Power Systems

IBM

The Best of the IBM i Performance Data Investigator

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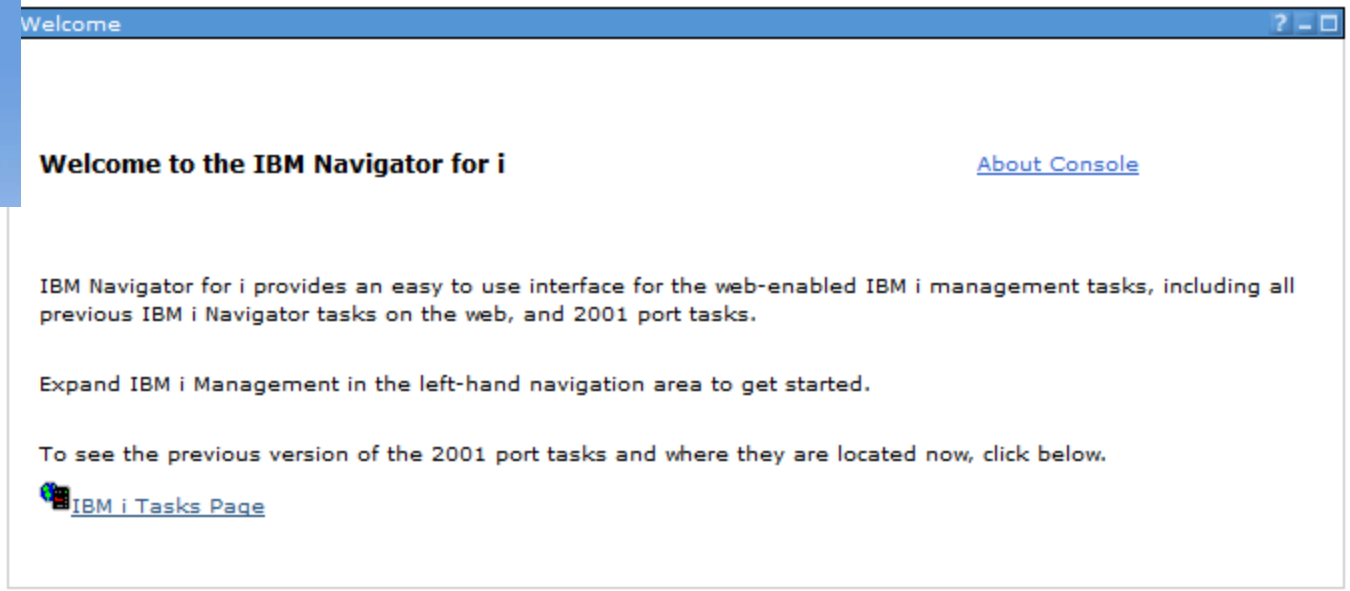
@DawnMayiCan

IBM Navigator for i

- IBM Navigator for i is the Web console for managing IBM i
  - Has much of the function as System i Navigator
    - but with a browser user interface
  - Simply point your browser to http://systemname:2001



Updates to the Performance Data Investigator - PTFs

- Major enhancements have been made to **Navigator for i** and the **Performance Tasks**
  - IBM i 7.2!
  - For 7.1 - install the latest level of:
    - HTTP Server group PTF SF99368
    - Java group PTF SF99572
    - Database group PTF SF99701
    - Performance Tools group PTF SF99145
  - For 6.1 - install the latest level of:
    - HTTP Server group PTF SF99115
    - Java group PTF SF99562
    - Database group PTF SF99601
    - Performance Tools group PTF SF99114

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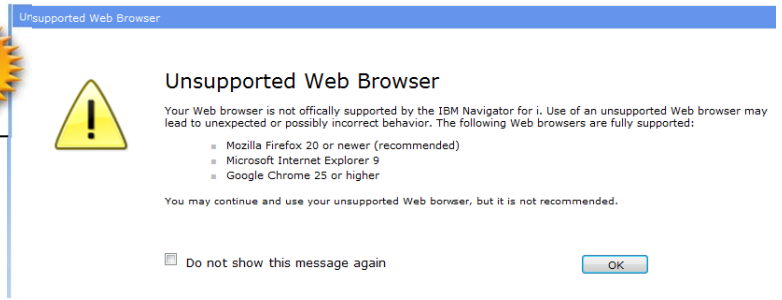
Browser Support

7.2



- Supported Browsers for the latest Navigator enhancements:
  - Internet Explorer 9
  - FireFox 20 or newer
  - Google Chrome 25 or higher (with IBM i 7.2 *for now…*)

- Browser tips:
  - Unexpected results could be browser related. Example problems are….
    - Hung charts
    - Empty tables

- Clear your browser cache after installing the PTFs
- Review your browser security settings

- For details see the following web page: https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/IBM%20i%20Technology%20Updates/page/Browser%20Tips

Tips for Best Performance for Navigator (and the Performance tasks)

- Good system tuning practices are essential
  - CPU
  - Memory
  - Disk

- PDI makes extensive use of SQL to gather data for charts and tables
- Navigator tasks run in the ADMIN2 job in the QHTTPSVR subsystem

- Ensure no bad DNS entries on the system
  - http://www-912.ibm.com/s_dir/slkbase.nsf/1ac66549a21402188625680b0002037e/b9e677063f24f859862575ee006b1881

- Use Application Runtime Expert to validate your environment
  - http://www.ibm.com/developerworks/ibmi/library/i-applicationruntime/index.html

  - **Network health checker** can be run from QShell:
    `/QIBM/ProdData/OS/OSGi/templates/bin/areVerify.sh -network`

    http://ibmsystemsmag.blogs.com/i_can/2013/09/application-runtime-expert-network-health-checker.html

- Use the Web Performance Advisor to validate your Web Performance
  - http://pic.dhe.ibm.com/infocenter/iseries/v7r1m0/topic/rzaie/rzaieconwebperfadvisor.htm

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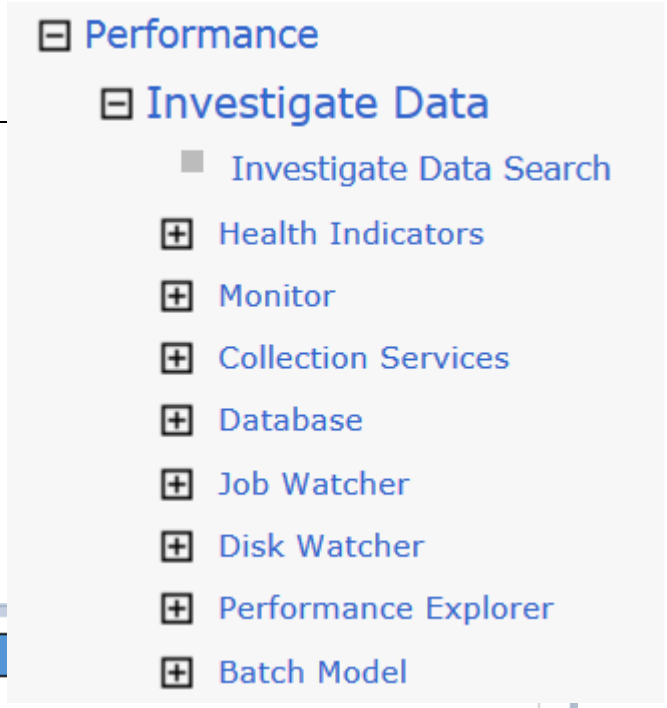
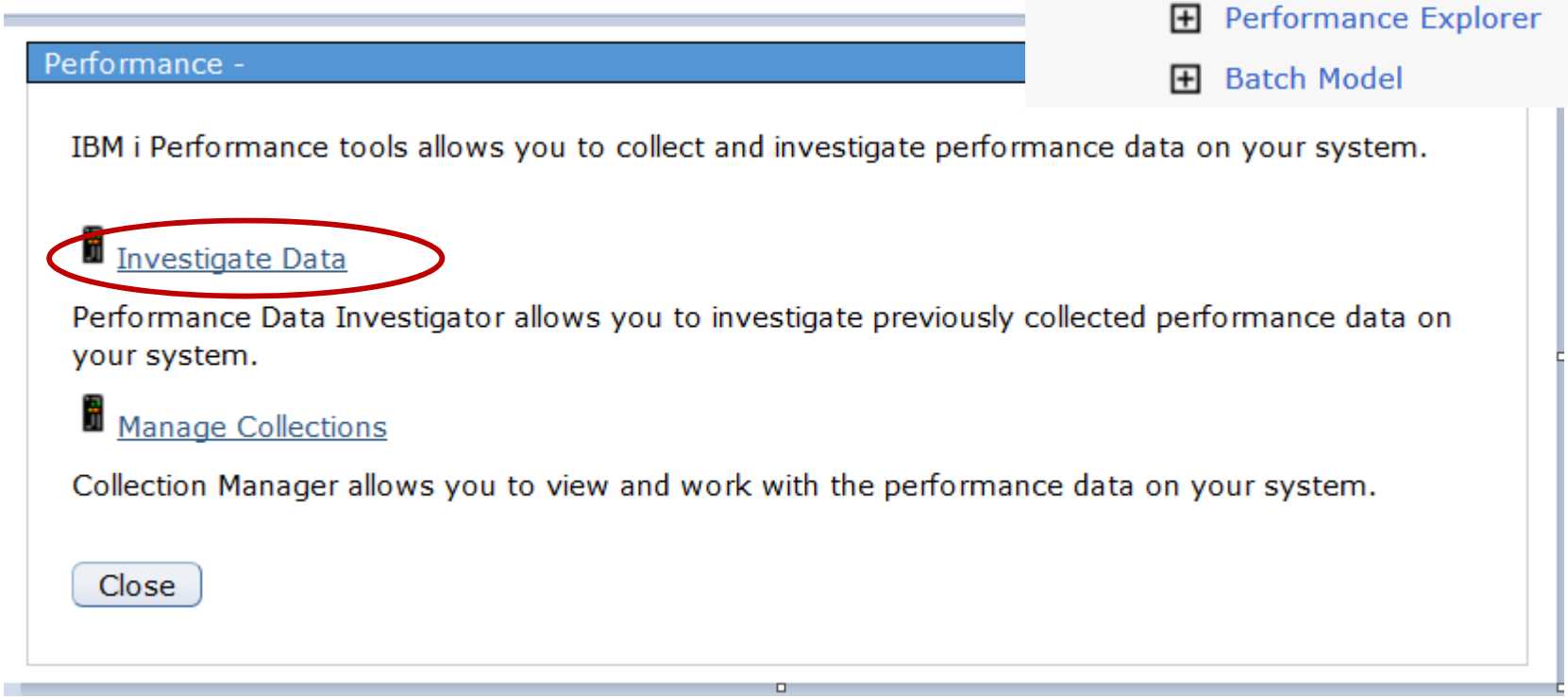
IBM Navigator for i
Performance
Investigate Data





Packaging
Performance Tools Licensed Program Product

- IBM i for Collection Services, Health Indicators, Monitors 7.2

- Performance Tools Licensed Program Product
  - 5761PT1 for 6.1
  - 5770PT1 for 7.1 and 7.2

  - **Performance Tools - Manager Feature**
    - Disk Watcher, Performance Explorer, Database, Batch Model 7.2
  - Performance Tools - Agent Feature
  - **Performance Tools** - Job Watcher

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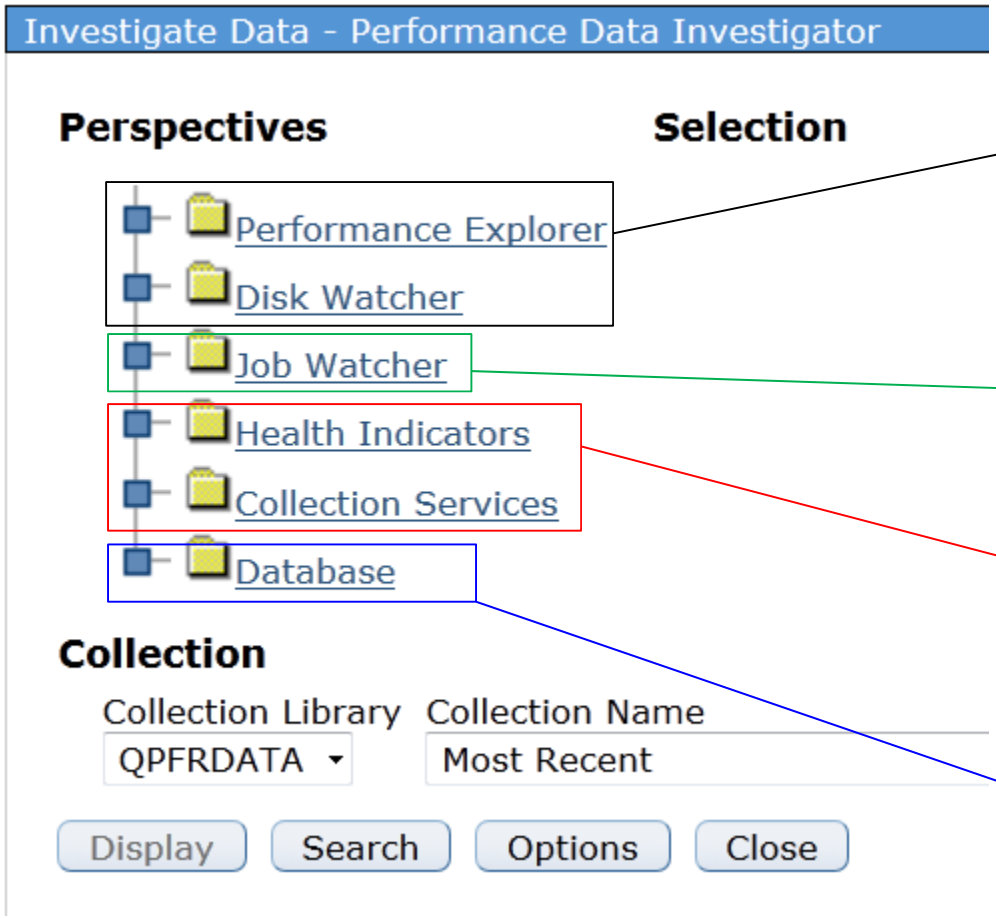
Packaging:
Performance Tools Licensed Program Product

6.1 and 7.1



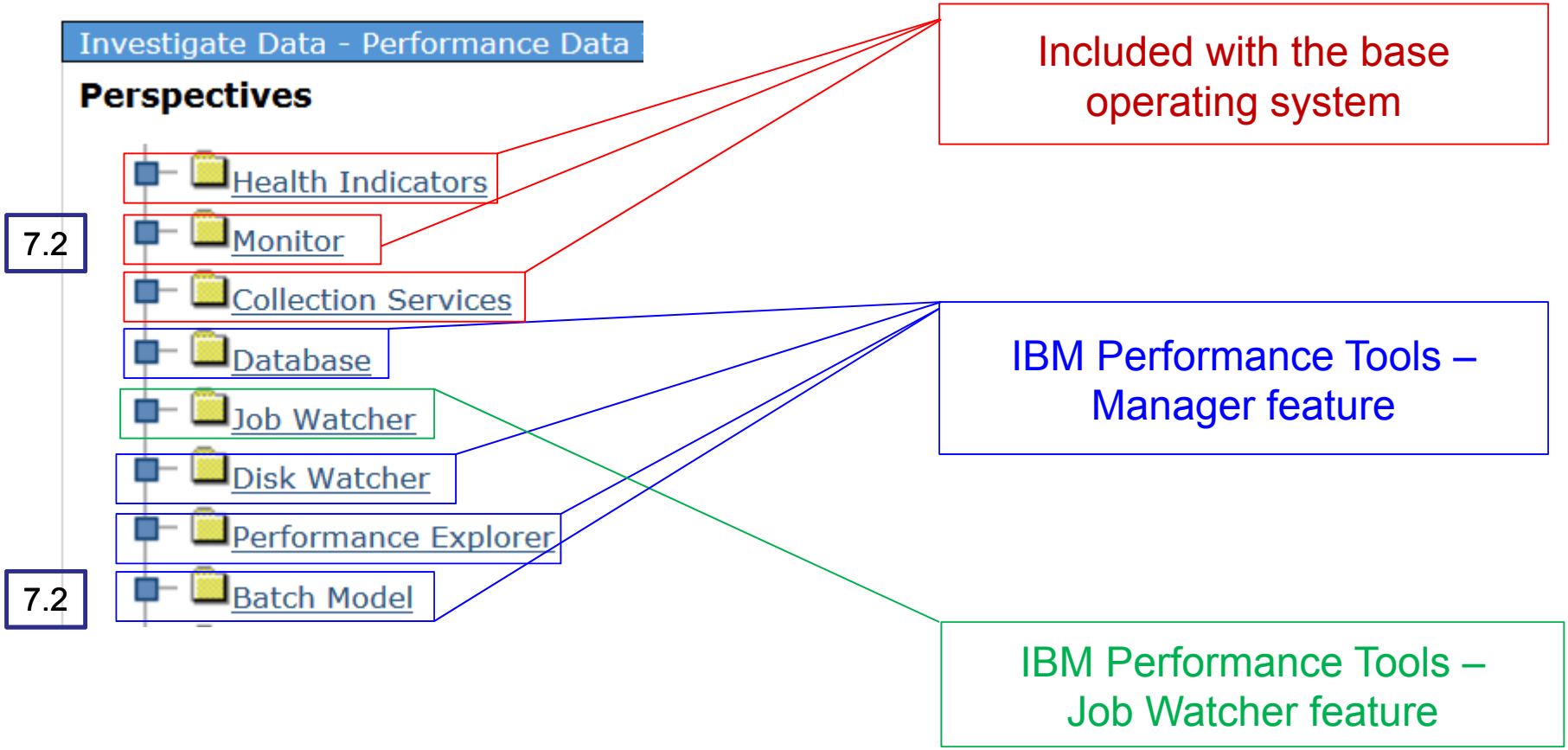
IBM Performance Tools – Manager feature

IBM Performance Tools – Job Watcher feature

Included with the base operating system

IBM Performance Tools – Manager feature and **latest PTFs**

Packaging:
Performance Tools Licensed Program Product 7.2



Prerequisites: Authorizing Users to PDI

- Users need to be authorized to use the investigate data and collection manager performance tasks
- Include users on the QPMCCDATA and QPMCCFDN authorization lists
  - *Can be done via GUI or green screen*

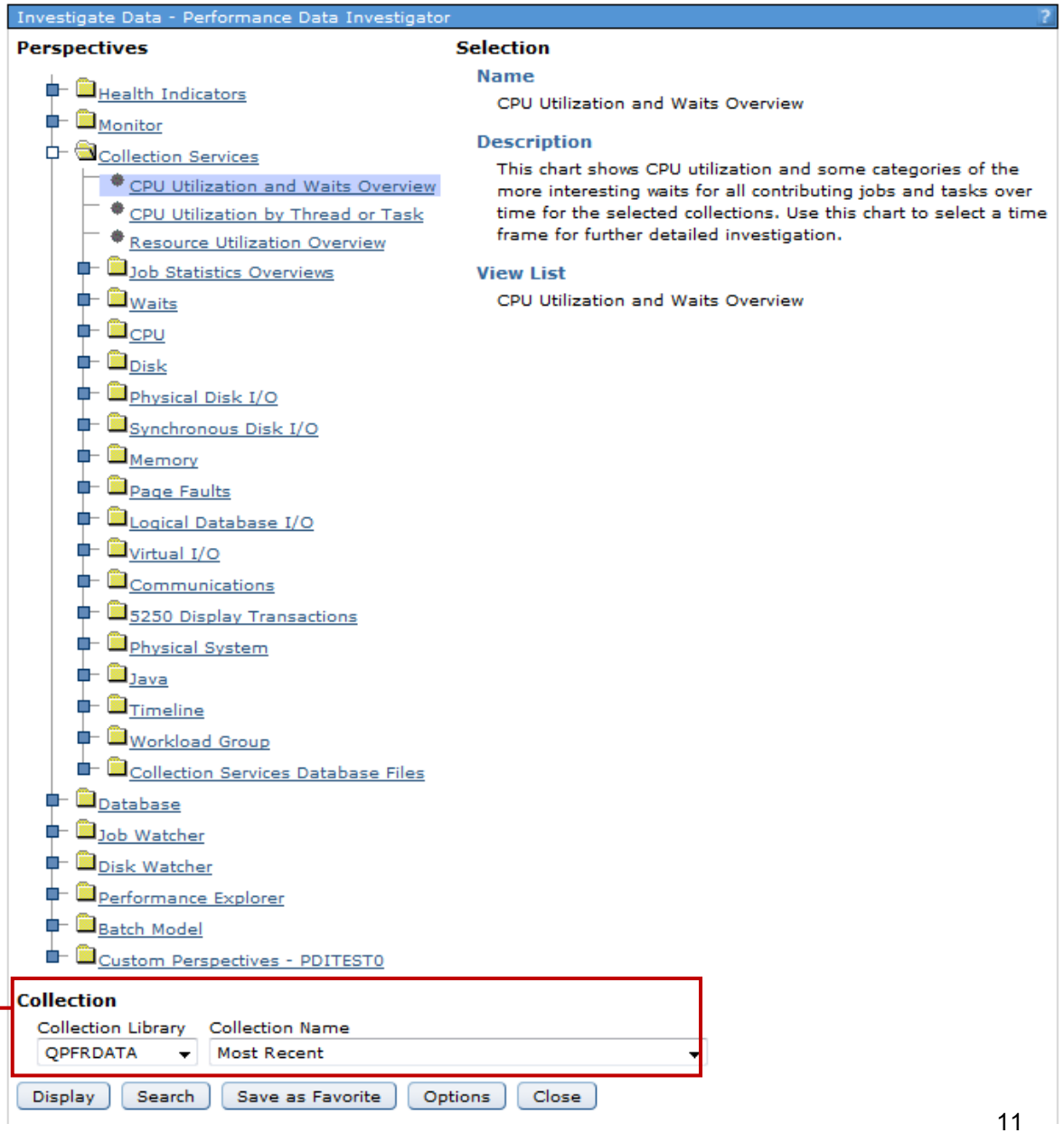
```
                          Edit Authorization List

Object . . . . . :   QPMCCDATA       Owner  . . . . . :   QSYS
  Library  . . . . :     QSYS         Primary group  . . :   *NONE

Type changes to current authorities, press Enter.

             Object    List
User        Authority  Mgt
*PUBLIC     *EXCLUDE
QSYS        *ALL        X
PDI01       *USE
PDI02       *USE
PDI03       *USE
PDI04       *USE
PDI05       *USE
PDI06       *USE
PDI07       *USE
PDI08       *USE
PDI09       *USE
                                                                  More...
```

Investigate Data – Select Collection



The Collection boxes allow you to specify which collection you want to work with.

