Power Systems

IBM

iDoctor update

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IBM

LUG

Agenda

- Overview
  - Goals, components, unique features and website.
- Latest updates to iDoctor
  - Covering the last 18 months.
- Questions?
  - Contact idoctor@us.ibm.com or mccargar@us.ibm.com

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Overview

- iDoctor is a suite of dynamic performance tools
  - Developed by the IBM i Global Support Center.
  - Sold via Lab Services

- We cover all areas of performance
  - Started in V4R5
  - 7 IBM i components (2 free)
  - 2 Power components (free)

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iDoctor goals

- Broaden the user base for Performance Investigation
  - Operators, programmers, consultants, etc.
- Simplify and automate processes
- Provide quick access to data
- Provide more analysis options
- Reduce the dependency on PEX traces

PRODUCTIVITY

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IBM i Component	Description
Collection Services Investigator (CSI)	High-level system/job monitoring Specializes in job waits analysis
Job Watcher (JW)	Medium-level job analysis Specializes in job waits analysis
PEX Analyzer (PA)	Low-level system/job/disk tracing stats, profiling
Disk Watcher (DW)	Disk stats and traces See also CSI – disk graphs and/or PEX Analyzer – Physical Disk I/O
Plan Cache Analyzer	Analyses the system plan cache.
iDoctor FTP GUI (free)	Work with the IFS and libraries/objects.
Must Gather Tools (free)	GUI for QMGTOOLs library

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Power Component (non IBM i)	Description
VIOS Investigator (free)	Collects or analyzes nmon, npiv or VIOS Advisor data. Includes support to automatically download/install and run the latest PerfPMR.
Power Connections (free)	Manage your SQLite, HMC, VIOS, AIX or Linux connections and drill down for more details. Includes support to graph nmon data on the PC (with SQLite) or on an IBM i.

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iDoctor GUI

- Built on Windows
  - Superior flexibility and functionality
  - Support to run on Citrix servers
  - Runs on Linux KVMs, VirtualBox, etc.

- All components offer a similar user experience

- Requires:
  - System i Access for Windows or IBM i Access Client Solutions
    - Note: only if using the IBM i components.
  - .NET 4.0 or higher
  - Visual Studio 2012 redistributable package

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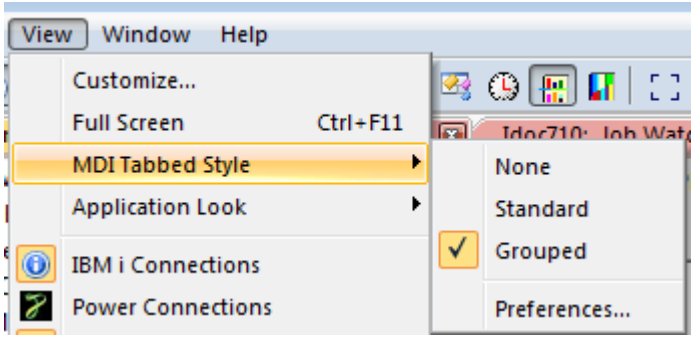
New tabbed style interface

- Three styles available:
  - **Grouped** – Tabs can be grouped together into 1 or more groups in order to make comparisons.
    - Default setting
    - Drag and drop to move tabs around
    - **Note:** Views cannot be tiled or cascaded when using this style.
  - **Standard –** Provides tabs for each view and allows cascading and tiling of views.
  - **None** – This is the same as the original iDoctor GUI design (no tabs.)



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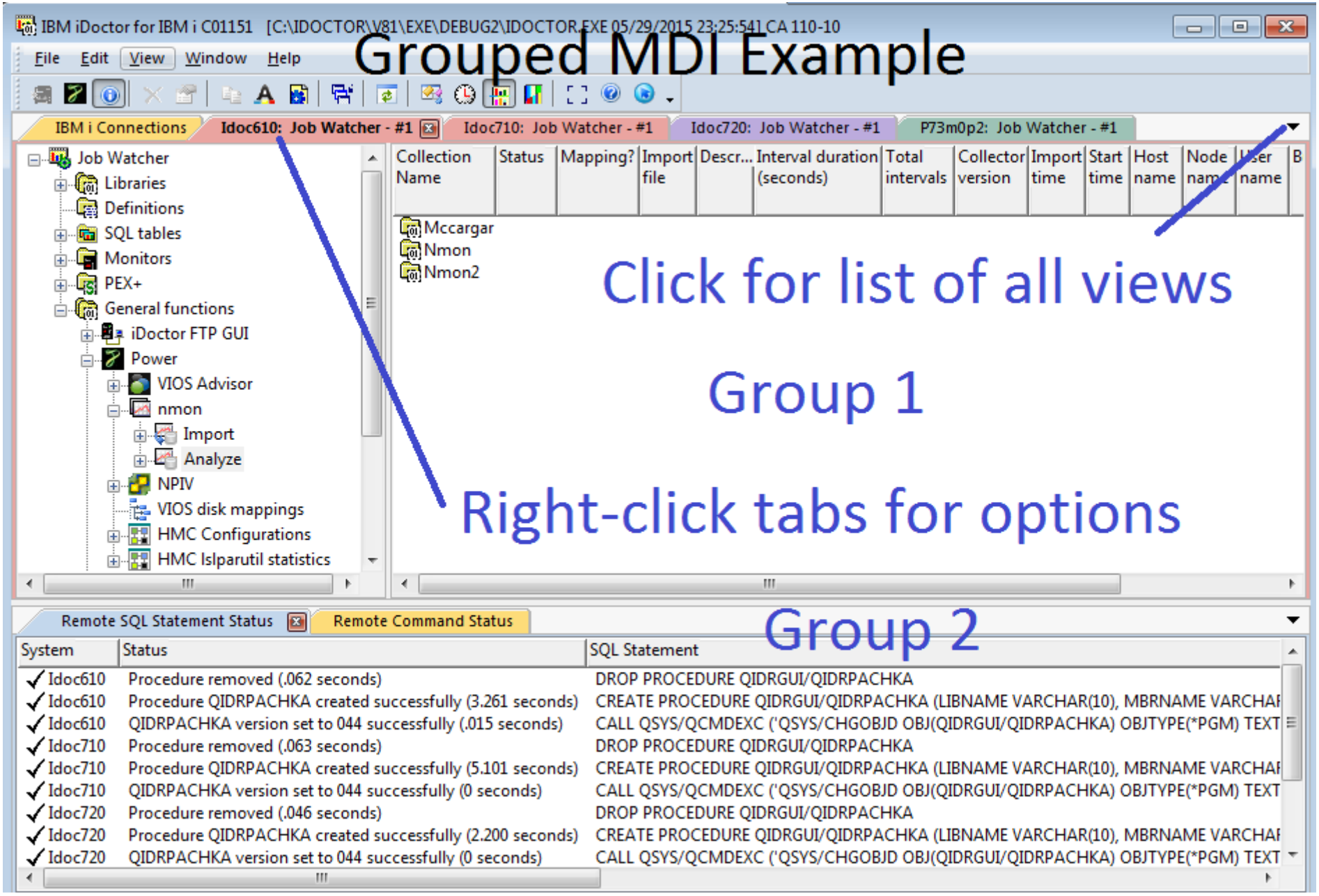
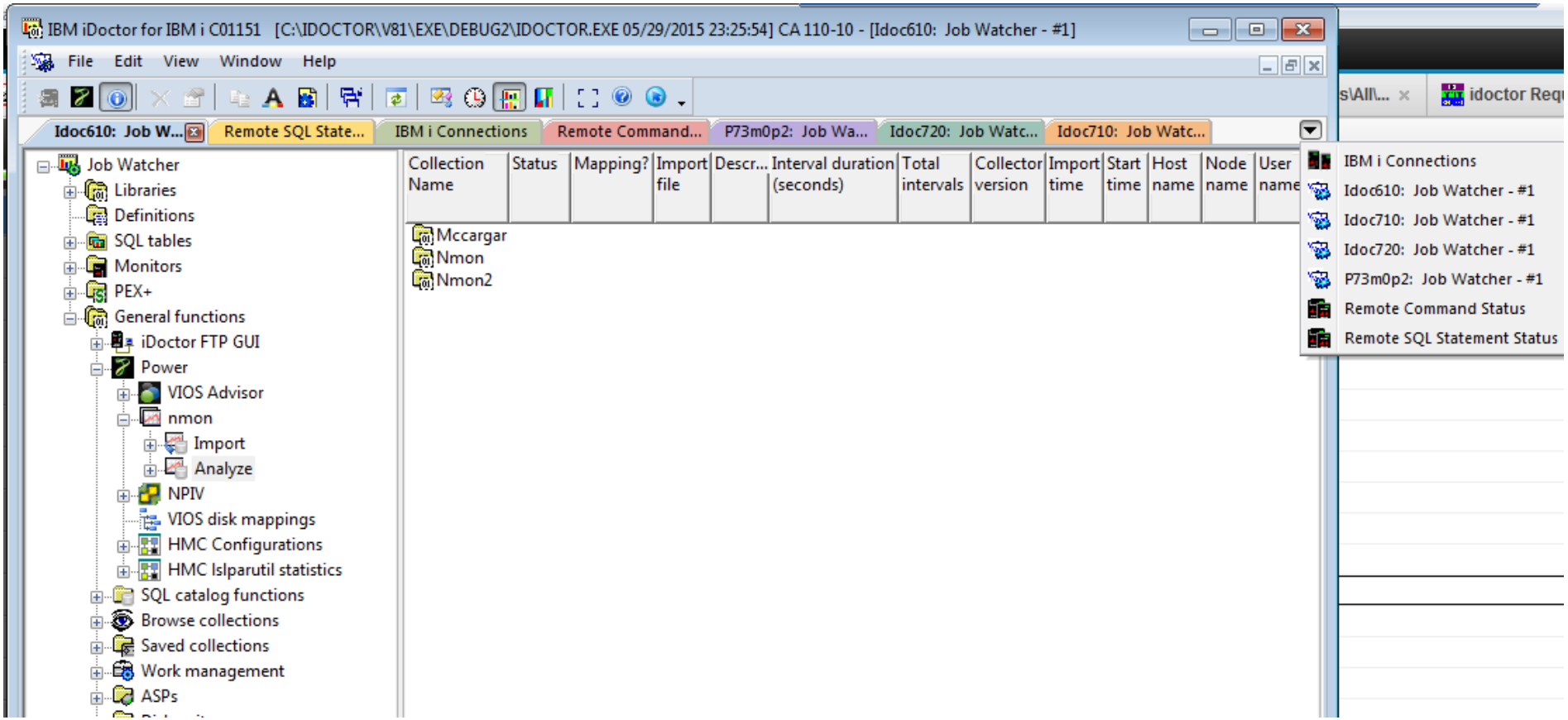
Power Systems



Standard MDI Example - Maximized

- All views shown in a single group or tiled/cascaded if desired.



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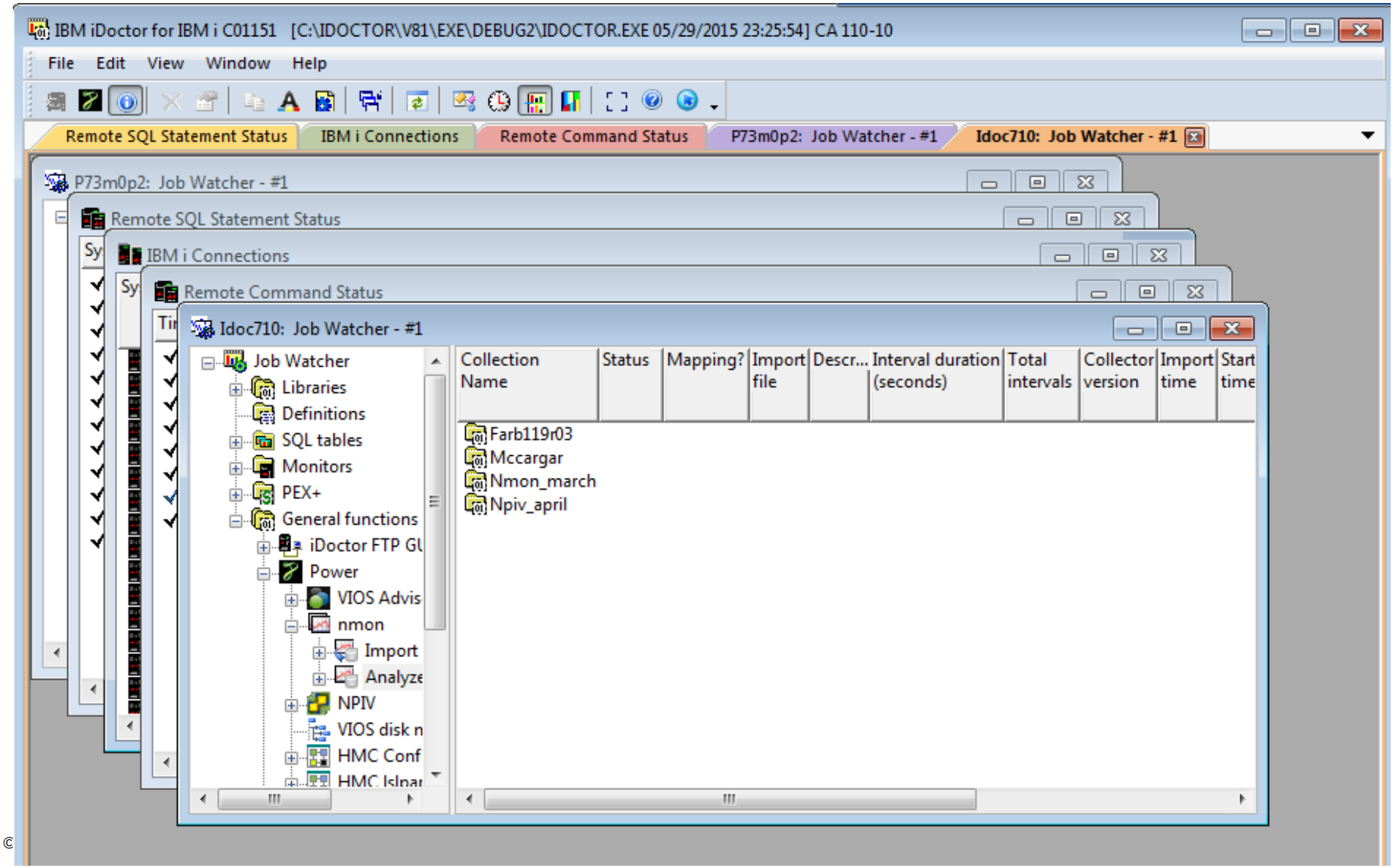
Standard MDI Example - Cascaded



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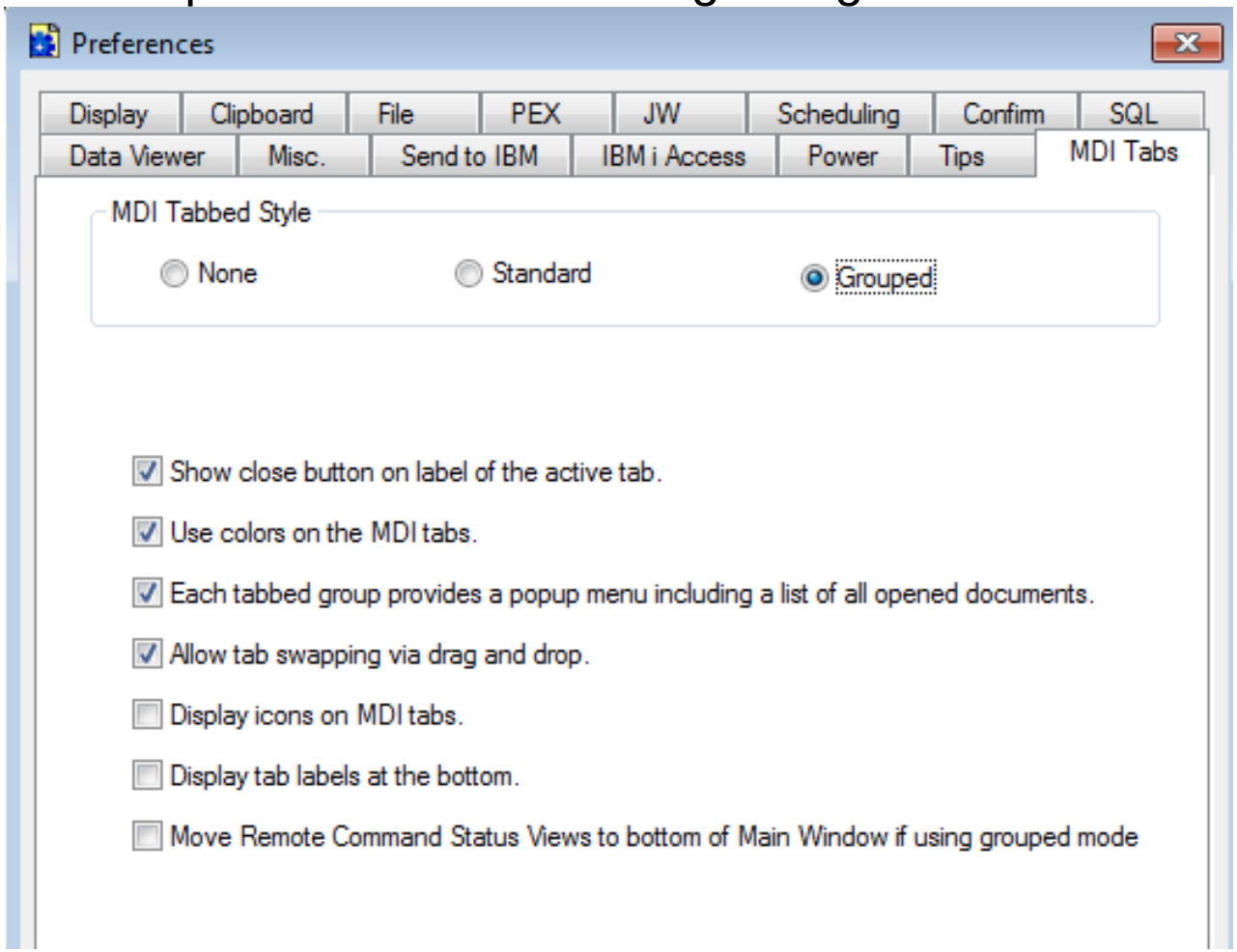
MDI Tabs - Preferences

- Controls various presentation details regarding how the tabs will look.



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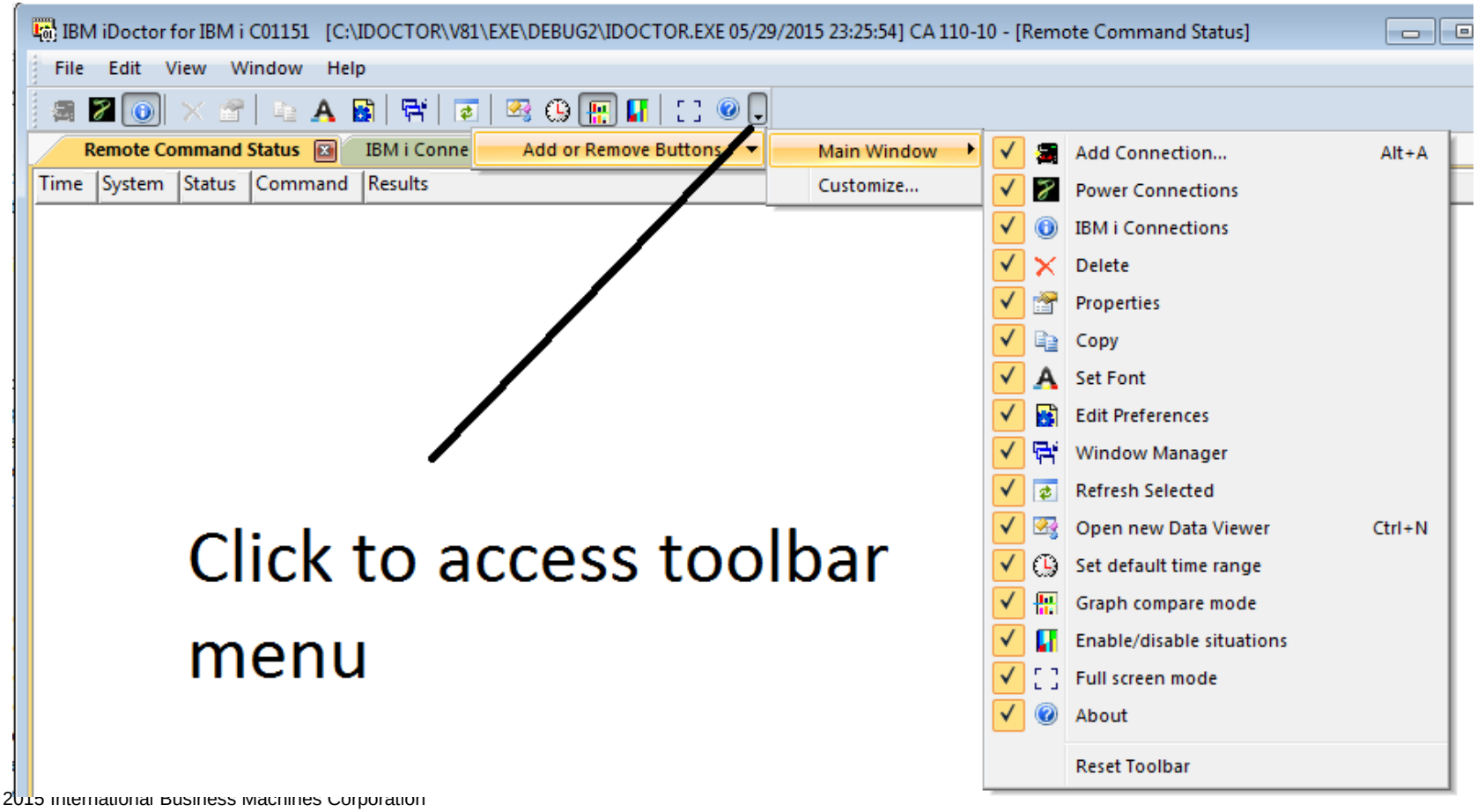
Customizable toolbars

- Click drop down arrow at end of toolbar.
- Toolbar menu -> Customize for additional options.



