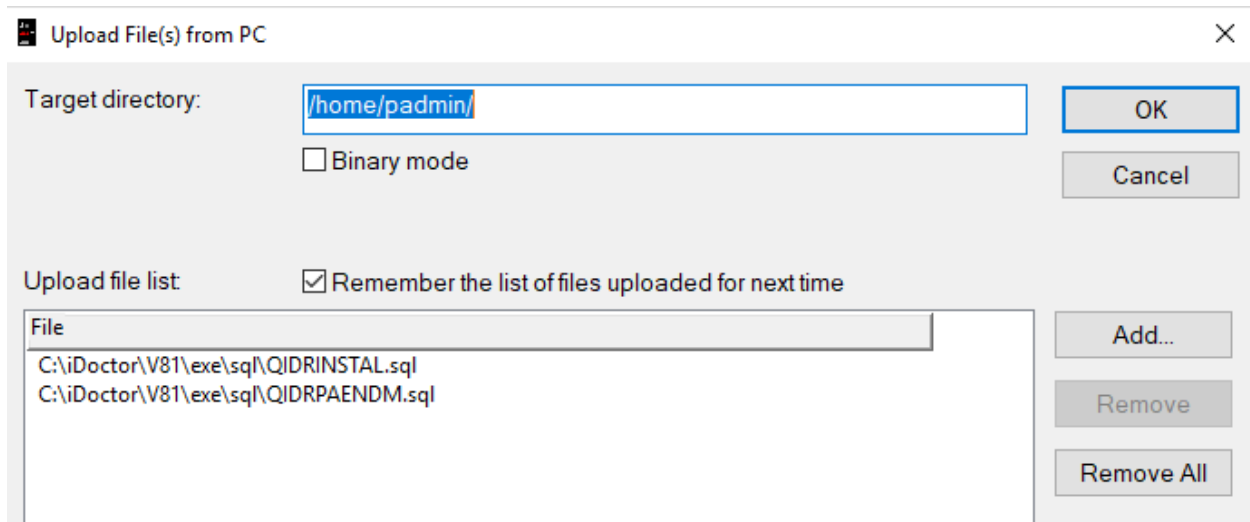
This option can be used to download the file to the PC and then open it within an editor inside of iDoctor. After making changes the file will be sent back to the VIOS and replaced.



Option	Description
Max data to read	This indicates how much data is downloaded to the PC from the file. The possible values are 1 MB, 10 MB and 100 MB. Tip: You should not edit anything other than text files with this interface and only if the entire data has been read.
OK	If changes have been made this will send the file back to the remote system and replace it.

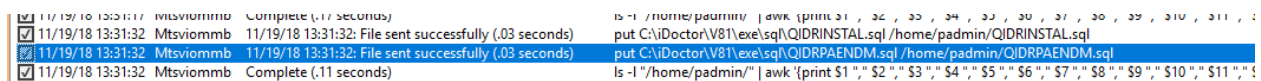
4.10.7 Upload File(s) from PC

The Upload file(s) window allows the user to transfer 1 or more files from the PC to the desired directory on the remote system. These transfers occur via the Remote command status view and the results of which can be viewed there.



Upload File(s) from PC Window

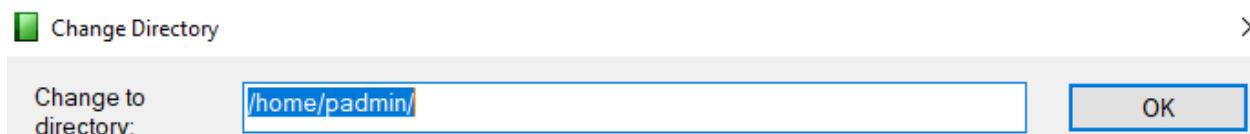
Option	Description
Target directory	This value contains the desired location to send the file(s) on the PC to.
Binary mode	Check this box if you wish to use binary mode to send the files.
Remember the list...	Use this option is you want the GUI to remember the list of files and repopulate the list again with the same set of files. This can be handy if sending the same files to multiple LPARs.
Upload file list	This is the list of files on the PC that will be transferred to the remote server.
Add button	Use this button to add files from the PC to the list.
Remove button	This button removes the selected files from the list.
Remove all button	Removes everything from the list.



Results in Remote Command Status View

4.10.8 Change Directory

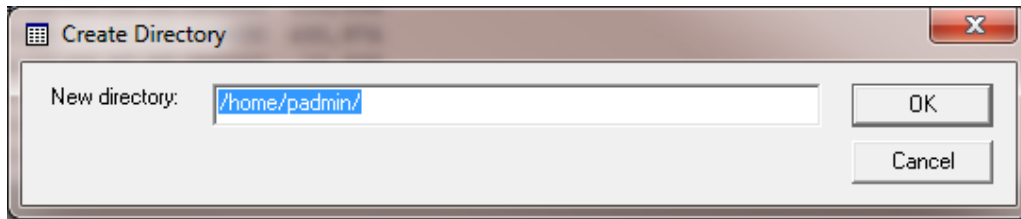
This option is used to change the current directory used for the first folder under the General functions folder. If selecting a directory and using this menu the default value listed will be directory selected.



Change Directory Window

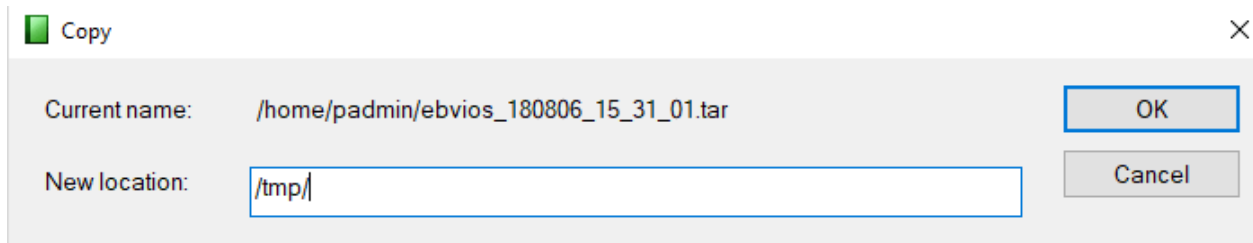
4.10.9 Create Directory

This option is used to create a directory on the remote server. By default, the window will show the path for the current directory and you will need to modify this path appropriately.

*Create Directory Window*

4.10.10 Copy

This option is to copy one or more files/directories to the desired new location. Only if specifying a single file may be the value entered a file name. Otherwise the value provided should be the directory to copy the selections into.

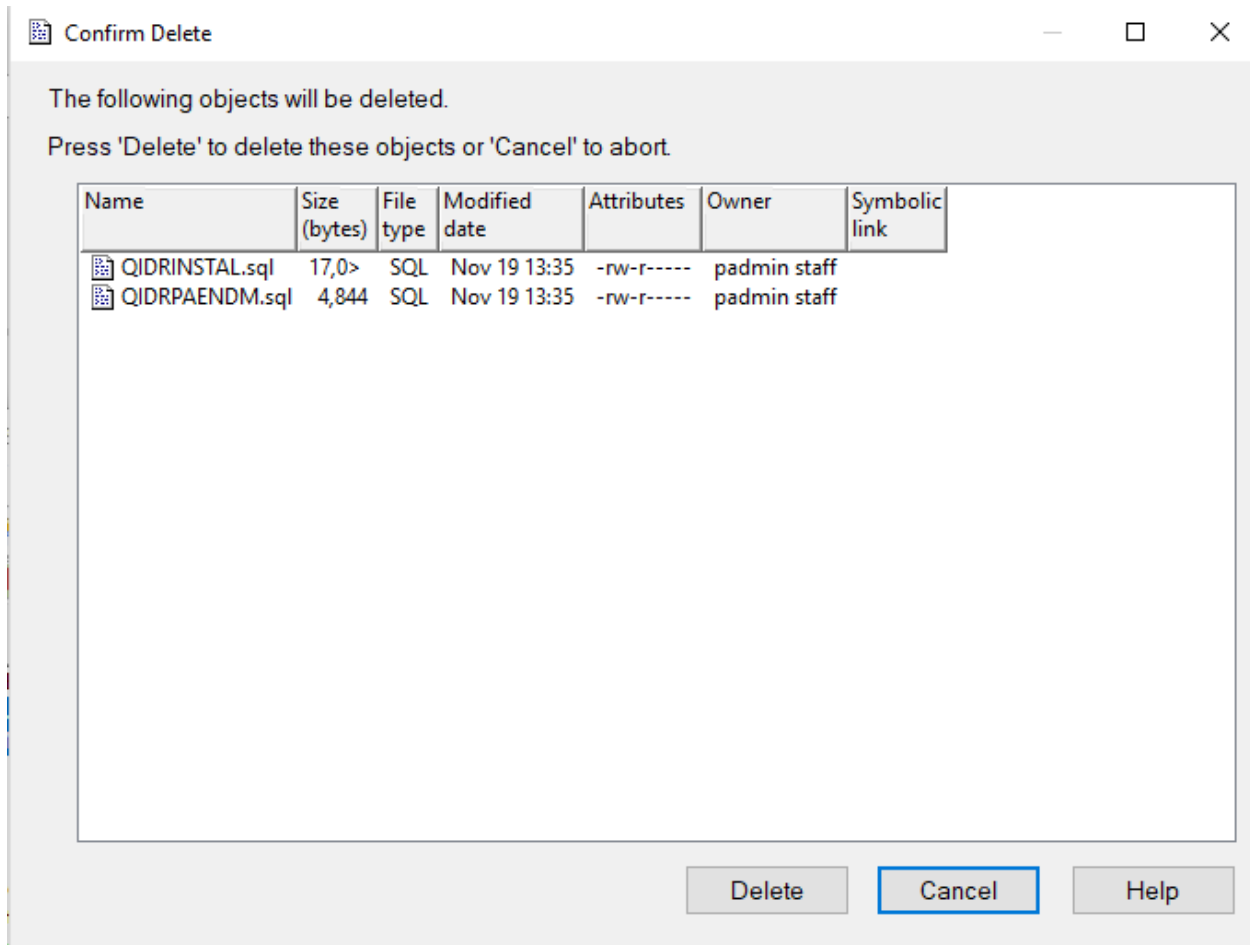
*Copy Window*

```
15:25:36 Ebvios      Complete (.30 second> cp -r /home/padmin/ebvios_180806_15_31_01.tar /tmp/
15:25:36 Ebvios      Complete (.28 second> ls -l "/home/padmin/" | awk '{print $1 "," $2 "," $3 "," $4 "," $5'}
```

Remote Command Status View Copy

4.10.11 Delete

The Delete option will remove the file(s) and/or directories and their contents from the remote server.

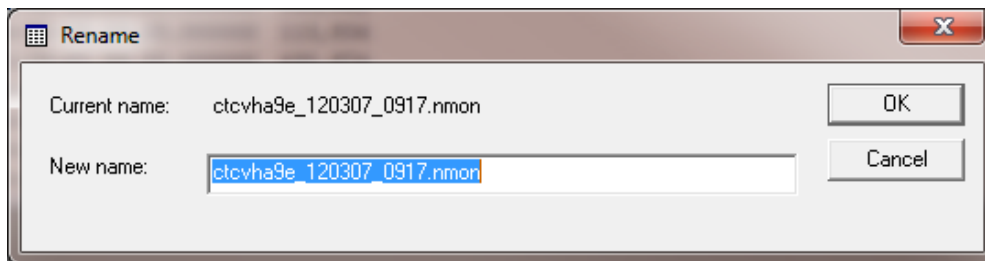


Confirm Delete Window

4.10.12 Rename

The Rename menu option allows you to change a specific file or directory and give it a new name.

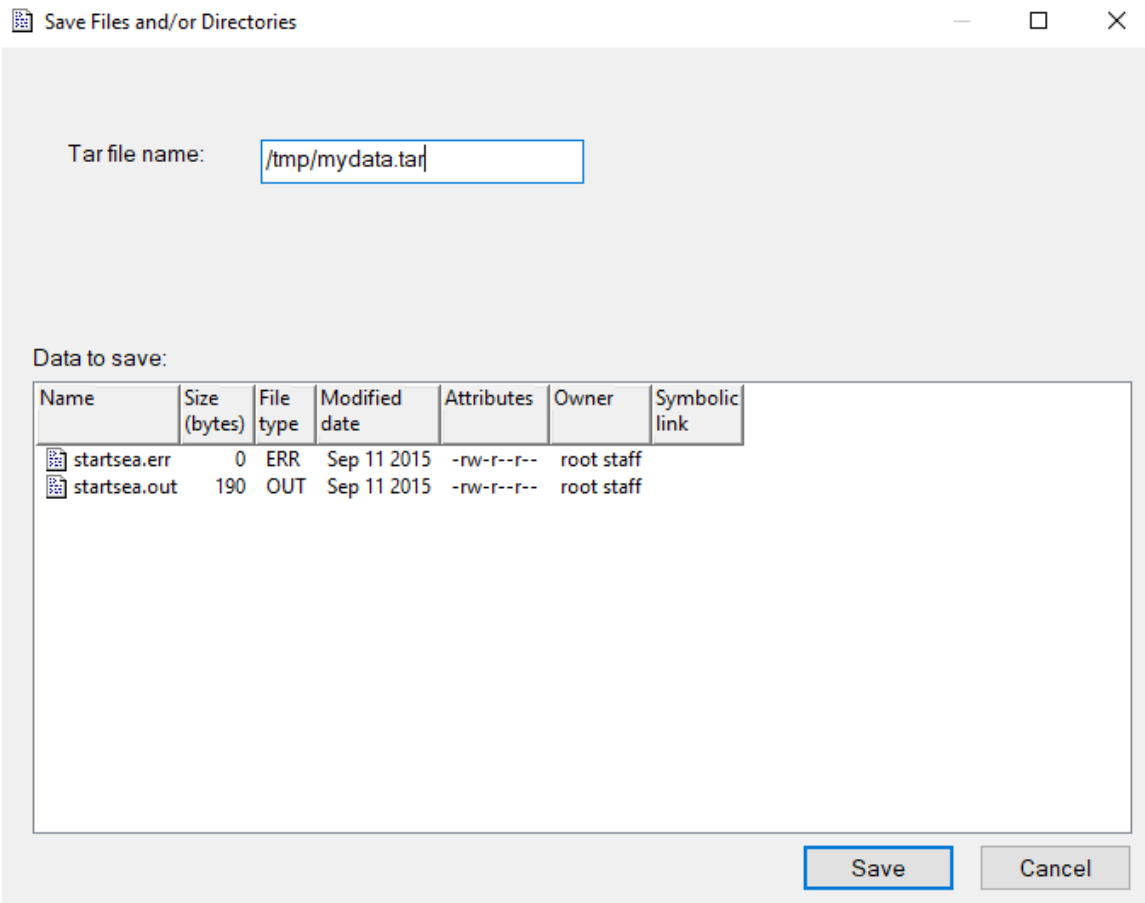
The interface looks like this:



Rename Window

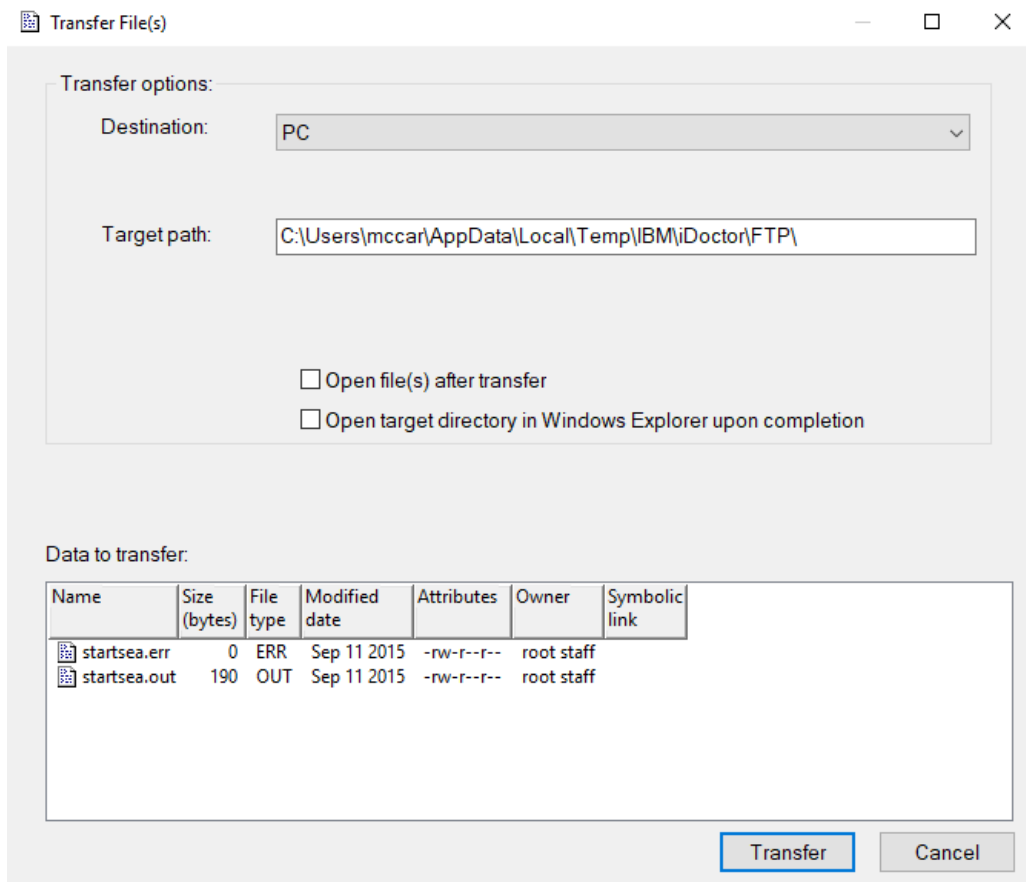
4.10.13 Save

This option will save all selections to a tar file that you specify.

*Save Files and/or Directories Window*

4.10.14 Transfer to -> PC

This option can be used to download the selected file(s) to the PC. The files will be placed in the iDoctor temp directory's FTP subdirectory by default.



Transfer File(s) Window

Option	Description
Destination	This indicates where the files will be sent.
Target path	The directory on the PC to send the files to. Only if transferring a single file would this be a filename instead of a directory.
Open file(s) after transfer	This option will open each file (in Notepad) after they are transferred to the PC. Tip: Avoid using this option if you are transferring many files!
Open target directory in Windows Explorer	If checked, then after the download completes, Windows Explorer will be automatically opened to show the files downloaded on the PC.

4.10.15 Transfer to -> FTP Server

This option will send the selected files to the specified target system in the path indicated. This occurs by running the ftp command on the current remote server to the target system. The files will be sent directly from the system you are working with to the target system.

Transfer File(s)

Transfer options:

Destination:

Target system:

Target path:

☒ Create subdirectory

Username: Password:

Port: Secure connection:

Data to transfer:

Name	Size (bytes)	File type	Modified date	Attributes	Owner	Symbolic link
 MTSVIOMmB_150812_1129.nmon	36	NMON	Nov 15 14:15	lrwxrwxrwx	root staff	/tmp/nmon/MTSVIOM
 MTSVIOMmB_181112_1454.nmon	36	NMON	Nov 15 14:15	lrwxrwxrwx	root staff	/tmp/nmon/MTSVIOM

Transfer File(s) -> FTP server

Option	Description
Destination	This indicates where the files will be sent.
Target system	The system to send the selected files to.
Target path	The directory on the target system to send the selected file(s) to.
Create subdirectory	This will create the directory specified if it does not exist already. Note: This only works for a single directory, it will NOT create multiple directories in one shot.
Username	The user profile to use when making the connection to the remote server.
Password	The password to use when making the remote connection. Specify a password such as your email address if connecting with the "anonymous" user.
Port	This the port to use when making the FTP connection and should be either Default or Secure. If Secure is used, then the ftp -s parameter will be used to enable a secure TLS/SSL.
Secure connection	Select SSL for this value if you wish to make a secure connection (or use Secure for the Port parameter value.)
Data to transfer	This is the list of files to send to the target remote system.

After pressing the Transfer button, the required command will be sent to the Remote Command Status View and executed there. A scripted ftp command is used within the SSH connection that the Remote Command Status View provides.

IBM i Connections Power Connections Remote Command Status ✕				
Time	System	Status	Command	Results
☒ 11/19/18 16:45:55	Mtsviommb	Complete (.30 seconds)	cat /tmp/idoctor/qidrvrm.txt	29 2018-11-14-11.51.
☒ 11/19/18 16:46:00	Mtsviommb	Complete (.23 seconds)	pwd	/home/padmin
☒ 11/19/18 16:46:04	Mtsviommb	Complete (.11 seconds)	ls -l "/home/padmin/" awk '{print \$>	total,8936,..... -rw-
☒ 11/19/18 16:46:29	Mtsviommb	11/19/18 16:46:31: Success (1>	ftp -n -v idoc720 <<ENDSCRIPT>	Connected to idoc72
☒ 11/19/18 16:46:32	Mtsviommb	Complete (.05 seconds)	ls -l ftp -n -v idoc720 <<ENDSCRIPT quote USER mccargar site namefmt 1 mkdir /tmp2/abc/ cd /tmp2/abc/ bin type put /home/padmin/QIDRINSTAL.sql2 QIDRINSTAL.sql2 !	

FTP script used to execute a file transfer from a VIOS to an IBM I within the Remote Command Status View

Tip: The results of running the script can be seen in the Results column.

4.10.16 Transfer to -> IBM - Testcase

This option will send the selected files to IBM's testcase system in Boulder, CO. This occurs by running the ftp command on the current remote server to the target system. The files will be sent directly from the system you are working with to the target system. Typically, you can use the username anonymous and password of your email address when making this connection.

Transfer File(s)

Transfer options:

Destination: IBM - Testcase (Boulder, CO USA) ▾

Target system: testcase.boulder.ibm.com Use IP addr

Target path: /toibm/aix/

☒ Create subdirectory

Username: anonymous Password: ●●●●●●

Port: Default ▾ Secure connection: Default ▾

Data to transfer:

Name	Size (bytes)	File type	Modified date	Attributes	Owner	Symbolic link
 MTSVIOMmB_150812_1129.nmon	36	NMON	Nov 15 14:15	lrwxrwxrwx	root staff	/tmp/nmon/MTSVIOM
 MTSVIOMmB_181112_1454.nmon	36	NMON	Nov 15 14:15	lrwxrwxrwx	root staff	/tmp/nmon/MTSVIOM

Transfer **Cancel**

Transfer File(s) -> IBM - Testcase

Option	Description
Destination	This indicates where the files will be sent.
Target system	The system to send the selected files to.
Target path	The directory on the target system to send the selected file(s) to.
Create subdirectory	This will create the directory specified if it does not exist already. Note: This only works for a single directory, it will NOT create multiple directories in one shot.
Username	The user profile to use when making the connection to the remote server.
Password	The password to use when making the remote connection. Specify a password such as your email address if connecting with the "anonymous" user.
Port	This the port to use when making the FTP connection and should be either Default or Secure. If Secure is used, then the ftp -s parameter will be used to enable a secure TLS/SSL.
Secure connection	Select SSL for this value if you wish to make a secure connection (or use Secure for the Port parameter value.)
Data to transfer	This is the list of files to send to the target remote system.

4.10.17 Transfer to -> IBM – ECUREP

This option will send the selected files to IBM's ECUREP system in Germany. See the previous section for more information on this interface.

4.10.18 Transfer to -> IBM – Blue Diamond Lab

These options will send the selected files to IBM's Blue Diamond Lab. A secure FTP connection must be used when making the connection. See the previous section for more information on this interface.

5 VIOS Monitor Setup

If the VIOS and companion IBM i system are setup properly it is possible to enable 24x7 nmon data collection. This support only works for VIOS systems and currently requires several manual install steps to enable.

Data is automatically collected on the VIOS, sent to the IBM i in the IFS and then processed and analyzed using SQL and moved in DB files that iDoctor can graph. Old data is automatically removed based on the desired retention settings.

5.1 Summary

These steps allow you to automatically collect NMON stats from VIOS partitions and send the data to IFS directories located on an IBM i partition. There is a monitor that runs on the IBM i partition which imports the IFS files into database file members that can be analyzed with the iDoctor client. Retention periods are set for both the IFS and database file members. Requirements and setup instructions are included below.

5.2 AS IS / NO WARRANTY

These functions are not officially supported by IBM and are intended for use at your own risk and come with NO WARRANTY of any kind.

Note: Running the VIOS scripts referenced here can create files on your VIOS that if left for a long time and not cleaned up they will eventually fill up the file system and cause issues. Regular system monitoring and maintenance by the user is required.

5.3 Required Steps

1. Install the latest iDoctor client and server builds located on our website. Note that the iDoctor server build will need to be updated on the partition that the VIOS data is sent to and analyzed on. The iDoctor client will need to be updated on any PC that will be used to work with the data. <http://public.dhe.ibm.com/services/us/igsc/idoctor/html/downloadOptions.html>
2. [Install the scripts on the VIOS](#) partitions that you will collecting data from.
3. [Set up the SSH connection](#) between the VIOS and IBM i.
4. [Set up the VIOS Monitor data directories](#) on the VIOS partition(s) and the target data directories on the IBM i Analysis System.
5. [Set up the Directory Monitor on the IBM i](#).

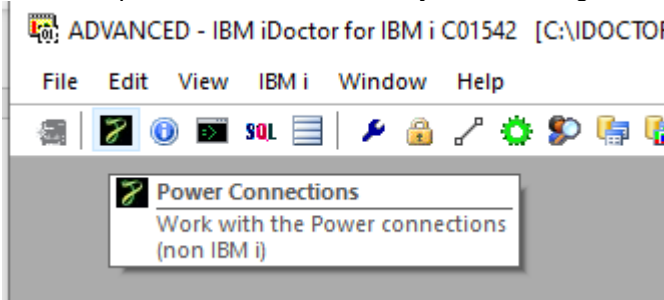
5.4 Installing iDoctor Scripts

These scripts are included with the iDoctor GUI located on your PC typically in the following location:

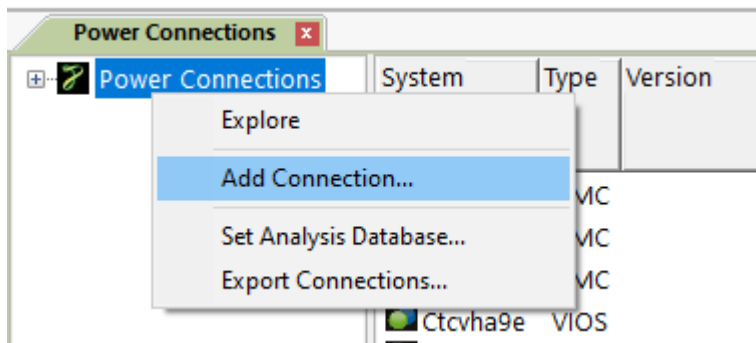
C:\Program Files (x86)\IBM\iDoctor\ServerUpdates\AIX\idoctor.tar

These scripts can be sent to the VIOS over an FTP from the PC to the VIOS or when connecting to the VIOS with iDoctor GUI for the first time the files will be installed. Here we show how to connect to the VIOS using the iDoctor GUI. If sending the file manually using SSH or FTP the file should be unpacked into /tmp/idoctor directory on the VIOS.

1. Open the iDoctor Client on your PC and go to Power Connections.



2. Right click on Power Connections and select 'Add Connection'.



3. Fill out the 'Add Power Connections' window as below with the fully qualified host name or IP address of your VIOS partition. Click OK.

Provide below the system name or IP address as well as the type of connection. The description parameter is optional.

System:

Connection type:

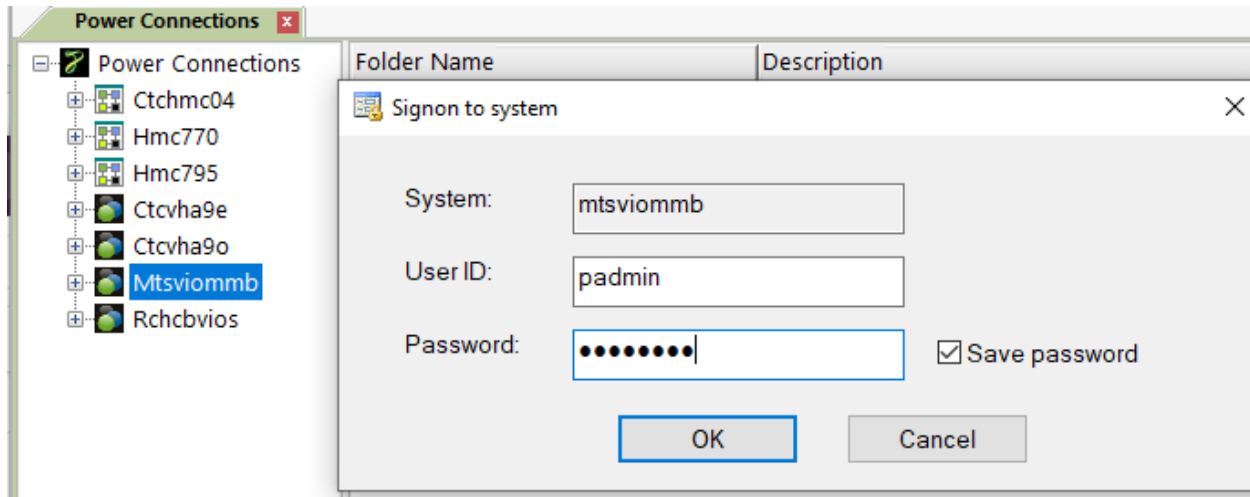
Default user mode:

Description:

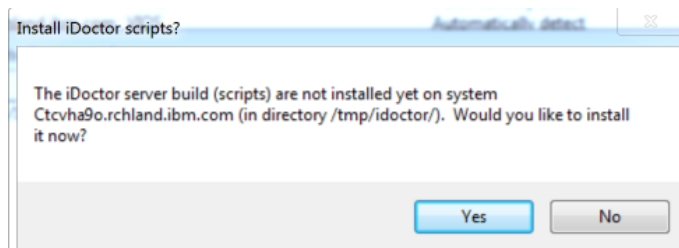
SSH Putty private key file (optional):

FTP method: Port:

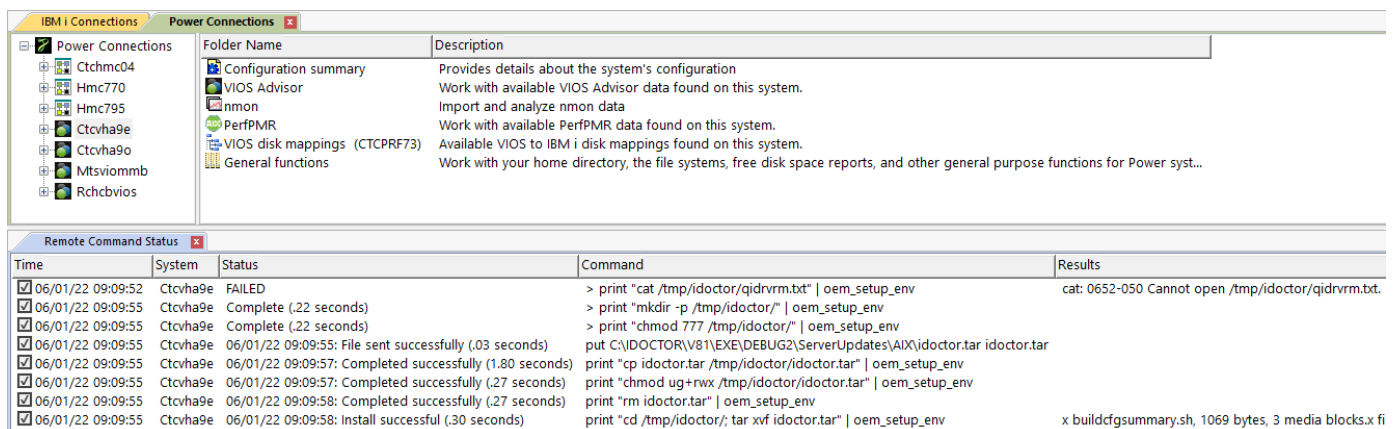
4. Click on the VIOS partition in the left pane, enter your login credentials, and click OK.



- Click yes when the following window appears asking if you would like to install the scripts.



- The following messages in the Remote Command Status View indicate successful installation of the scripts.



5.5 SSH Connection Setup Instructions

The SSH Setup Instructions below will walk you through setting up SSH connection between the VIOS and IBM i.

- On the VIOS, ensure that SSH is configured properly and started. For help see: <https://www.ibm.com/support/pages/node/670273>
- On the IBM i, ensure that SSH is configured properly and started. For help see: <https://www.ibm.com/support/pages/node/687225>

- ```
cd /home/padmin
ssh-keygen -t rsa -f id_rsa -N ''
Generating public/private rsa key pair.
Your identification has been saved in id_rsa.
Your public key has been saved in id_rsa.pub.
The key fingerprint is:
ea:65:af:41:86:6d:8c:f1:c7:cf:ed:bb:97:9d:43:4d root@ctcvha9e
The key's randomart image is:
+--[RSA 2048]-----+
|
|
|
| .
| B . E|
| o S o ..|
| = . o . ..|
| . + o o +|
| . o o . +o|
| ++. |
+-----+

```

- ## QSH Command Entry

```
$
> mkdir /home/BSMENGENES/.ssh
$
> ls -la
total: 28 kilobytes
drwxrwsrwx 3 BSMENGENES 0 8192 Mar 18 16:20 .
drwxrwsrwx 7 QSYS 0 8192 Apr 29 2013 ..
drwxrwsrwx 2 BSMENGENES 0 8192 Mar 18 16:20 .ssh
```

5. Ensure the user profile has the home directory specified. Use DSPUSRPRF to check and CHGUSRPRF to change the profile if necessary.

```

Change User Profile (CHGUSRPRF)

Type choices, press Enter.

Locale *SAME

User options *NONE *SAME, *NONE, *CLKWD...
 + for more values

User ID number 131 1-4294967294, *SAME
Group ID number *NONE 1-4294967294, *SAME, *GEN...
Home directory /home/BSMENGES_

```

6. FTP to the VIOS partition to retrieve the public key file or have it sent to an intermediate system if FTP is not allowed. Note that ASCII transfer should be used or the key file should be zipped prior to sending.

If FTPing from the IBM i to VIOS example:

```

ftp viosname

login

ascii

cd /home/padmin

namefmt 1

get id_rsa.pub /home/myuserid/.ssh/id_rsa.pub

quit

```

```

> ascii
200 Type set to A; form set to N.
> cd /home/padmin
250 CWD command successful.
> namefmt 1
500 'SITE NAMEFMT 1': command not understood.
Client NAMEFMT is 1.
> get id_rsa.pub /home/bsmenges/.ssh/id_rsa.pub
229 Entering Extended Passive Mode (|||56151|)
150 Opening data connection for id_rsa.pub (395 bytes).
226 Transfer complete.
396 bytes transferred in 0.173 seconds. Transfer rate 2.291 KB/sec.

```

7. Double-check the IBM i and VIOS are configured properly for SSH to work.

Key points:

- Ensure 5733-SC1 -- IBM portable utilities for i is installed on the system
- The userid's home directory must not have public write authority
- The following directories for the user must not have any public authorities:
  - /home/myuserid/.ssh
  - /home/myuserid/.ssh/authorized\_keys
- `chmod go-w /home/myuserid`

- chmod 700 /home/myuserid/.ssh
  - chmod 700 /home/myuserid/.ssh/authorized\_keys
8. The public key must be located in the /home/myuserid/authorized\_keys file. Use the cp command to copy the id\_rsa.pub file into the authorized\_keys file. Only use the cp command if the file is empty or you do not care about it's contents as cp will overwrite the file. If the authorized\_keys file already contains data, keys from other systems for example, use the cat command instead as follows. If you will be having multiple VIOS send data to the same IBM i, then you will need to bring down the key files one at time and use cat to add them to the authorized\_keys file.

**Example using cp (data in the file will be replaced) cp id\_rsa.pub authorized\_keys**

```
> cp id_rsa.pub authorized_keys
$
> ls
authorized_keys id_dsa.pub id_rsa.pub
```

**Example using cat >> (data will be appended to the end of the file)**

**cat id\_rsa.pub >> authorized\_keys**

```
==> cat id_rsa.pub >> authorized_keys
```

9. Ensure that the ssh daemon is in listen mode. Netstat option 3 and look for local port ssh. Use STRTCPSVR SERVER(\*SSHD) to start the server. It is also recommended to set this server to autostart when TCP is started on the system. This can be done in iNav or by updating the QUSRSYS/QATOCSTART.

```
Work with IPv4 Connection Status
System: ID0C710
Type options, press Enter.
 3=Enable debug 4=End 5=Display details 6=Disable debug
 8=Display jobs
```

| Opt | Remote Address | Remote Port | Local Port | Idle Time | State  |
|-----|----------------|-------------|------------|-----------|--------|
| —   | *              | *           | ftp-con >  | 113:16:04 | Listen |
| —   | *              | *           | ssh        | 000:00:35 | Listen |

10. Now that the IBM i setup is complete, SSH from the VIOS partition to the IBM i in order to add the IBM i to the Known Hosts File on the VIOS.
- a. After logging in to the VIOS issue the command `ssh myuserid@myipaddress` where myuserid is the userid configured on the IBM i partition and my IP address is the IP address or hostname.domain name of the IBM i partition. If using hostname VIOS must be able to perform DNS lookup.
  - b. Answer yes when prompted. The IBM i will be added to the list of known hosts.
  - c. Log on with the password for myuser.
  - d. Log off the IBM i partition by typing exit and press enter.

```

login as: padmin
padmin@ctcvha9e.rchland.ibm.com's password:
Last unsuccessful login: Wed Jan 21 15:16:30 CST 2015 on ssh from 9.10.75.129
Last login: Sat Mar 21 09:04:29 CDT 2015 on ftp from idoc710.rchland.ibm.com
$ oem_setup_env
ssh bsmenges@9.5.68.31
The authenticity of host '9.5.68.31 (9.5.68.31)' can't be established.
ECDSA key fingerprint is cb:33:f9:b8:3f:fd:64:34:69:fa:e0:1e:9f:05:d9:1f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '9.5.68.31' (ECDSA) to the list of known hosts.
bsmenges@9.5.68.31's password:
$ █

```

11. Now that everything is set up on the VIOS and IBM i partitions, test that you are able to logon without a password.
  - a. `ssh -i /home/padmin/id_rsa myuserid@myIPaddress`
  - b. If you get a \$ prompt without further prompting or messages, you are logged on the IBM i. Type exit, and enter to log off.
  - c. If you are prompted for a password, then something is wrong in the configuration or with the ssh daemon on the server side. Try ssh again with -iv, -ivv, or -ivvv flags for various levels of logging that will help to pinpoint the error (verbose, very verbose, or very very verbose). The sshd logs on the IBMi side can also be checked for errors.

---

## 5.6 VIOS Data Directory Setup Instructions

This section will walk you through setting up data directories on the IBM i partition and cron scheduler entries on the VIOS that will automatically collect and send NMON data to the IBM i.

1. Create the data directories on the IBM i. In this example we create a sub directories in the user's home directory for NMON data. If you will be sending from multiple VIOS you can send all of the data to the same directories, create one directory for each VIOS, or set it up however you want. In the next section, the setup for the Directory Monitor will allow you to configure the monitor with the various data locations for import by VIOS host name, data type, and target library.
  - a. `qsh`
  - b. `mkdir /home/myuserid/nmon`
2. Enable SEA Advanced Accounting. The 'seastat' command is used to collect samples from SEA adapters on the VIOS. Accounting needs to be enabled for each adapter in order for the command to collect data.
  - a. Enter 'oem\_setup\_env' followed by 'lsdev -Cc adapter' to get a list of all adapters on the VIOS. To filter out just the SEA adapters use 'lsdev -Cc adapter | grep Shared'. Note that 'grep' is a case sensitive search.
  - b. For each SEA, enter 'chdev -l entxx -a accounting=enabled' replacing entxx with the name of the SEA adapter. Repeat this for all SEA adapters you want to monitor. Running the command with 'accounting=disabled' turns off advanced accounting.
3. Add cron schedule entries on the VIOS. The following steps are using crontab -e to modify the cron file manually using the vi editor. This can be tricky if it is your first time using vi. Each time you modify the file you will use the following process.
  - a. Log on to the VIOS with padmin.
  - b. Type oem\_setup\_env and press enter.
  - c. Type crontab -e and press enter.
  - d. Use down arrow key to get to the last line of the file. Use O to insert a line.

- e. Make changes to the file.
- f. :x and press enter to save the changes.

4. Below is an example showing the required entries in cron. An explanation of the entries follows.

**0 \*\*\*\* /bin/ksh /tmp/idoctor/nmon\_monitor.sh 300 12**

**\*\*\*\*\* /bin/ksh /tmp/idoctor/scp\_monitor.sh /home/padmin/id\_rsa mccargar 9.5.65.1  
/home/mccargar/nmon nmon**

**a. NMON Monitor:**

**0 \*\*\*\* /bin/ksh /tmp/idoctor/nmon\_monitor.sh 300 12**

This starts a new NMON collection with 5 minute intervals every hour (300 seconds x 12 intervals).

**b. SCP Monitor for NMON data:**

(\* \* \* \* \* indicates the entry will run every minute and check if anything is ready to be sent)

**\*\*\*\*\* /bin/ksh /tmp/idoctor/scp\_monitor.sh /home/padmin/id\_rsa myuserid myIPAddress  
/home/myuserid/nmon nmon**

myuserid: User ID configured for SSH on the IBM i system.

MyIPAddress: IP address of the IBM i system.

/home/myuserid/nmon: Remote directory where nmon data for this system should be sent.

Nmon: Tells the SCP Monitor that this is nmon data.

5. Example of how to enter the above entries using crontab -e.

- a. crontab -e
- b. Use down arrows to go to bottom of file. Press the 'o' key to open a new line after the cursor. This places the editor into insertion mode.
- c. Type in the following (NMON monitor from above is used as an example): 0 \* \* \* \*  
/tmp/idoctor/nmon\_monitor.sh 300 12
- d. Press the escape key to go back to command mode. If you made a mistake and need to fix it, use the applicable command from the cheat sheet referenced above to edit what was previously typed.
- e. To exit and save changes, from command mode, type :x and press enter.
- f. To exit without saving changes, from command mode, type :q! and press enter.

6. The authorities on the .sh scripts may need fixing to make sure padmin has RWX to them.

- a. Example command while in /tmp/idoctor directory on VIOS:
- b. chmod u=rwx nmon\_monitor.sh

7. Now that the monitors are configured, after each NMON collection the data will be copied from the collection directory to an SCPOUT directory. This will happen approximately every 60 minutes around the top of the hour. The SCPOUT directories are monitored every minute for new data. As new data arrives, it is sent to the specified IBM i remote directory and then deleted from the VIOS. Doing an 'ls' on the /tmp/vios\_investigator directory will show the applicable sub-directories which are created after the first time the scripts are run. This will happen at the top of the first hour after the entries are added to the Cron scheduler.

- a. /tmp/vios\_investigator/nmon: NMON Monitor data is stored here
- b. /tmp/vios\_investigator/scpout\_nmon: NMON SCP output directory

## 5.6.1 Some tips that may be useful if you are having problems

1. Use `crontab -l` to view the file
2. Using the `tail` command to view a log – example the CRON log by default is located in `/var/adm/cron`. Example – to read the last 100 lines of the cron log , enter `tail -100 /var/adm/cron/log | more`
3. use the 'man' cmd to view a manual on a given topic. Example – `man crontab`
4. After the key is copied to the `authorized_keys` file on the IBMi , the `id_rsa.pub` is NO LONGER needed/used.

## 5.7 Directory Monitor Setup Instructions

1. Use the `QIDRGUI/ADDDIRMON` command to add the monitored directory or directories. Each entry will monitor the specified IFS directory for data arrival and import it into the specified library. Several examples are included below. Organize the data however you like.
2. Example: Entry to monitor directory for NMON files from VIOS1 and import to library VIOS1PERF. Note: The `*SEA/*NPV` options are no longer used since `nmon` can collect SEA and NPV data now. Each collection is imported and appended to existing files in the library such that there is one collection per day. As new data arrives from the VIOS throughout the day graphs can be refreshed to show the latest intervals.

```
QIDRGUI/ADDDIRMON DIR('/home/myuser/vios1') IFSPFX(*ALL) TGTLIB(VIOS1PERF)
TGTPFX(VIOS1) IFSRTN(2) DBRTN(30) MODE(*DAILY)
```

| Add NMON Monitored Dir (ADDDIRMON) |                               |                 |
|------------------------------------|-------------------------------|-----------------|
| Type choices, press Enter.         |                               |                 |
| Directory to monitor . . . . .     | <u> '/home/myuser/vios1' </u> |                 |
| Prefix of IFS files . . . . .      | <u> *ALL </u>                 |                 |
| Target library . . . . .           | <u> vios1perf </u>            | Character value |
| Target prefix . . . . .            | <u> vios1 </u>                | Character value |
| Days to retain IFS files . . . . . | <u> 2 </u>                    | 0-9999          |
| Days to retain DB files . . . . .  | <u> 30 </u>                   | 0-9999          |
| Map files . . . . .                |                               |                 |
| Import mode . . . . .              | <u> *DAILY </u>               | *NORMAL, *DAILY |

3. Parameter descriptions:
  - a. Directory to monitor: IFS location to monitor for new files.
  - b. Prefix of IFS files: This lets you filter on a filename prefix if data is arriving from multiple sources.
  - c. Target library: Library where the data will be imported for analysis.
  - d. Target prefix: This will be the prefix for the DB file members.
  - e. Days to retain IFS files: How long to keep the raw data in the IFS. This data is not used by iDoctor for analysis purposes.
  - f. Days to retain DB files: How long to keep the imported DB files. This data is used by iDoctor for various reports and graphs.
  - g. Map files: If disk mapping files have been included from any IBM i partitions they can be

referenced here.

- h. Import mode: \*DAILY appends each collection received into a single member per day. \*NORMAL means that each collection received has its own member. For example, collections received hourly at the end of the day would have one member using \*DAILY versus 24 members using \*NORMAL.
- 4. Start the directory monitor with the current user or a different user. Put this command in your startup to ensure the monitor starts up after an IPL or maintenance.  
QIDRGUI/STRDIRMON USER(\*CURRENT)
- 5. Other applicable commands: ENDDIRMON, RMVDIRMON
- 6. Once files have been imported they can be viewed by opening any iDoctor component, such as Collection Services Investigator or Job Watcher, and expanding General Functions > Power > NMON > Analyze > Expand the library and member.

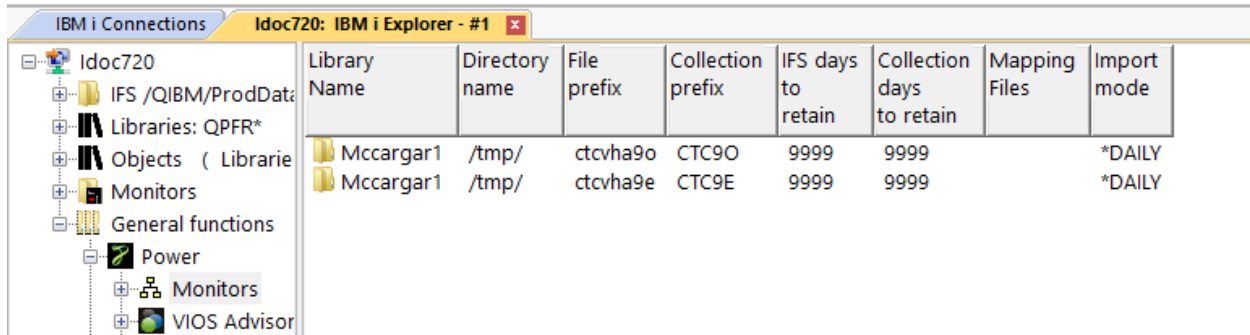
## 6 Monitors

The Monitors folder allows the configuration of 24x7 data collection and retention settings for the IBM i system currently being used. This support works best after manual setup on the VIOS and IBM i (see previous section) is done to allow the automatic transfer of data from the VIOS to the IBM i's IFS.

**Note #1:** This option only appears when connected to an IBM i system under General Functions -> Power -> Monitors. It is not available when connecting via Power Connections.

**Note #2:** Data placed into IFS directories manually would also allow these functions to work.

This folder allows a user to control the settings in terms of which IFS files/directories to check for and what iDoctor DB tables to create when new data comes into the system within the IFS.



| Library Name | Directory name | File prefix | Collection prefix | IFS days to retain | Collection days to retain | Mapping Files | Import mode |
|--------------|----------------|-------------|-------------------|--------------------|---------------------------|---------------|-------------|
| Mccargar1    | /tmp/          | ctcvha9o    | CTC9O             | 9999               | 9999                      |               | *DAILY      |
| Mccargar1    | /tmp/          | ctcvha9e    | CTC9E             | 9999               | 9999                      |               | *DAILY      |

*IBM i Explorer -> General functions -> Power -> Monitors folder*

Each entry in this folder displays the library and type of data that can be found within each. It also lists the directory name on the IFS as well as additional retention settings that apply for both the IFS files and the DB collection tables that iDoctor creates.

The columns in the Monitors folder are described below:

| Column                    | Description                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Library name              | The library where the data is located for this monitor entry.                                                                                                                                                                                                                                                                                                                                                     |
| Directory name            | The IFS directory where the incoming data from the VIOS is located.                                                                                                                                                                                                                                                                                                                                               |
| File prefix               | Specifies the prefix of files that will be included in the monitor. This allows for files from different sources to be distinguished when they reside in the same directory.<br><br>For example: One entry could have a file prefix value of <b>vios1</b> and the 2 <sup>nd</sup> entry could use <b>vios2</b> . The same IFS data could end up different libraries on the IBM i if desired after being analyzed. |
| Collection prefix         | Specifies the prefix that should be used for the collections when importing them. After this prefix a numbering scheme is used (0000-9999.)                                                                                                                                                                                                                                                                       |
| IFS days to retain        | Specifies the number of days matching files in the IFS directory should be retained before the monitor deletes them. Note that this determination is based on date within the file name, and not the change/create timestamps of the filenames.                                                                                                                                                                   |
| Collection days to retain | Specifies the number of days to retain the database files generated by the monitor. This determination is made based on the timestamp of the most recent interval in the collection.                                                                                                                                                                                                                              |
| Mapping files             | An optional listing of up to 5 VIOS to IBM i disk mapping files.                                                                                                                                                                                                                                                                                                                                                  |
| Import mode               | Determines the behavior of the monitor when importing files.<br><br>*NORMAL<br>Every file imported from the IFS has an associated performance collection in the database.<br><br>*DAILY<br>Matching files of the same type from the same day are merged into a single performance collection.                                                                                                                     |

## 6.1 Menus

The Monitors folder provides the following menu options:

| Option                  | Description                                                                                                                                                                                                                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select fields...        | This lets you control which fields to show in the Monitors folder (see the previous section for the list of columns.)                                                                                                                                                                                                                                     |
| Add Monitored directory | This will create a new monitor entry based on the settings you specify on the Add Monitored Directory window.                                                                                                                                                                                                                                             |
| Start Monitor           | This will kick off a new monitor job on the IBM i. Only 1 can be active at a time. This will check each monitor entry for new data and import needed files in the libraries indicated.                                                                                                                                                                    |
| End Monitor             | Ends the monitor job either delayed or immediate.<br><br>*DELAY<br>A signal is sent to the monitor job, which will end cleanly as soon as the signal is recognized. This should happen within 15 seconds in most cases.<br><br>*IMMED<br>An ENDJOB *IMMED command is issued to immediately end the directory monitor job. Not recommended for normal use. |
| Tracing -> Enable       | Turns on debug tracing for the monitor job. Typically, you only need to use this if iDoctor support asks for it.                                                                                                                                                                                                                                          |
| Tracing -> Disable      | Turns off debug tracing.                                                                                                                                                                                                                                                                                                                                  |
| Tracing -> View log     | Downloads the current monitor log to the PC and displays it in Notepad,                                                                                                                                                                                                                                                                                   |

## 6.2 Add Monitored Directory

This option adds an IFS directory to the list of directories that the iDoctor monitor will scan for new nmon files. The monitor scans this list after every sleep cycle, so a new directory may be added without restarting the monitor. As new files are uploaded to the IFS directory, the monitor will import them according to the rules defined on this window.

 Add Monitored Directory ✕

This option adds an IFS directory to the list of directories that the monitor will scan for new nmon files. The monitor scans this list after every sleep cycle, so a new directory may be added without restarting the monitor.

The monitor will import new data found in the IFS to the target library defined here.



Library (target):

Collection prefix:  1 - 6 characters

IFS directory:

IFS file prefix:  1 - 50 characters

Import mode:

IFS days to retain:  0 - 9999      DB days to retain:  0 - 9999

VIOS->IBM i mapping files:

Add Monitored Directory window

| Option                         | Description                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Library name                   | The library where the data is located for this monitor entry.                                                                                                                                                                                                                                                                                                                          |
| Collection prefix              | Specifies the prefix that should be used for the collections when importing them. After this prefix a numbering scheme is used (0000-9999.)                                                                                                                                                                                                                                            |
| IFS directory                  | The IFS directory where the incoming data from the VIOS is located on the IBM i.                                                                                                                                                                                                                                                                                                       |
| IFS file prefix                | Specifies the prefix of files that will be included in the monitor. This allows for files from different sources to be distinguished when they reside in the same directory.<br><br>For example: One entry could have a file prefix value of vios1 and the 2nd entry could use vios2. The same IFS data could end up different libraries on the IBM i if desired after being analyzed. |
| Import mode                    | Determines the behavior of the monitor when importing files.<br><br>*NORMAL<br>Every file imported from the IFS has an associated performance collection in the database.<br><br>*DAILY<br>Matching files of the same type from the same day are merged into a single performance collection.                                                                                          |
| IFS days to retain             | Specifies the number of days matching files in the IFS directory should be retained before the monitor deletes them. Note that this determination is based on date within the file name, and not the change/create timestamps of the filenames.                                                                                                                                        |
| DB (collection) days to retain | Specifies the number of days to retain the database files generated by the monitor. This determination is made based on the timestamp of the most recent interval in the collection.                                                                                                                                                                                                   |
| Mapping files                  | A list of up to 5 VIOS to IBM i disk mapping files, where every 20 characters specify first a library, and then a file name. These must be appropriately spaced.                                                                                                                                                                                                                       |

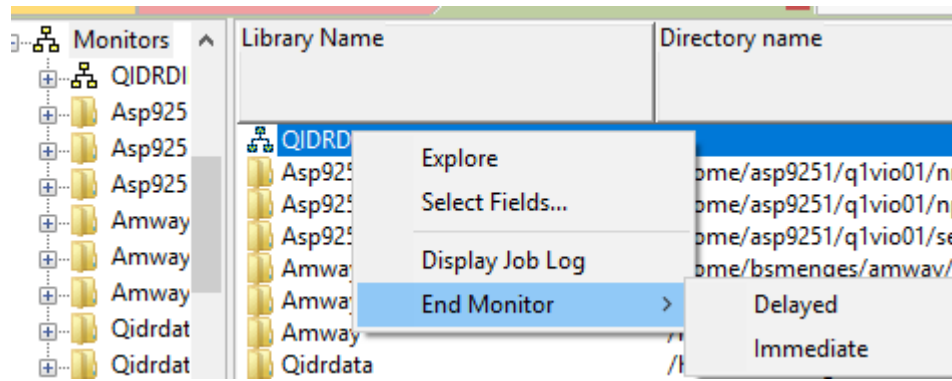
## 6.3 Active Monitor Job

To tell if the monitor of this type is running on an IBM i just look and see if a job name is listed at the top of the entries within the Monitors folder. If not, then the Monitor is not currently running on the IBM i and no data will be processed. Only 1 monitor can be active at a time.

| Library Name               | Directory name | File prefix | Collection prefix | IFS days to retain | Collection days to retain | Mapping Files | Import mode |
|----------------------------|----------------|-------------|-------------------|--------------------|---------------------------|---------------|-------------|
| QIDRDIRMON/MCCARGAR/209529 |                |             |                   |                    |                           |               |             |
| Mccargar1                  | /tmp/          | ctcvha9o    | CTC90             | 9999               | 9999                      |               | *DAILY      |
| Mccargar1                  | /tmp/          | ctcvha9e    | CTC9E             | 9999               | 9999                      |               | *DAILY      |

*Monitors folder showing the active monitor job*

If you right-click the job, there are options to end the monitor or display the job log.



Monitor job options

## 6.4 Collections (within a monitor)

Each monitor entry contains a list of one or more collections. See the [nmon](#) documentation for more information.

| IBM iConnections - Idoc720: IBM i Explorer - #1 |        |          |                                |             |                             |                 |                   |                         |  |
|-------------------------------------------------|--------|----------|--------------------------------|-------------|-----------------------------|-----------------|-------------------|-------------------------|--|
| Collection                                      | Status | Mapping? | Import file                    | Description | Interval duration (seconds) | Total intervals | Collector version | Import time             |  |
| SQL tables                                      |        |          |                                |             |                             |                 |                   |                         |  |
| CTC9O1111                                       | Ready  |          | /tmp/ctcvha9o_181111_0200.nmon |             | 300                         | 36              | TOPAS-NMON        | 2021-10-15-06.42.16.717 |  |
| CTC9O1110                                       | Ready  |          | /tmp/ctcvha9o_181110_2200.nmon |             | 300                         | 36              | TOPAS-NMON        | 2021-10-15-06.42.08.950 |  |
| CTC9O1102                                       | Ready  |          | /tmp/ctcvha9o_181102_2000.nmon |             | 300                         | 24              | TOPAS-NMON        | 2021-10-15-06.42.01.633 |  |
| CTC9O0420                                       | Ready  |          | /tmp/ctcvha9o_170420_1600.nmon |             | 300                         | 3               | TOPAS-NMON        | 2021-10-15-06.41.56.689 |  |
| CTC9O1212                                       | Ready  |          | /tmp/ctcvha9o_161212_2300.nmon |             | 300                         | 211             | TOPAS-NMON        | 2021-10-15-06.41.54.486 |  |
| CTC9O1114                                       | Ready  |          | /tmp/ctcvha9o_161114_0500.nmon |             | 300                         | 60              | TOPAS-NMON        | 2021-10-15-06.40.56.979 |  |

IBM i Explorer -> General functions -> Power -> Monitors -> mccargar1 folder

## 7 VIOS Advisor

The VIOS Advisor folder provides a listing of VIOS Advisor data that has been found on the VIOS.

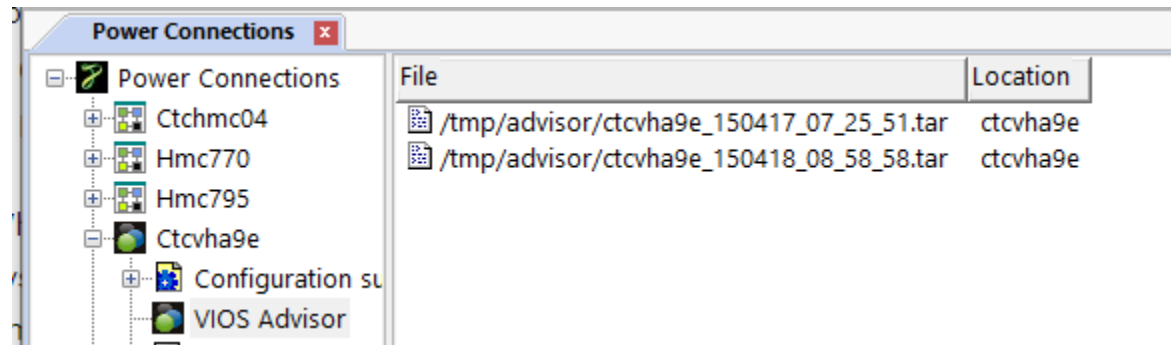
**Note:** This folder also exists under an IBM I component under General Functions -> Power. This shows any VIOS advisor tar files that have been sent to the IFS under /tmp.

From this view a user can download the data to the PC to unzip the files and view the report.