Only collections valid for the type of chart you select will be displayed.

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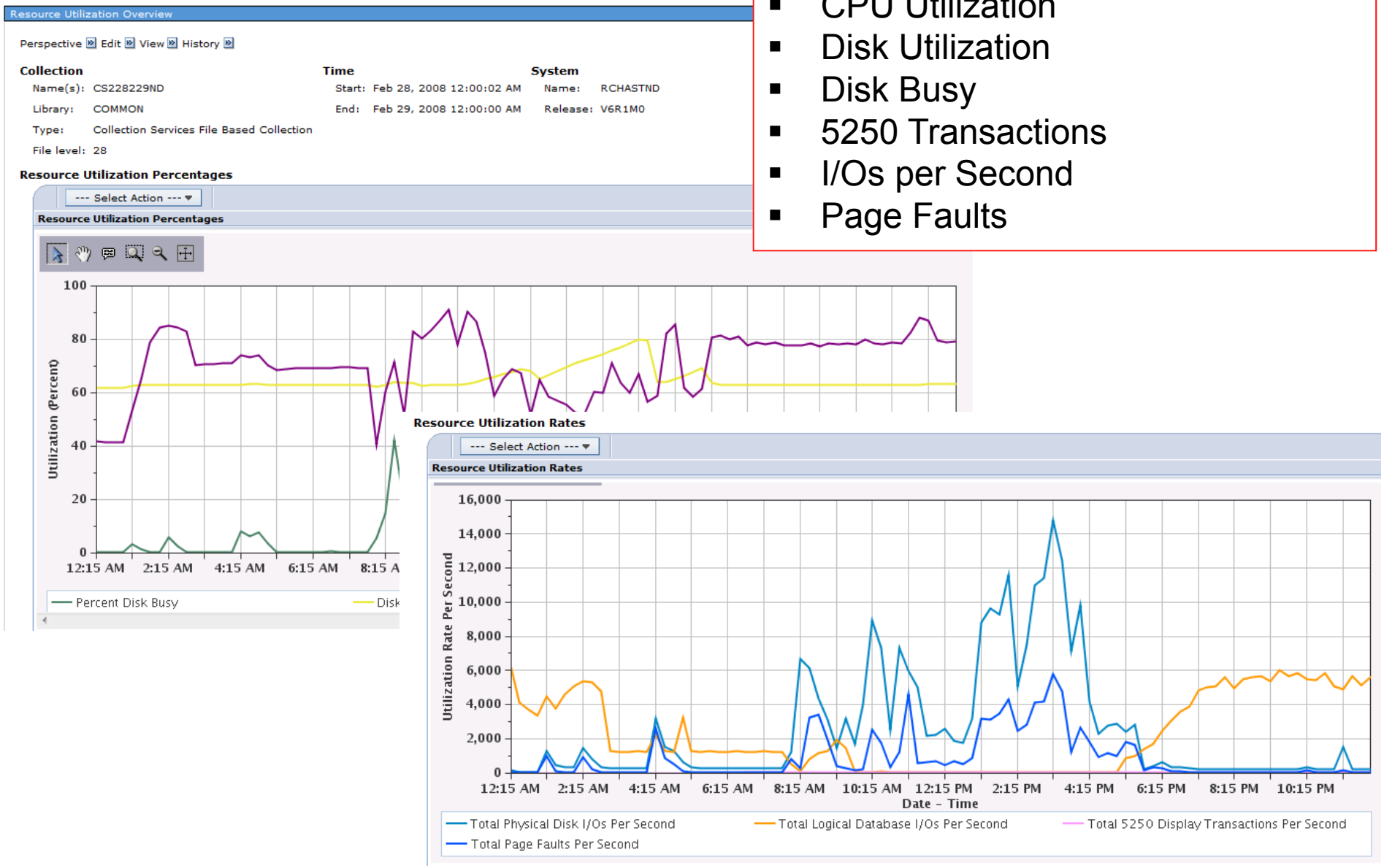
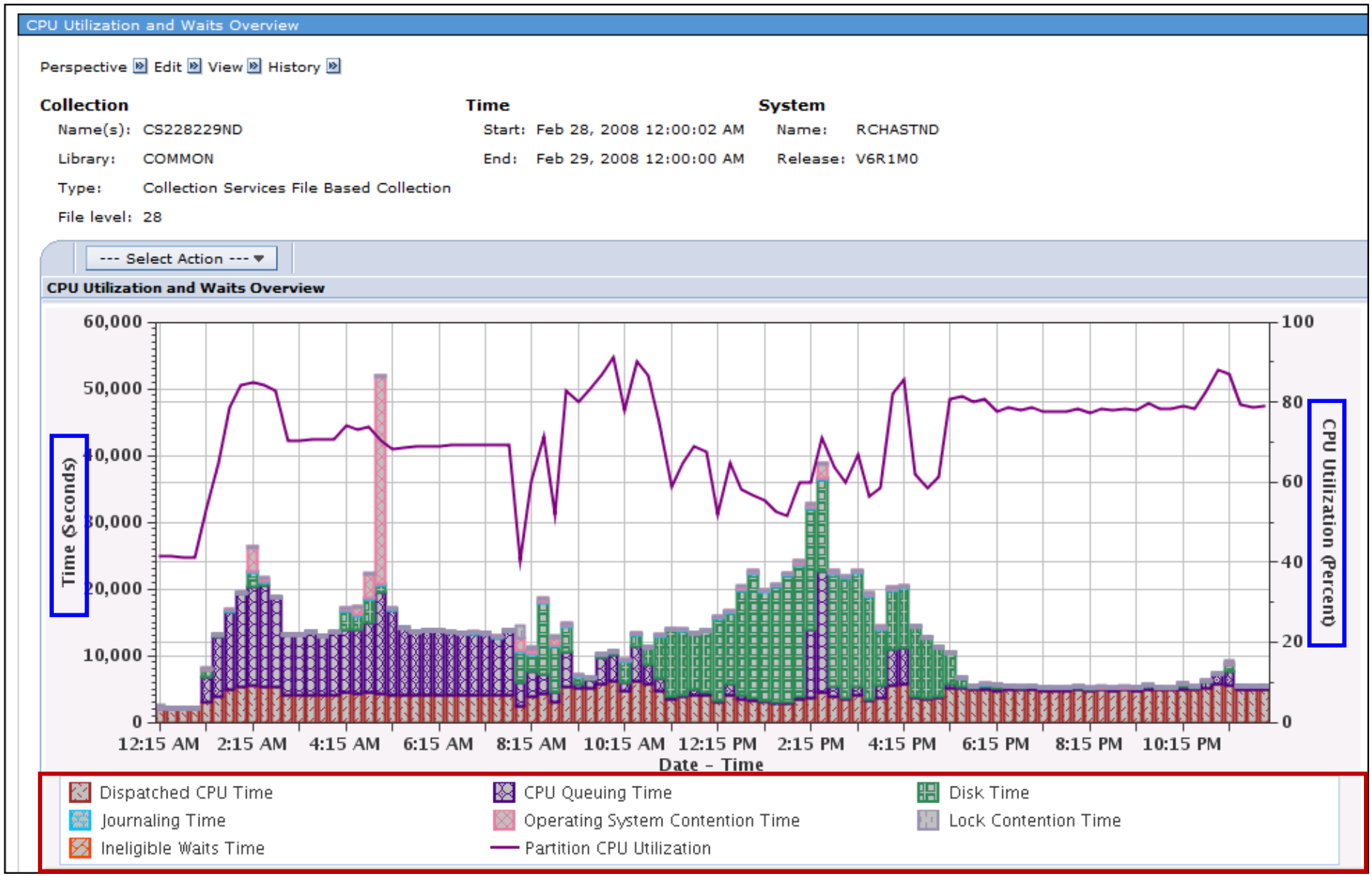
Resource Utilization Overview

Summary for general overall health:

- CPU Utilization
- Disk Utilization
- Disk Busy
- 5250 Transactions
- I/Os per Second
- Page Faults

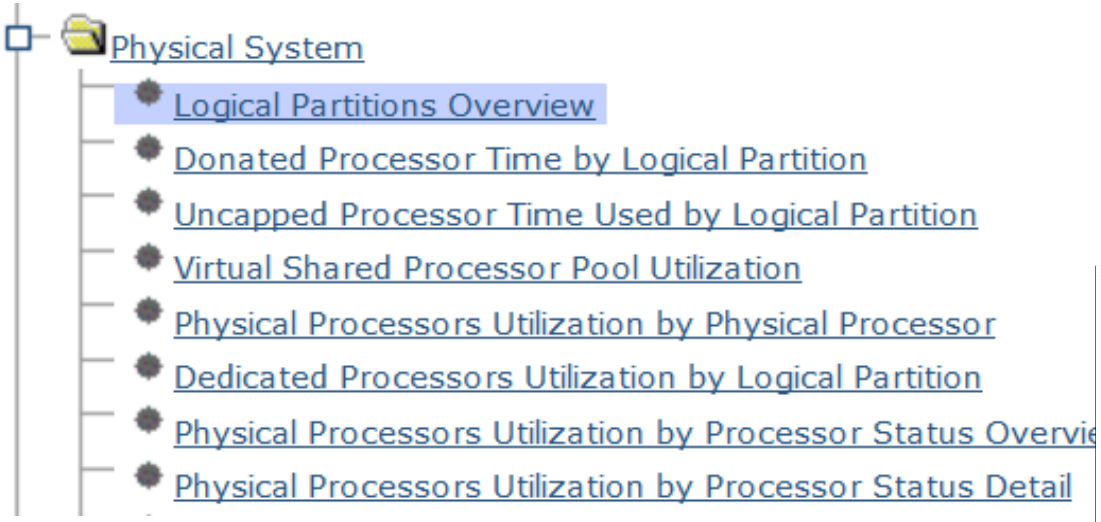


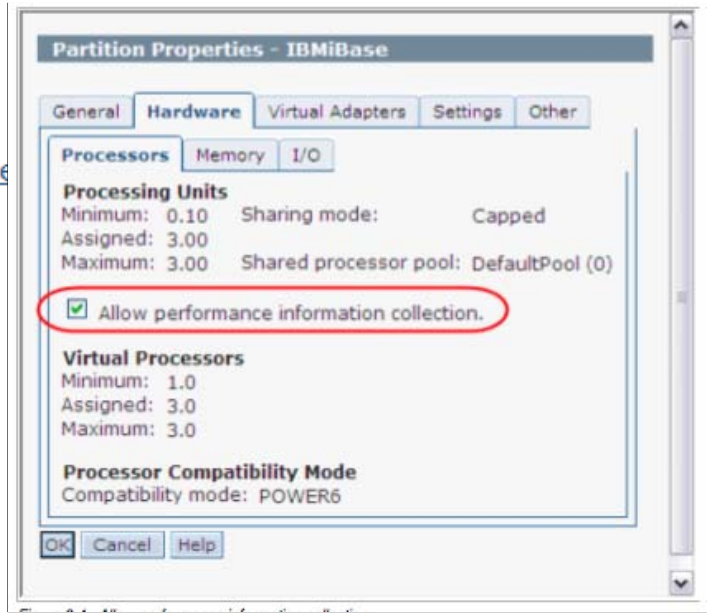
CPU Utilization and Waits Overview



Physical System Charts – Frame view of Performance!

Collection Services has the ability to collect certain high-level cross-partition processor performance metrics for all logical partitions on the same single physical server regardless of operating system. This is available on Power 6 and above servers, with a minimum firmware level xx340_061. When this data is available, it can be viewed via several perspectives found under "Physical System".





HMC option to enable performance collection must be turned on for the IBM i partition to collect the data

http://ibmsystemsmag.blogs.com/i_can/2009/10/i-can-display-cpu-utilization-for-all-partitions.html

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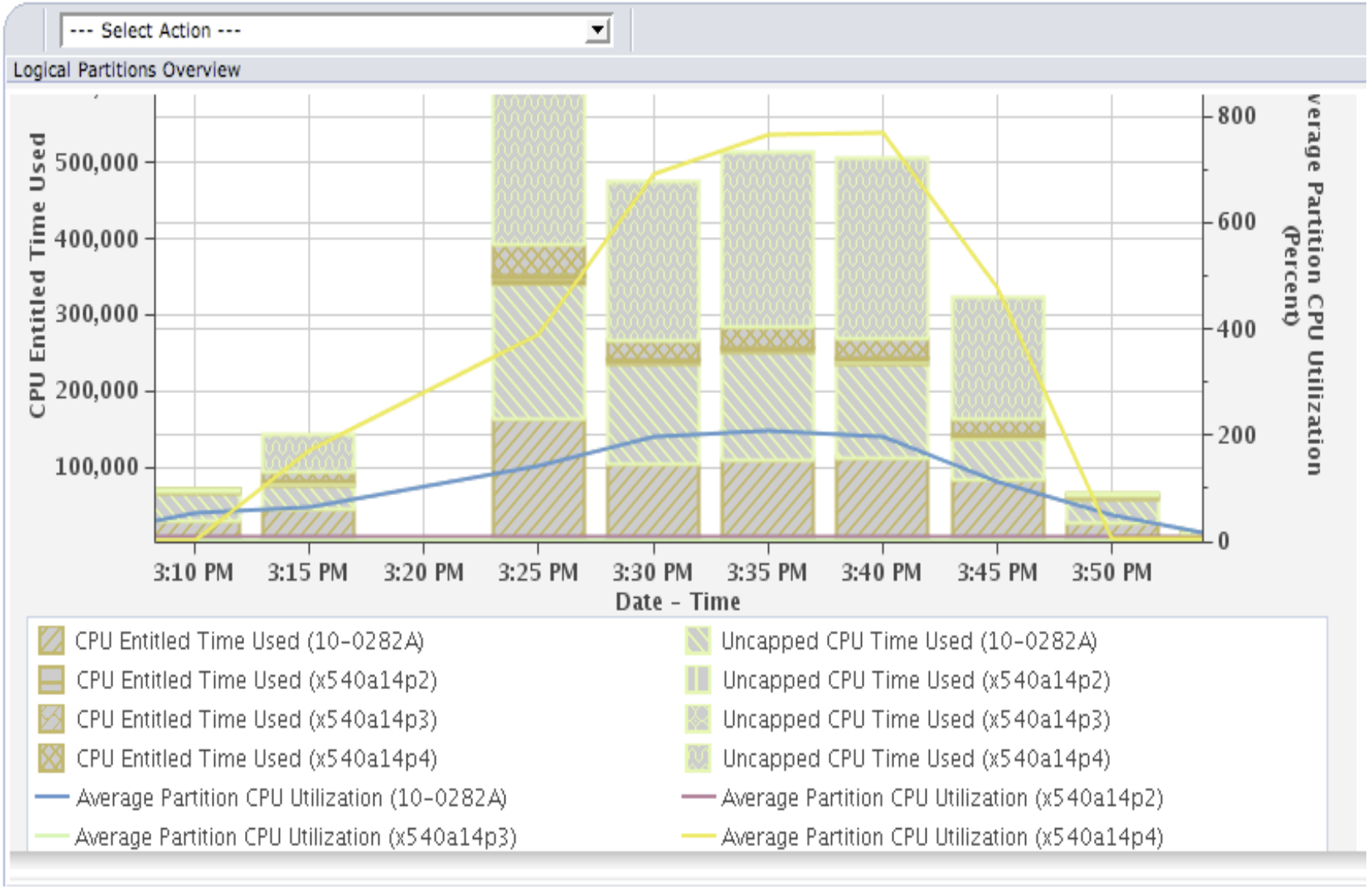
Logical Partitions Overview
Requires Power 6 and IBM i 6.1 or later



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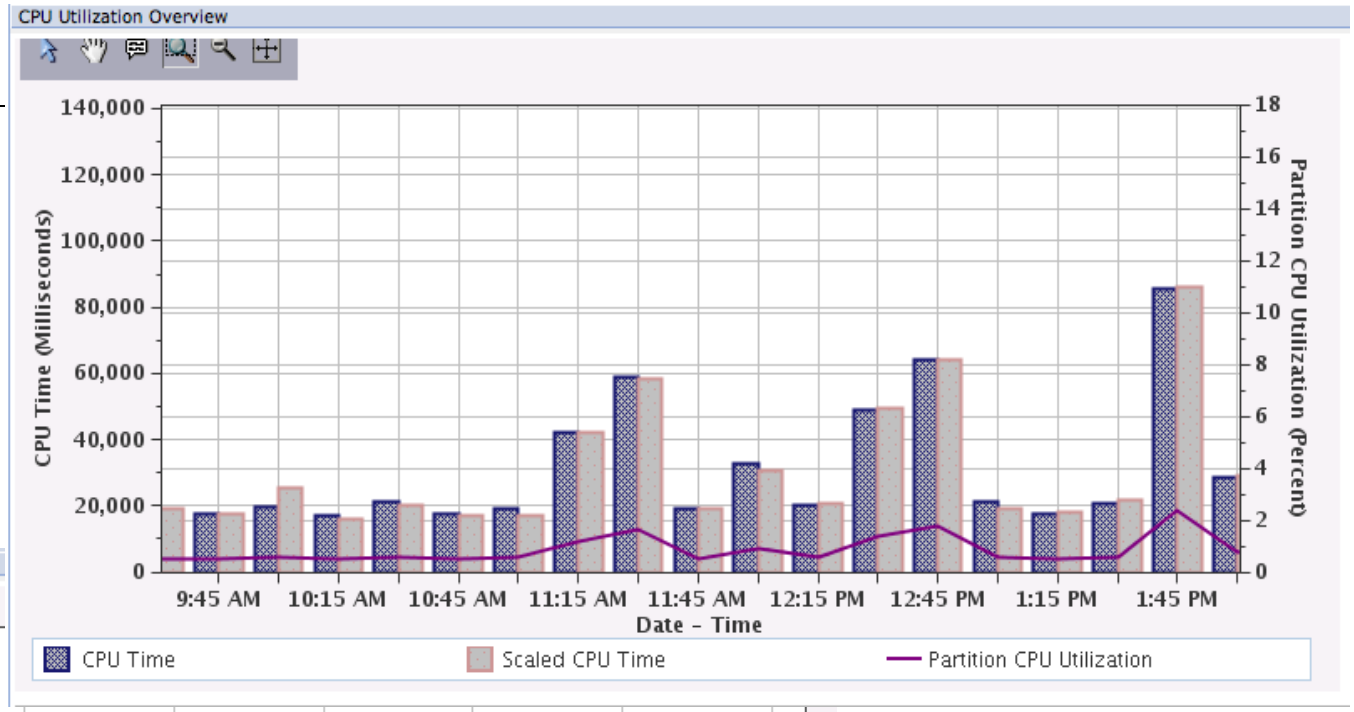
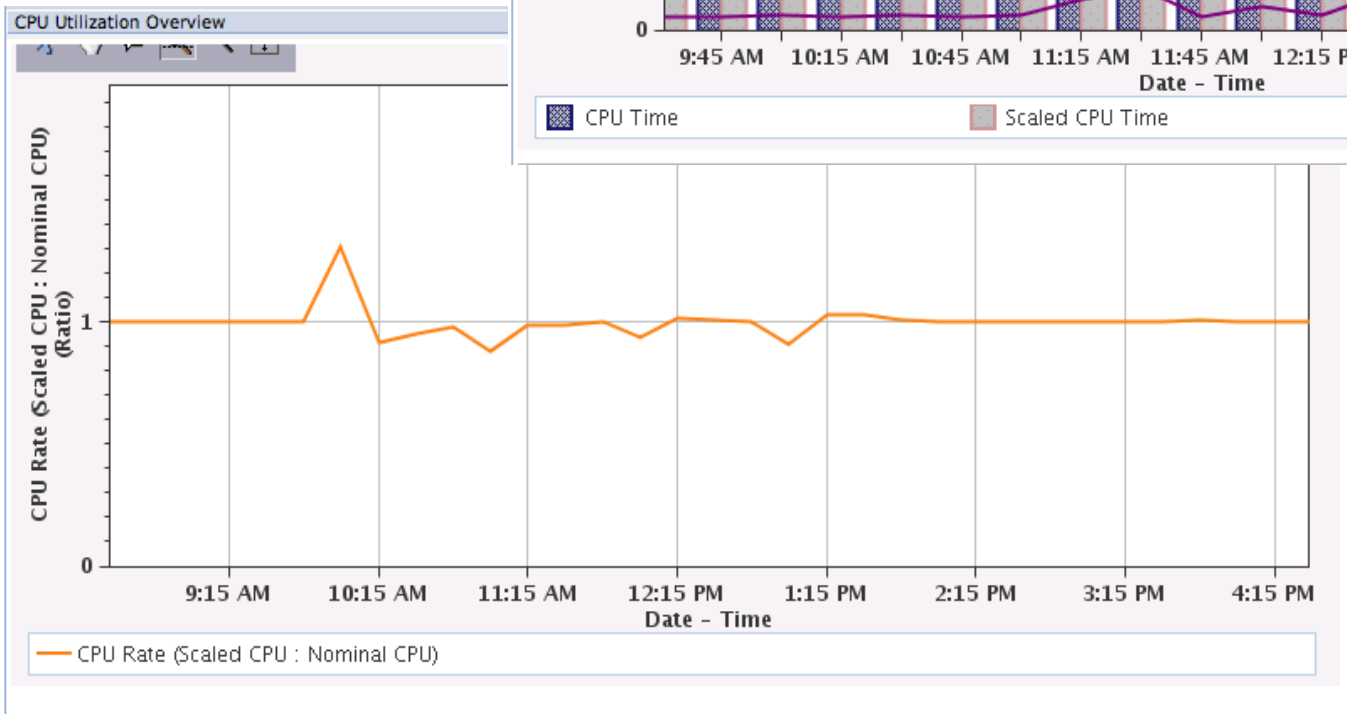
Scaled CPU