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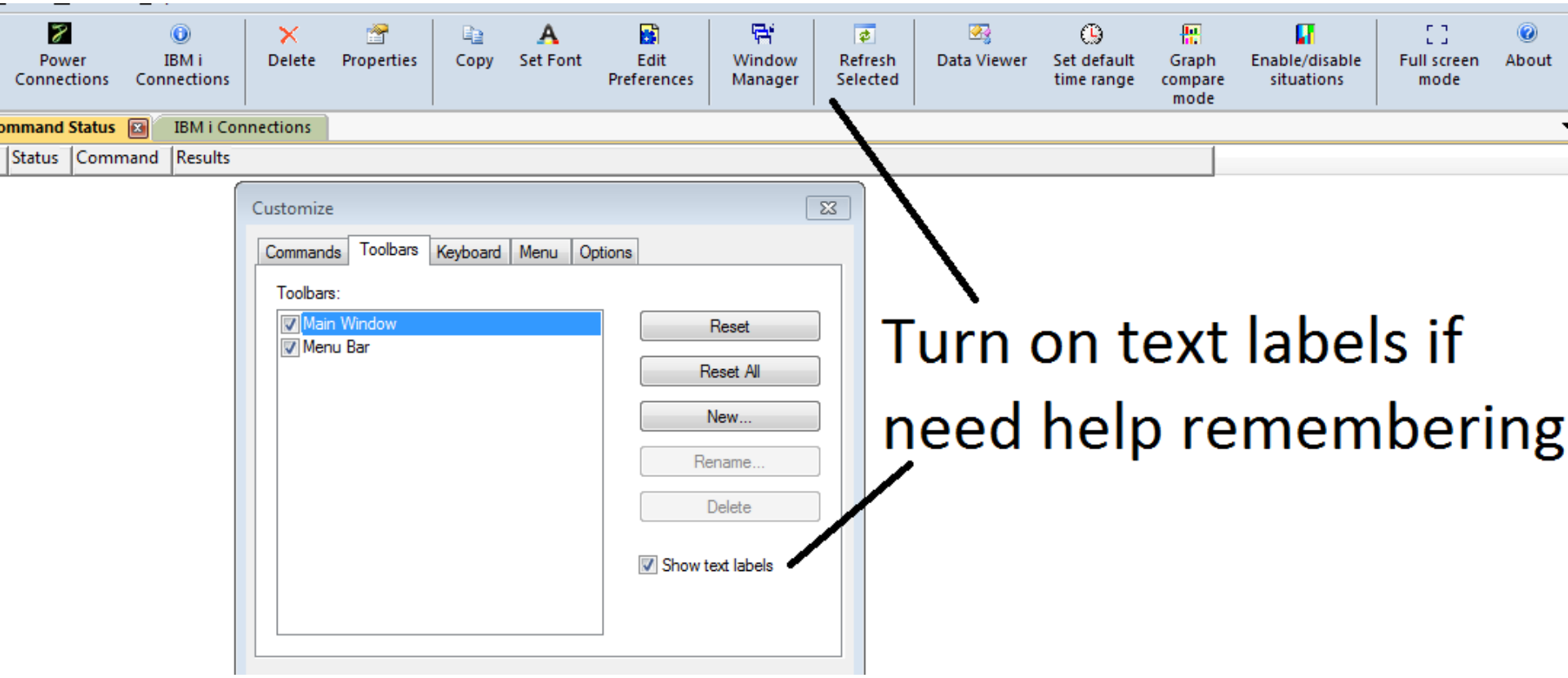
Customize – Toolbars – Show text labels

- Use Toolbar menu -> Customize -> Toolbars



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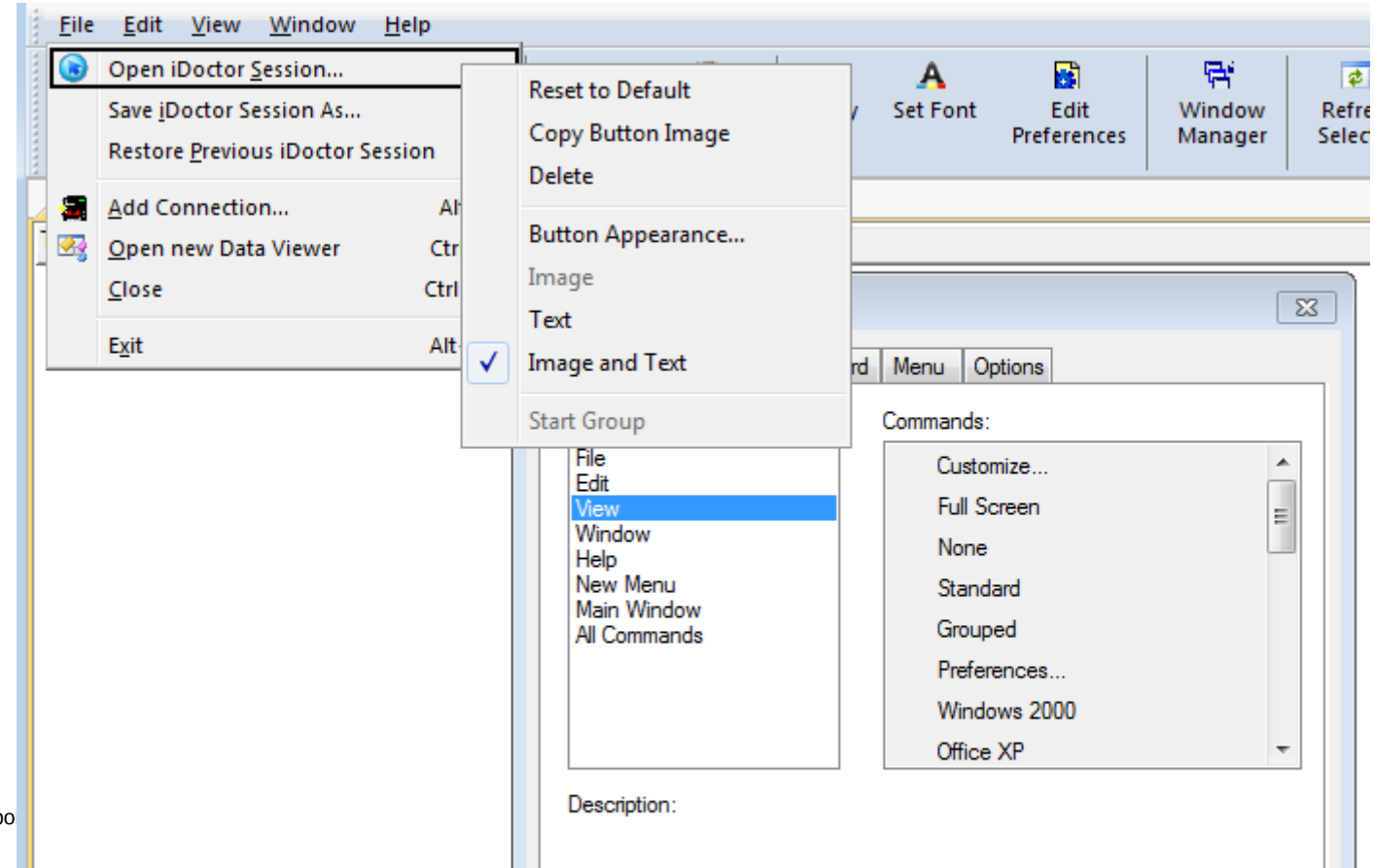
Customize – Menus

- With Customize window open you can click on menus to.
  - Right-click an individual menu to delete or change the image displayed.
  - Drag and drop a menu as new toolbar button or move them around in the menu.
  - Delete



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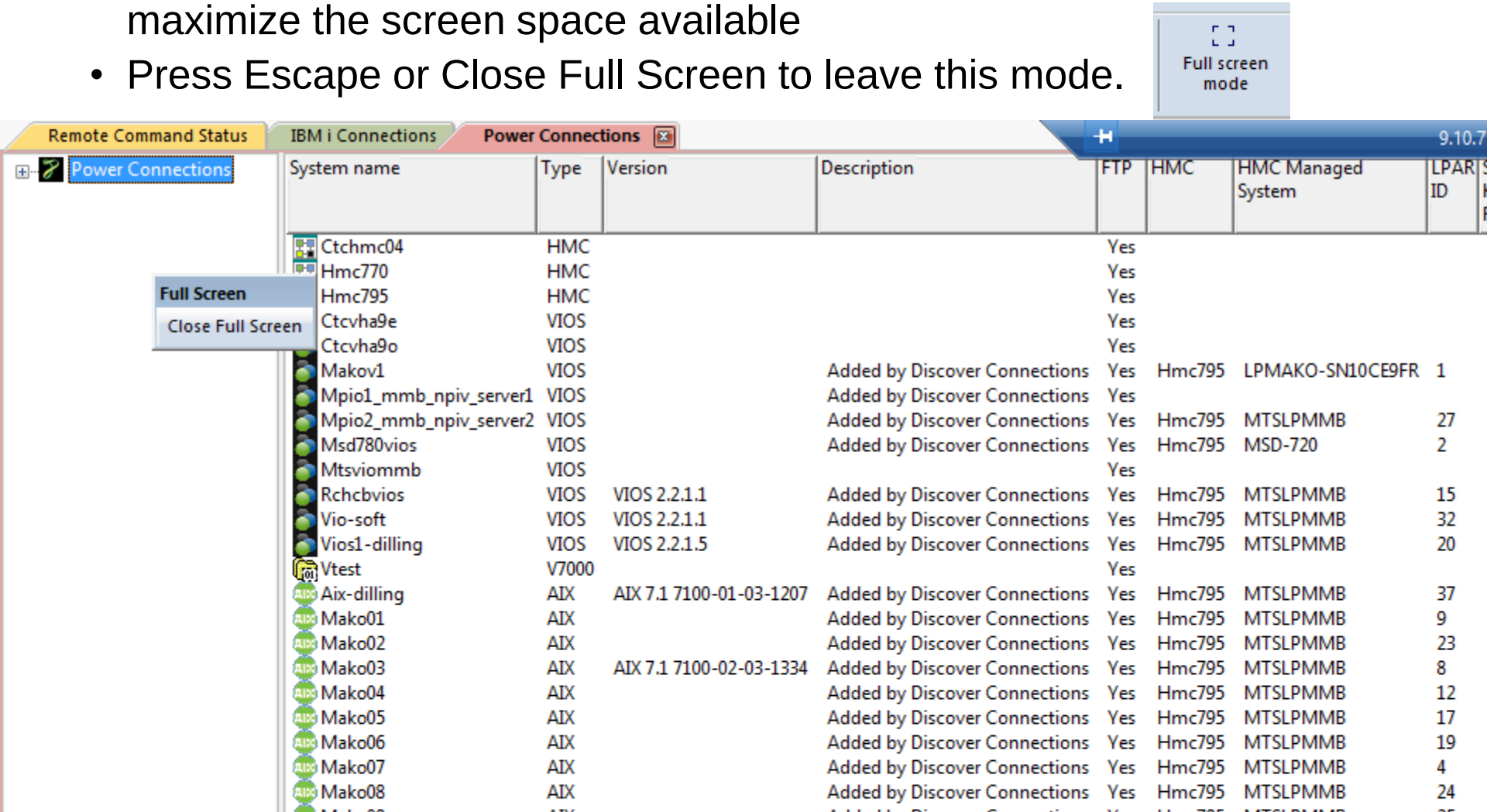
Full Screen Mode

- This options allows you to temporarily hide the menu/toolbars to maximize the screen space available
- Press Escape or Close Full Screen to leave this mode.



Citrix Support

- We have a Citrix server within support now and are using this internally.
- iDoctor no longer requires Windows administrator level authority in order to run.
- **Note:** Windows administrator level authority is still required to install the latest server builds.

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“My Connections” is now “IBM i Connections”

- The list of connections within iDoctor is now called IBM i Connections.
- All non IBM i Connections have been moved to a new expandable Power Connections view.
- Use these buttons to hide or show IBM i Connections or Power Connections.

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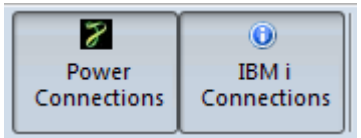
Connection Export



- Use the Export Connections menu to save your desired connections to a Windows registry file.
  - Allows you to transfer connections to another PC/user.
  - Or need to uninstall/reinstall IBM i Access.
    - **Note:** Uninstalling IBM i Access will remove your connections.

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Power Connections

- Work with HMCs, VIOS, AIX, or Linux systems.
- Also provides access to local SQLite stored data through SQLite ODBC connections.
- Uses SSH
- HMCs can be expanded to view managed systems and LPARs. LPARs can be expanded to work with available iDoctor functions.
- Use the Set Analysis Database menu to configure where performance data will be stored.
- iDoctor scripts get installed to /tmp/idoctor directory by default.

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Power Connections Example

IBM i Connections | Power Connections

Power Connections

System name	Type	Version	Description	FTP	HMC	HMC Managed System	LPAR ID	SSH Pu Key File
LOCAL_SQLITE	SQLite		C:\sqlite\iDoctor.sqlite	Yes				
LOCAL_SQLITE_41	SQLite		C:\sqlite\iDoctor41.sqlite	Yes				
Ctchmc04	HMC			Yes				
Hmc770	HMC			Yes				
Hmc795	HMC			Yes				
Ctcvha9e	VIOS			Yes				
Ctcvha9o	VIOS			Yes				
Makov1	VIOS		Added by Discover Connections	Yes	Hmc795	LPMAKO-SN10CE9FR	1	
Msd780vios	VIOS		Added by Discover Connections	Yes	Hmc795	MSD-720	2	
Mtsviommb	VIOS			Yes				
Rchcbvios	VIOS	VIOS 2.2.1.1	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	15	
Vio-soft	VIOS	VIOS 2.2.1.1	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	32	
Vios1-dilling	VIOS	VIOS 2.2.1.5	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	20	
Vaa	V7000			Yes				
Mako02	AIX		Added by Discover Connections	Yes	Hmc795	MTSLPMMB	23	
Mako03	AIX	AIX 7.1 7100-02-03-1334	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	8	
Mako04	AIX		Added by Discover Connections	Yes	Hmc795	MTSLPMMB	12	
Mako05	AIX		Added by Discover Connections	Yes	Hmc795	MTSLPMMB	17	
Mako06	AIX		Added by Discover Connections	Yes	Hmc795	MTSLPMMB	19	
Mako07	AIX		Added by Discover Connections	Yes	Hmc795	MTSLPMMB	4	
Mako09	AIX		Added by Discover Connections	Yes	Hmc795	MTSLPMMB	25	
Mako10	AIX			Yes				
Mako21	AIX		Added by Discover Connections	Yes	Hmc795	LPMAKO-SN10CE9FR	21	
Mako22	AIX		Added by Discover Connections	Yes	Hmc795	LPMAKO-SN10CE9FR	22	
Mako23	AIX		Added by Discover Connections	Yes	Hmc795	LPMAKO-SN10CE9FR	23	
Mako24	AIX		Added by Discover Connections	Yes	Hmc795	LPMAKO-SN10CE9FR	24	
Mako30	AIX			Yes				
Rchaixve1	AIX	AIX 7.1 7100-02-01-1245	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	13	
Rchaixve2	AIX	AIX 6.1 6100-08-00-0000	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	14	
Rchaixve3	AIX	AIX 7.1 7100-02-01-1245	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	39	
Rchasnim	AIX	AIX 7.1 7100-03-01-1341	Added by Discover Connections	Yes	Hmc795	MTSLPMMB	38	

Power Connections – Additional Software Recommended

- Putty (for SSH file transfers, and SSH key generation)
  - http://the.earth.li/~sgtatham/putty/latest/x86/putty-0.64-installer.exe
  - Configure where this is installed in Preferences -> Power.
  - If not used, then FTP connections are also required.

- SQLite (fast, zero installation DB for analyzing performance data)
  - http://sqlite.org/2015/sqlite-shell-win32-x86-3081002.zip
  - http://sqlite.org/2015/sqlite-dll-win32-x86-3081002.zip
  - Extract both of the above to a single directory (i.e. C:\sqlite)
  - Configure where this is installed on the Set Analysis DB window.
  - If not used, then an IBM i must be used to analyze data.

- SQLite ODBC Driver (required if using SQLite with iDoctor)
  - http://www.ch-werner.de/sqliteodbc/sqliteodbc.exe

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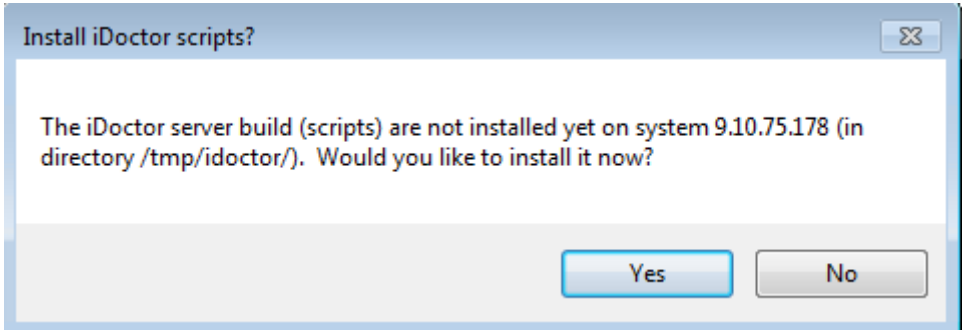
Power Connections – Installing scripts

- First time you connect to AIX, Linux or VIOS you will be asked if scripts can be installed.



- Requires FTP or Putty's pscp.exe command (configure which is used under Preferences -> Power.)

- If using pscp.exe you will be required to connect manually to the system with Putty once to get server's host key cached in the registry.

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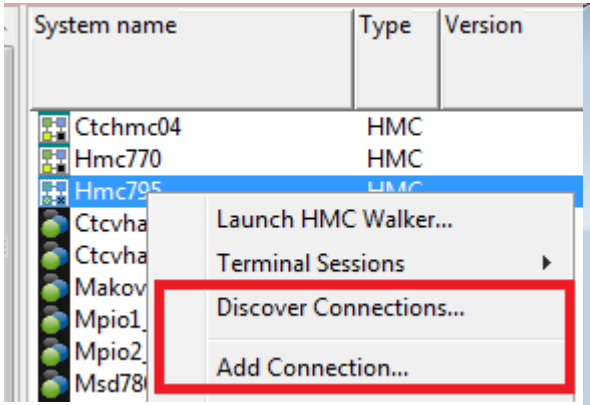
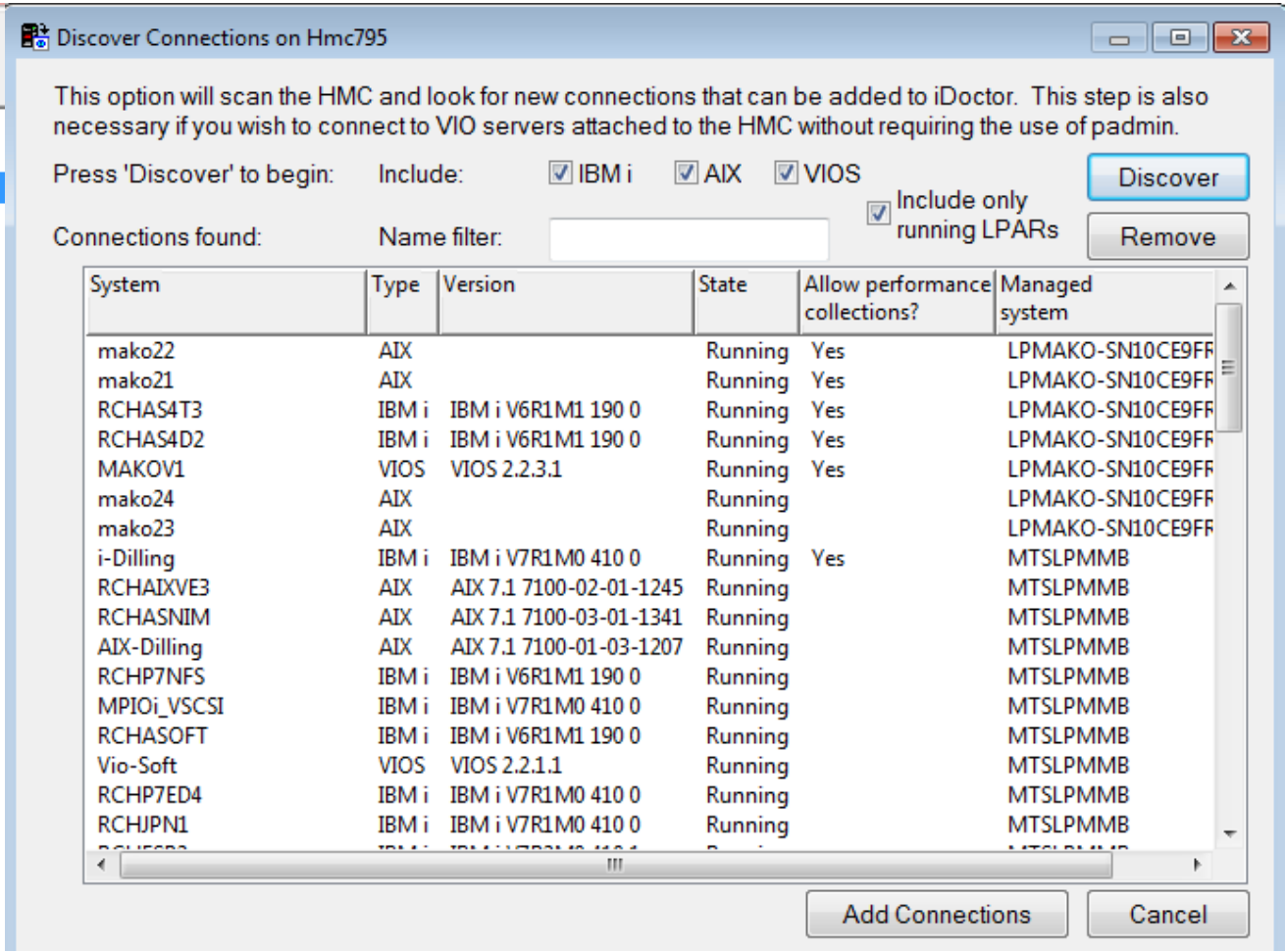
Power Connections – Discover Connections

- Add Connections using Discover Connections (for an HMC) or use the Add Connection menu.





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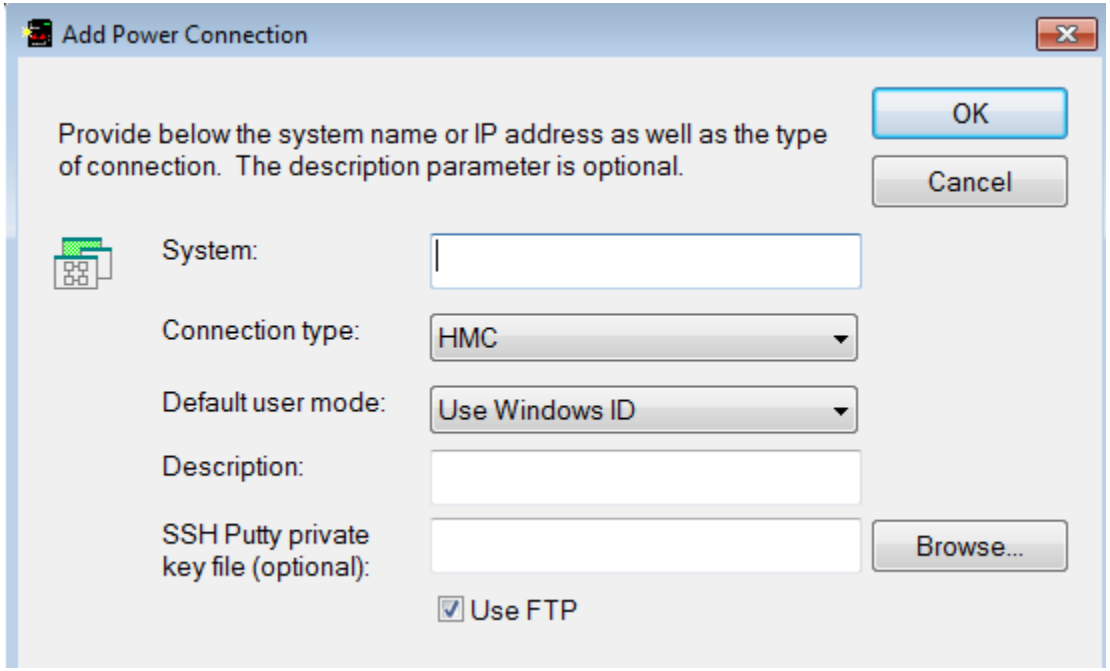
Power Connections – Add Power Connection

- Add new Power Connections via this screen.
- Allows option to use SSH keyed connection.
- Can also be used to connect to a local SQLite DB.



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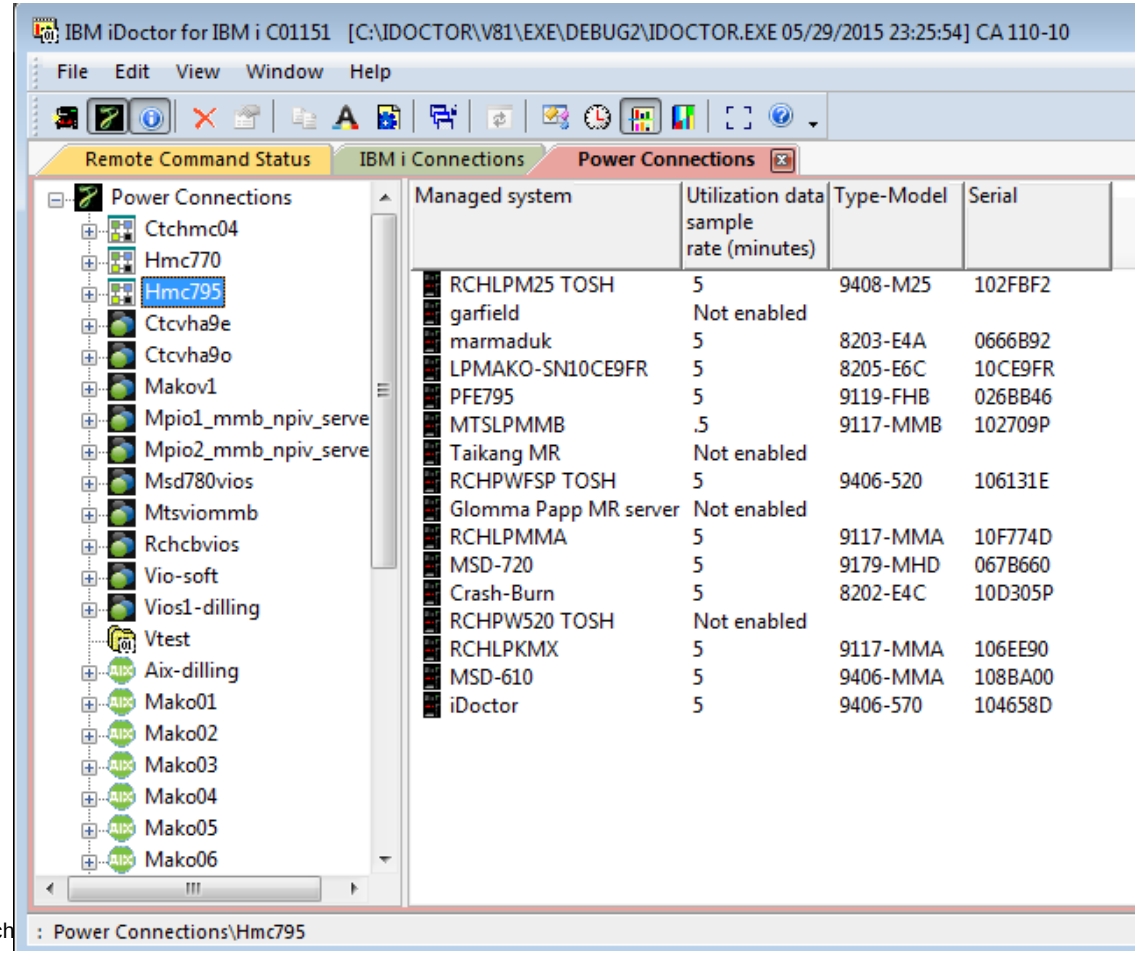
Power Connections – Managed systems within an HMC

- This view allows you to view/change the utilization data sample rate (used by lslparutil).