Visit this website for more details on VIOS Advisor:

<https://www.ibm.com/docs/en/power7?topic=managing-virtual-io-server-performance-advisor>

An example of the contents of this folder is:



VIOS -> VIOS Advisor folder

The following menu options are available when right-clicking the VIOS Advisor folder:

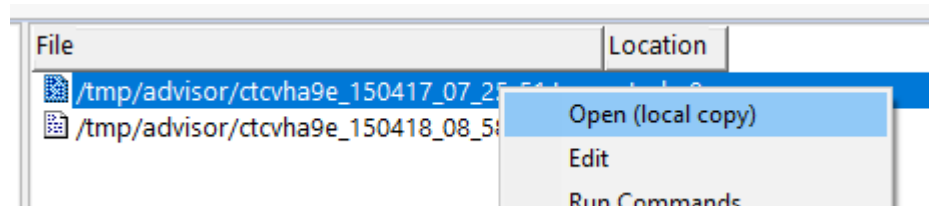
| Menu                   | Description                                                                                                                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Explore                | Displays the contents of the folder in the list.                                                                                                                                                                                                         |
| Upload...              | This option displays the Upload files from PC window which is used to transfer any previously collected VIOS Advisor .tar files from the PC to the server in the desired directory.                                                                      |
| Find VIOS Advisor data | This option will scan the specified directories on the server looking for VIOS Advisor data. Afterwards, refreshes of the VIOS Advisor folder will reveal the data found.                                                                                |
| Start VIOS Advisor     | This option provides several choices for how VIOS Advisor data shall be collected.<br><b>Note:</b> Your new data won't be visible in the VIOS Advisor folder until after it has finished collecting and the Find VIOS Advisor data option has been used. |

### 7.1 Analyzing

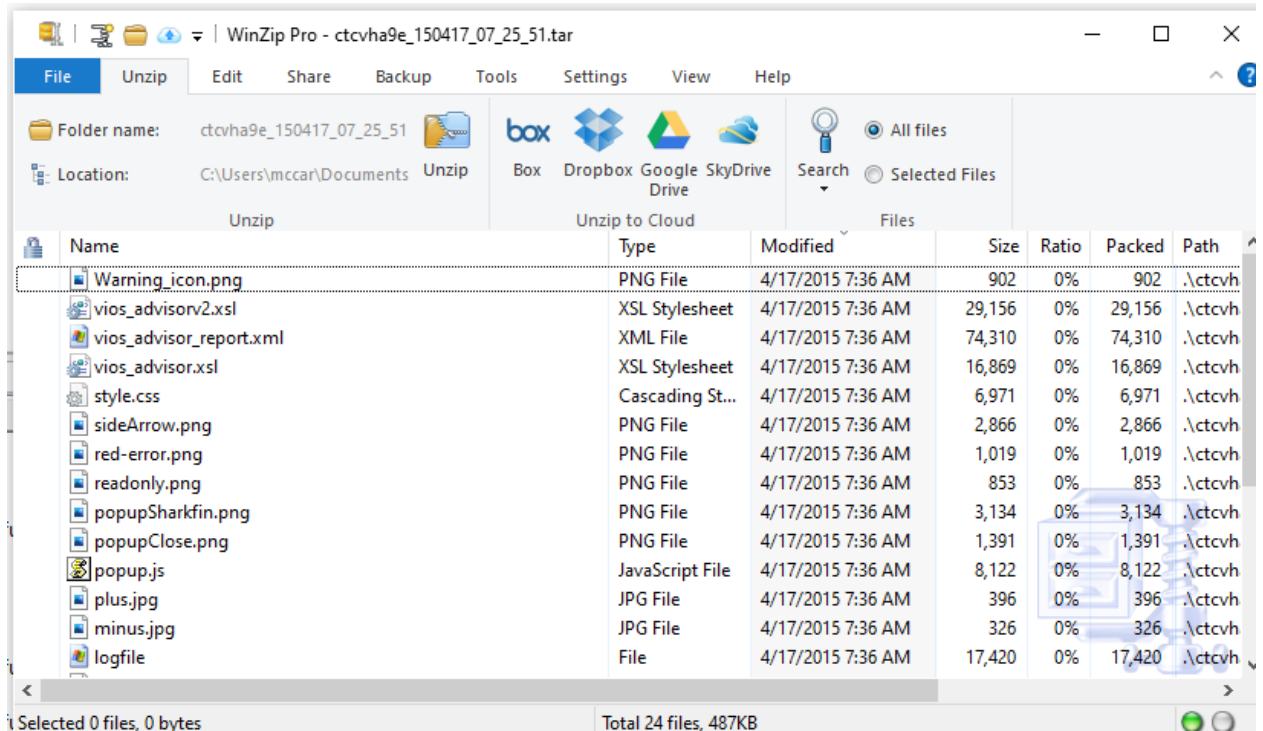
VIOS Advisor data is stored in a .tar file which will need to be transferred to a system that has a web browser and a .tar file extractor installed. After extracting the data, you will need to open the **vios\_advisor\_report.xml** file in a web browser to view the report.

To analyze this data on your PC with the iDoctor GUI you will need to have something like 7Zip or WinZip installed and configured to be the default program used when opening .tar files. Here is an example of what the process looks like to analyze this data.

- 1) Right-click the desired .tar file and use the Open menu.



- 2) Unzip the data to the directory of your choice by pressing the Unzip button.



- 3) Open the vios\_advisor\_report.xml into either FireFox or Internet Explorer. This report does not work correctly with Google Chrome or Microsoft Edge.

**VIOS Performance Advisor**

**VIOS Performance Recording Summary**  
 Hostname : MTSVIOMMB  
 PartitionID: 18  
[IBM Systems Workload Estimator \(VIOS Sizings\)](#)

**Monitoring**  
 Start Time: 04/30/2014 05:23 PM  
 Stop Time: 04/30/2014 05:32 PM  
 Duration: 9 min

**Advisory Report** [Learn More](#)

**System - Configuration**

| Name                            | Value                                                            |
|---------------------------------|------------------------------------------------------------------|
| Processor Family                | Architecture PowerPC Implementation<br>POWER7_COMPAT_mode 64 bit |
| Server Model                    | IBM 9117-MMB                                                     |
| Server Frequency                | 3500.0 MHz                                                       |
| Server - Online CPUs            | 4.0 cores                                                        |
| Server - Maximum Supported CPUs | 8.0 cores                                                        |
| VIOS Level                      | 2.2.3.0                                                          |
| VIOS Advisor Release            | 0.1                                                              |

**VIOS - I/O Activity**

| Name                 | Value                                                                                                                      |
|----------------------|----------------------------------------------------------------------------------------------------------------------------|
| Disk I/O Activity    | Average : 0 @ 0.00 KB Peak: 0 @ 0KB                                                                                        |
| Network I/O Activity | [ Average Send: 13 @ 2.0 MBps , Average Receive: 13 @ 0.7MBps ] [ Peak Send: 16 @ 11.6 MBps , Peak Receive: 16 @ 0.9MBps ] |

**VIOS - Processor**

| Name                     | Measured Value                                        | Suggested Value | First Observed      | Last Observed    |
|--------------------------|-------------------------------------------------------|-----------------|---------------------|------------------|
| CPU Capacity             | 4.0 ent                                               |                 | 04/30/2014 05:23 PM |                  |
| CPU consumption          | Average: 0.2% (cores: 0.1)<br>High: 3.0% (cores: 0.2) |                 | 04/30/2014 05:23 PM | 04/30/2014 05:32 |
| Processing Mode          | Shared CPU, (UnCapped)                                |                 | 04/30/2014 05:23 PM |                  |
| Variable Capacity Weight | 128                                                   | 129-255         | 04/30/2014 05:23 PM |                  |
| Virtual Processors       | 4                                                     |                 | 04/30/2014 05:23 PM |                  |
| SMT Mode                 | SMT4                                                  |                 | 04/30/2014 05:23 PM |                  |

**System - Shared Processing Pool**

| Name | Measured Value | Suggested Value | First Observed | Last Observed |
|------|----------------|-----------------|----------------|---------------|
|      |                |                 |                |               |

**VIOS - Disk Adapters** Risk/Impact 1=lowest 5=highest

| Name | Measured | Suggested | First | Last | Risk | Impact |
|------|----------|-----------|-------|------|------|--------|
|      |          |           |       |      |      |        |

*VIOS Performance Advisor Report*

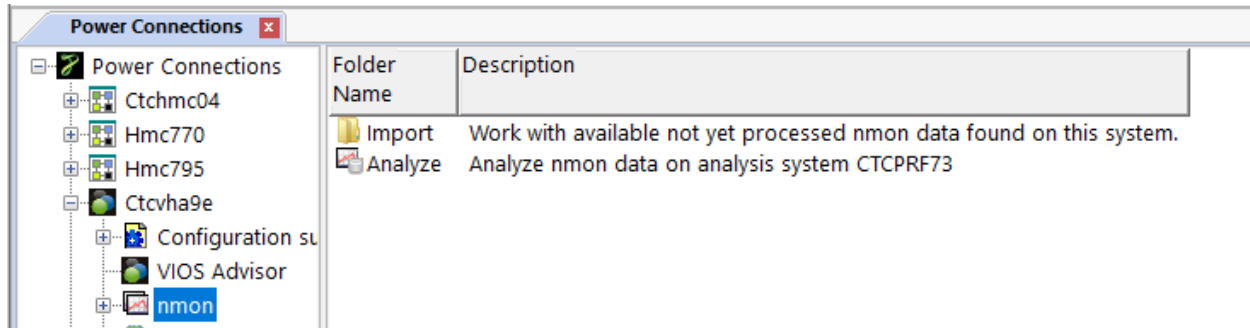
More information on interpreting the results can be found here:

<https://www.ibm.com/docs/en/power7?topic=advisor-virtual-io-server-performance-reports>

## 8 nmon

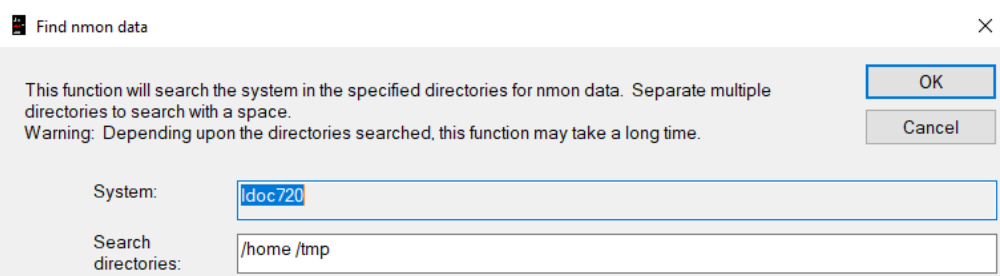
The nmon folder which provides the ability to view nmon data on the VIOS or analyze nmon data found on the analysis database (IBM i).

**Note:** This folder also exists under an IBM i component under General Functions -> Power. This shows any nmon data found in the IFS or ready to be viewed from libraries created on the system.



VIOS -> nmon folder

The following menu options are available when right-clicking the nmon folder:

| Menu                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Explore                           | Displays the contents of the folder in the list.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Upload...                         | <p>This option displays the Upload files from PC window which is used to transfer any previously collected nmon files from the PC to the IFS in the desired directory.</p> <p><b>Note:</b> This option only applies when connected to an IBM i (using General functions -&gt; Power and not via the Power Connections interface.)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Find nmon data                    | <p>This option will scan the specified directories on the current system looking for nmon data. This operation could take seconds to several minutes. Afterwards a refresh of the nmon -&gt; import folder will reveal the data found.</p>  <p>The dialog box titled "Find nmon data" contains the following text: "This function will search the system in the specified directories for nmon data. Separate multiple directories to search with a space. Warning: Depending upon the directories searched, this function may take a long time." It has two input fields: "System:" with the value "ldoc720" and "Search directories:" with the value "/home /tmp". There are "OK" and "Cancel" buttons.</p> |
| Start nmon                        | This option provides several choices for collecting nmon data.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <a href="#">Analyze NMON Data</a> | <p>This option allows you to upload nmon data from your PC to the current analysis system for graphing purposes. After this process completes the data will be available under the Analyze folder.</p> <p><b>Note:</b> If not currently connected to an IBM i, then the data will be sent to the IBM i you have set as the analysis database.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### 8.1 Import

This folder displays the available raw nmon data found on the system that has not yet been processed into the analysis database.

**Note:** To find new data on the system, you must use the Find nmon data menu option.

Power Connections

| Name                      | Size (KBs) | Modified date | Type | Owner      | Symbolic link                          |
|---------------------------|------------|---------------|------|------------|----------------------------------------|
| ..                        |            |               |      |            |                                        |
| ctcvha9e_150417_0726.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_150417_0726.nmon    |
| ctcvha9e_180816_1000.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_180816_1000.nmon    |
| ctcvha9e_180816_1100.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_180816_1100.nmon    |
| ctcvha9e_180816_1200.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_180816_1200.nmon    |
| ctcvha9e_180816_1300.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_180816_1300.nmon    |
| ctcvha9e_180816_1400.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_180816_1400.nmon    |
| ctcvha9e_210407_1042.nmon | .04        | May 31 13:21  | NMON | root staff | /home/padmin/ctcvha9e_210407_1042.nmon |
| ctcvha9e_210407_1052.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_210407_1052.nmon    |
| ctcvha9e_210407_1057.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_210407_1057.nmon    |
| ctcvha9e_210408_0738.nmon | .04        | May 31 13:21  | NMON | root staff | /home/padmin/ctcvha9e_210408_0738.nmon |
| ctcvha9e_210408_0752.nmon | .03        | May 31 13:21  | NMON | root staff | /tmp/nmon/ctcvha9e_210408_0752.nmon    |
| ctcvha9e_220531_1321.nmon | .04        | May 31 13:21  | NMON | root staff | /home/padmin/ctcvha9e_220531_1321.nmon |

VIOS -> nmon -> Import folder

**Note:** The contents of the Import folder are cached and only rebuilt each time the Find NMON data option is used. If these files are removed (outside of this interface) the change will NOT be immediately reflected here and only rerunning the Find option will correct this.

When right-clicking on an .nmon file in this folder, the following additional menu options are available specific to .nmon files:

| Menu                              | Description                                                                                                                                                                                                 |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Open (local copy)                 | This option will cause the .nmon file to be downloaded to the PC and then opened using the default program specified by Windows for .nmon files.                                                            |
| <a href="#">Analyze NMON Data</a> | This menu will cause the selected .nmon files to be processed by the iDoctor stored procedure that analyzes nmon data. Once complete the graphable nmon data can be found under the nmon -> Analyze folder. |

## 8.2 Analyze

This folder shows the list of libraries on the analysis database IBM i that contains nmon data.

Expand a library in the tree to view the collections and the reports they contain.

An example is:

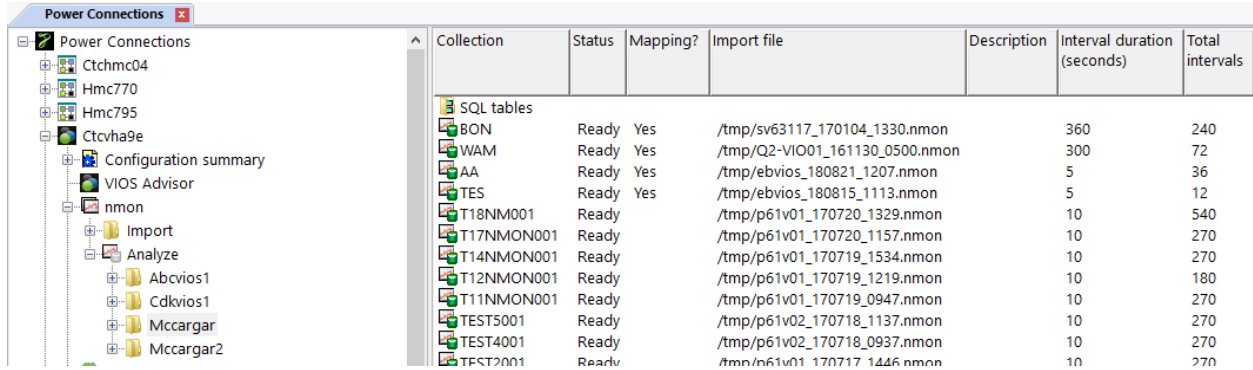
| Power Connections |           | Library Name      | Description | ASP | Owner    |
|-------------------|-----------|-------------------|-------------|-----|----------|
| Power Connections | Abcvios1  |                   |             | 0   | WEAVE    |
| Ctchmc04          | Cdkvios1  | vios data for b01 |             | 0   | WEAVE    |
| Hmc770            | Mccargar  |                   |             | 0   | MCCARGAR |
| Hmc795            | Mccargar2 |                   |             | 0   | MCCARGAR |
| Ctchvha9e         |           |                   |             |     |          |
| Configuration su  |           |                   |             |     |          |
| VIOS Advisor      |           |                   |             |     |          |
| nmon              |           |                   |             |     |          |
| Import            |           |                   |             |     |          |
| Analyze           |           |                   |             |     |          |
| PerfPMR           |           |                   |             |     |          |

Power -> nmon -> Analyze folder

## 8.3 Collections

Each library contains a list of nmon collections that have been imported into it and are ready to graph. Each collection consists of a set of iDoctor created [SQL Tables](#) that were derived from the nmon data and in some cases a VIOS Investigator disk mapping (optional).

Each collection contains a detailed set of reporting options (graphs or tables) within it.



| Collection | Status | Mapping? | Import file                    | Description | Interval duration (seconds) | Total intervals |
|------------|--------|----------|--------------------------------|-------------|-----------------------------|-----------------|
| SQL tables |        |          |                                |             |                             |                 |
| BON        | Ready  | Yes      | /tmp/sv63117_170104_1330.nmon  |             | 360                         | 240             |
| WAM        | Ready  | Yes      | /tmp/Q2-VIO01_161130_0500.nmon |             | 300                         | 72              |
| AA         | Ready  | Yes      | /tmp/ebvios_180821_1207.nmon   |             | 5                           | 36              |
| TES        | Ready  | Yes      | /tmp/ebvios_180815_1113.nmon   |             | 5                           | 12              |
| T18NMON001 | Ready  |          | /tmp/p61v01_170720_1329.nmon   |             | 10                          | 540             |
| T17NMON001 | Ready  |          | /tmp/p61v01_170720_1157.nmon   |             | 10                          | 270             |
| T14NMON001 | Ready  |          | /tmp/p61v01_170719_1534.nmon   |             | 10                          | 270             |
| T12NMON001 | Ready  |          | /tmp/p61v01_170719_1219.nmon   |             | 10                          | 180             |
| T11NMON001 | Ready  |          | /tmp/p61v01_170719_0947.nmon   |             | 10                          | 270             |
| TEST5001   | Ready  |          | /tmp/p61v02_170718_1137.nmon   |             | 10                          | 270             |
| TEST4001   | Ready  |          | /tmp/p61v02_170718_0937.nmon   |             | 10                          | 270             |
| TEST2001   | Ready  |          | /tmp/p61v01_170717_1446.nmon   |             | 10                          | 270             |

*List of nmon collections in library mccargar*

### 8.3.1 Collection Fields

The list of collections contains several columns which are described below:

| Field                | Description                                                                                                                                                                     |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Collection           | Name of the collection. This is a short unique name (10 characters or less) given to the collection at import time based on the collection name prefix value.                   |
| Status               | Indicates if all necessary VIOS Investigator tables have been created successfully.                                                                                             |
| Mapping?             | Indicates if a disk mapping was used when creating this collection. Not having a disk mapping will mean fewer analysis options will be available.                               |
| Import File          | This column displays the original file name that was used when the import occurred.                                                                                             |
| Description          | A description given to the collection when the import occurred.                                                                                                                 |
| Interval duration    | The duration of each interval within the nmon data.                                                                                                                             |
| Total intervals      | The total number of intervals (snapshots) taken.                                                                                                                                |
| Collector version    | Depending on the release of nmon, this is either a version number or TOPAS-NMON.                                                                                                |
| Import time          | The date and time the import occurred.                                                                                                                                          |
| Start time           | The date and time when nmon started.                                                                                                                                            |
| End time             | The date and time when the nmon collection ended.                                                                                                                               |
| Host name            | The name of the host on the system the nmon data was collected on.                                                                                                              |
| Node name            | The node name for the system the nmon data was collected on.                                                                                                                    |
| User name            | The user name that started the nmon collection.                                                                                                                                 |
| Build                | The nmon build number used.                                                                                                                                                     |
| Command              | The command used to create the nmon data.                                                                                                                                       |
| AIX                  | The version of AIX installed when the collection was created.                                                                                                                   |
| System serial number | The system serial number of the system where the nmon data was created.                                                                                                         |
| Mode                 | <p>This indicates the import mode used on the <a href="#">Analyze data window</a> when importing the data into the database.</p> <p>0 = Normal<br/>1 = Append<br/>2 = Merge</p> |

### 8.3.2 Menus

The following menu options are available by right-clicking on a nmon collection.

| Menu                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analyses                             | <p>This contains the list of analysis options available to run against the selected collections. In iDoctor, these analyses are SQL stored procedures.</p> <p>Currently these are the options available:</p> <p><b>Analyze Collection</b> – This is the interface that lets you work with all the analyses.</p> <p><b>Run Change nmon sensitive user data</b> – This will modify the data in the nmon collection to hide/replace potential any customer sensitive data.</p> |
| <a href="#">nmon Analyzer (A-L)</a>  | <p>These graphs are designed to look like the nmon Analyzer Excel spreadsheets as much as possible. This folder contains graphs for sheets named A* through L* as well as the SYS_SUMM sheet.</p> <p><b>Note:</b> The graphs in the nmon Analyzer folders graphs do not offer drill-down options.</p>                                                                                                                                                                       |
| <a href="#">nmon Analyzer (M-Z)</a>  | These graphs are designed to look like the nmon Analyzer Excel spreadsheets as much as possible. This folder contains graphs for sheets named M* through Z*.                                                                                                                                                                                                                                                                                                                |
| <a href="#">nmon Analyzer tables</a> | This folder contains similar representations to some the sheets in nmon Analyzer in table form.                                                                                                                                                                                                                                                                                                                                                                             |
| <a href="#">System</a>               | These are high-level graphs covering a variety of areas on the system (CPU, kernel, paging, memory, configuration, etc)                                                                                                                                                                                                                                                                                                                                                     |
| <a href="#">CPU</a>                  | The CPU graphs show CPU utilizations with or without CPU idle percentages included.                                                                                                                                                                                                                                                                                                                                                                                         |
| <a href="#">Disk</a>                 | The disk graphs display the various disk statistics provided by nmon.                                                                                                                                                                                                                                                                                                                                                                                                       |
| <a href="#">TOP processes</a>        | These graphs show statistics for the Top processes collected by nmon. The top processes are optionally collected using a CPU filtering parameter within the Start NMON Collection Wizard.                                                                                                                                                                                                                                                                                   |
| Generate Reports                     | Launches the Report Generator function that lets you create multiple reports at once.                                                                                                                                                                                                                                                                                                                                                                                       |
| Open import file                     | <p>This option allows the user to the transfer the original .nmon file to the PC and open it.</p> <p><b>Note:</b> This will only work if the original import file still exists on the server.</p>                                                                                                                                                                                                                                                                           |
| <a href="#">Copy</a>                 | This function will copy the desired collection to a different name in the same library or copy one or more selected collections to another library.                                                                                                                                                                                                                                                                                                                         |
| <a href="#">Delete</a>               | <p>Removes the selected collections from the system.</p> <p><b>Note:</b> This action does NOT remove the original .nmon import file from the IFS.</p>                                                                                                                                                                                                                                                                                                                       |
| Rename                               | Renames the specified nmon collection                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Save...                              | Saves the specified nmon collection(s) to a save file on the IBM i.                                                                                                                                                                                                                                                                                                                                                                                                         |
| Transfer to                          | This menu provides several choices for sending the nmon collections to another server or the PC.                                                                                                                                                                                                                                                                                                                                                                            |
| <a href="#">Properties</a>           | This displays general information about the nmon collection.                                                                                                                                                                                                                                                                                                                                                                                                                |

### 8.3.3 Properties

This interface provides general information about the nmon collection such as the command string used to create it, the partition it was created on and when it was captured.

**General**

Collection: ABC8  
 Library: MCCARGAR  
 Description:   
 Partition collected on:  
 Collector version: TOPAS-NMON  
 Command: `/usr/bin/topas_nmon -fTNAdKLMOPVY^ -w 4 -s 60 -c 1440 -m /admin/nmon -youtput_dir=/admin/nmon/col14-v1 -ystart_time=00:00:01`

**Summary:**

Import time: 2022-06-02-15.51.32.104462 Interval duration (secs): 60  
 Start time: 25-APR-2018 00:00:02 Snapshots: 656  
 Avg disk tps: 1  
 Max disk tps: 4  
 Total number of megabytes read: 2  
 Total number of megabytes written: 392  
 Read/write ratio: .0068

**CPU Summary:**

| Description (CPULABEL) | User CPU % (CPUUSERPCT) | System CPU % (CPUSYSPCT) | Wait CPU % (CPUWAITPCT) | Idle CPU % (CPUIDLEPCT) |
|------------------------|-------------------------|--------------------------|-------------------------|-------------------------|
| Avg                    | .1133                   | 1.8989                   | .0323                   | 97.9267                 |
| Max                    | .3000                   | 11.7000                  | 1.2000                  | 99.4000                 |
| Max:Avg                | 2.6487                  | 6.1614                   | 37.1321                 | 1.0150                  |

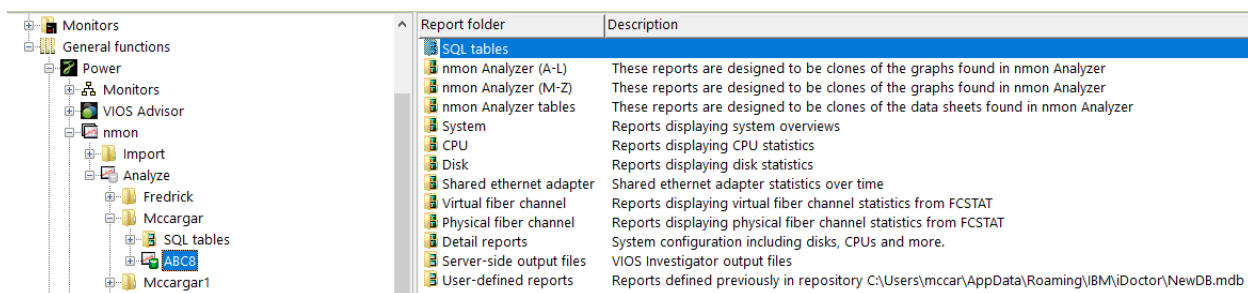
Copy Copy URL OK Cancel

*Nmon -> Collection Properties -> General*

## 8.4 Reports

The next sections describe the reporting options available for nmon collections.

Many graphs are found within several folders under the collection. You can also access this same set of graphs by right-clicking the collection and picking the appropriate menu.



*IBM i Explorer -> nmon -> Analyze -> mccargar -> (Collection) ABC8*

Each folder contains a series of graphs or reports. You can open one by expanding the folder and double-clicking on the desired graph name. You can also open graphs by right-clicking them and choosing the desired menu option to either open the graph in a new Data Viewer or into an existing one.

Some graphs in a folder will have several [alternate views](#) available. This allows you to quickly toggle between one graph and a different one.

**Tip:** Some graph types (such as the disk graphs) support graphing multiple collections at once.

To do this, select all desired collections from the list of collections, then right-click and pick the desired graph from the menu.

---

### 8.4.1 Menus

Right-clicking a graph gives a menu with the following options:

| Menu          | Field Description                                                                                                                                              |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Open graph(s) | Opens the selected graphs into a new Data Viewer or an existing one depending on the submenu available that shows the list of Data Viewers (if any are open).  |
| Edit          | This option will open the graph without running the SQL statement. The SQL Editor will be opened allowing the user to modify the query before running the SQL. |

## 9 nmon Analyzer (A-L)

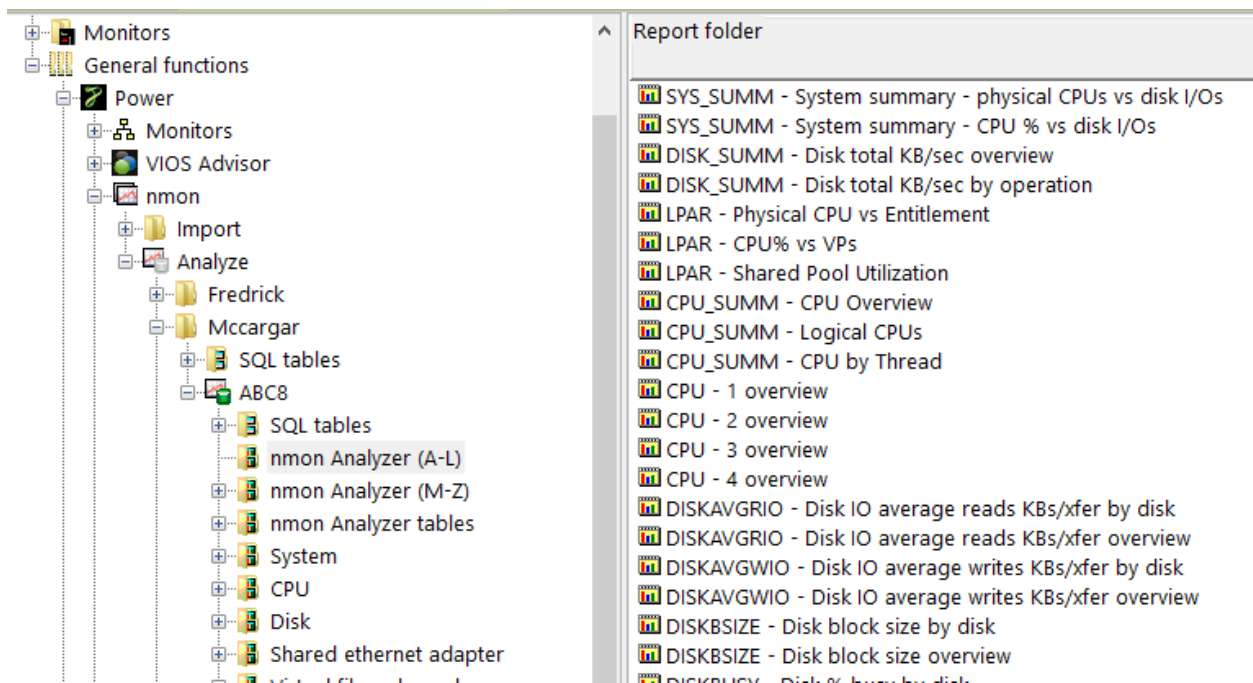
These graphs are designed to look like the graphs/sheets found in the nmon Analyzer Excel spreadsheet.

This section covers all nmon Analyzer sheets from A-L as well as the SYS\_SUMM sheets. The other sheets are also covered but stored in additional folders.

**Note:** Some graphs will NOT appear depending on what data exists in the original nmon file. If the data tag does not exist, then the graphs will not appear here.

For more information on nmon Analyzer, visit this website:

<http://nmon.sourceforge.net/pmwiki.php?n=Site.Nmon-Analyzer>

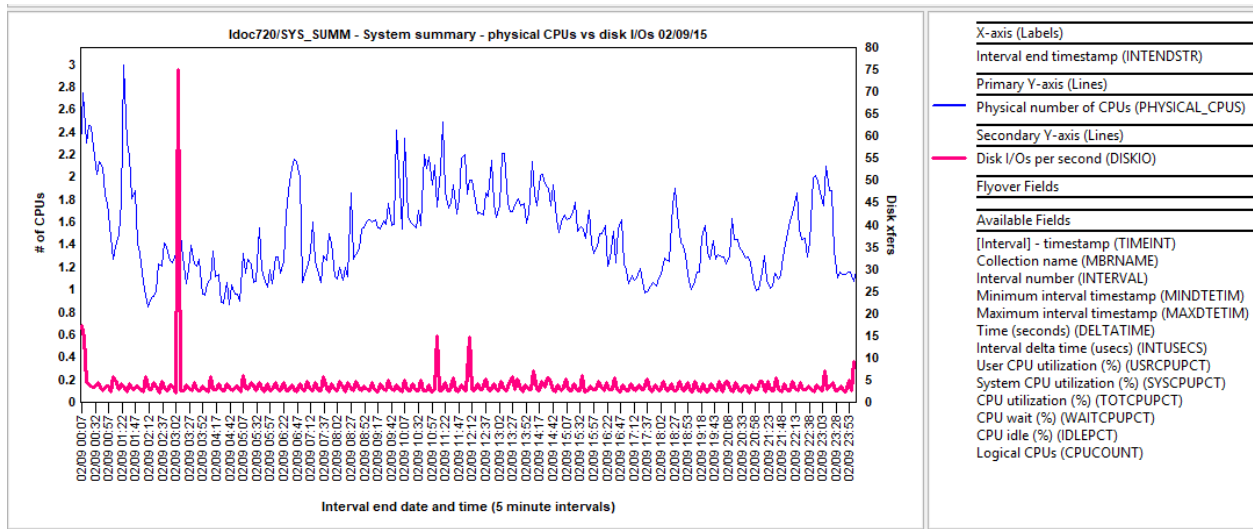


*nmon Analyzer (A-L) folder*

### 9.1 SYS\_SUMM – System summary – physical CPUs vs disk I/Os

This line graph provides a comparison of the # of physical CPUs used vs total disk I/Os over time.

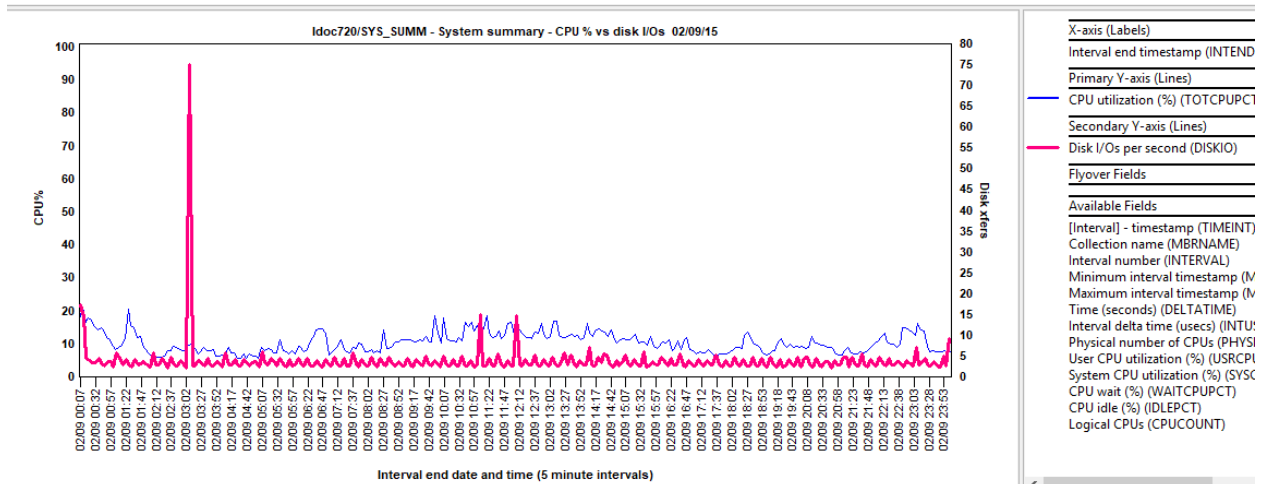
**Note:** This graph requires “LPAR” data records to be returned in the nmon output for the number of physical CPUs to be listed correctly at a value > 0.



SYS\_SUMM – System summary – physical CPUs vs disk I/Os

## 9.2 SYS\_SUMM - System summary - CPU % vs disk I/Os

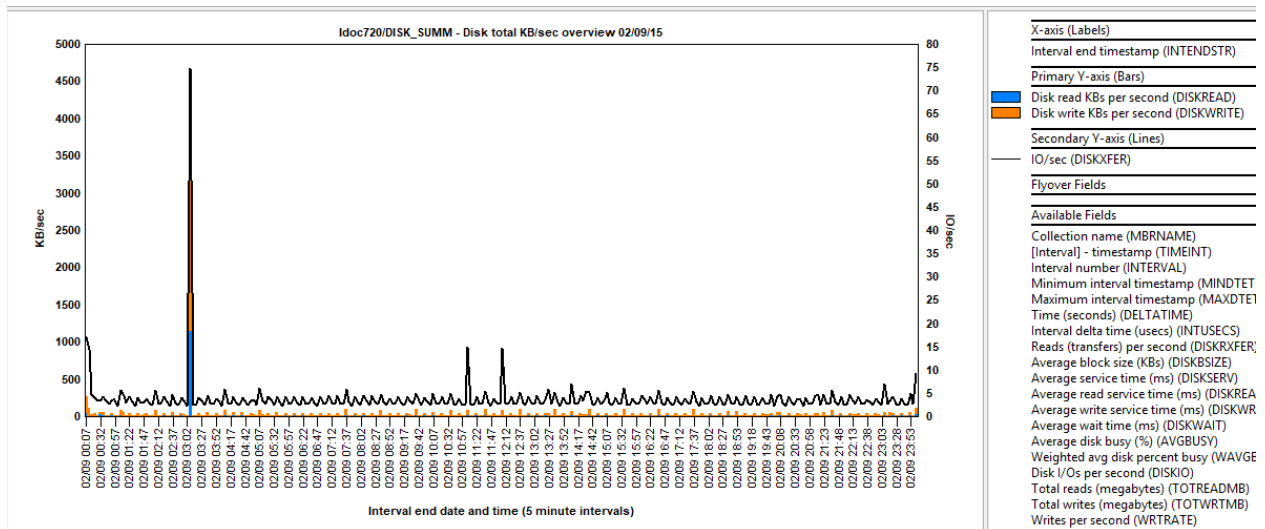
This line graph compares CPU utilization with total disk I/Os over time.



SYS\_SUMM - System summary - CPU % vs disk I/Os

## 9.3 DISK\_SUMM - Disk total KB/sec overview

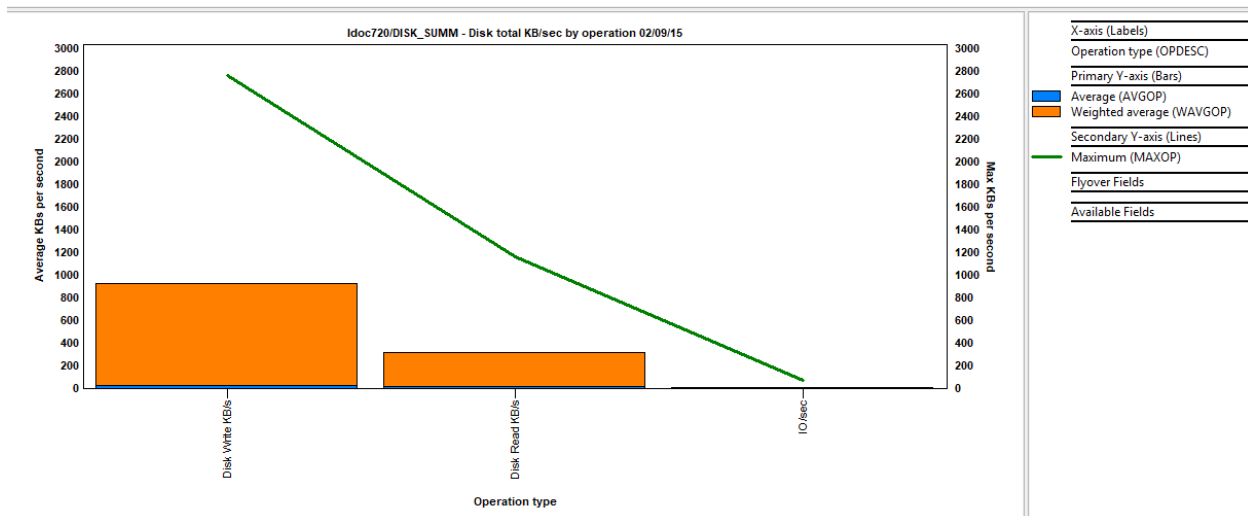
This graph compares disk read and write size rates over time with I/Os per second on the Y2.



DISK\_SUMM - Disk total KB/sec overview

## 9.4 DISK\_SUMM - Disk total KB/sec by operation

This graph displays the avg, weighted average and maximum values for each type of metric in the previous graph.



DISK\_SUMM - Disk total KB/sec by operation

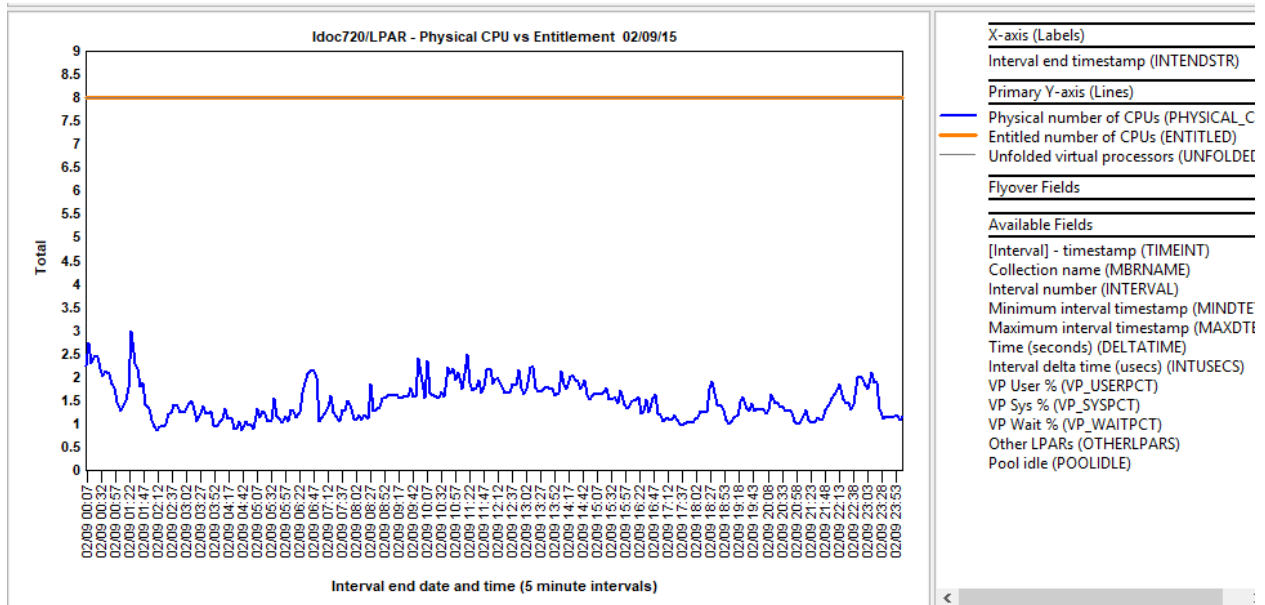
## 9.5 LPAR – Physical CPU vs Entitlement

This graph compares physical CPUs vs entitled CPUs along with the unfolded virtual processors.

For an uncapped partition the number of physical processors may exceed the entitlement but can never exceed the number of virtual processors allocated to the partition. For AIX the graph also shows the number of unfolded virtual processors (AIX will “fold” - stop dispatching work to - excess processors in order to minimize scheduling costs).

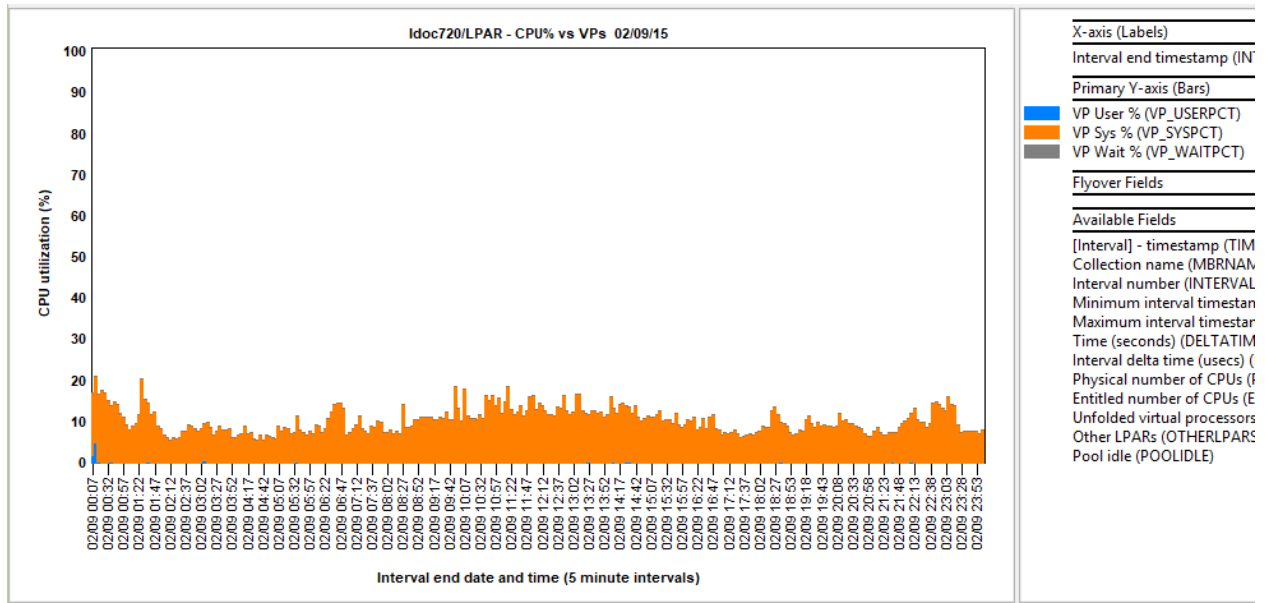
Note that the ratio of physical processor to entitlement (shown as %entc in the output of the `lparstat` command) will generally be higher than CPU% on the CPU\_ALL sheet. The reason for this is that a

partition that is within its entitlement may wait for a short period of time before ceding a processor that enters an I/O wait or becomes idle. This can eliminate unnecessary context switches.



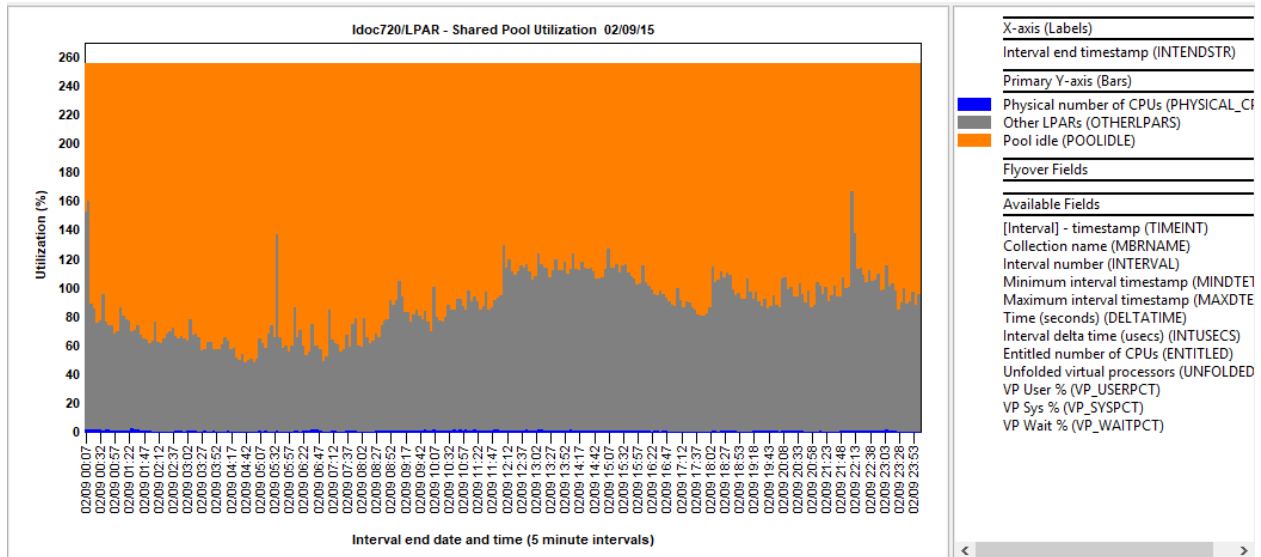
## 9.6 LPAR – CPU% vs VPs

This graph shows CPU utilization as a percentage of virtual processors – for AIX this is broken down in to VP User%, VP Sys% and VP Wait%. This level of detail is not available for Linux or releases of NMON prior to version 12.



## 9.7 LPAR – Shared Pool Utilization

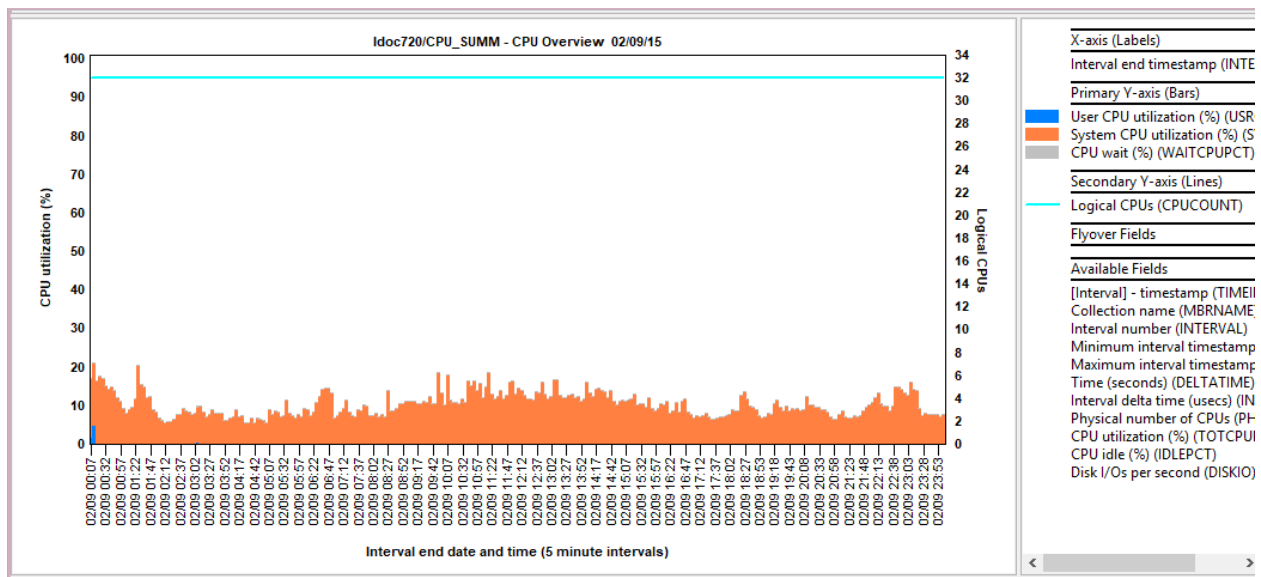
This graph is only present for AIX systems and shows CPU utilization of the shared pool by this and other partitions. Note that if the partition is not authorized to see utilization of the shared pool then the pool will appear to be 100% utilized.



## 9.8 CPU\_SUMM - CPU Overview

This graph provides a breakdown of CPU Utilization by thread (logical processor) and by core over the collection period. The chart can be very useful in identifying situations in which the system is thread-starved (i.e. too few threads to fully utilize the logical processors) or where the workload is dominated by a small number of single-threaded processes.

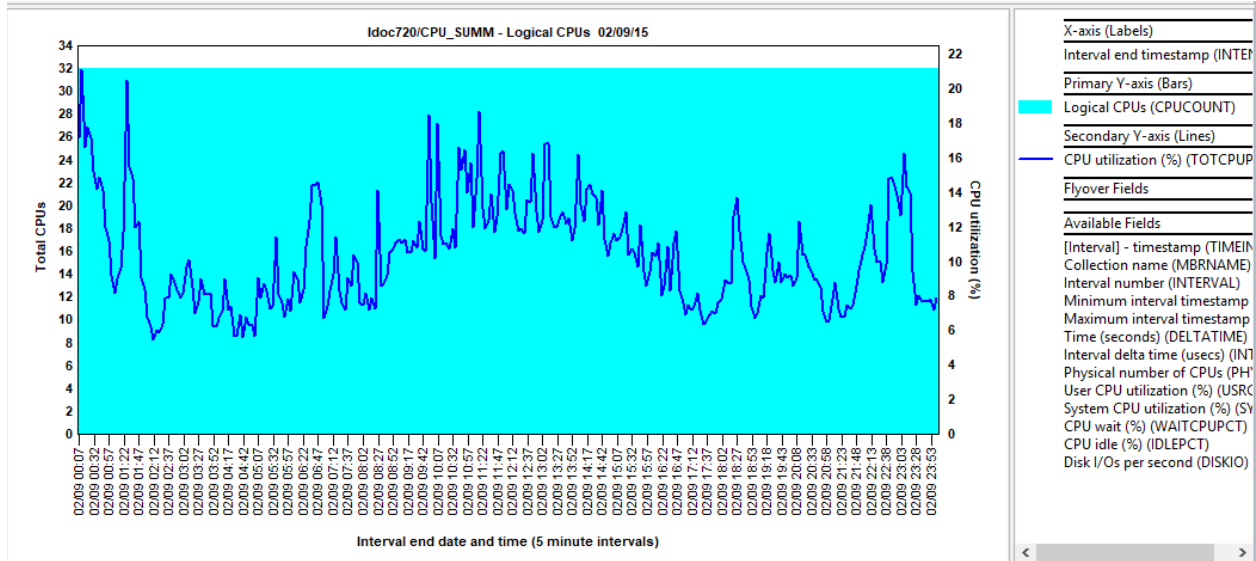
Note that if CPUs have been dynamically reconfigured during the collection period, these figures reflect only those intervals when the CPU was varied on.



CPU\_SUMM - CPU Overview

## 9.9 CPU\_SUMM - Logical CPUs

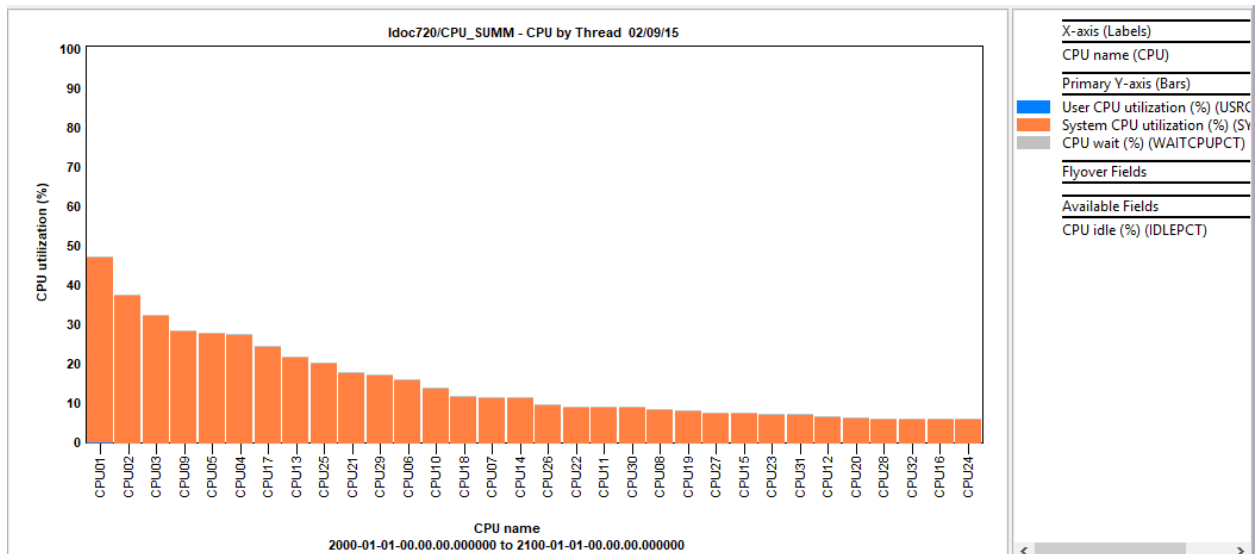
This graphs logical CPUs vs CPU utilization on the Y2.



*CPU\_SUMM - Logical CPUs*

## 9.10 CPU\_SUMM - CPU by Thread

This graph ranks the CPU threads / name.

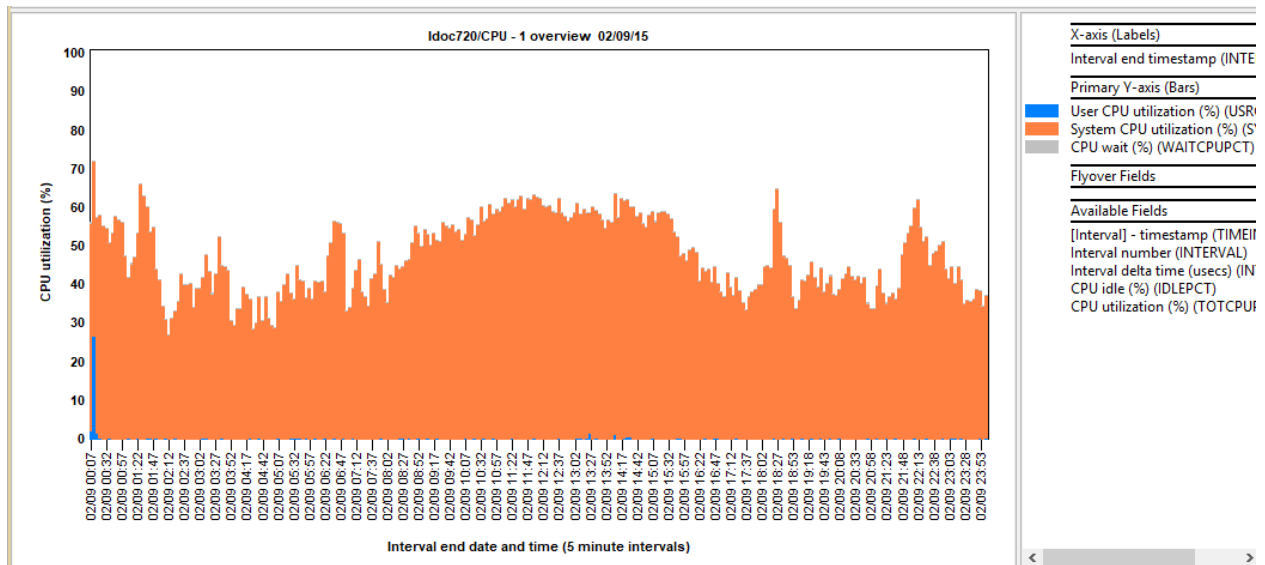


*CPU\_SUMM - CPU by Thread*

## 9.11 CPU – N Overview

These sheets show User CPU utilization, System %, CPU wait% and CPU idle % by time of day for each logical processor. Note that for micro partitions, the CPU Idle % and CPU Wait % figures will include times when the physical processor was ceded to the shared pool.

Typically only graphs for CPU numbers 1-4 are provided but the SQL statement can be easily modified to change this graph.



## 9.12 DISKAVGRIO - Disk IO Average reads KBs/xfer by disk

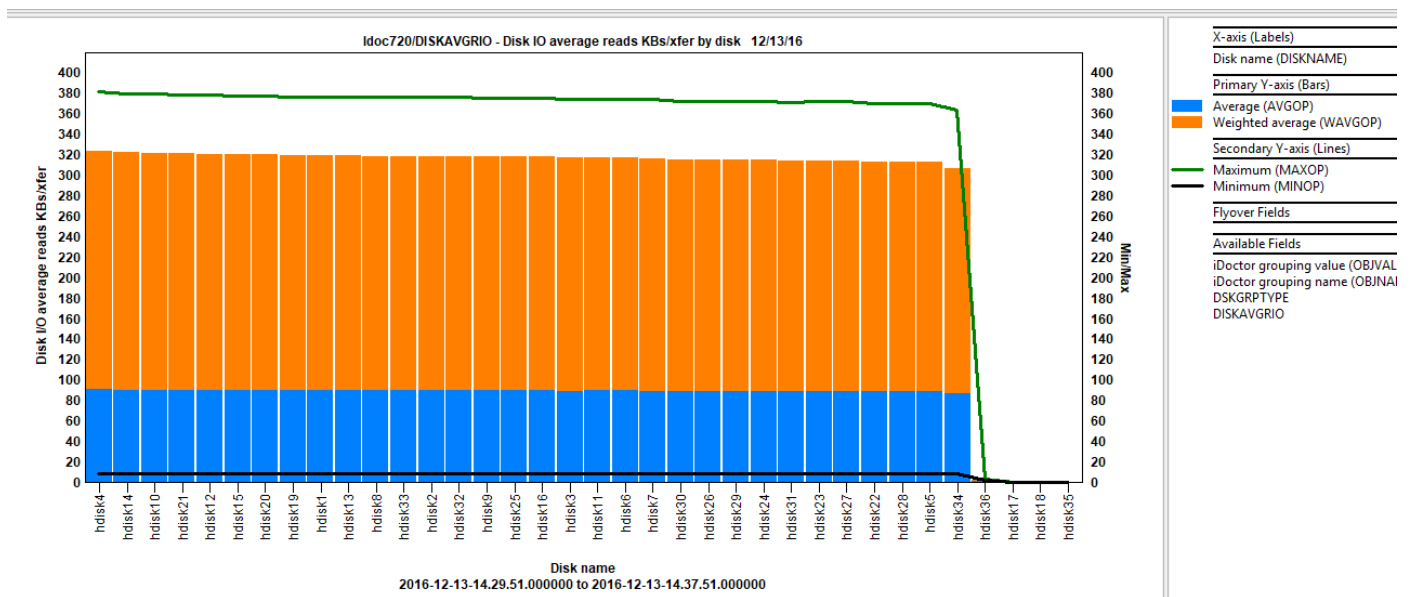
This graph shows the average disk read KBs per IO per disk and compares that with the min and max values on the Y2.

**NOTE:** AIX documentation here states the following which means the current nmon produced description "Disk IO Average Reads per second" for this field is **wrong**:

[https://www.ibm.com/support/knowledgecenter/en/ssw\\_aix\\_72/com.ibm.aix.prftools/io\\_stat.htm](https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.prftools/io_stat.htm)

*DISKAVGRIO, Disk IO Average Reads KBs/xfer*

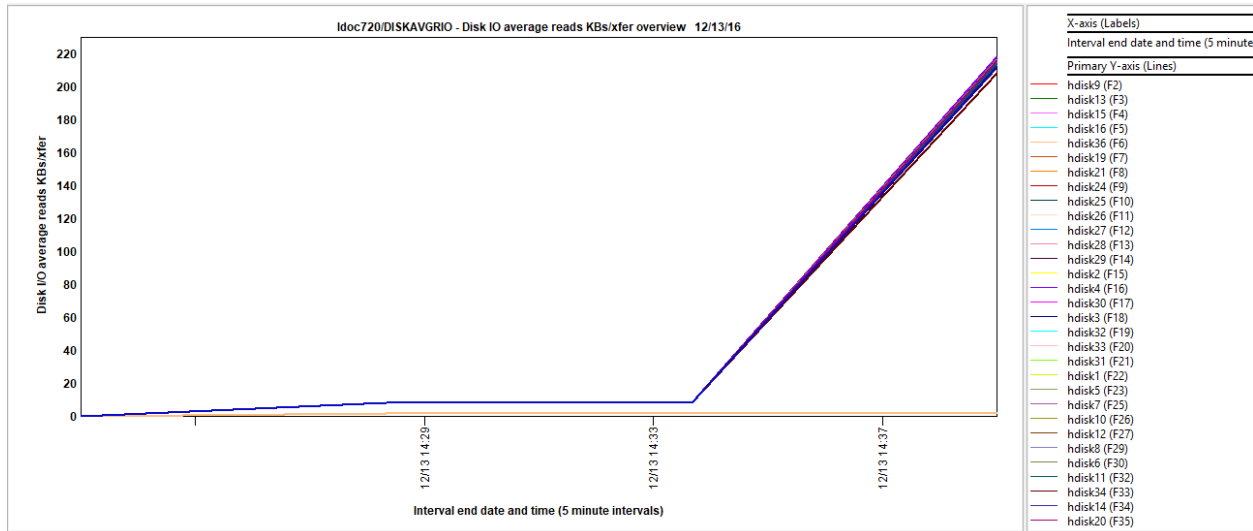
*Average number of KBs that are read from the disk per read I/O operation.*



*DISKAVGRIO - Disk IO Average reads KBs/xfer by disk*

## 9.13 DISKAVGRIO – Disk IO Average reads KBs/xfer overview

This graph displays the average disk read KBs per IO over time. **Note:** It will only work well for a limited number of disks. If you have more than 48 disks only the 1<sup>st</sup> 48 disks in the data will be shown.