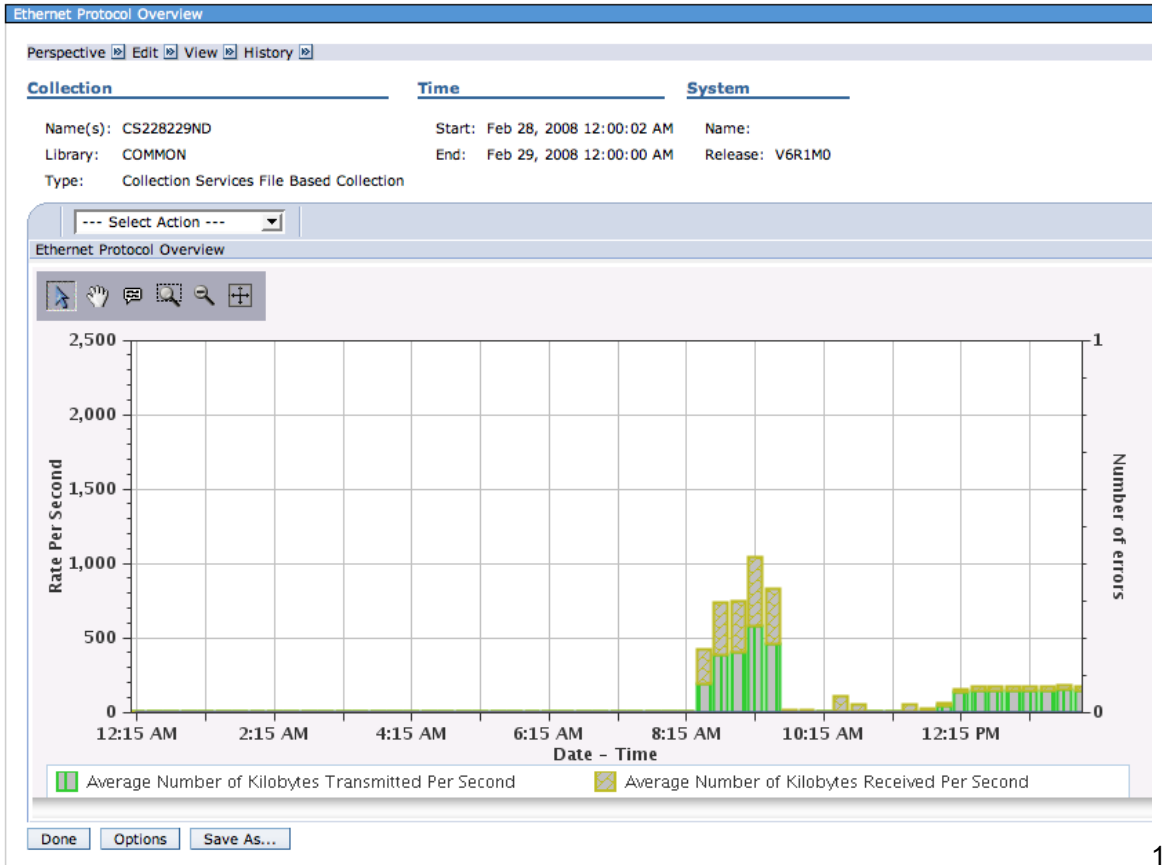




http://ibmsystemsmag.blogs.com/i_can/2010/03/i-can-understand-scaled-cpu-time.html

Communications Perspectives

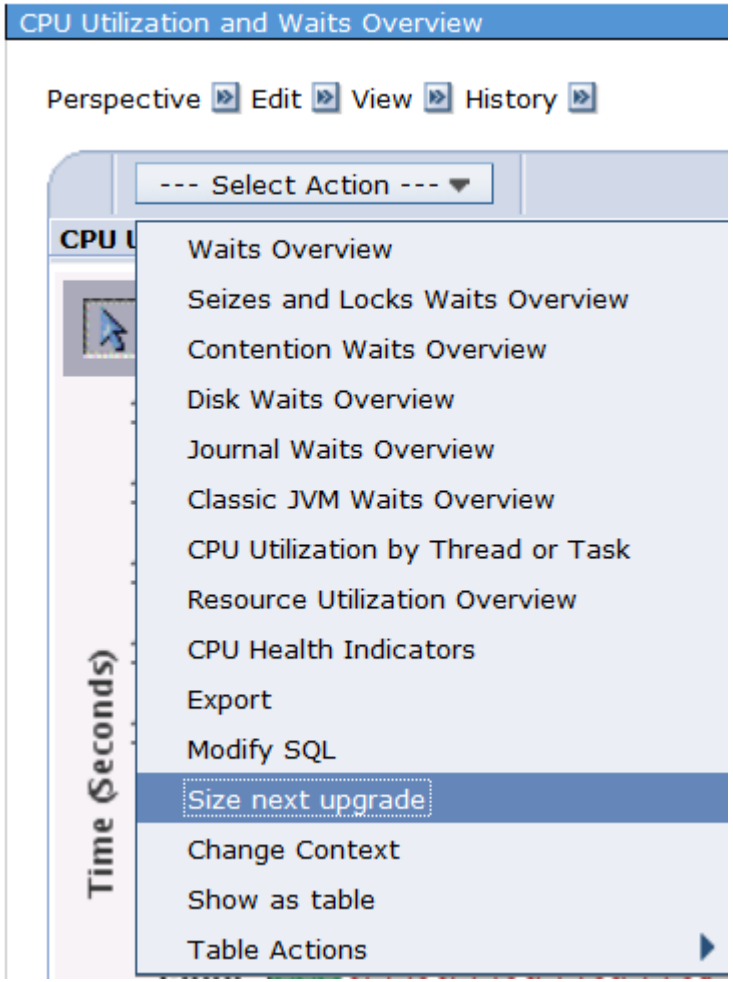
- Communications
  - Asynchronous Protocol Overview
  - Binary Synchronous Protocol Overview
  - DDI Protocol Overview
  - Token-ring Protocol Overview
  - Ethernet Protocol Overview
  - Frame Relay Protocol Overview
  - SDLC Protocol Overview
  - IDLC Protocol Overview
  - LAPD Protocol Overview
  - PPP Protocol Overview
  - X.25 Protocol Overview



Size Next Upgrade
Send data directly to the IBM Workload Estimator

Takes the measured data from Collection Services and inputs it to the IBM Workload Estimator (WLE)

Intended for a one-time sizing activity



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Search 7.2

"Investigate Data Search" added in 7.2

Investigate Data Search

Type at least 3 non-empty characters

Case Sensitive Whole Words Only

Search In:

Package Name Description Metrics
Perspective View SQL

Show Columns:

Metrics
SQL

Package Name	Perspective	Description	View
Collection Services	Storage Allocation/Deallocation by Thread or Task	This chart shows allocation and deallocation of the temporary and permanent storage, net frames requested by thread or task. Use this chart to select a thread or task for viewing its storage statistics over time.	Storage Allocation/Deallocation by Thread or Task Sorted by Allocation
Collection Services	Storage Allocation/Deallocation Overview	This chart shows allocation and deallocation of the temporary and permanent storage for all contributors over time for the selected collections. Use this chart to select a time frame for further detailed investigation.	Storage Allocation/Deallocation Overview
Monitor	Disk Storage Utilization (Average)	Charts show the disk storage utilization (average) metric of the performance data monitored, as well as the metric breakdown details by ASP.	Disk Storage Utilization (Average)

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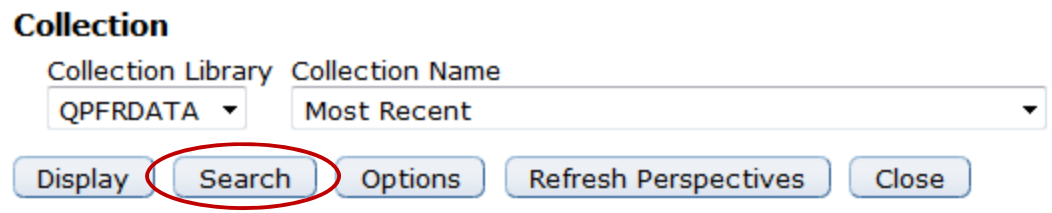
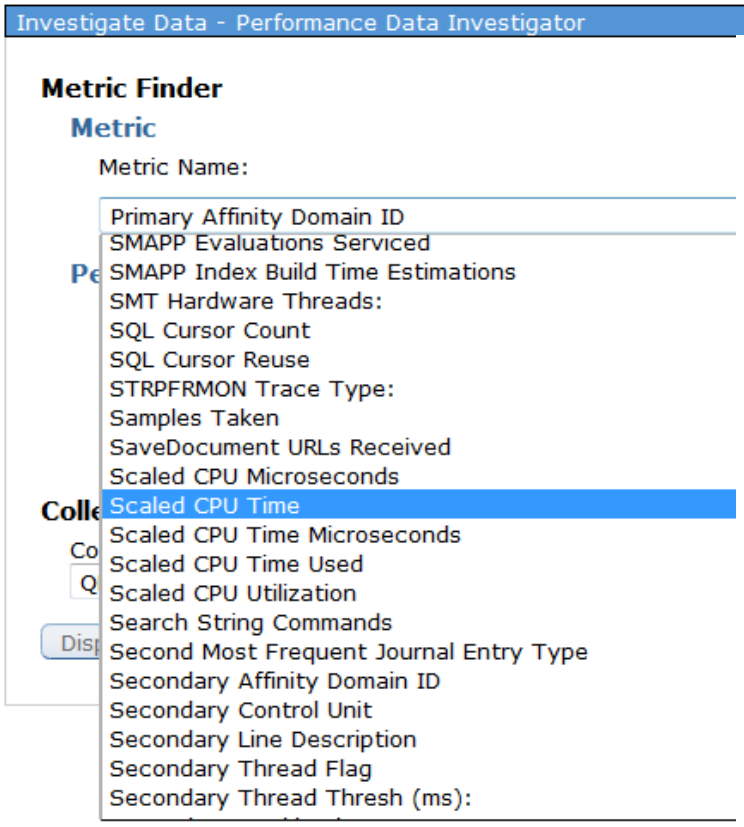
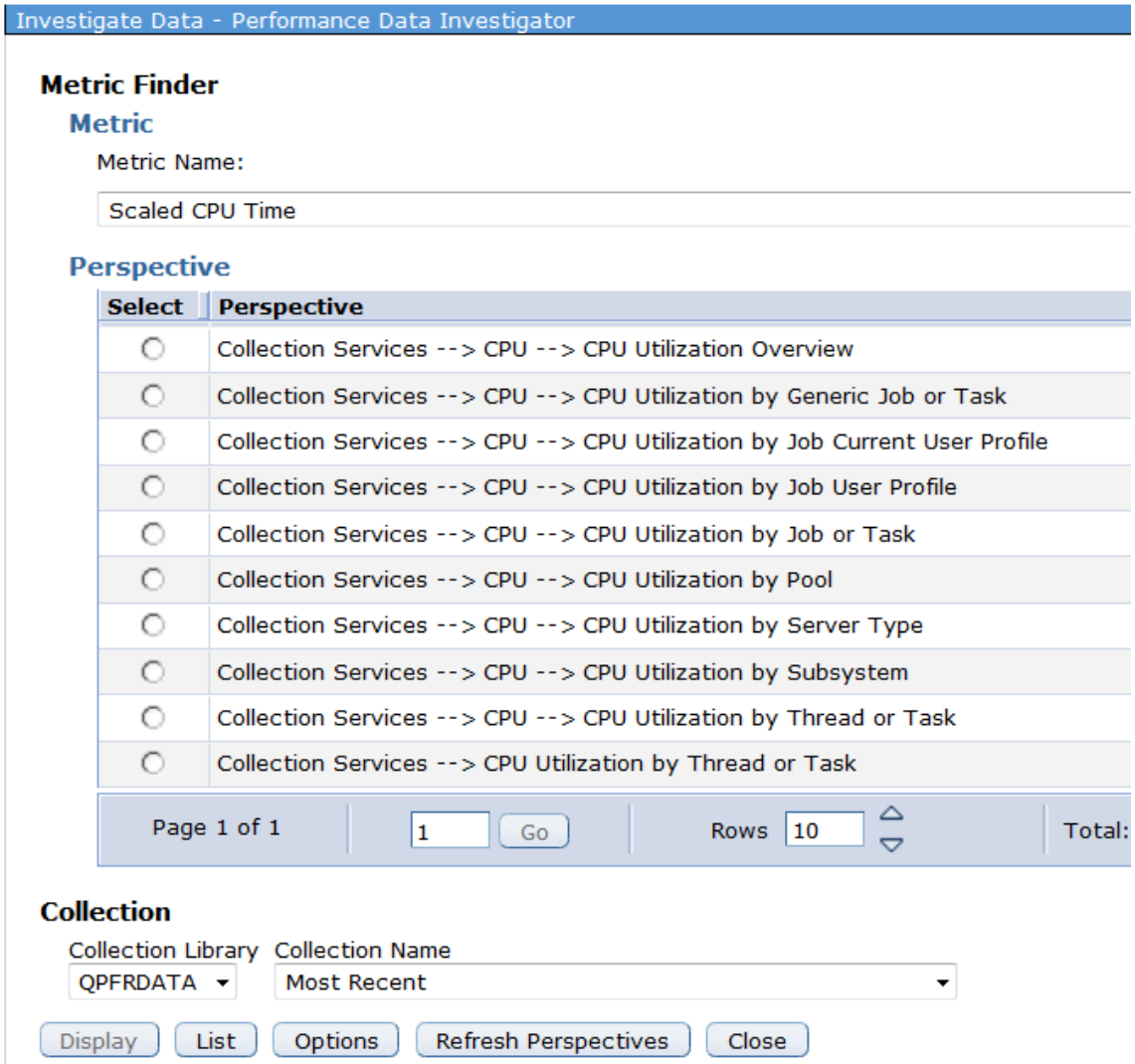
Metric Finder







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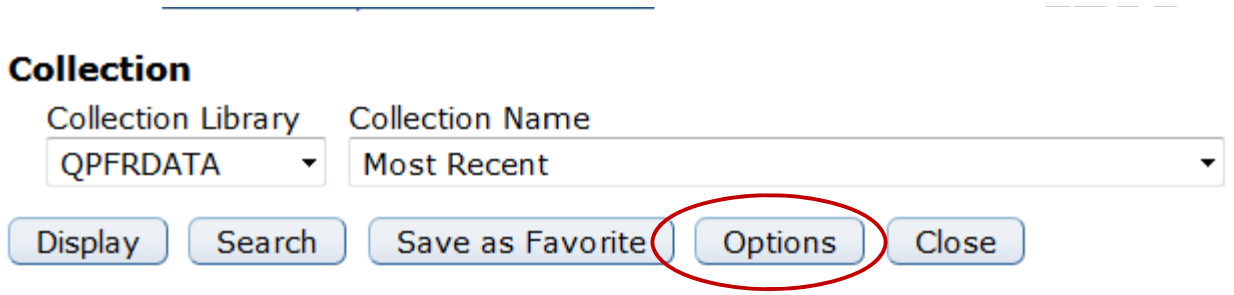
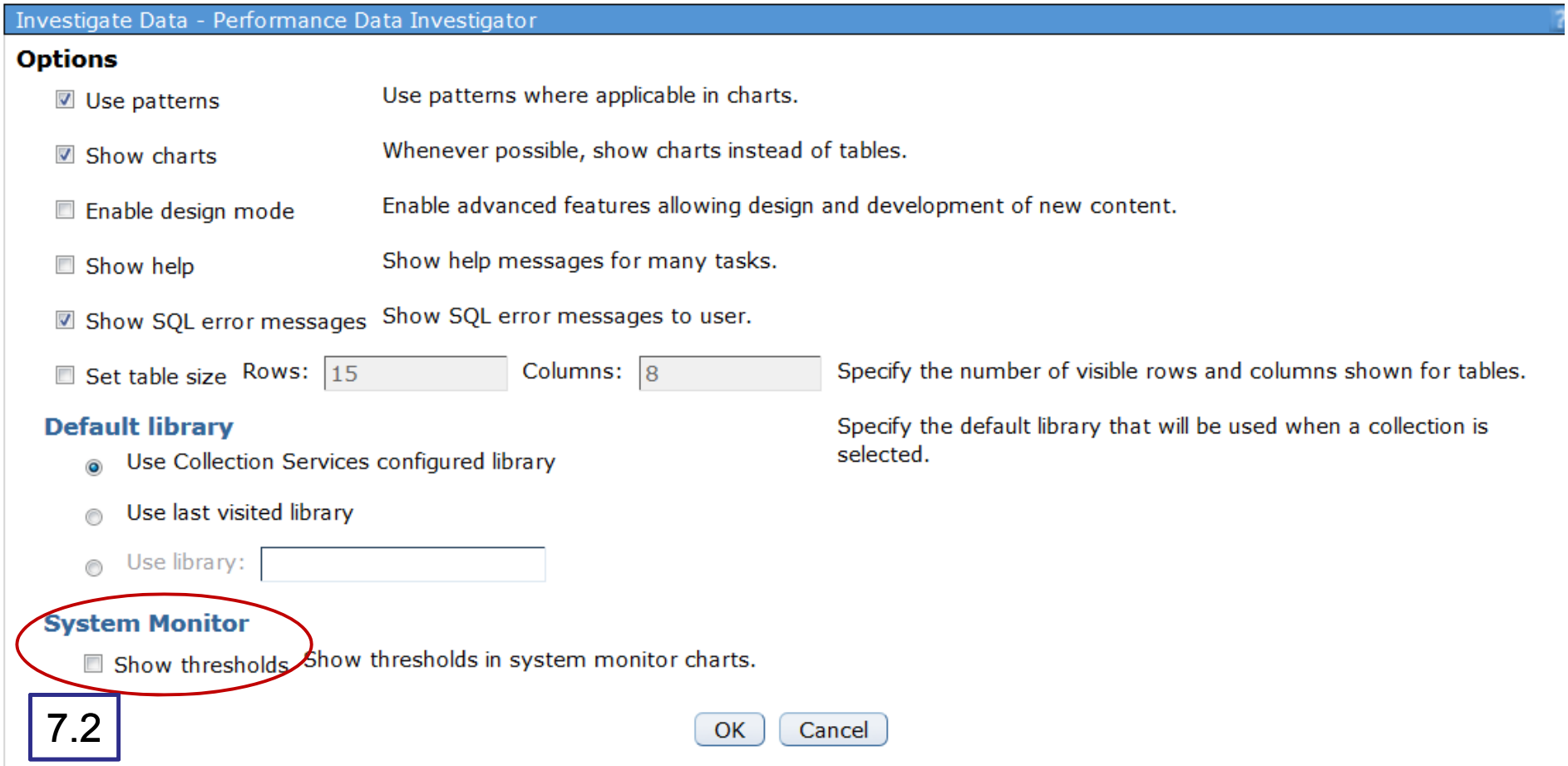
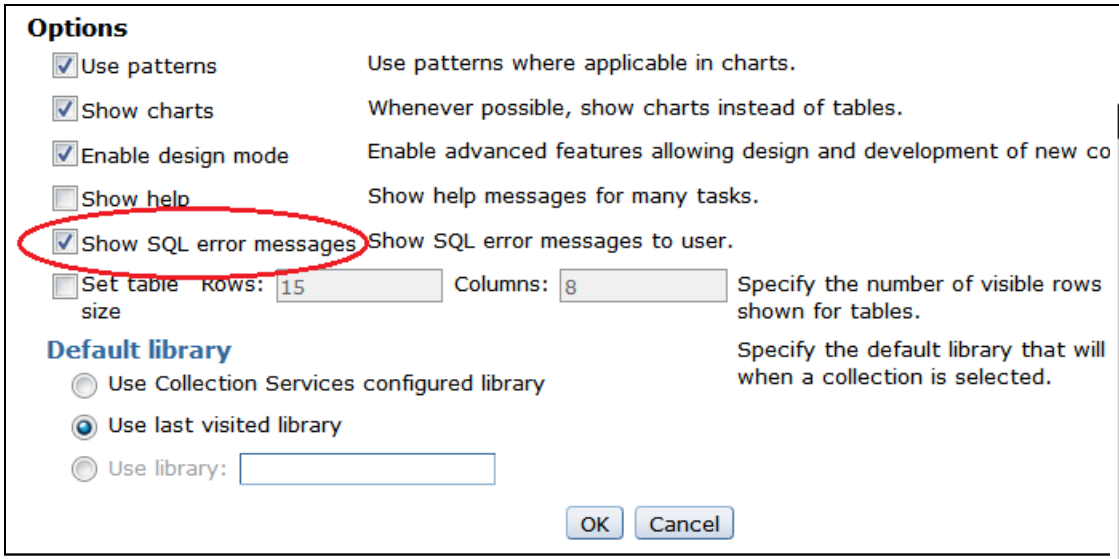
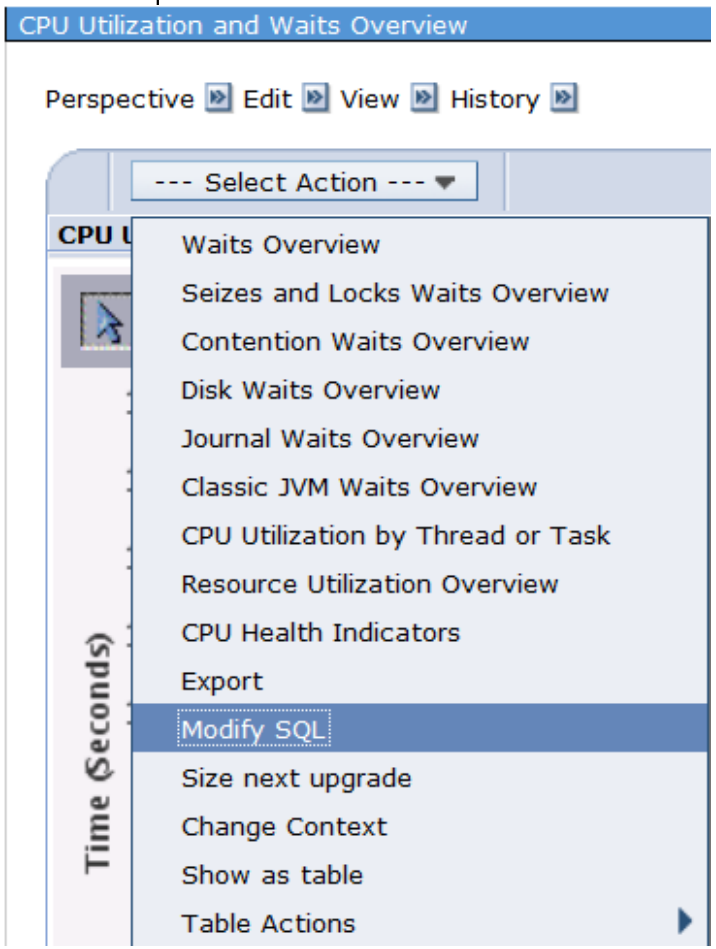
Options