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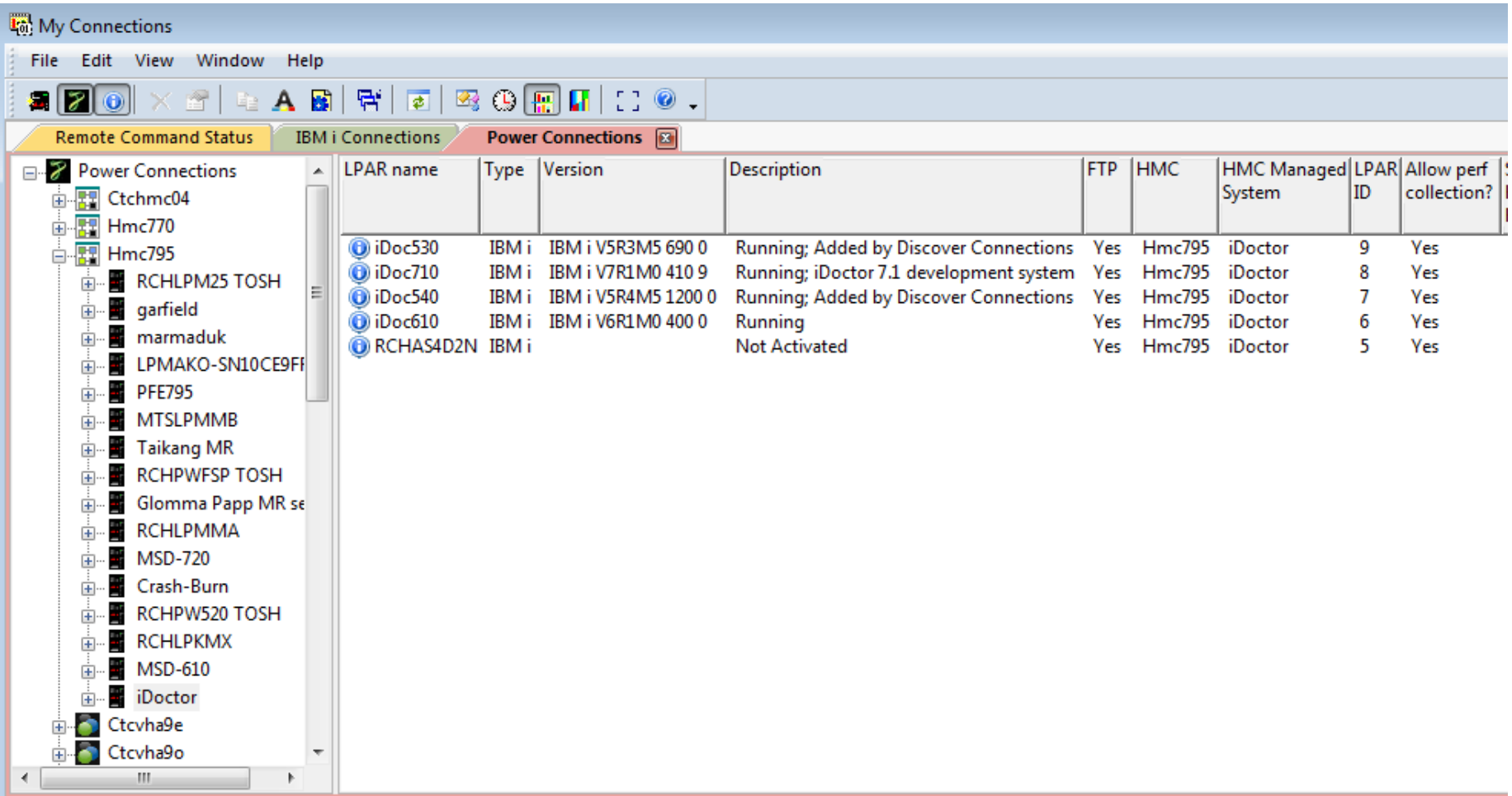
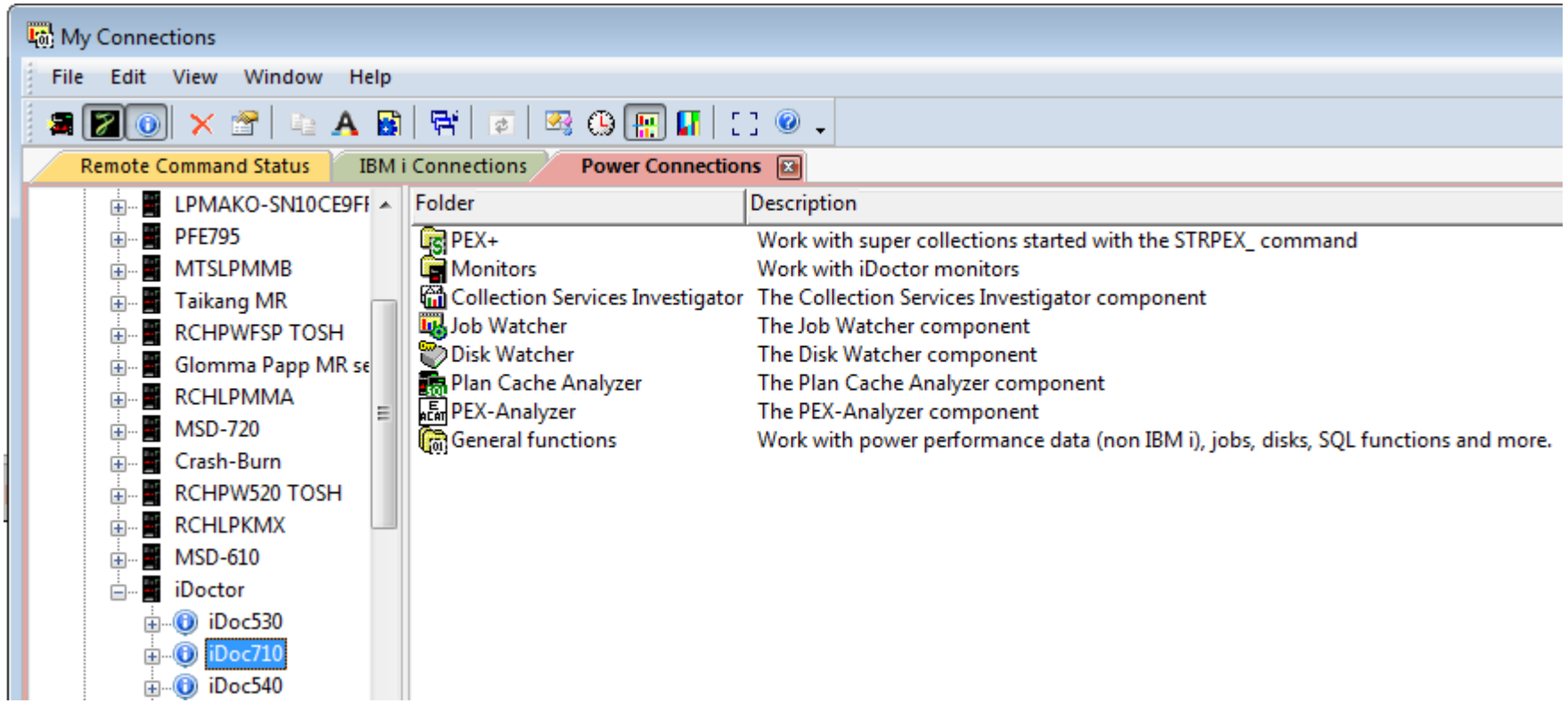
Power Connections – LPARs within a managed system

- Right-click and Launch iDoctor Components menu or drill down further to access iDoctor functions.



Power Connections – IBM i LPAR Functions

- Some functions require a key (CSI, JW, PEX).



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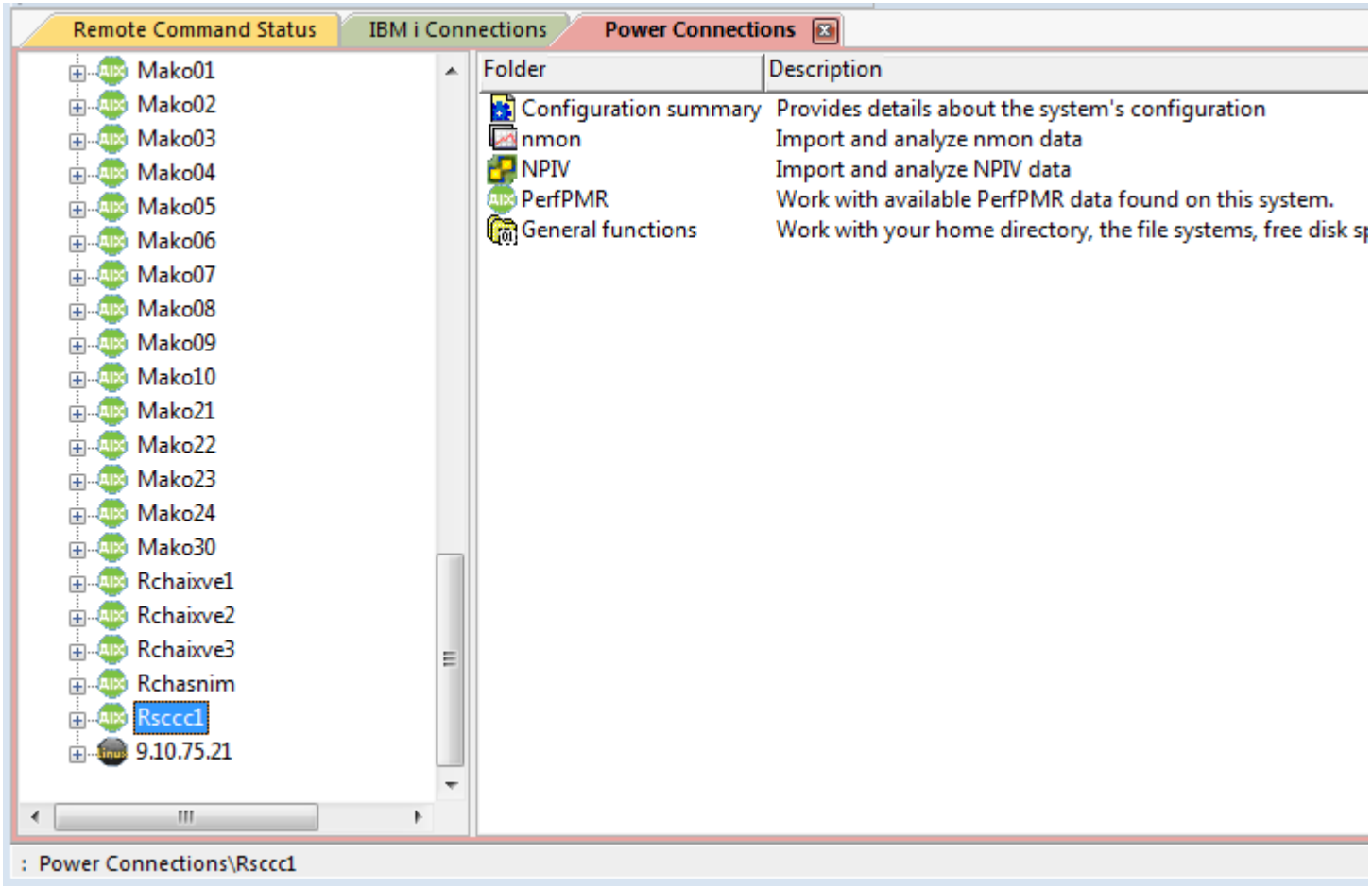
Power Connections – AIX Functions

- Nmon, npiv, perfpmr, and more.



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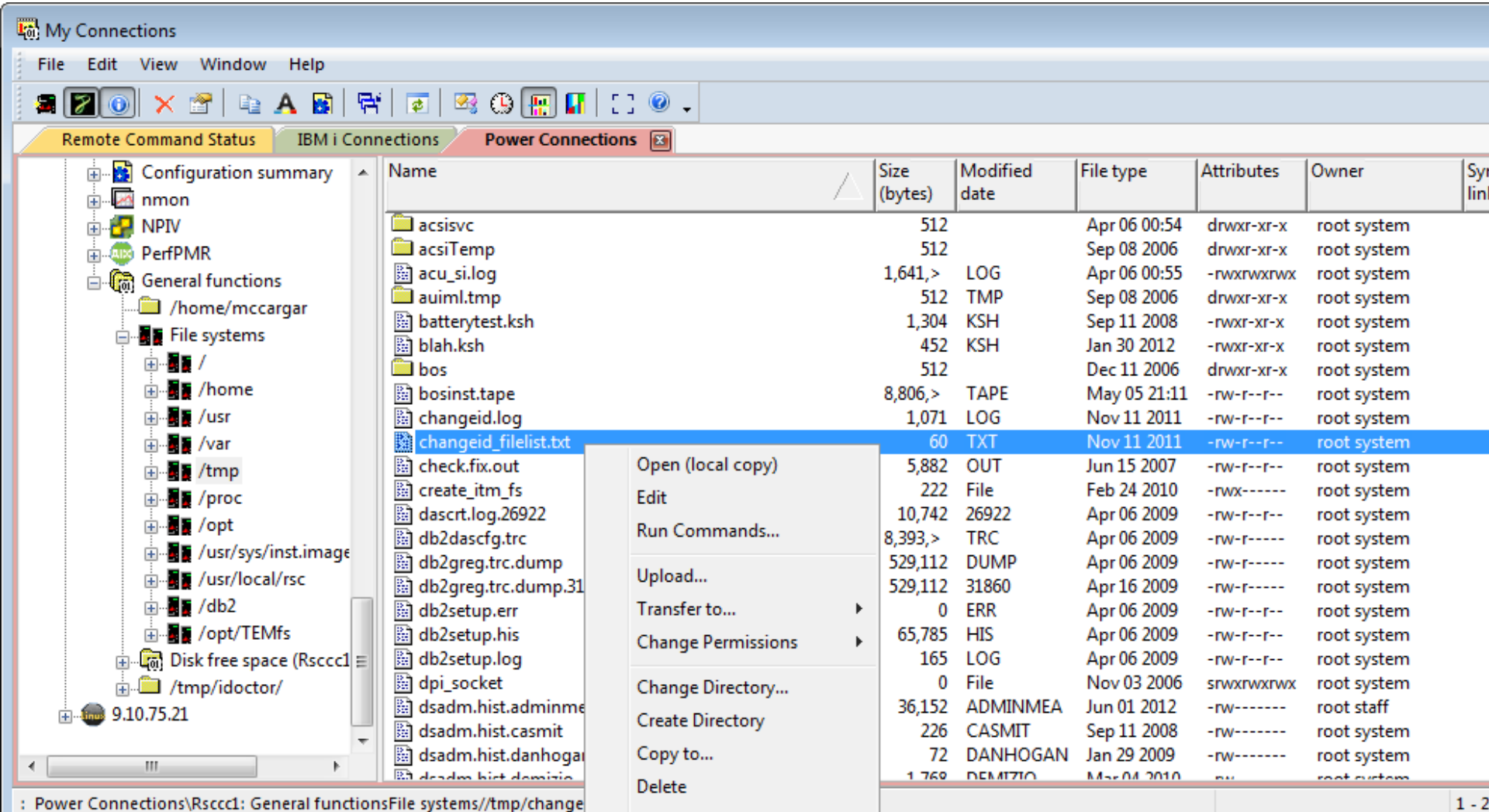
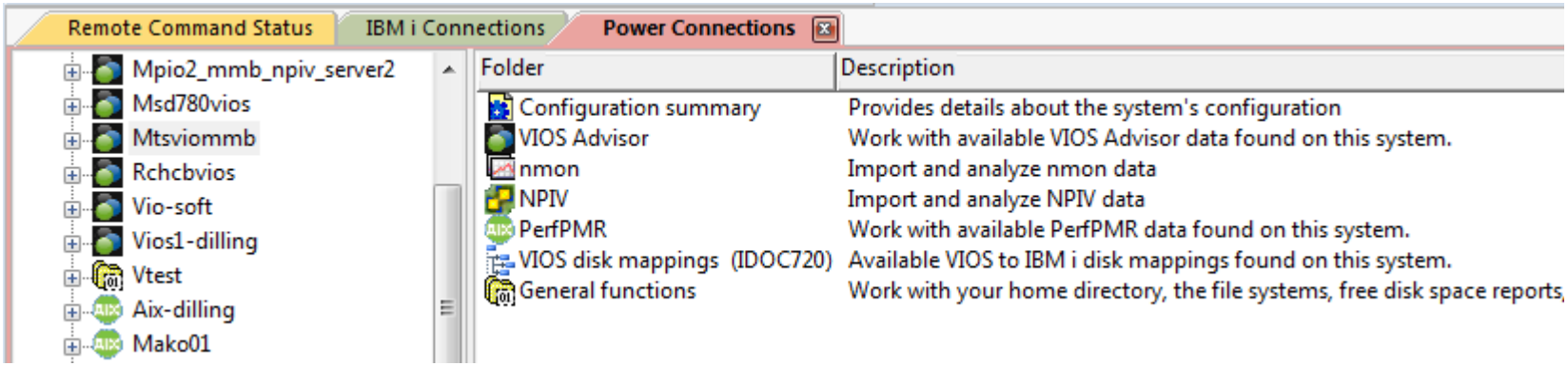
Power Connections – AIX – General Functions

- File systems /tmp example on an AIX system.



Power Connections – VIOS (Investigator) Functions

- VIOS Advisor, nmon, npiv, PerfPMR
- VIOS to IBM i disk mappings



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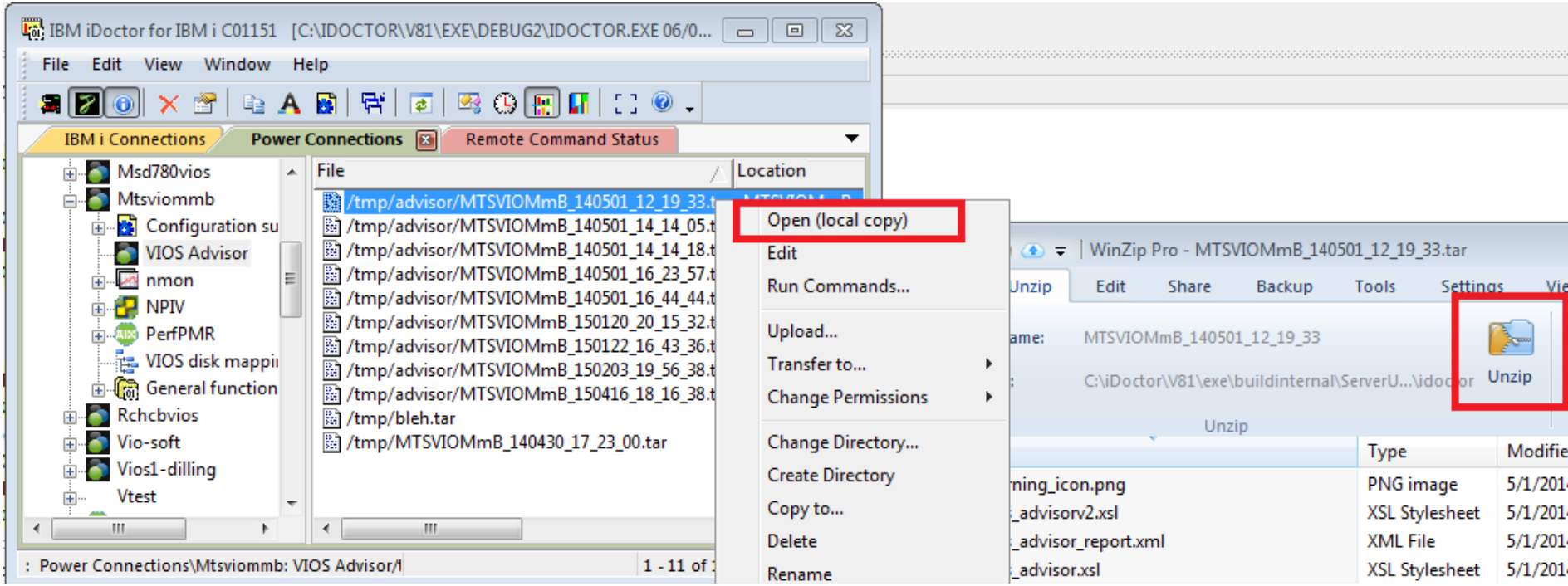
Power Connections – VIOS Advisor

- VIOS Advisor folder contains VIOS Advisor .tar files.
  - Create via GUI or part command on VIOS.
  - Use Open menu to download to the PC
  - Unzip all files then open vios_advisor_report.xml in Firefox or IE (doesn't work in Google Chrome)



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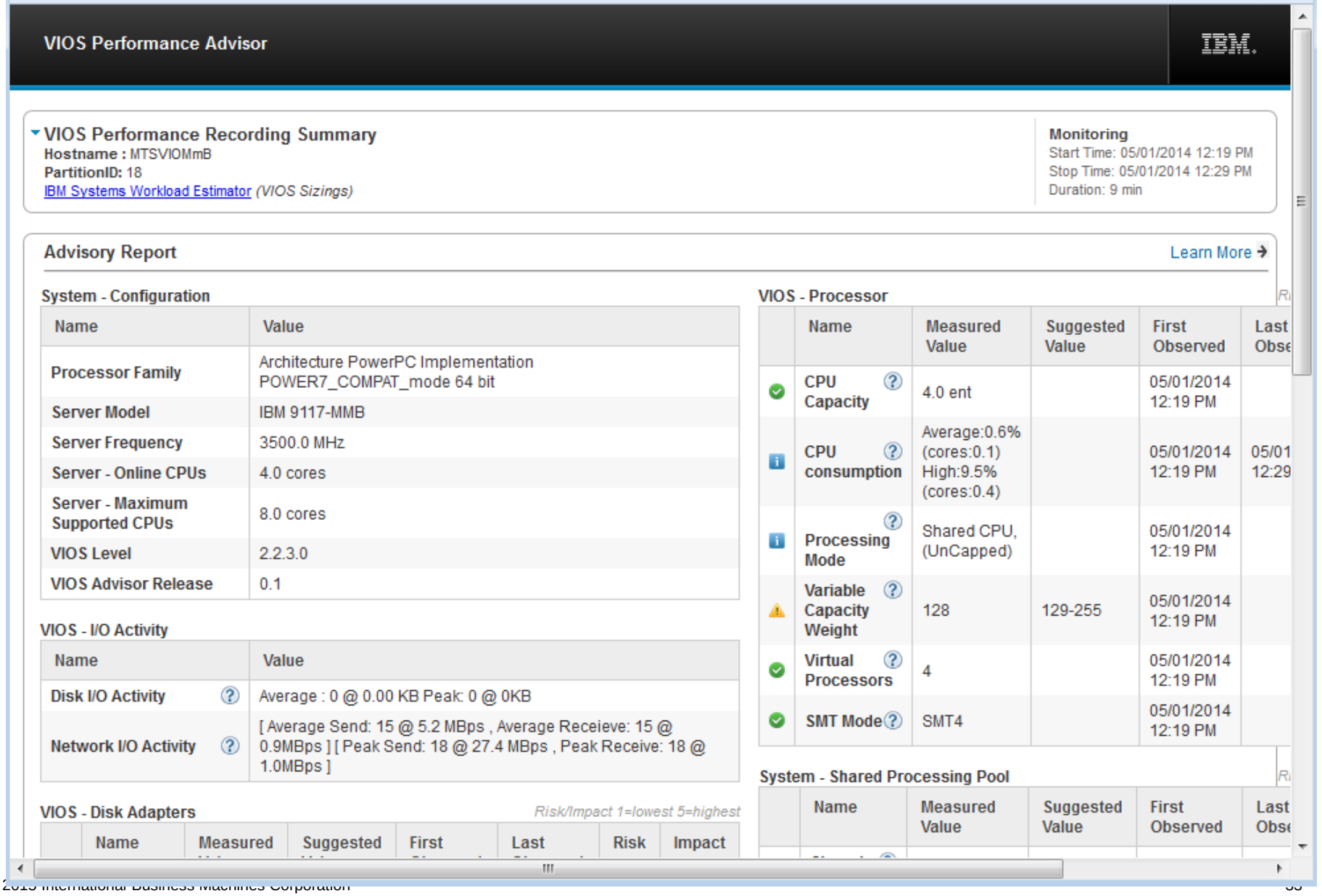