## 9.14 DISKAVGWIO - Disk IO Average writes per second by disk

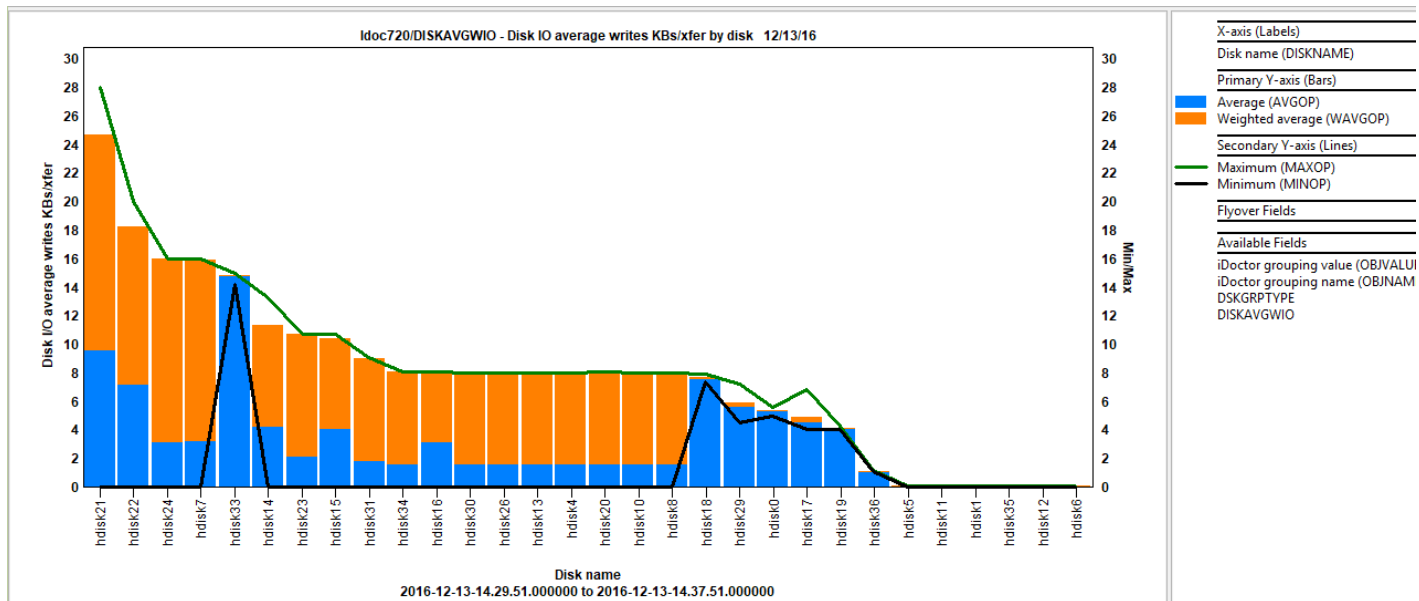
This graph shows the average disk writes KBs per IO per disk and compares that with the min and max values on the Y2.

**NOTE:** AIX documentation here states the following which means the current nmon produced description "Disk IO Average Writes per second" for this field is **wrong**:

[https://www.ibm.com/support/knowledgecenter/en/ssw\\_aix\\_72/com.ibm.aix.prftools/io\\_stat.htm](https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.prftools/io_stat.htm)

DISKAVGWIO, Disk IO Average Writes KBs/xfer

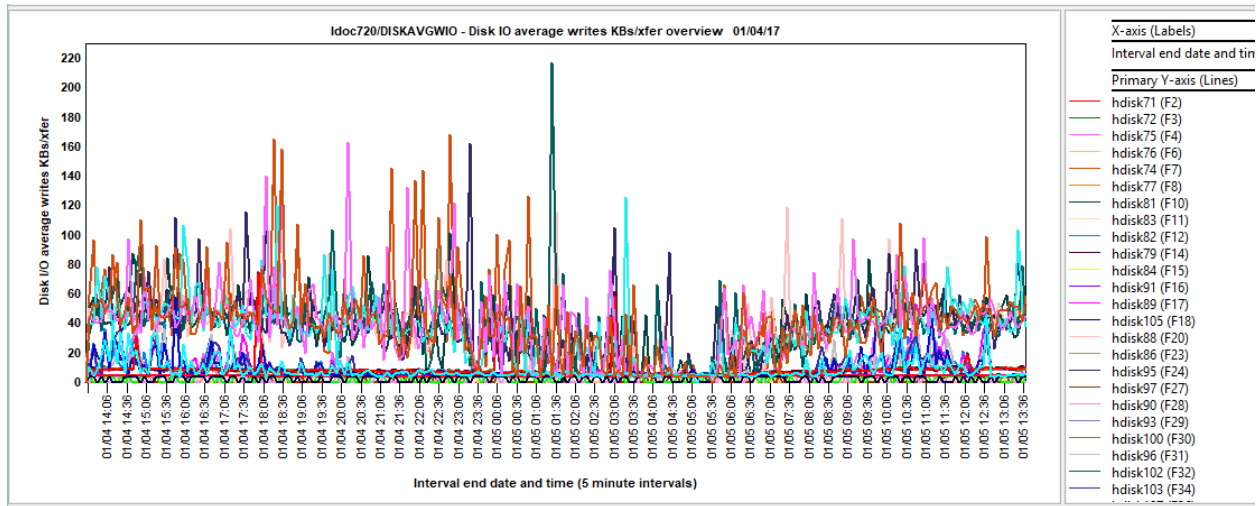
Average number of KBs that are written to the disk per write I/O operation.



DISKAVGRIO - Disk IO Average writes KBs/xfer by disk

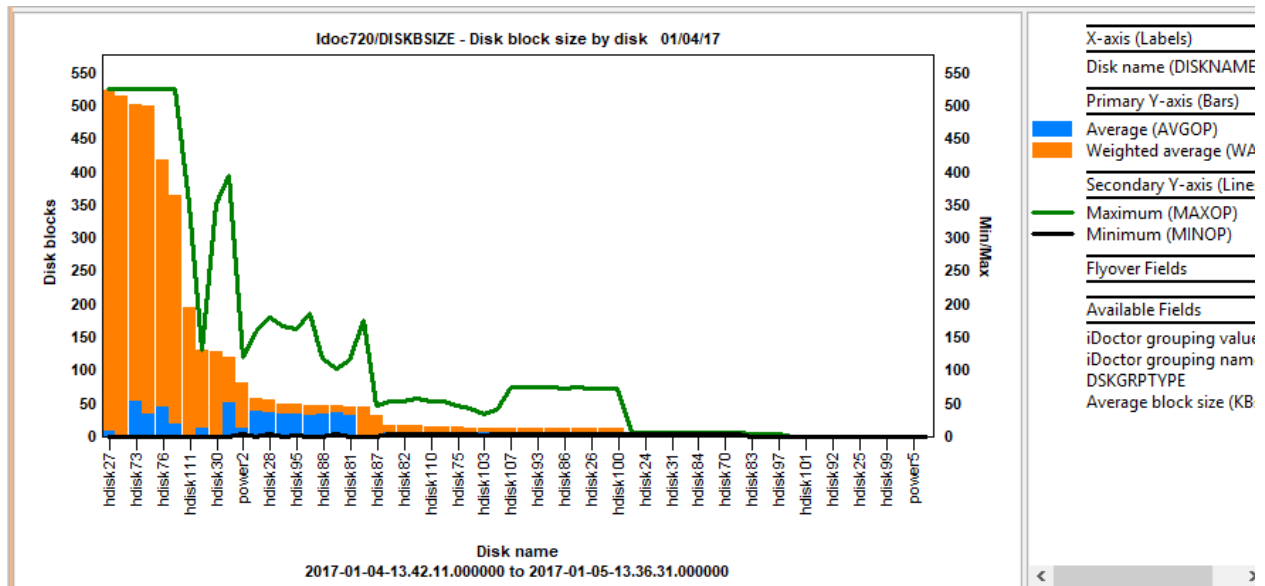
## 9.15 DISKAVGWIO – Disk IO Average writes KBs/xfer overview

This graph displays the average disk read KBs per IO over time. **Note:** It will only work well for a limited number of disks. If you have more than 48 disks only the 1<sup>st</sup> 48 disks in the data will be shown.



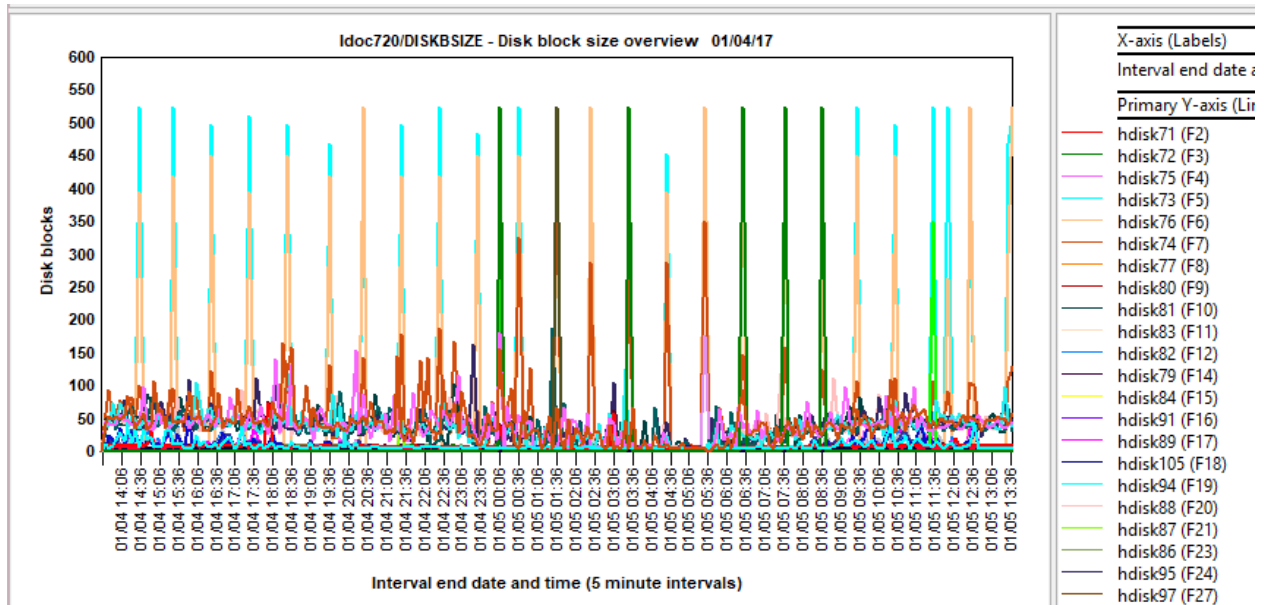
## 9.16 DISKBSIZE – Disk block size by disk

This graph shows the average disk blocks read and written per disk and compares that with the min and max values on the Y2. If this number is not very close to the stripe size for the device there may be a problem that could be solved by increasing the value of numclust.



## 9.17 DISKBSIZE – Disk block size overview

This graph displays each disk's total disk blocks read/written over time. **Note:** It will only work well for a limited number of disks. If you have more than 48 disks only the 1<sup>st</sup> 48 disks in the data will be shown.



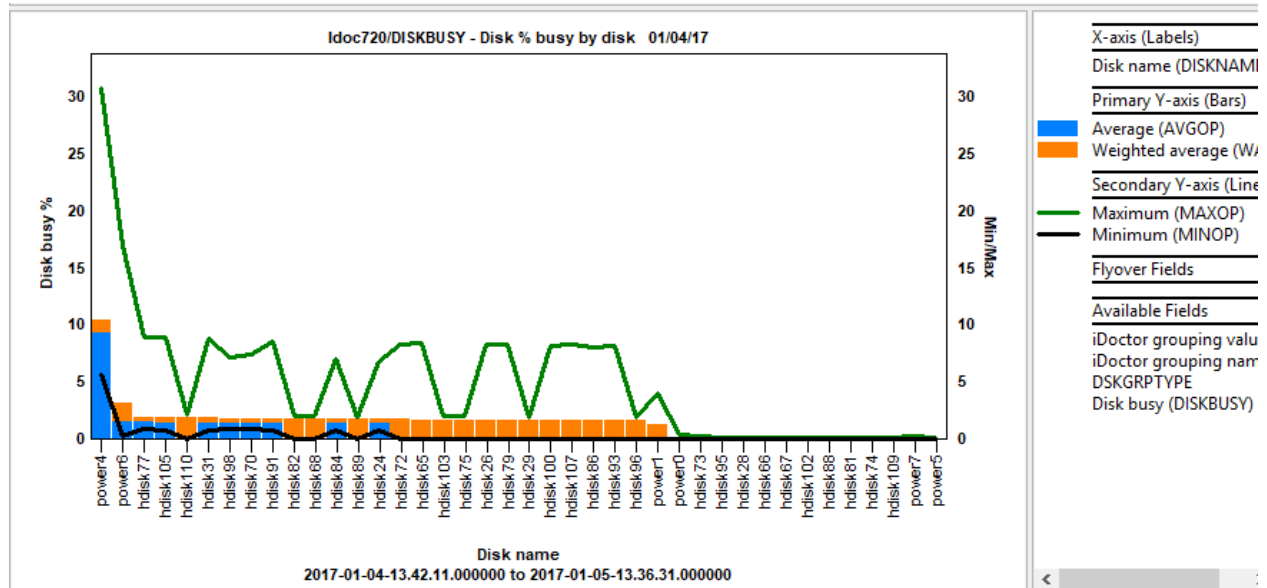
## 9.18 DISKBUSY – Disk % busy by disk

This graph shows the average disk percent busy and compares that with the min and max values on the Y2.

This is the same as the %tm\_act value recorded by iostat.

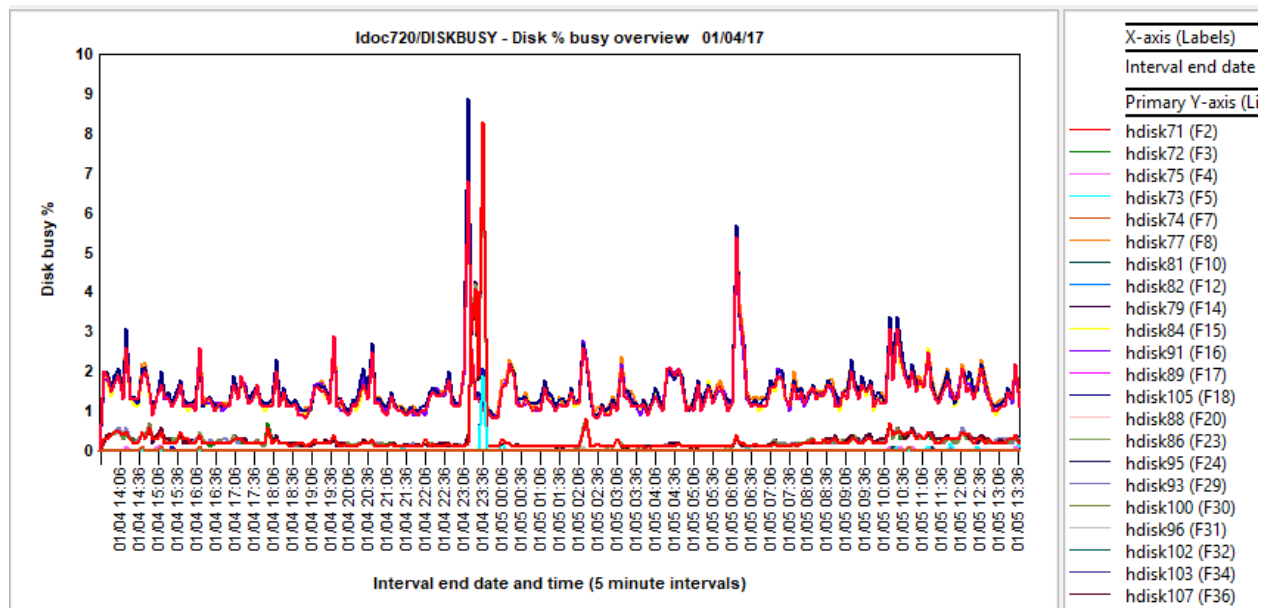
**Note:** if this graph contains all zero values then it means you forgot to enable iostat collection before starting nmon:

```
chdev -l sys0 -a iostat=true
```



## 9.19 DISKBUSY – Disk % busy overview

This graph displays each disk's percent busy over time as a line graph. **Note:** It will only work well for a limited number of disks. If you have more than 48 disks only the 1<sup>st</sup> 48 disks in the data will be shown.

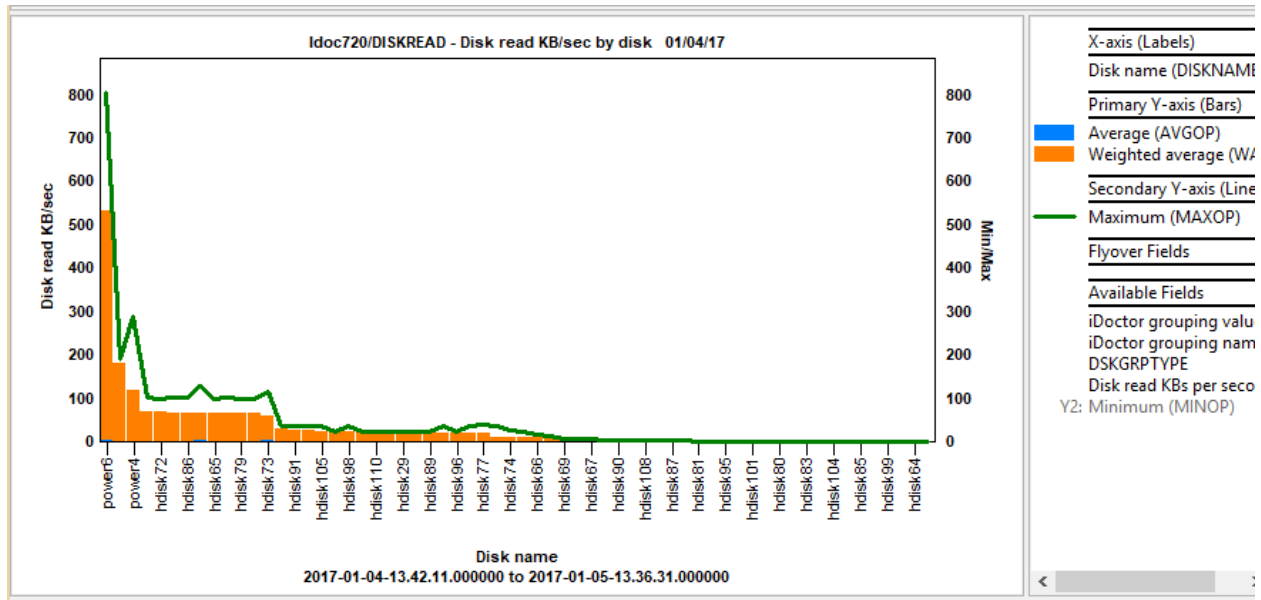


## 9.20 DISKREAD – Disk read KB/sec by disk

This graph shows the average disk read KB/sec and compares that with the min and max values on the Y2.

**DISKREAD, Disk Read KB/s**

Total read operations from the disk in KBs per second.

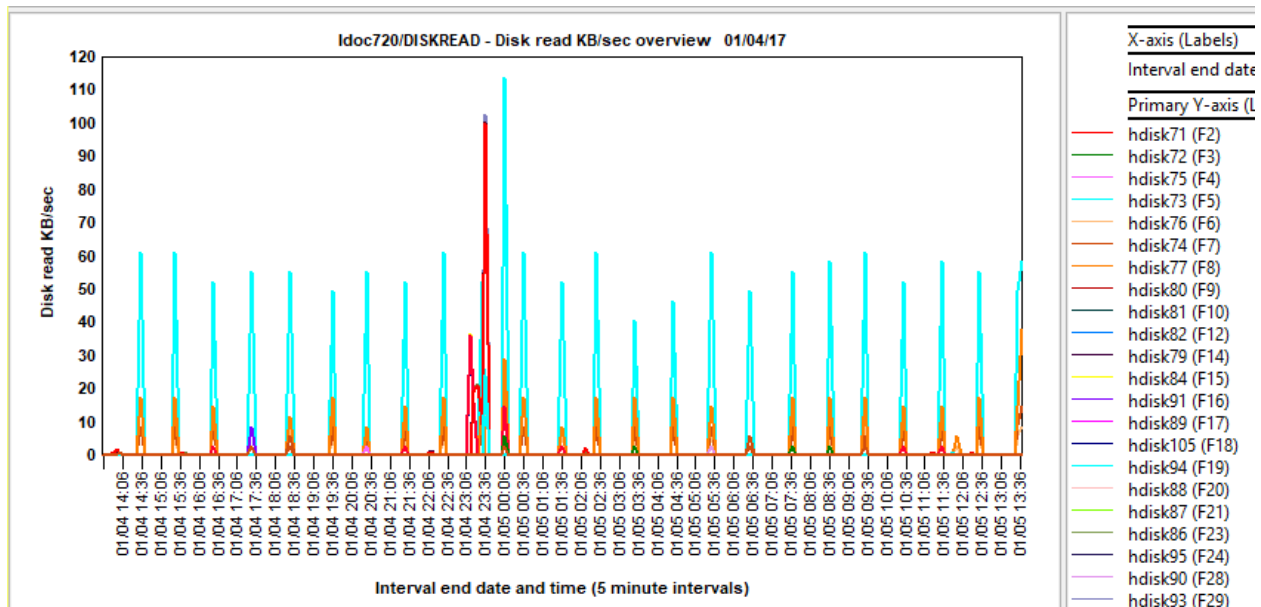


## 9.21 DISKREAD – Disk read KB/sec overview

This graph shows the average disk read KBs/sec over time as a line graph. **Note:** It will only show a maximum of 48 disks.

**DISKREAD, Disk Read KB/s**

Total read operations from the disk in KBs per second.

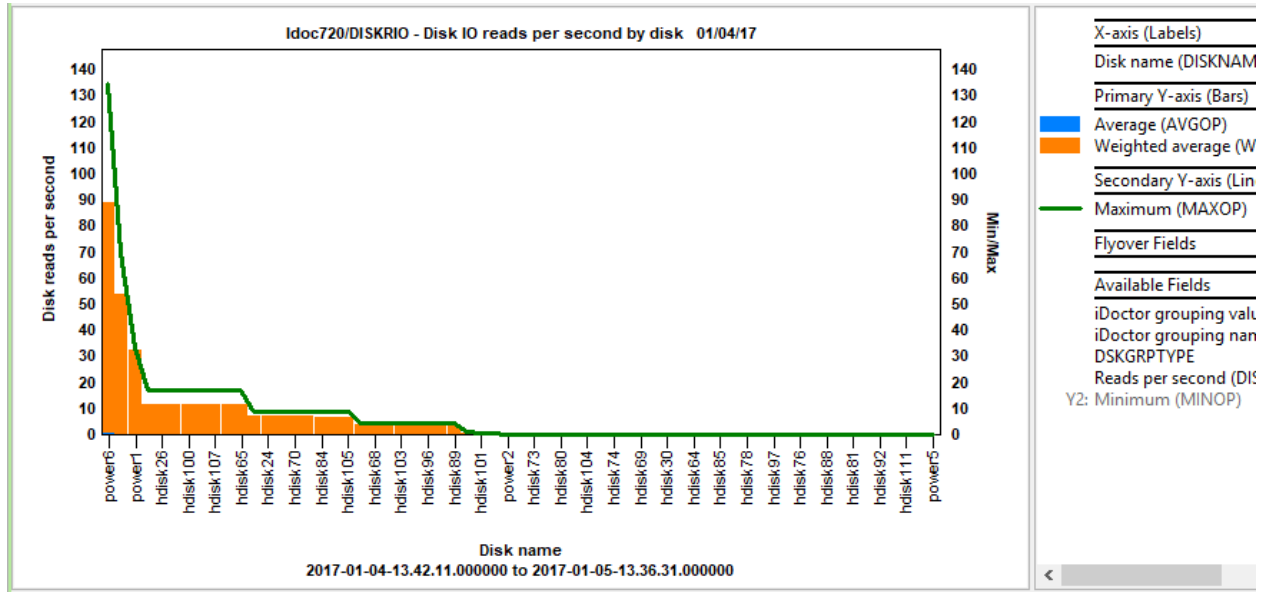


## 9.22 DISKRIO – Disk IO reads per second by disk

This graph shows the average disk reads per second and compares that with the min and max values on the Y2.

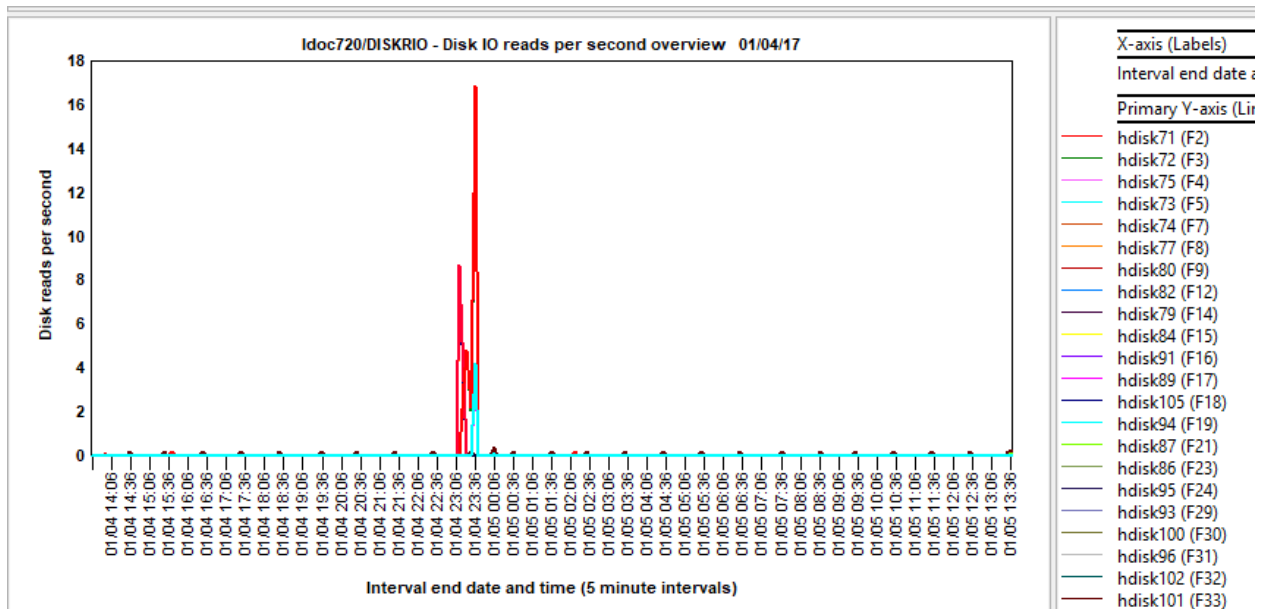
**DISKRIO, Disk IO Reads per second**

Number of disk read I/O transfers per second.



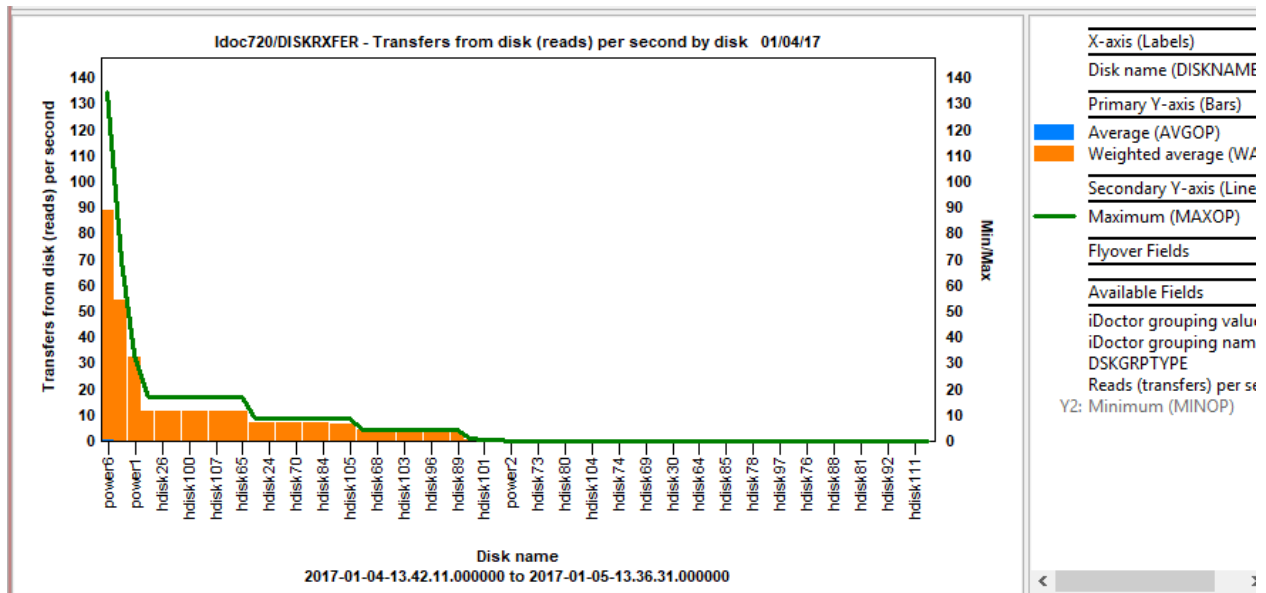
## 9.23 DISKRIO – Disk IO reads per second overview

This graph shows the average disk read per second overtime as a line graph. **Note:** It will only show a maximum of 48 disks.



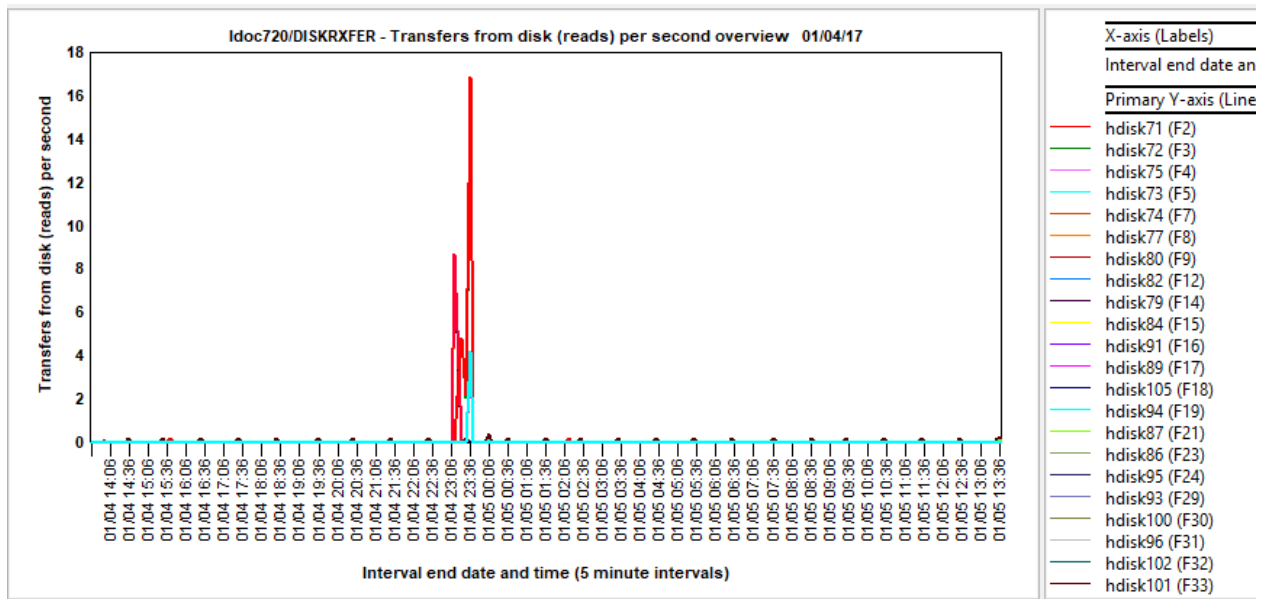
## 9.24 DISKRXFER – Transfer from disk (reads) per second by disk

This graph shows the average transfer from disk reads per second and compares that with the min and max values on the Y2.



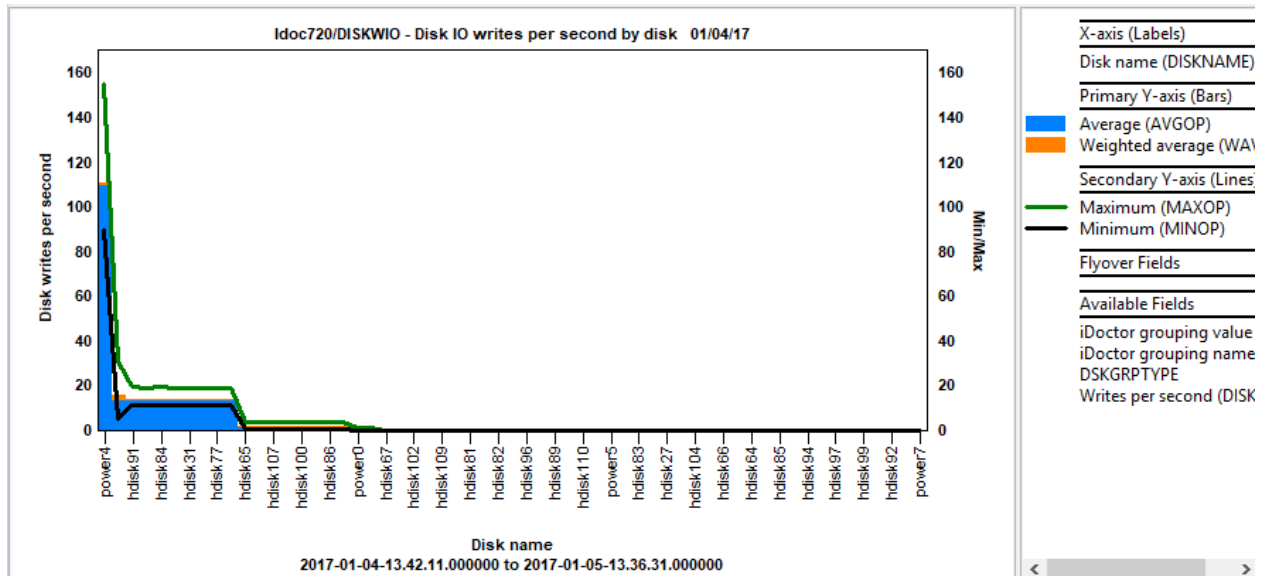
## 9.25 DISKRXFER – Transfer from disk (reads) per second overview

**Note:** It will only show a maximum of 48 disks.



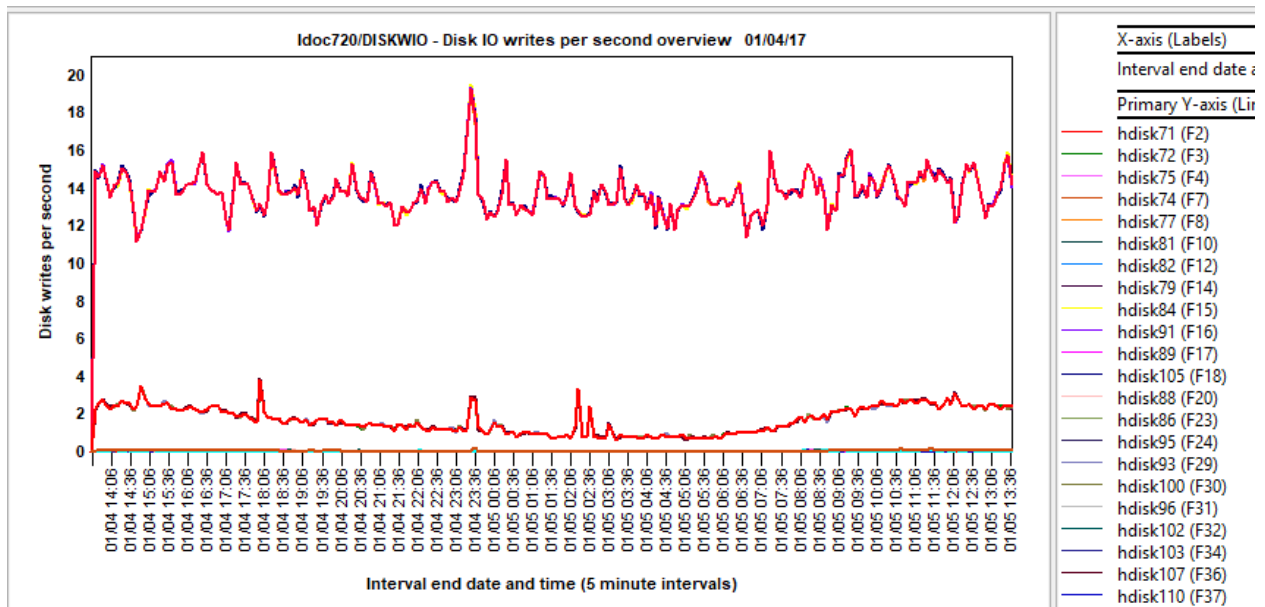
## 9.26 DISKWIO – Disk IO writes per second by disk

This graph shows the average disk writes per second and compares that with the min and max values on the Y2.



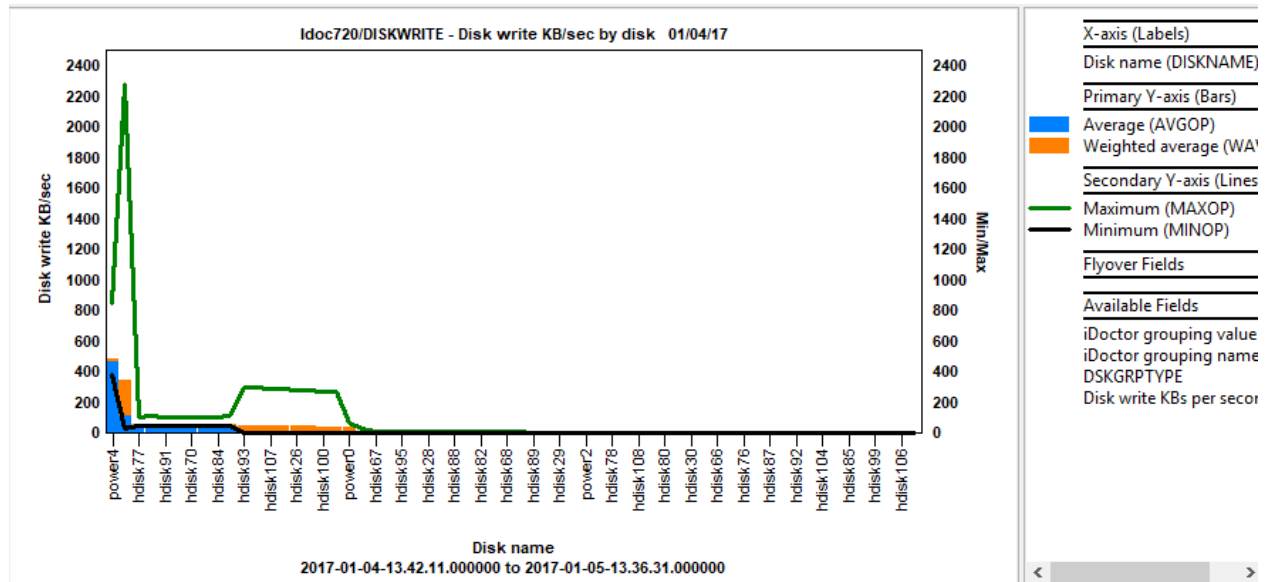
## 9.27 DISKWIO – Disk IO writes per second overview

**Note:** It will only show a maximum of 48 disks.



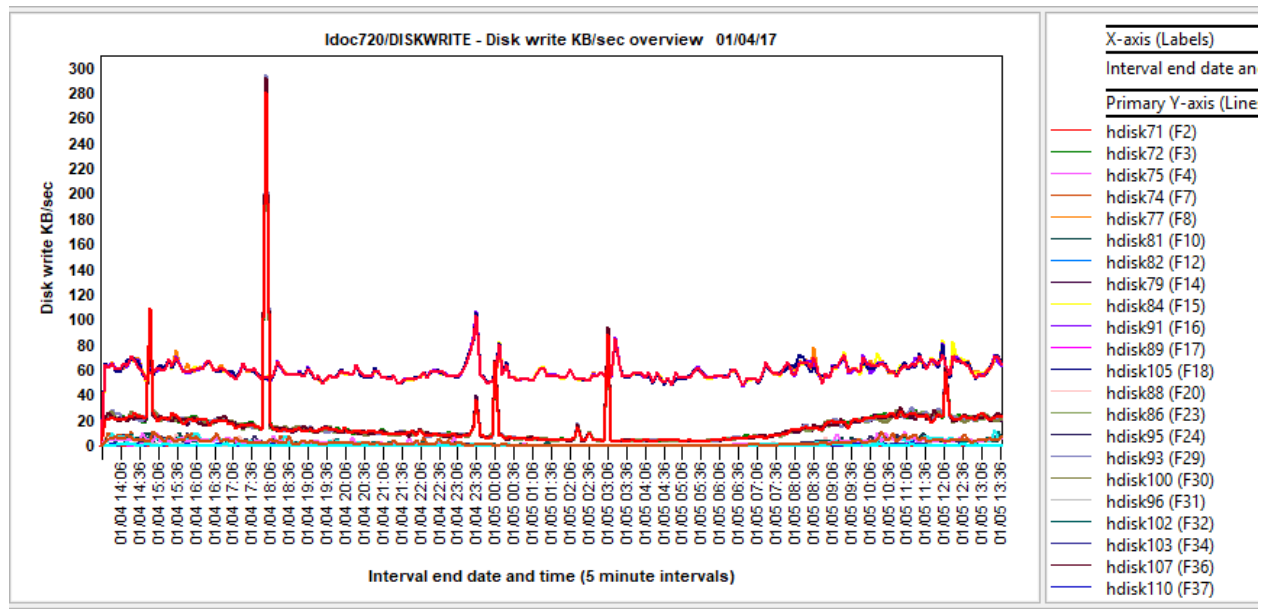
## 9.28 DISKWRITE – Disk write KB/sec by disk

This graph shows the average disk write size (in KB/sec) and compares that with the min and max values on the Y2.



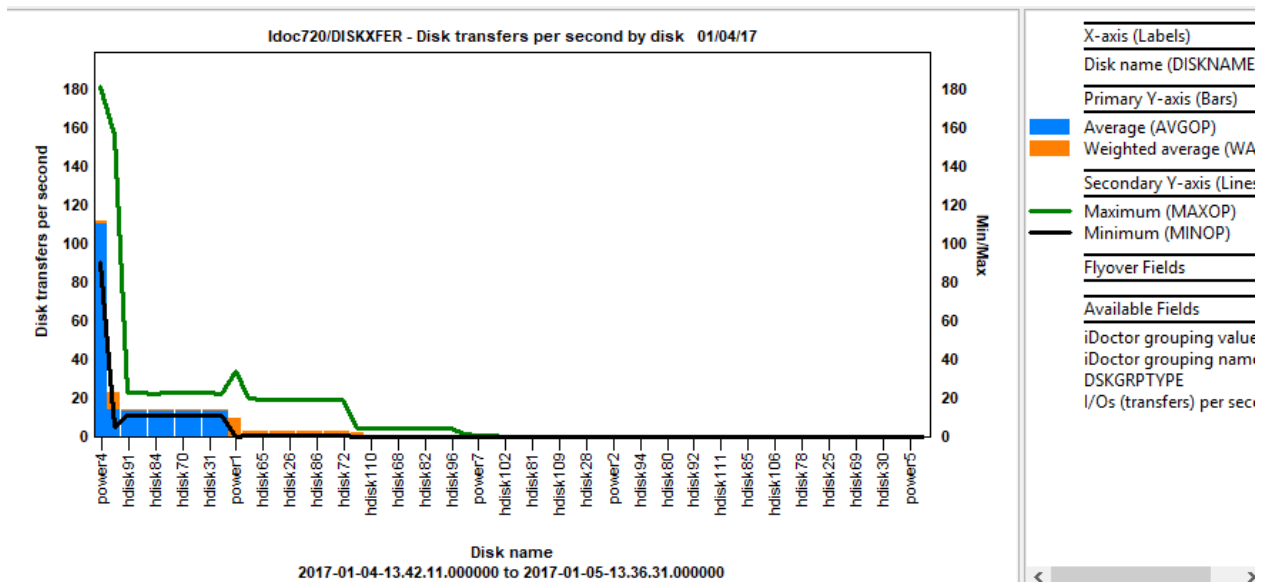
## 9.29 DISKWRITE – Disk write KB/sec overview

**Note:** It will only show a maximum of 48 disks.



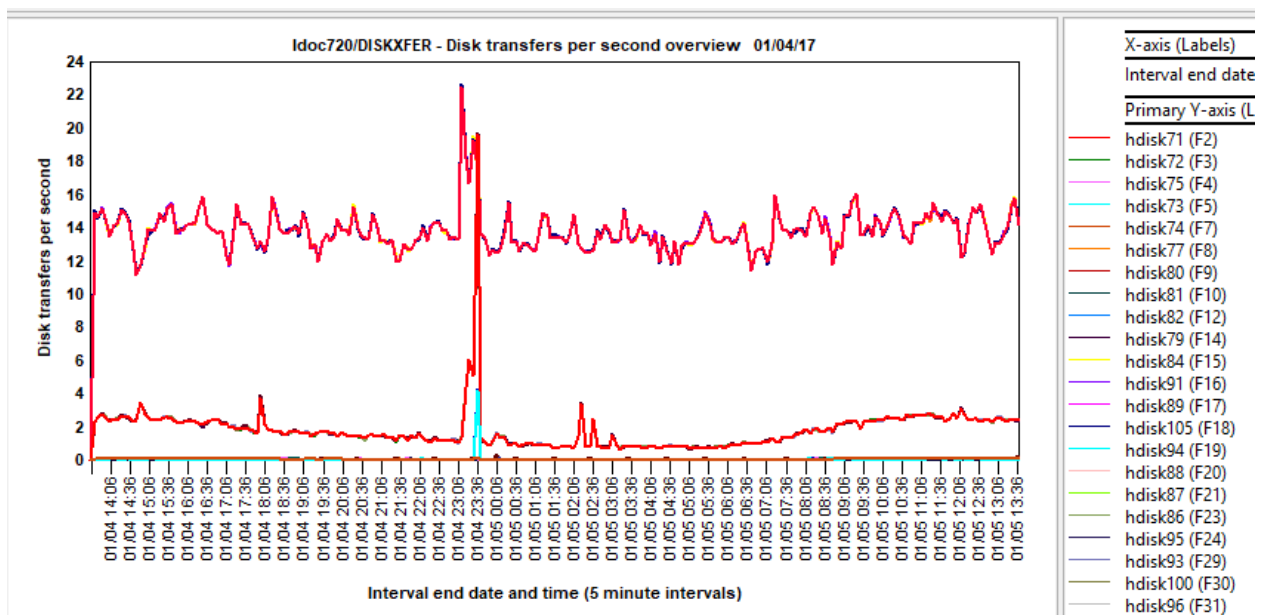
## 9.30 DISKXFER – Disk transfers per second by disk

This graph shows the average disk transfers per second and compares that with the min and max values on the Y2.



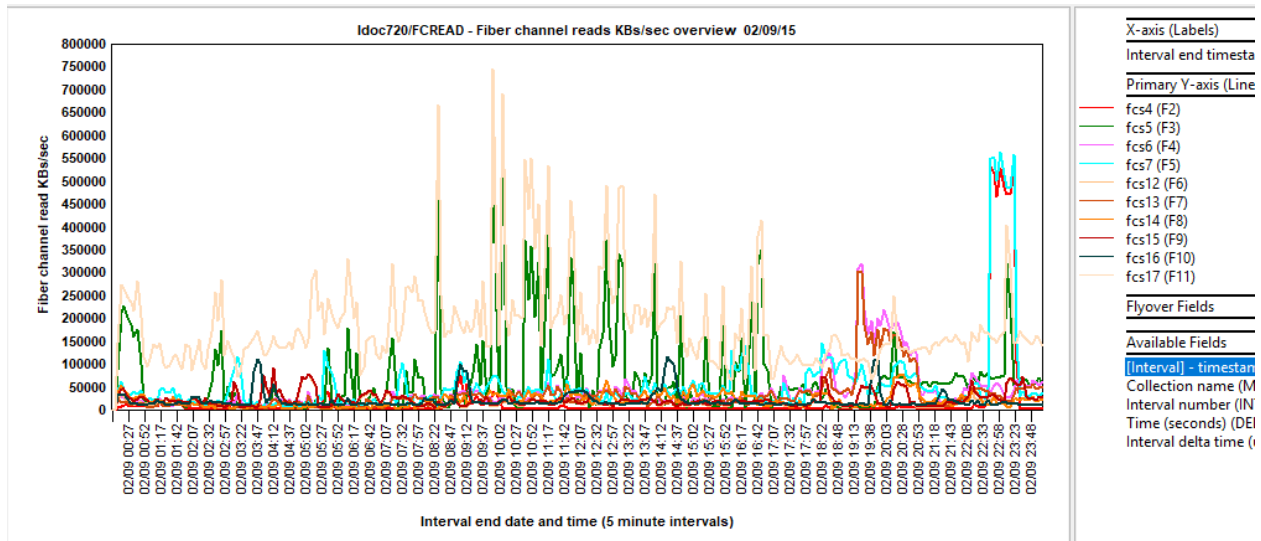
## 9.31 DISKXFER – Disk transfers per second overview

**Note:** It will only show a maximum of 48 disks.



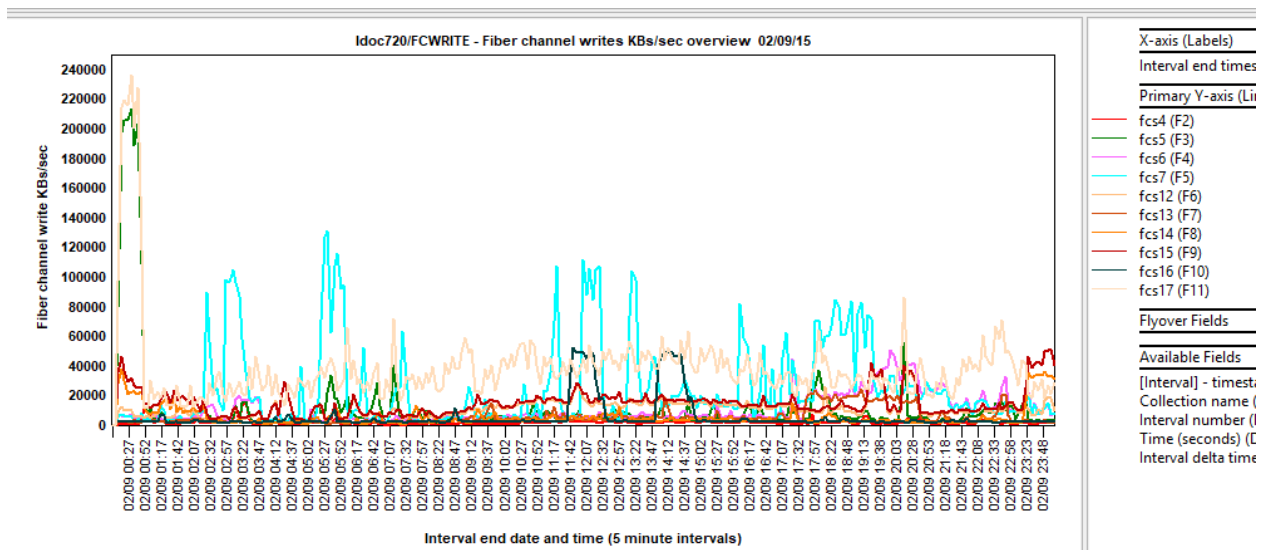
## 9.32 FCREAD – Fiber channel reads KBs/sec overview

This graph displays the data rate (KBs/sec) for read operations on each Fiber Channel adapter in the system. **Note:** It will only show a maximum of 48 adapters.



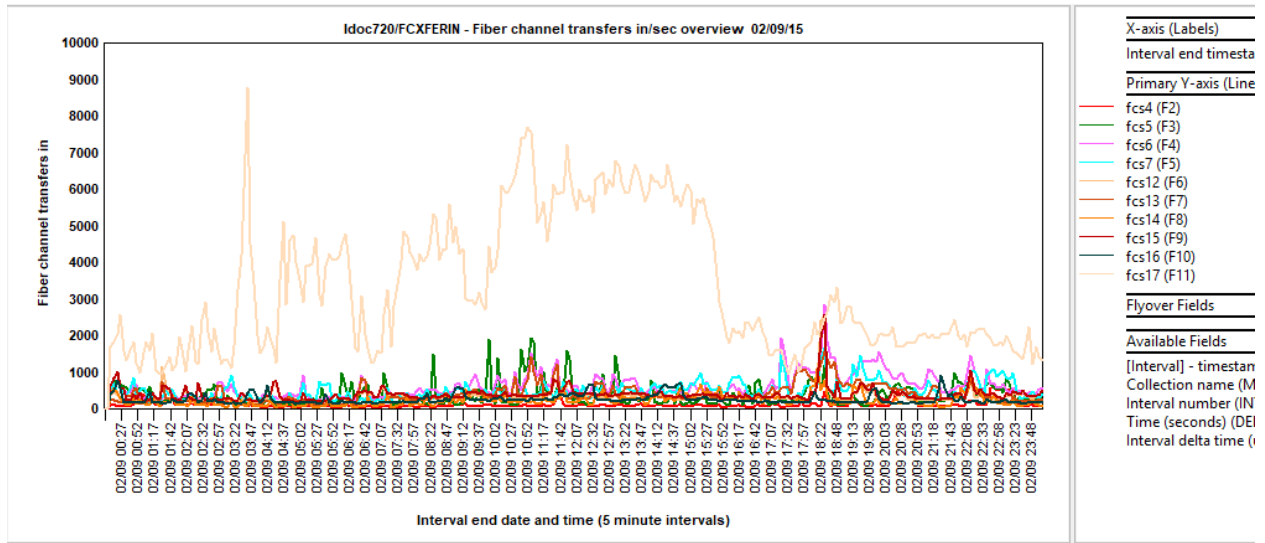
### 9.33 FCWRITE – Fiber channel writes KBs/sec overview

This graph displays the data rate (KBs/sec) for write operations on each Fiber Channel adapter in the system. **Note:** It will only show a maximum of 48 adapters.



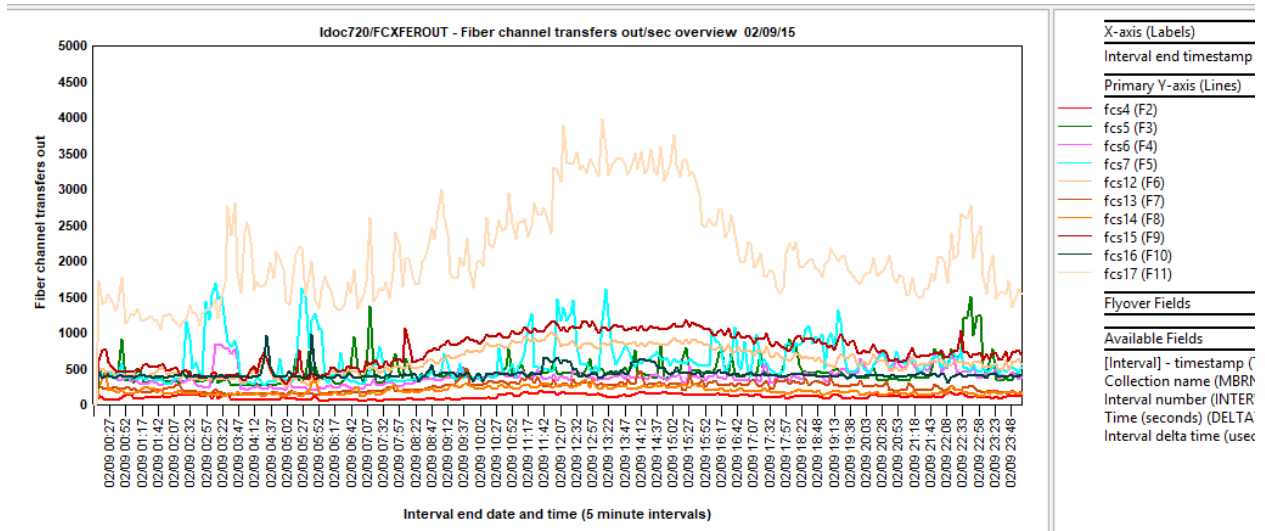
### 9.34 FCXREFIN – Fiber channel transfers in/sec overview

This graph displays the read operations per second on each Fiber Channel adapter in the system. **Note:** It will only show a maximum of 48 adapters.



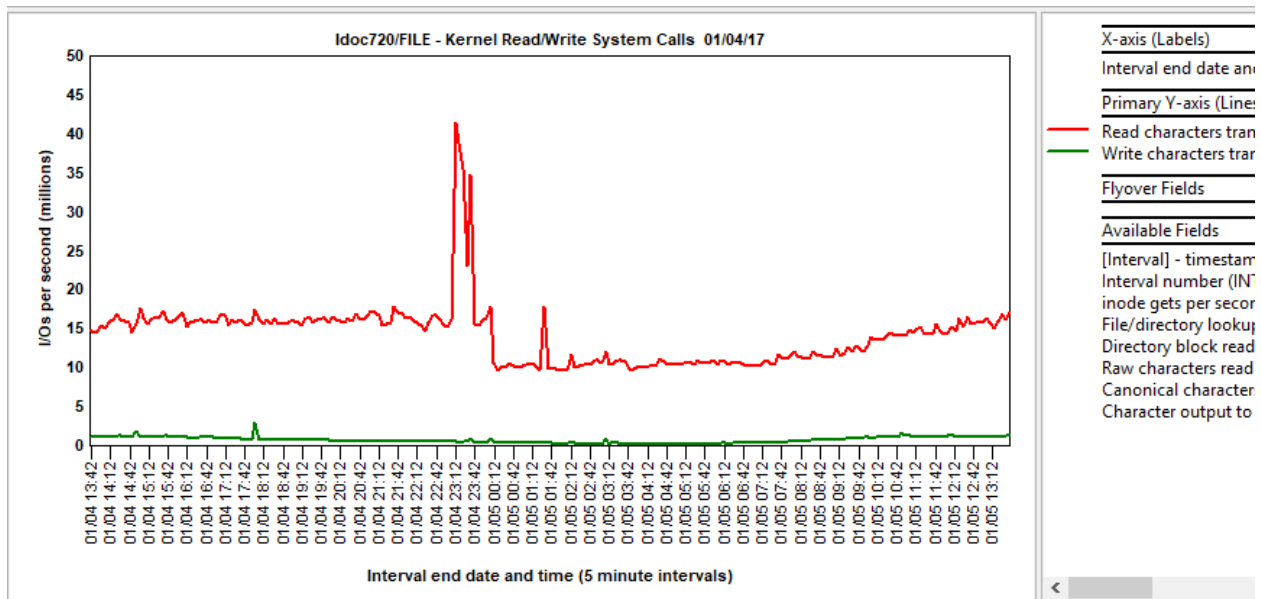
## 9.35 FCXREFOUT – Fiber channel transfers out/sec overview

This graph displays the write operations per second on each Fiber Channel adapter in the system. **Note:** It will only show a maximum of 48 adapters.



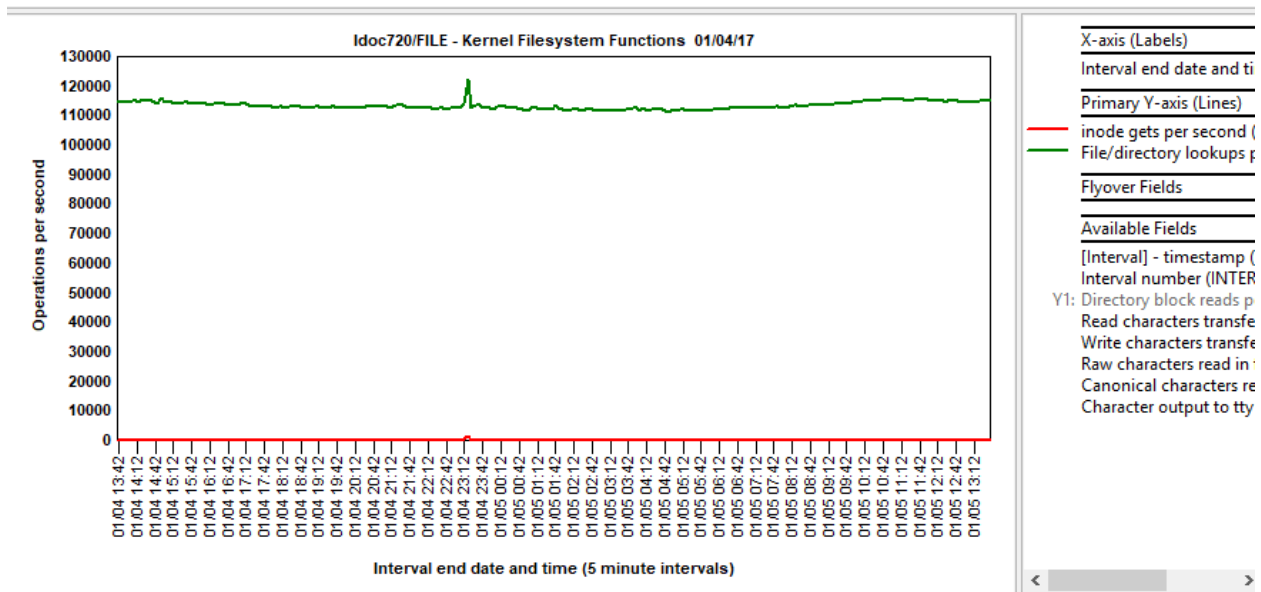
## 9.36 FILE – Kernel Read/Write System Calls

This graph displays the number of characters transferred per second (in millions) for both read and write system calls.



## 9.37 FILE – Kernel Filesystem Functions

This graph displays operations per second for inode gets, file/directory lookups and directory block reads.