Option – Show SQL Error Messages





"Show SQL error messages" -

Modify SQL window will provide error message to help solve SQL errors.

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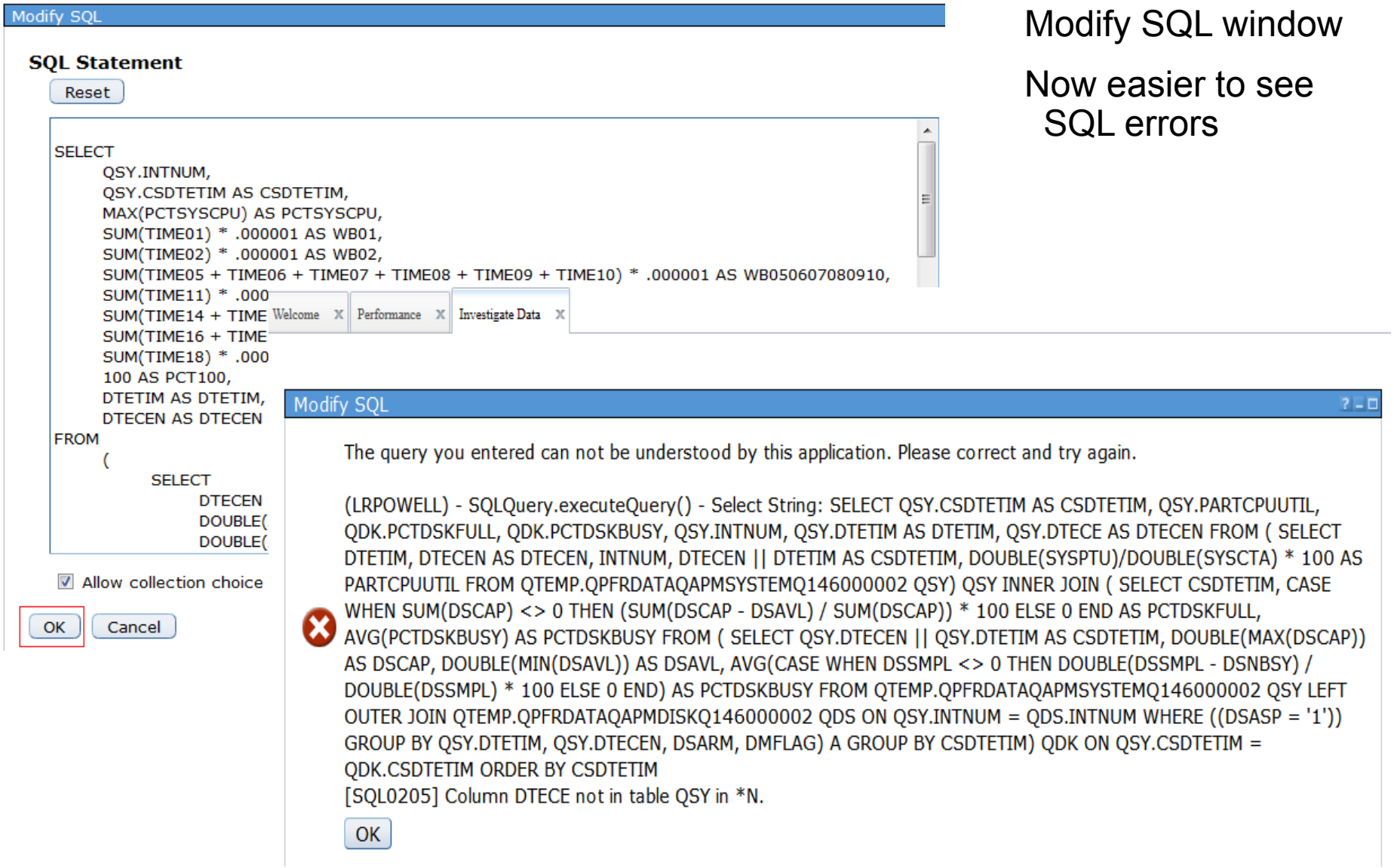
Show SQL Error Messages

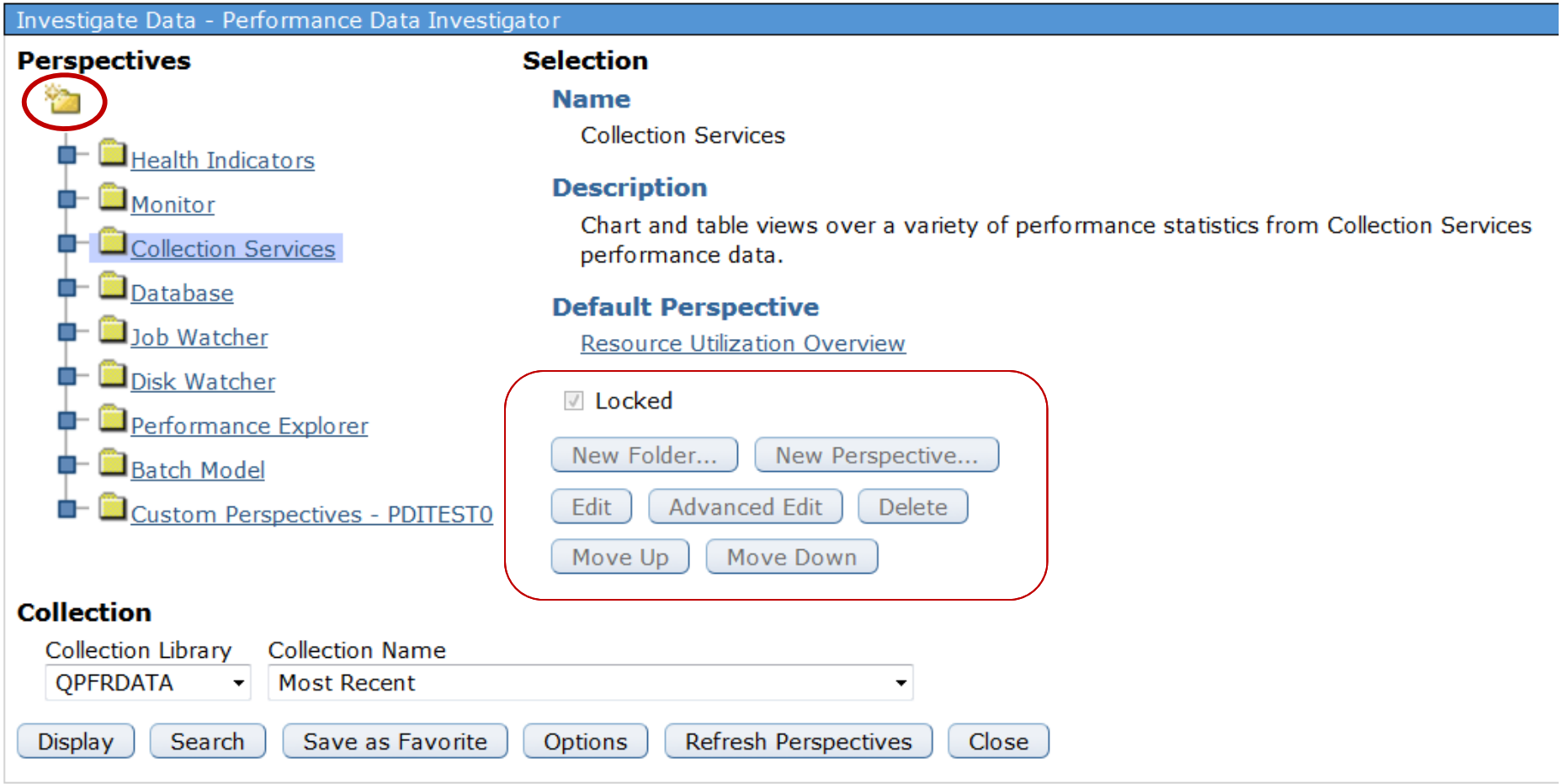


Modify SQL window

Now easier to see SQL errors

Design Mode

Once you “Enable Design Mode” additional options become available to create and edit your own charts and tables.



http://ibmsystemsmag.blogs.com/i_can/2011/08/customizing-a-perspective-in-pdi.html

Additional Content Packages

- 6.1 and 7.1:
  - Health Indicators
  - Database
  - Job Watcher
  - Disk Watcher
  - Performance Explorer
- New in 7.2:
  - Monitor
  - Batch Model

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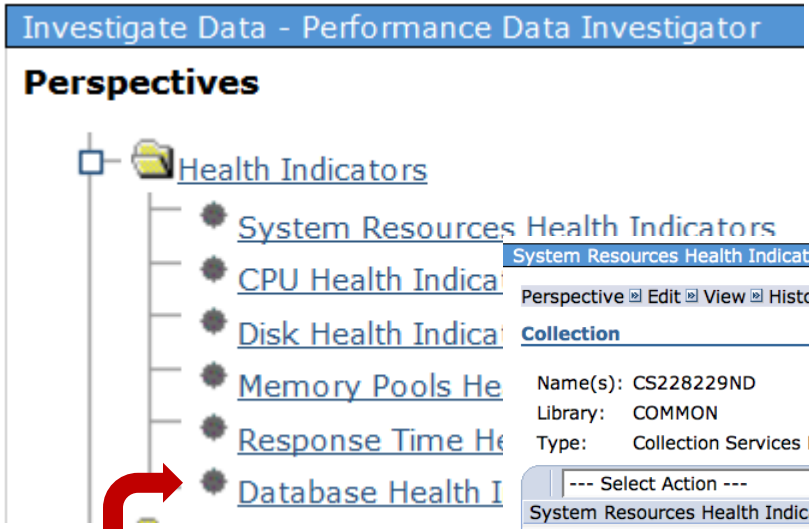
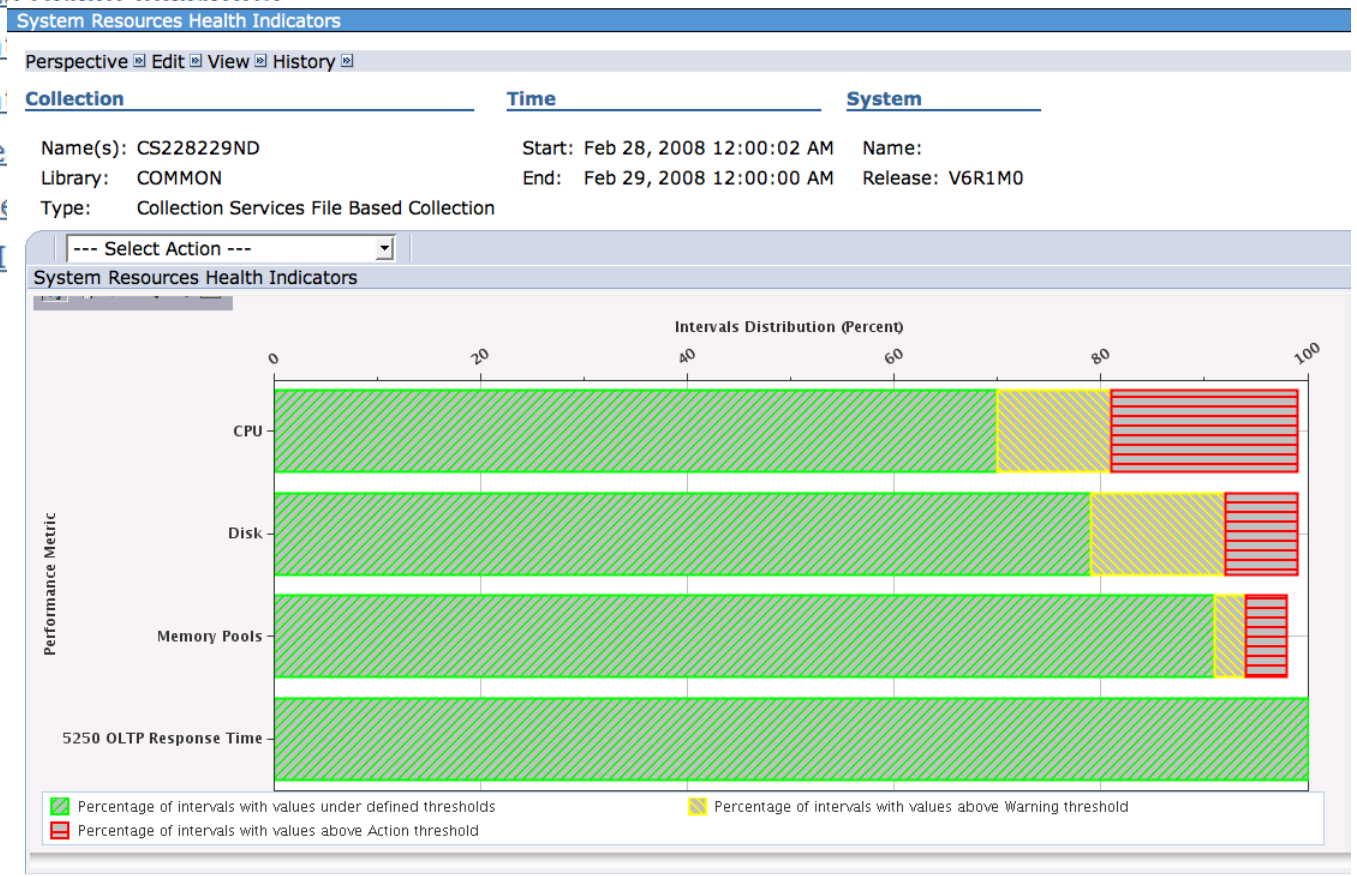
Health Indicators