VIOS Performance Advisor

IBM

VIOS Performance Recording Summary

Hostname : MTSVIOMmB
PartitionID: 18
IBM Systems Workload Estimator *(VIOS Sizings)*

Monitoring
Start Time: 05/01/2014 12:19 PM
Stop Time: 05/01/2014 12:29 PM
Duration: 9 min

Advisory Report

Learn More

System - Configuration

Name	Value
Processor Family	Architecture PowerPC Implementation 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: 15 @ 5.2 MBps , Average Receieve: 15 @ 0.9MBps] [Peak Send: 18 @ 27.4 MBps , Peak Receive: 18 @ 1.0MBps]

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

	Name	Measured	Suggested	First	Last	Risk	Impact

VIOS - Processor

	Name	Measured Value	Suggested Value	First Observed	Last Obse
✓	CPU Capacity	4.0 ent		05/01/2014 12:19 PM	
i	CPU consumption	Average:0.6% (cores:0.1) High:9.5% (cores:0.4)		05/01/2014 12:19 PM	05/01 12:29
i	Processing Mode	Shared CPU, (UnCapped)		05/01/2014 12:19 PM	
⚠	Variable Capacity Weight	128	129-255	05/01/2014 12:19 PM	
✓	Virtual Processors	4		05/01/2014 12:19 PM	
✓	SMT Mode	SMT4		05/01/2014 12:19 PM	

System - Shared Processing Pool

	Name	Measured Value	Suggested Value	First Observed	Last Obse

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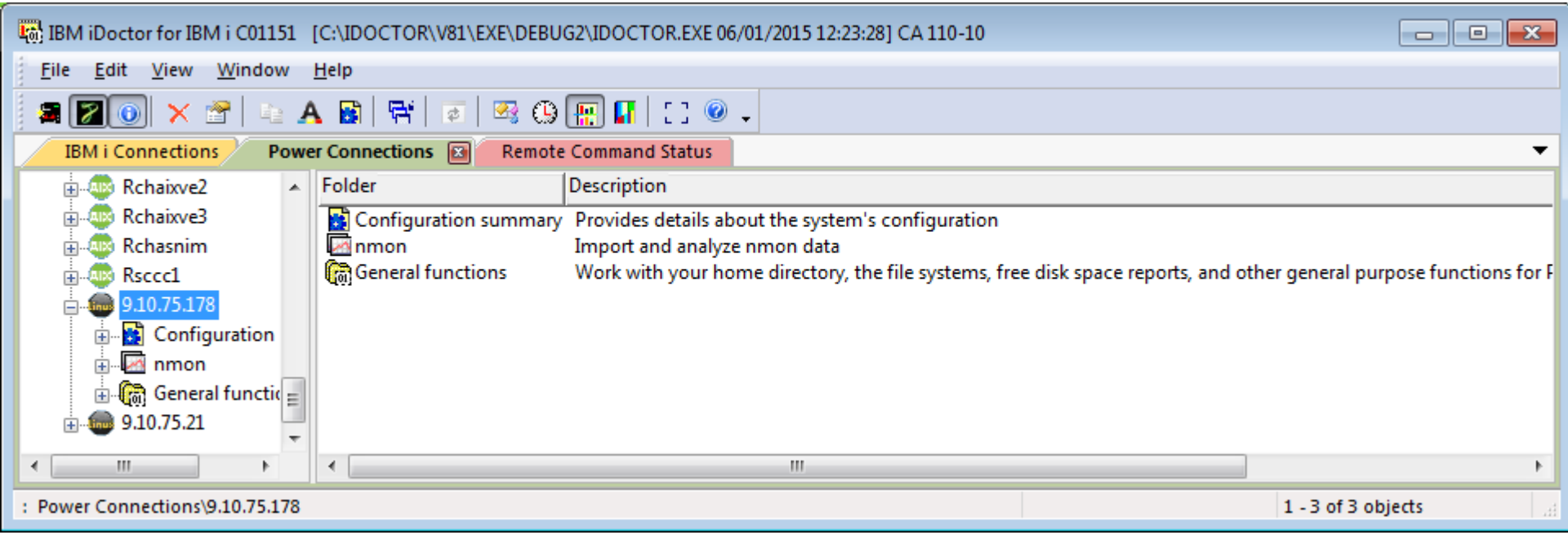
Power Connections – Linux Functions

- Nmon, configuration summary, access file system, etc.



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Power Connections – Analysis Database Graphing Support

- DB2 on IBM i
  - Nmon (with or without VIOS to IBM i disk mappings)
  - NPIV
  - HMC lslparutil stats
  - HMC configurations
- SQLite on the PC
  - Nmon (without a VIOS to IBM i disk mapping)
  - Other options not yet available
- Oracle Express on the PC
  - Removed because agreement with Oracle doesn't allow use of free Oracle DBs in IBM products.

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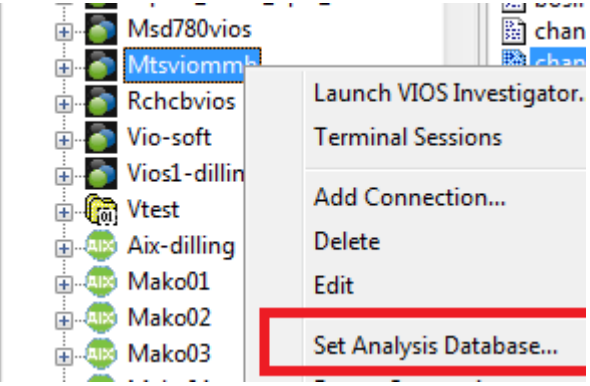
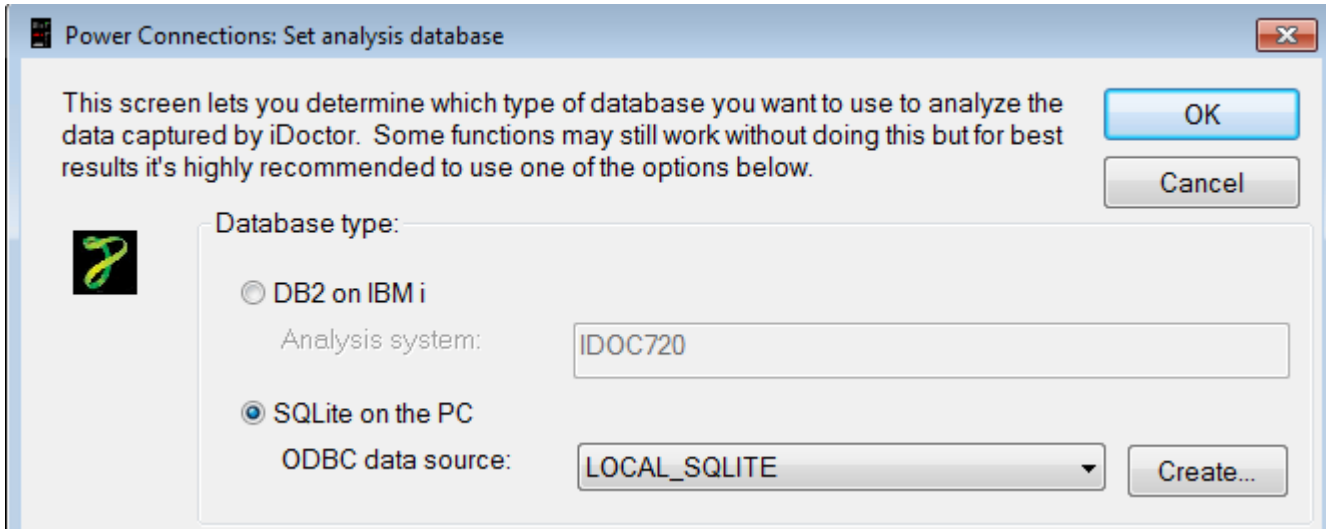
Power Connections – Set Analysis Database

- Configure where Power performance data will be stored.





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Analyzing Power Performance Data (nmon, npiv, etc.)

- Under any IBM i component: General Functions -> Power.
  - Data can be stored in the IFS or PC, then use Analyze Data menu to convert to DB files for graphing purposes.
  - **Note:** When connected to an IBM i, the Set Analysis Database setting does not apply. Data on the IBM i will always be shown.

- Power Connections
  - Expand a VIOS, Linux or AIX system for analysis options.
  - Nmon, npiv, VIOS Advisor or PerfPMR depending on type of system.

- Power Connections -> SQLite
  - Under the nmon folder. More to come in the future here.
  - Users without access to AIX/Linux/VIOS can also use this to analyze data entirely on the PC without touching the server (assuming they have the .nmon files.)

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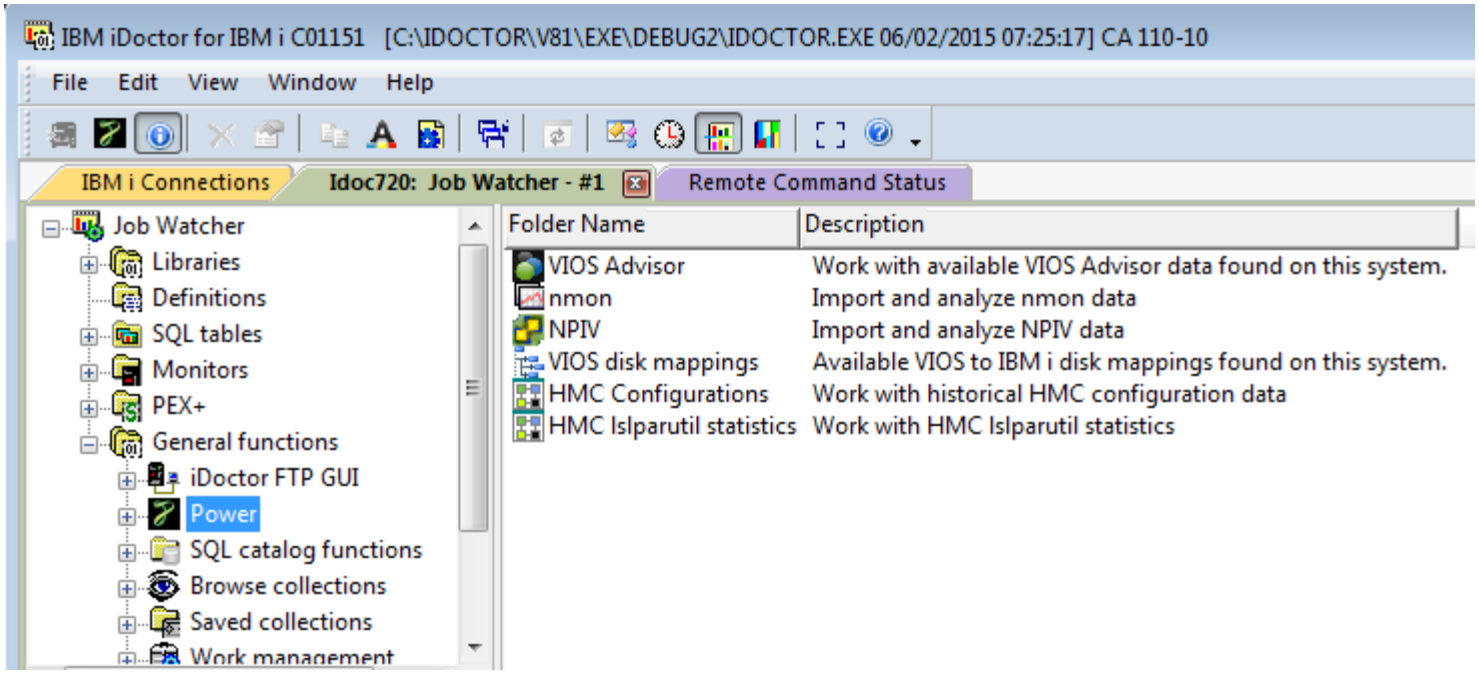
Job Watcher -> General Functions -> Power Example

- Each folder provides options to analyze (graph) or import additional data.



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Nmon

- All “nmon Analyzer”-like graphs added to iDoctor
  - Ron McCargar maintains the Excel nmon Analyzer now.
  - 83 graphs + 65 reports
- The original set of CSI-like nmon graphs are also available.
- A mechanism to automatically monitor/analyze new data sent to the IBM i is being developed.
- Multiple collections/days can be graphed at once.
- nmon Analyzer website/downloads
  - https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20Systems/page/nmon_analyser
- Nigel Griffith’s work on nmonchart:
  - http://nmon.sourceforge.net/pmwiki.php?n=Site.Nmonchart

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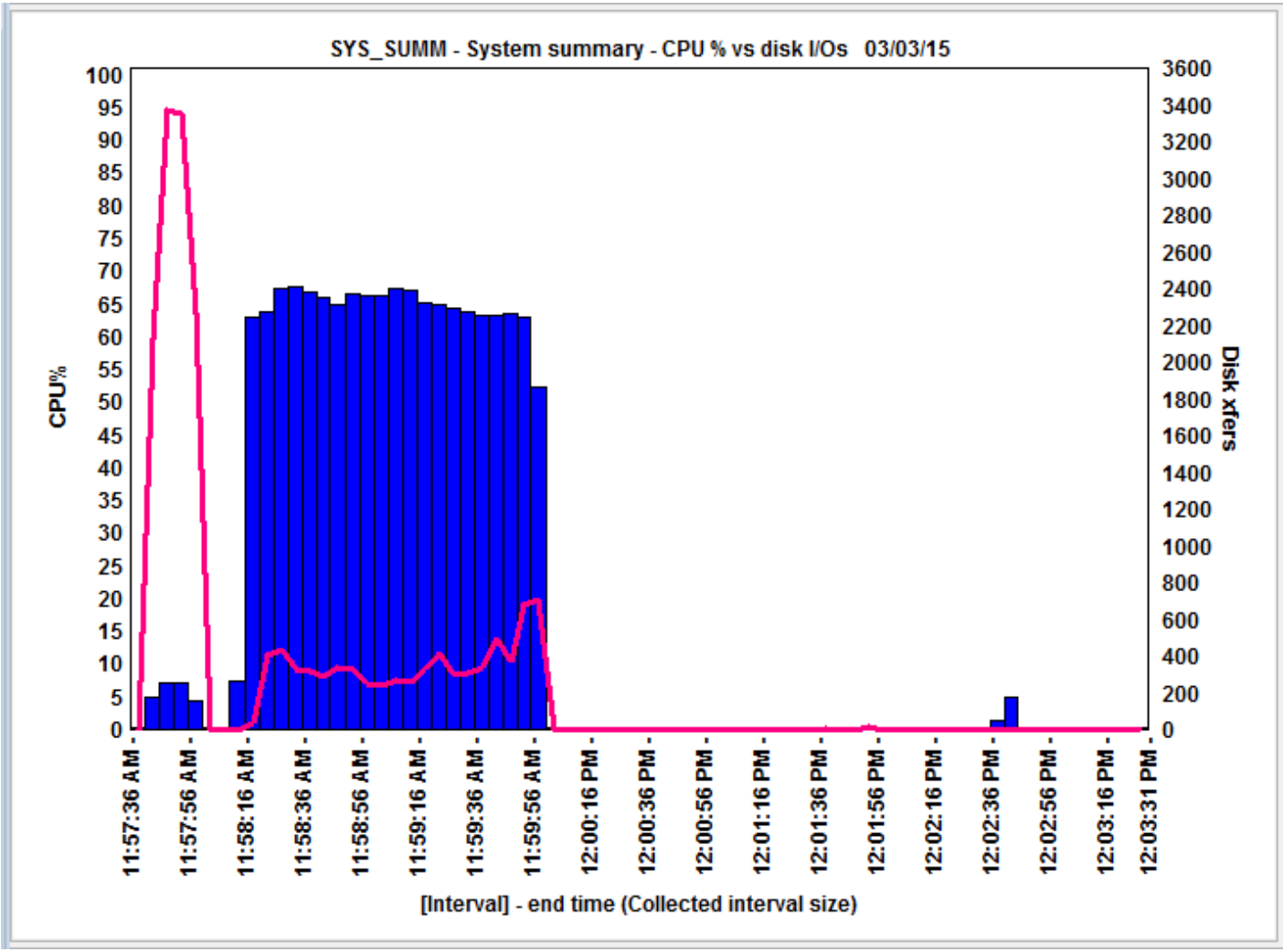
Nmon Analyzer – SYS_SUMM Graph Example



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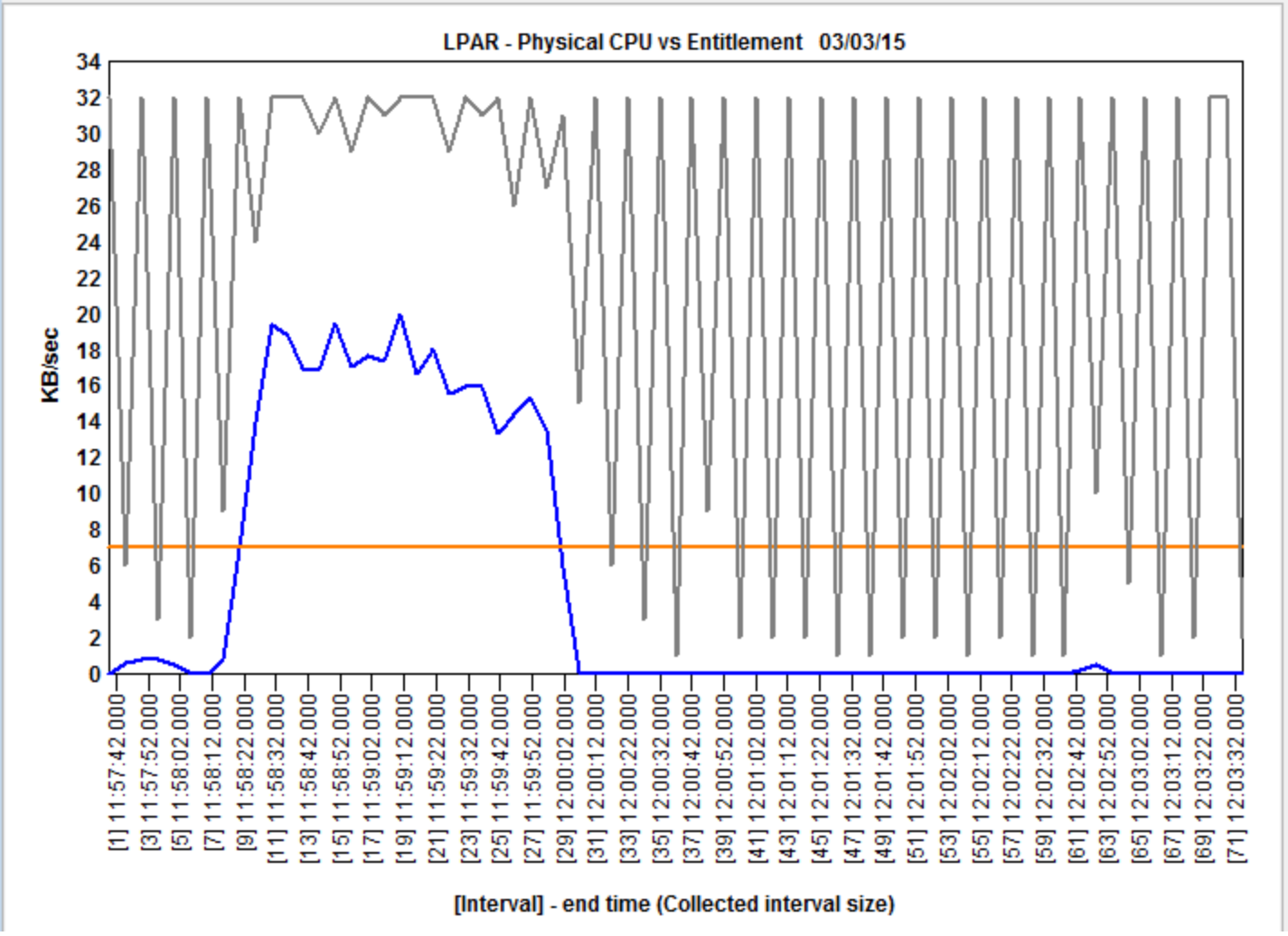
Nmon Analyzer – LPAR Graph Example



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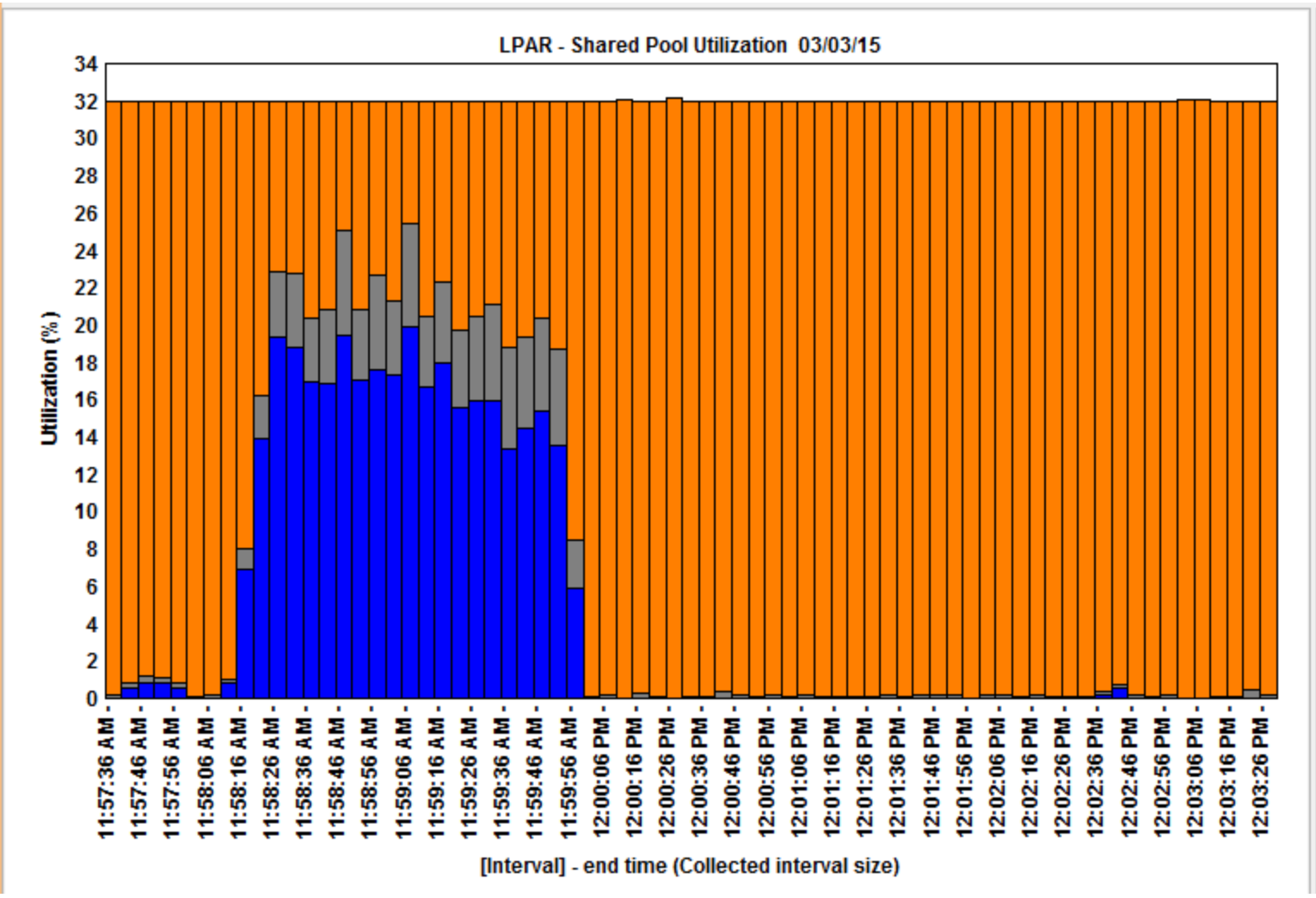
Nmon Analyzer – LPAR Graph Example