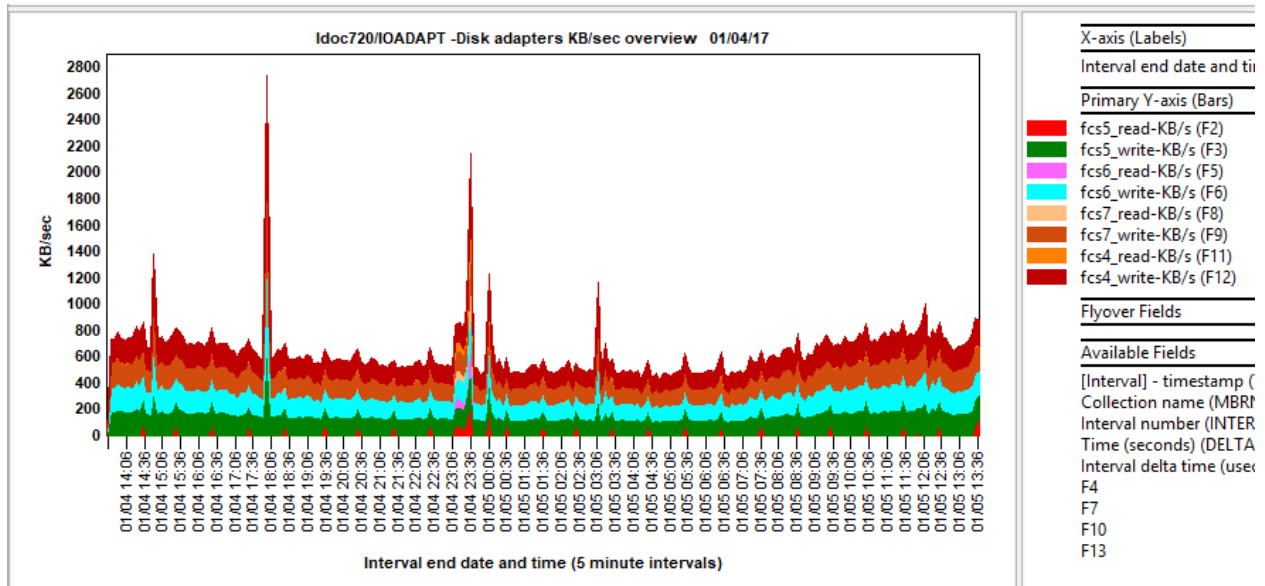


## 9.38 IOADAPT -Disk adapters KB/sec overview

For each I/O adapter listed on the BBBC sheet, contains the data rates for both read and write operations (Kbytes/sec) and total number of I/O operations performed. On AIX 5.1 and later, this information is reported by the iostat -A command.

**Note:** These charts can be easily converted to lines (or bars) by right-clicking the graph and using the **Graph definition -> Set Graph type** menu.

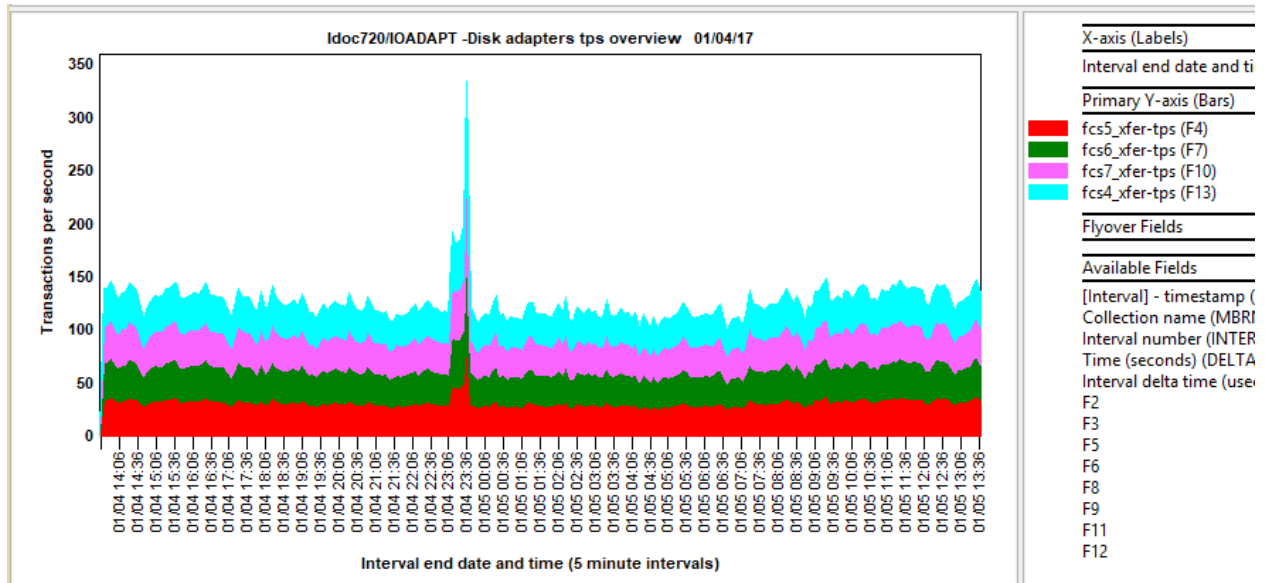
**Note:** It will only show a maximum of 48 adapters.



### 9.39 IOADAPT -Disk adapters tps overview

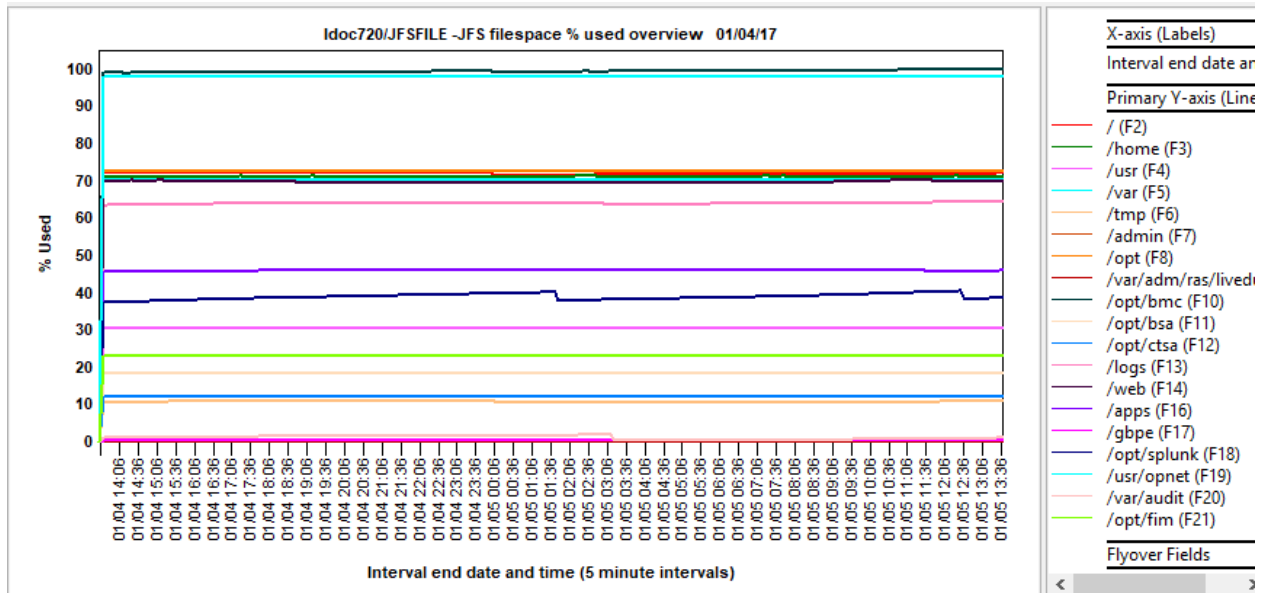
For each I/O adapter listed on the BBBC sheet, contains the data rates for both read and write I/O operations performed. **Note:** These charts can be easily converted to lines (or bars) by right-clicking the graph and using the **Graph definition -> Set Graph type** menu.

**Note:** It will only show a maximum of 48 adapters.



### 9.40 JFSFILE -JFS filesystem % used overview

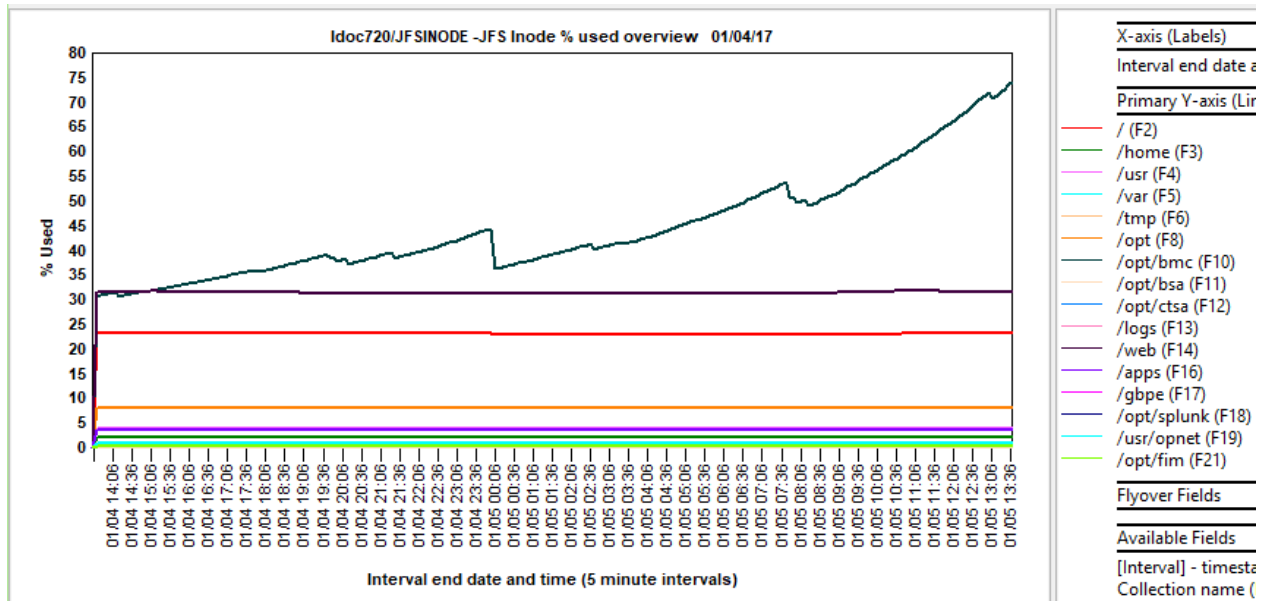
For each file system, this graph shows what percentage of the space allocation is being used during each interval. These figures are the same as the **%Used** value reported by the `df` command. The column headings show the mount point; sheet BBBC can be used to cross-reference to the file system/LV.



JFSFILE -JFS filesystem % used overview

## 9.41 JFSINODE -JFS Inode % used overview

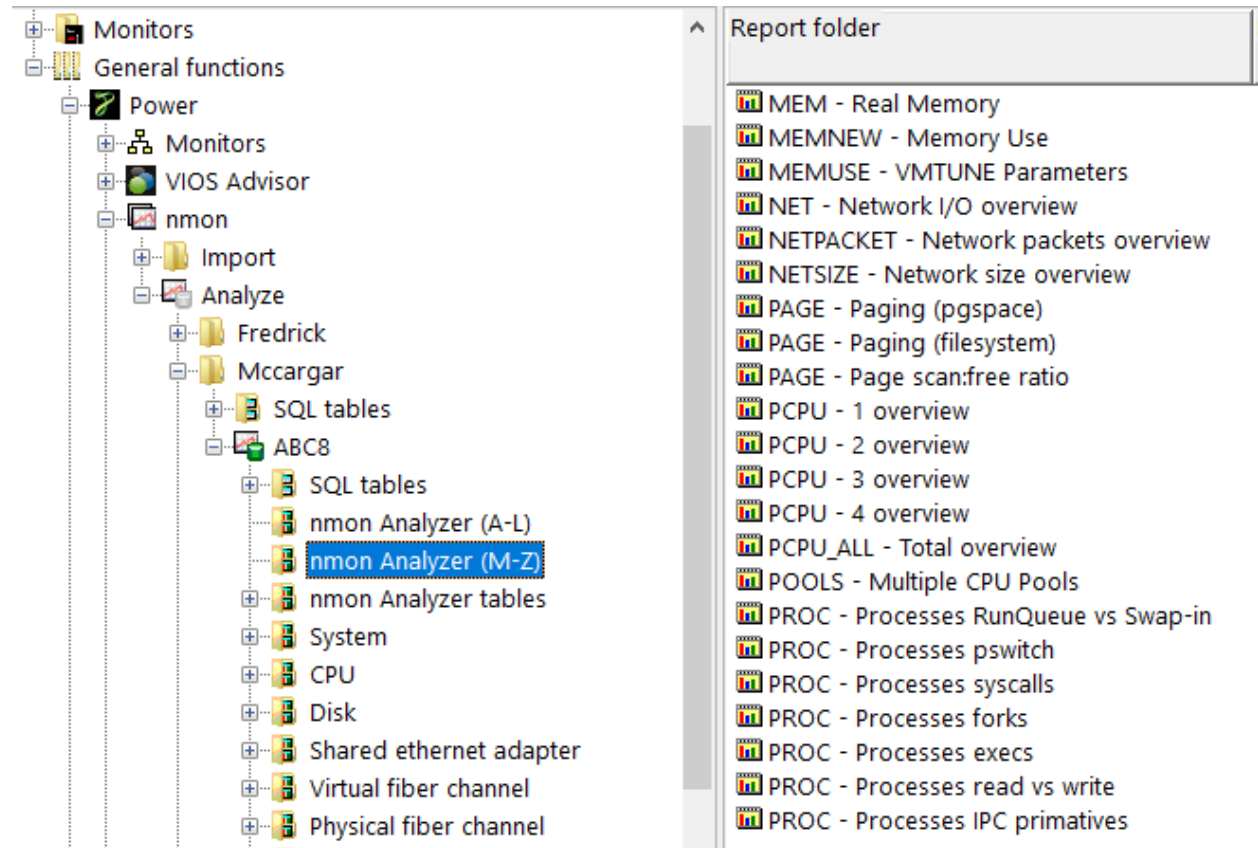
For each file system, this sheet shows what percentage of the Inode allocation is being used during each interval. These figures are the same as the **%used** value reported by the df command. The column headings show the mount point; sheet BBBC can be used to cross-reference to the file system/LV.



JFSINODE -JFS Inode % used overview

## 10 nmon Analyzer (M-Z)

These graphs cover nmon Analyzer sheets that start with the letters M through Z (excluding SYS\_SUMM.)

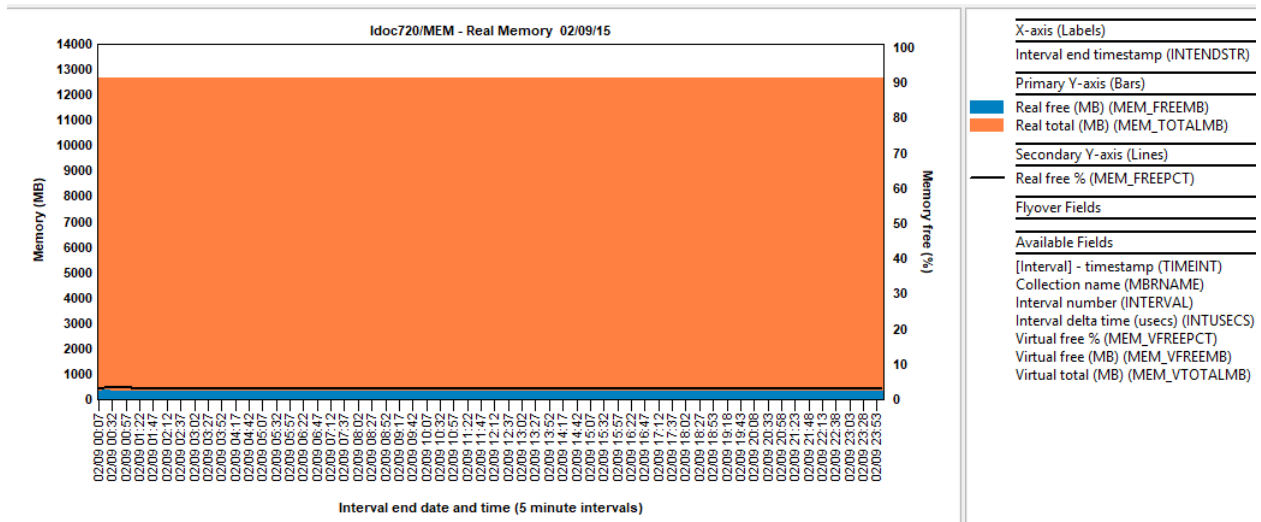


*nmon Analyzer (M-Z) folder*

**Note:** Some graphs will NOT appear depending on what data exists in the original nmon file. If the data tag does not exist, then the graphs will not appear here.

### 10.1 MEM - Real Memory

This graph shows the amount of Real Free memory (and total) in Mbytes by time of day.

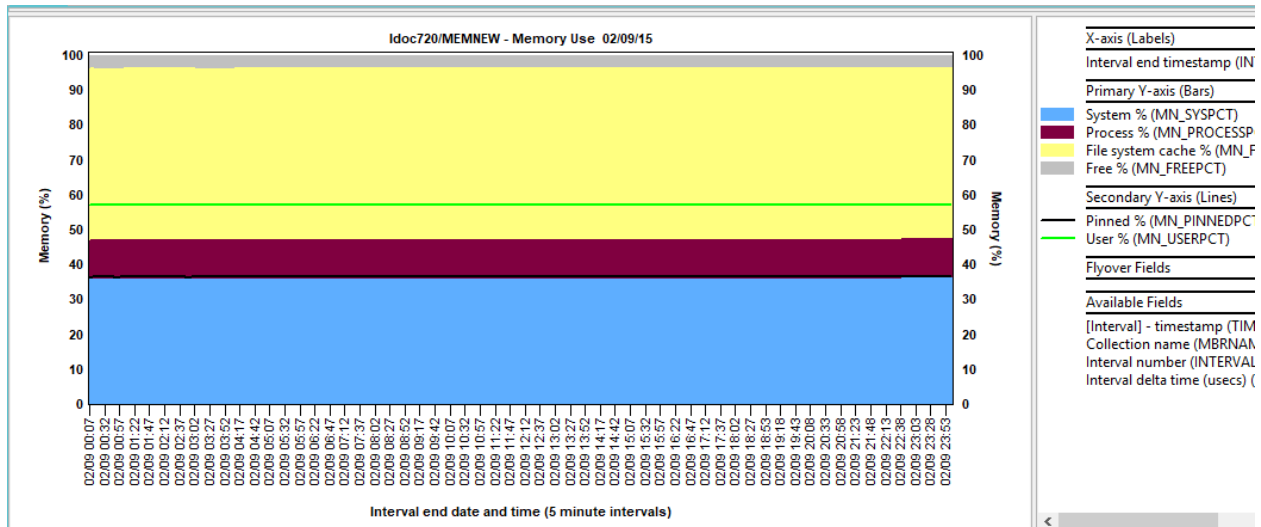


MEM - Real Memory

## 10.2 MEMNEW - Memory Use

The graph shows the allocation of memory split into the three major categories: pages used by user processes, file system cache, and pages used by the system (kernel).

- Process %** the percentage of real memory allocated to user processes
- FS Cache%** the percentage of real memory allocated to file system cache
- System %** the percentage of real memory used by system segments
- Free %** the percentage of unallocated real memory
- User %** the percentage of real memory used by non-system segments



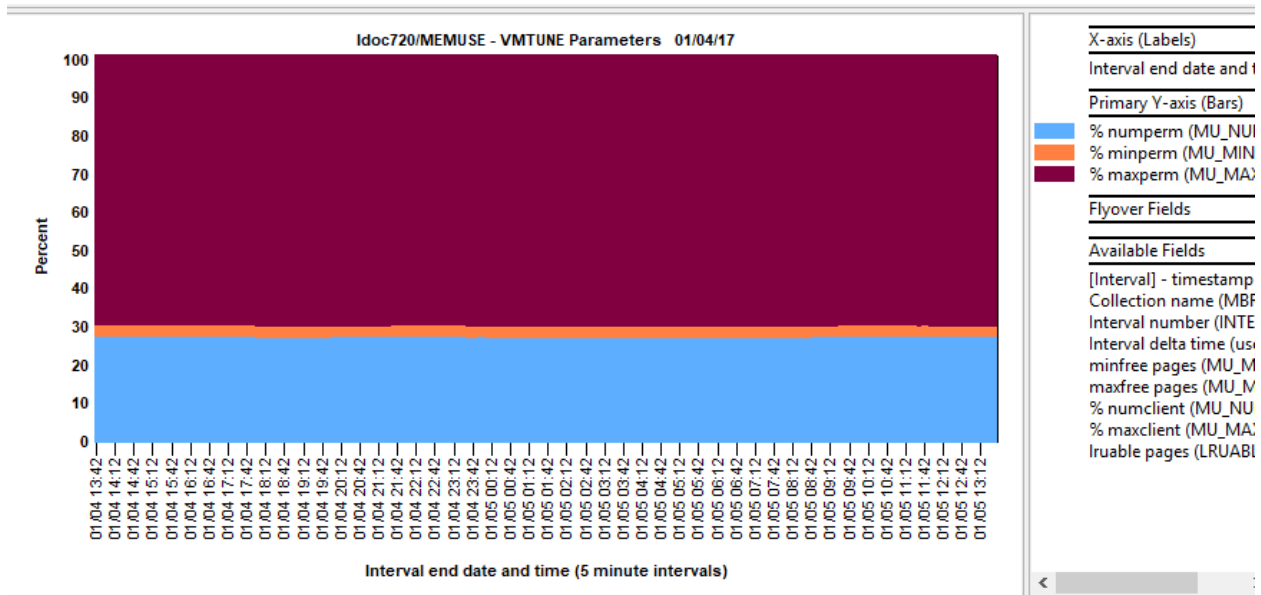
MEMNEW - Memory Use

## 10.3 MEMUSE - VMTUNE Parameters

Except for **%comp**, the values on this sheet are the same as would be reported by the vmtune command.

- %numperm** the percentage of real memory allocated to file pages.

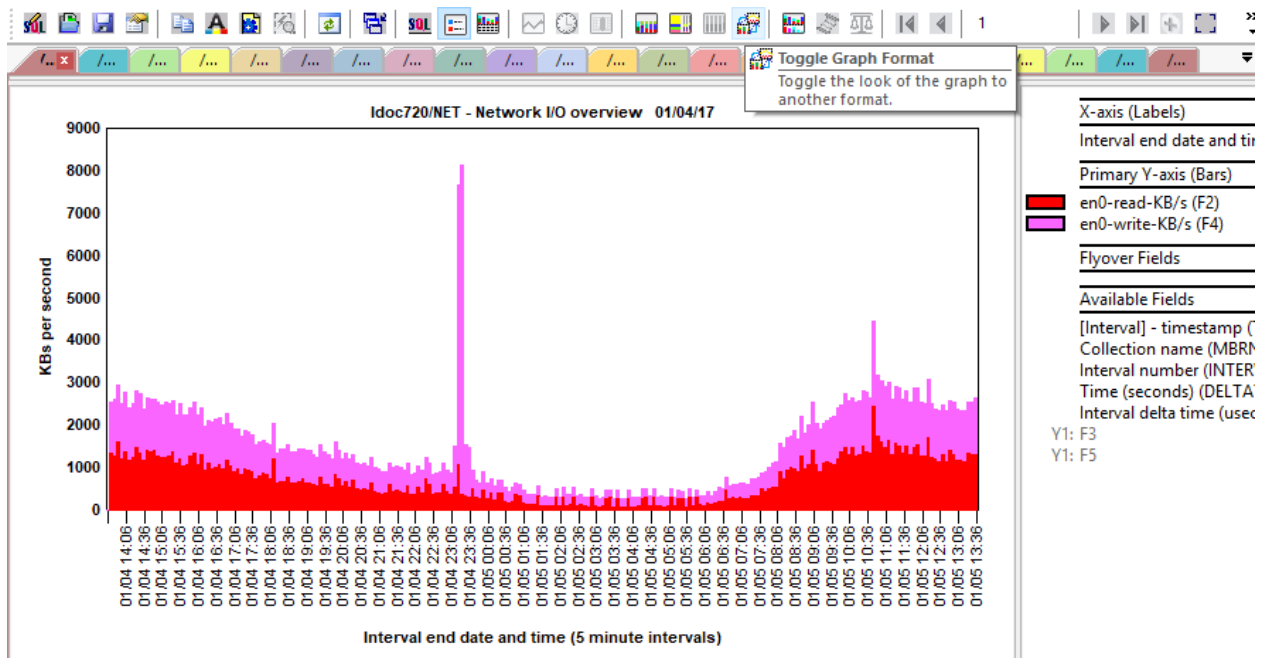
- %minperm** value specified on the vmtune command or system default of 20%. This will normally be constant for the run unless the vmtune or rmss commands are used during collection.
- %maxperm** value specified on the vmtune command or system default of 80%. This will normally be constant for the run unless the vmtune or rmss commands are used during collection.



MEMUSE - VMTUNE Parameters

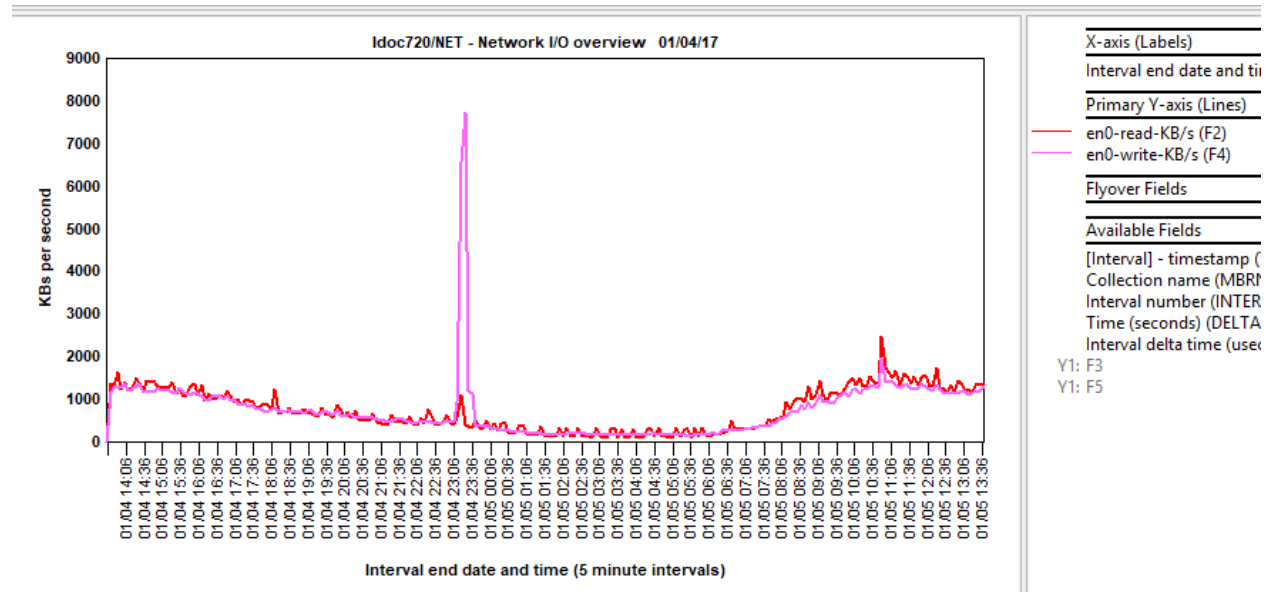
## 10.4 NET - Network I/O overview

This sheet shows the data rates, in Kbytes/sec, for each network adapter in the system (including SP switch if present). This is the same as produced by the netpmmon -O dd command. The first graph shows total network traffic broken down as Total-Read and Total-Write.



NET - Network I/O overview (as bars)

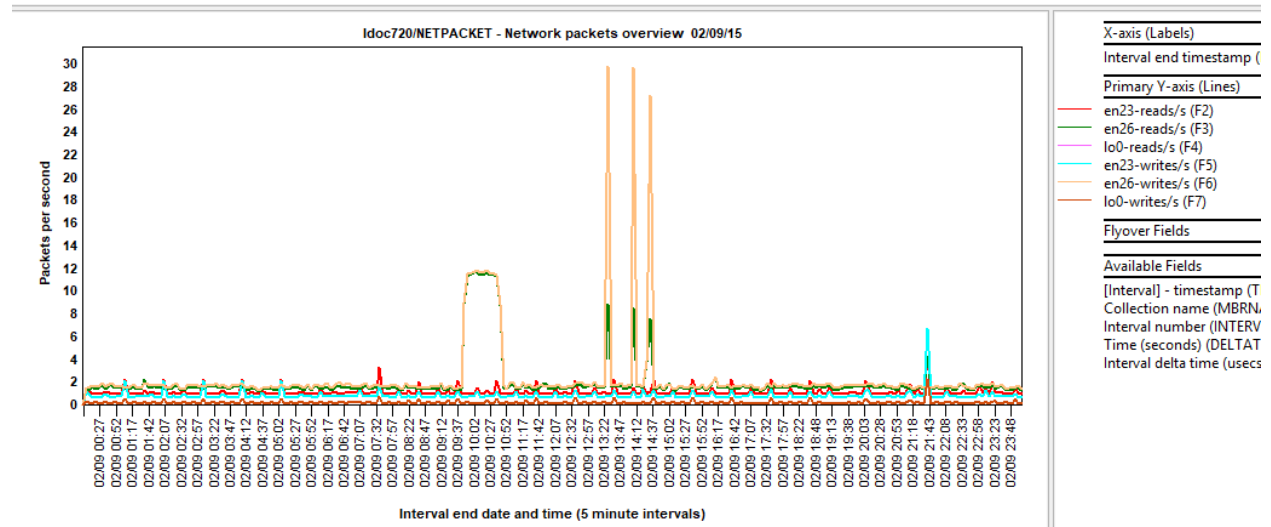
**Note:** These charts can be easily converted to lines (or bars) by clicking the Toggle Graph Format button on the toolbar (see previous screenshot.)



*NET - Network I/O overview (as lines)*

## 10.5 NETPACKET - Network packets overview

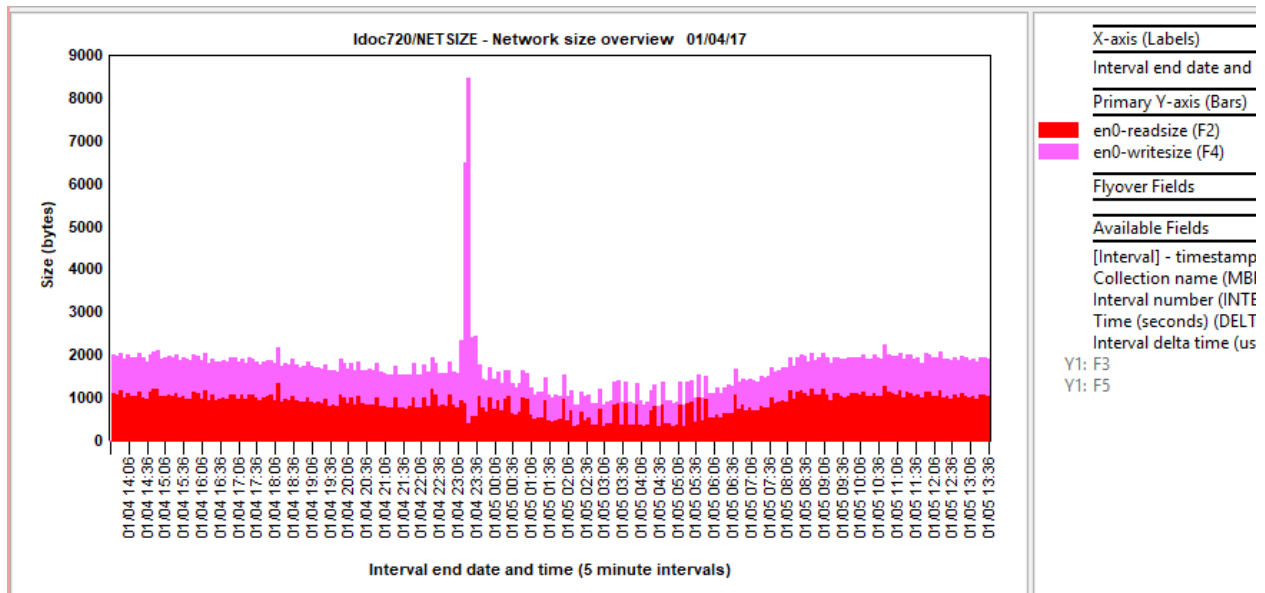
This sheet shows the number of read/write network packets for each adapter. This is the same as produced by the netpmom -O dd command.



*NETPACKET - Network packets overview*

## 10.6 NETSIZE - Network size overview

This sheet shows the average packet size in bytes for each network adapter in the system.



NETSIZE – Network size overview

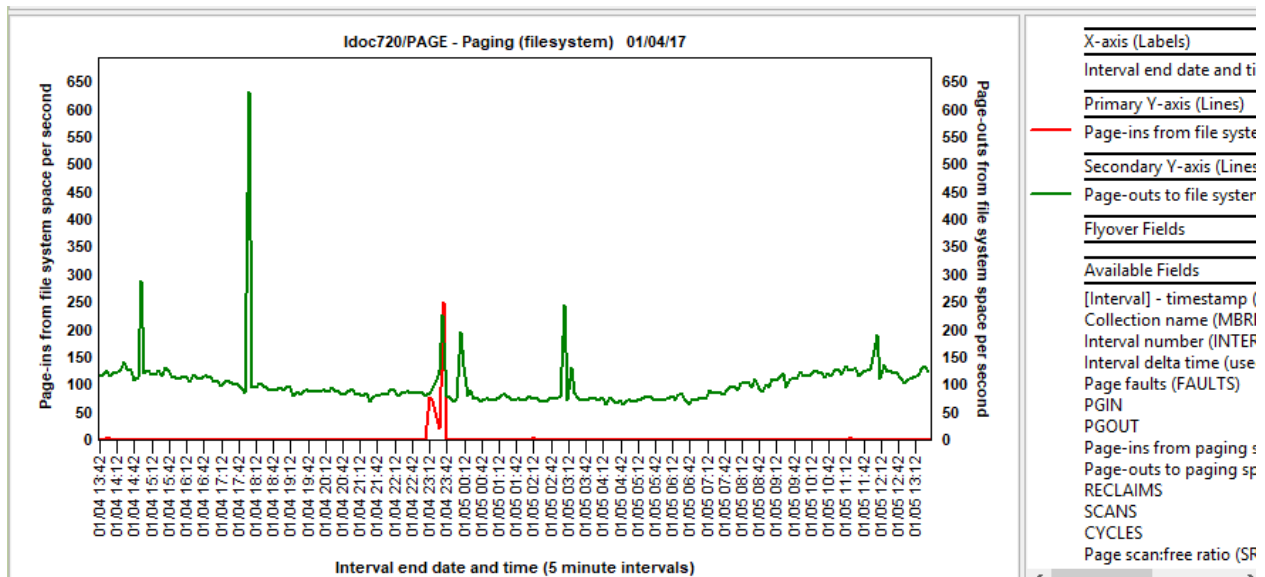
## 10.7 PAGE - Paging (pgspace)

The graph shows the total rate/sec of page-in/page-out operations to pgspace over time.

If **page-ins** is consistently higher than **page-outs** this may indicate thrashing.

## 10.8 PAGE - Paging (filesystem)

The graph shows the total rate/sec of page-in/page-out operations to file systems over time.

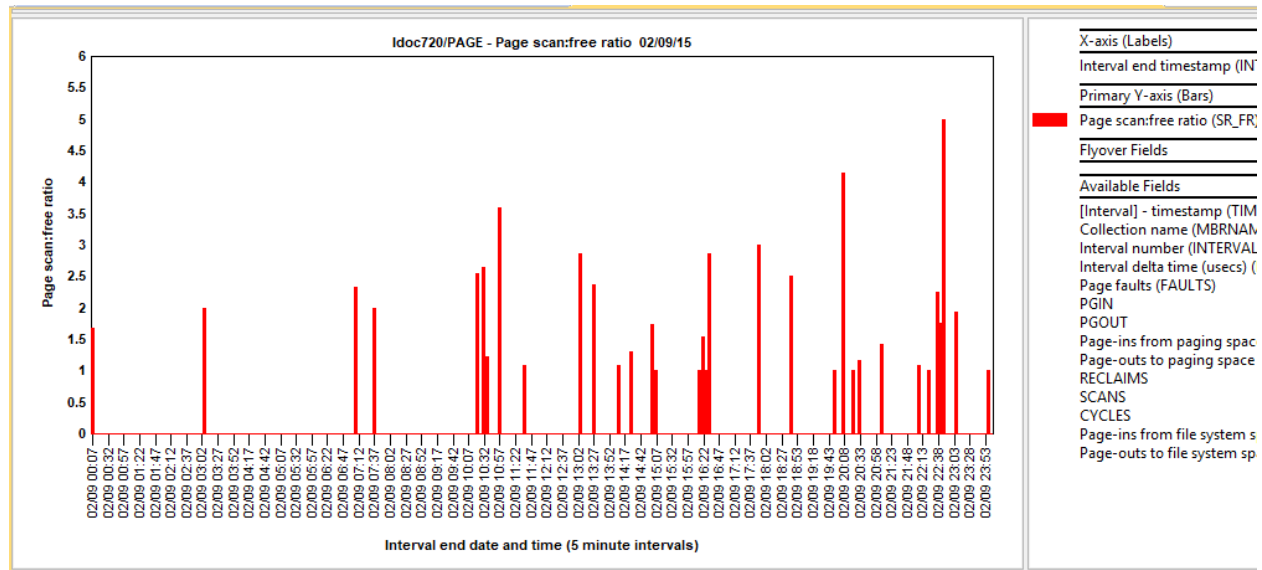


PAGE – Paging (filesystem)

## 10.9 PAGE - Page scan:free ratio

This graph shows the ration of scans to reclaims over time.

| Field                  | Description                                                                                                                                                                                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>scans</b>           | The number of pages/sec examined by the page replacement routine. This is the same as the sr value reported by vmstat. Page replacement is initiated when the number of free pages falls below minfree and stops when the number of free pages exceeds maxfree. |
| <b>reclaims (free)</b> | This field is the same as the fr value reported by vmstat and represents the number of pages/sec freed by the page-replacement routine.                                                                                                                         |

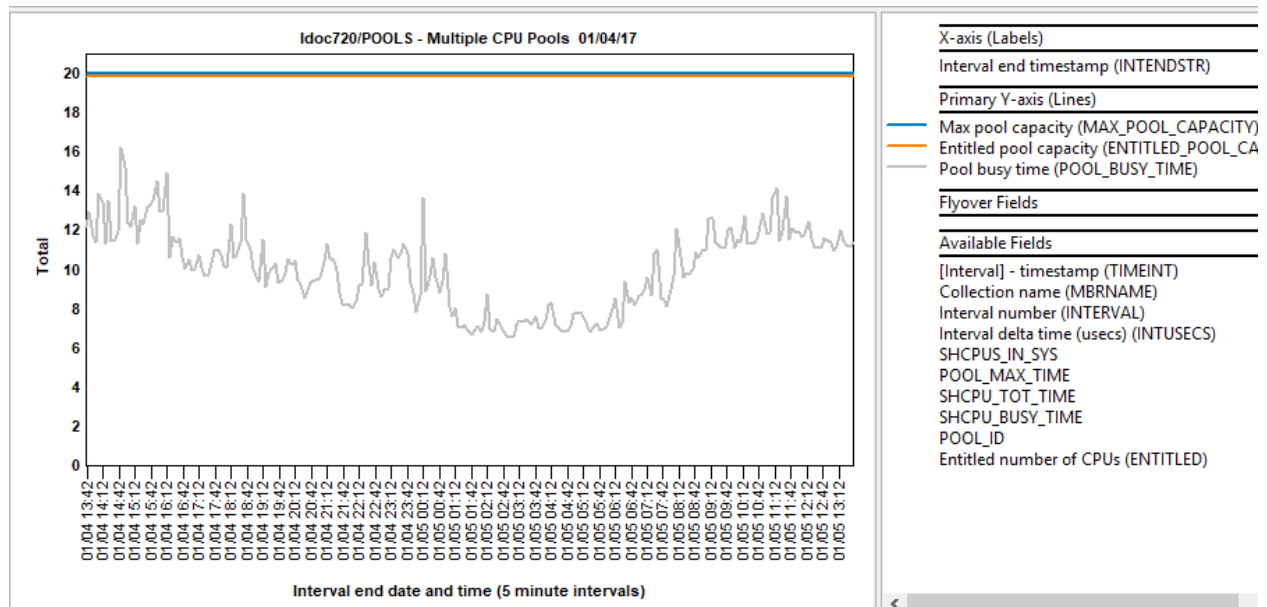


PAGE – Page scan:free ratio

## 10.10 POOLS - Multiple CPU Pools

This graph contains information about the shared pool in which the LPAR is running. Most of the data will only be present if "Allow performance information collection." is set in the LPAR properties.

| Field                         | Description                                                                |
|-------------------------------|----------------------------------------------------------------------------|
| <b>Max pool capacity</b>      | The maximum number of VPs defined for this pool                            |
| <b>Entitled pool capacity</b> | The entitlement for this pool (includes reserve entitlement)               |
| <b>Pool time</b>              | The average number of cores in use by this shared pool during the interval |



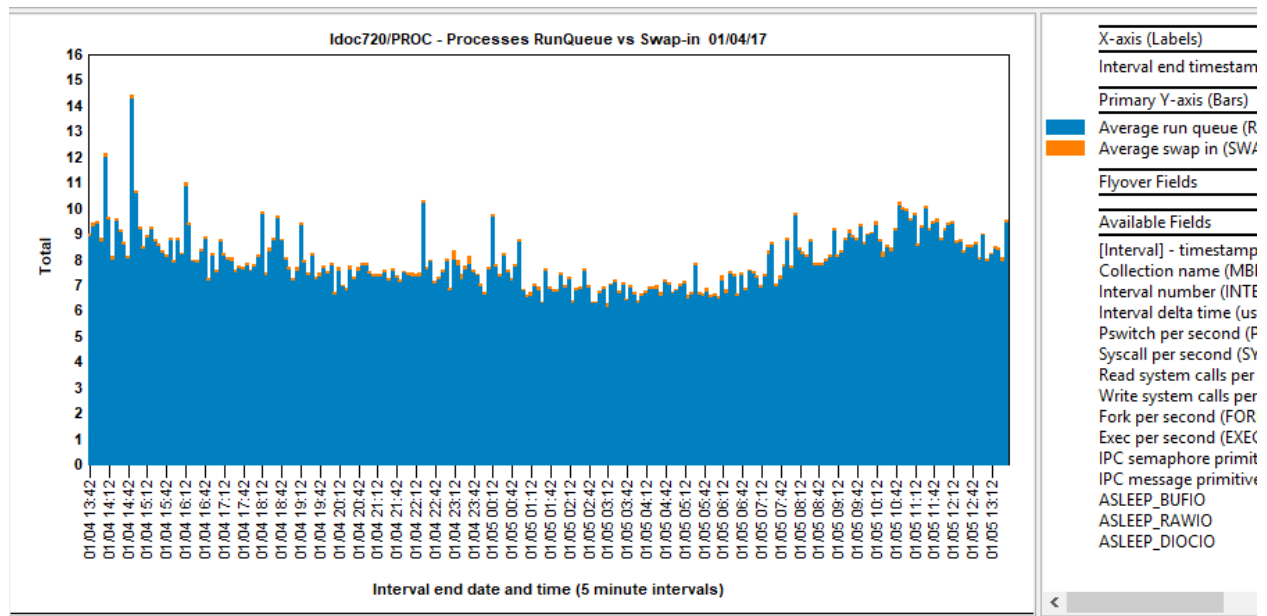
POOLS – Multiple CPU Pools

## 10.11 PROC - Processes RunQueue vs Swap-in

This sheet contains a subset of the fields reported by NMON on the Kernel Internal Statistics panel. The **RunQueue** and **Swap-in** fields are average values for the interval. All other fields are rates/sec:

**RunQueue** the average number of kernel threads in the run queue. This is reported as **runq-sz** by the sar -q command and is reported as **RunQueue** on the nmon Kernel Internal Statistics panel. A value that exceeds 3x the number of CPUs may indicate CPU constraint.

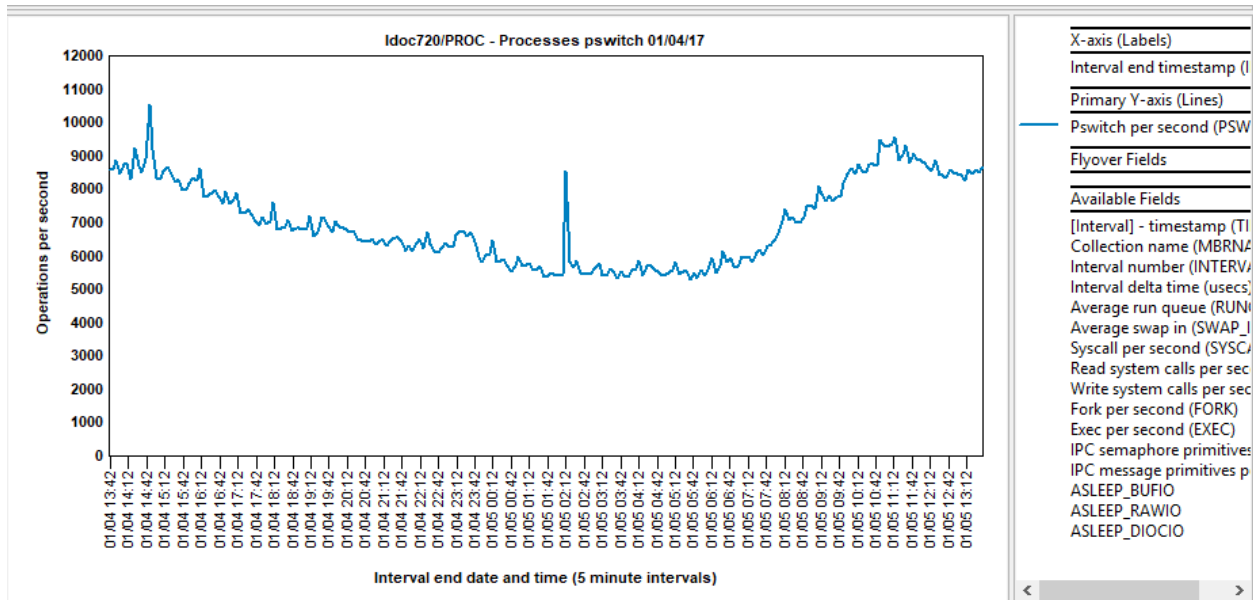
**Swap-in** the average number of kernel threads waiting to be paged in. This is reported as **swpq-sz** by the sar -q command.



PROC - Processes RunQueue vs Swap-in

## 10.12 PROC - Processes pswitch

This sheet contains a subset of the fields reported by NMON on the Kernel Internal Statistics panel. This graph reports the number of context switches. This is reported as **pswch/s** by the sar -w command.

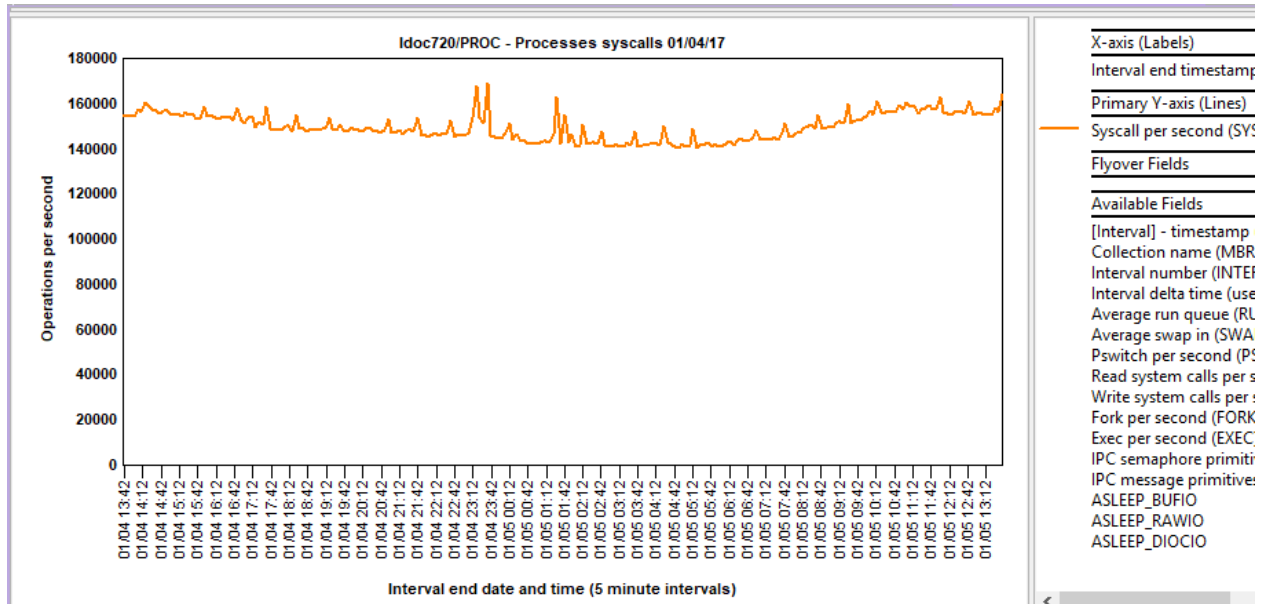


PROC - Processes pswitch

## 10.13 PROC - Processes syscalls

This sheet contains a subset of the fields reported by NMON on the Kernel Internal Statistics panel.

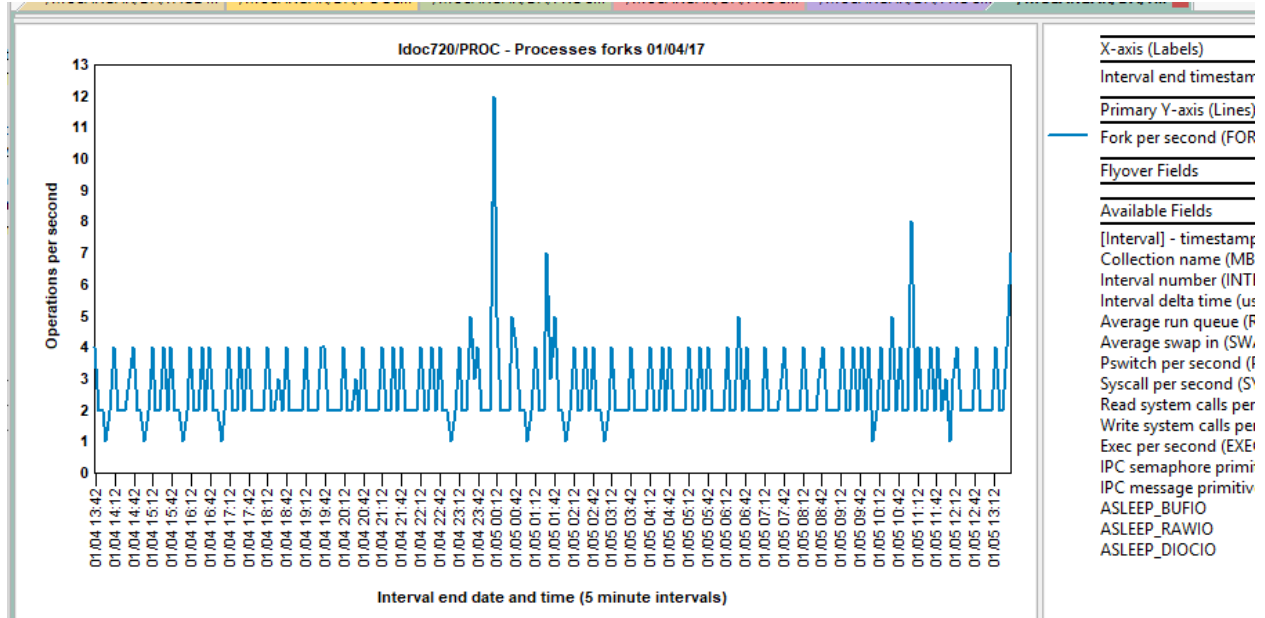
This graph reports the total number of system calls. This is reported as **scall/s** by the sar -c command.



PROC - Processes syscalls

## 10.14 PROC - Processes forks

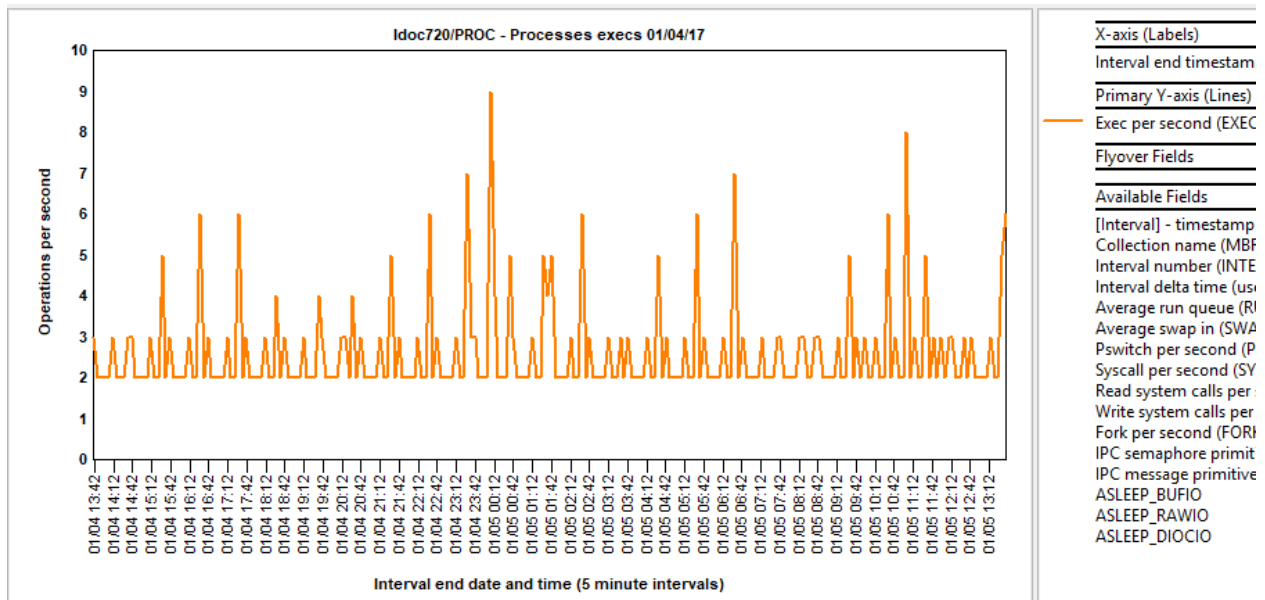
This graph reports the number of fork system calls. This is reported as **fork/s** by the sar -c command.



PROC - Processes forks

## 10.15 PROC - Processes execs

This graph reports the number of exec system calls per second. This is reported as **exec/s** by the sar -c command.

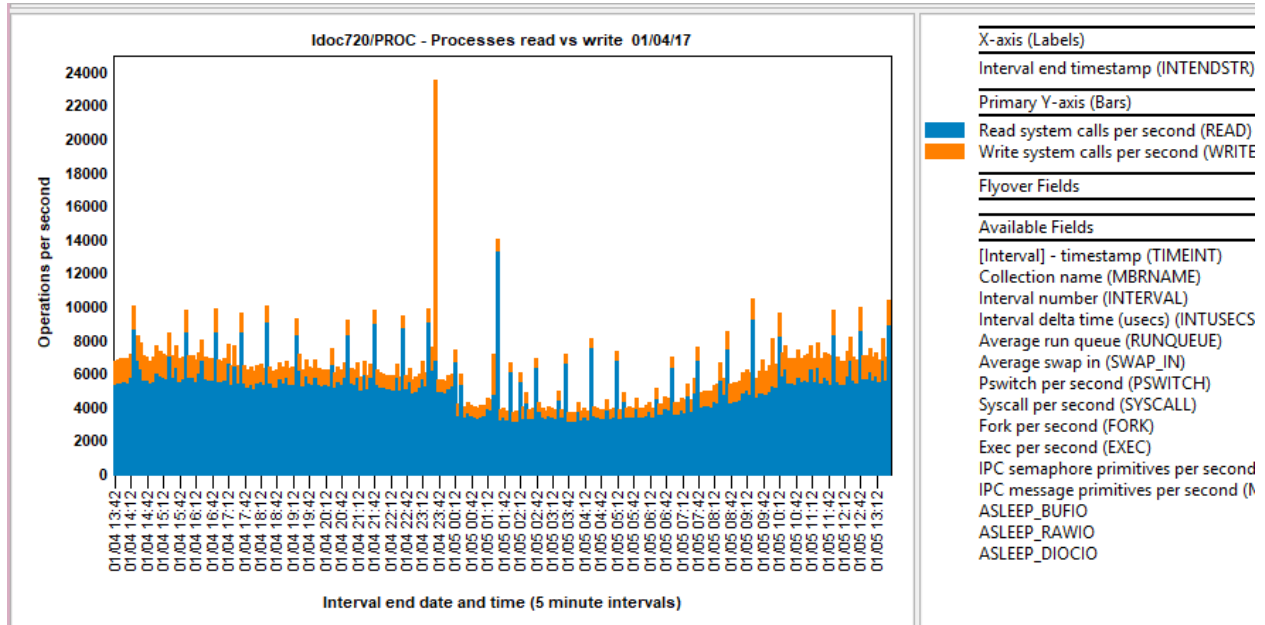


PROC - Processes execs

## 10.16 PROC - Processes read vs write

This graph compares read vs write system calls per second over time.

| Field        | Description                                                                                         |
|--------------|-----------------------------------------------------------------------------------------------------|
| <b>read</b>  | The number of read system calls. This is reported as <b>sread/s</b> reported by the sar -c command. |
| <b>write</b> | The number of write system calls. This is reported as <b>swrit/s</b> by the sar -c command.         |

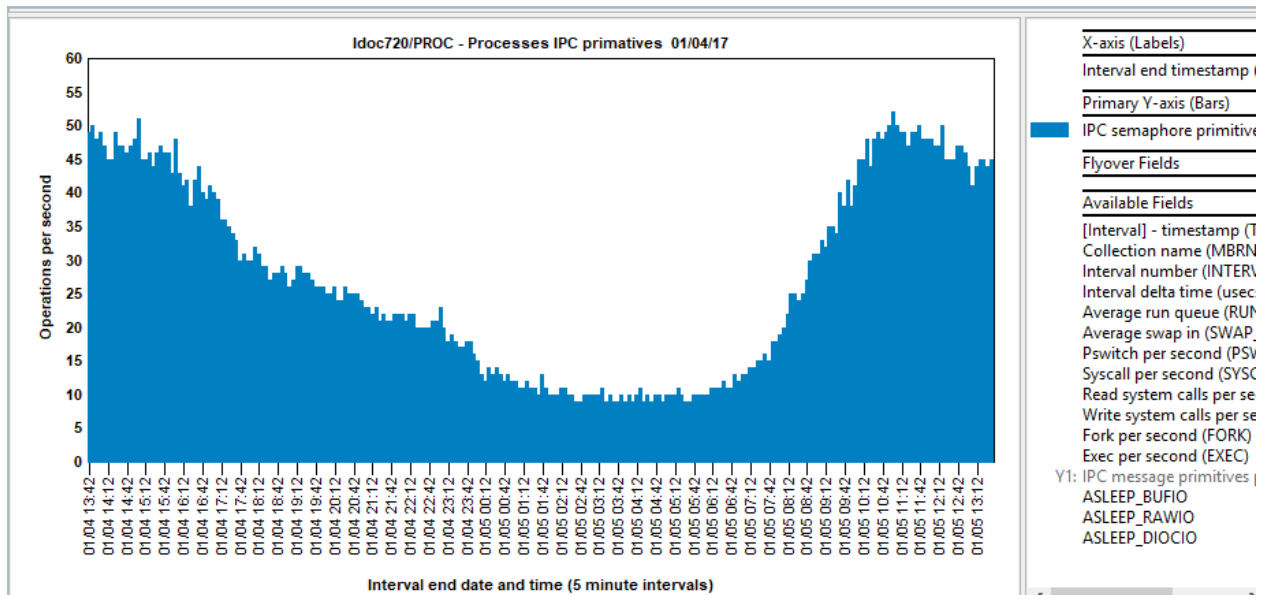


PROC - Processes read vs write

## 10.17 PROC - Processes IPC primitives

This graph compares IPC semaphore primitives vs IPC message primitives per second over time.