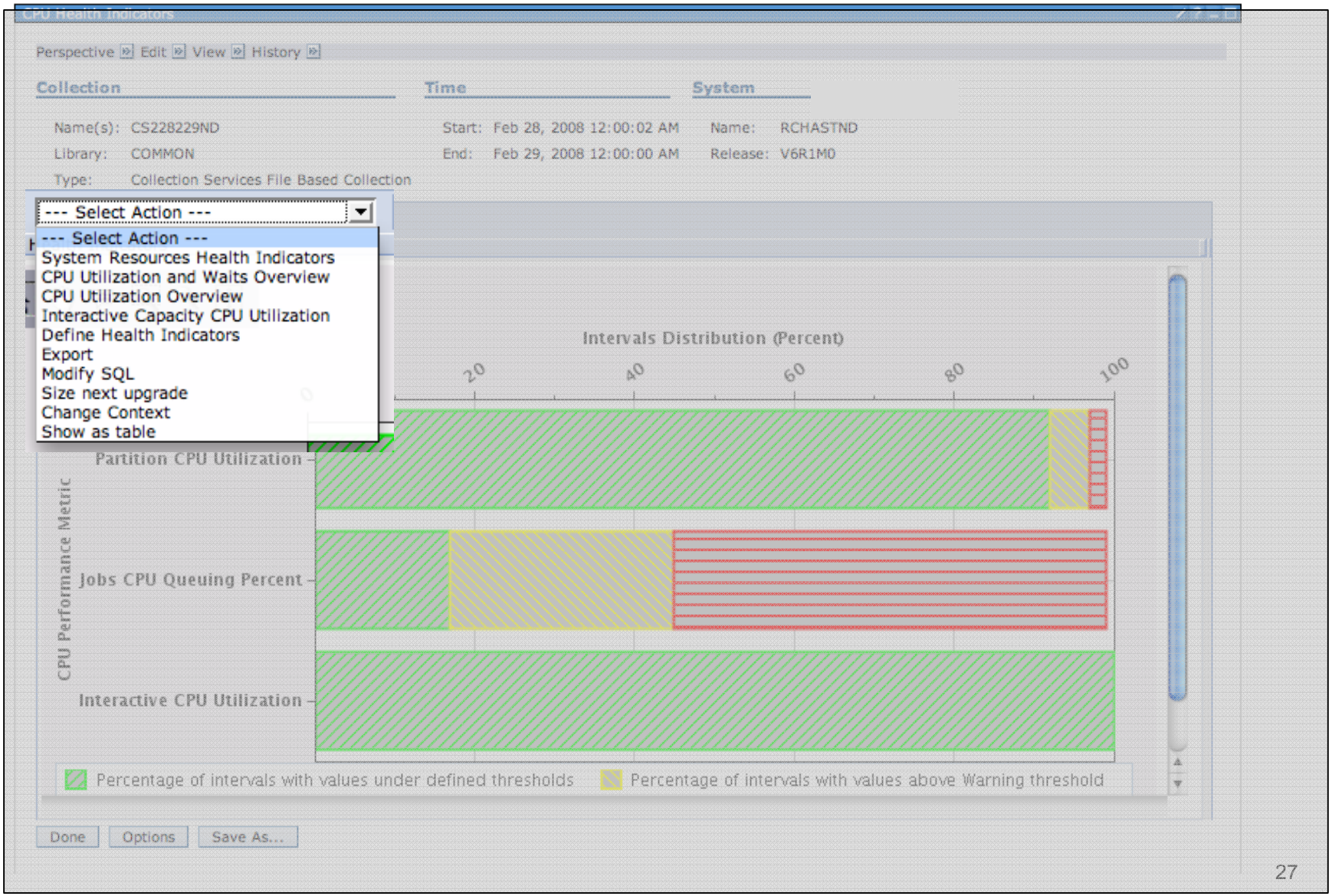


System Resource Health Indicators



Database Health Indicators are new in 7.2

CPU Health Indicators



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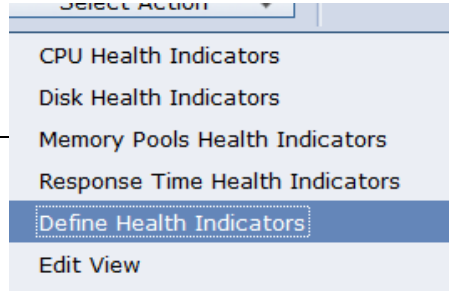
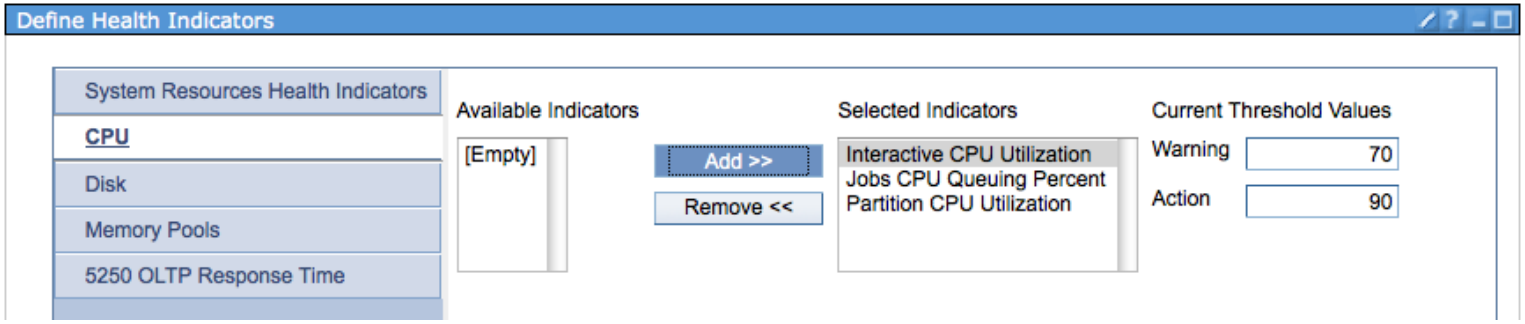
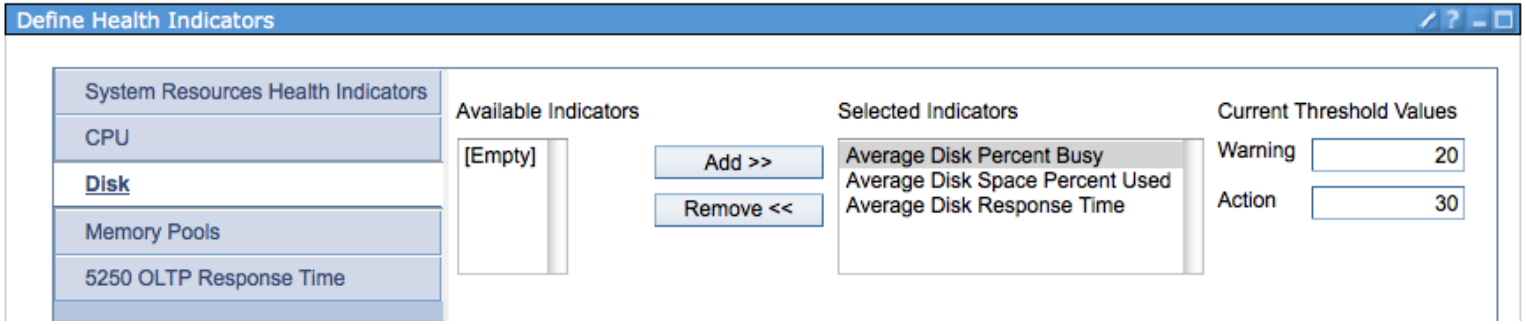
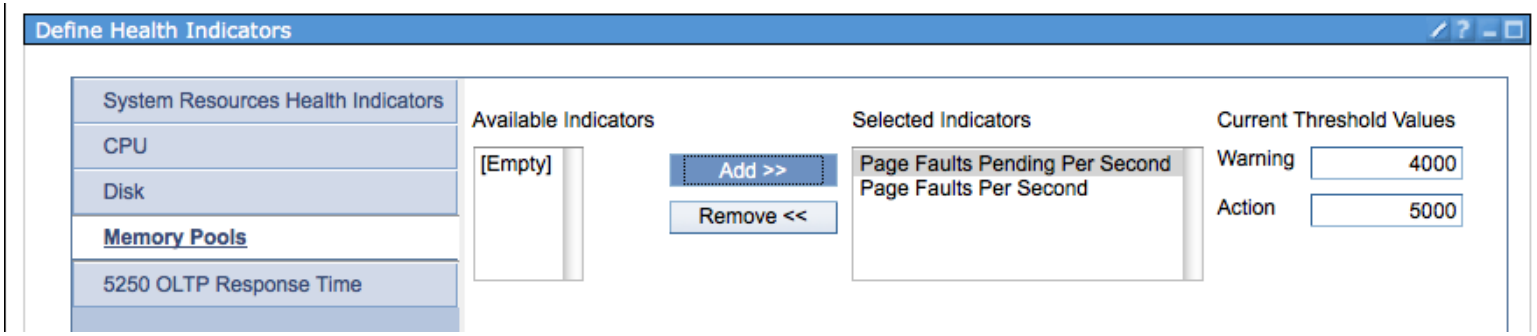
Define Health Indicators

7.1 screen captures



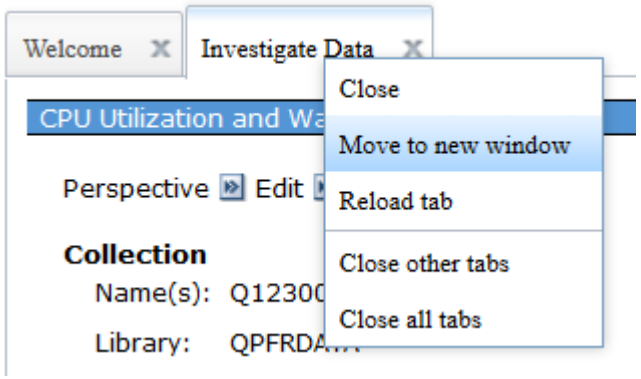




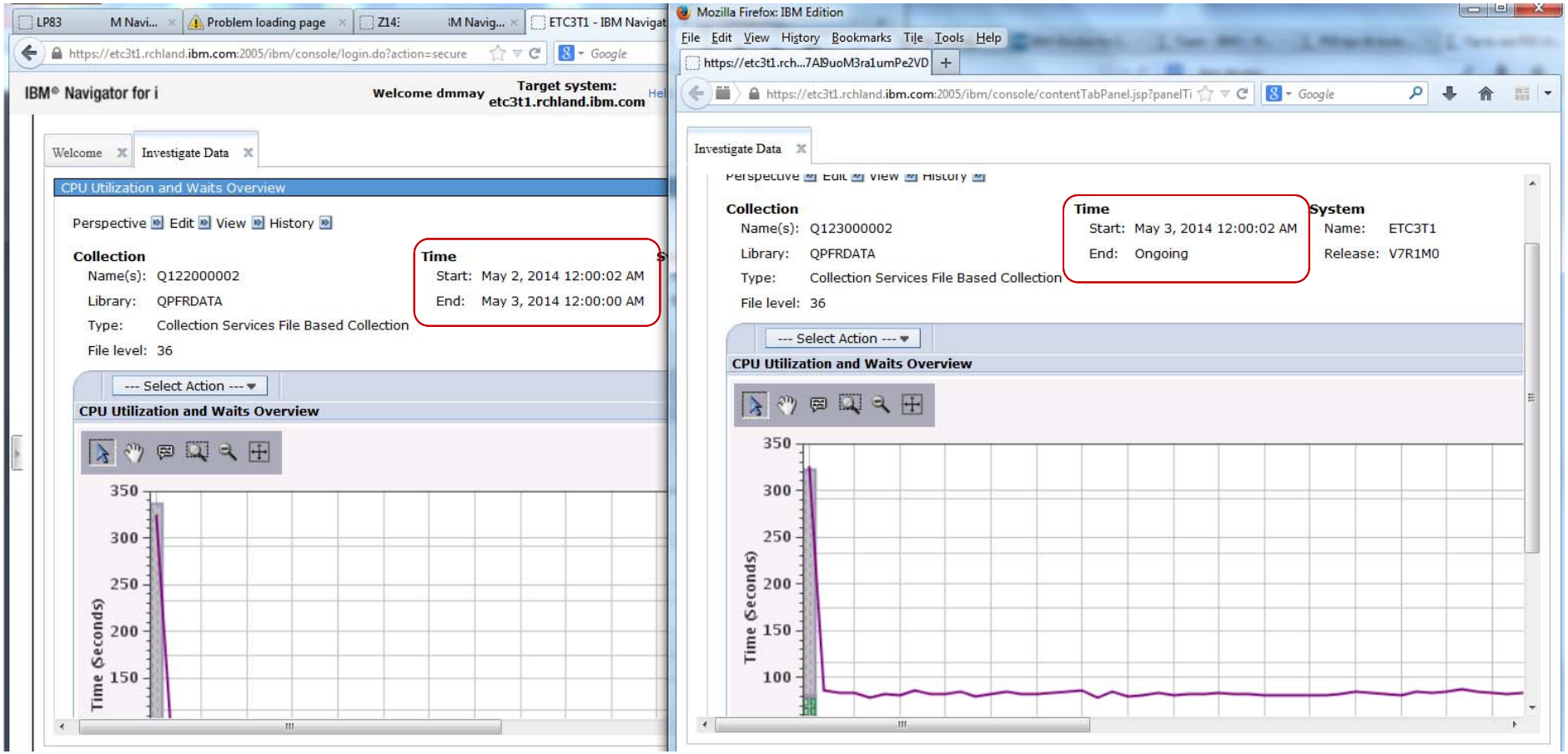


Display Charts in Separate Window

It's useful to compare two graphs side-by-side



Two Different Charts from Two Different Days



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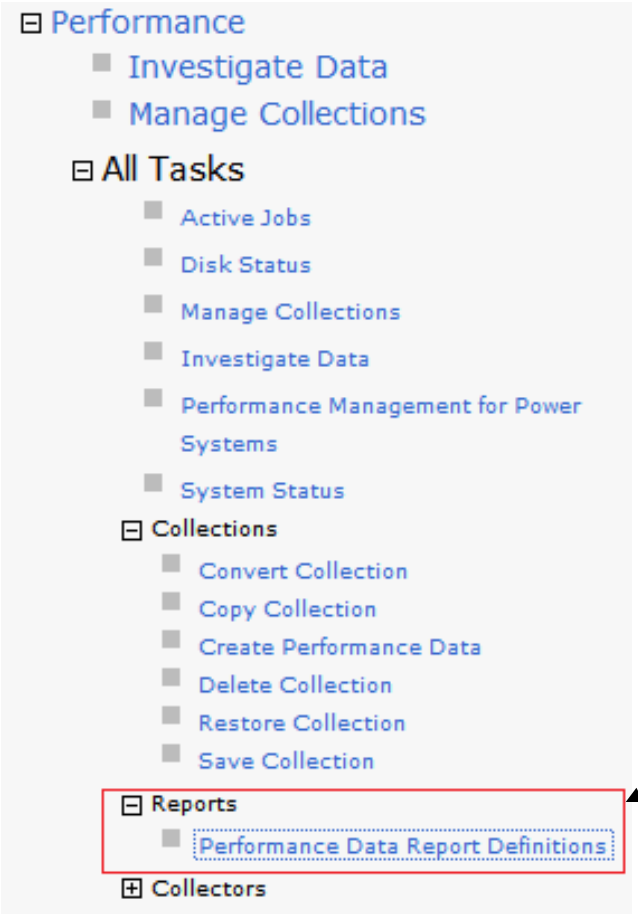
Performance Data Reports

"Executive" Reports

- Create a group of printed or online graphs of performance perspectives.
- Generate a PDF or zip file containing the requested graphs for the collection
- Use for weekly reports



Create Performance Data Report

Start here with Reports ->

Performance Data Report Definitions

http://ibmsystemsmag.blogs.com/i_can/2013/05/performance-reports-with-the-performance-data-investigator.html

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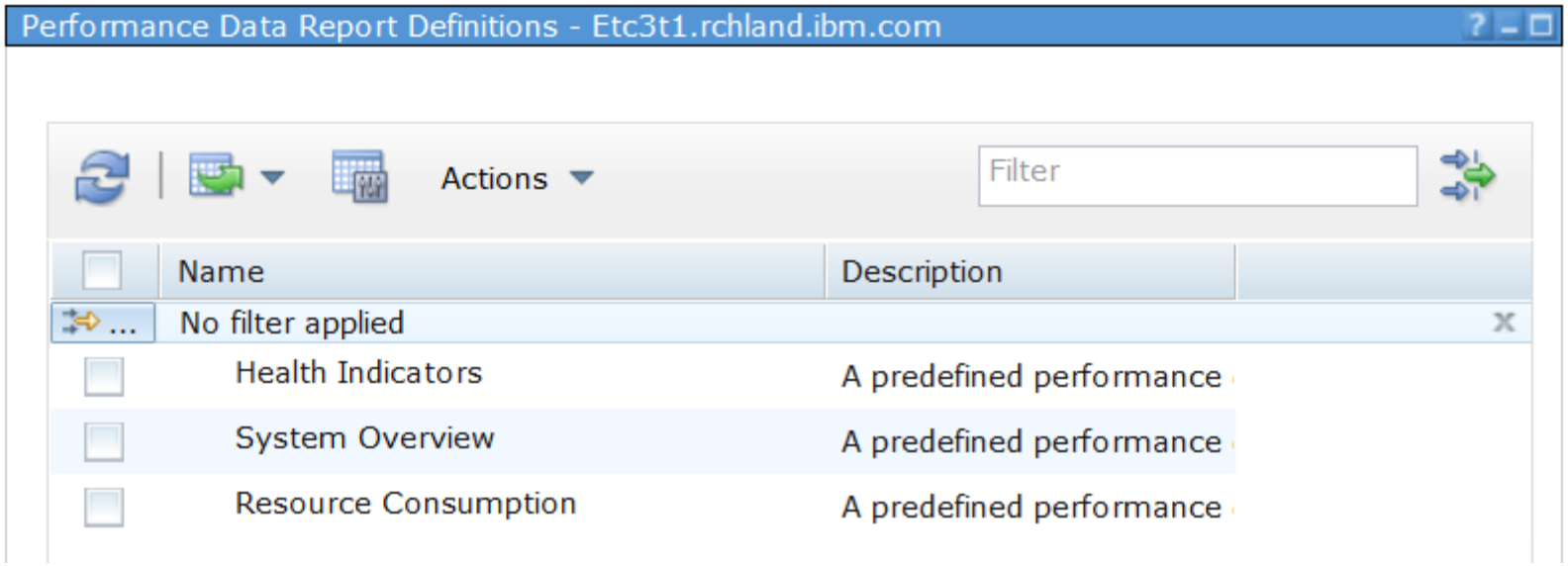
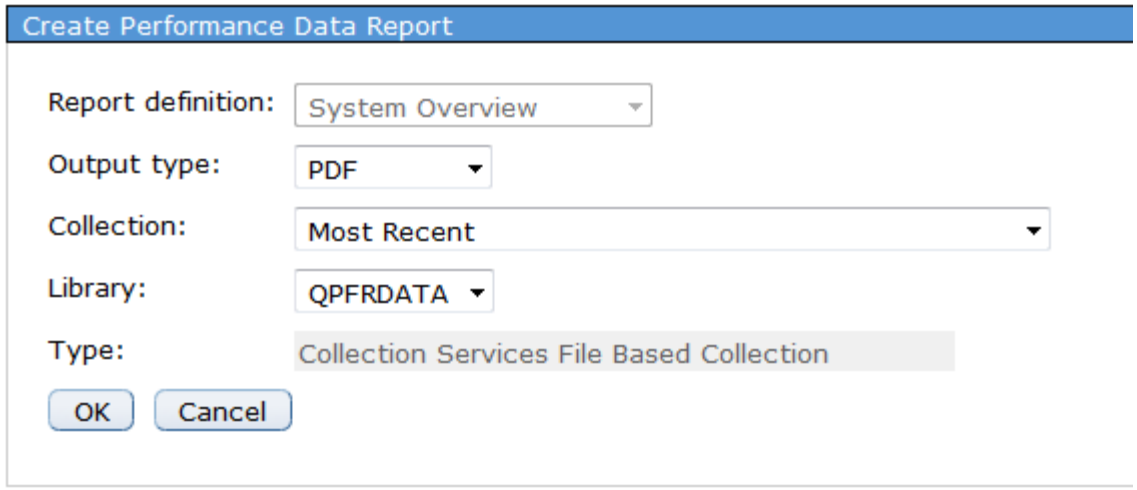
Report Definitions





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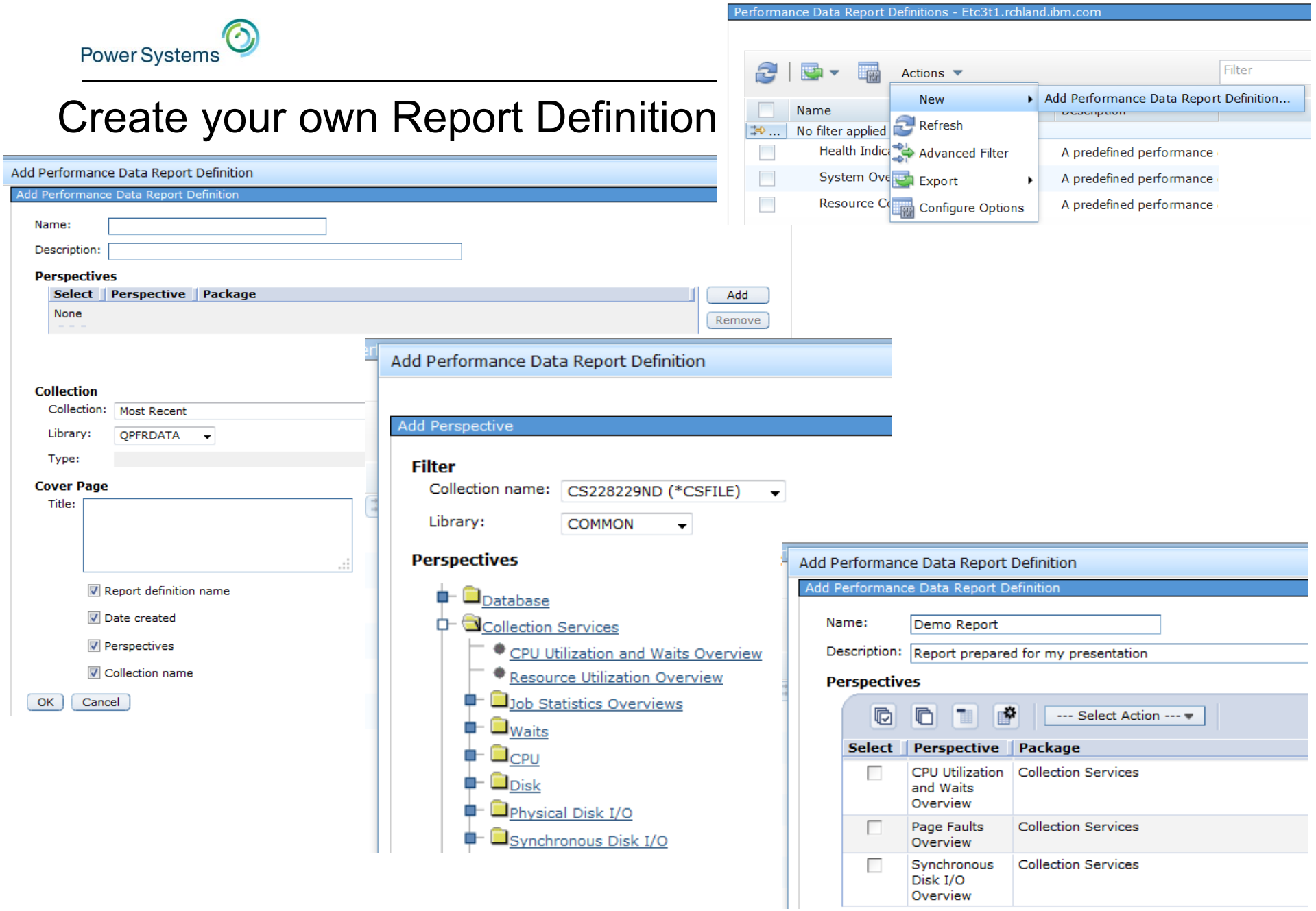
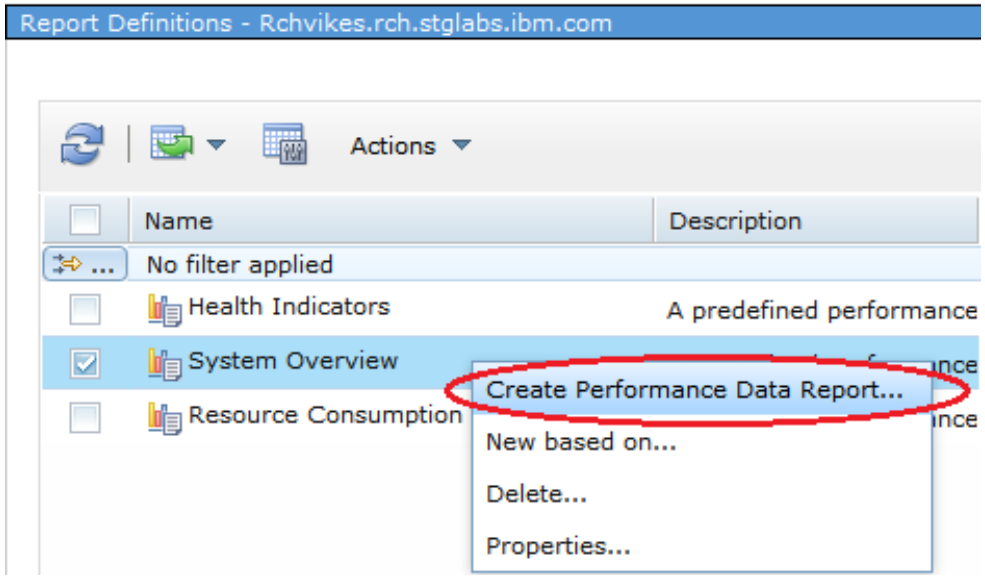
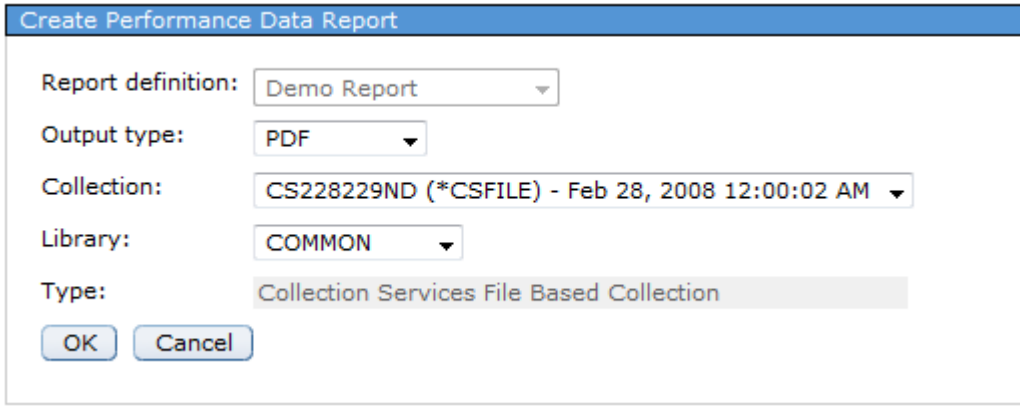
Create your own Report Definition