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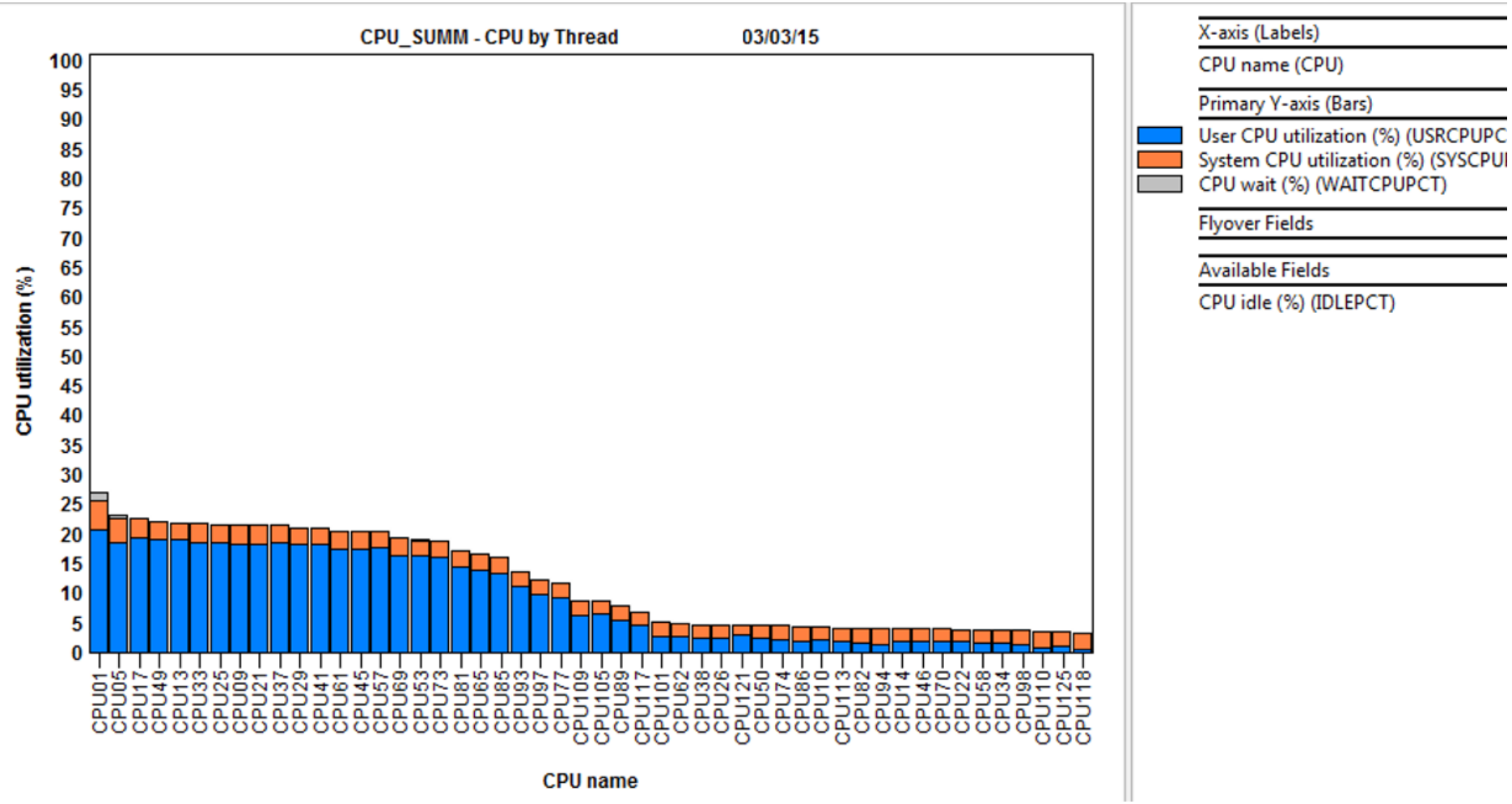
Nmon Analyzer – CPU_SUMM Graph Example



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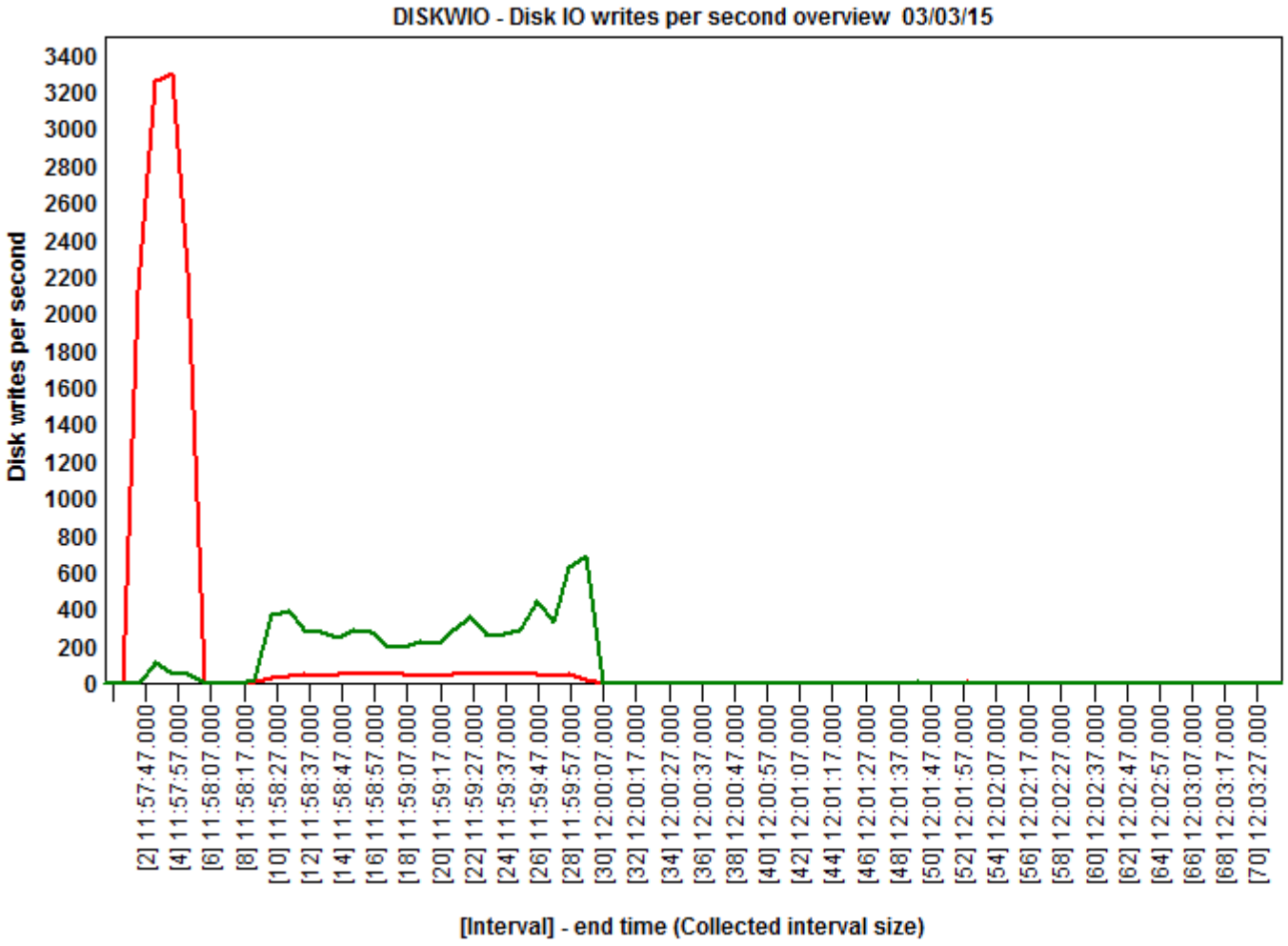
Nmon Analyzer – DISKWIO Graph Example



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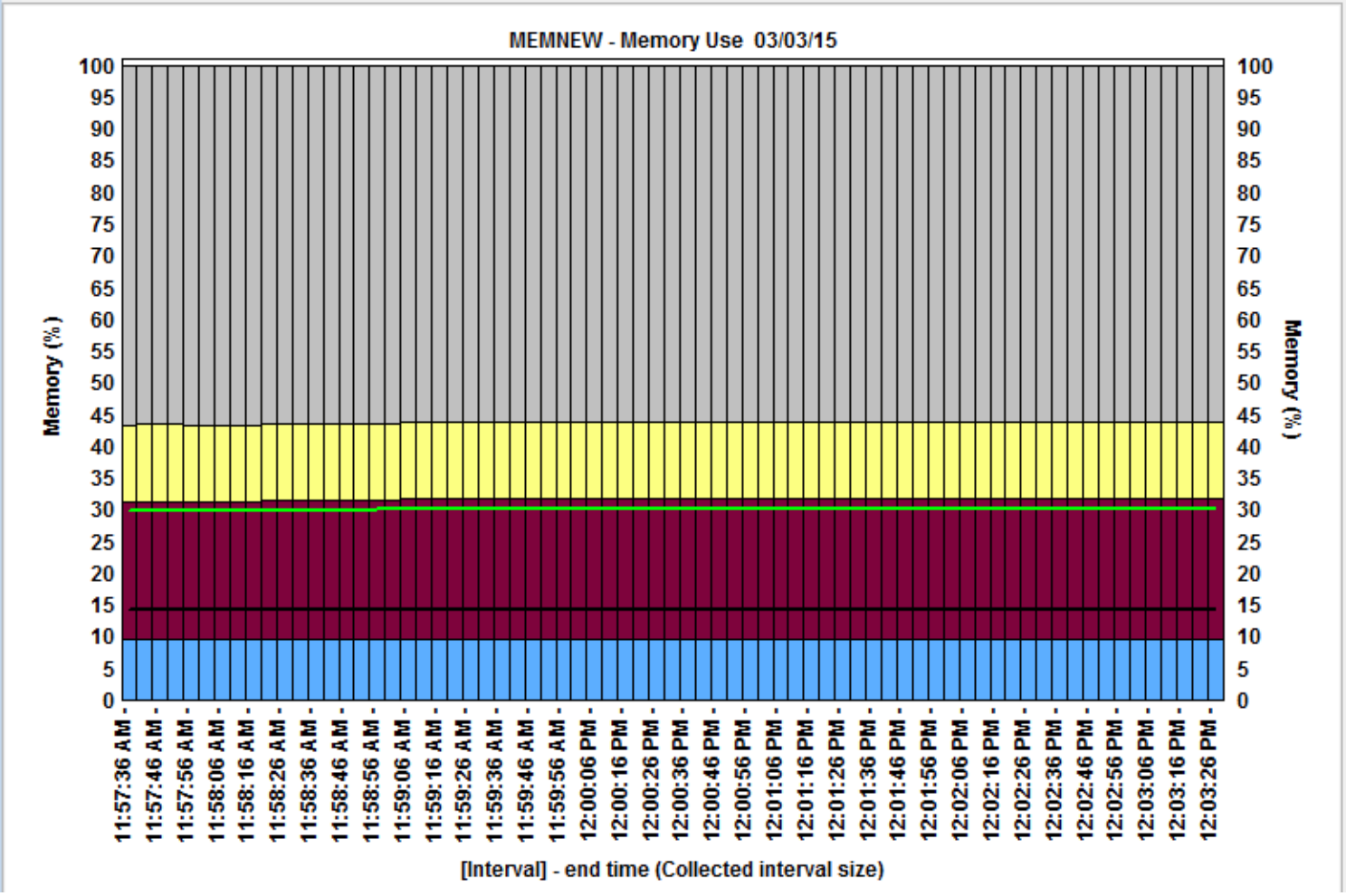
Nmon Analyzer – MEMNEW Graph Example



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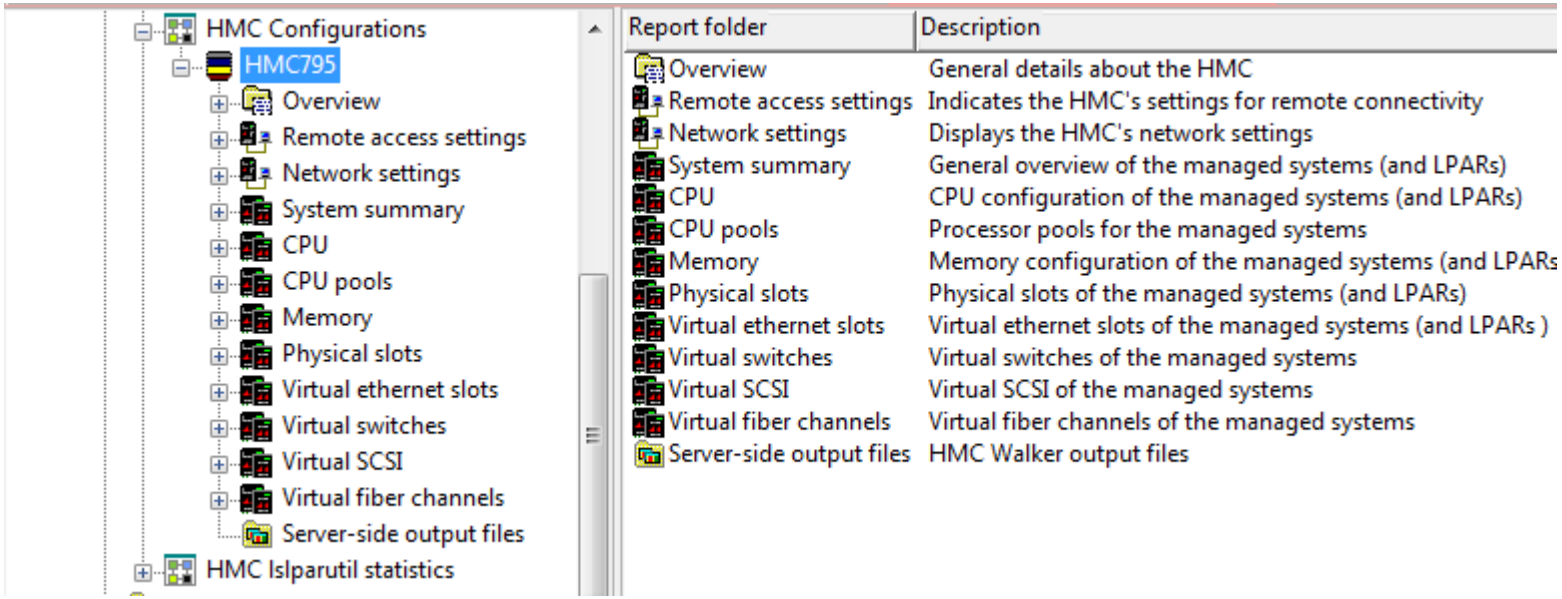
HMC Configurations

- Collects HMC configuration data and stores in IBM i DB2.
  - Similar to HMC Scanner
  - Access this under IBM i -> General Functions -> Power
  - Support to store data in SQLite coming soon.



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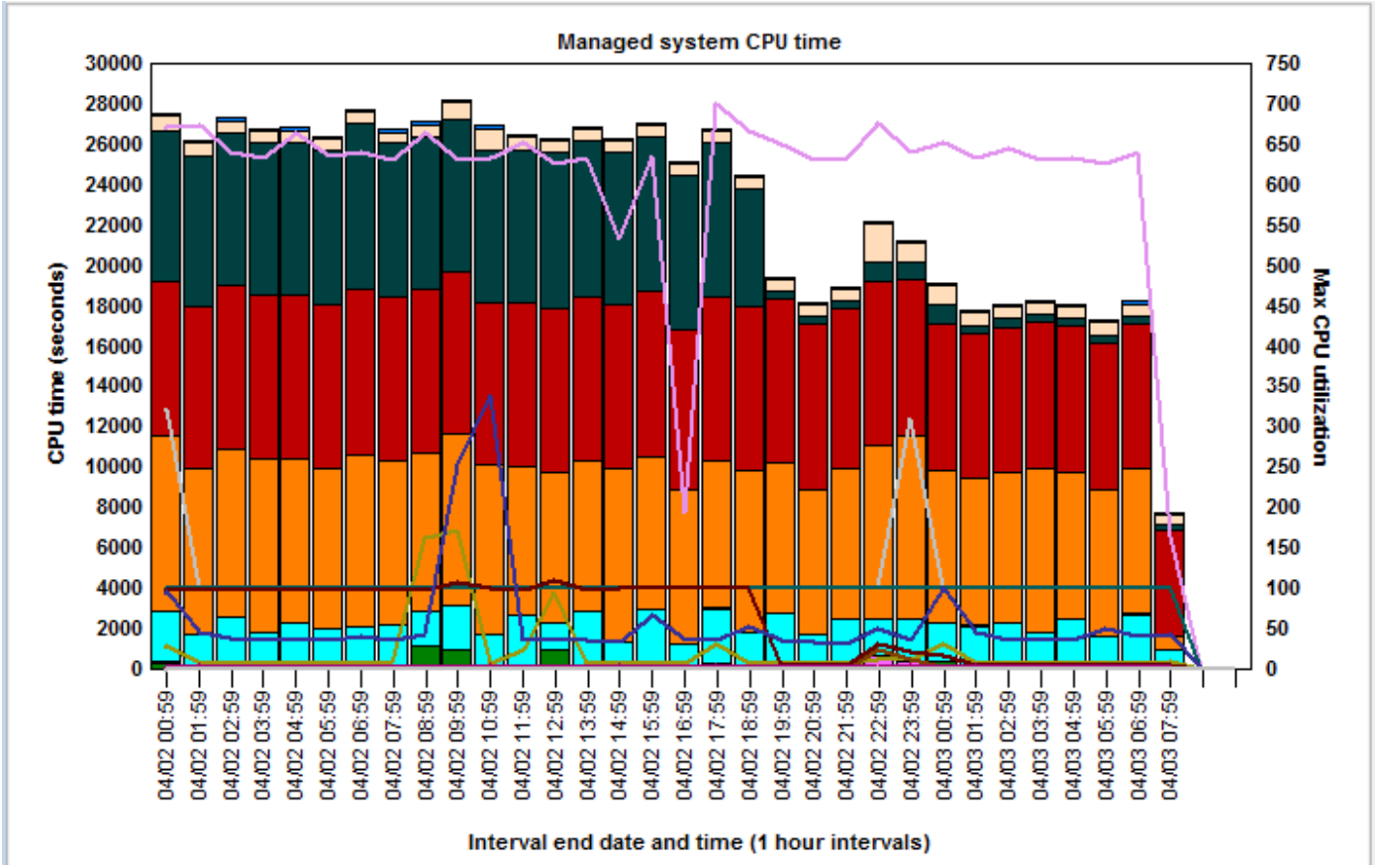
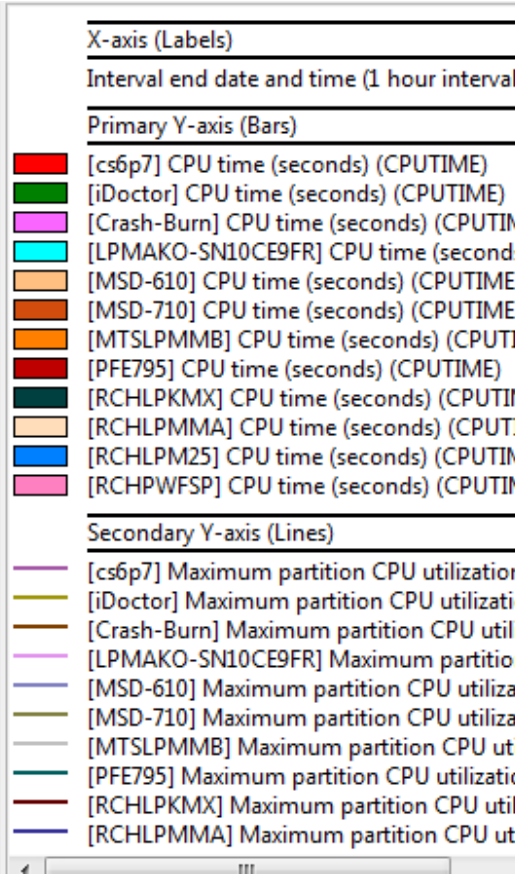
HMC lslparutil statistics

- Collects HMC lslparutil statistics and stores in IBM i DB2.
  - Allows graphing of managed systems or individual LPARs.
  - Support to store in SQLite coming soon.





Sessions

- The GUI keeps track of all views opened and saves to a ‘history’ folder the state of your current session.
  - Can be used to restore a previous session from an earlier date
    - File -> Open iDoctor Session...
  - Or restore your session if the iDoctor GUI crashes.
    - File -> Restore Previous iDoctor Session
  - Save your current session to a file of your choice for later.
    - File -> Save iDoctor Session As...
- **Note:** This functionality replaces the shortcut support for individual graphs.

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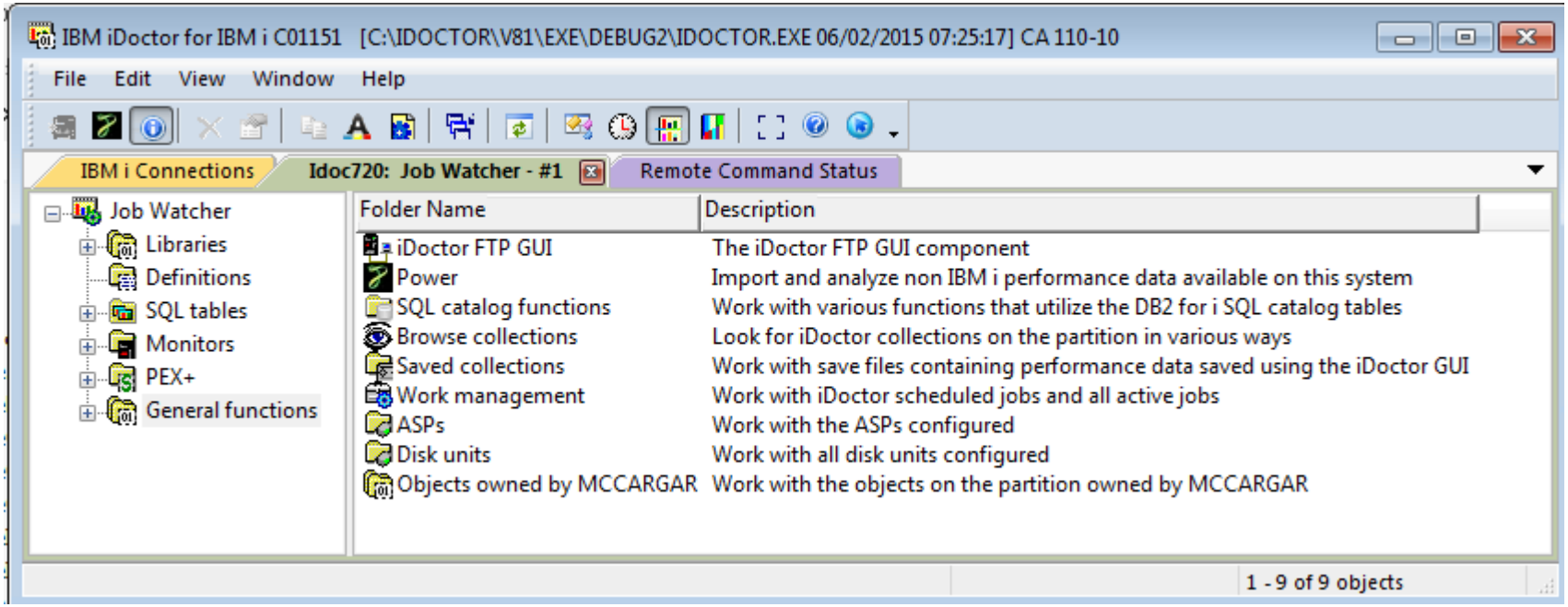
General Functions

- New folder added to most components
  - Provides miscellaneous functions: File system access, Power, Work management, SQL tables, Disk units, etc.
  - Added to avoid cluttering up initial list of functions.