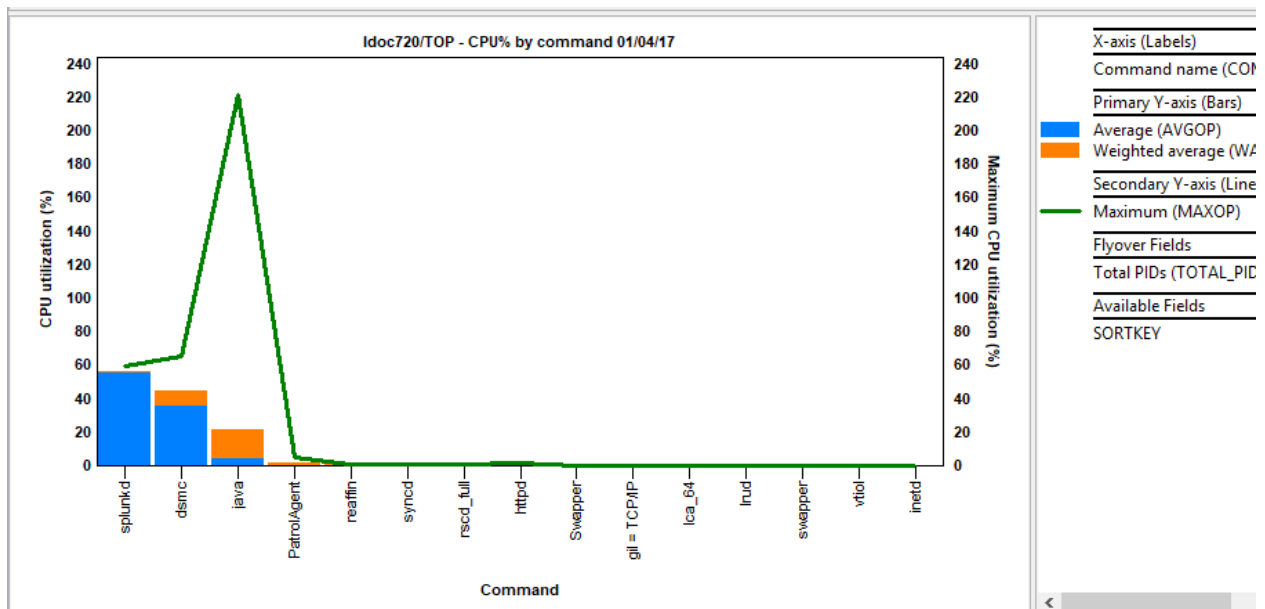
| Field      | Description                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sem</b> | The number of IPC semaphore primitives (creating, using and destroying).<br>This is reported as <b>sema/s</b> by the sar -m command. |
| <b>msg</b> | The number of IPC message primitives (sending and receiving). This is reported as <b>msg/s</b> by the sar -m command.                |



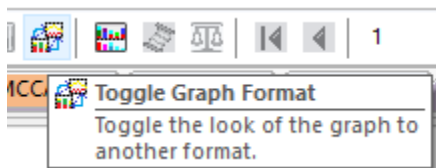
PROC – Processes IPC primitives

## 10.18 TOP - CPU% by command

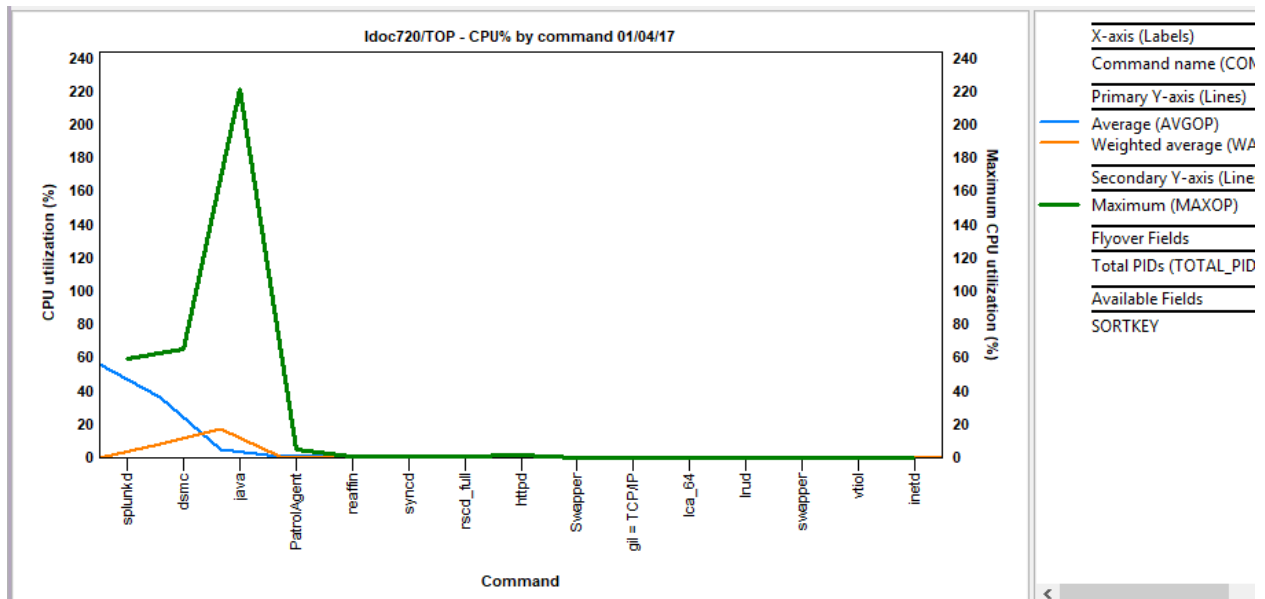
**Note:** data only present for processes that consumed a significant amount of CPU during an interval. The TOP sheets does **NOT** represent a complete view of the system.



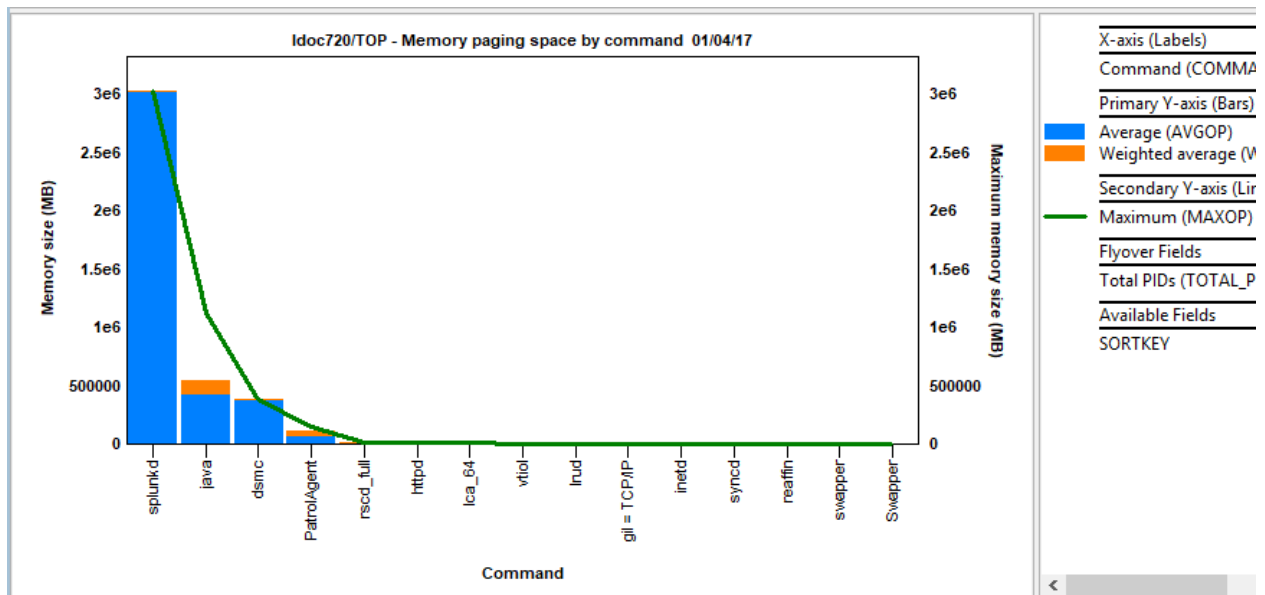
TOP – CPU % by command



**Tip:** Press the toggle graph format button to convert this graph to bars to lines if desired.

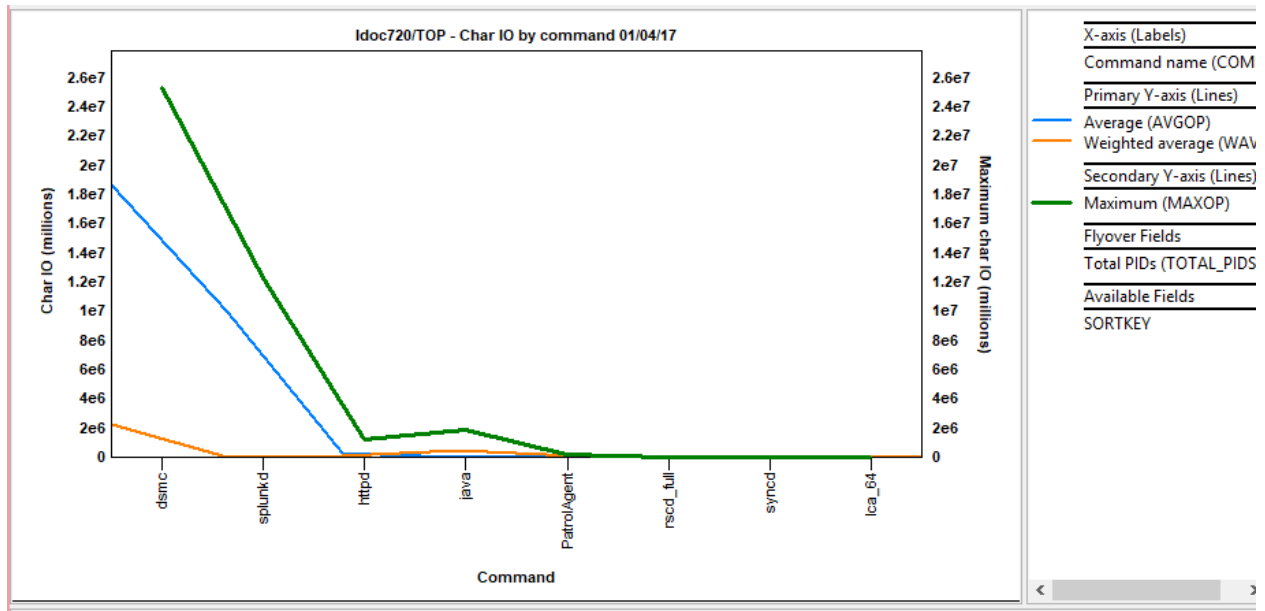


## 10.19 TOP - Memory paging space by command



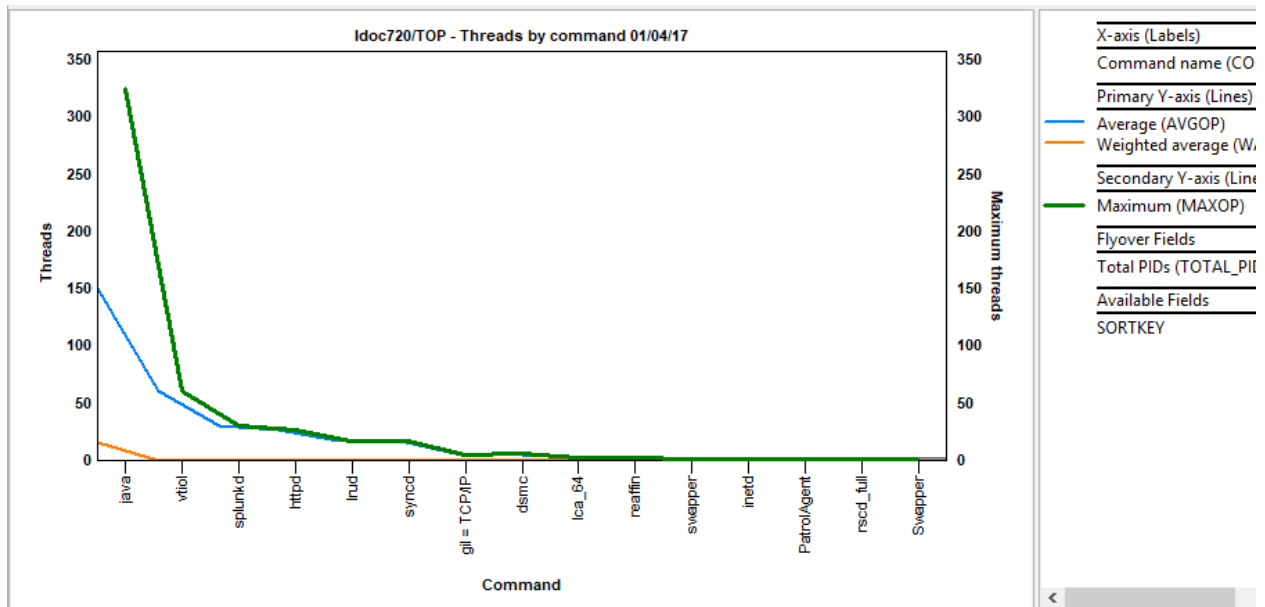
TOP – Memory paging space by command

## 10.20 TOP - Char IO by command



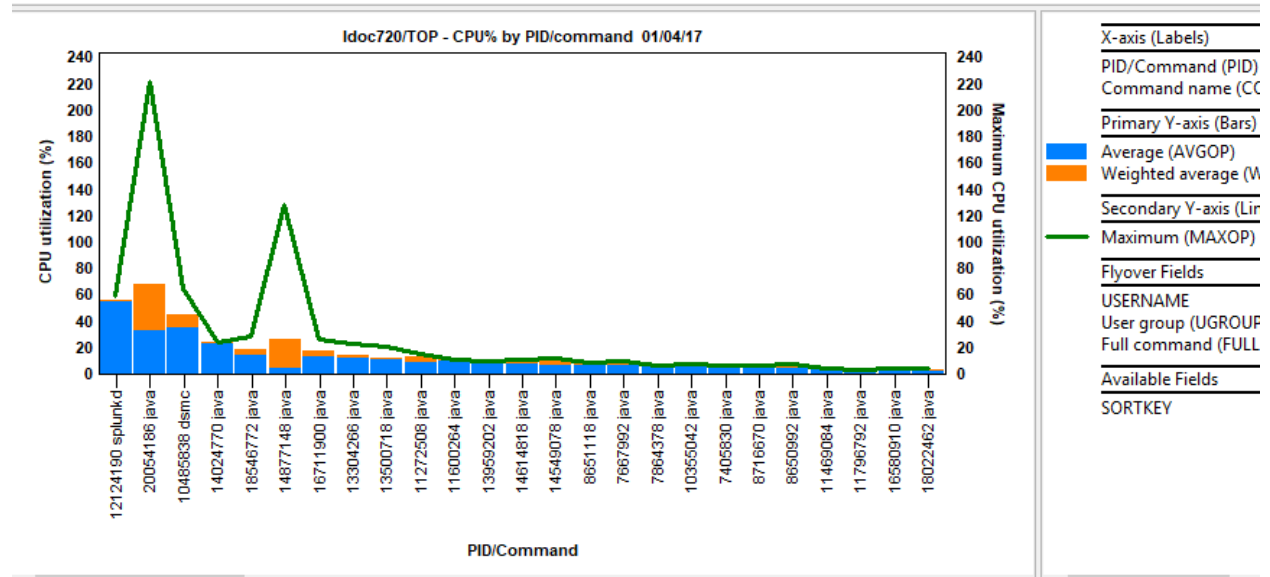
TOP – Char IO by command

## 10.21 TOP - Threads by command



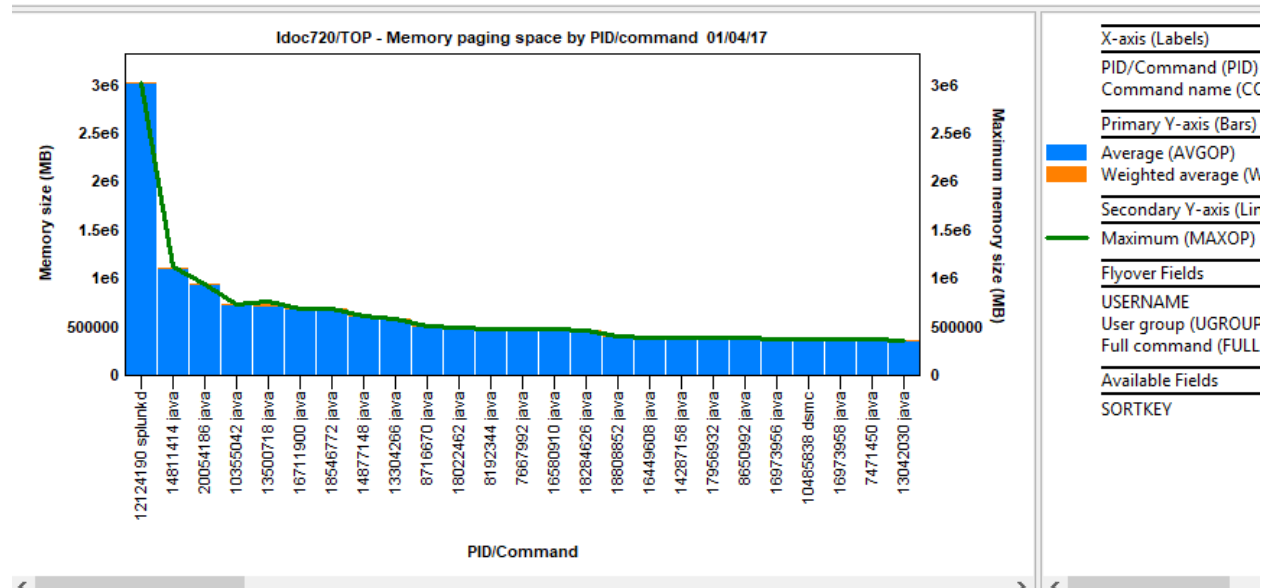
TOP – Threads by command

## 10.22 TOP - CPU% by PID/command



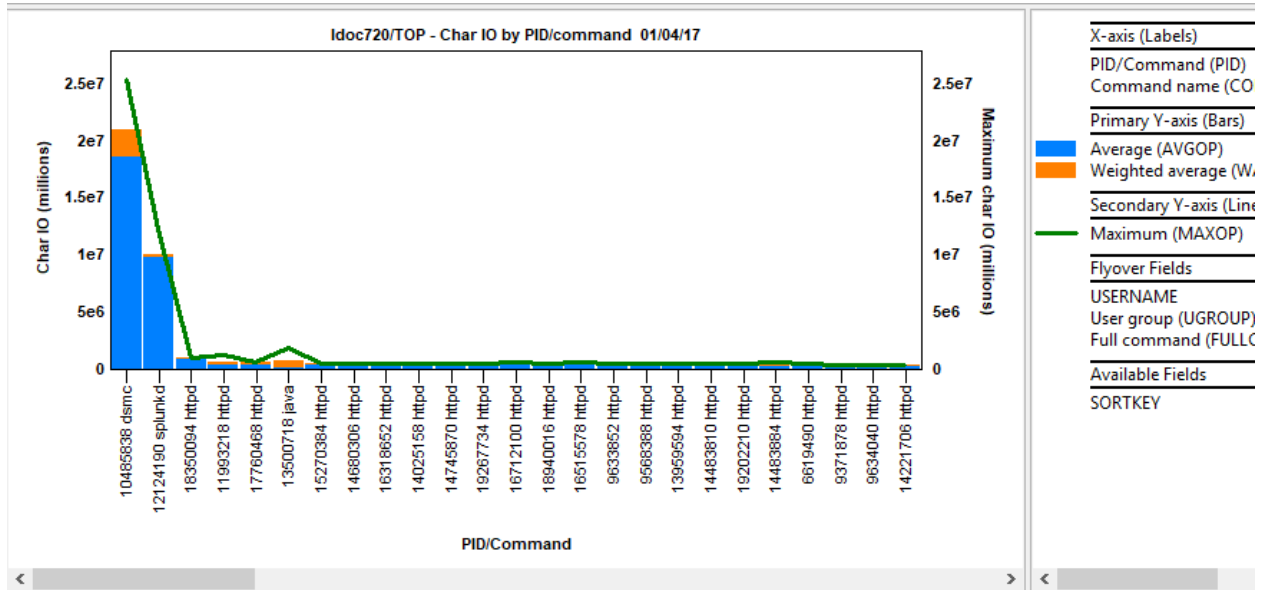
TOP – CPU % by PID/command

## 10.23 TOP - Memory paging space by PID/command



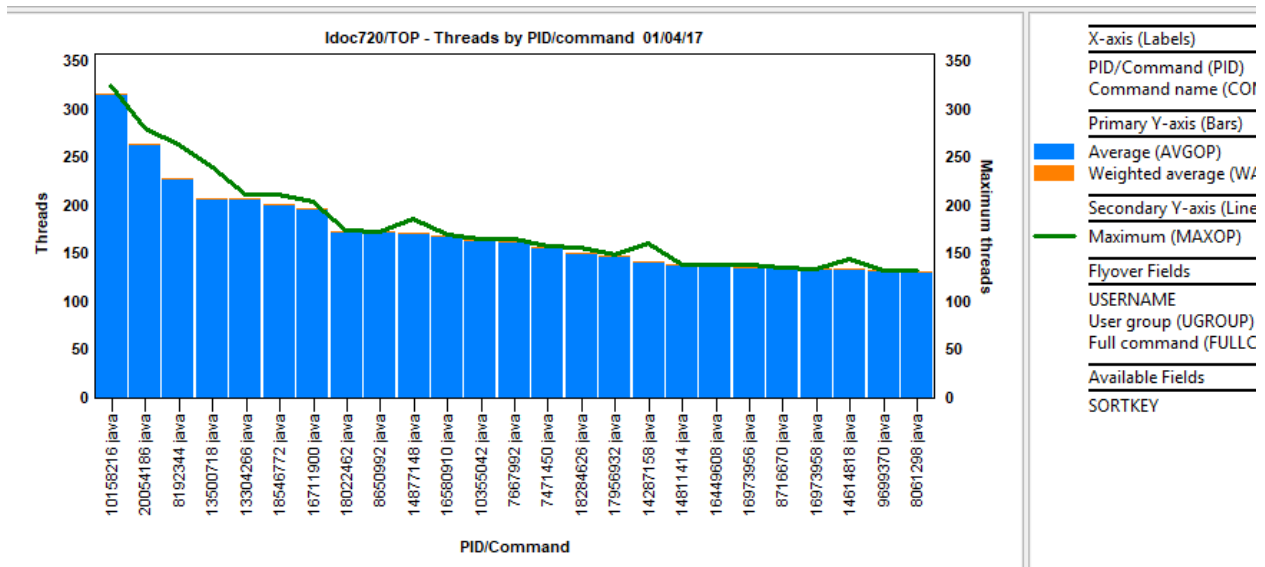
TOP – Memory paging space by PID/command

## 10.24 TOP - Char IO by PID/command



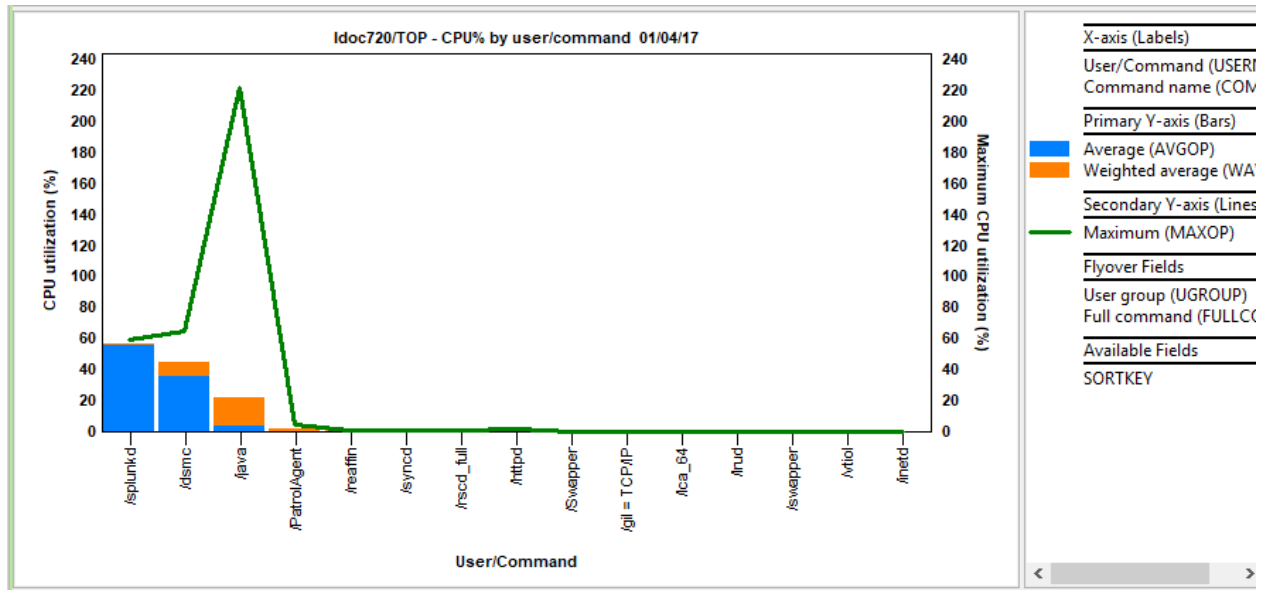
TOP – Char IO by PID/command

## 10.25 TOP - Threads by PID/command



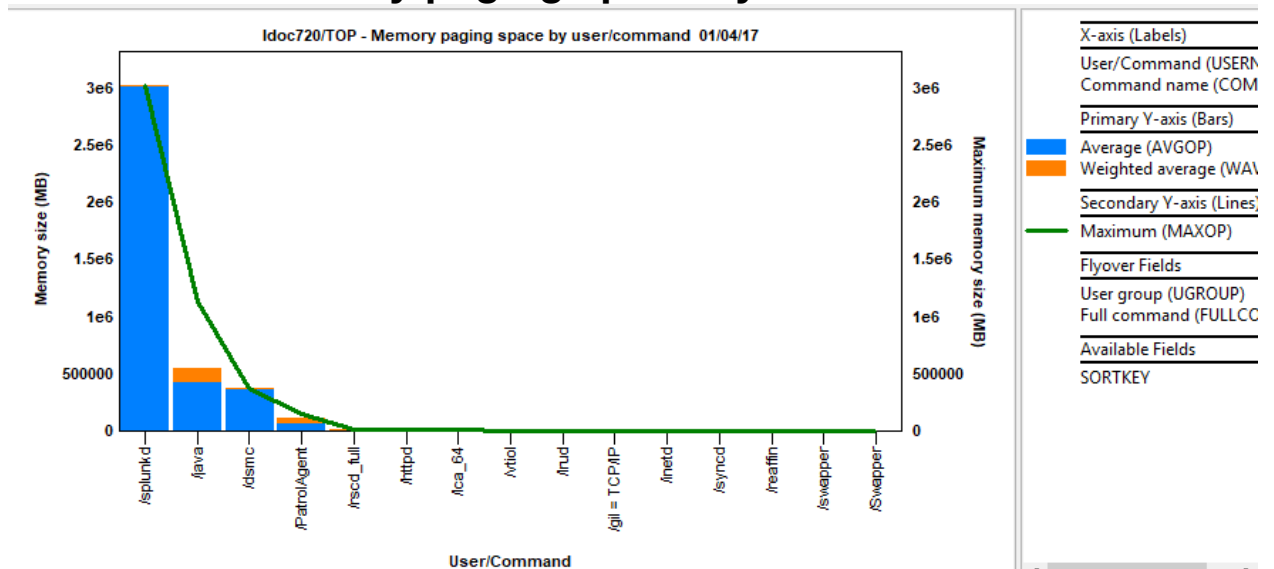
TOP – Threads by PID/command

## 10.26 TOP - CPU% by user/command



TOP – CPU % by user/command

## 10.27 TOP - Memory paging space by user/command

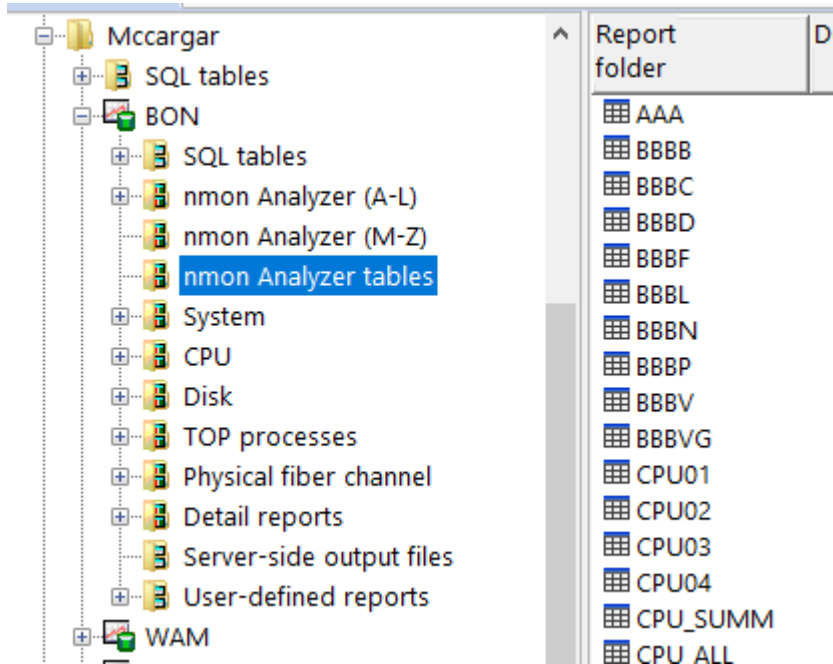


TOP – Memory paging space by user/command

## 11 nmon Analyzer tables

This folder displays the nmon table data from nmon Analyzer as close as possible.

**Note:** Some reports will NOT appear depending on what data exists in the original nmon file. If the data tag does not exist, then the report will not exist.



*nmon Analyzer sheets folder*

**Note:** Some reports use fixed width fonts by default such as Courier New. To control the fixed width font settings used for this report, use the Preferences -> Display – Advanced – Fonts for editors/logs value's **Change...** button.

### 11.1 AAA – (General Information)

This sheet lists general information about the collection, the system it was created on and when it was created.

| CTCPRF73/MCCARGAR/TEST2/AAA - #1 |                  |                                                                                                                |          |       |       |
|----------------------------------|------------------|----------------------------------------------------------------------------------------------------------------|----------|-------|-------|
| File ID (FILEID)                 | A (A)            | B (B)                                                                                                          | C (C)    | D (D) | E (E) |
| 1                                | AIX              | 6.1.9.316                                                                                                      |          |       |       |
| 1                                | build            | AIX                                                                                                            |          |       |       |
| 1                                | command          | /usr/bin/topas_nmon -f -s 15 -c 40 -t -l 0.1 -d -^ -O -youtput_dir=/home/padmin/ctcvha9e -ystart_time=13:21:18 | May31    | 2022  |       |
| 1                                | cpus             | 8                                                                                                              | 8        |       |       |
| 1                                | date             | 31-MAY-2022                                                                                                    |          |       |       |
| 1                                | disks_per_line   | 150                                                                                                            |          |       |       |
| 1                                | hardware         | Architecture PowerPC Implementation POWER7_COMPAT_mode 64 bit                                                  |          |       |       |
| 1                                | host             | ctcvha9e                                                                                                       |          |       |       |
| 1                                | interval         | 15                                                                                                             |          |       |       |
| 1                                | kernel           | HW-type=CHRP=Common H/W Reference Platform Bus=PCI LPAR=Dynamic Multi-Processor 64 bit                         |          |       |       |
| 1                                | LPARNumberName   | 2                                                                                                              | ctcvha9e |       |       |
| 1                                | MachineType      | IBM                                                                                                            | 8233-E8B |       |       |
| 1                                | NodeName         | ctcvha9e                                                                                                       |          |       |       |
| 1                                | progname         | topas_nmon                                                                                                     |          |       |       |
| 1                                | runname          | ctcvha9e                                                                                                       |          |       |       |
| 1                                | SerialNumber     | 10001AP                                                                                                        |          |       |       |
| 1                                | snapshots        | 40                                                                                                             |          |       |       |
| 1                                | SubprocessorMode | Unknown                                                                                                        |          |       |       |
| 1                                | time             | 13:21:18                                                                                                       |          |       |       |
| 1                                | timestampsize    | 0                                                                                                              |          |       |       |
| 1                                | TL               | 09                                                                                                             |          |       |       |
| 1                                | user             | padmin                                                                                                         |          |       |       |
| 1                                | version          | TOPAS-NMON                                                                                                     |          |       |       |
| 1                                | VIOS             | 2.2.6.21                                                                                                       |          |       |       |

AAA

## 11.2 BBBB – (Disks)

The BBBB sheet lists all disks listed in the ODM together with the capacity (in GBs) and the adapter type (SCSI/SSA/Fibre) as reported by lsdev.

**Note:** Some fiber-attached devices do not report their capacity to AIX.

**Note #2:** iDoctor assigns a disk ID to each disk for analysis purposes and this will be found in several iDoctor reports.

| File ID (FILEI) | Disk ID (within iDoctor DB) (DISKID) | Disk name (DISKNA) | Size in GBs (SIZE_G) | Disk attach type (DISC_ATTACH_TYPE) |
|-----------------|--------------------------------------|--------------------|----------------------|-------------------------------------|
| 1               | 0001                                 | hdisk71            | 80.00                | EMC                                 |
| 1               | 0002                                 | hdisk72            | 300.00               | EMC                                 |
| 1               | 0003                                 | hdisk75            | 60.00                | EMC                                 |
| 1               | 0004                                 | hdisk73            | 32.00                | EMC                                 |
| 1               | 0005                                 | hdisk76            | 2.00                 | EMC                                 |
| 1               | 0006                                 | hdisk74            | 50.00                | EMC                                 |
| 1               | 0007                                 | hdisk77            | 80.00                | EMC                                 |
| 1               | 0008                                 | hdisk80            | 32.00                | EMC                                 |
| 1               | 0009                                 | hdisk81            | 50.00                | EMC                                 |
| 1               | 0010                                 | hdisk83            | 2.00                 | EMC                                 |
| 1               | 0011                                 | hdisk82            | 60.00                | EMC                                 |
| 1               | 0012                                 | hdisk78            | 80.00                | EMC                                 |
| 1               | 0013                                 | hdisk79            | 300.00               | EMC                                 |
| 1               | 0014                                 | hdisk84            | 80.00                | EMC                                 |
| 1               | 0015                                 | hdisk91            | 80.00                | EMC                                 |
| 1               | 0016                                 | hdisk89            | 60.00                | EMC                                 |
| 1               | 0017                                 | hdisk105           | 80.00                | EMC                                 |
| 1               | 0018                                 | hdisk94            | 32.00                | EMC                                 |
| 1               | 0019                                 | hdisk88            | 50.00                | EMC                                 |
| 1               | 0020                                 | hdisk87            | 32.00                | EMC                                 |
| 1               | 0021                                 | hdisk92            | 80.00                | EMC                                 |
| 1               | 0022                                 | hdisk86            | 300.00               | EMC                                 |
| 1               | 0023                                 | hdisk95            | 50.00                | EMC                                 |

BBBB

---

## 11.3 BBBC – (Logical volumes)

The BBBC sheet shows the output from the lspv command for all local disks at the start of the data collection.

**Note:** To control the fixed width font settings used for this report, use the Preferences -> Display – Advanced – Fonts for editors/logs value's **Change...** button.

| File ID (FILEID) | DATA (DATA)                                                |
|------------------|------------------------------------------------------------|
| 1                | hdisk0:                                                    |
| 1                | LV NAME LPs PPs DISTRIBUTION MOUNT POINT                   |
| 1                | hd10opt 27 27 14..00..00..00..13 /opt                      |
| 1                | hd11admin 2 2 02..00..00..00..00 /admin                    |
| 1                | VMLibrary 576 576 200..56..00..159..161 /var/vio/VMLibrary |
| 1                | livedump 4 4 04..00..00..00..00 /var/adm/ras/livedump      |
| 1                | lg_dumplv 16 16 16..00..00..00..00 N/A                     |
| 1                | hd1 480 480 00..166..153..161..00 /home                    |
| 1                | hd9var 24 24 00..14..06..00..04 /var                       |
| 1                | hd3 75 75 75..00..00..00..00 /tmp                          |
| 1                | hd4 164 164 00..04..160..00..00 /                          |
| 1                | hd2 117 117 00..63..00..00..54 /usr                        |
| 1                | paging00 16 16 00..16..00..00..00 N/A                      |
| 1                | hd8 1 1 00..01..00..00..00 N/A                             |
| 1                | hd5 1 1 01..00..00..00..00 N/A                             |
| 1                | hd6 8 8 08..00..00..00..00 N/A                             |
| 1                | hdisk0 00f6001a207349a6 rootvg active                      |

BBBC

## 11.4 BBBD – (I/O adapters)

The BBBD sheet shows a list of all I/O adapters listed in the ODM together with the hdisks addressed through that adapter.

| File ID (FILEI) | Disk adapter number (ADAPTER_NUMBE) | Disk adapter name (ADAPTER_NA) | Total disks (DIS) | Description (DESC)                   |
|-----------------|-------------------------------------|--------------------------------|-------------------|--------------------------------------|
| 1               | 0                                   | fcs5                           | 14                | Virtual Fibre Channel Client Adapter |
| 1               | 1                                   | fcs6                           | 14                | Virtual Fibre Channel Client Adapter |
| 1               | 2                                   | fcs7                           | 14                | Virtual Fibre Channel Client Adapter |
| 1               | 3                                   | fcs4                           | 14                | Virtual Fibre Channel Client Adapter |

BBBD

## 11.5 BBBF – (Fiber channel / FCSTAT)

The BBBF sheet displays output from the FCSTAT command against each fiber channel adapter on the system.

[illegible]*BBBF*

## 11.6 BBBL – (Shared processors)

The BBBL sheet is only produced if the operating system is running in AIX partitions and contains details of the configuration of the LPAR at the start of the collection run.

| File ID (FILEI) | METRIC            | Value                                                                       |
|-----------------|-------------------|-----------------------------------------------------------------------------|
| 1               | lparno            | 3                                                                           |
| 1               | lparname          | sv63117-cdn-ebus-weblogic-wk-p                                              |
| 1               | CPU in sys        | 20                                                                          |
| 1               | Virtual CPU       | 15                                                                          |
| 1               | Logical CPU       | 120                                                                         |
| 1               | smt threads       | 8                                                                           |
| 1               | capped            | 0                                                                           |
| 1               | min Virtual       | 1                                                                           |
| 1               | max Virtual       | 20                                                                          |
| 1               | min Logical       | 1                                                                           |
| 1               | max Logical       | 160                                                                         |
| 1               | min Capacity      | 0.5                                                                         |
| 1               | max Capacity      | 9.0                                                                         |
| 1               | Entitled Capacity | 6.0                                                                         |
| 1               | min Memory MB     | 10240                                                                       |
| 1               | max Memory MB     | 168960                                                                      |
| 1               | online Memory     | 168960                                                                      |
| 1               | Pool CPU          | 20                                                                          |
| 1               | Weight            | 128                                                                         |
| 1               | pool id           | 0                                                                           |
| 1               | Flags             | LPARed DRable SMT Shared UnCapped PoolAuth Migratable Not-Donating AMSable. |

BBBL

## 11.7 BBBN – (Network adapters)

The BBBN describes each network adapter in the system and shows the name, speed and MTU size.

| File ID (FILEI) | Network adapter name (NETWORK_NA) | MTU size (MTU) | Speed (Mbits/sec) (MBITS) | Description (DESC)                  |
|-----------------|-----------------------------------|----------------|---------------------------|-------------------------------------|
| 1               | en0                               | 1500           | 10240                     | Standard Ethernet Network Interface |
| 1               | 0                                 | 0              | 0                         | not available                       |

BBBN

## 11.8 BBBP – (Command output)

This report displays command output from running several AIX commands at the time the NMON collection was taken. The commands include the following:

uptime, lsconf, lspis, lparstat, emstat, vmo, lssrad, mpstat, schedo, vmstat, wlm\*, oslevel, ifconfig, netstat and more.

Note that to get output from these commands requires NMON to be running with root privileges.

| File ID<br>(FILEID) | CMD<br>(CMD) | DATA<br>(DATA)                                                     | F4<br>(F4) | F5<br>(F5) |
|---------------------|--------------|--------------------------------------------------------------------|------------|------------|
| 1                   | uptime       |                                                                    |            |            |
| 1                   | uptime       | 01:21PM up 699 days, 4:53, 0 users, load average: 0.49, 0.55, 0.51 |            |            |
| 1                   | lsconf       |                                                                    |            |            |
| 1                   | lsconf       | System Model: IBM,8233-E8B                                         |            |            |
| 1                   | lsconf       | Machine Serial Number: 10001AP                                     |            |            |
| 1                   | lsconf       | Processor Type: POWERPC_POWER7                                     |            |            |
| 1                   | lsconf       | Processor Implementation Mode: POWER 7                             |            |            |
| 1                   | lsconf       | Processor Version: PV_7_Compat                                     |            |            |
| 1                   | lsconf       | Number Of Processors: 2                                            |            |            |
| 1                   | lsconf       | Processor Clock Speed: 3550 MHz                                    |            |            |
| 1                   | lsconf       | CPU Type: 64-bit                                                   |            |            |
| 1                   | lsconf       | Kernel Type: 64-bit                                                |            |            |
| 1                   | lsconf       | LPAR Info: 2 ctcvha9e                                              |            |            |
| 1                   | lsconf       | Memory Size: 4096 MB                                               |            |            |
| 1                   | lsconf       | Good Memory Size: 4096 MB                                          |            |            |
| 1                   | lsconf       | Platform Firmware level: AL730_157                                 |            |            |
| 1                   | lsconf       | Firmware Version: IBM,AL730_157                                    |            |            |
| 1                   | lsconf       | Console Login: enable                                              |            |            |
| 1                   | lsconf       | Auto Restart: true                                                 |            |            |
| 1                   | lsconf       | Full Core: false                                                   |            |            |
| 1                   | lsconf       | NX Crypto Acceleration: Not Capable                                |            |            |
| 1                   | lsconf       |                                                                    |            |            |
| 1                   | lsconf       | Network Information                                                |            |            |
| 1                   | lsconf       | Host Name: ctcvha9e                                                |            |            |
| 1                   | lsconf       | IP Address: 9.5.167.80                                             |            |            |
| 1                   | lsconf       | Sub Netmask: 255.255.255.0                                         |            |            |
| 1                   | lsconf       | Gateway: 9.5.167.1                                                 |            |            |

BBBP

## 11.9 BBBV – (Volume groups)

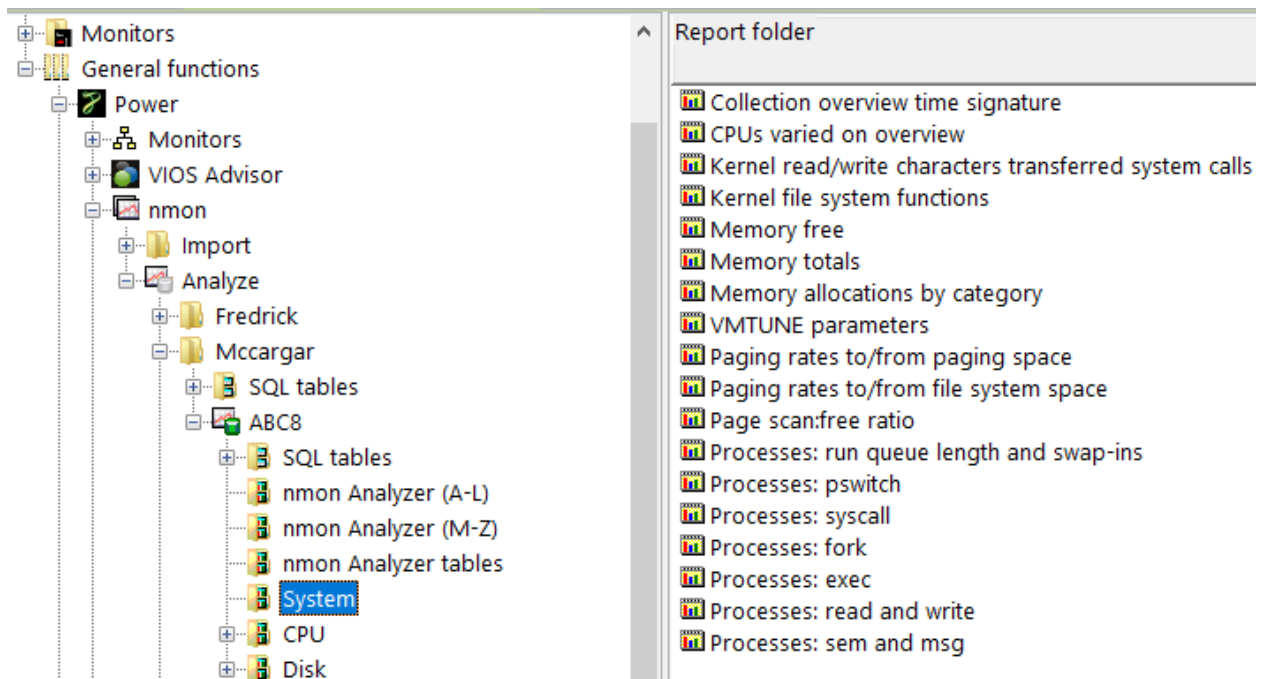
This sheet lists all of the volume groups present at the start of the collection

| File ID<br>(FILEID) | DATA<br>(DATA)                                                      |
|---------------------|---------------------------------------------------------------------|
| 1                   | VOLUME GROUP: rootvg VG IDENTIFIER: 00f6001a00004c00000001499fa3... |
| 1                   | VG STATE: active PP SIZE: 64 megabyte(s)                            |
| 1                   | VG PERMISSION: read/write TOTAL PPs: 1599 (102336 megabytes)        |
| 1                   | MAX LVs: 256 FREE PPs: 88 (5632 megabytes)                          |
| 1                   | LVs: 14 USED PPs: 1511 (96704 megabytes)                            |
| 1                   | OPEN LVs: 13 QUORUM: 2 (Enabled)                                    |
| 1                   | TOTAL PVs: 1 VG DESCRIPTORS: 2                                      |
| 1                   | STALE PVs: 0 STALE PPs: 0                                           |
| 1                   | ACTIVE PVs: 1 AUTO ON: yes                                          |
| 1                   | MAX PPs per VG: 32512                                               |
| 1                   | MAX PPs per PV: 2032 MAX PVs: 16                                    |
| 1                   | LTG size (Dynamic): 512 kilobyte(s) AUTO SYNC: no                   |
| 1                   | HOT SPARE: no BB POLICY: relocatable                                |
| 1                   | PV RESTRICTION: none INFINITE RETRY: no                             |
| 1                   | DISK BLOCK SIZE: 512 CRITICAL VG: no                                |

BBBV

## 12 System

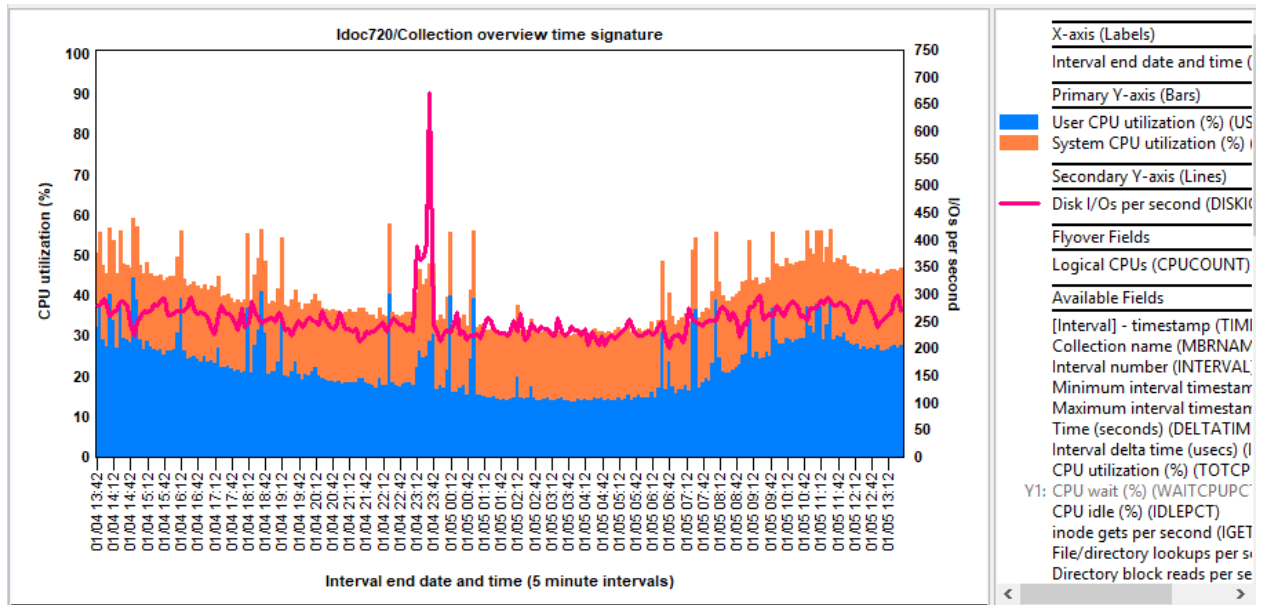
These graphs display several different types of statistics for the AIX/VIOS or Linux system.



Systems folder

### 12.1 Collection overview time signature

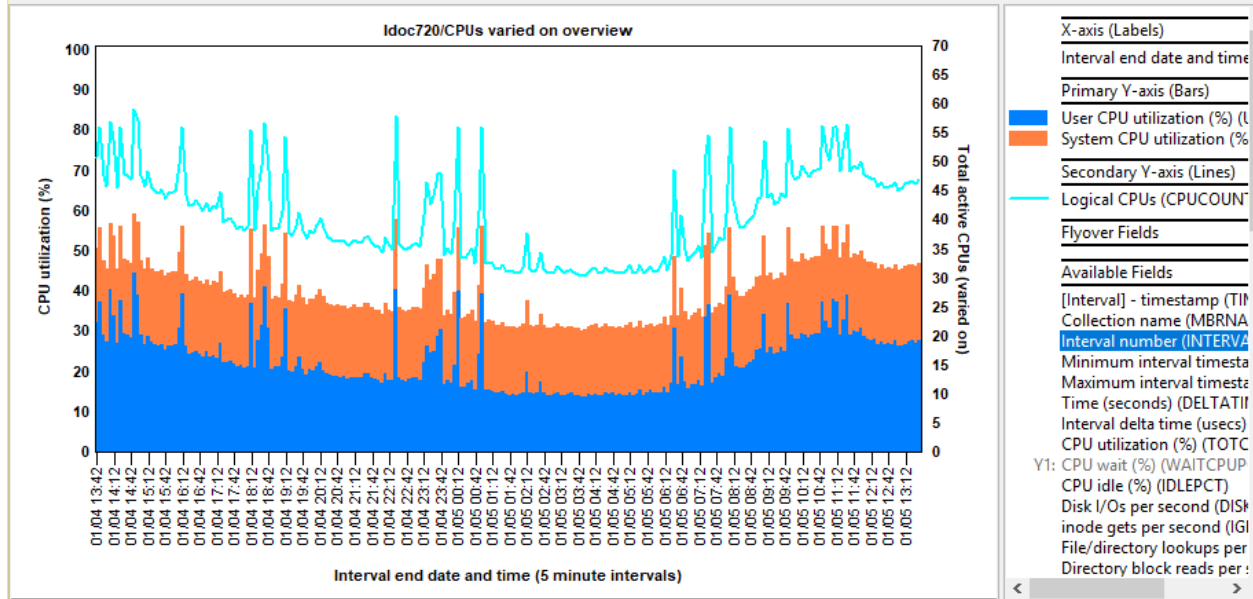
This graph shows CPU utilization and CPU wait percentage along with disk I/Os per second as the secondary Y-axis (Y2).



Collection overview time signature

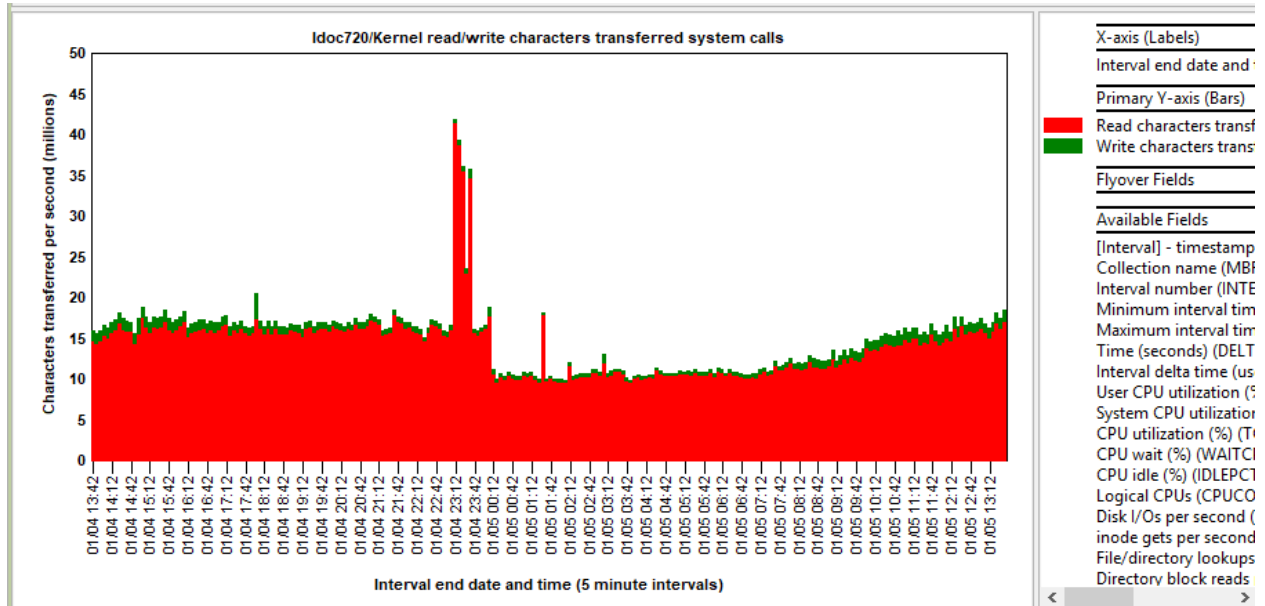
## 12.2 CPUs varied on overview

This graph shows CPU utilization and CPU wait percentage along with the number of CPUs varied on over time on the secondary Y-axis (Y2).



CPUs varied on overview

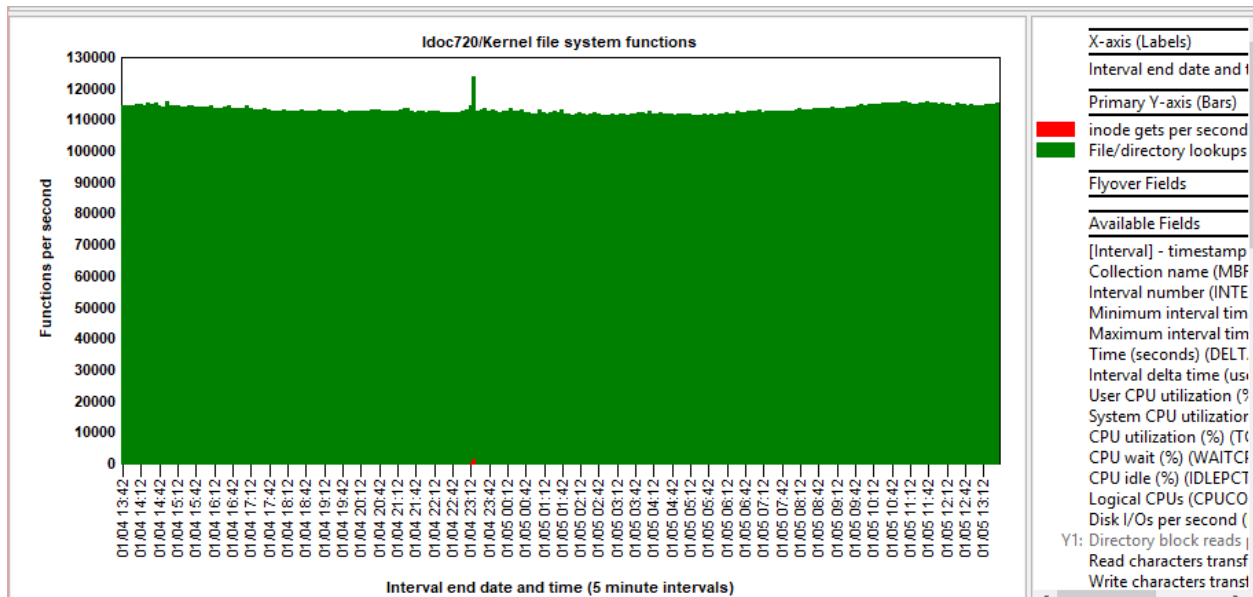
## 12.3 Kernel read/write characters transferred system calls



Kernel read/write characters transferred system calls

## 12.4 Kernel file system functions

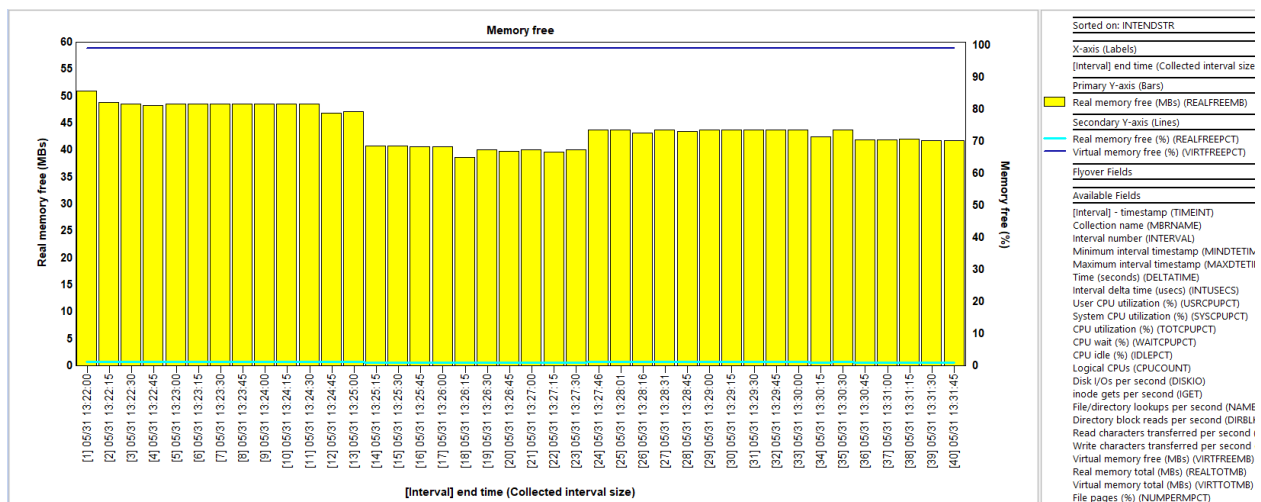
This graph displays the number of function calls per second over time for the iget, namei and dirblk functions.



Kernel file system functions

## 12.5 Memory free

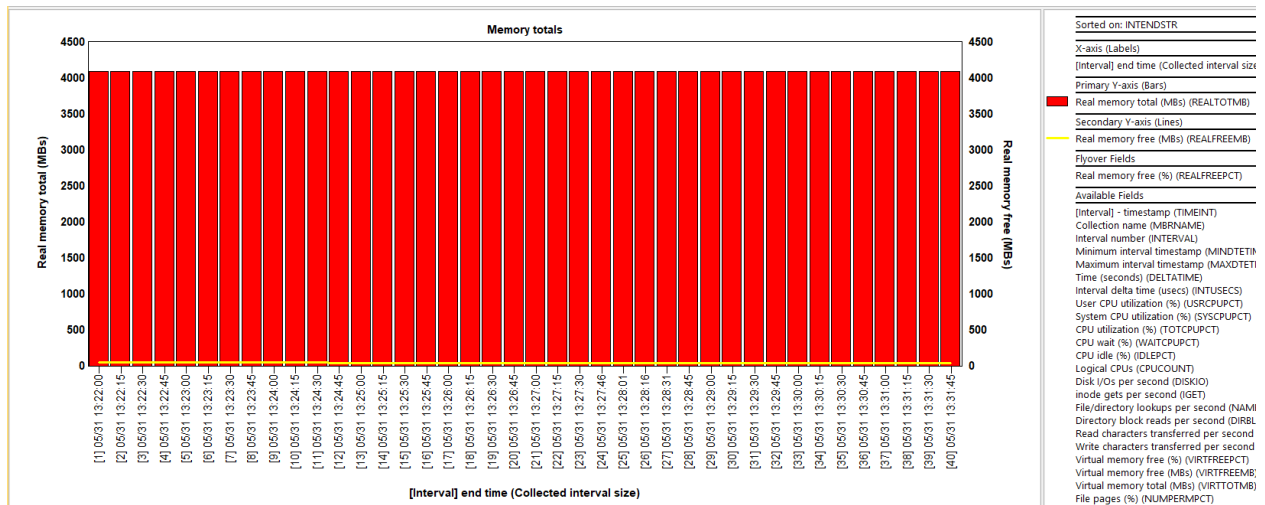
This graph shows the real memory free in megabytes and also as a percentage on the second Y-axis along with virtual memory free.



Memory free

## 12.6 Memory totals

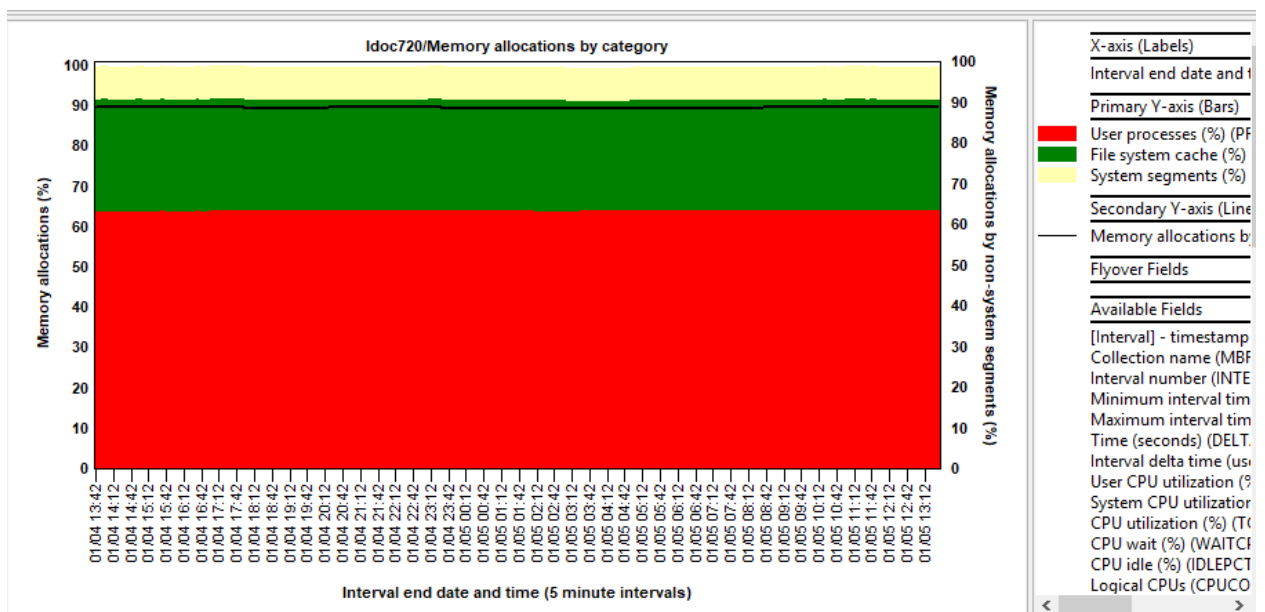
This graph displays total real memory along with the real memory free on the secondary Y-axis.