Create Performance Data Report





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Resulting Report (PDF example)

Feb 28, 2013 10:03:43 AM

Performance data report definition:

Demo Report

Report title:

Example Report based upon COMMON performance collection

Perspectives included in report:

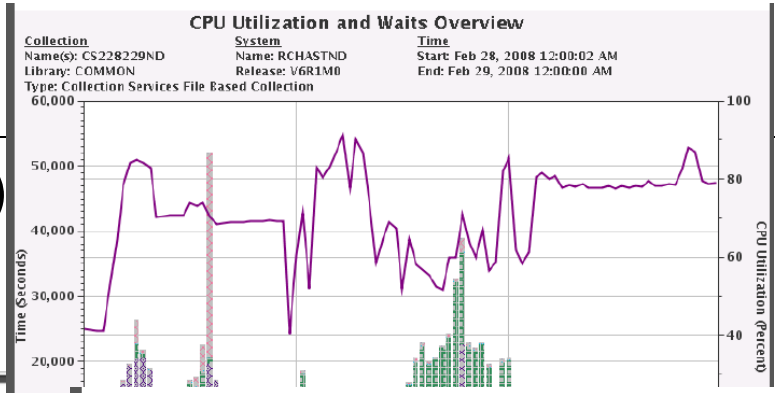
CPU Utilization and Waits Overview

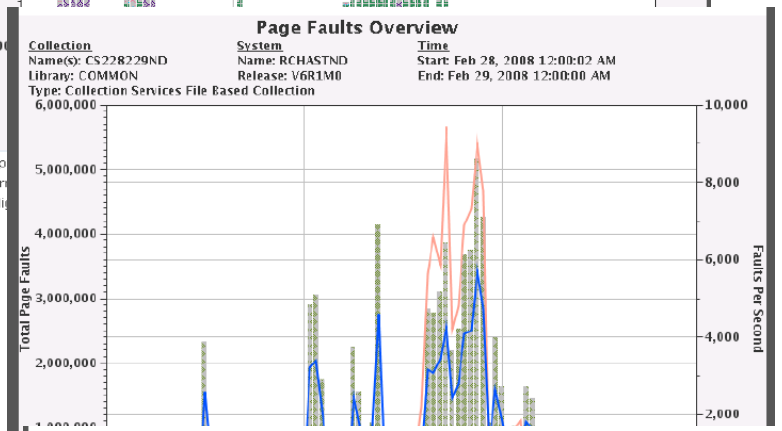
Page Faults Overview

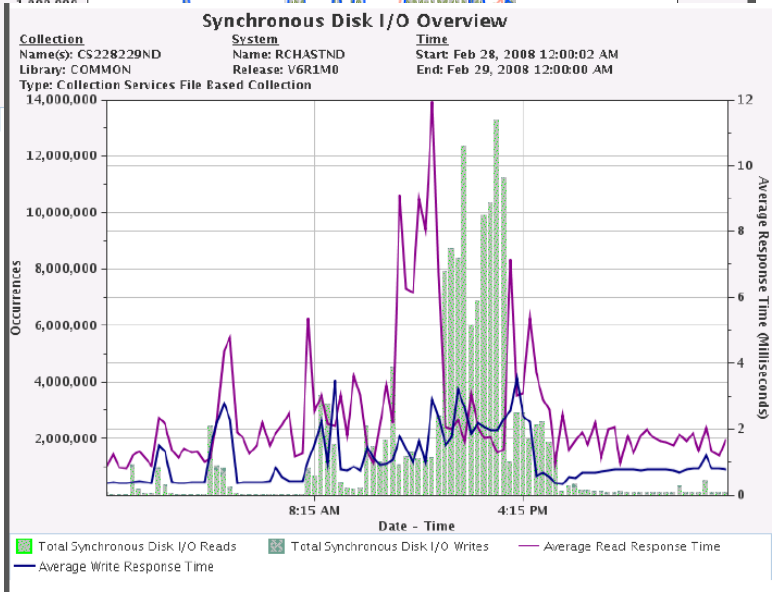
Synchronous Disk I/O Overview

Library/Collection used for report:

Common/Cs228229nd

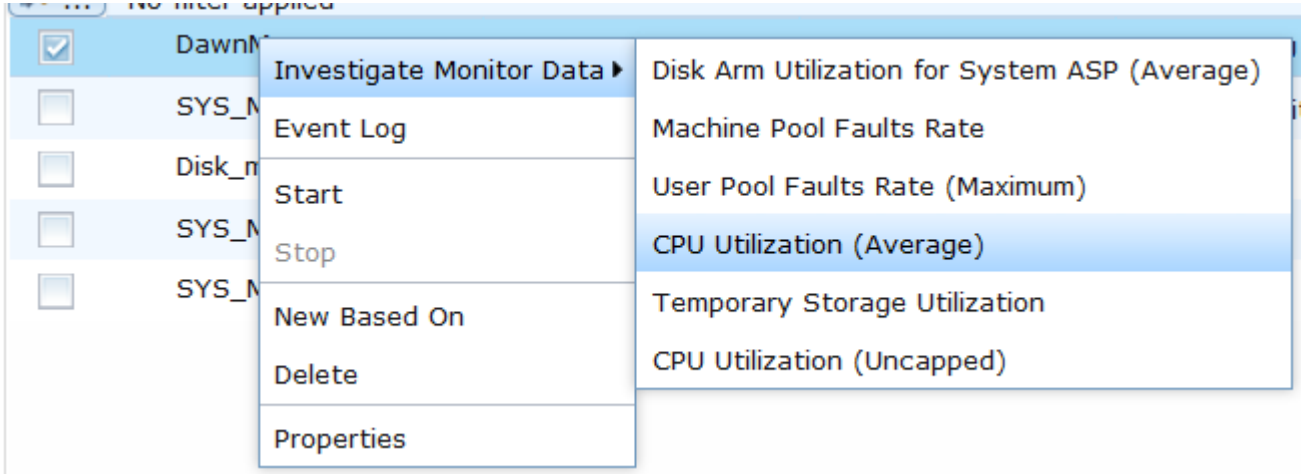






7.2 System Monitors

- System Monitors are new with Navigator in 7.2
  - Similar capability to Management Central System Monitors
- System Monitor data comes from Collection Services
- You view System Monitor data with the Performance Data Investigator



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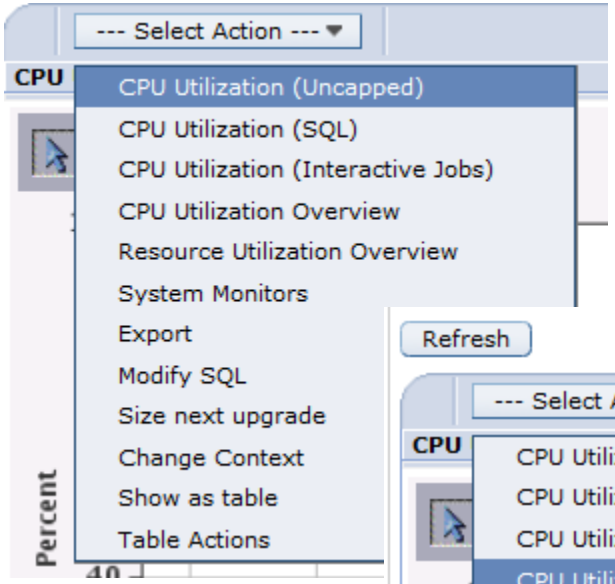
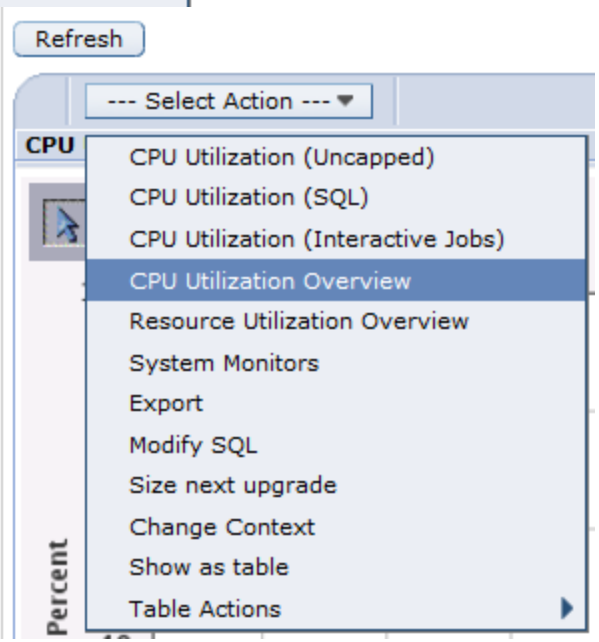
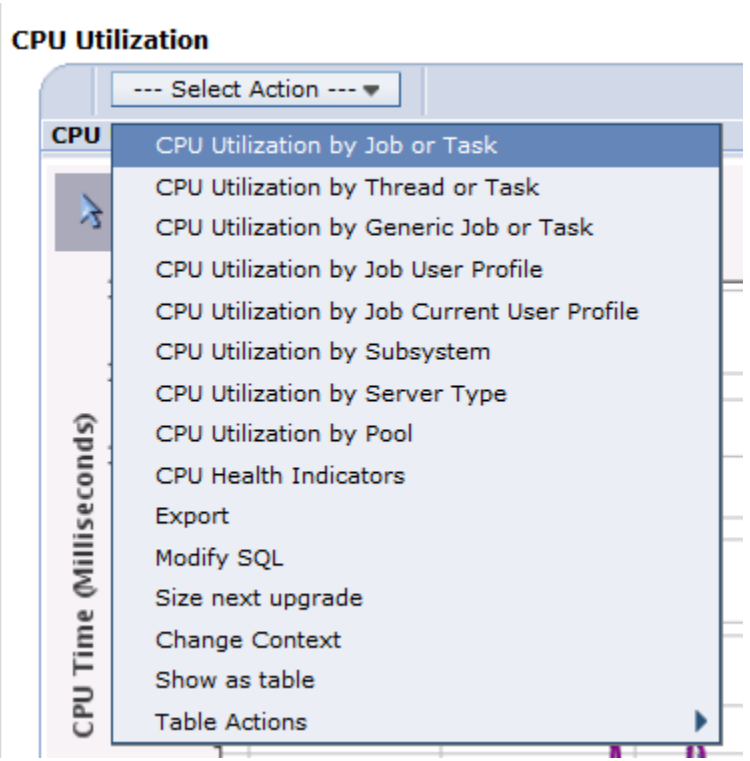
Monitor Drill-down Actions

With Navigator System Monitors, you use the Performance Data Investigator to view the graphs.

Drill-down to find contributing jobs







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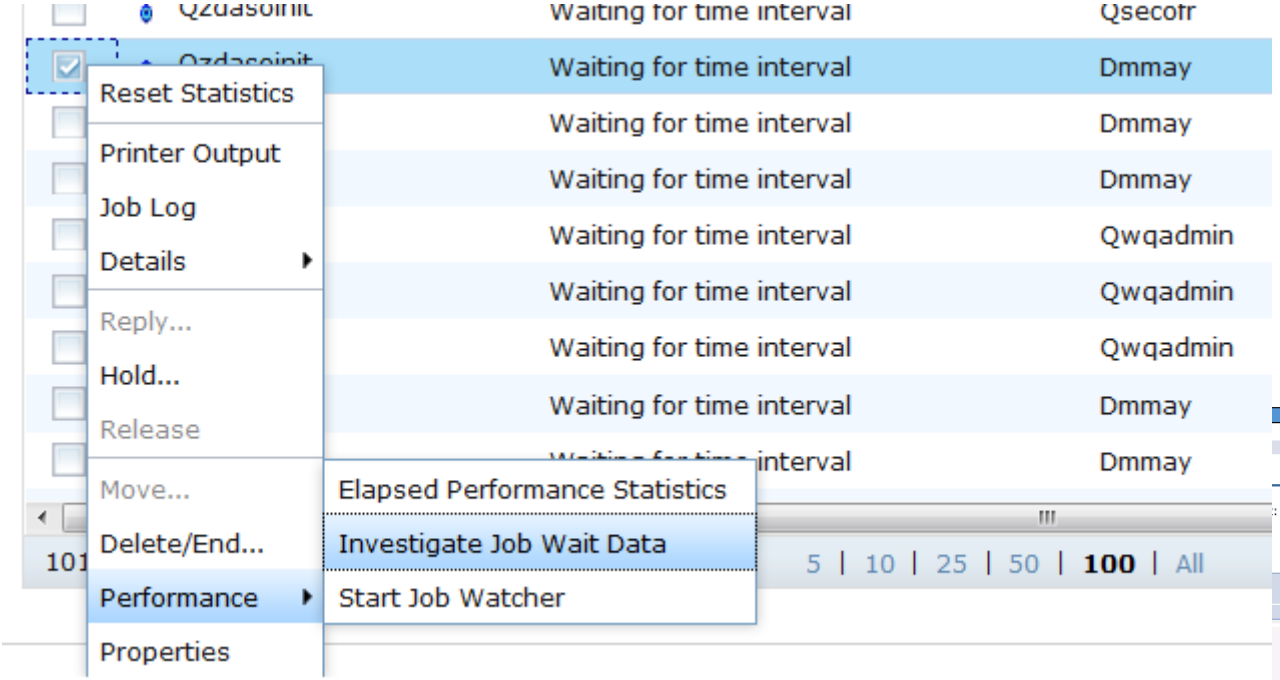
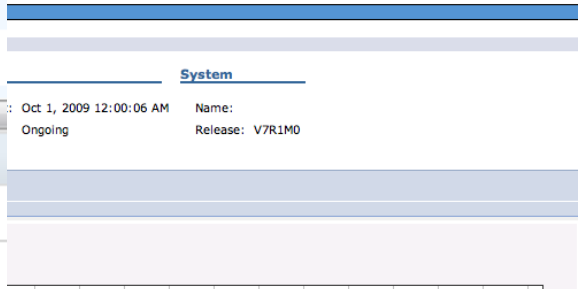
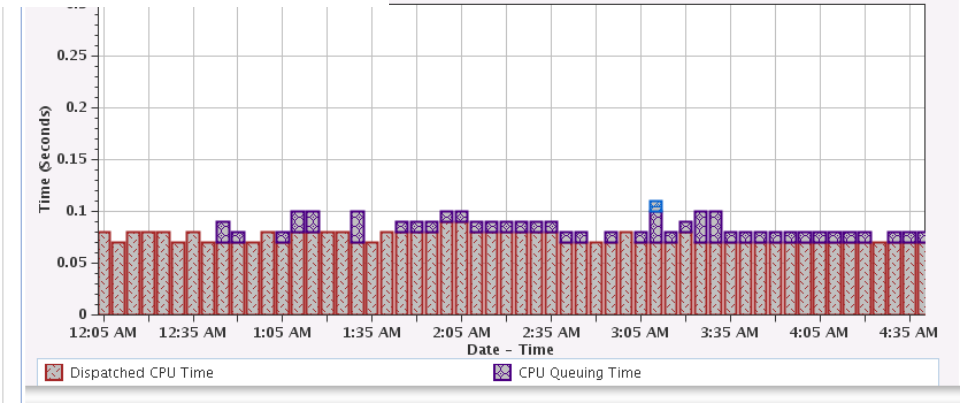
Investigate Data for an Active Job