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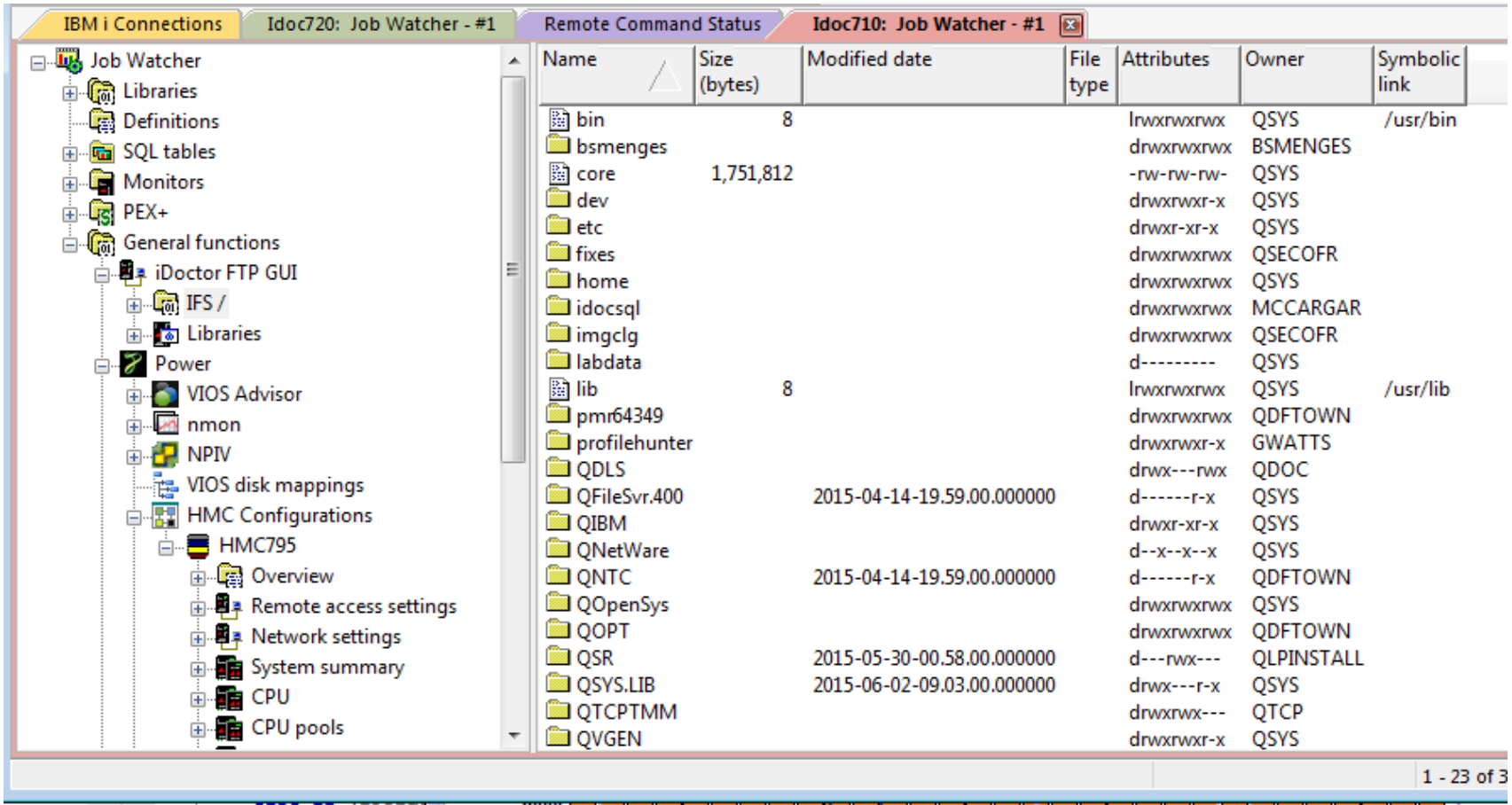
iDoctor FTP GUI (free)

- Access the IFS or work with libraries/objects on an IBM i
  - Can be used to upload/download performance files or analyze them (i.e. kick off procedures for graphing purposes.)



General functions -> SQL Catalog functions

- Tables
  - Work with real time table/member statistics since last IPL or create and graph your own data collections.
  - Can be used to determine best candidates to move to SSDs.
  - This could be extended to collect index statistics if desired.

- IBM i Services
  - Provides miscellaneous functions: system values, PTFs, users/groups.
  - Could add more here if users are interested.

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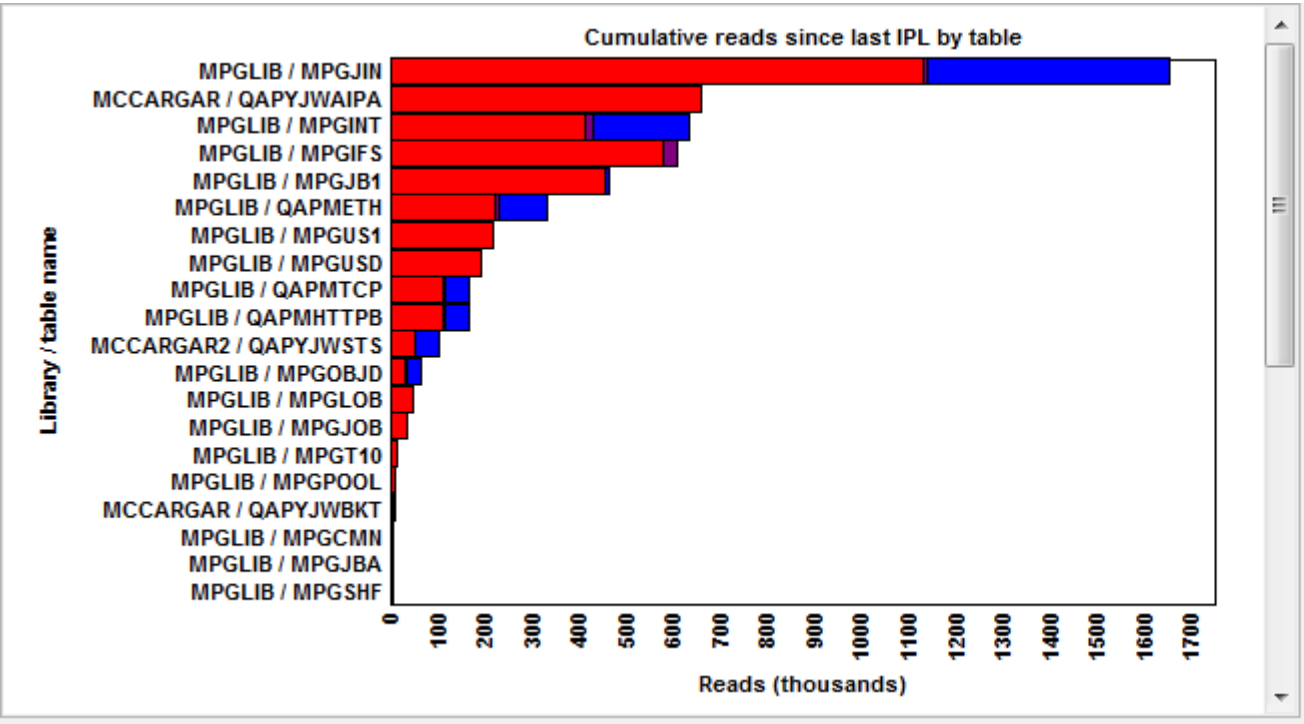
Table statistics graph example

- Accessible under General functions -> SQL Catalog functions -> Tables -> Table statistics after creating a collection.
- Stats can be either given since last IPL or during the data collection.
- Member statistics graphs also available.



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Increase number of graphs you can open

- iDoctor graph control uses large number Windows GDI objects
  - Windows default limit is 10000 by default (per application.)
  - A single 300 bar x 33 color graph might use 2500-3000 objects.
  - Limit can be increased to 64K max.

- Within the iDoctor directory you can
  - Increase limit to 40K by running SetGDILimitTo40K.reg
  - Restore back to default Windows limit by running SetGDILimitTo10K.reg
  - **Note:** iDoctor directory is typically C:\program files (x86)\ibm\idoctor or C:\program files\ibm\idoctor

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IBM i Connection SSL Support

- Check the Use SSL option on your IBM i connection.
  - Applies to remote command/program calls and ODBC connections only.

- **Note:** Secure FTP options are not available in all areas of iDoctor.
  - Need help testing this due to lack of test environments.
  - If this is something you are interested and can help test, contact me.

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Super collections

- iDoctor super collections are now created using Must Gather Tools.
  - These contain PEX, JW, CS data and more.
  - QMGTOOLs library must be installed

- PEX+ folder in GUI is used to view data
  - This requires license keys to both JW and PEX
  - Start collections using Start Collection menu on the PEX+ folder.

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IDRINSTALL command

- Allows iDoctor and QMGTOOLs to be installed via green screen
  - Can check for new builds and download the latest automatically
  - or use a specified library that contains the iDoctor save files if FTP access is not available.
  - Command exists in QIDRGUI and QMGTOOLS libraries with latest builds.

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Install the GUI silently

- Added support to install with no interface or prompts.
- Unzip iDoctorClientUpdate.exe (using WinZip or other compatible software) to a directory of your choice. Then execute InstalliDoctor.exe with these parameters:
  - InstalliDoctor.exe -hidegui -nostart
- -hidegui will cause the installer to not be shown at all
- -nostart will not start the iDoctor GUI when complete.

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New graphing features

- Sort option from graph legend
  - Right-click desired field in legend and use Sort menu.
    - Ascending or descending options are available.

- Mouse wheel scrolling
  - See Preference -> Display -> Mouse wheel scroll percentage
  - Hold down CTRL while scrolling to increase/decrease bars per page shown.

- Zoom
  - Left-click and hold to draw a selection area over the graph to zoom in.
  - Zoom out by clicking on the graph again.
  - **Note:** You can zoom in multiple times.

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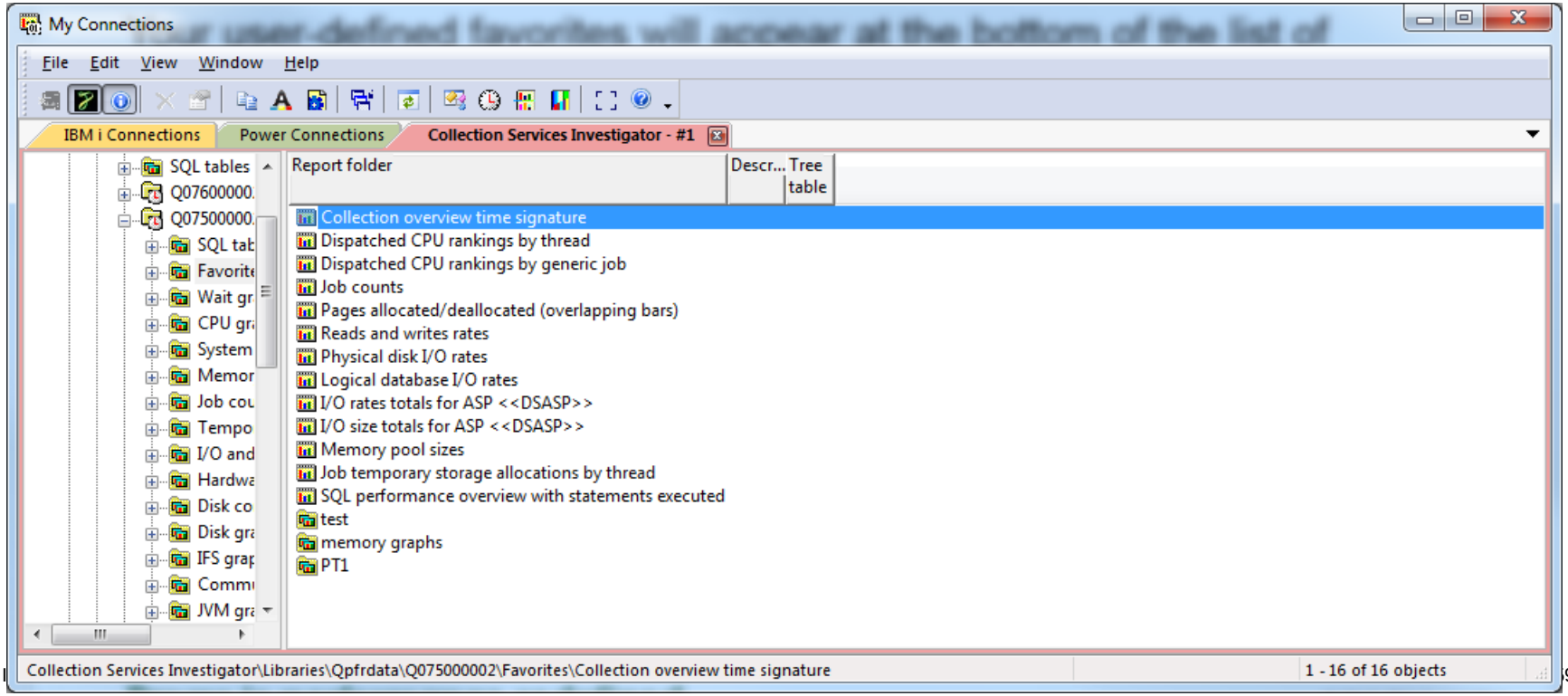
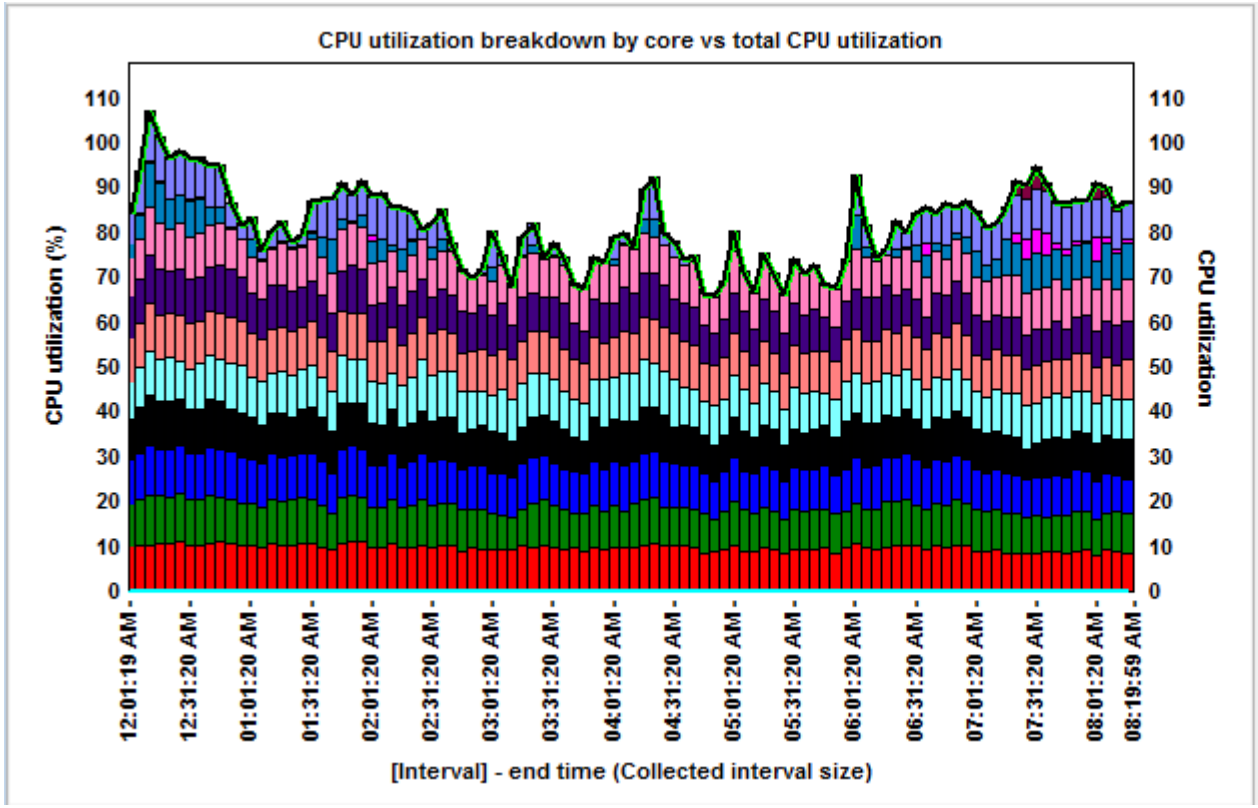
Favorites

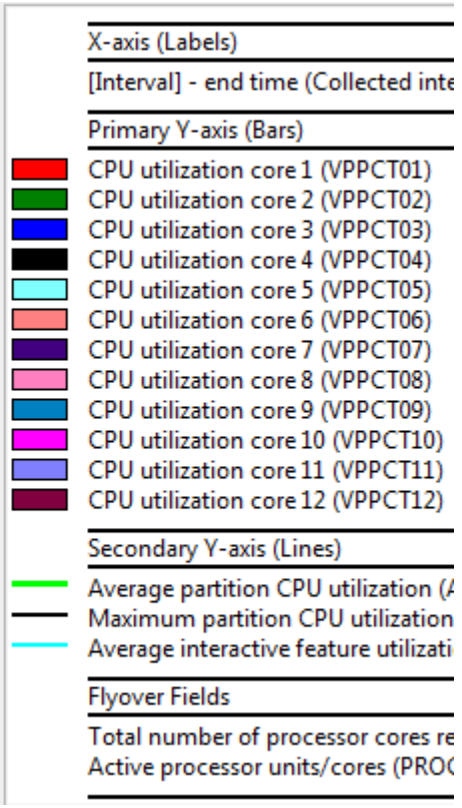
- New option in CSI and JW to show most widely used graphs.
- Define your own favorites using the iDoctor Report Generator interface



Collection Services Investigator – CPU core graphs

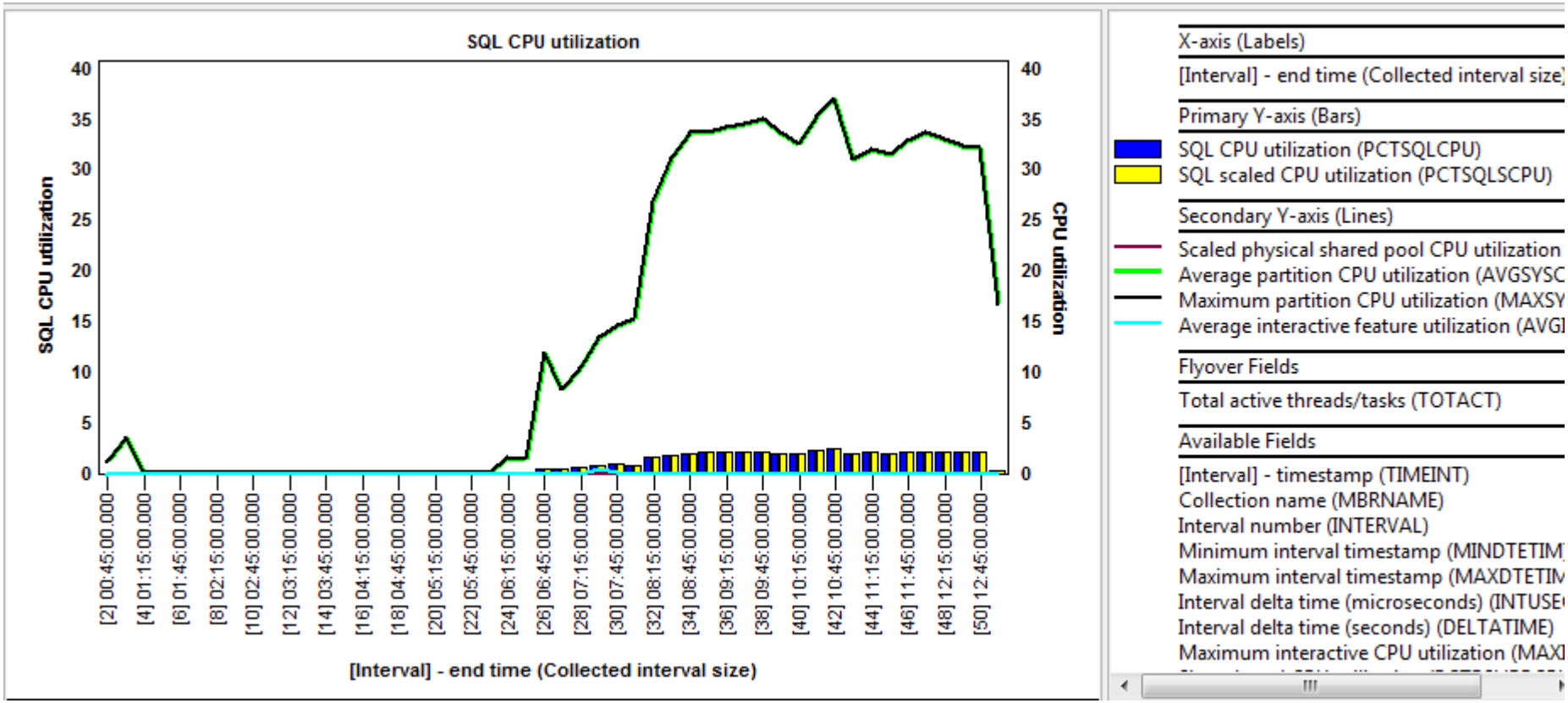
- In the CPU Graphs folder added these graphs:
  - CPU utilization breakdown by core vs total CPU utilization
  - CPU utilization breakdown by core
  - 7.1/6.1 = 64 cores max; 7.2 = 96 cores max.





Collection Services Investigator – SQL CPU Graph (7.2)

- In the CPU Graphs folder:
  - SQL CPU utilization
    - Compares SQL unscaled vs scaled CPU utilization.
    - Partition CPU utilization on second Y-axis.



Collection Services Investigator - SVC/Storwize graphs

- Graph types under the CSI - SVC/Storwize graphs folder:
  - Virtual disk statistics
  - Managed disk statistics
  - Node statistics
  - Flattened by virtual disk name (one color per vdisk)
  - Flattened by managed disk name (one color per mdisk)
  - Flattened by node name (one color per node)
  - Flattened by drive ID (one color per drive ID)
  - Flattened by generic virtual disk name (one color per generic virtual disk name)

- Use the QMGTOOLS/SVCIMPORT command to create the necessary database files.

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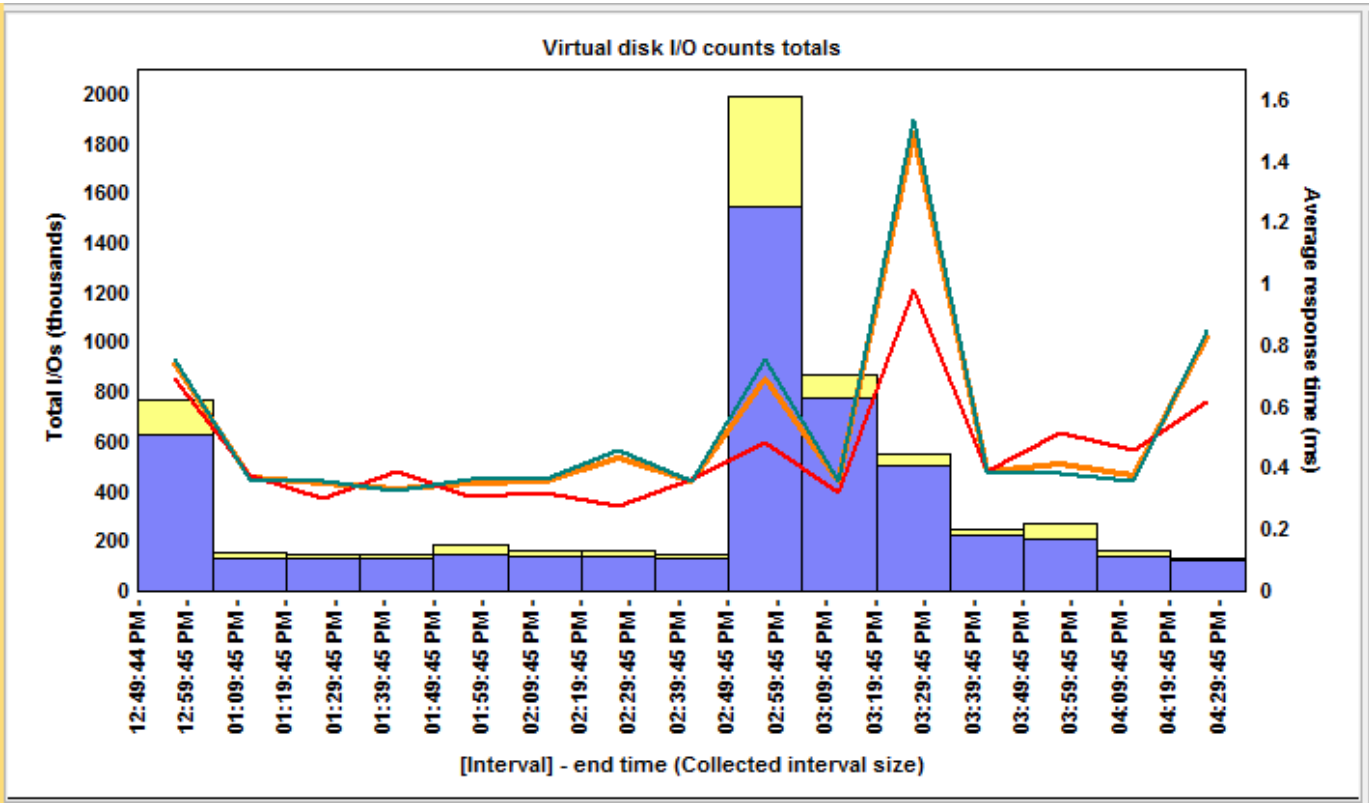
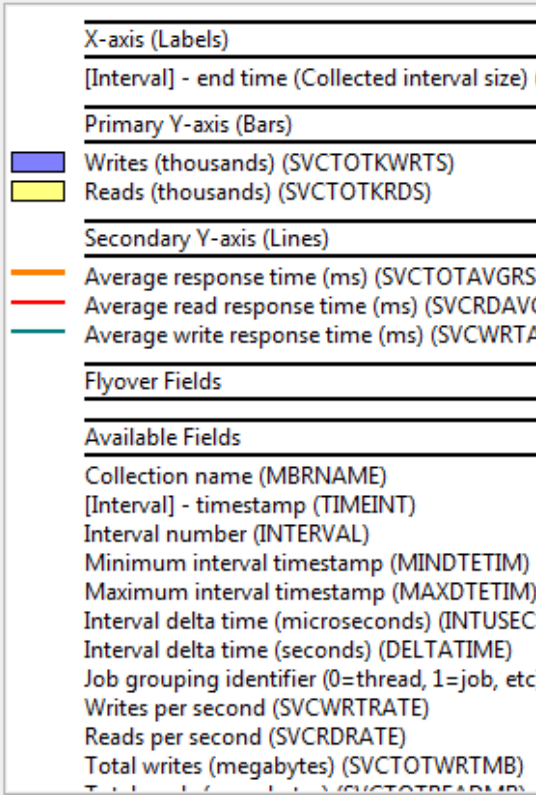
Collection Services Investigator - SVC/Storwize graphs