Memory totals

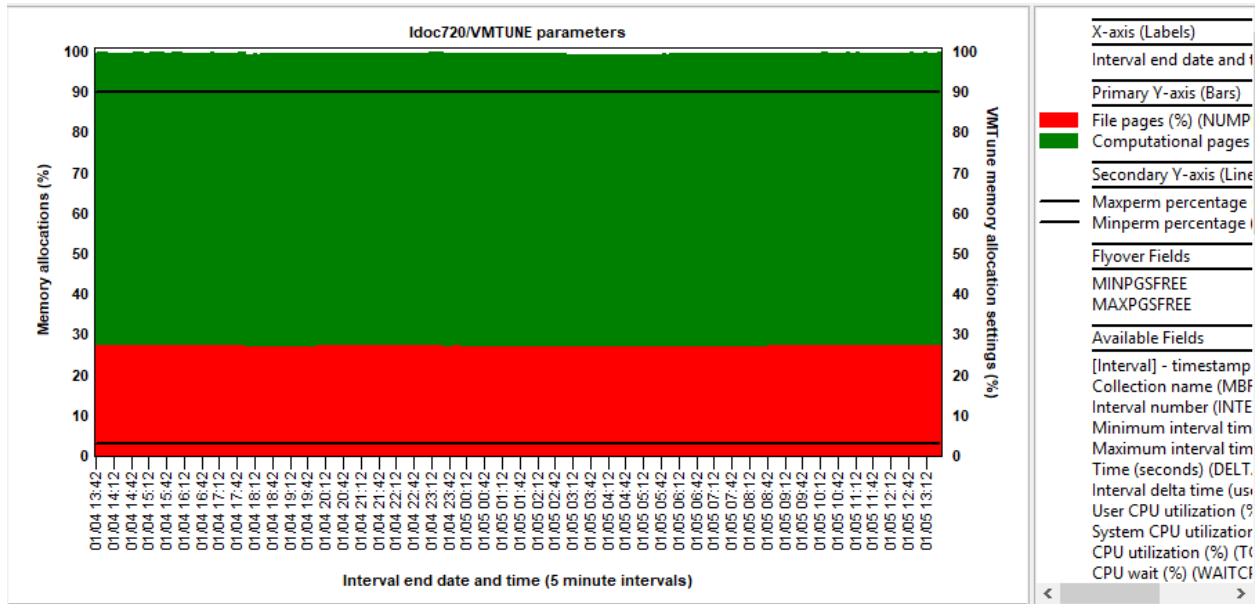
## 12.7 Memory allocations by category

This graph gives the user an indication of the possible high-level categories that memory is being allocated to.



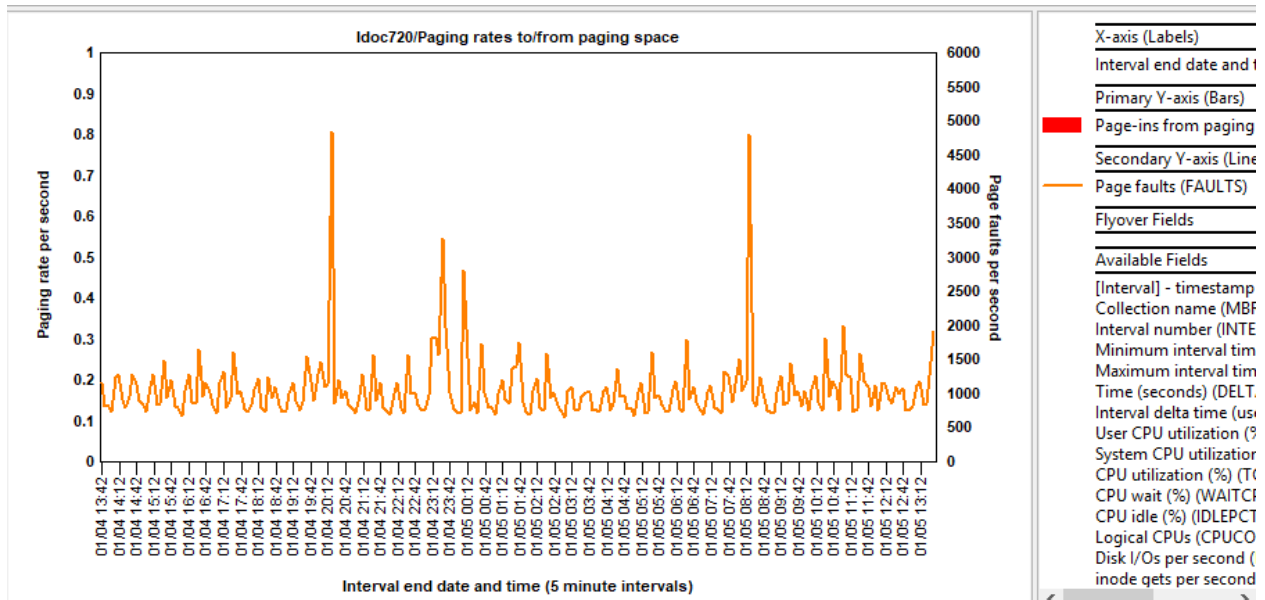
Memory allocations by category

## 12.8 VMTUNE parameters



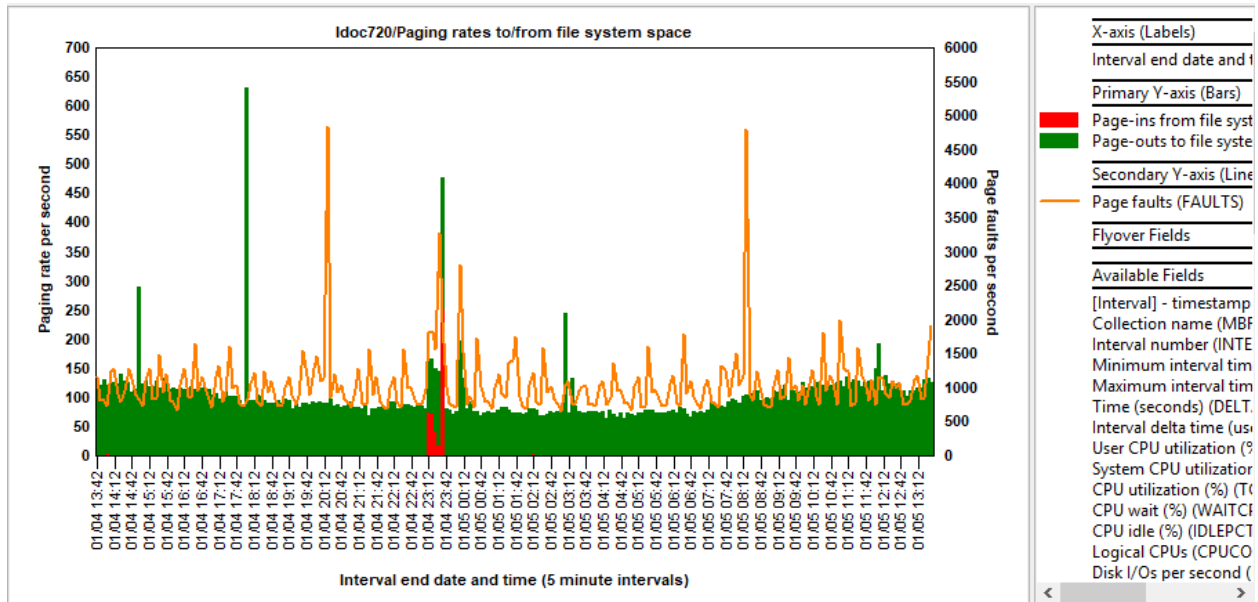
VMTUNE parameters

## 12.9 Paging rates to/from paging space



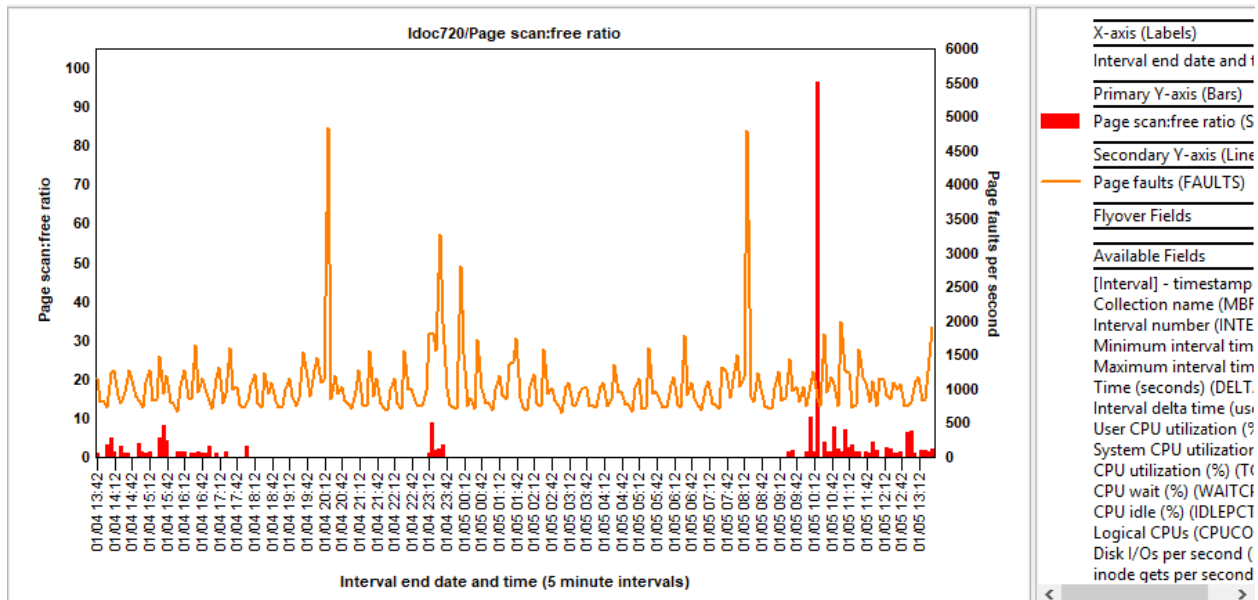
Paging rates to/from paging space

## 12.10 Paging rates to/from file system space



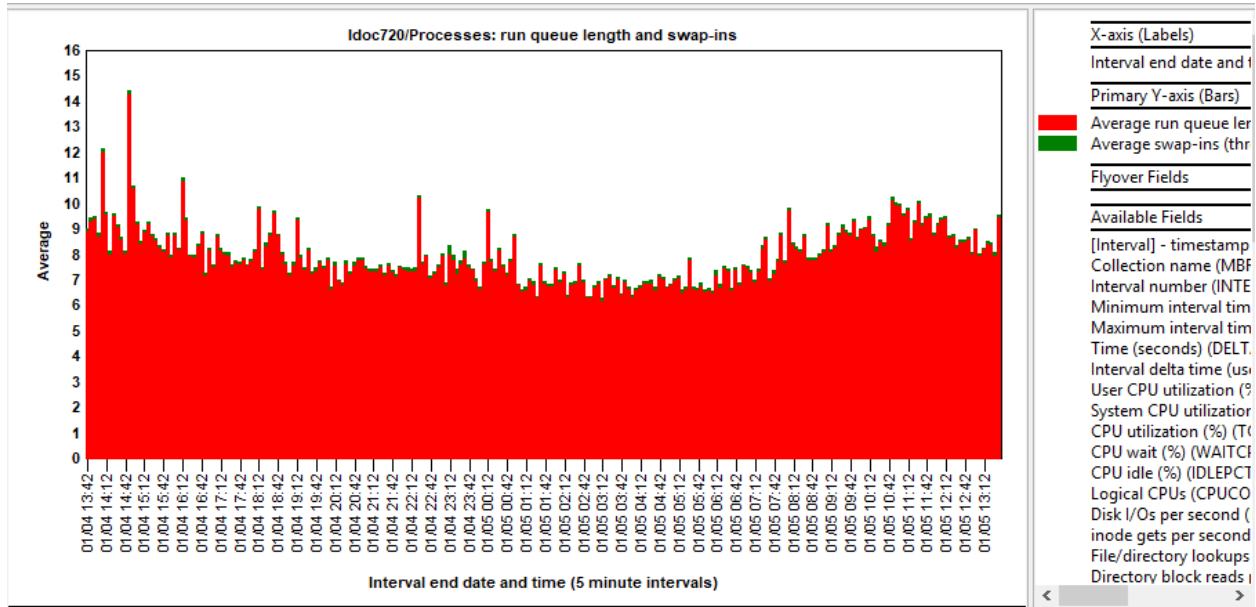
Paging rates to/from file system space

## 12.11 Page scan:free ratio



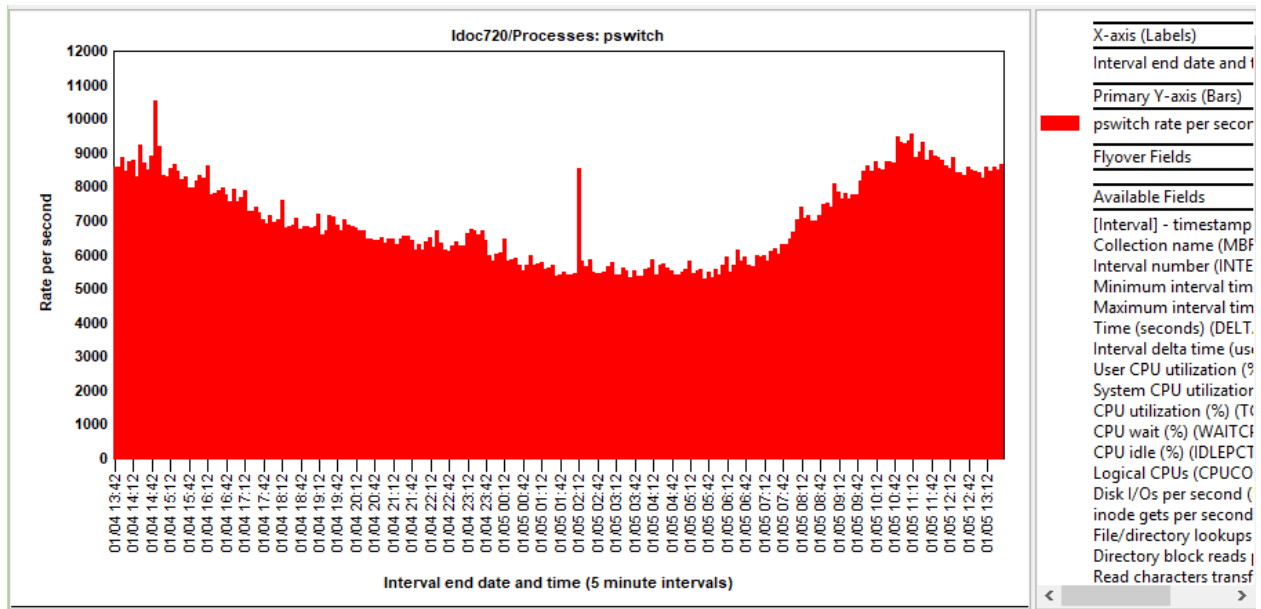
Page scan:free ratio

## 12.12 Processes: run queue length and swap-ins



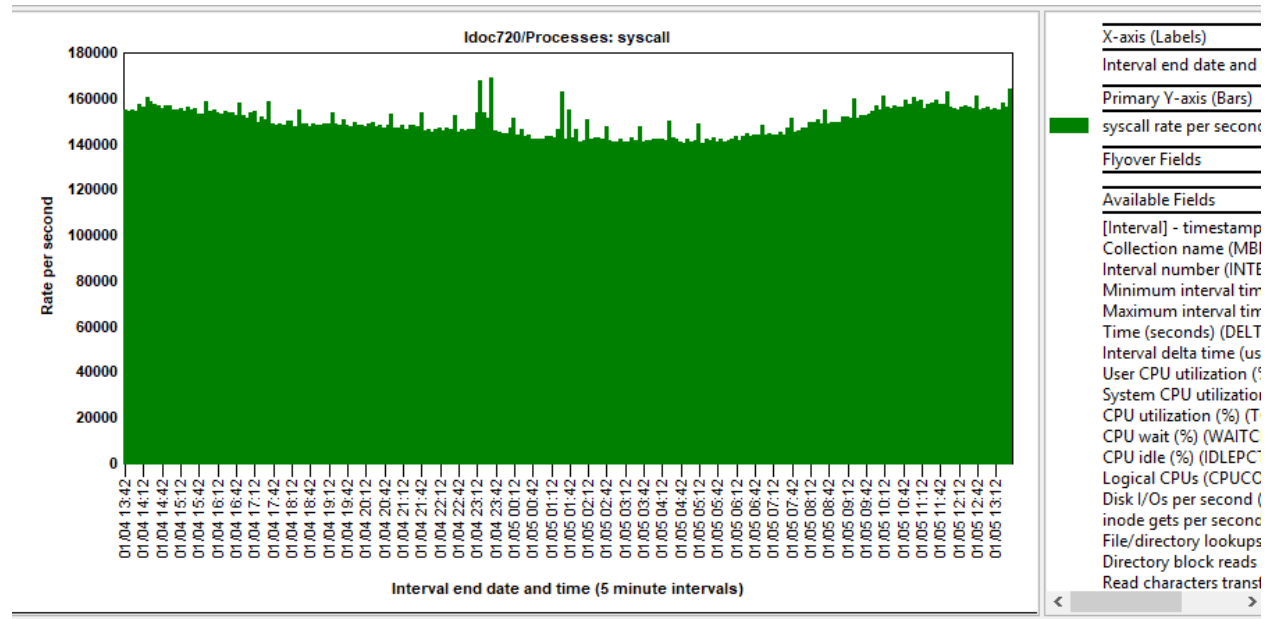
Processes: run queue length and swap-ins

## 12.13 Processes: pswitch

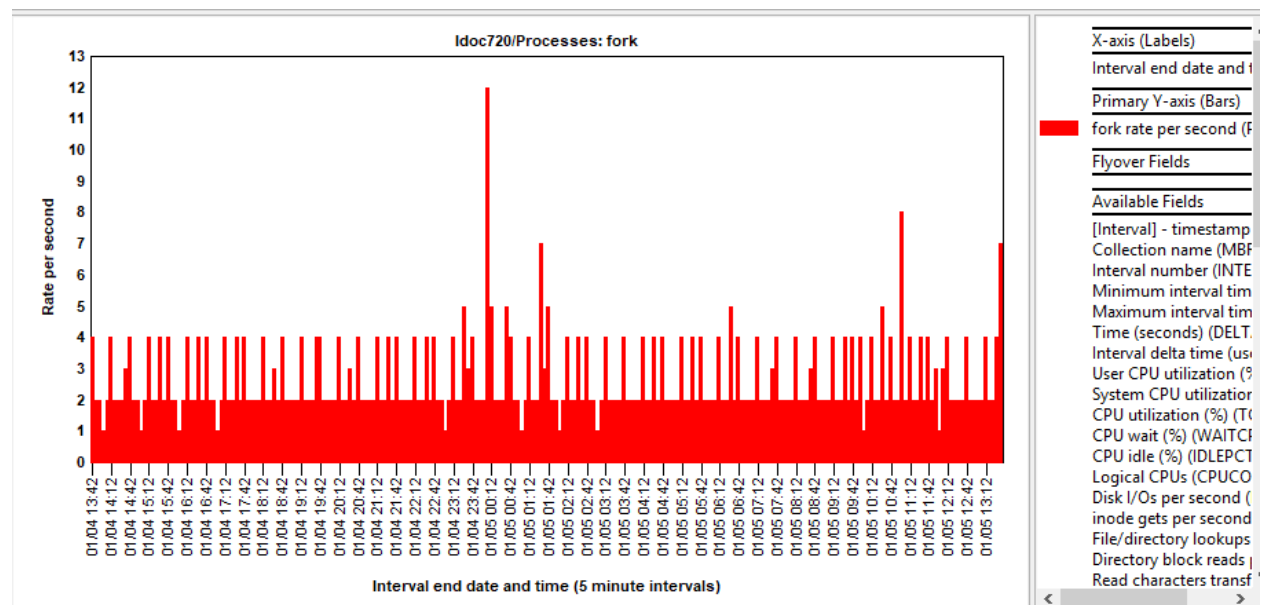


Processes: pswitch

## 12.14 Processes: syscall

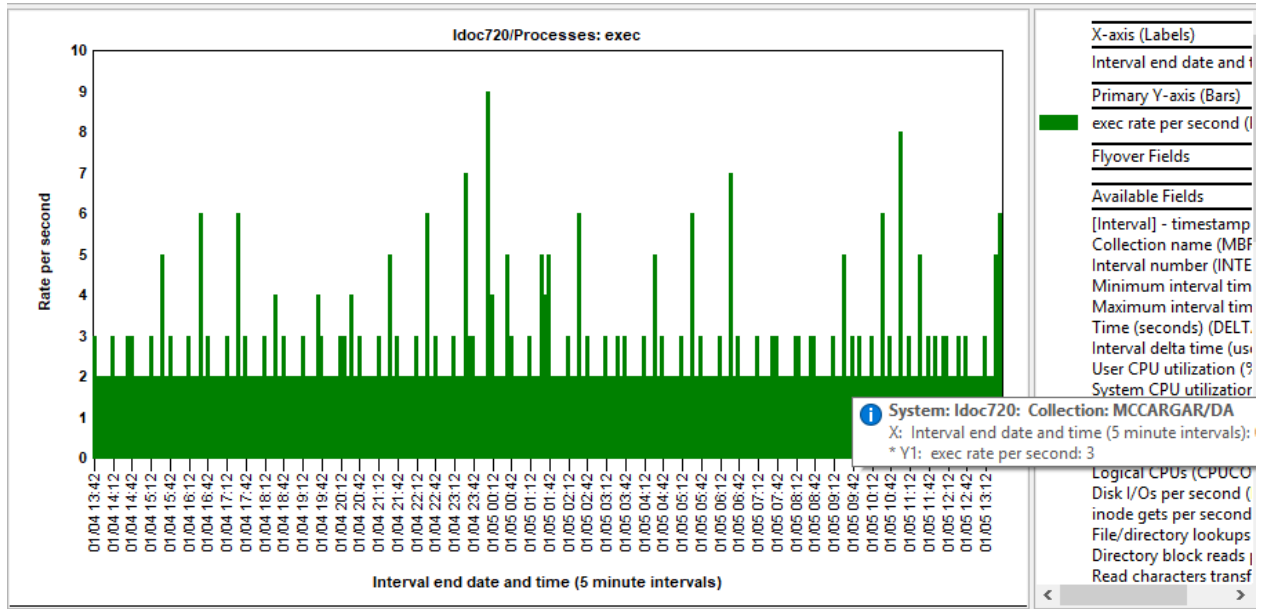


## 12.15 Processes: fork

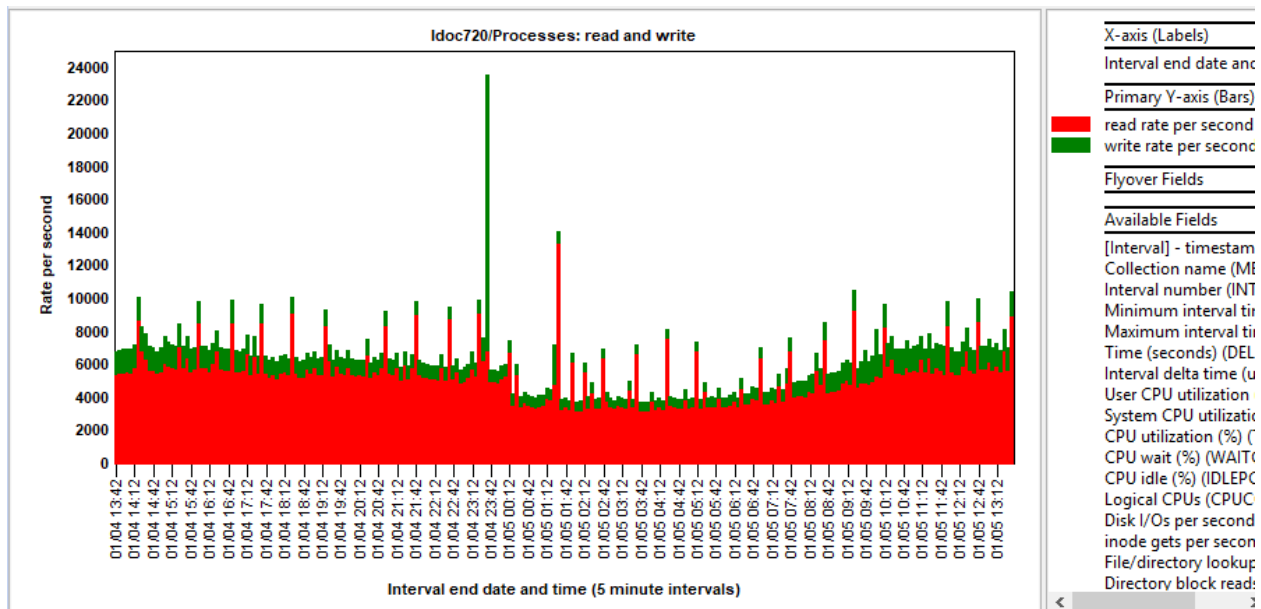


Processes: fork

## 12.16 Processes: exec

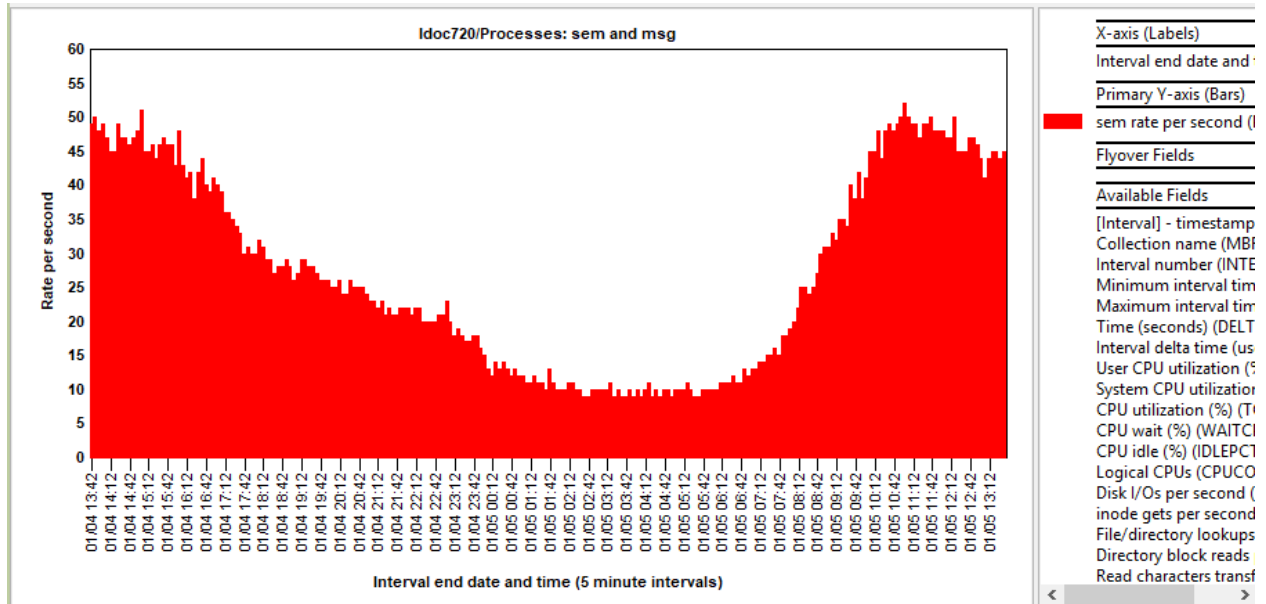


## 12.17 Processes: read and write



Processes: read and write

## 12.18 Processes: sem and msg



Processes: sem and msg

## 13 CPU

The CPU graphs display CPU utilization over time and provides an option to rank the CPU utilizations by processor under the **CPU utilization rankings** folder.

|  | Report folder                          | Description                                            | Tr |
|--|----------------------------------------|--------------------------------------------------------|----|
|  | CPU utilization                        |                                                        |    |
|  | CPU utilization with CPU idle          |                                                        |    |
|  | CPU utilization rankings               | Ranks the CPU utilization by processor                 |    |
|  | CPU utilization with CPU idle rankings | Ranks the CPU utilization (with CPU idle) by processor |    |

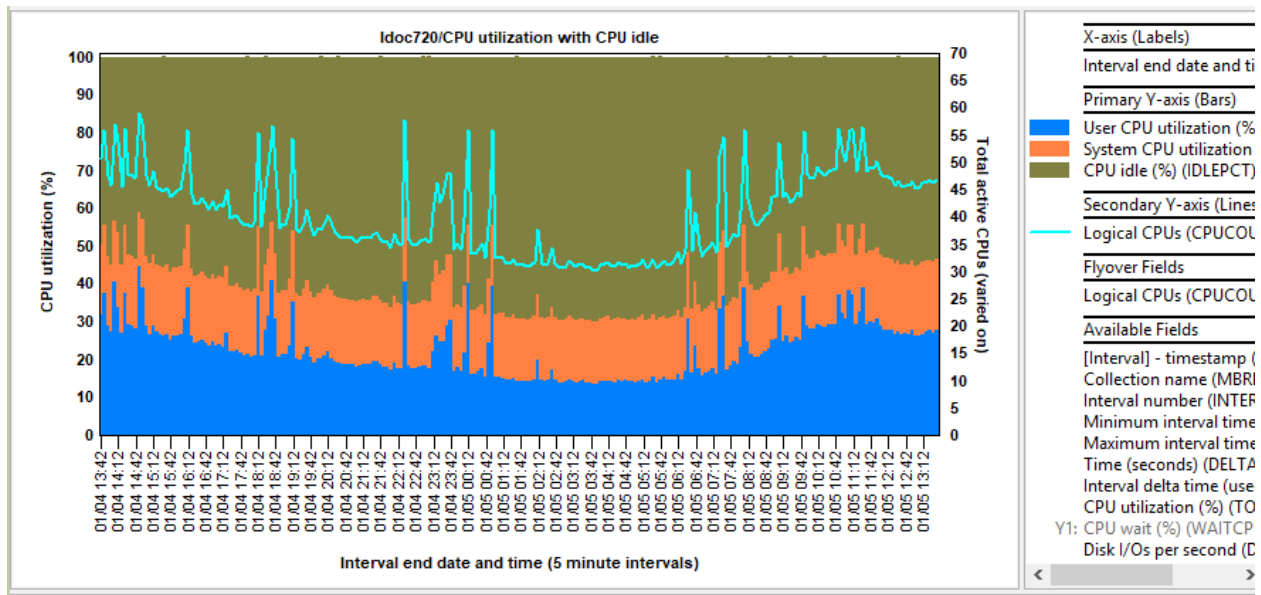
CPU folder

### 13.1 CPU Utilization

This graph shows user and system CPU utilization and CPU wait percentage along with the total varied on CPUs as the secondary Y-axis (Y2).

### 13.2 CPU Utilization with CPU idle

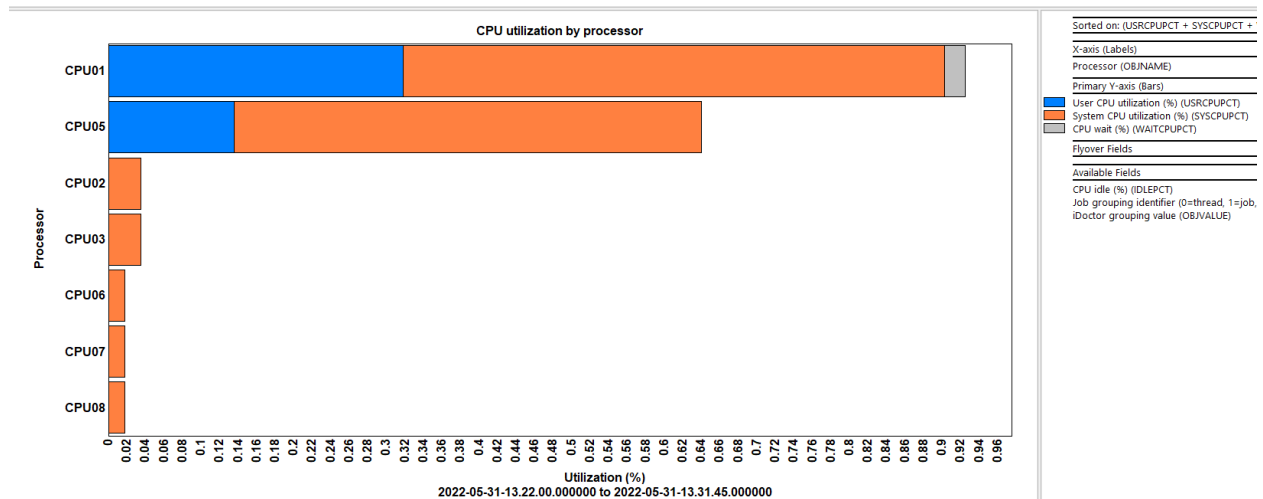
This is the same graph as the previous one except it also includes the CPU idle (%.)



CPU Utilization with CPU idle

### 13.3 CPU Utilization by processor

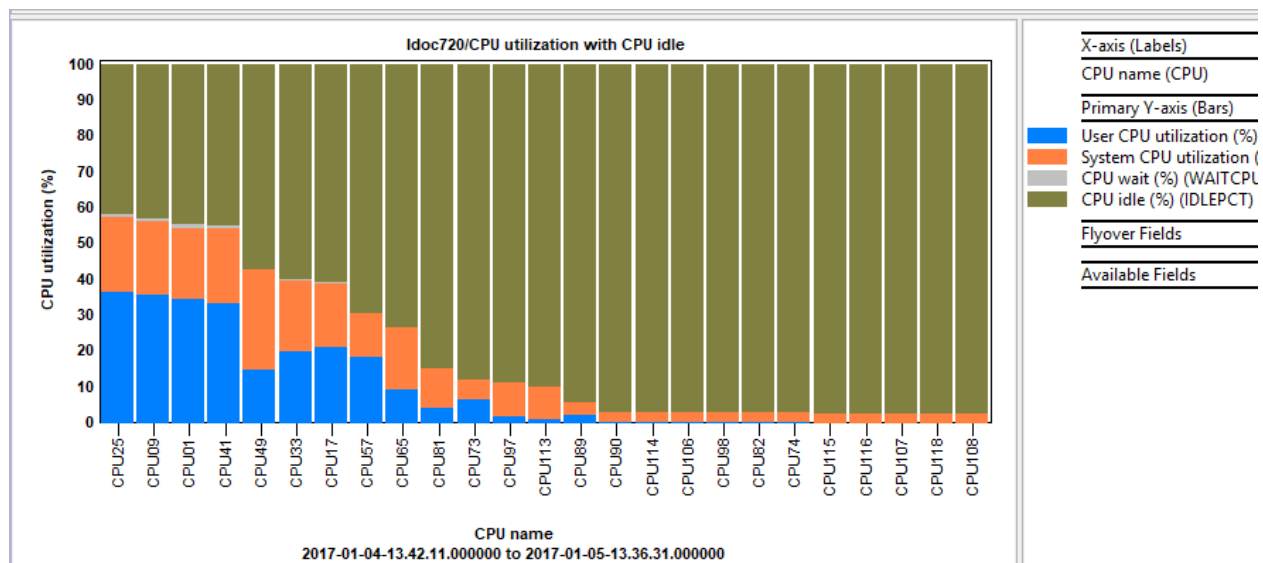
This graph shows CPU utilization and CPU wait percentage with the CPU thread having the highest utilization shown first.



CPU Utilization

## 13.4 CPU Utilization with CPU idle by processor

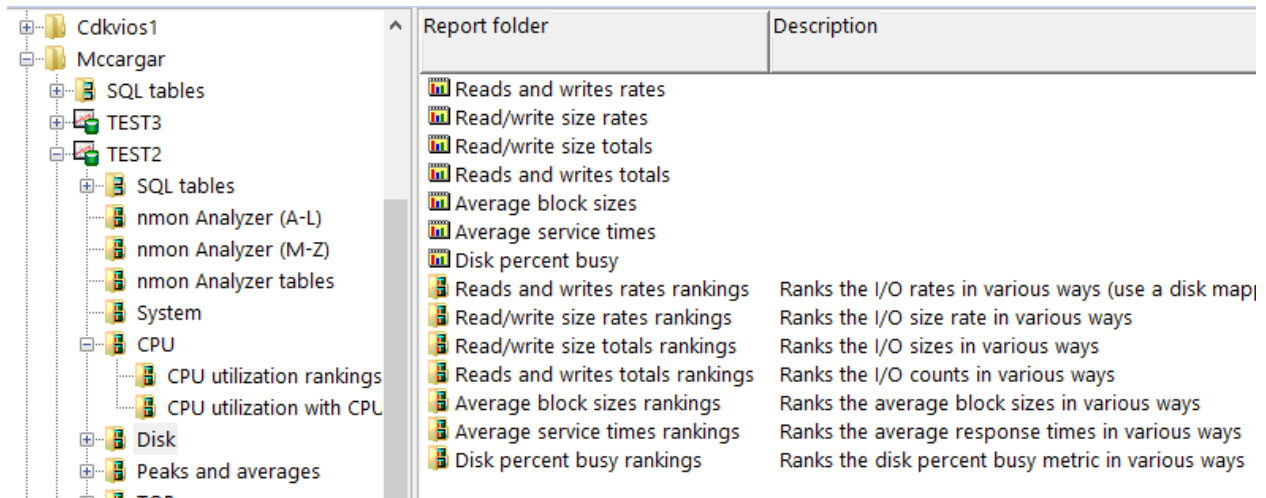
This is the same graph as the previous one except it also includes the CPU idle (%.)\



CPU Utilization with CPU idle

## 14 Disk graphs

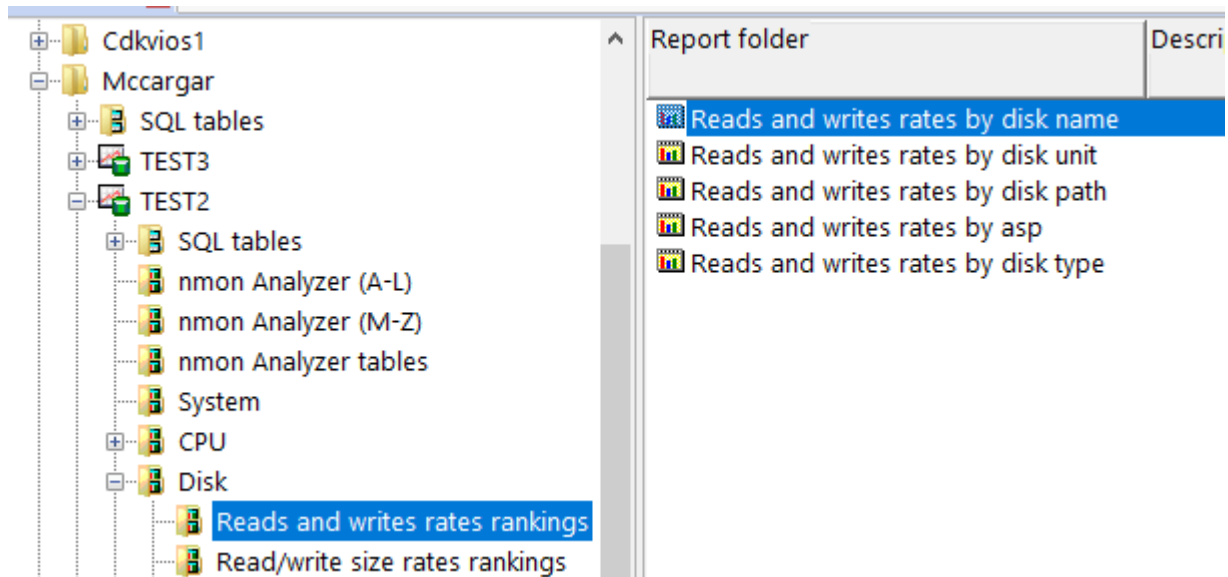
The disk graphs display the various disk statistics provided by nmon. Within the subfolders are ranking graphs that allow the user to rank by disk name.



*Nmon disk folder*

**Note:** If a valid VIOS to IBM i disk mapping has been provided (at analysis time when using the Analyze NMON Data window) then the following additional ranking graphs are available in the subfolders:

By disk unit  
By disk path  
By ASP  
By disk type



*Disk -> Reads and wites rates rankings folder (if a disk mapping provided)*

Older versions of nmon do not collect all statistics shown in these graphs. In those cases, the graphs or portions of the graph may be all 0s (or show up blank.)

**Tip:** In the Preferences interface on the Power tab, options are available to filter these graphs by ASP or disk name. The disk name filtering option allows you to only show EMC/PowerPath disks or exclude them. After graphs have been opened, use the Change SQL Parameters menu from the graph to modify the parameters/filtering used if desired.

**Note:** It is highly recommended to include disk response times in your nmon data. See the section on the Power Collection Wizard for more information on how to include these. If NOT collected, then you will have all 0s for the Average response times shown on these graphs.

---

## 14.1 NMON Disk fields

Here is a list of the disk fields collected by NMON (taken from <https://www.ibm.com/docs/en/aix/7.2?topic=tool-io-statistics>):

### **DISKBUSY, Disk %Busy**

Percentage of time during which the disk is active.

### **DISKREAD, Disk Read KB/s**

Total read operations from the disk in KBs per second.

### **DISKWRITE, Disk Write KB/s**

Total write operations to the disk in KBs per second.

### **DISKXFER, Disk transfers per second**

Number of transfers per second.

### **DISKRXFER, Transfers from disk (reads) per second**

Number of read transfers per second.

### **DISKBSIZE, Disk Block Size**

Total number of disk blocks that are read and written over the interval.

### **DISKRIO, Disk IO Reads per second**

Number of disk read I/O transfers per second.

### **DISKWIO, Disk IO Writes per second**

Number of disk write I/O transfers per second.

### **DISKAVGRIO, Disk IO Average Reads KBs/xfer**

Average number of KBs that are read from the disk per read I/O operation.

### **DISKAVGWIO, Disk IO Average Writes KBs/xfer**

Average number of KBs that are written to the disk per write I/O operation.

### **DISKSERV, Disk Service Time msec/xfer**

Average disk I/O service time per transfer in milliseconds.

### **DISKREADSERV, Disk Read Service Time msec/xfer**

Average read disk service time per transfer in milliseconds.

### **DISKWRITESERV, Disk Write Service Time msec/xfer**

Average write disk service time per transfer in milliseconds.

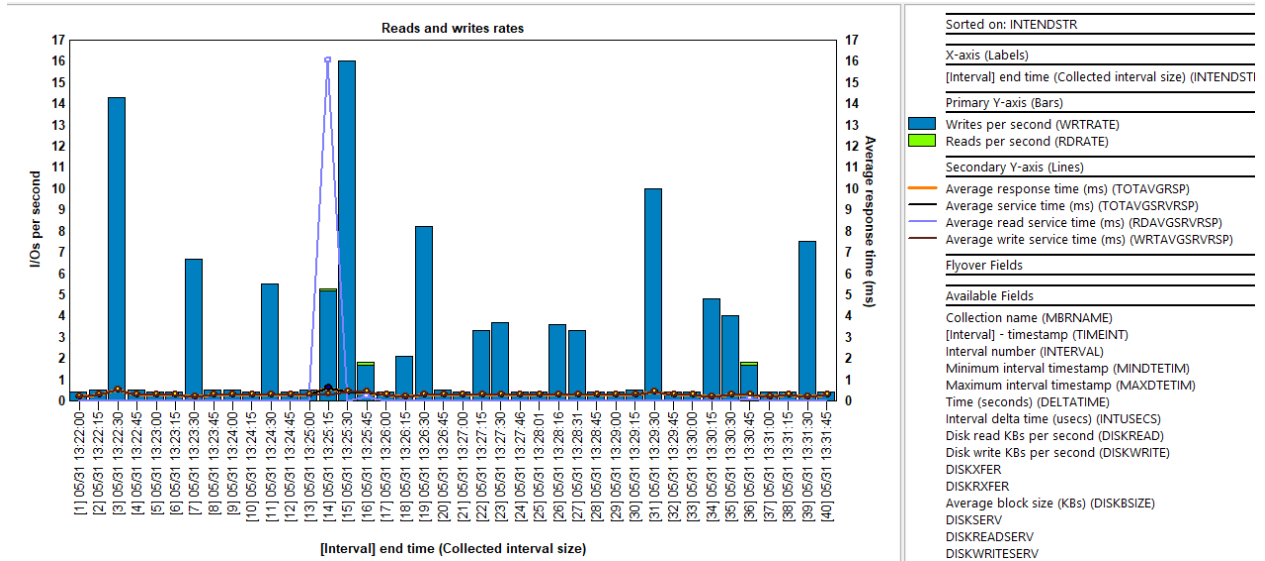
### **DISKWAIT, Disk Wait Queue Time msec/xfer**

Average time spent in the disk wait queue per transfer in milliseconds.

---

## 14.2 Reads and writes rates

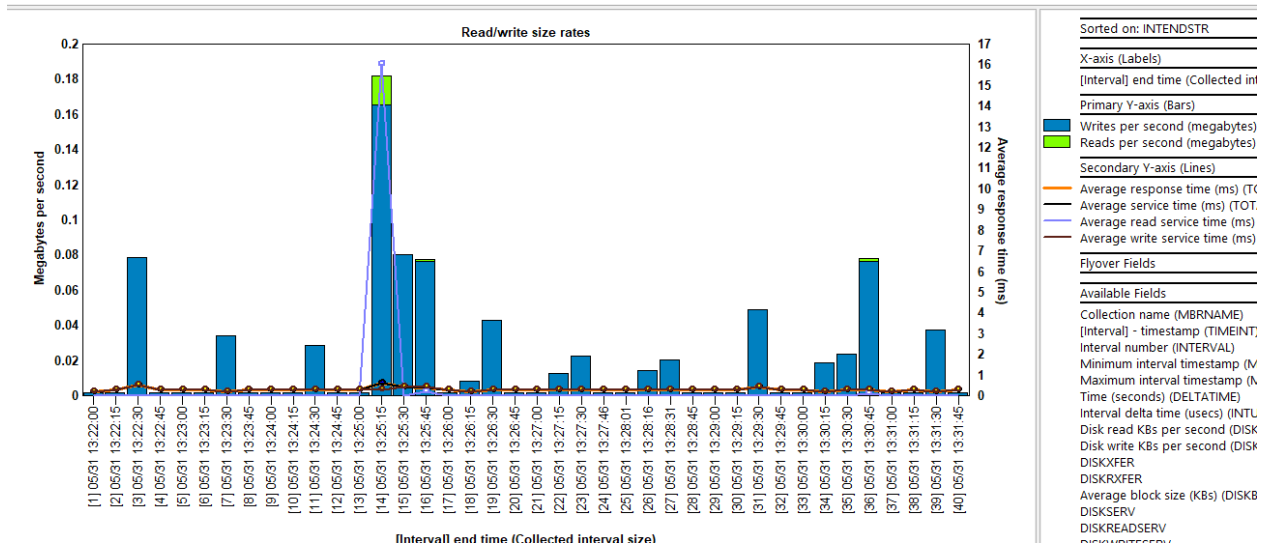
This graph shows the I/O rates per second for reads and writes along with the average response time and average services times on the secondary Y-axis (Y2).



Reads and writes rates

## 14.3 Read/write size rates

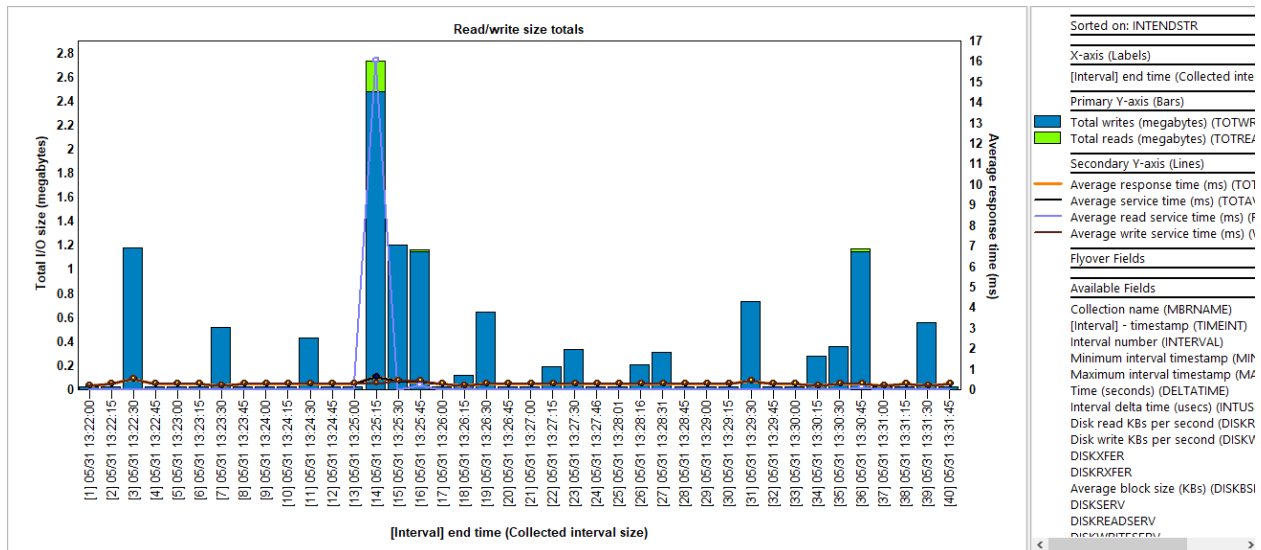
This graph shows the I/O size rates for reads and writes (in megabytes per second) along with the average response time and average services times on the secondary Y-axis (Y2).



Read/write size rates

## 14.4 Read/write size totals

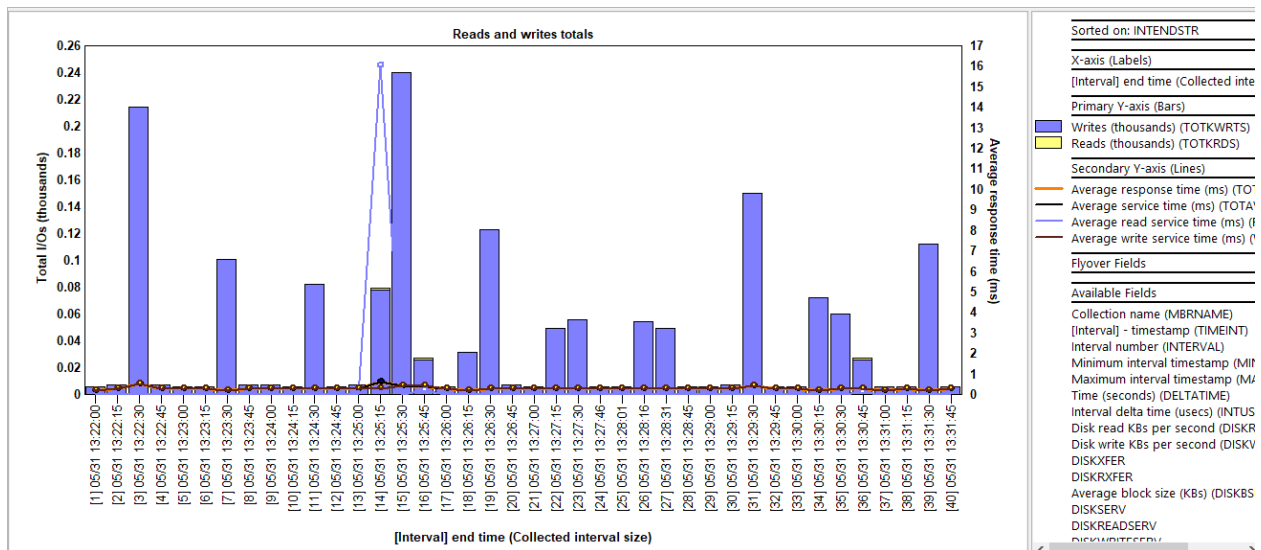
This graph shows the total I/O size (in megabytes) for both reads and writes along with the average response time and average services times on the secondary Y-axis (Y2).



Read/write size totals

## 14.5 Reads and writes totals

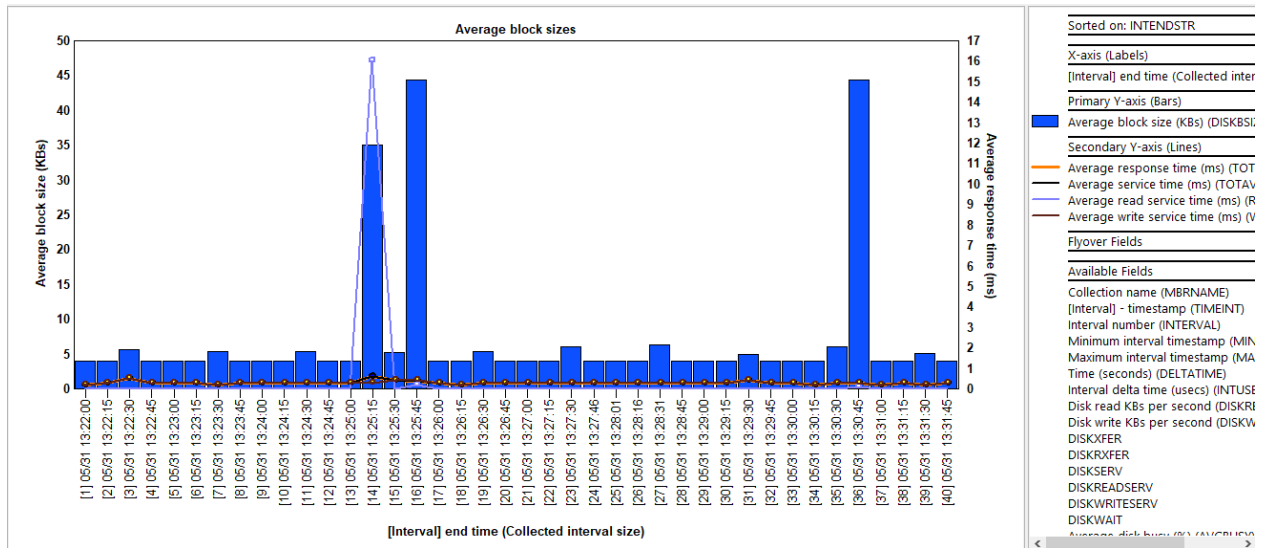
This graph shows the total number of reads and writes along with the average response time and average services times on the secondary Y-axis (Y2).



Read and writes totals

## 14.6 Average block sizes

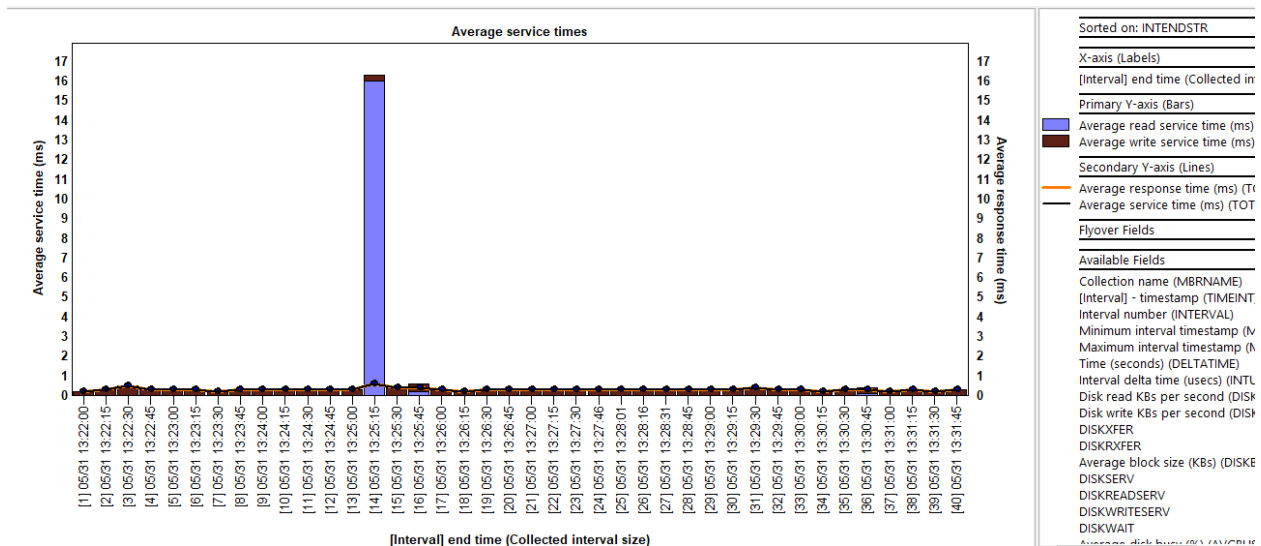
This graph shows the average block size along with the average response time and average services times on the secondary Y-axis (Y2).



Average block sizes

## 14.7 Average service times

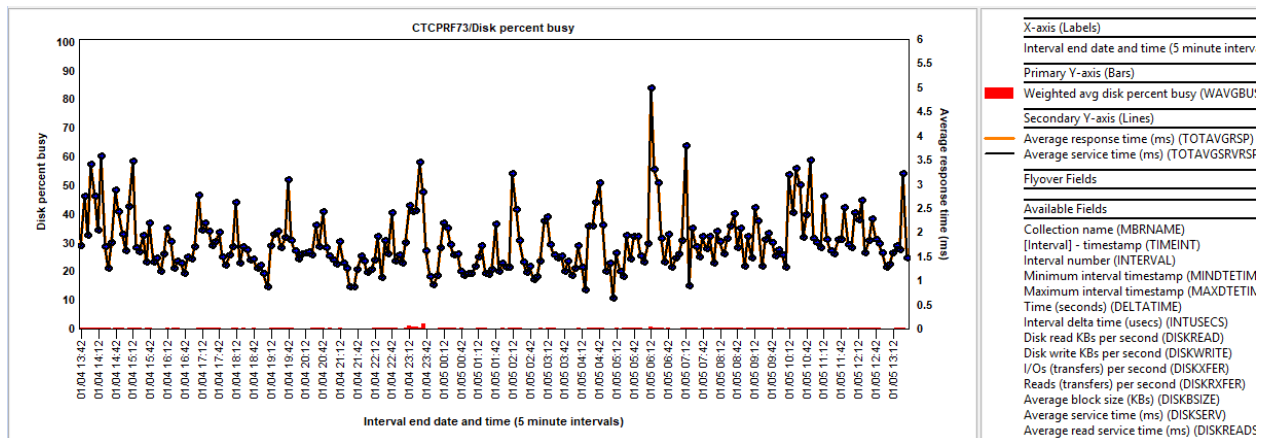
This graph shows the average read and write service times along with the average response time and average services time on the secondary Y-axis (Y2).



Average service times

## 14.8 Disk percent busy

This graph displays the average disk percent busy (calculated as a weighted average that exclude 0 values) along with the average response time and average services times on the secondary Y-axis (Y2).

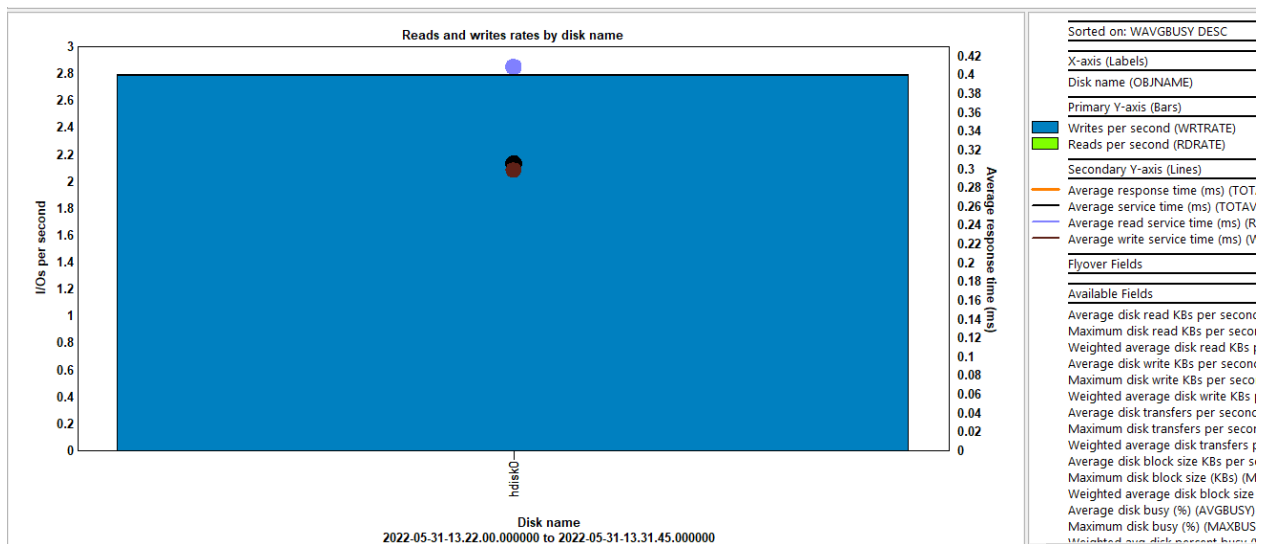


Disk percent busy

## 14.9 Reads and writes rates rankings

This graph shows the I/O rates per second for reads and writes along with the average response time and average services times on the secondary Y-axis (Y2). The data is ranked by 1 of several possible ways.