Active jobs – what's happening *right now*



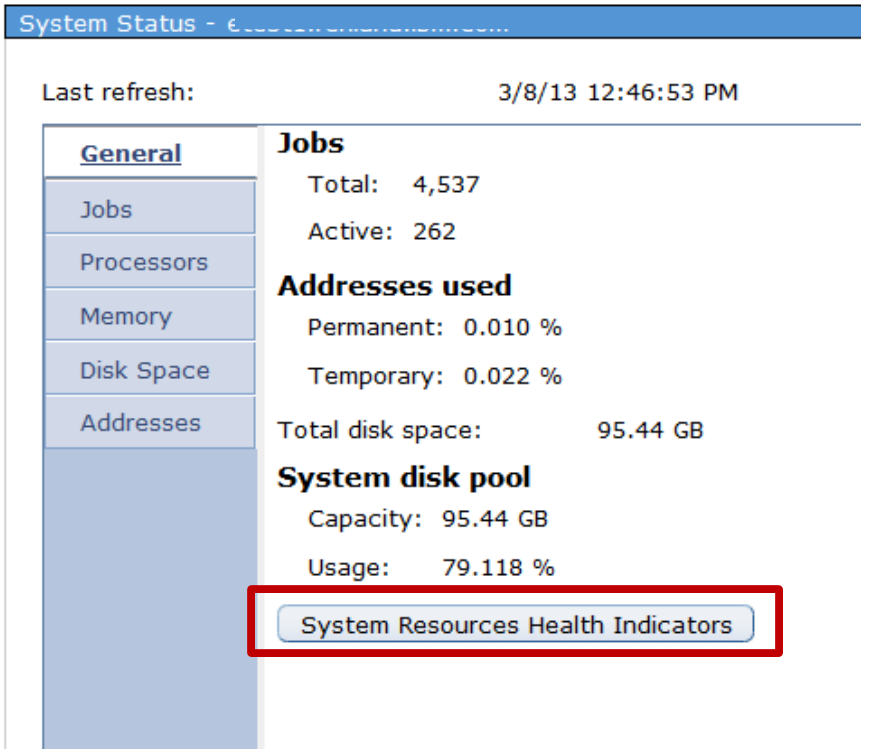


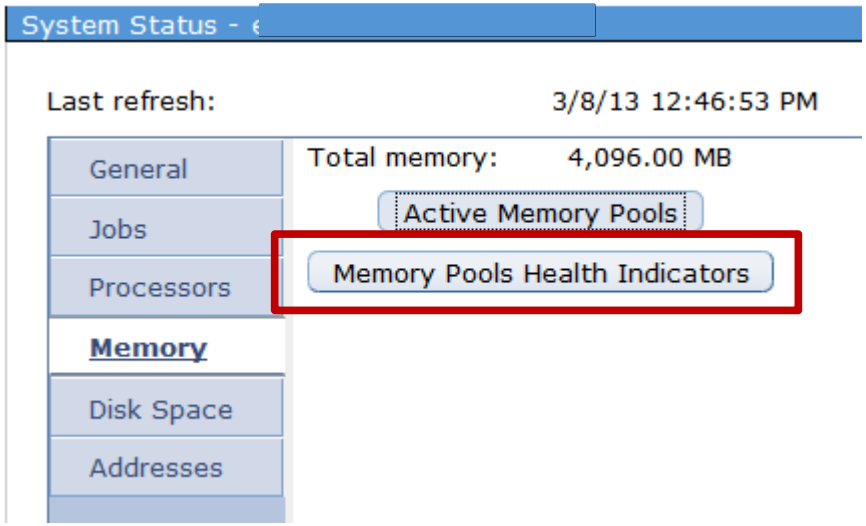
Job wait data

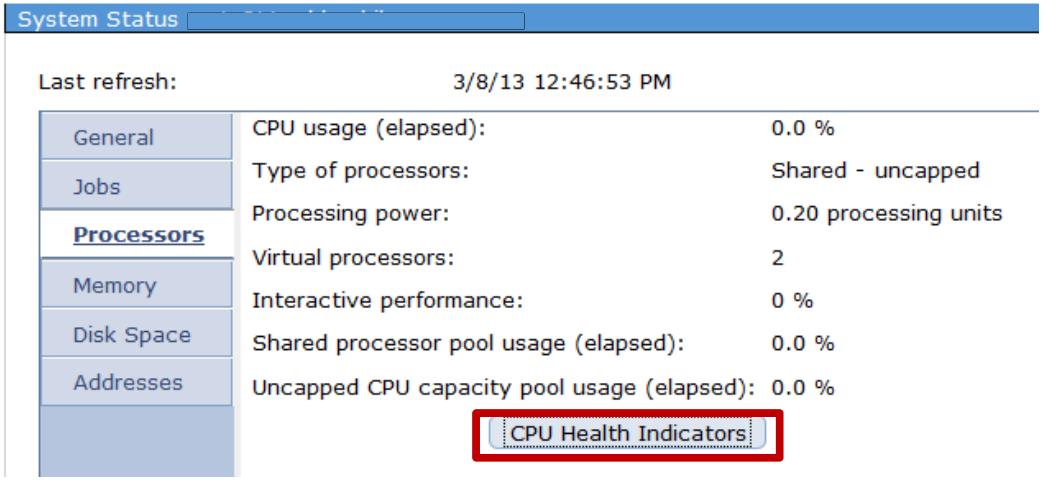
Collection Services job data

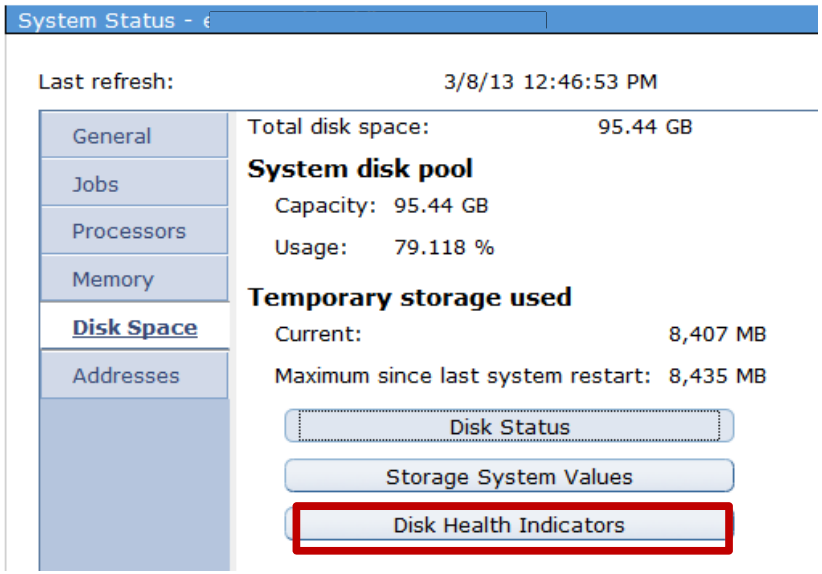
How did I get to here?

Integration with System Status

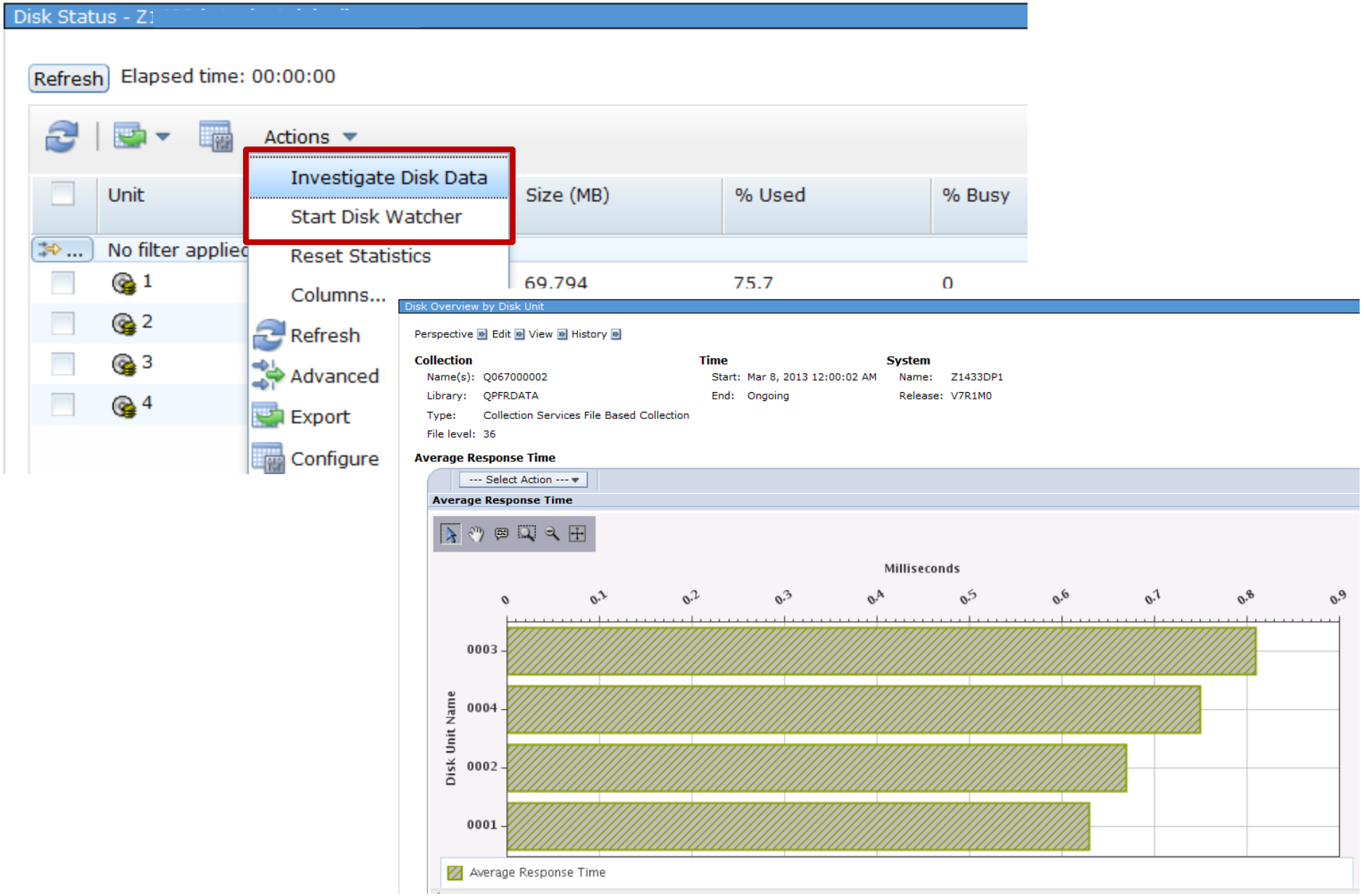








Integration with Disk Status



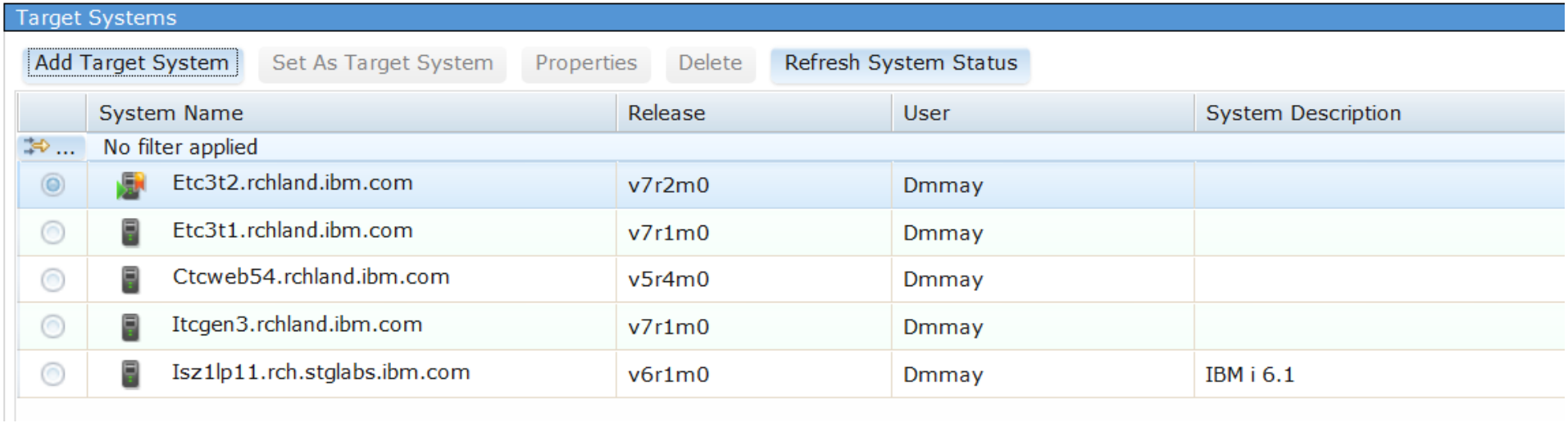
Set Target System

7.2 screen captures

You can connect to one partition, but manage a different partition.

You can manage IBM i 5.4, 6.1, 7.1, and 7.2

Not all features are available on all releases

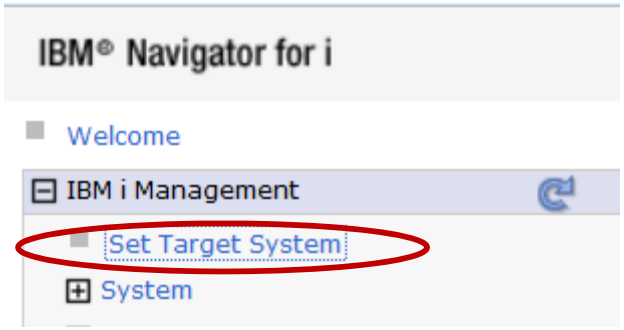


Power Systems

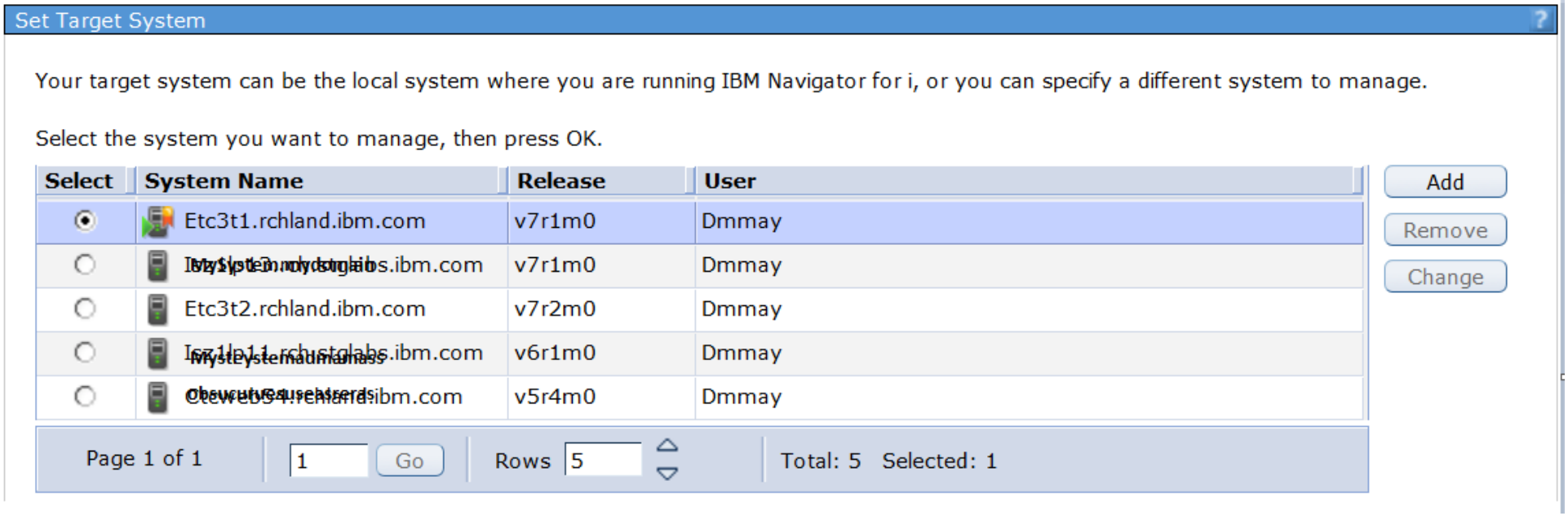
Welcome dmmay Target system: etc3t1.rchland.ibm.com

Set Target System

7.1 screen captures



You can connect to one partition, but manage a different partition.



Set Target System

Target System

HTTP Server runs on the system you initially log into.

You can manage a second system; no web server is required on the second system; the Host Servers are used

Investigate Data

Database

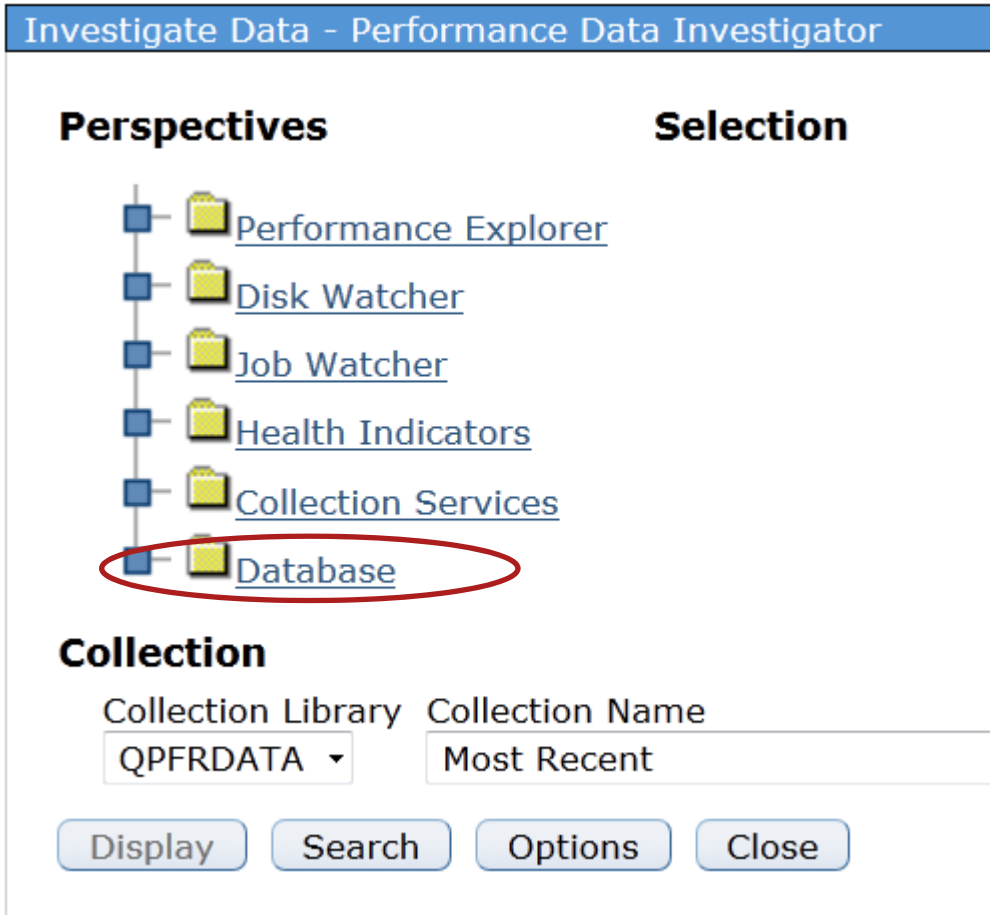
Requires the latest PTF groups, including the database group
Must have the Performance Tools LPP, Manager feature, installed

Available on IBM i 6.1 and 7.1 with PTFs
Included with IBM i 7.2

Integration with Database

- Leverage the capabilities of PDI with valuable data gathered from database
- PDI charting of
  - SQL Plan Cache Snapshots and Event Monitors
  - SQL Performance Monitor files
- Collection Services collection of job-level SQL metrics
- Visual charts and/or tables in PDI that are focused on database related metrics
- Navigation between database and performance tasks

Database Perspectives

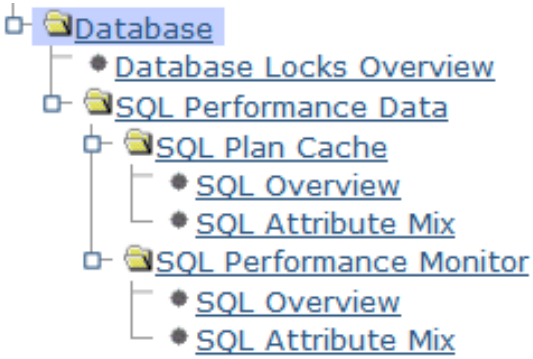


Must have the Performance Tools LPP, Manager Feature, installed

Integration with Database – package overview

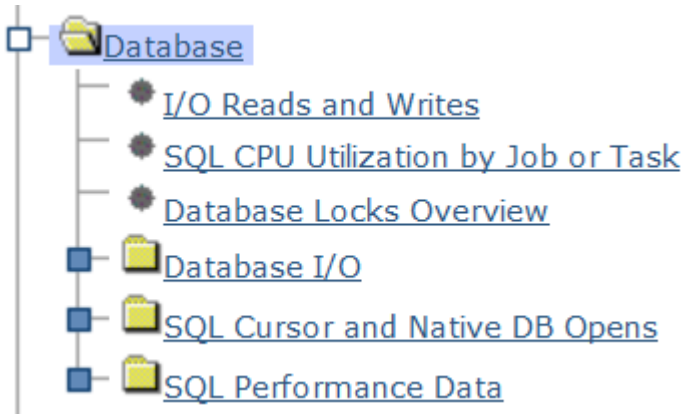
Database Package for 6.1

- Database Locks Overview
- SQL Performance Data
  - SQL Plan Cache Snapshots and Event Monitors
  - SQL Performance Monitor



Database Package for 7.1, 7.2

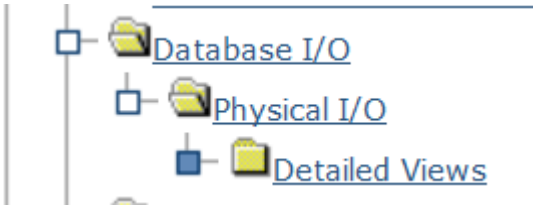
- I/O Reads and Writes
- SQL CPU
- Database Locks Overview
- Database I/O
  - Utilizes Job Level SQL Metrics
- SQL Cursor and Native DB Opens
- SQL Performance Data
  - SQL Plan Cache Snapshots and Event Monitors
  - SQL Performance Monitor



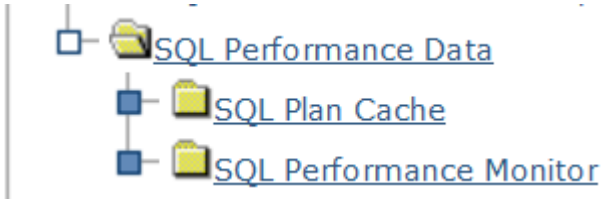
Integration with Database – 7.1 versus 7.2