- Example: Virtual disk statistics -> Virtual disk I/O counts totals





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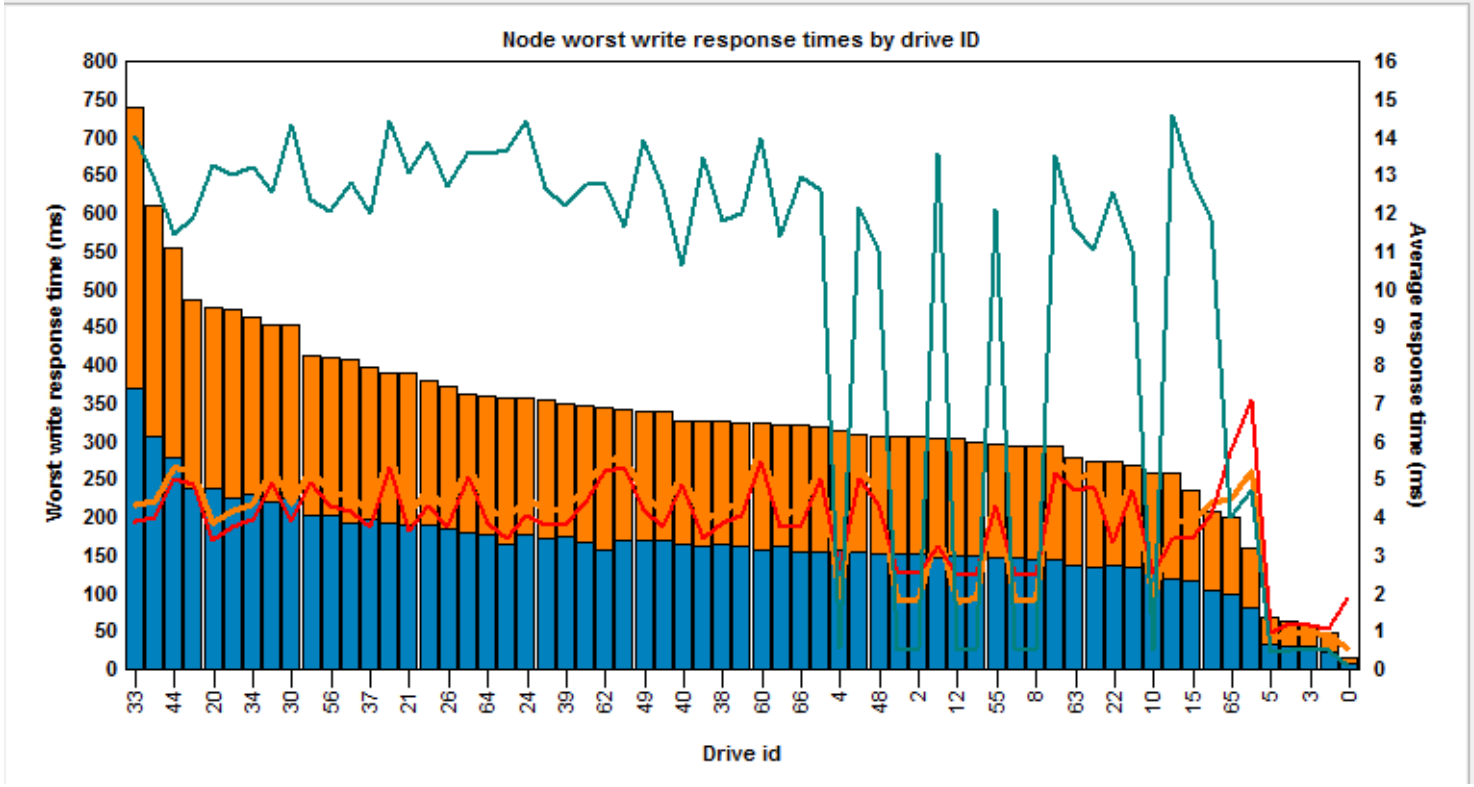
Collection Services Investigator - SVC/Storwize graphs

- Example: Node statistics -> Node worst write response times by drive ID



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Questions/Feedback?

- Do you have any suggestions or feature requests?
  - Can send them to mccargar@us.ibm.com or idoctor@us.ibm.com or let me know now as time permits.

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Backup Slides Begin Here (as time permits)

- See also:
  - https://www-912.ibm.com/i_dir/idoctor.nsf/
  - http://public.dhe.ibm.com/services/us/igsc/idoctor/iDoctorMar2015.pdf
  - https://www.ibm.com/developerworks/community/groups/service/html/communityview?communityUuid=5f260572-0786-4dee-889d-ae7adc18944f

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Collection Services Investigator – Hardware configuration

- Under Hardware -> Resource configuration added 4 new reports:
  - Hardware summary
  - Sockets summary
  - Memory summary
  - Planar summary

- These give high level overviews of the cores, planars and memory available on the physical system.

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Collection Services Investigator – MGTCOL properties

- Properties on a management collection object now provides a new tab called Management collection
  - View the categories of data along with collection intervals and time periods captured.

- **Note:** In order for data to be usable by CSI you will need at least *SYSLVL, *JOBMI and *JOBOS.
  - Ideally the time interval sizes should be the same or graphing issues may occur.

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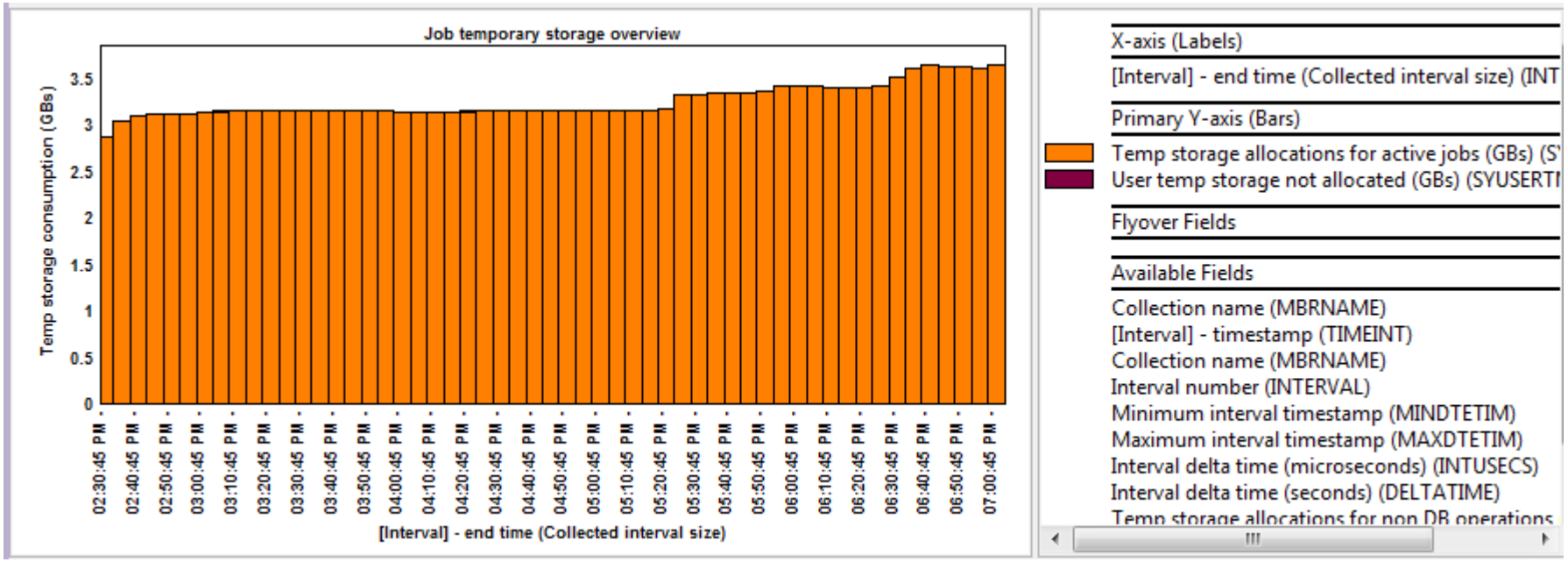
Collection Services Investigator – Temp storage graphs (7.2)

- Graphs available under the Temporary storage folder:
  - IBM i temporary storage overview
  - IBM i DB/non-DB temporary storage overview
  - Job temporary storage overview
  - Job temporary storage rankings
  - Drill-down to selected job/job grouping over time graphs



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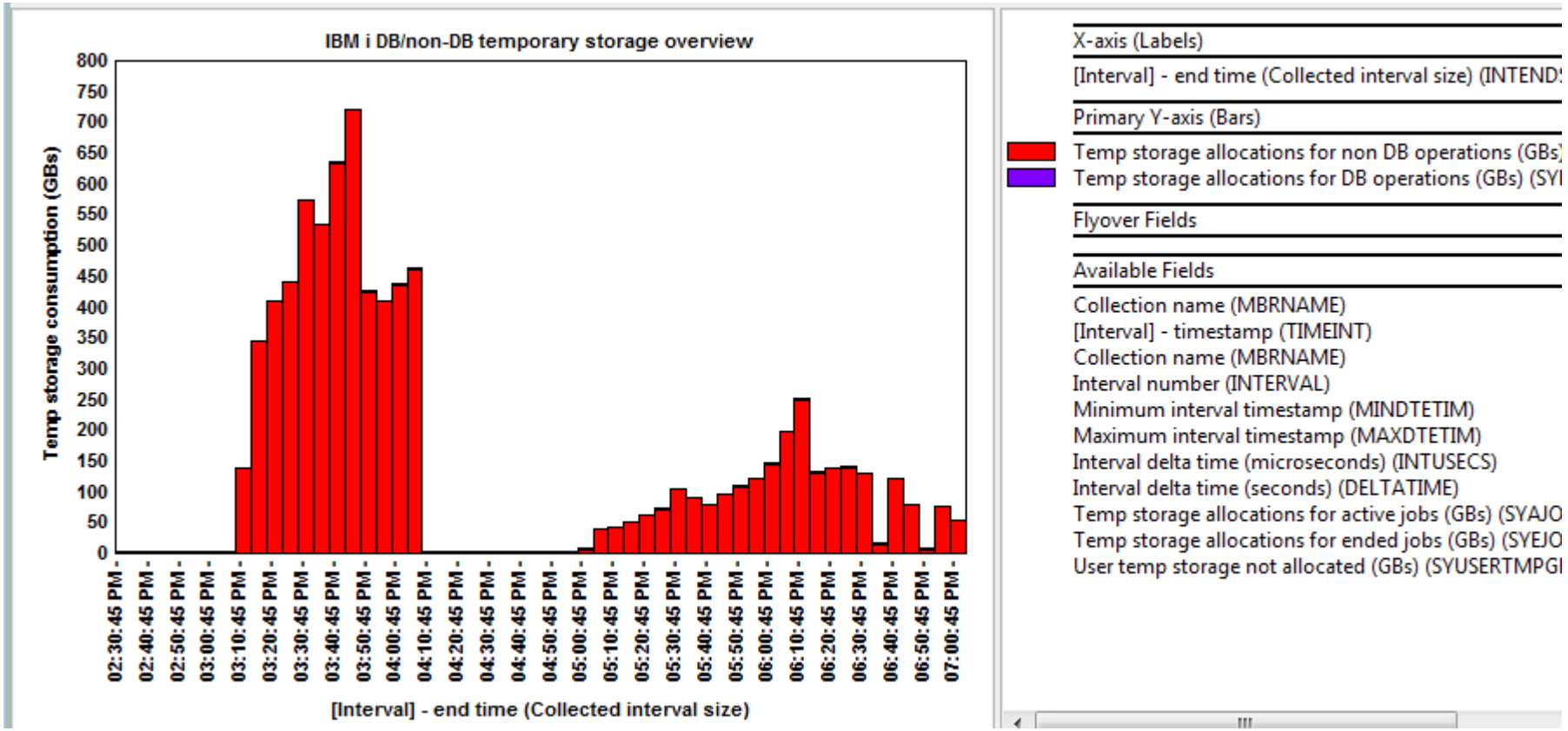
Collection Services Investigator – Temp storage graphs (7.2)

- IBM i DB/non-DB temporary storage overview



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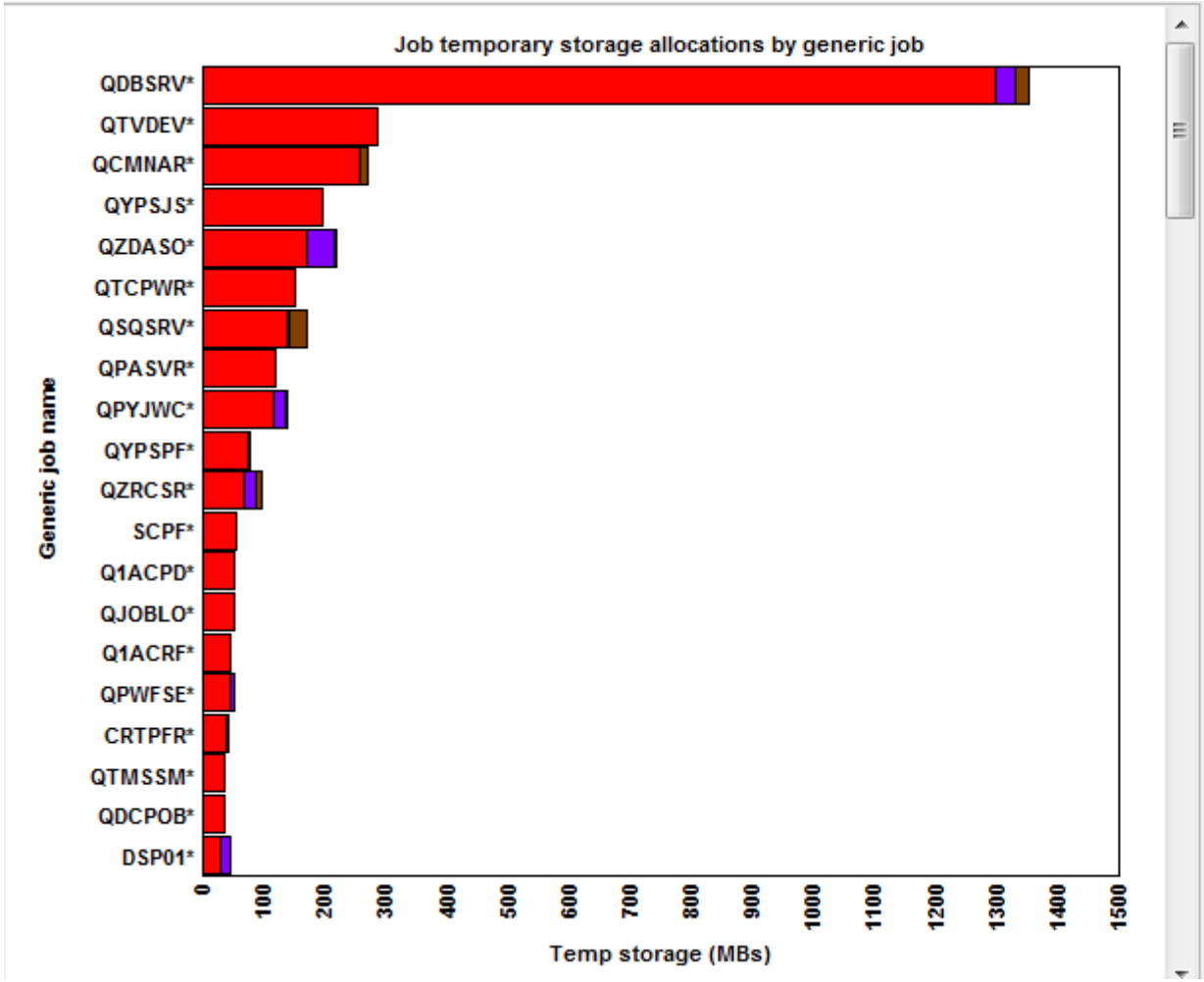
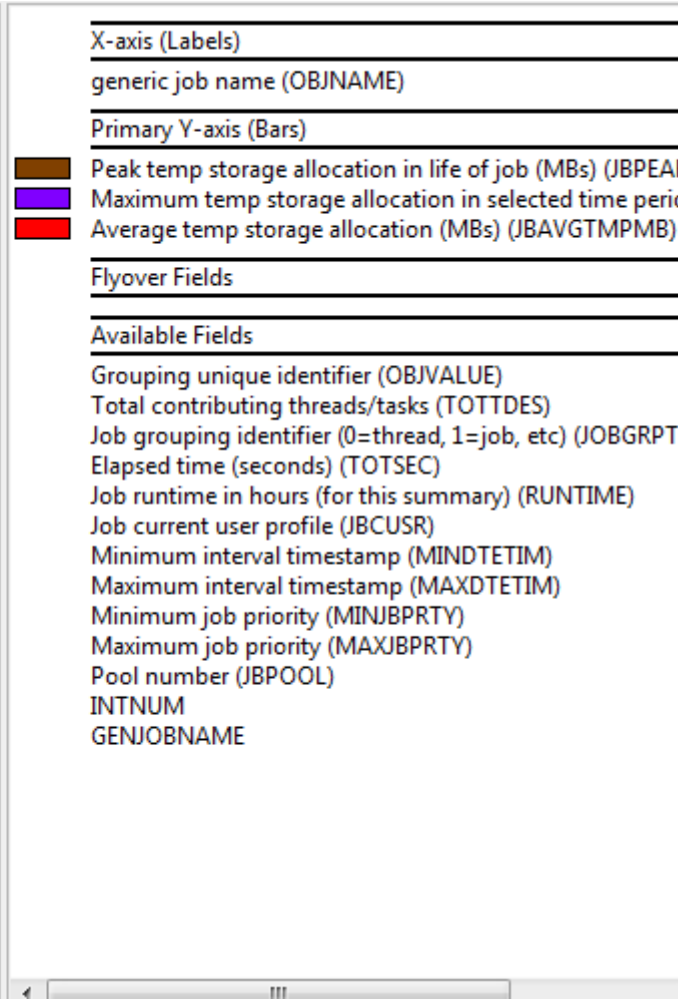
Collection Services Investigator – Temp storage graphs (7.2)

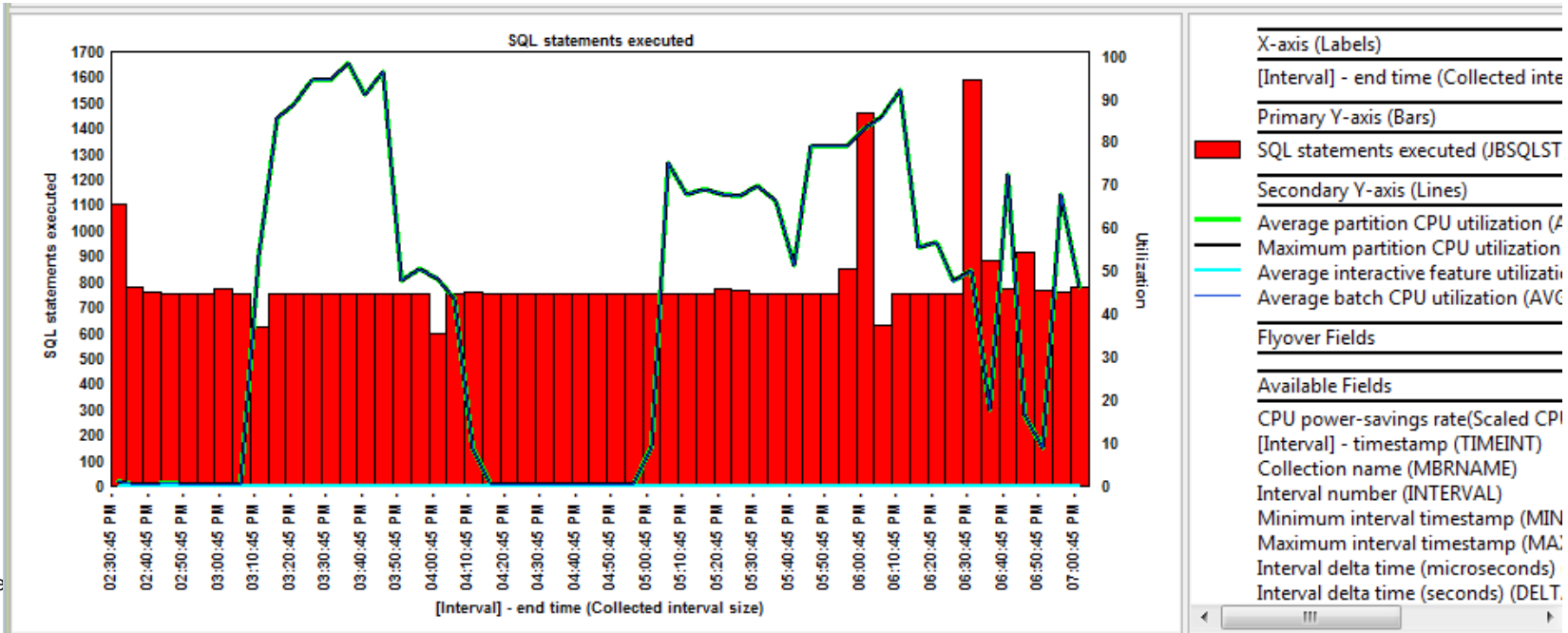
- Job temporary storage allocations by generic job





Collection Services Investigator – SQL graphs (7.2)

- New graphs available under the SQL folder at 7.2:
  - SQL statements executed
  - SQL logical database I/O totals
  - SQL logical database I/O rates
  - SQL compressions
  - Rankings graphs for all above
  - Drill down to selected job/job grouping over time



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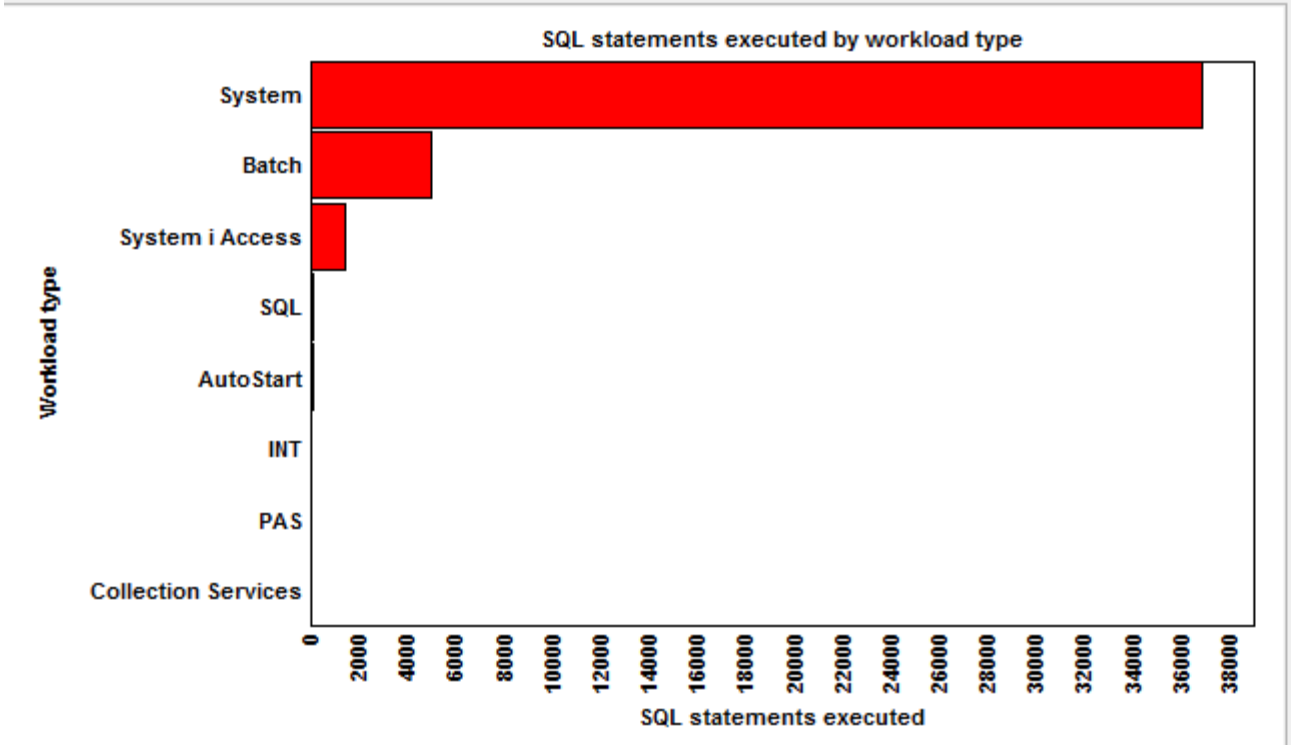
Collection Services Investigator – SQL graphs (7.2)