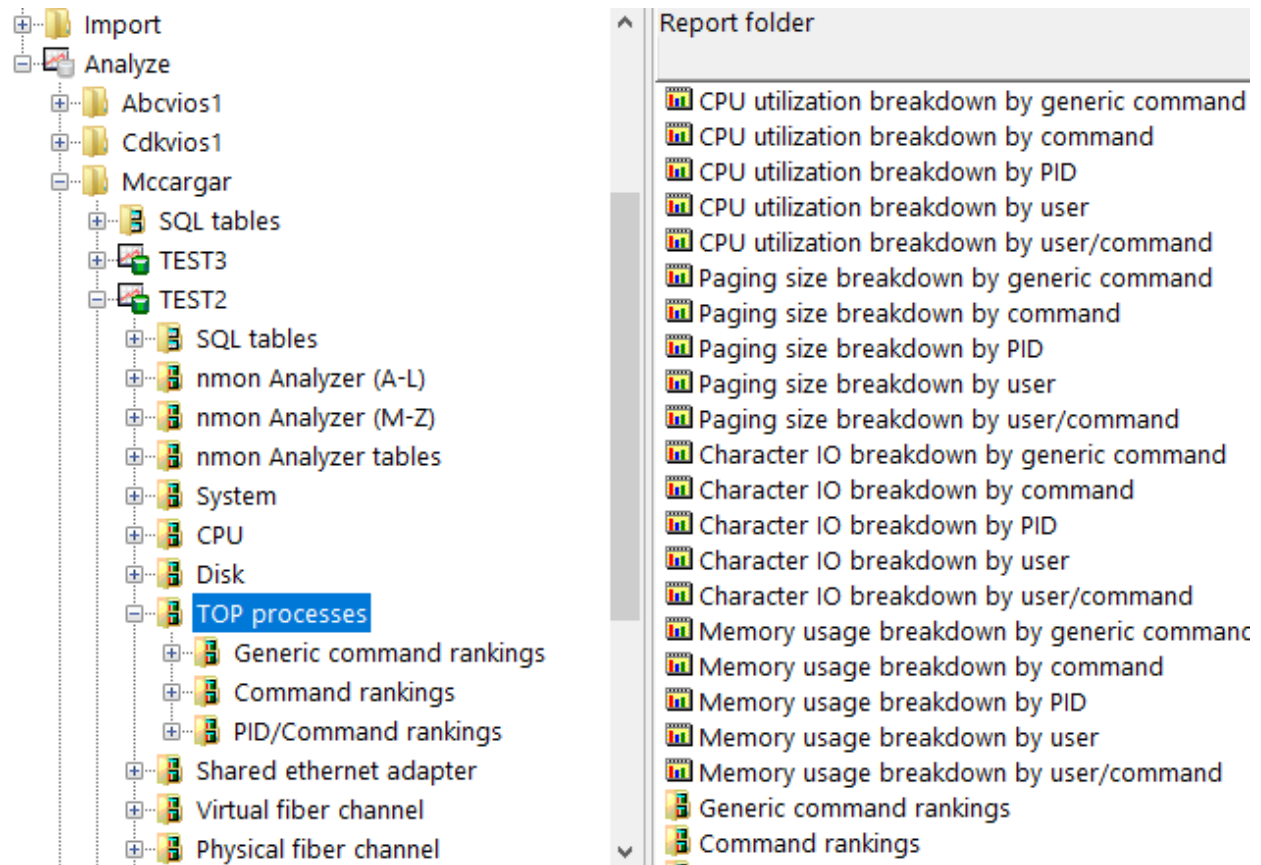
An example follows:



Reads and writes rates by disk name

## 15 TOP processes

The top graphs show data only from the Top collected processes by NMON. These processes are the ones that satisfy the top processes CPU filtering parameter when creating the collection.



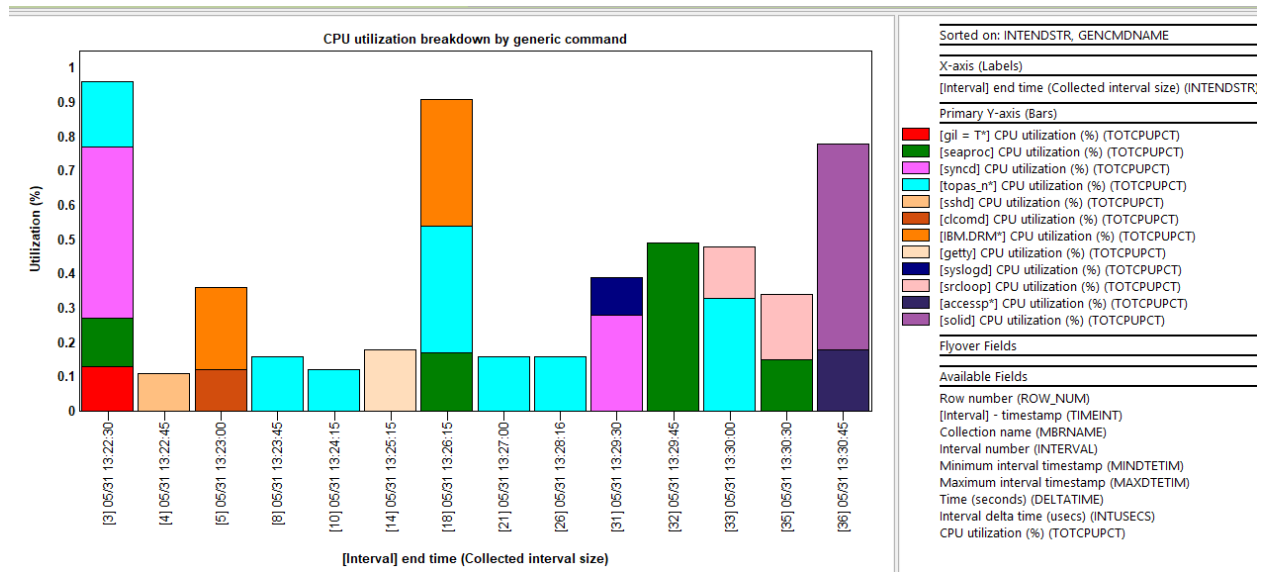
*TOP processes folder*

**Note:** Collectively these graphs do NOT show all metrics on the system.

These graphs display CPU utilization, paging size, character IO, memory usage over time.

Additional graphs are also shown which show the same metrics but ranked by command or PID (process ID) or broken down by command, PID, etc.

An example of this type of graph is:



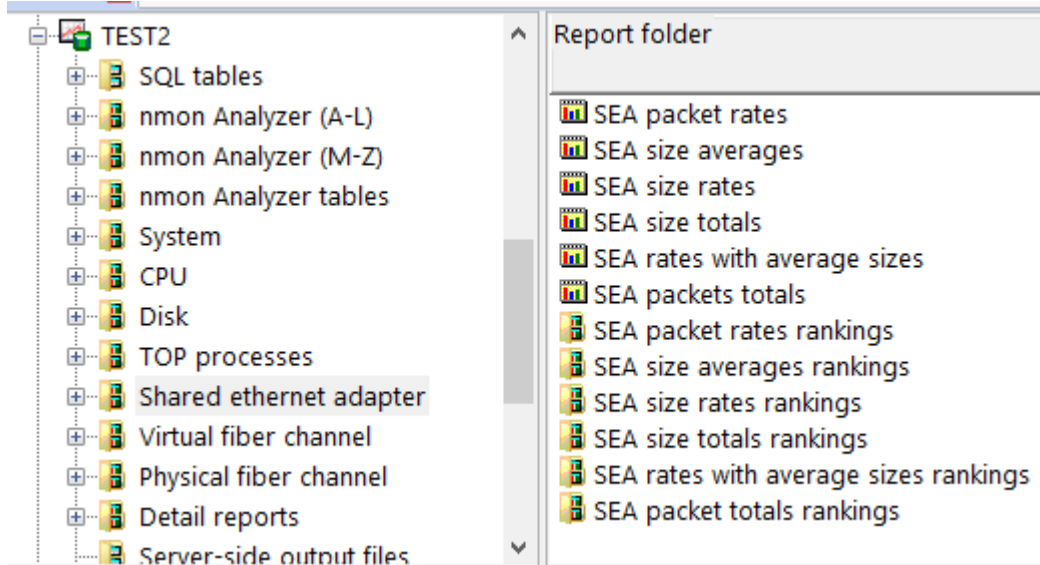
CPU utilization breakdown by generic command

## 16 Shared ethernet adapter

These graphs provide metrics for the shared ethernet adapter data found in the nmon collection.

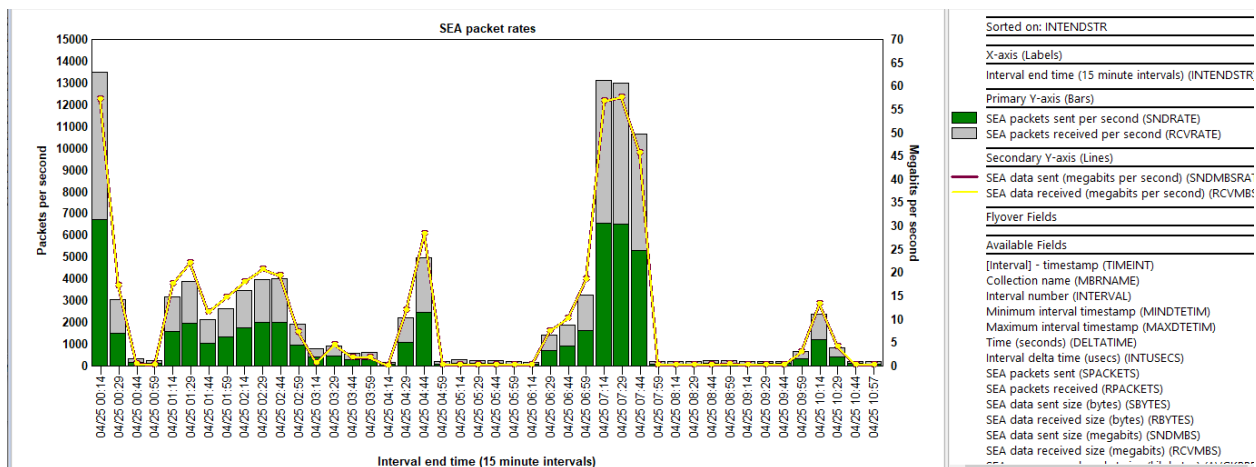
**Note:** This folder will only appear if these statistics have been captured.

**Note #2:** These graphs contained incorrect output with builds 1542 and earlier.



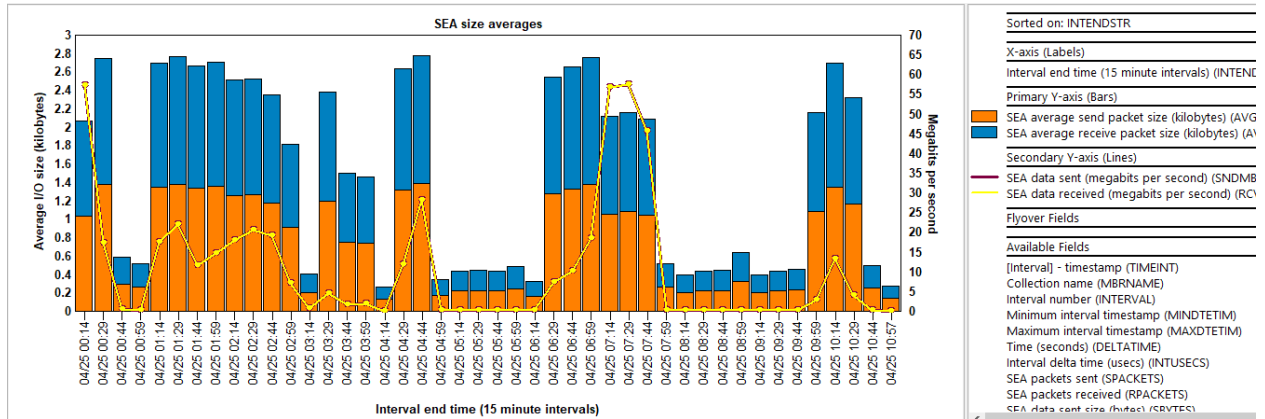
Shared ethernet adapter folder

### 16.1 SEA packet rates



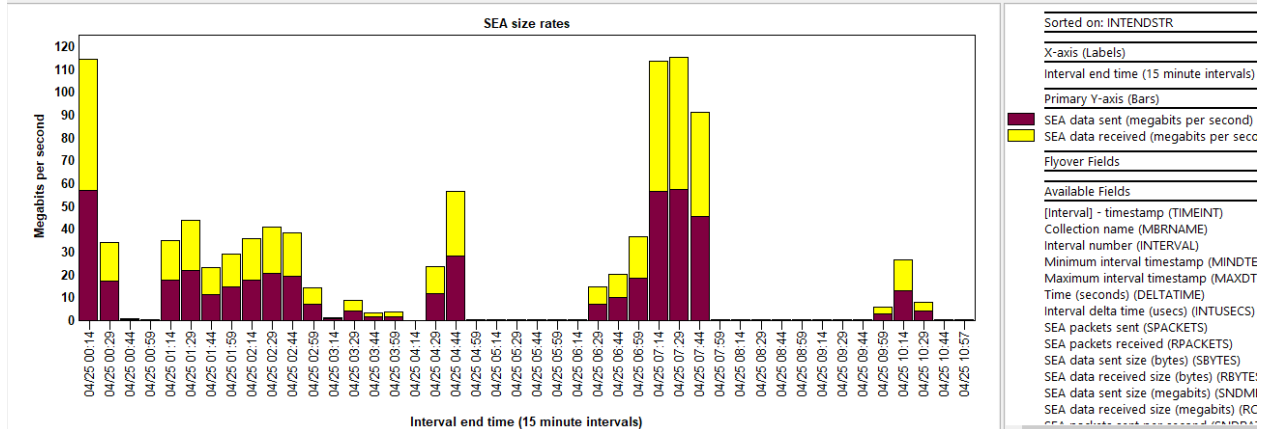
SEA packet rates

## 16.2 SEA size averages



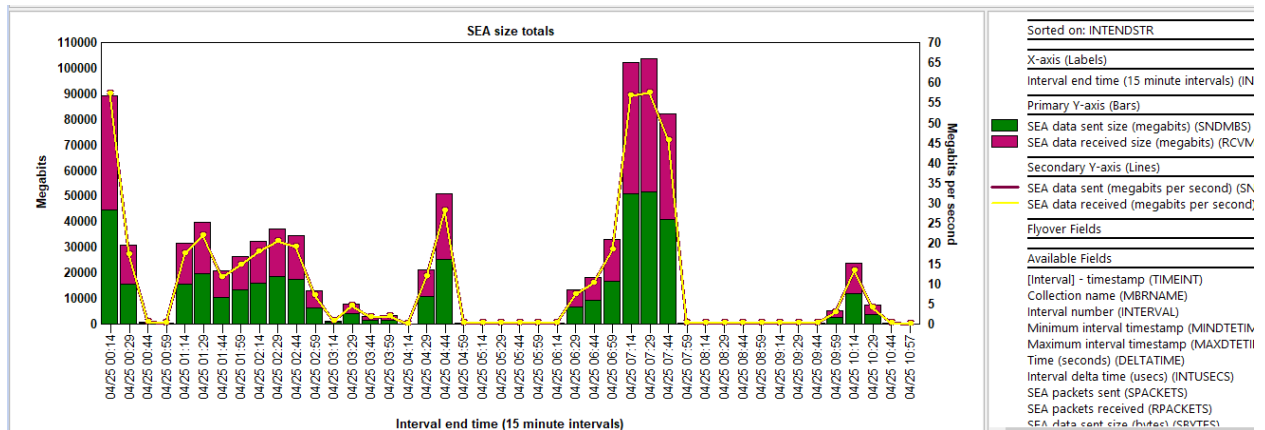
SEA size averages

## 16.3 SEA size rates



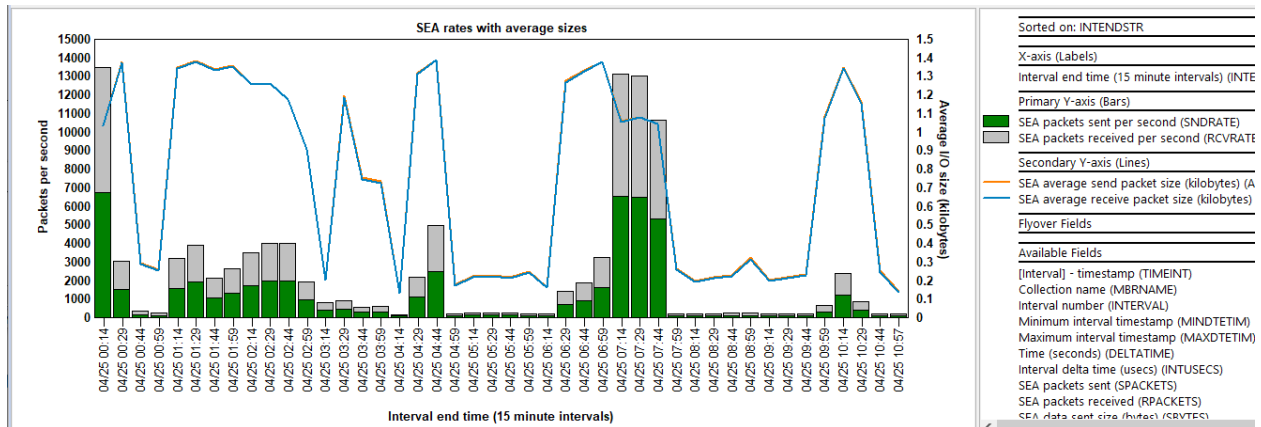
SEA size rates

## 16.4 SEA size totals



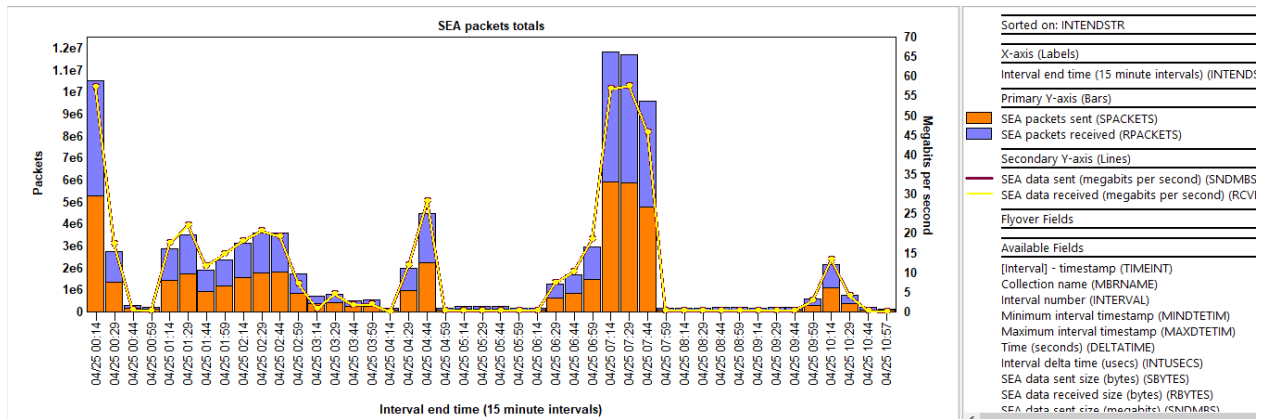
SEA size totals

## 16.5 SEA rates with average sizes



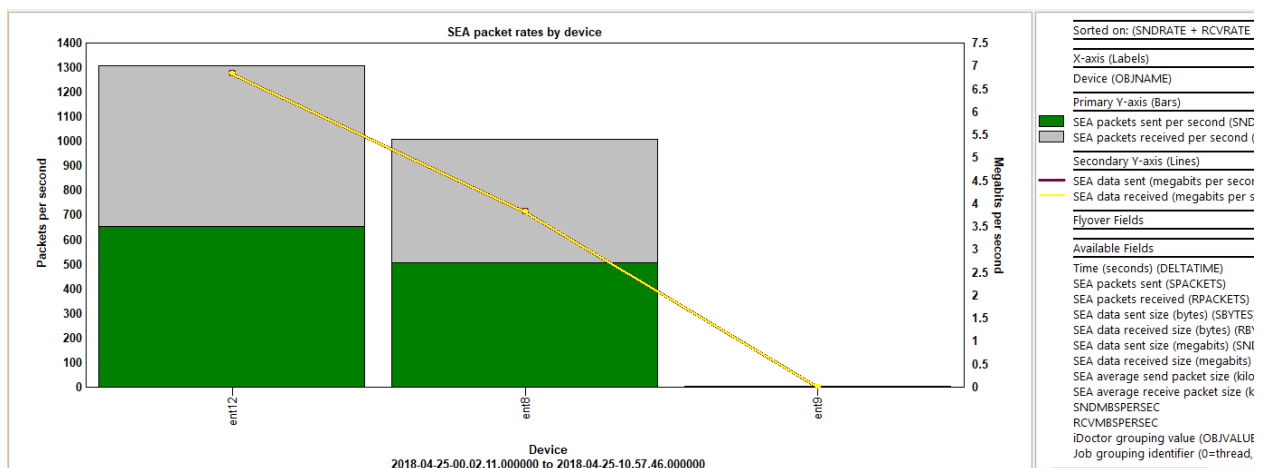
SEA rates with average sizes

## 16.6 SEA packets totals



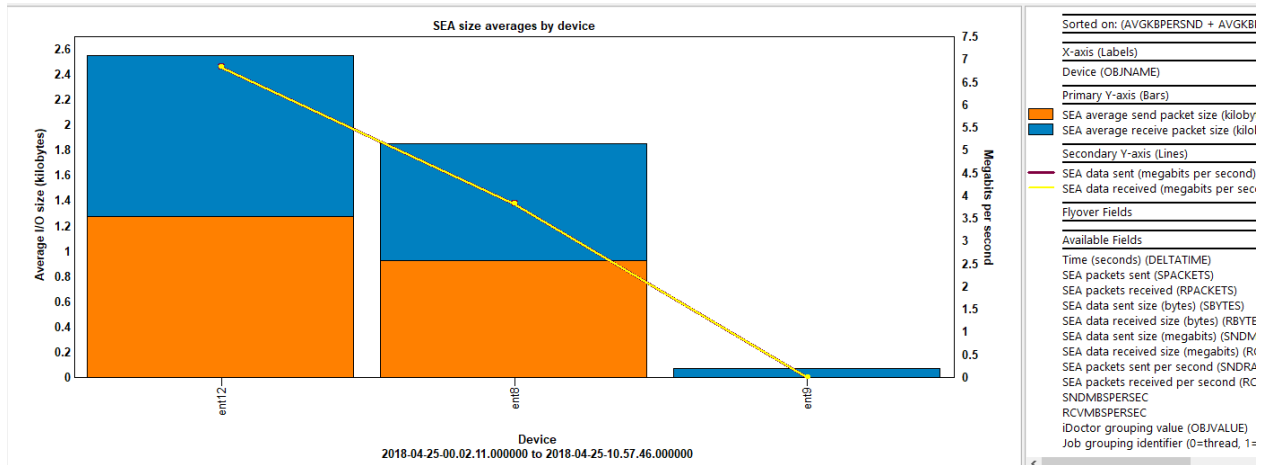
SEA packets totals

## 16.7 SEA packet rates rankings



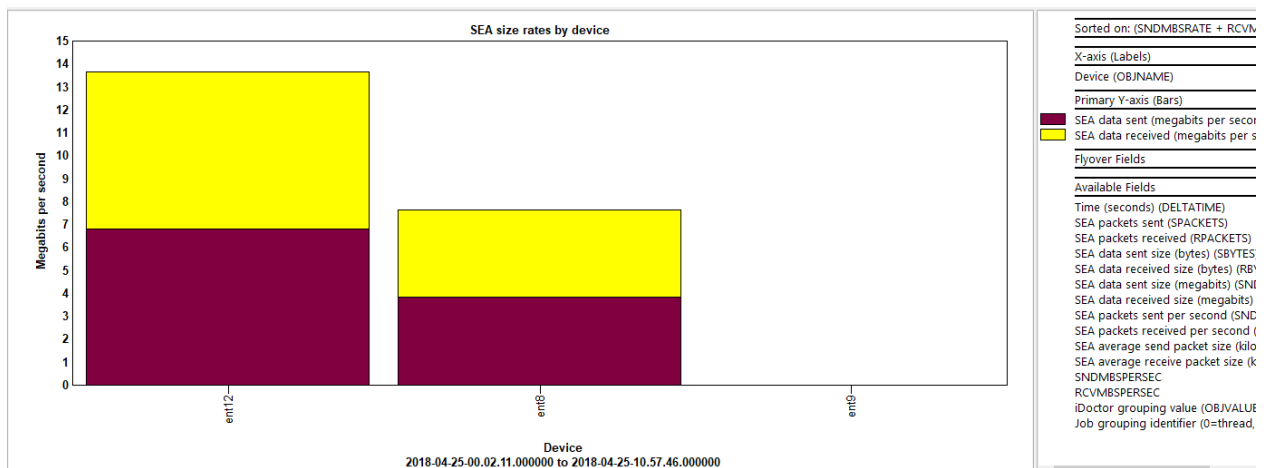
SEA packet rates by device

## 16.8 SEA size averages rankings



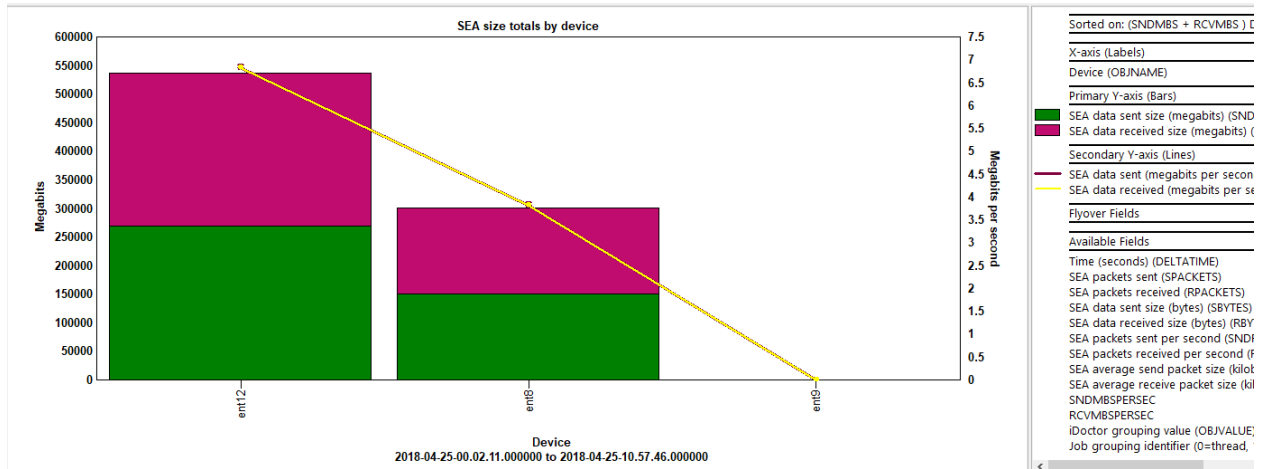
SEA size averages by device

## 16.9 SEA size rates rankings



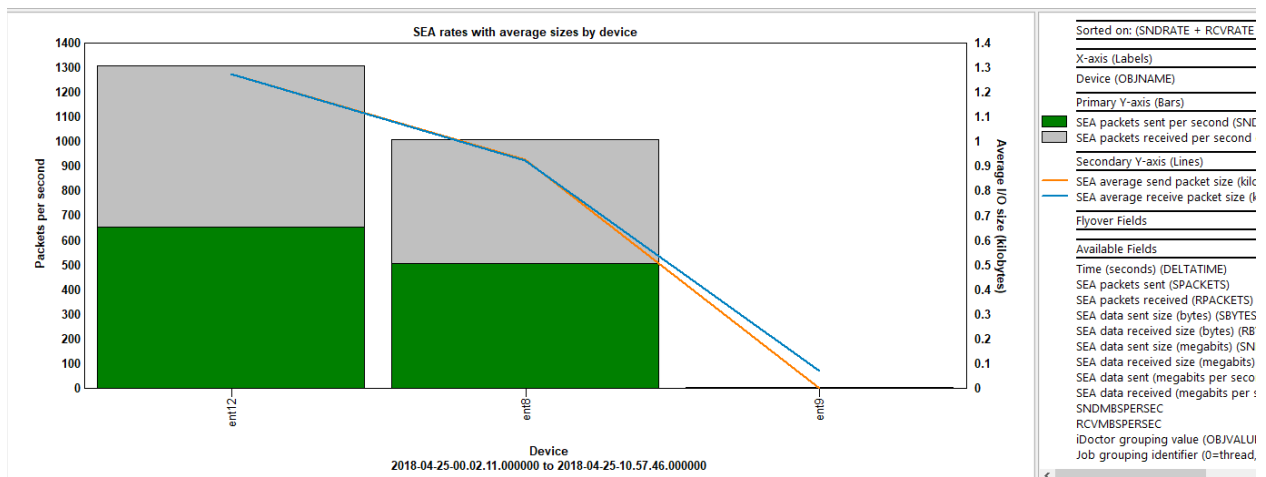
SEA size rates by device

## 16.10 SEA size totals rankings



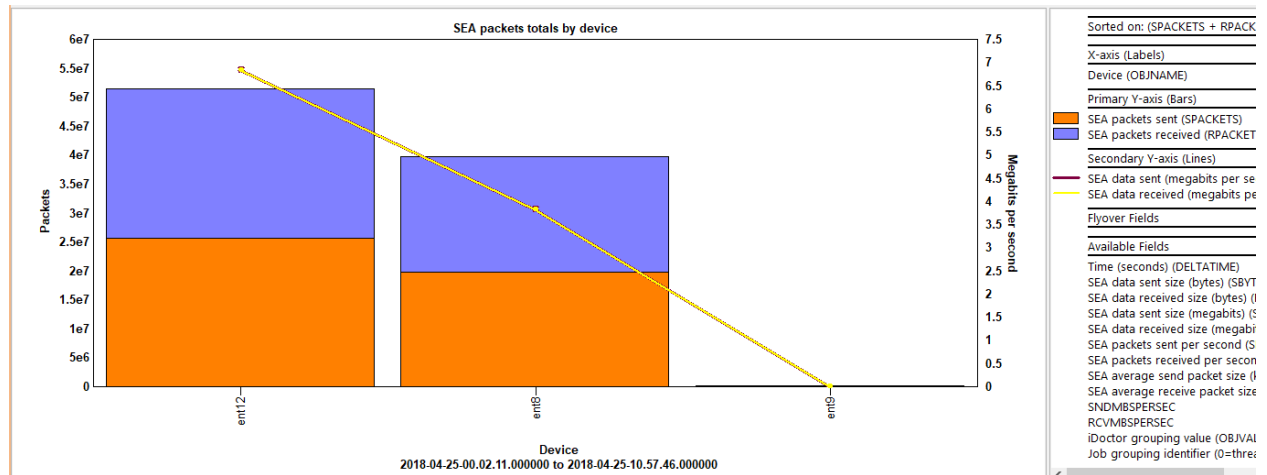
SEA size totals by device

## 16.11 SEA rates with average sizes rankings



SEA rates with average sizes by device

## 16.12 SEA packet totals rankings



SEA packet totals by device

## 17 Virtual fiber channel

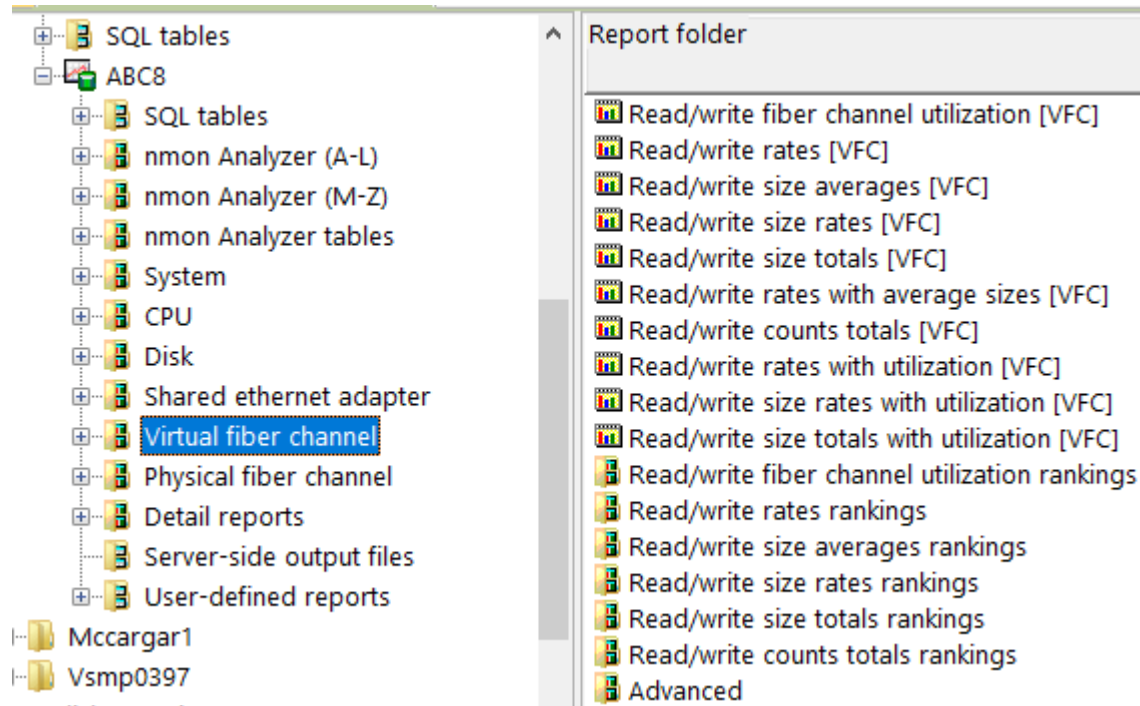
These graphs provide the virtual fiber channel statistics captured during the nmon collection.

The ranking graph each offer the following 3 possible groupings:

1. By VIOS | LPAR
2. By VIOS | FC | VFC
3. By VIOS | FC

Also note that the **Advanced** folder contains “flattened” style graphs where each VFC has its own color. They will only work well with a limited number of devices.

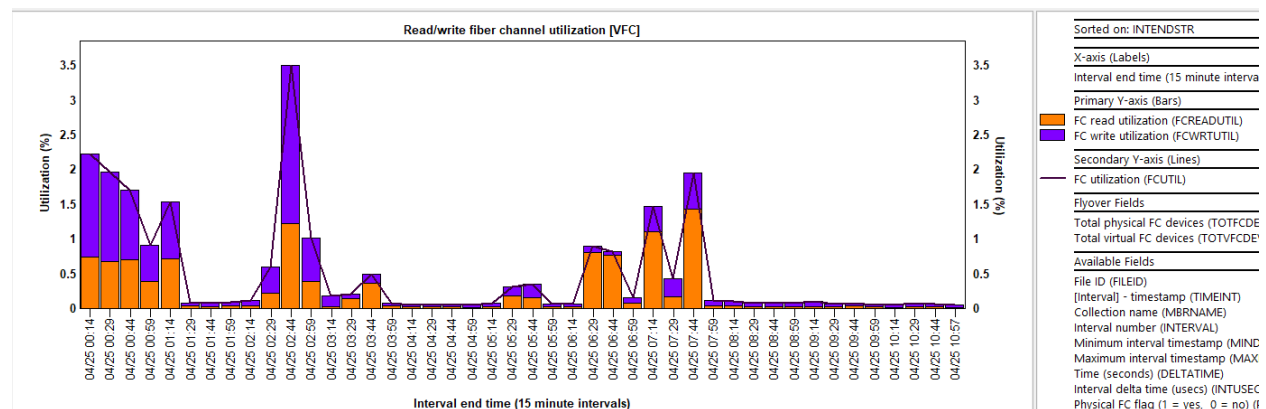
**Note:** This folder will only appear if the statistics have been captured.



Virtual fiber channel folder

### 17.1 Read/write fiber channel utilization [VFC]

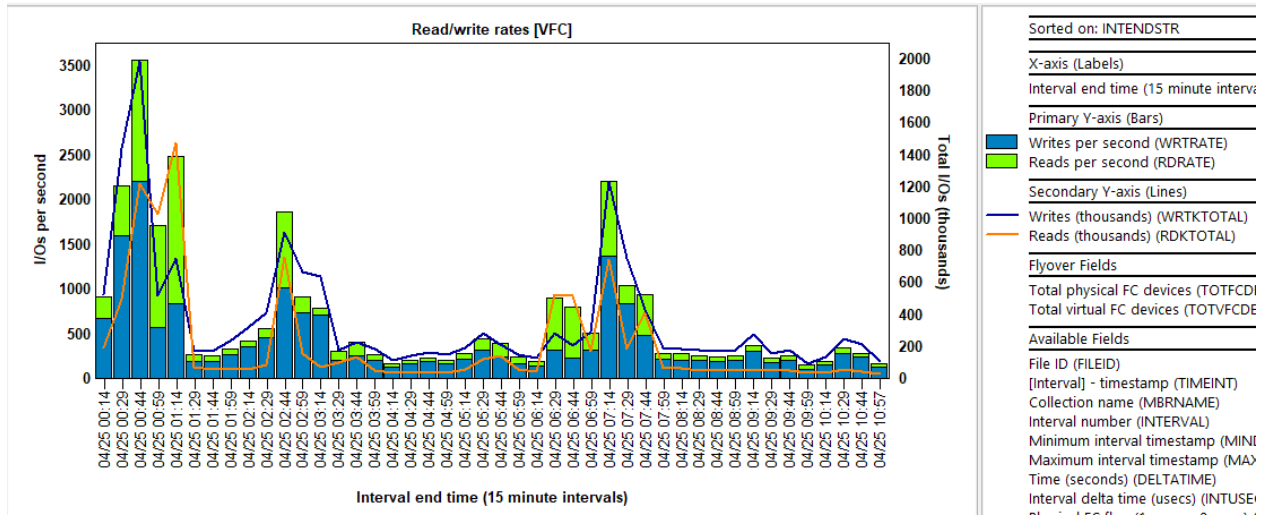
This graph shows the average virtual fiber channel utilization for all devices for reads vs writes.



Read/write fiber channel utilization [VFC]

## 17.2 Read/write rates [VFC]

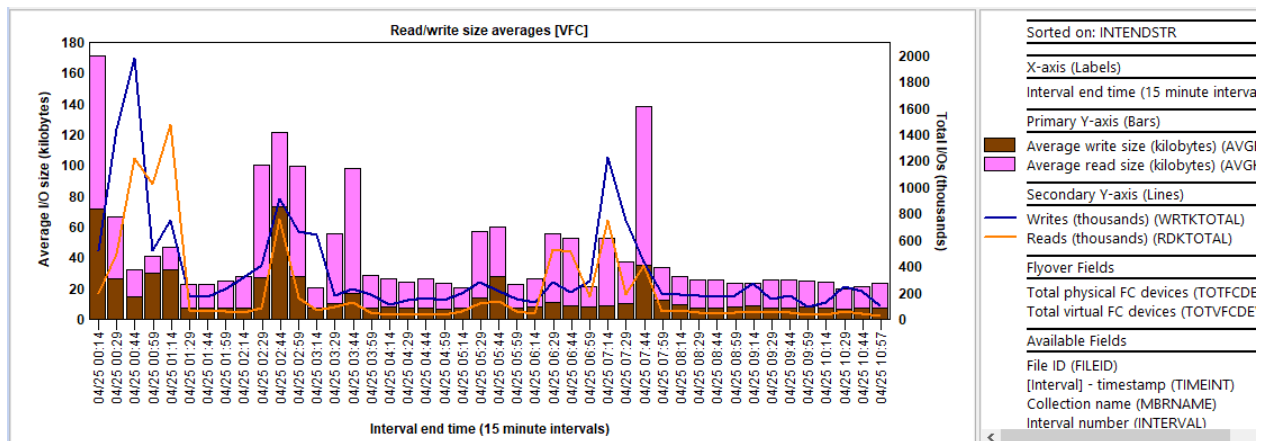
This graph shows the reads and writes per second for all virtual fiber channels with the total I/O counts on the secondary Y-axis.



Read/write rates [VFC]

## 17.3 Read/write size averages [VFC]

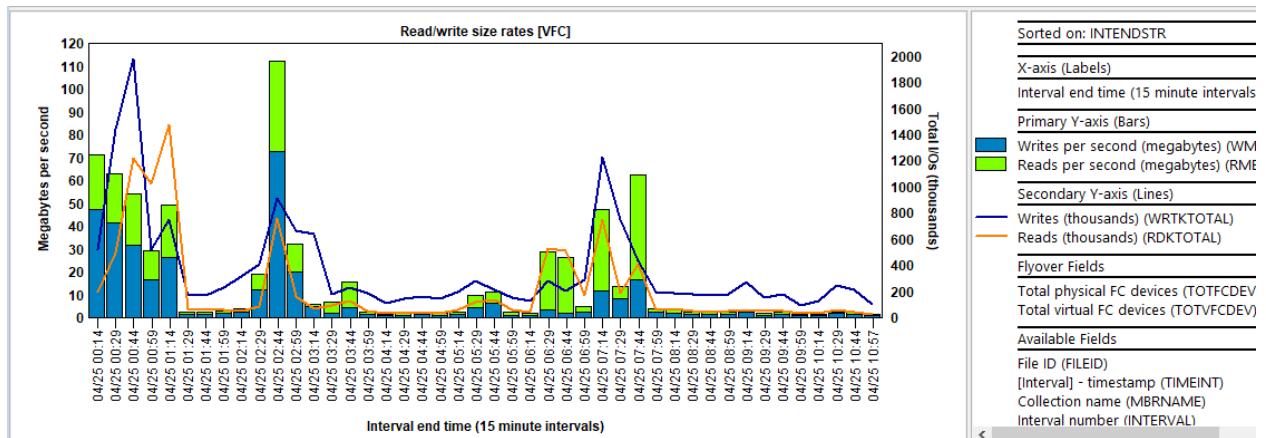
This graph shows the average I/O sizes (in kilobytes) for all virtual fiber channels with the total I/O counts on the secondary Y-axis.



Read/write size averages [VFC]

## 17.4 Read/write size rates [VFC]

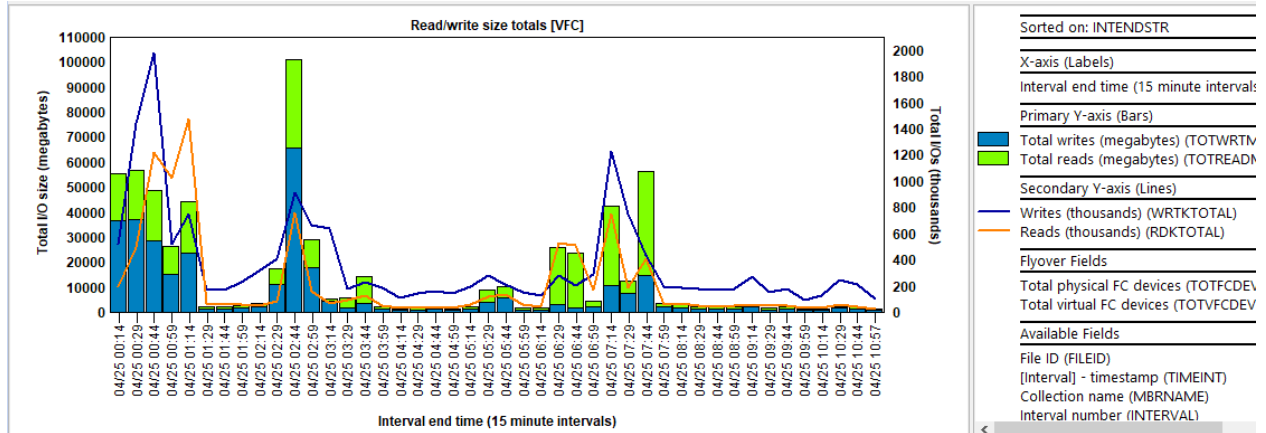
This graph shows the I/O size rates (in megabytes per second) for all virtual fiber channels with the total I/O counts on the secondary Y-axis.



Read/write size rates [VFC]

## 17.5 Read/write size totals [VFC]

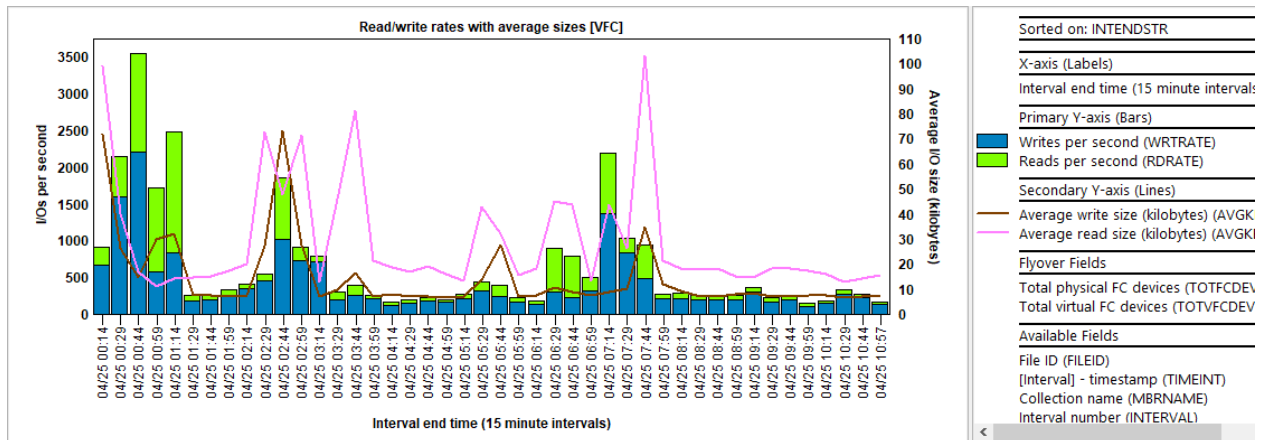
This graph shows the total I/O sizes (in megabytes) for all virtual fiber channels with the total I/O counts on the secondary Y-axis.



Read/write size totals [VFC]

## 17.6 Read/write rates with average sizes [VFC]

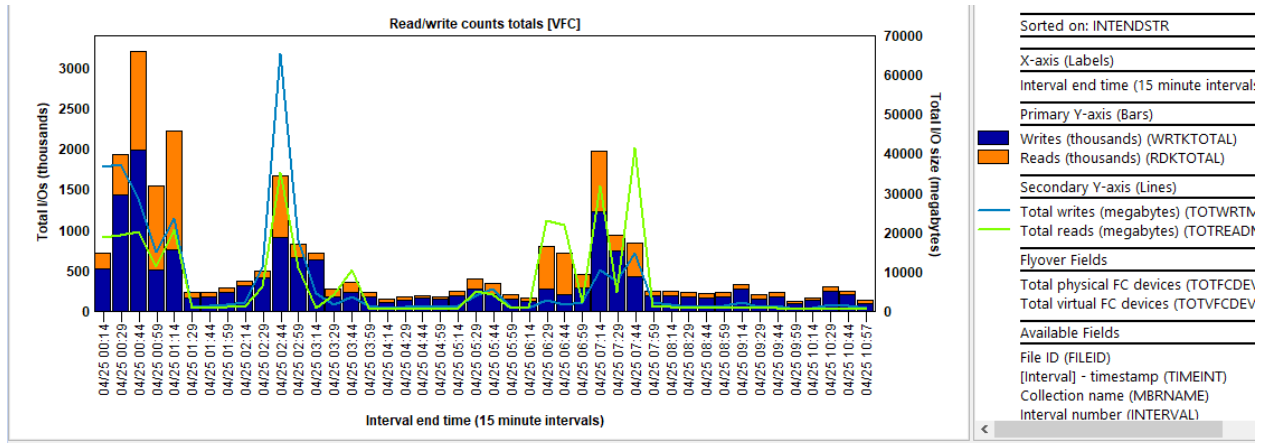
This graph shows the reads and writes per second for all virtual fiber channels with the average I/O sizes (in kilobytes) on the secondary Y-axis.



Read/write rates with average sizes [VFC]

## 17.7 Read/write counts totals [VFC]

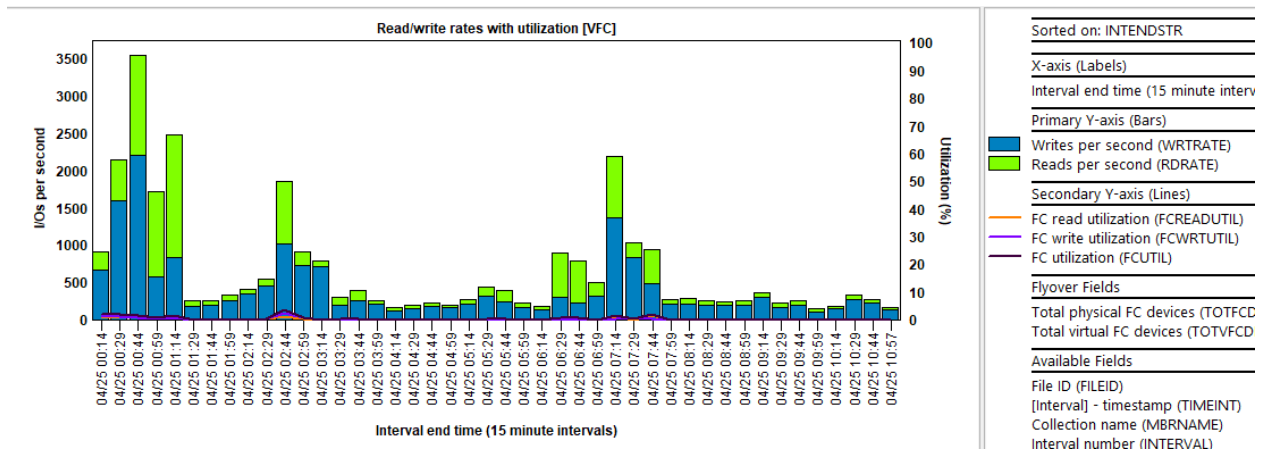
This graph shows the total reads and writes (in thousands) for all virtual fiber channels with the total I/O size (in megabytes) on the secondary Y-axis.



Read/write counts totals [VFC]

## 17.8 Read/write rates with utilization [VFC]

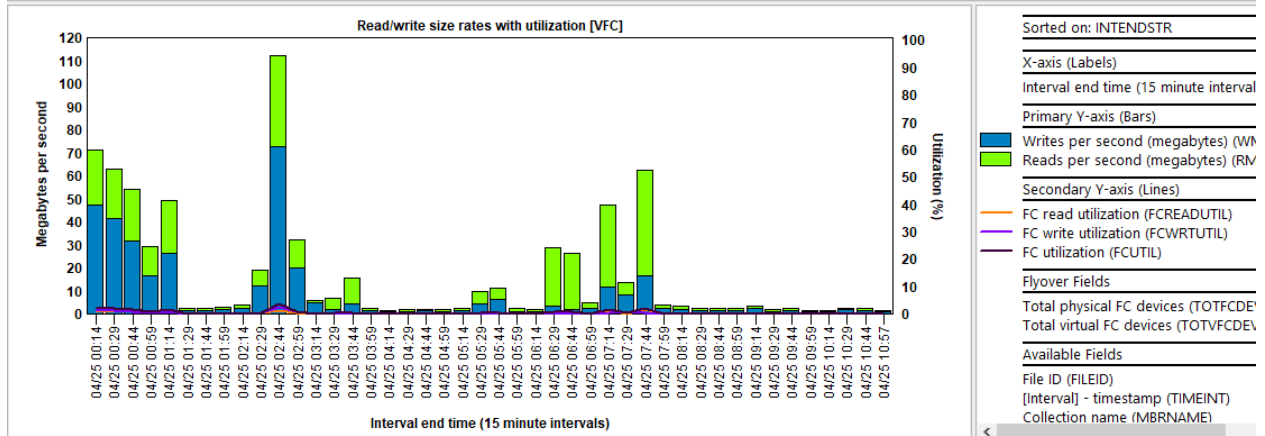
This graph shows the reads and writes per second for all virtual fiber channels with the utilization on the secondary Y-axis.



## Read/write rates with utilization [VFC]

## 17.9 Read/write size rates with utilization [VFC]

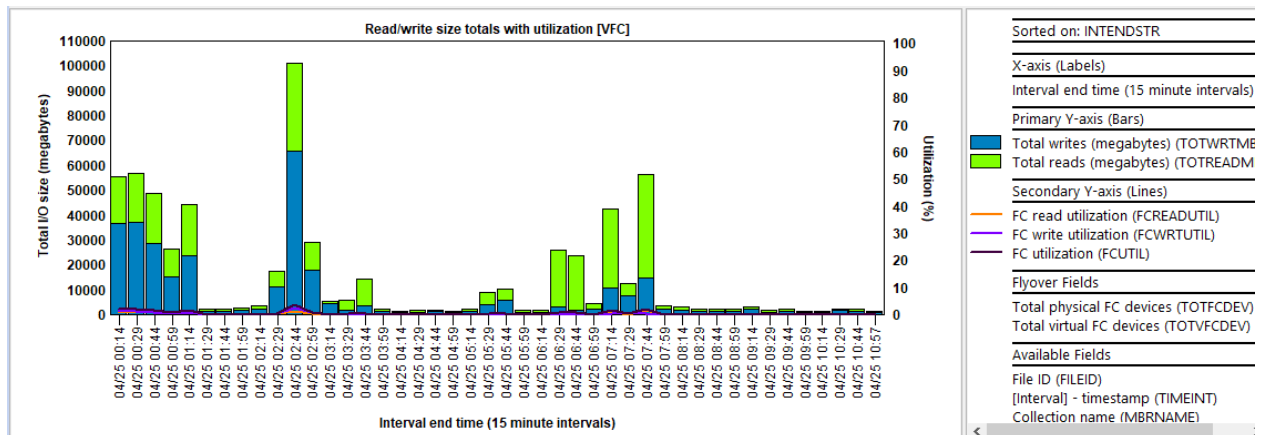
This graph shows the reads and writes rates (in megabytes per second) for all virtual fiber channels with the utilization on the secondary Y-axis.



## Read/write size rates with utilization [VFC]

## 17.10 Read/write size totals with utilization [VFC]

This graph shows the total I/O sizes (in megabytes) for all virtual fiber channels with the utilization on the secondary Y-axis.



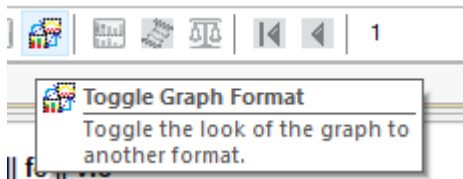
## Read/write size totals with utilization [VFC]

## 17.11 Read/write fiber channel utilization rankings

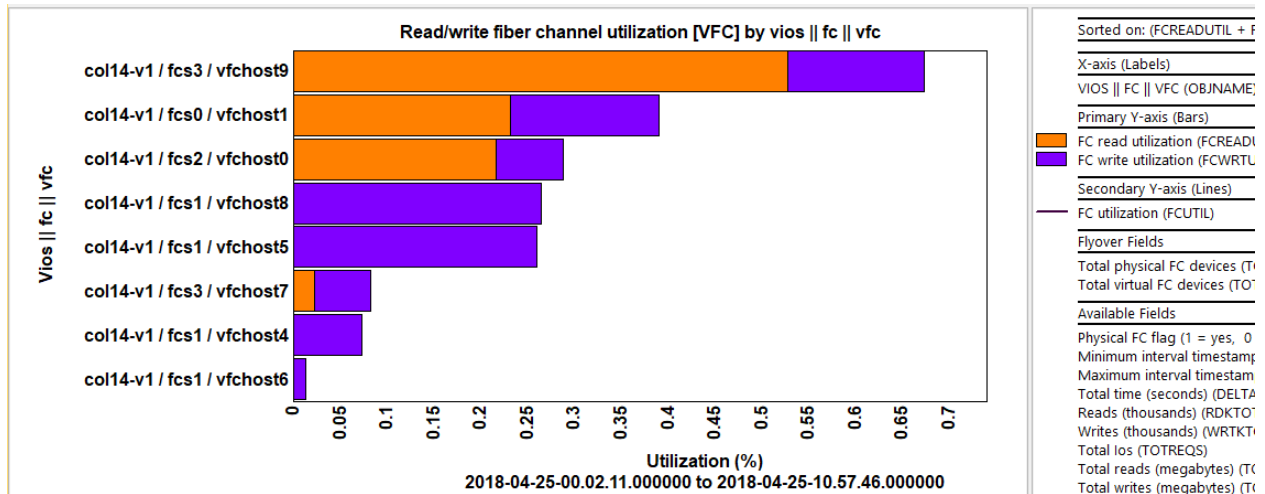
This graph ranks the average virtual fiber channel utilization for reads vs writes by one of the possible groupings.

The optional secondary Y-axis shows the combined utilization for reads and writes.

**Tip:** Use the toggle graph format toolbar button to show or hide the secondary Y-axis.



An example follows:



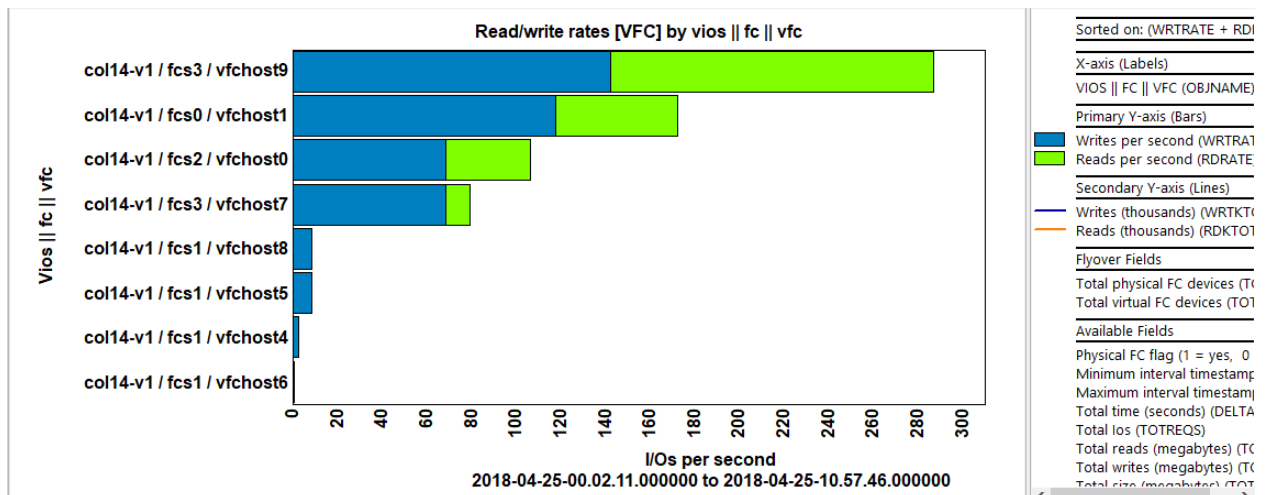
Read/write fiber channel utilization [VFC] by vios || fc || vfc

## 17.12 Read/write rates rankings

This graph ranks the reads and writes rate per second for the virtual fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



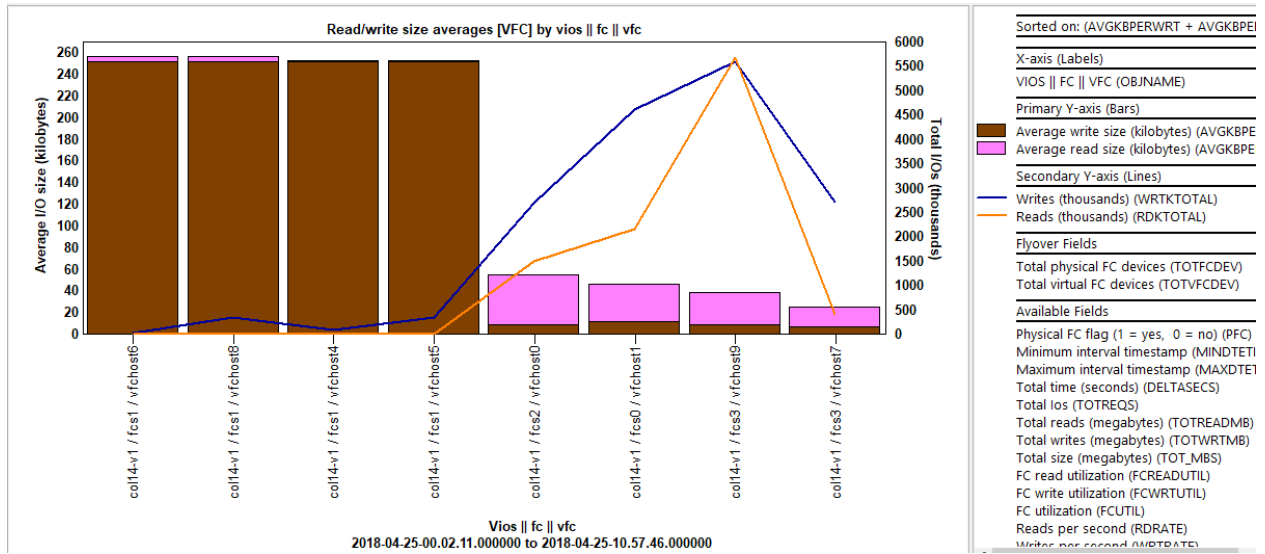
Read/write rates [VFC] by vios || fc || vfc

## 17.13 Read/write size averages rankings

This graph ranks the average I/O size for the virtual fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



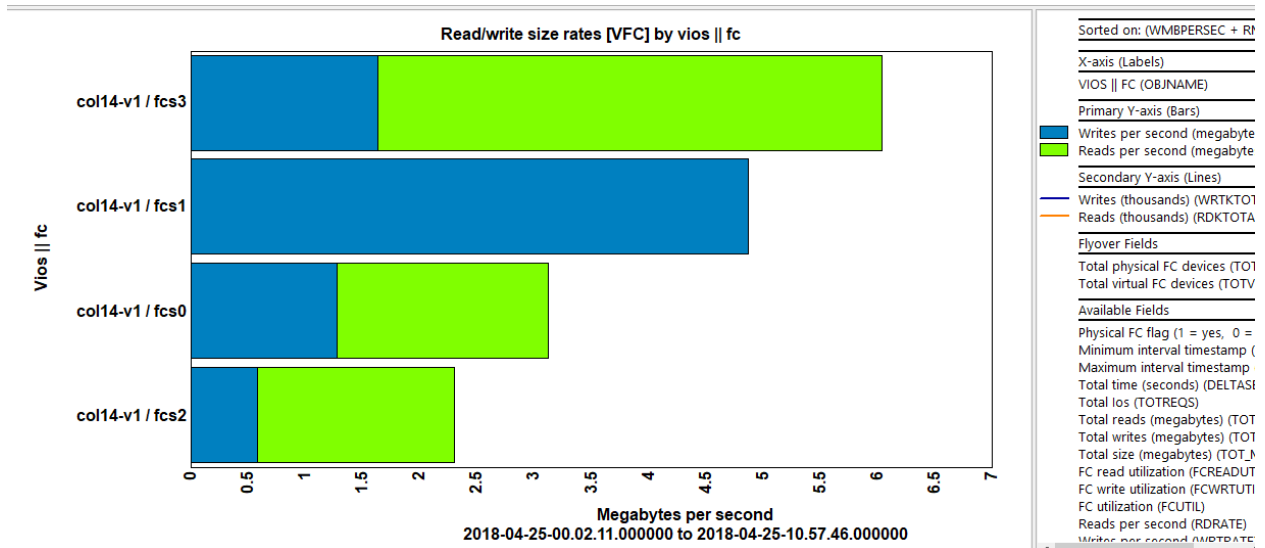
Read/write size averages [VFC] by vios || fc || vfc

## 17.14 Read/write size rates rankings

This graph ranks the reads and writes rates in megabytes per second for the virtual fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



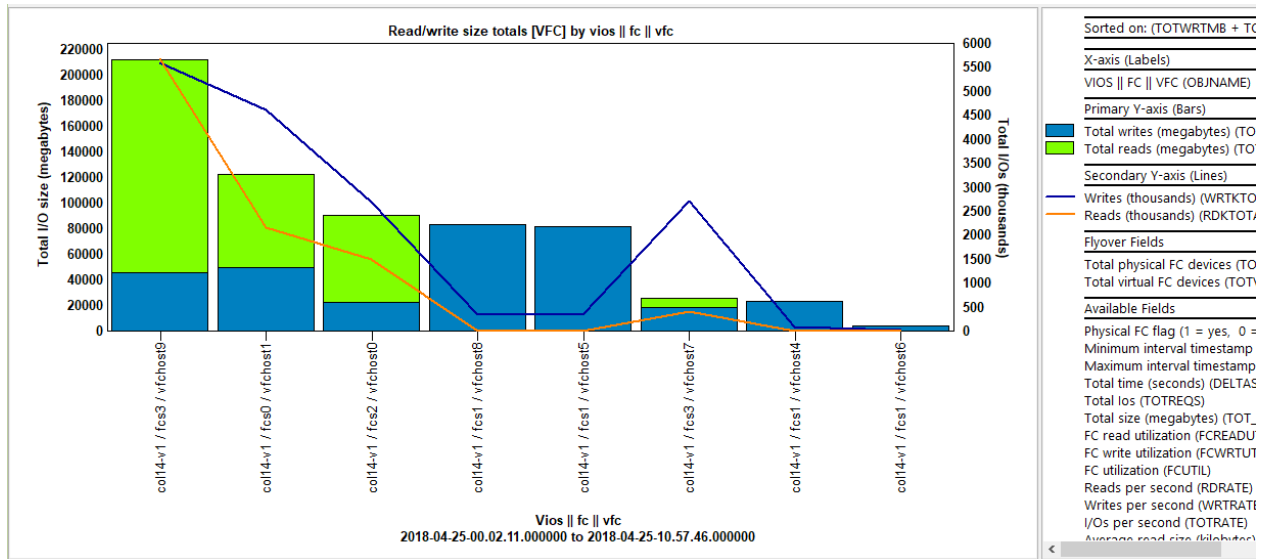
Read/write size rates [VFC] by vios || fc

## 17.15 Read/write size totals rankings

This graph ranks the total I/O sizes (in megabytes) for reads and writes for the virtual fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



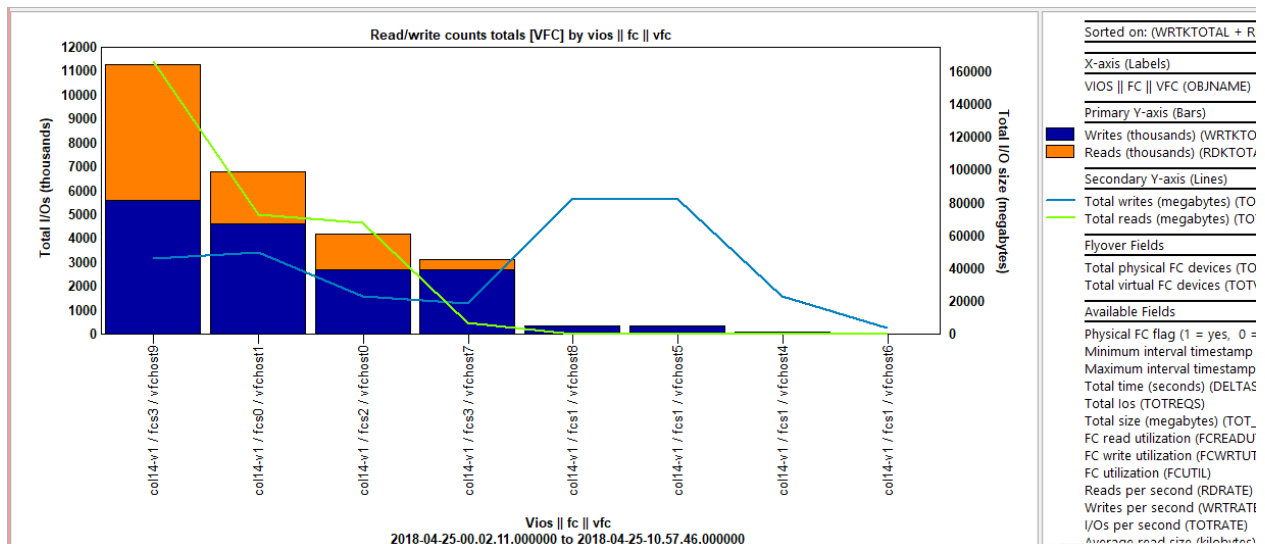
Read/write size totals [VFC] by vios || fc || vfc

## 17.16 Read/write counts totals rankings

This graph ranks the reads and write totals (in thousands) for the virtual fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/O sizes in megabytes for reads and writes.