- SQL -> SQL statements executed rankings
  - SQL statements executed by workload type



X-axis (Labels)

workload type (OBJNAME)

Primary Y-axis (Bars)

SQL statements executed (JBSQLSTMT)

Flyover Fields

Job runtime in hours (for this summary) (RUN
Minimum interval timestamp (MINDTETIM)
Total contributing threads/tasks (TOTTDES)

Available Fields

Grouping unique identifier (OBJVALUE)
Job grouping identifier (0=thread, 1=job, etc)
Elapsed time (seconds) (TOTSEC)
Maximum interval timestamp (MAXDTETIM)
Spool files created (JBSPLFC)
Jobs submitted or spawned (JBSBMJOBS)
SQL logical writes (JBLWTSQL)
SQL logical writes per second (JBLWTSQLRAT
SQL logical reads (JBLRDSQL)
SQL logical reads per second (JBLRDSQLRATE
SQL logical others (JBDBUSQL)
SQL logical others per second (JBDBUSQLRAT

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Collection Services Investigator – SQL – Plan Cache (7.2)

- New graphs available under the SQL -> Plan cache folder at 7.2:
  - Active queries
  - Total plans
  - Total plans with plan cache size
  - Sub caches and pruning event listeners
  - Cached runtime objects
  - Reusable runtime objects
  - Queries run with reusable runtime objects
  - Plans built
  - Plan cache probes
  - Plan cache awakenings and naps
  - Plans pruned and removed
  - Query opens
  - Adaptive query processing statistics
  - Optimizations
  - Maintained temporary index statistics

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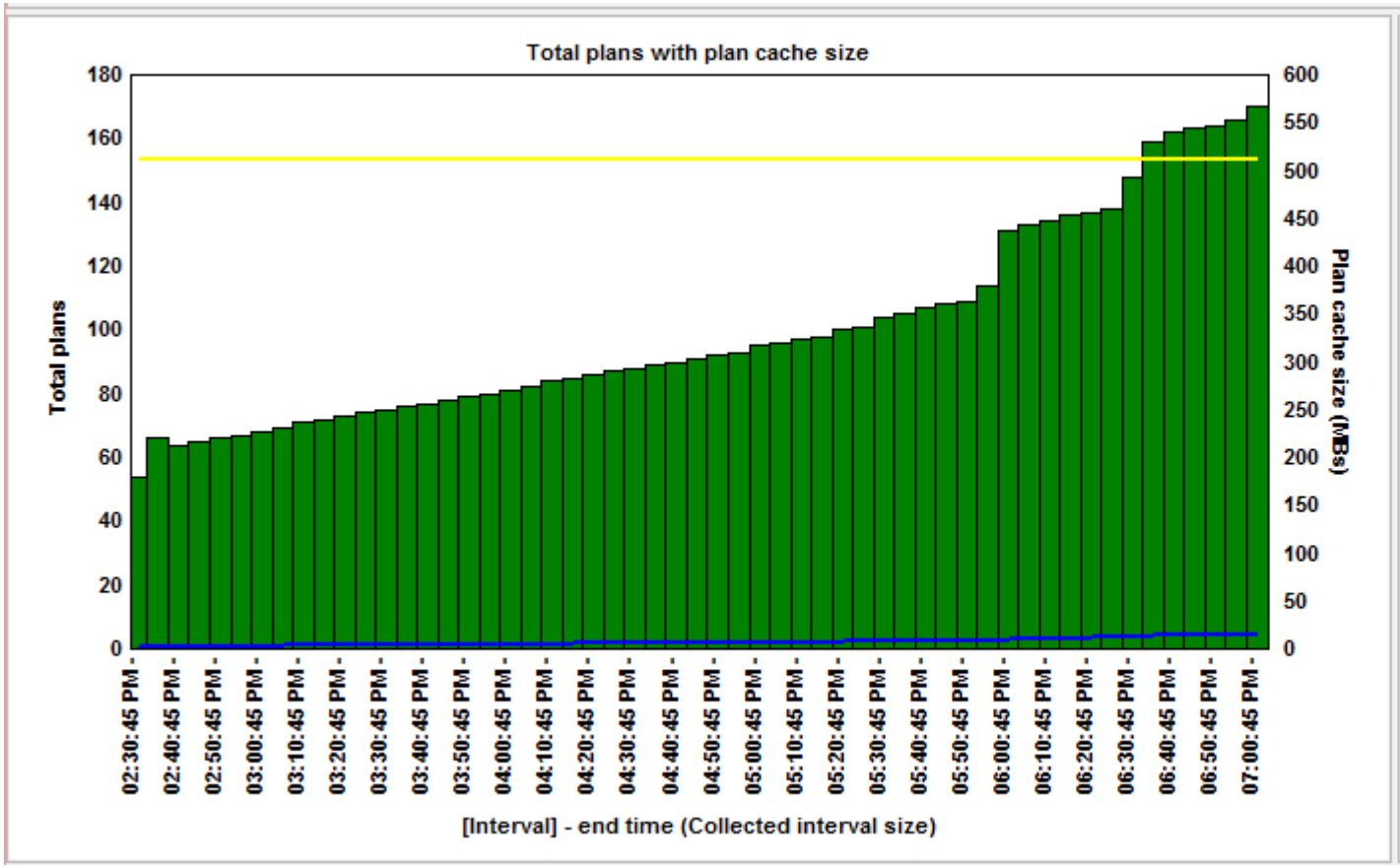
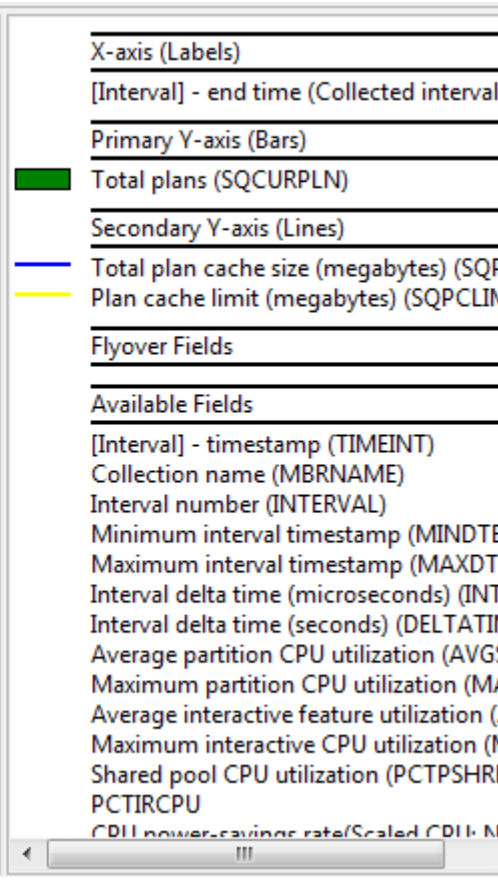
Collection Services Investigator – SQL – Plan Cache (7.2)

- SQL -> Plan cache:
  - Total plans with plan cache size





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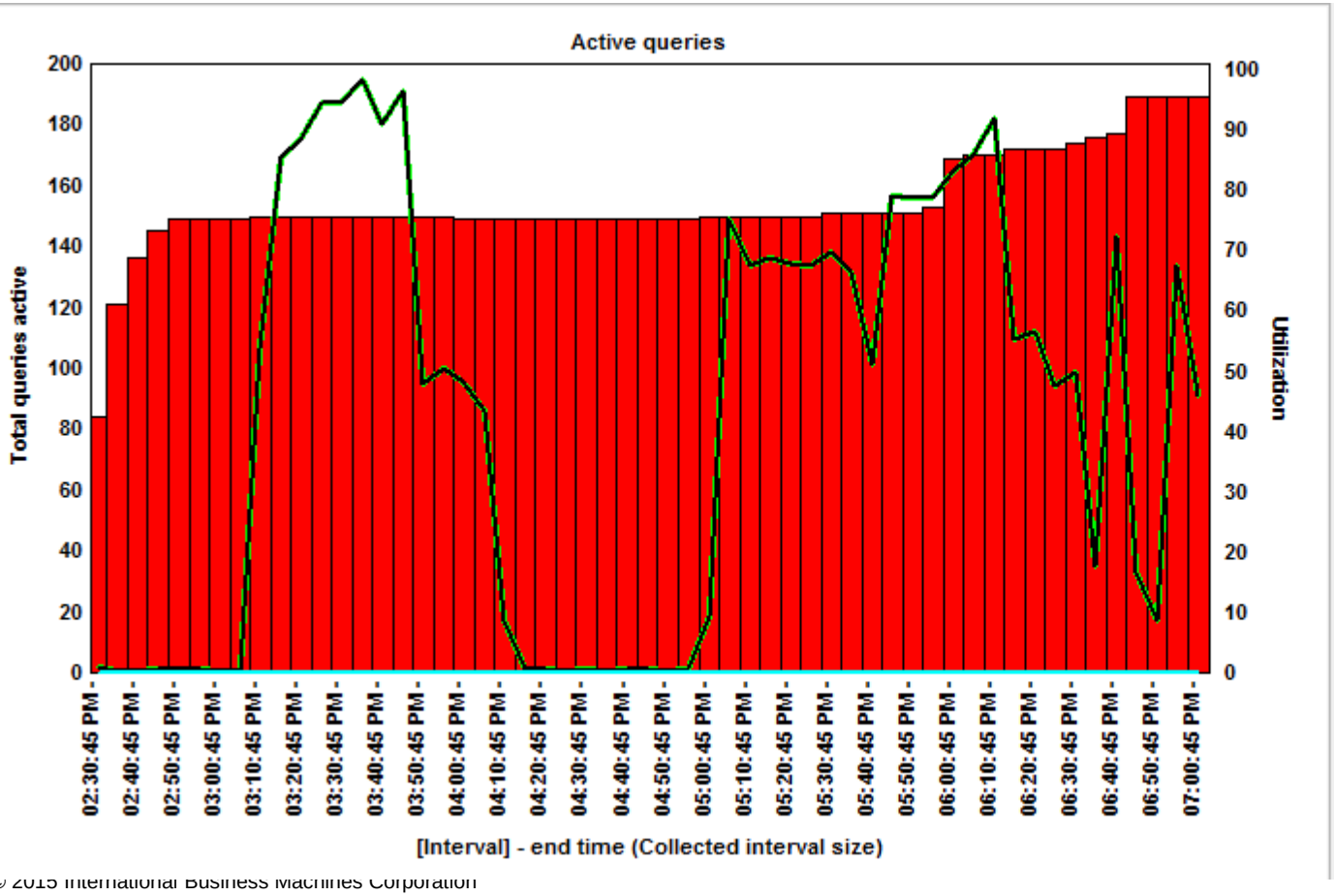
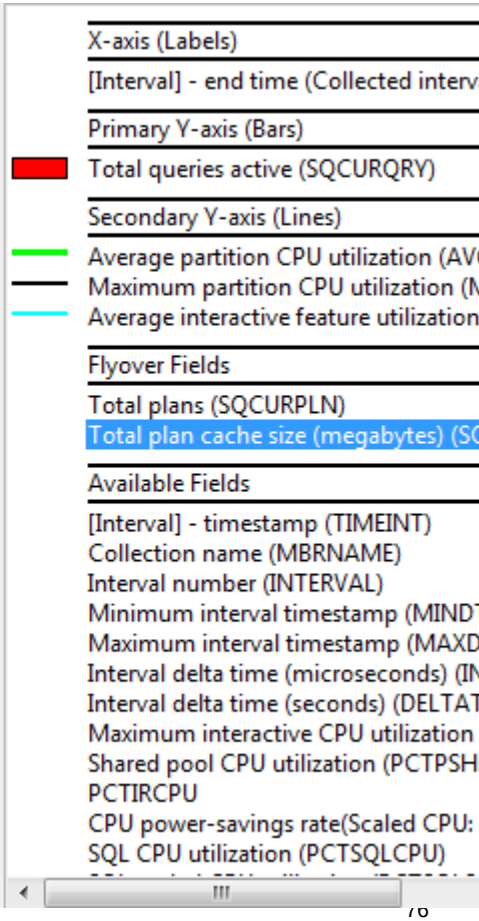
Collection Services Investigator – SQL – Plan Cache (7.2)

- SQL -> Plan Cache:
  - Active queries





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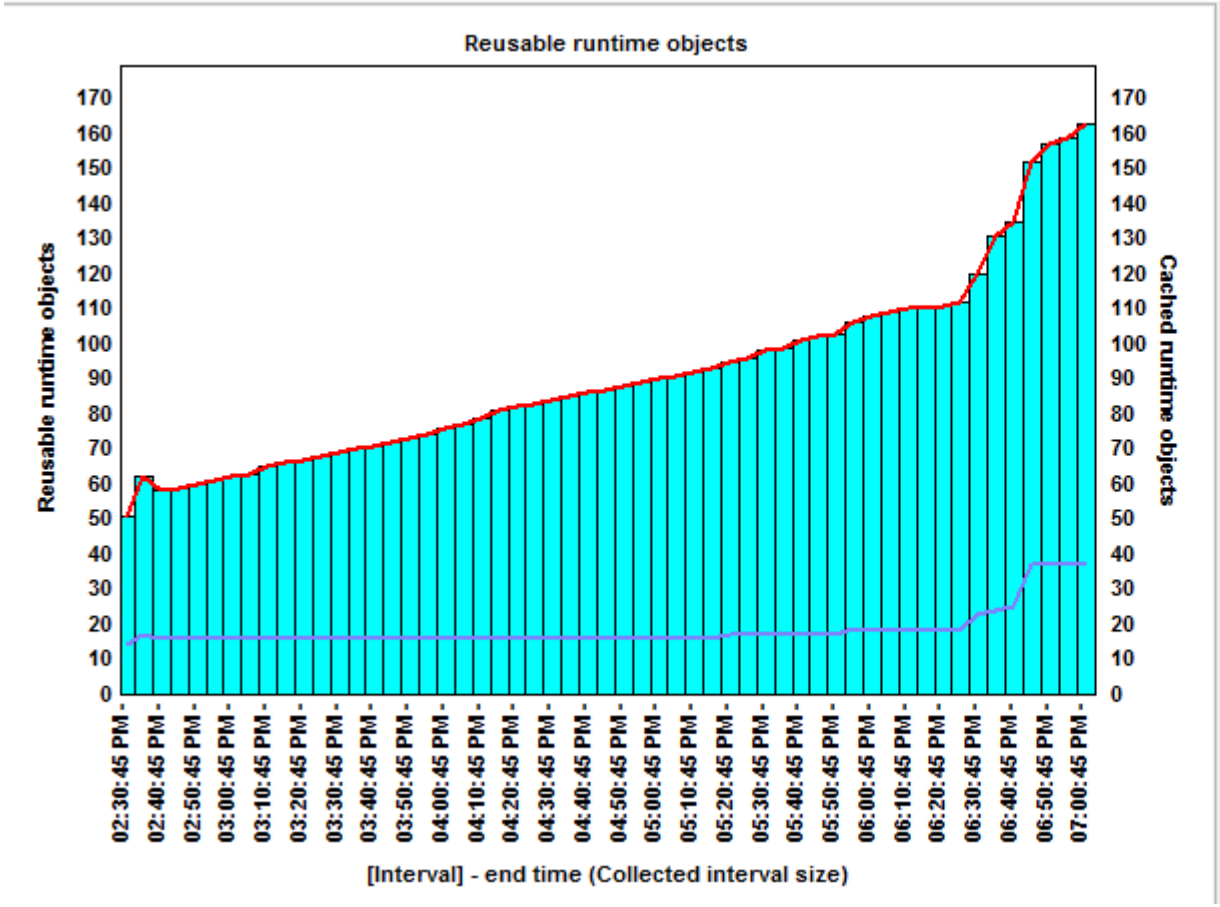
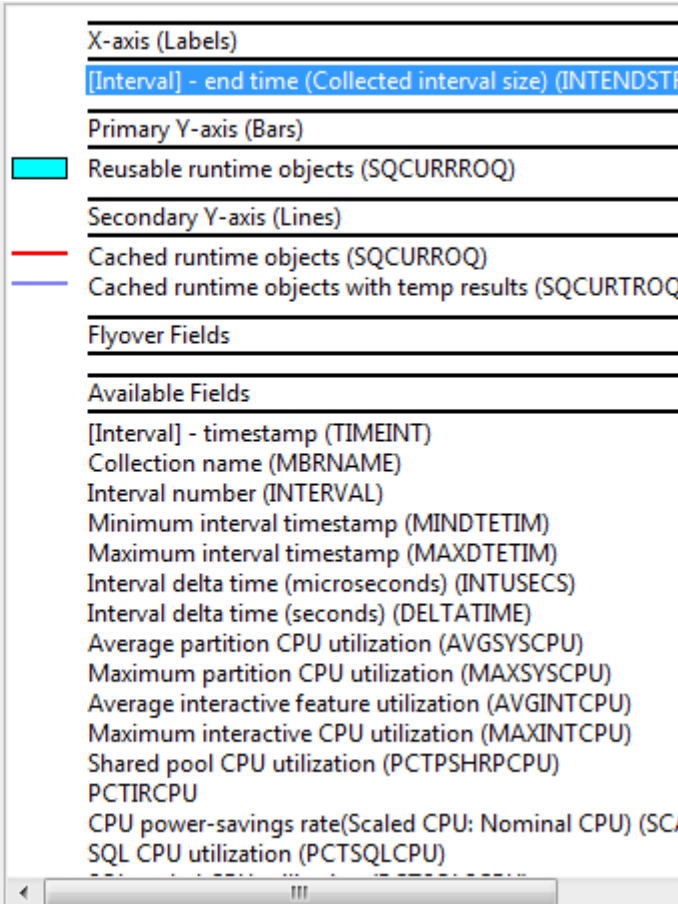
Collection Services Investigator – SQL – Plan Cache (7.2)

- SQL -> Plan Cache:
  - Reusable runtime objects





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CSI – Hardware - Resource configuration

- New reports in the Hardware -> Resource configuration folder:
  - Hardware resources hierarchies (6 types)
  - Storage resources by IOP/IOA (3 types)
  - Comm resources
  - Coupled resources
  - Processor resources
  - Local workstation resources
  - Tape libraries by IOP/IOA
  - Tape units by IOP/IOA
  - Disk units by IOP/IOA
  - Optical storage units by IOP/IOA
  - and more

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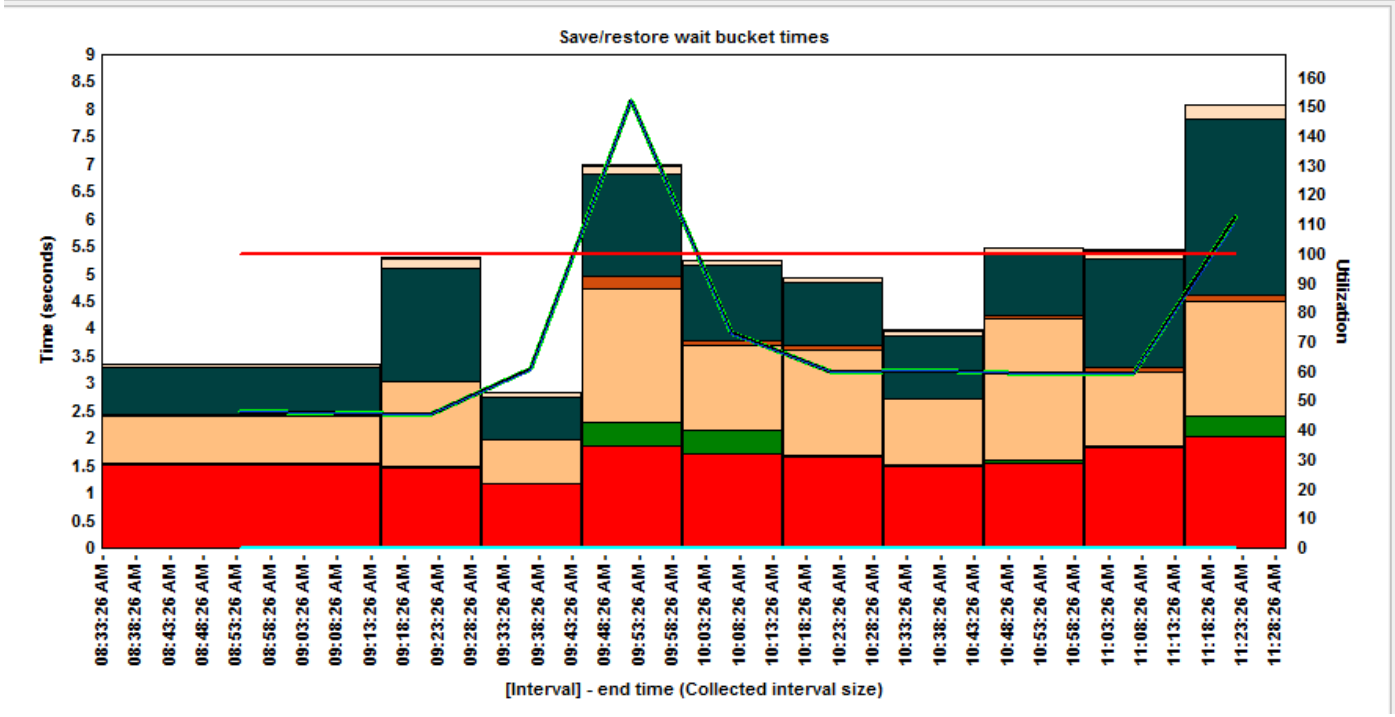
CSI – Hardware – Save/restore wait bucket graphs

- At 7.1+ updated the Hardware -> Save/restore folder to include a new graph called "Save/restore wait bucket times".
  - Shows wait buckets for jobs doing save/restore operations only.
  - Can drill down to job rankings



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Collection Services Investigator – Additional new graphs

- Hardware -> Tape
- Communication graphs
  - Domino, HTTP, TCP/IP, etc.
- PT1 reports
  - Designed to look similar to the green screen reports

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Job Watcher - STRJWMON command fixes

- When a Job Watcher monitor (or Disk Watcher monitor) ends a collection, it will no longer trigger the job to end abnormally if the collection does not exist at the time it is ended.
  - That could happen if the job ended on its own due to the definition settings, before the monitor was able to end it.

- The help text for the Collection overlap (OVRLAP) changed:
  - This value (in seconds) will be added to the JW definition's collection duration, to ensure that data is still being collected while the next collection is being started. This value should be set to at least how long it takes for a collection to start in your environment.

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Job Watcher - Additional green screen command changes

- New RUNSUM parameter:
  - "Run default analyses (RUNSUM)" *YES/*NO with default *NO applies to:
    - ENDJWCOL, ENDDWCOL, ENDJWMON, ENDDWMON, ENDPAMON
  - This allows the default "summarization" analyses to be ran when collections or monitors end based on the command used.
- Commands removed from QIDRWCH:
  - DSZJWCOL, SPLJWCOL, ADDPRDACS

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Job Watcher – Additional new graphs

- Memory
  - Pages marked easy to steal (7.2)
  - Memory page demand, net page frames
- Job counts
  - Job counts rankings or short-lived rankings (with 7 job groupings)
- CPU
  - 5 new graphs
- SQL (7.2)
  - SQL statements executed, logical database I/O
- Temporary storage (7.2)
  - 10 new graphs

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PEX Analyzer updates

- Start PEX Collection Wizard changes:
  - Interface added to optionally start QMGTOOLS/STRPEX_
  - STRPACOL problem types are no longer used.
    - GUI will issue ADDPEXDFN to create definition based on your parameters.
  - Maximum events to collect option
  - PMCO interval size mismatch check
    - Two collections cannot run on a system at the same-time with different PMCO interval sizes.
- New options for call stacks analysis
  - Generate call stacks by generic job/task.
- Added activation groups analysis
- TPROF PMCO format 4 support (cache line breakouts)

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iDoctor Resources

- iDoctor e-mail list: usage tips, build updates, PTF info, etc.
  - Send requests to mccargar@us.ibm.com
- iDoctor Website:
  - http://www-912.ibm.com/i_dir/idoctor.nsf/
- YouTube Channel (20+ videos):
  - https://www.youtube.com/user/IBMiDoctorForIBMi
- Documentation:
  - http://public.dhe.ibm.com/services/us/igsc/idoctor/iDoctorV72.pdf

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