An example follows:

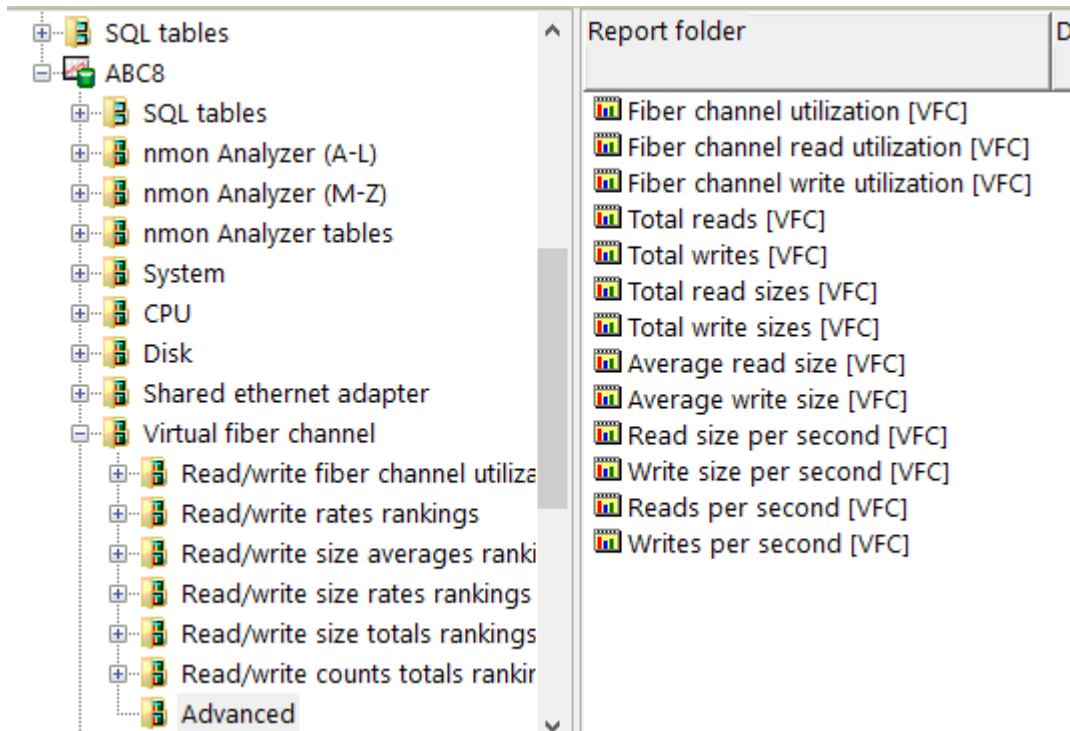


Read/write counts totals [VFC] by vios || fc || vfc

## 17.17 Advanced

This folder contains a set of “flattened” style graphs which means that multiple data records make up each bar of the graph and each device will have its own color. Unlike the graphs in the Virtual fiber channel folder, these graphs divide up contributions for each device over time.

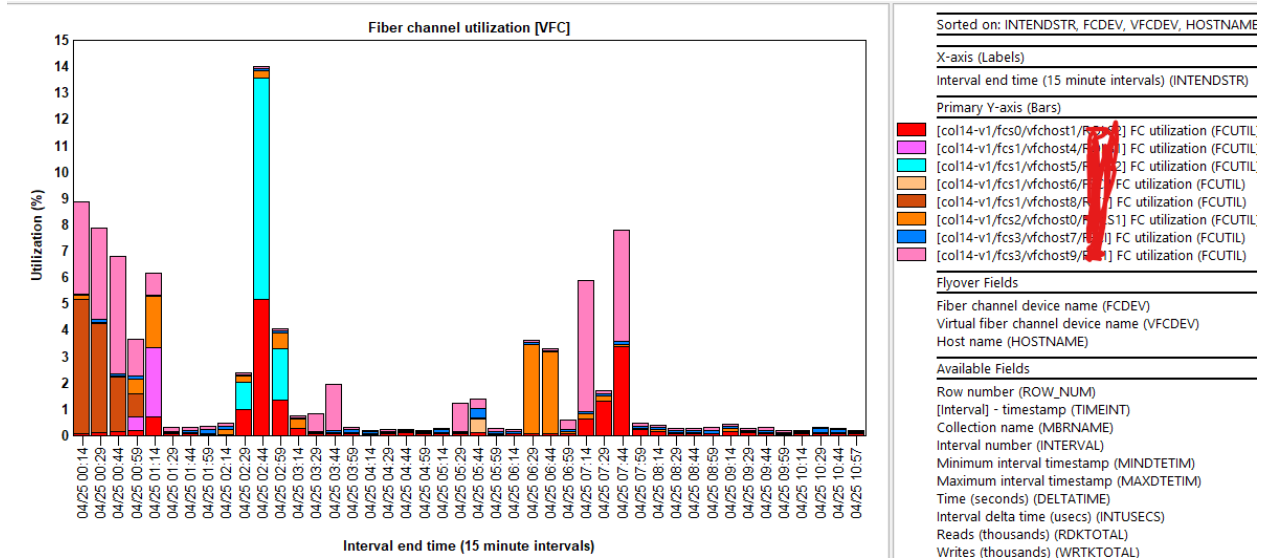
**Note:** These graphs will not work well if your configuration has a very large number of devices. Use the rankings graphs instead in that case.



Virtual fiber channel -> Advanced

These graphs contain the same metrics covered in the previous sections. Each color's fiber channel, virtual fiber channel and LPAR name is listed in the graph legend or use the graph flyovers.

An example follows:



Fiber channel utilization [VFC]

## 18 Physical fiber channel

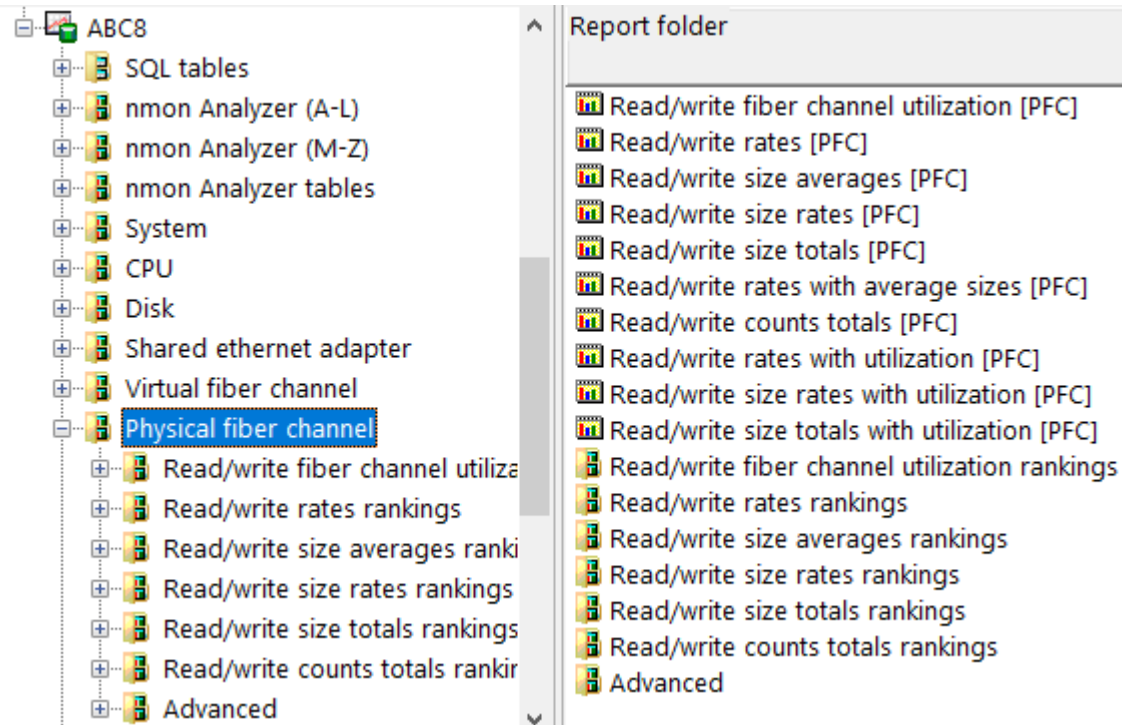
These graphs provide the **physical** fiber channel (PFC) statistics captured during the nmon collection.

The ranking graph each offer the following 2 possible groupings:

1. By VIOS | LPAR
2. By VIOS | FC

Also note that the **Advanced** subfolder contains “flattened” style graphs where each PFC has its own color. They will only work well with a limited number of devices.

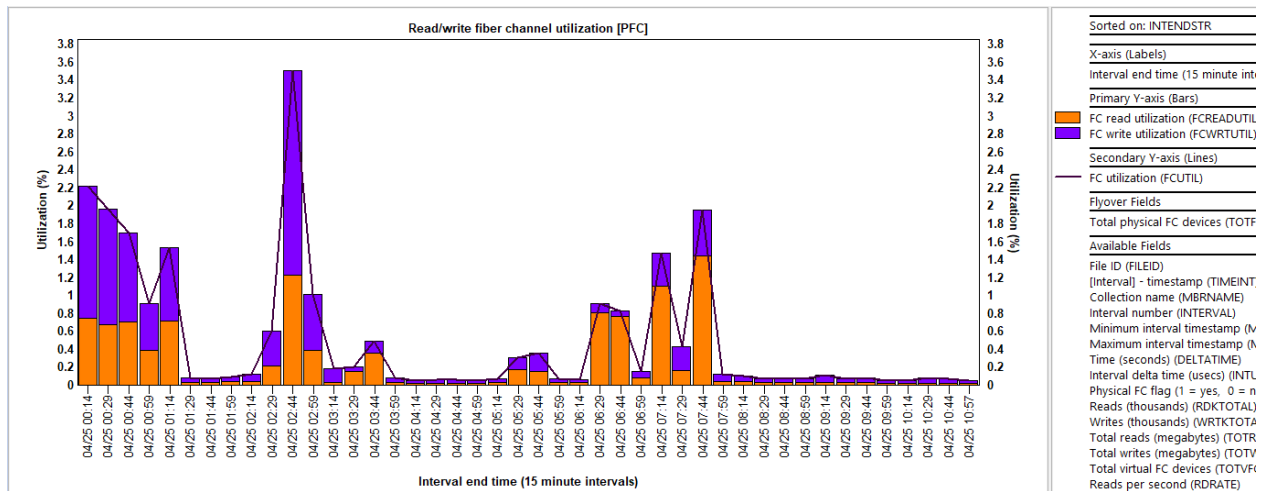
**Note:** This folder will only appear if the statistics have been captured.



*Physical fiber channel folder*

### 18.1 Read/write fiber channel utilization [PFC]

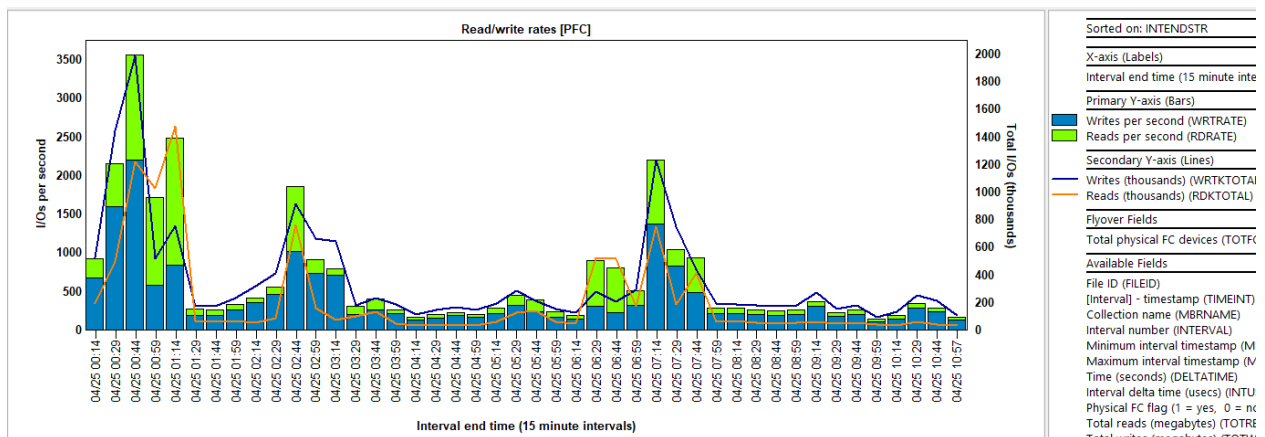
This graph shows the average physical fiber channel utilization for all devices for reads vs writes.



Read/write fiber channel utilization [PFC]

## 18.2 Read/write rates [PFC]

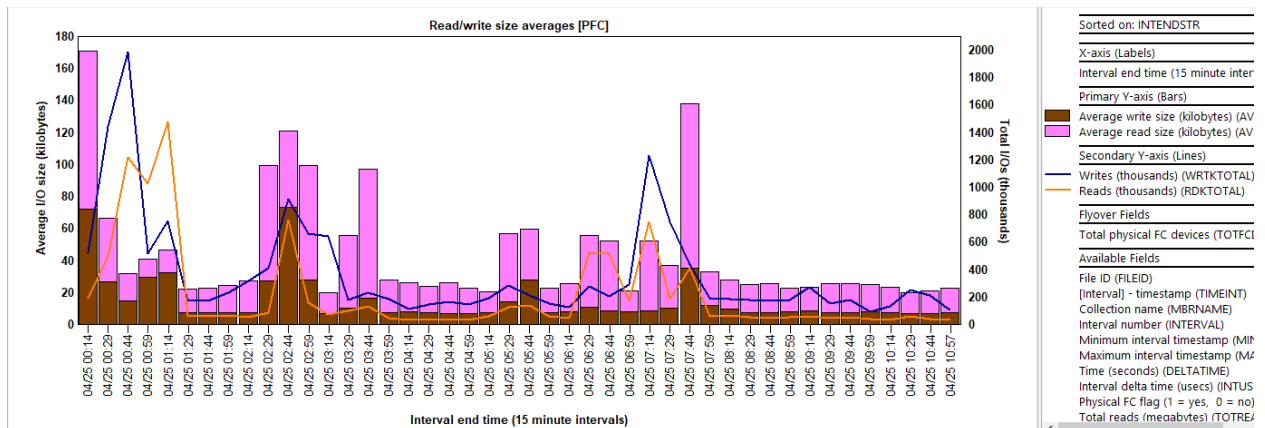
This graph shows the reads and writes per second for all physical fiber channels with the total I/O counts on the secondary Y-axis.



Read/write rates [PFC]

## 18.3 Read/write size averages [PFC]

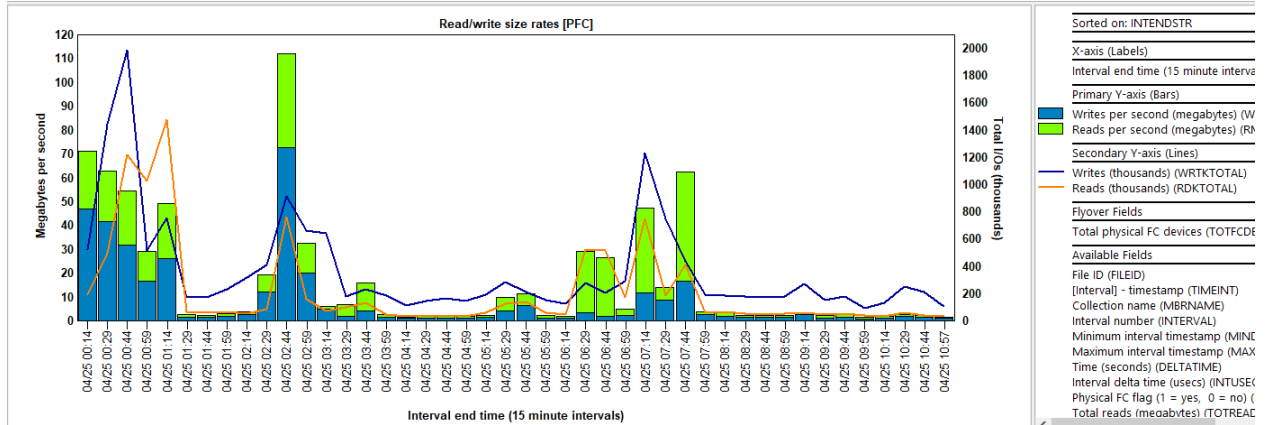
This graph shows the average I/O sizes (in kilobytes) for all physical fiber channels with the total I/O counts on the secondary Y-axis.



## Read/write size averages [PFC]

## 18.4 Read/write size rates [PFC]

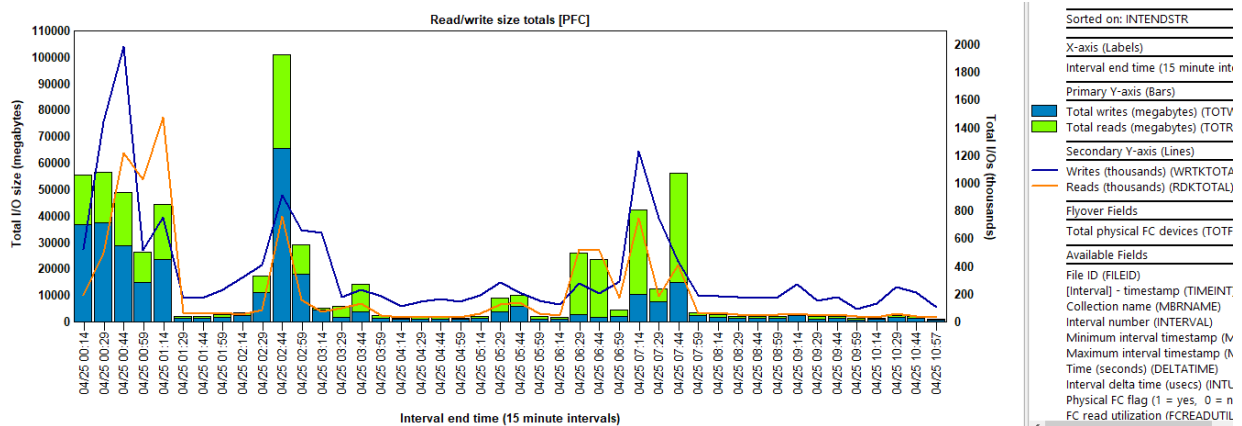
This graph shows the I/O size rates (in megabytes per second) for all physical fiber channels with the total I/O counts on the secondary Y-axis.



Read/write size rates [PFC]

## 18.5 Read/write size totals [PFC]

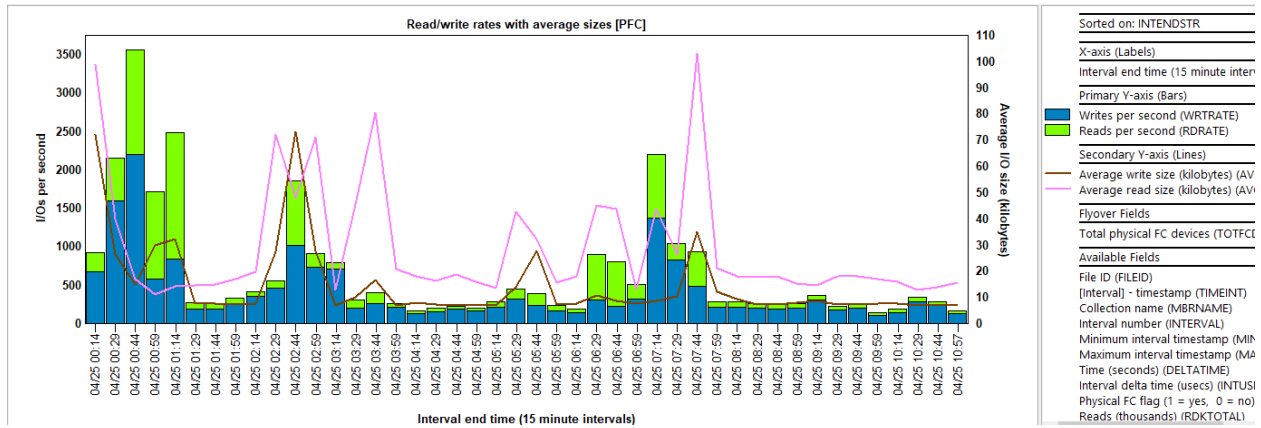
This graph shows the total I/O sizes (in megabytes) for all physical fiber channels with the total I/O counts on the secondary Y-axis.



Read/write size totals [PFC]

## 18.6 Read/write rates with average sizes [PFC]

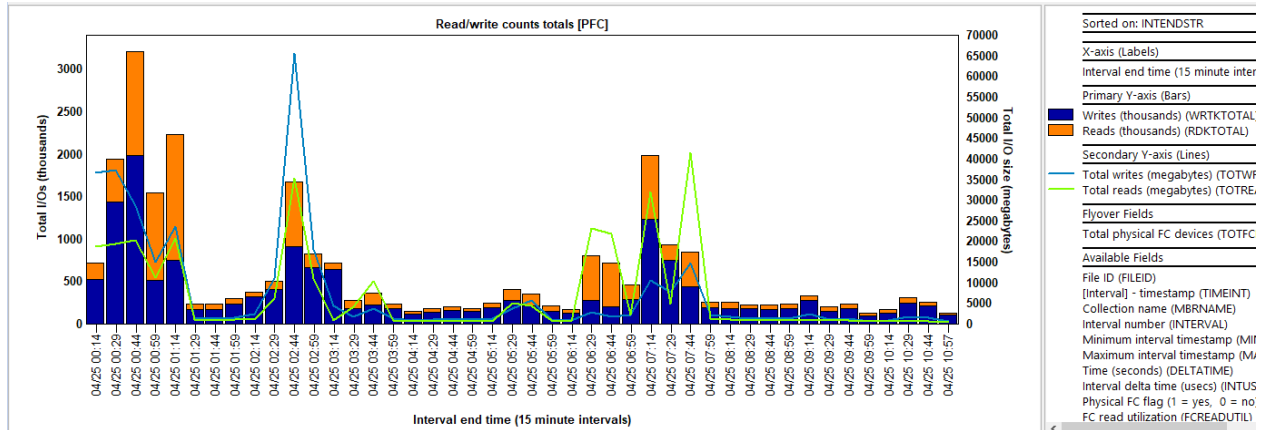
This graph shows the reads and writes per second for all physical fiber channels with the average I/O sizes (in kilobytes) on the secondary Y-axis.



Read/write rates with average sizes [PFC]

## 18.7 Read/write counts totals [PFC]

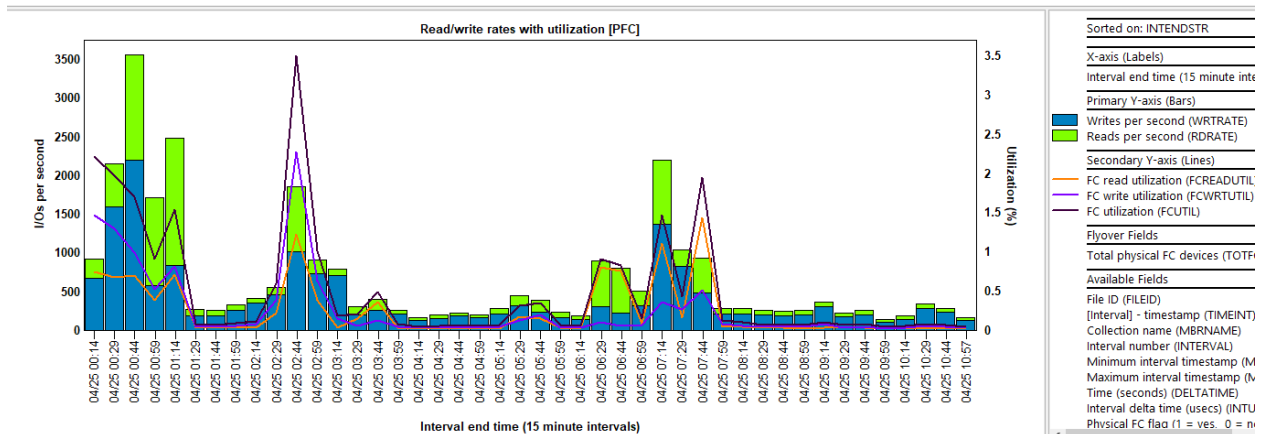
This graph shows the total reads and writes (in thousands) for all physical fiber channels with the total I/O size (in megabytes) on the secondary Y-axis.



Read/write counts totals [PFC]

## 18.8 Read/write rates with utilization [PFC]

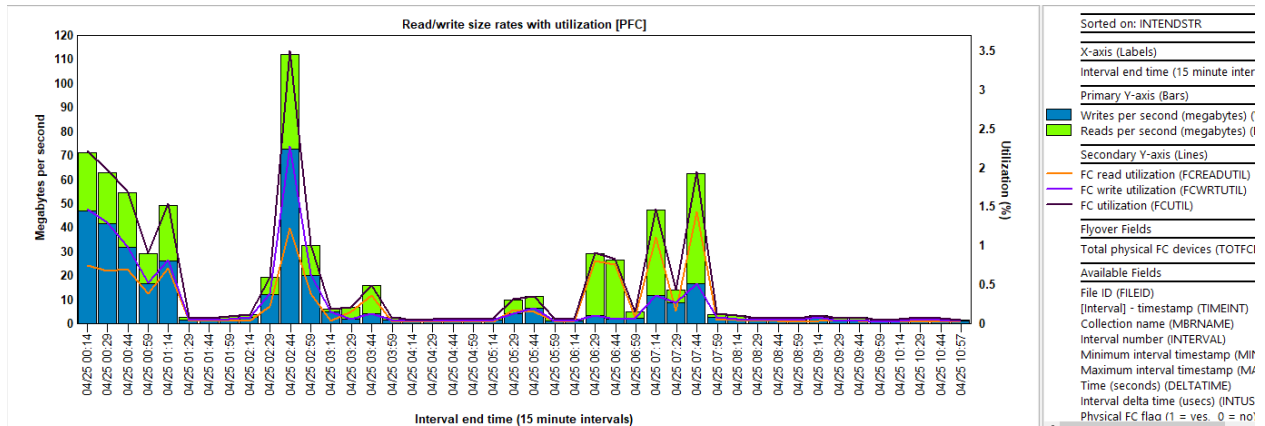
This graph shows the reads and writes per second for all physical fiber channels with the utilization on the secondary Y-axis.



Read/write rates with utilization [PFC]

## 18.9 Read/write size rates with utilization [PFC]

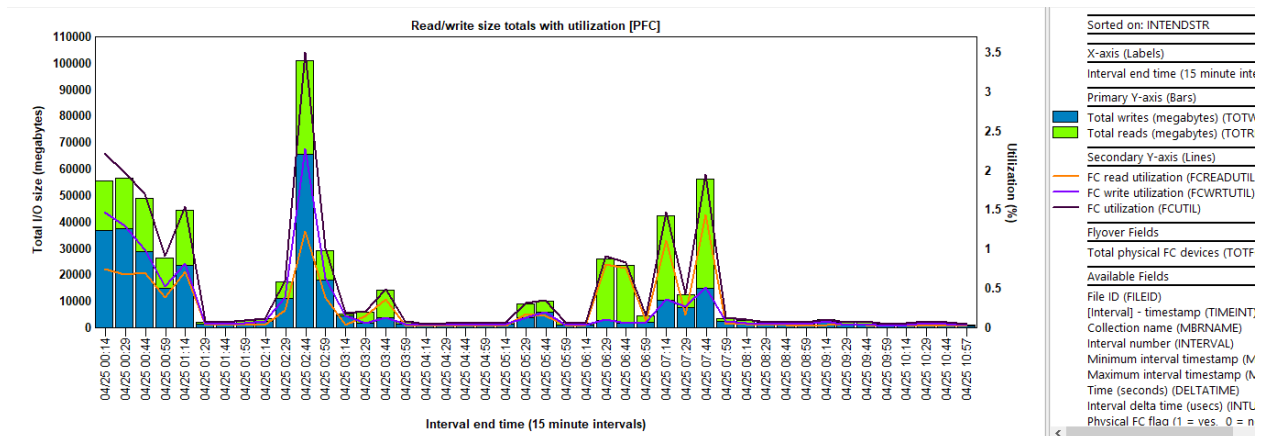
This graph shows the reads and writes rates (in megabytes per second) for all physical fiber channels with the utilization on the secondary Y-axis.



Read/write size rates with utilization [PFC]

## 18.10 Read/write size totals with utilization [PFC]

This graph shows the total I/O sizes (in megabytes) for all physical fiber channels with the utilization on the secondary Y-axis.



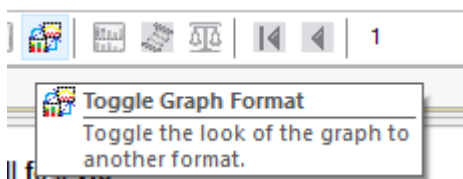
Read/write size totals with utilization [PFC]

## 18.11 Read/write fiber channel utilization rankings

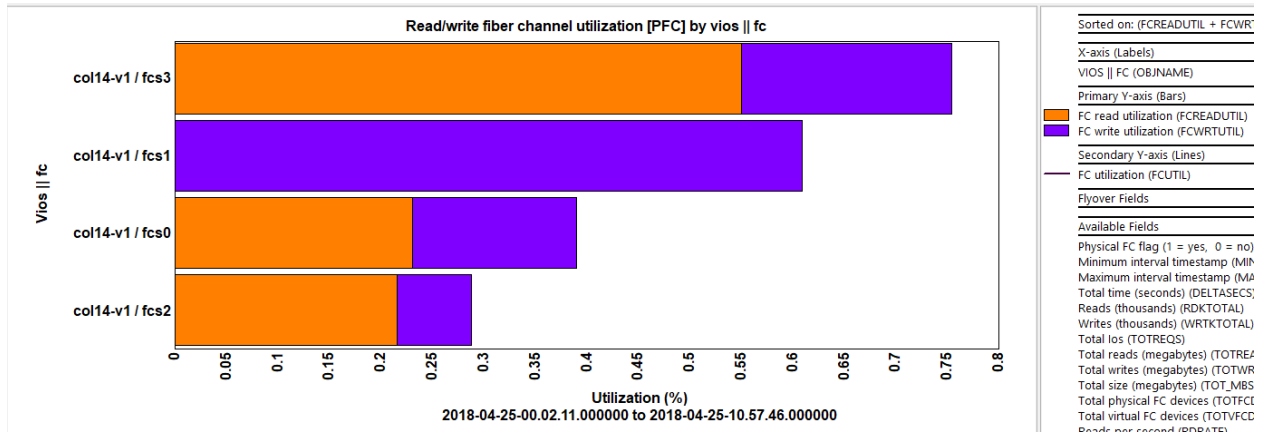
This graph ranks the average physical fiber channel utilization for reads vs writes by one of the possible groupings.

The optional secondary Y-axis shows the combined utilization for reads and writes.

**Tip:** Use the toggle graph format toolbar button to show or hide the secondary Y-axis.



An example follows:



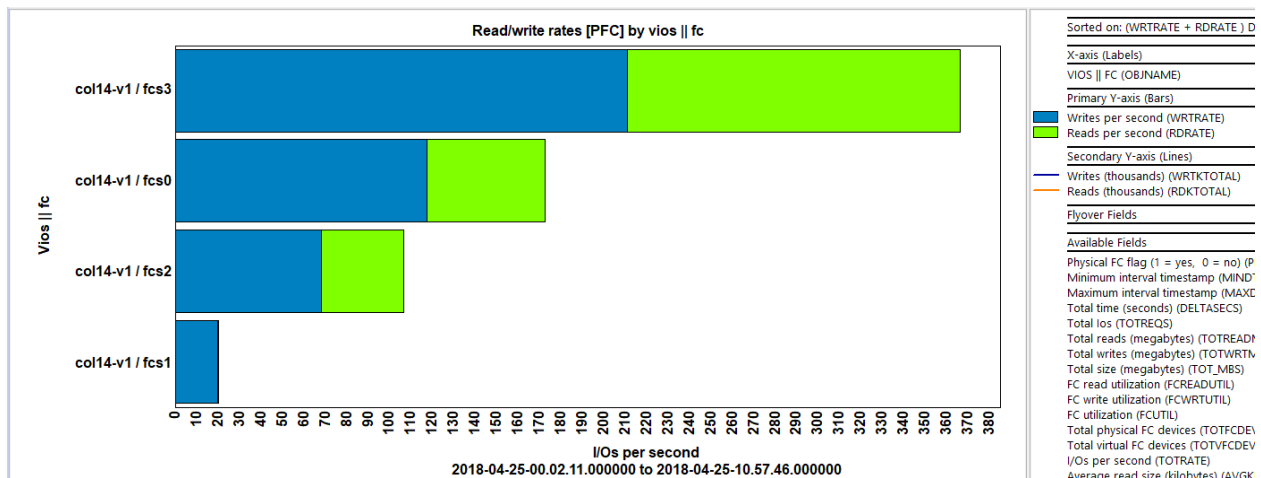
Read/write fiber channel utilization [PFC] by vios || fc

## 18.12 Read/write rates rankings

This graph ranks the reads and writes rate per second for the physical fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



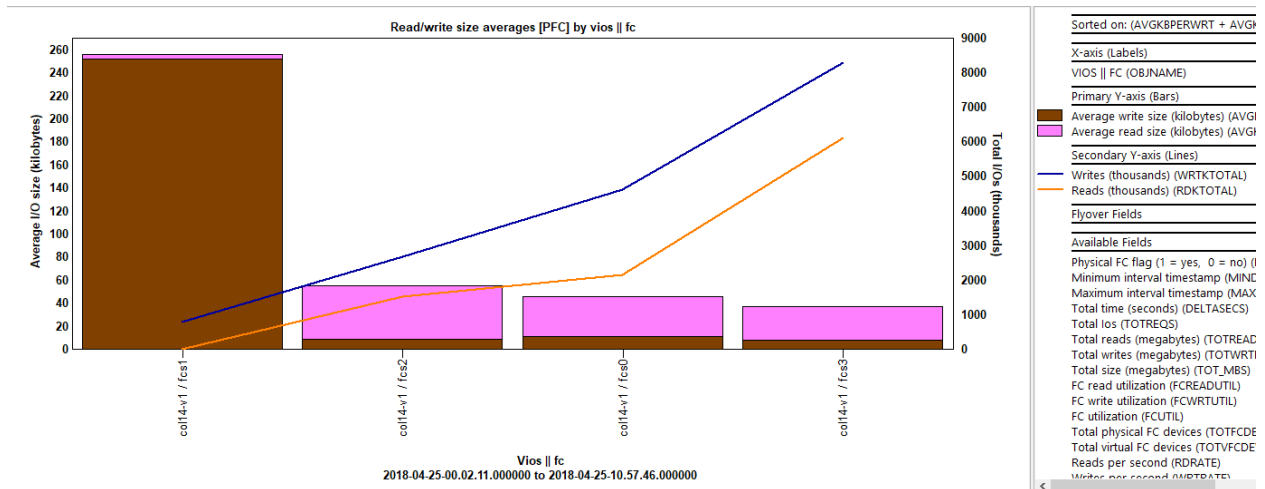
Read/write rates [PFC] by vios || fc

## 18.13 Read/write size averages rankings

This graph ranks the average I/O size for the physical fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



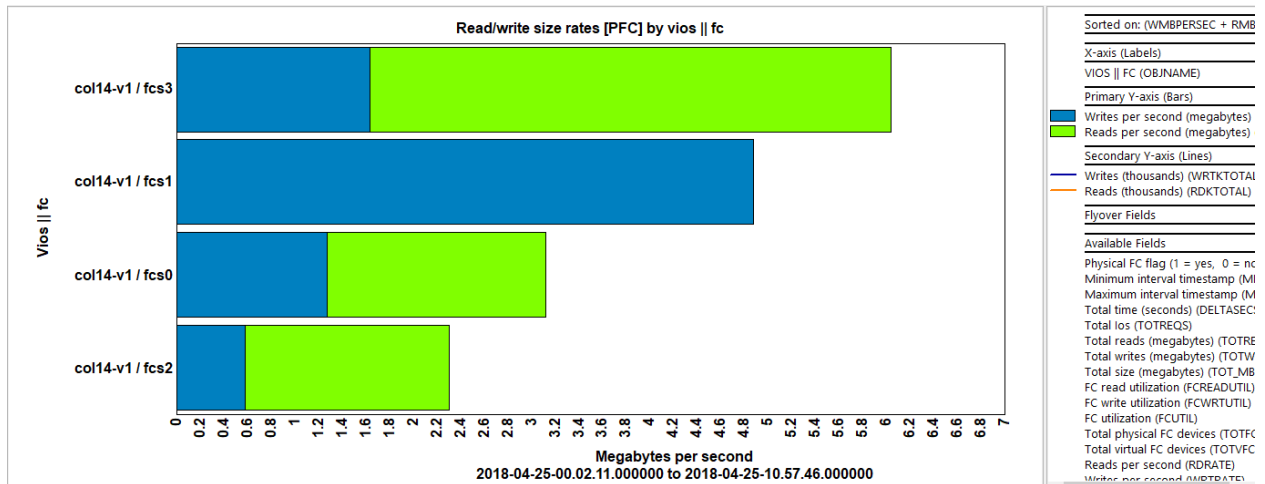
Read/write size averages [PFC] by vios || fc

## 18.14 Read/write size rates rankings

This graph ranks the reads and writes rates in megabytes per second for the physical fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



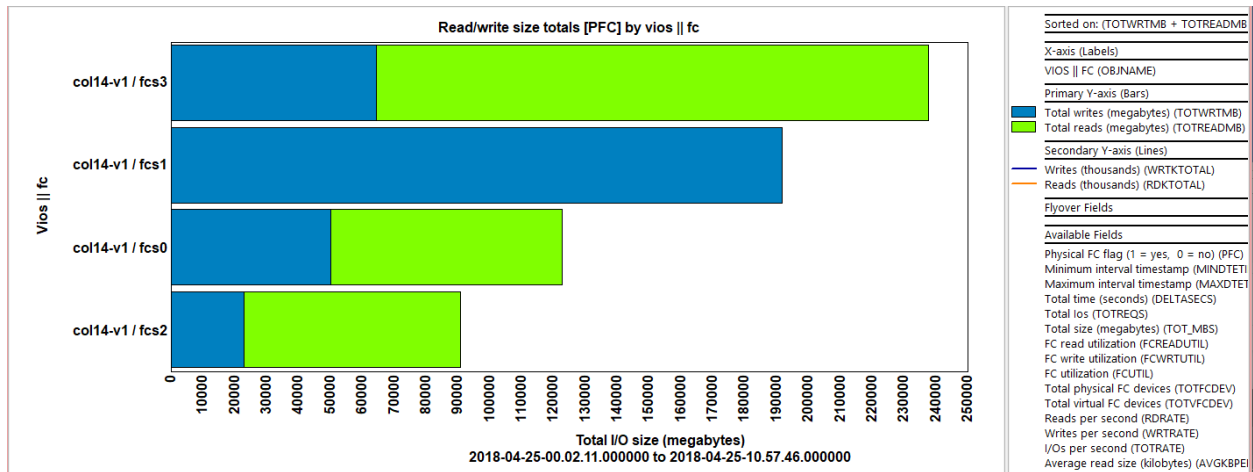
Read/write size rates [PFC] by vios || fc

## 18.15 Read/write size totals rankings

This graph ranks the total I/O sizes (in megabytes) for reads and writes for the physical fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/Os (in thousands) for reads and writes.

An example follows:



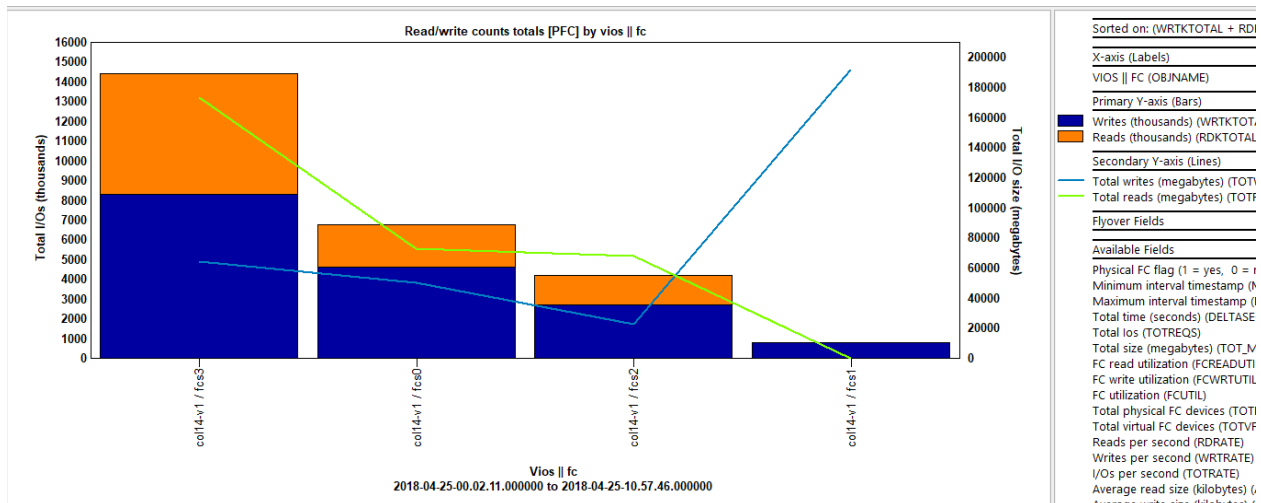
Read/write size totals [PFC] by vios || fc

## 18.16 Read/write counts totals rankings

This graph ranks the reads and write totals (in thousands) for the physical fiber channels by one of the possible groupings.

The optional secondary Y-axis shows the total I/O sizes in megabytes for reads and writes.

An example follows:

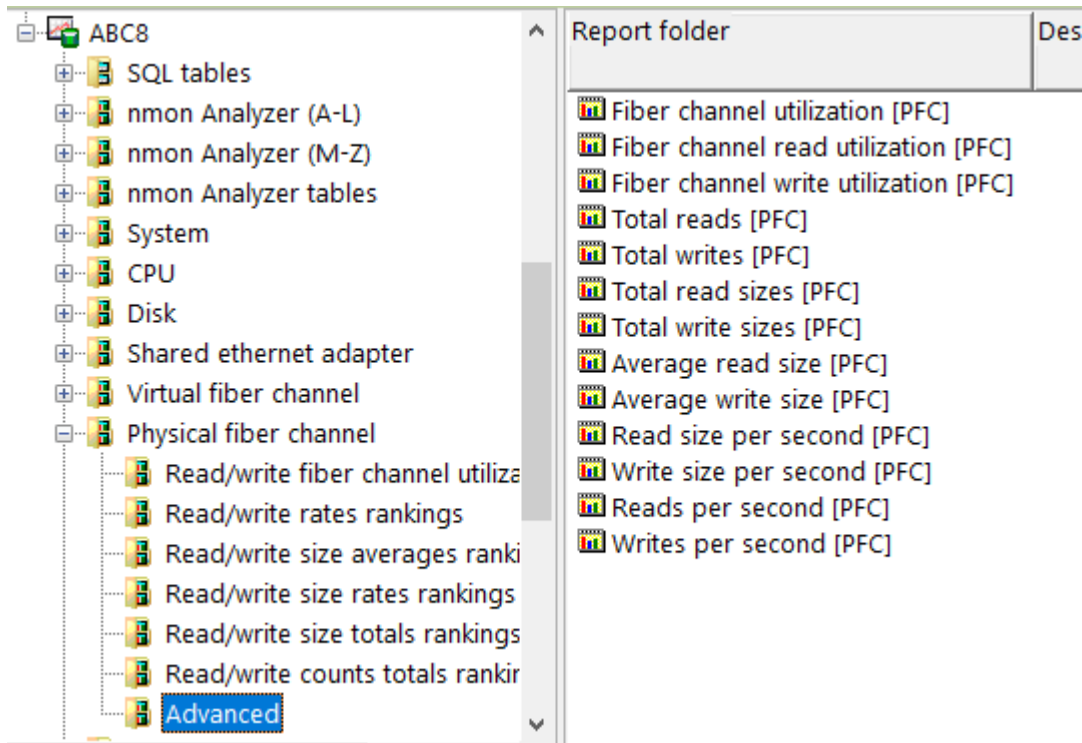


Read/write counts totals [PFC] by vios || fc

## 18.17 Advanced

This folder contains a set of “flattened” style graphs which means that multiple data records make up each bar of the graph and each device will have its own color. Unlike the graphs in the Physical fiber channel folder, these graphs divide up contributions for each device over time.

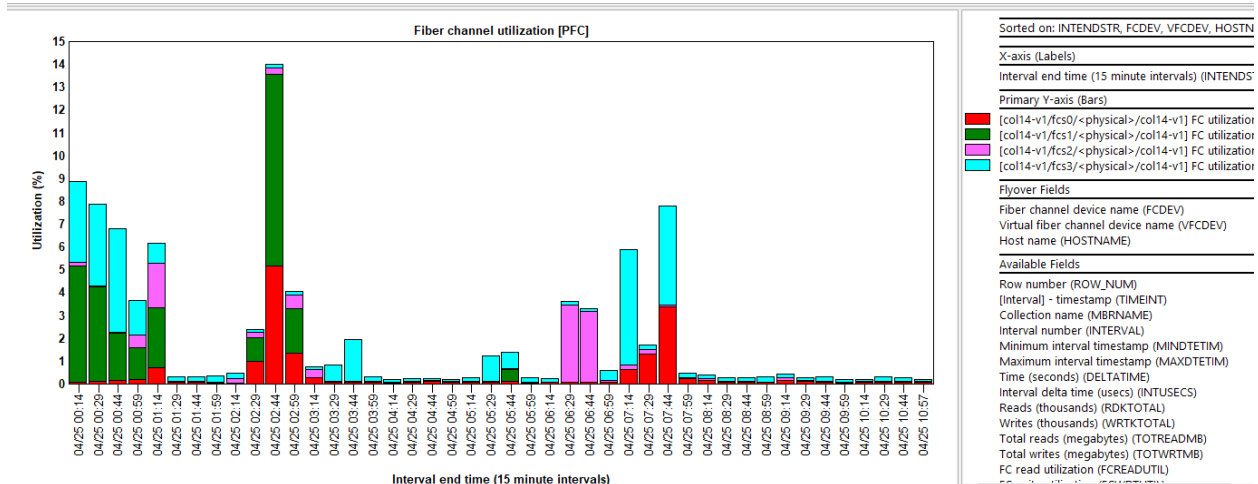
**Note:** These graphs will not work well if your configuration has a very large number of devices. Use the rankings graphs instead in that case.



### Physical fiber channel -> Advanced

These graphs contain the same metrics covered in the previous sections. Each color's device information is listed in the graph legend or use the graph flyovers.

An example follows:



### Fiber channel utilization [PFC]

## 19 Detail reports

This folder contains table-based reports intended for advanced users.

The screenshot shows the IBM iDoctor interface. On the left, a tree view shows the folder structure under 'ABC8'. The 'Detail reports' folder is selected and highlighted. Below the tree view, there are links for 'Mccargar1', 'Vsm0397', and 'OS disk mappings'. On the right, a table lists the reports available in the 'Detail reports' folder.

| Report folder                                 | Description | Tree table |
|-----------------------------------------------|-------------|------------|
| Basic NPIV configuration                      |             | Yes        |
| Disks (BBBB)                                  |             |            |
| Logical volumes (BBBC)                        |             |            |
| I/O adapters (BBBD)                           |             |            |
| Fiber channels /FCSTAT (BBBF)                 |             |            |
| Shared processor LPARs (BBBL)                 |             |            |
| Network adapters (BBBN)                       |             |            |
| Command output (BBBP)                         |             |            |
| Volume groups (BBBV)                          |             |            |
| vmstat -v deltas                              |             |            |
| vmstat -v all                                 |             |            |
| Physical fiber channels idle                  |             |            |
| Physical fiber channel averages               |             |            |
| Physical fiber channel totals                 |             |            |
| Physical fiber channel totals by interval     |             |            |
| Physical fiber channel totals by interval, FC |             |            |

*Detail reports*

## 20 Server-side output files

This folder contains a list of tables associated with the current nmon collection. This is the set of the tables created during the import/analysis process and they will all begin with NM\* and end with the name of the current collection.

|                                 | Output file    | Description                   | Records |
|---------------------------------|----------------|-------------------------------|---------|
| ABC8                            | Nmcor_abc8     | Disk mapping (VIOS to IBM i)  | 0       |
| SQL tables                      | Nmcsv_abc8     |                               | 123,272 |
| nmon Analyzer (A-L)             | Nmdb_abc8      | Raw data records              | 123,272 |
| nmon Analyzer (M-Z)             | Nmdisk_abc8    | Disk statistics               | 1,312   |
| nmon Analyzer tables            | Nmdiskraw_abc8 | Raw disk data records         | 18,368  |
| System                          | Nmdisku_abc8   | Disk information              | 2       |
| CPU                             | Nmfcraw_abc8   | Raw FC data records           | 10,512  |
| Disk                            | Nmfcu_abc8     |                               | 4       |
| Shared ethernet adapter         | Nmfiles_abc8   |                               | 1       |
| Virtual fiber channel           | Nminti_abc8    | Interval timestamps           | 656     |
| Physical fiber channel          | Nmisum_abc8    | Interval summary              | 656     |
| Detail reports                  | Nmipar_abc8    | LPAR data                     | 656     |
| <b>Server-side output files</b> | Nmnetu_abc8    |                               | 2       |
| User-defined reports            | Nmnpiv_abc8    | NPIV statistics               | 10,496  |
| Mccargar1                       | Nmnpivraw_abc8 | Raw NPIV data records         | 7,884   |
| Vsm0397                         | Nmnpivu_abc8   |                               | 12      |
| /IOS disk mappings              | Nmsea_abc8     | SEA statistics                | 1,968   |
| /IMC configurations             | Nmsearaw_abc8  | Raw SEA data records          | 1,971   |
| for i                           | Nmseau_abc8    |                               | 3       |
| collections results             | Nmsea2raw_abc8 | Raw SEA data record pack...   | 1,971   |
| ed collections                  | Nmtop_abc8     | TOP data                      | 0       |
| .                               | Nmsum_abc8     | TOP processes interval sum... | 0       |

Server-side output files folder

| File                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------|---------------------------|-------------------------------------|---------------------------|---------|------|-----------------------------------------------------------|------------------|---------|------|-------------------------------------|-----------------------------------------------------------|------------------|--------|---------|------|-----------------------------------------------------------|------------------|--------|---|------|-----------------------------------------------------------|------------------|--------|
| Nmcor_<col>                          | The VIOS to IBM i disk mapping provided (if any) at analysis time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmcsv_<col>                          | This file is a copy of the original .nmon file into a DB table.<br><b>Note:</b> This file contains just 1 32 KBs field and if the original data exceeded 32 KBs per line it will be truncated and lost during the import process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmdb_<col>                           | This file contains the data tag for each nmon record as well as up to 49 columns to go with it. If more than 49 columns exist in the original .nmon data they will be lost during the analysis process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmdisk_<col>                         | This file exists in order to make writing the SQL easier for the disk graphs. 1 record is created per interval per disk. Each disk is given an iDoctor generated disk ID.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmdisku_<col>                        | <div>This file provides information about the mapping of iDoctor generated disk IDs to hdisks on the VIOS.</div> <table><thead><tr><th>Disk ID (within iDoctor DB) (DISKID)</th><th>Disk name (DISKNA)</th></tr></thead><tbody><tr><td>1</td><td>hdisk71</td></tr><tr><td>2</td><td>hdisk72</td></tr><tr><td>3</td><td>hdisk75</td></tr><tr><td>4</td><td>hdisk73</td></tr><tr><td>5</td><td>hdisk76</td></tr><tr><td>6</td><td>hdisk74</td></tr><tr><td>7</td><td>hdisk77</td></tr></tbody></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Disk ID (within iDoctor DB) (DISKID)                      | Disk name (DISKNA)                | 1                         | hdisk71                             | 2                         | hdisk72 | 3    | hdisk75                                                   | 4                | hdisk73 | 5    | hdisk76                             | 6                                                         | hdisk74          | 7      | hdisk77 |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Disk ID (within iDoctor DB) (DISKID) | Disk name (DISKNA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 1                                    | hdisk71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 2                                    | hdisk72                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 3                                    | hdisk75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 4                                    | hdisk73                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 5                                    | hdisk76                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 6                                    | hdisk74                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 7                                    | hdisk77                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmfcu_<col>                          | <div>This file provides the fiber channel configuration (if available in the .nmon data.) The FCID is the fiber channel identifier generated by iDoctor and used to uniquely identifier each fiber channel.</div> <table><thead><tr><th>FCID</th><th>Fiber channel device name (FCDEV)</th><th>DEVICE_TYPE</th><th>WWPN</th><th>PORT_SPEED</th></tr></thead><tbody><tr><td>0</td><td>fcs4</td><td>Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM</td><td>C0507608F9E40000</td><td>8 GBIT</td></tr><tr><td>1</td><td>fcs5</td><td>Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM</td><td>C0507608F9E40002</td><td>8 GBIT</td></tr><tr><td>2</td><td>fcs6</td><td>Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM</td><td>C0507608F9E40004</td><td>8 GBIT</td></tr><tr><td>3</td><td>fcs7</td><td>Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM</td><td>C0507608F9E40006</td><td>8 GBIT</td></tr></tbody></table> | FCID                                                      | Fiber channel device name (FCDEV) | DEVICE_TYPE               | WWPN                                | PORT_SPEED                | 0       | fcs4 | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40000 | 8 GBIT  | 1    | fcs5                                | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40002 | 8 GBIT | 2       | fcs6 | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40004 | 8 GBIT | 3 | fcs7 | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40006 | 8 GBIT |
| FCID                                 | Fiber channel device name (FCDEV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DEVICE_TYPE                                               | WWPN                              | PORT_SPEED                |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 0                                    | fcs4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40000                  | 8 GBIT                    |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 1                                    | fcs5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40002                  | 8 GBIT                    |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 2                                    | fcs6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40004                  | 8 GBIT                    |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 3                                    | fcs7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Virtual Fibre Channel Client Adapter (adapter/vdevice/IBM | C0507608F9E40006                  | 8 GBIT                    |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmfiles_<col>                        | This table contains a list of original .nmon files used to create the data during the analysis process. This table only contains the filename in each record but the relative record number of each record in this table is the unique ID for each .nmon file. Other tables such as nmdb_<col> contains a FILEID field which maps to the relative record number in this file.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nminti_<col>                         | This table provides a list of intervals in the NMON data captured along with a timestamp where each interval ended. The NMON graphs use this table to ensure that time periods are properly graphed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmisum_<col>                         | This table provides an interval summary of the nmon statistics where several commonly graphed metrics are thrown together into 1 file to make the SQL statements easier to write.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| NMlpar_<col>                         | This table contains the LPAR data records from the nmon data but placed in a field described file.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                           |                                   |                           |                                     |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| Nmnetu_<col>                         | <div>This table provides information about the network configuration.</div> <table><thead><tr><th>File ID (FILEI)</th><th>Host name (HOSTNA)</th><th>NETNAME</th><th>MTU size (MTU)</th><th>Speed (Mbits/sec) (MBITS)</th><th>NETDESC</th></tr></thead><tbody><tr><td>1</td><td>i</td><td>en6</td><td>1500</td><td>1024</td><td>Standard Ethernet Network Interface</td></tr><tr><td>1</td><td>i</td><td>lo0</td><td>16896</td><td>0</td><td>Loopback Network Interface</td></tr></tbody></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                           | File ID (FILEI)                                           | Host name (HOSTNA)                | NETNAME                   | MTU size (MTU)                      | Speed (Mbits/sec) (MBITS) | NETDESC | 1    | i                                                         | en6              | 1500    | 1024 | Standard Ethernet Network Interface | 1                                                         | i                | lo0    | 16896   | 0    | Loopback Network Interface                                |                  |        |   |      |                                                           |                  |        |
| File ID (FILEI)                      | Host name (HOSTNA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NETNAME                                                   | MTU size (MTU)                    | Speed (Mbits/sec) (MBITS) | NETDESC                             |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 1                                    | i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | en6                                                       | 1500                              | 1024                      | Standard Ethernet Network Interface |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |
| 1                                    | i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | lo0                                                       | 16896                             | 0                         | Loopback Network Interface          |                           |         |      |                                                           |                  |         |      |                                     |                                                           |                  |        |         |      |                                                           |                  |        |   |      |                                                           |                  |        |

|              |                                                                                                           |
|--------------|-----------------------------------------------------------------------------------------------------------|
| Nmtop_<col>  | This table provides the TOP, data tags from the original .nmon file but placed in a field described file. |
| Nmtsum_<col> | This table provides an interval summary for all the TOP data tags.                                        |