Database Package for 7.1

- Database I/O

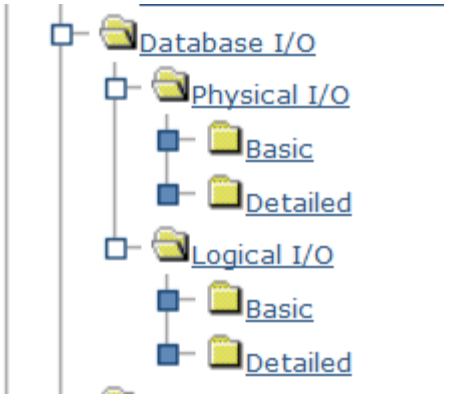


- SQL Performance Data



Database Package for 7.2

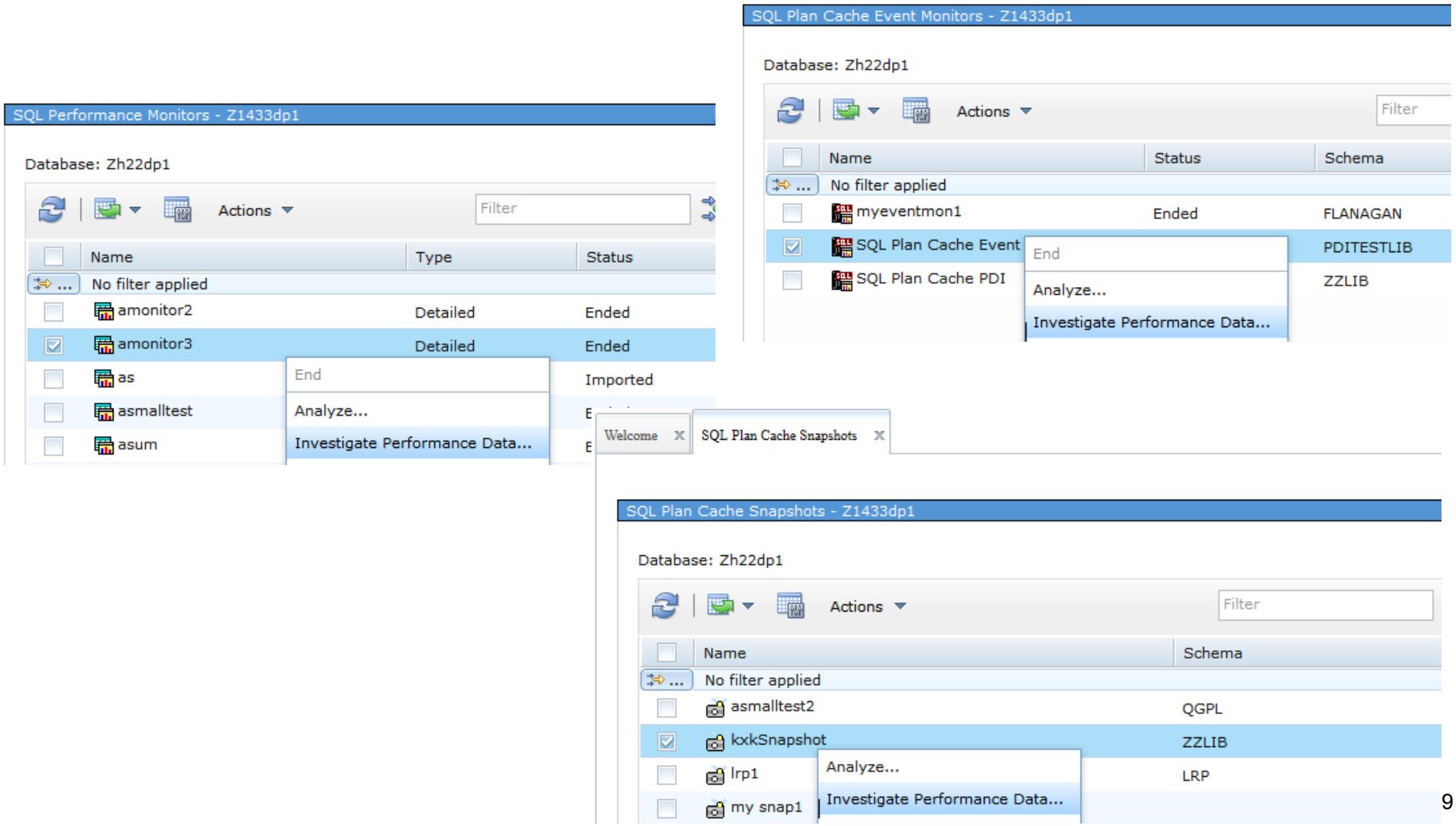
- Database I/O



- SQL Performance Data

Integration with Database

Launch “Investigate Performance Data” from various database tasks

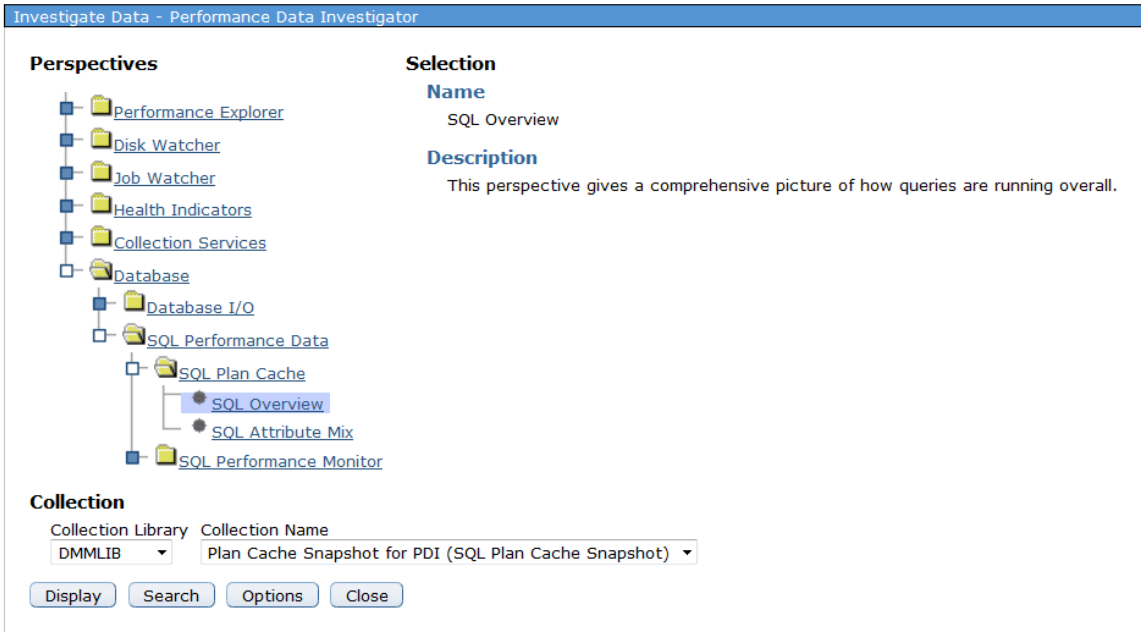


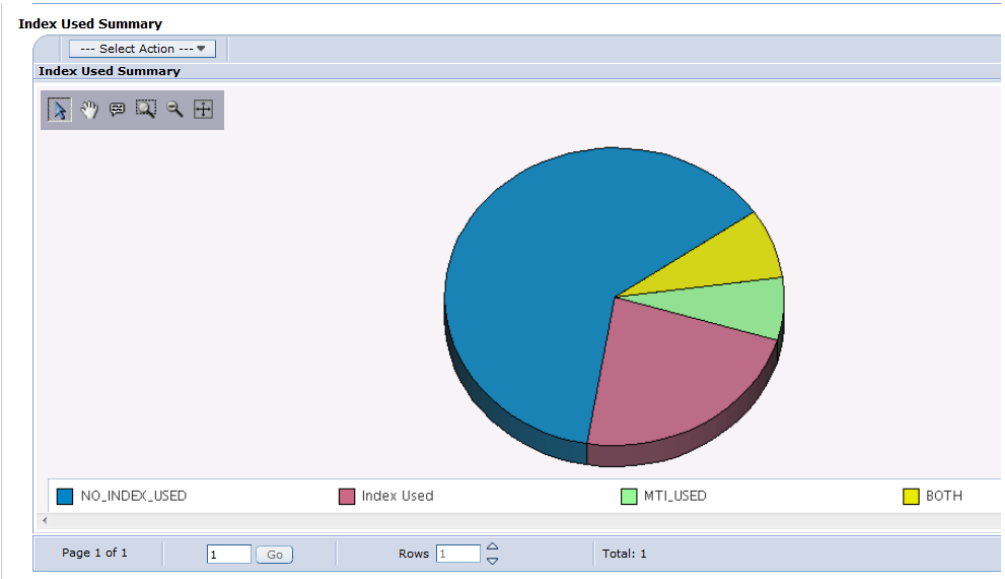
Power Systems

SQL Overview

Several graphs:

- Query time summary
- Open summary
- Open type summary
- Statement usage summary
- Index used summary
- Index create summary
- Index advised
- Statistics advised
- MQT use
- Access plan use
- Parallel degree usage





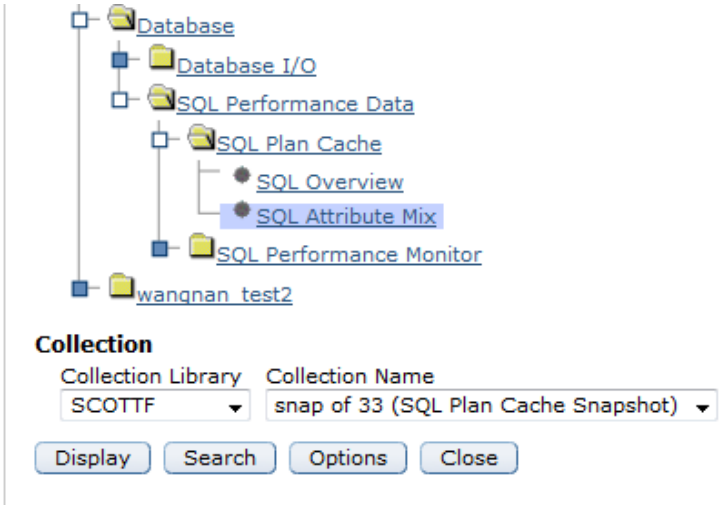
Power Systems

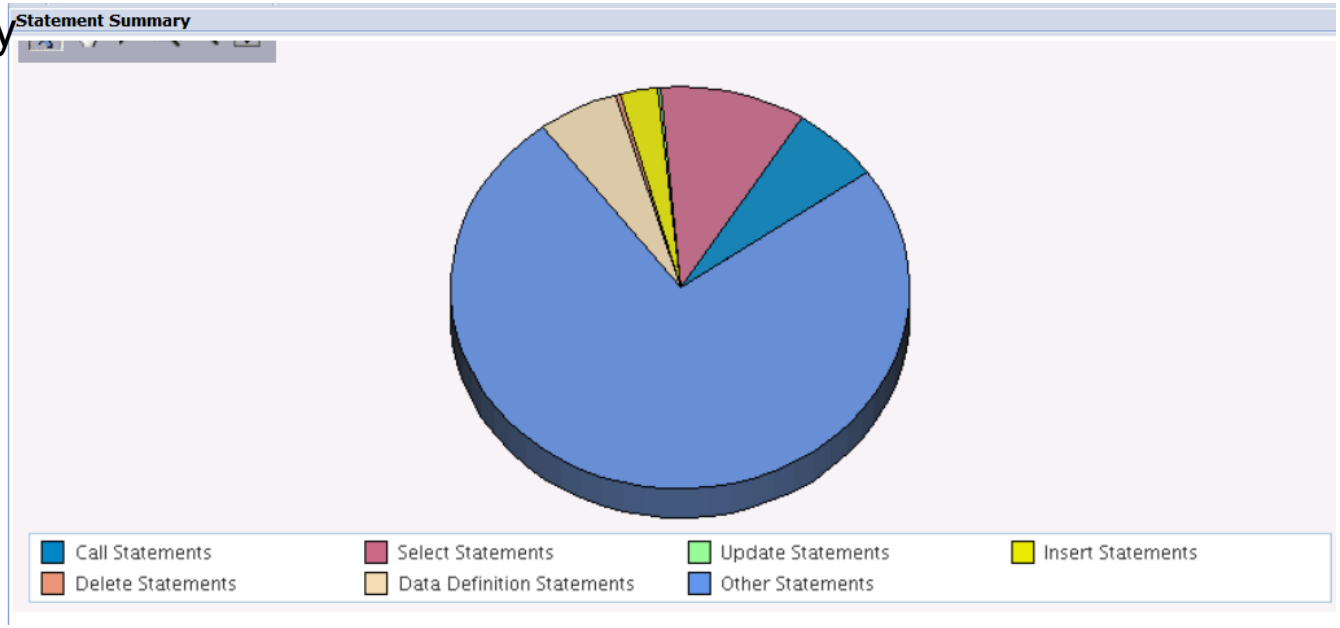
IBM

SQL Attribute Mix

Several graphs:

- Statement summary
- Statement type summary
- Isolation level summary
- Allow copy data summary
- Sort sequence summary
- Close cursor summary
- Naming summary
- Optimization goal
- Blocking summary





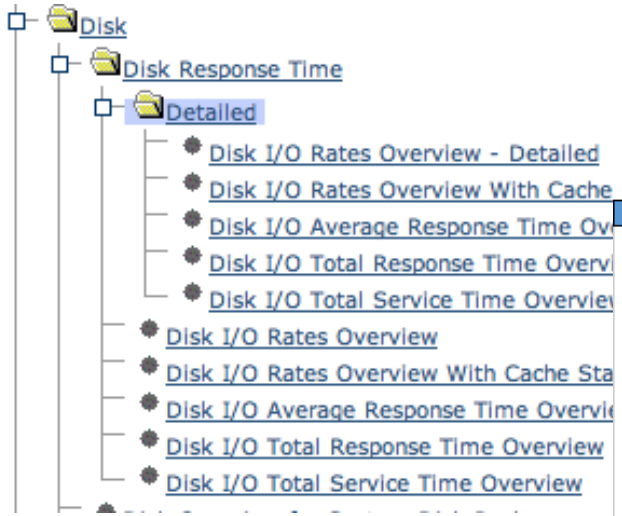
Investigate Data

Dawn's Favorite
Collection Services Perspectives

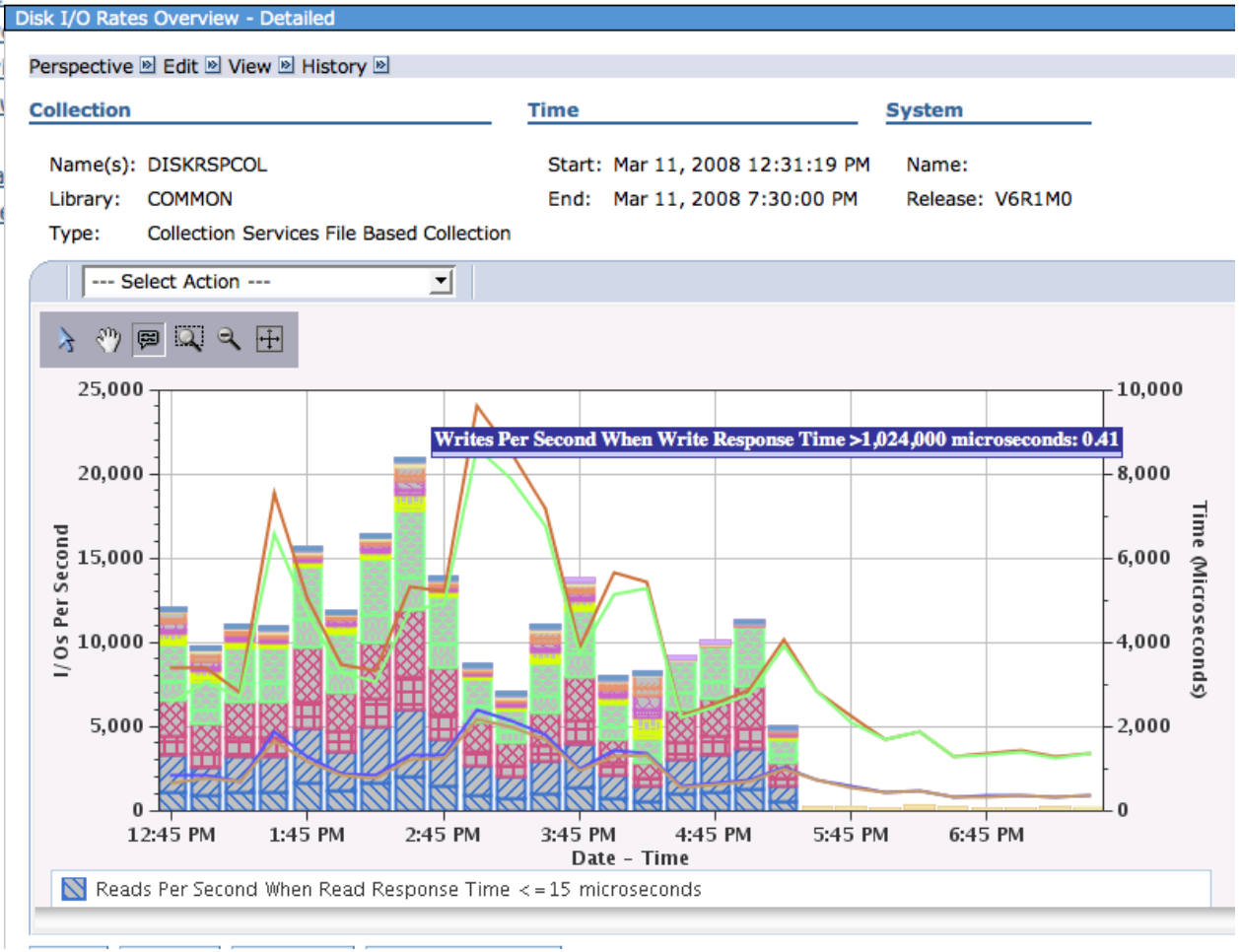
(PDI is more than Performance)

(not available on 6.1)

Disk Response Time Charts

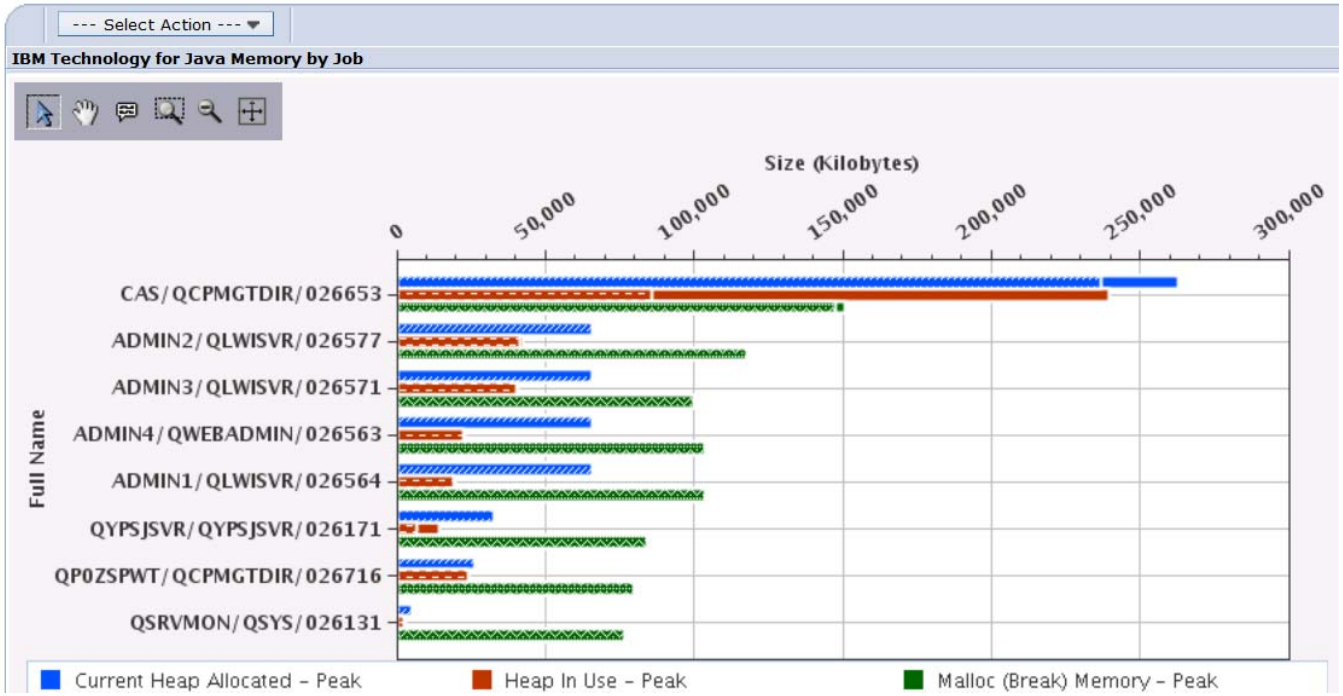


A very easy interface to see if you have slow disk operations



Power Systems

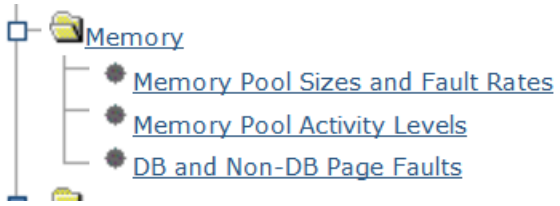
Java Perspectives



Find that job using a lot of heap…

Power Systems

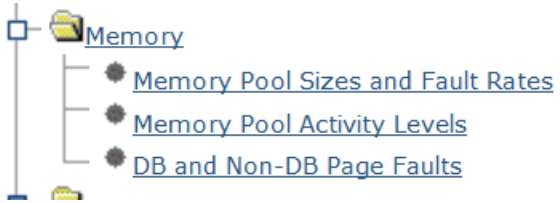
Memory



- Memory perspectives are now available
- Similar information from what you get on WRKSYSSTS….

System Pool	Pool Size (M)	Reserved Size (M)	Max Active	-----DB----- Fault	Pages	---Non-DB--- Fault	Pages
1	490.59	247.83	+++++	.0	.0	.0	.0
2	5344.71	6.07	149	.0	.0	.0	.0
3	2283.44	.00	203	.0	.0	12.3	29.0
4	.25	.00	5	.0	.0	.0	.0

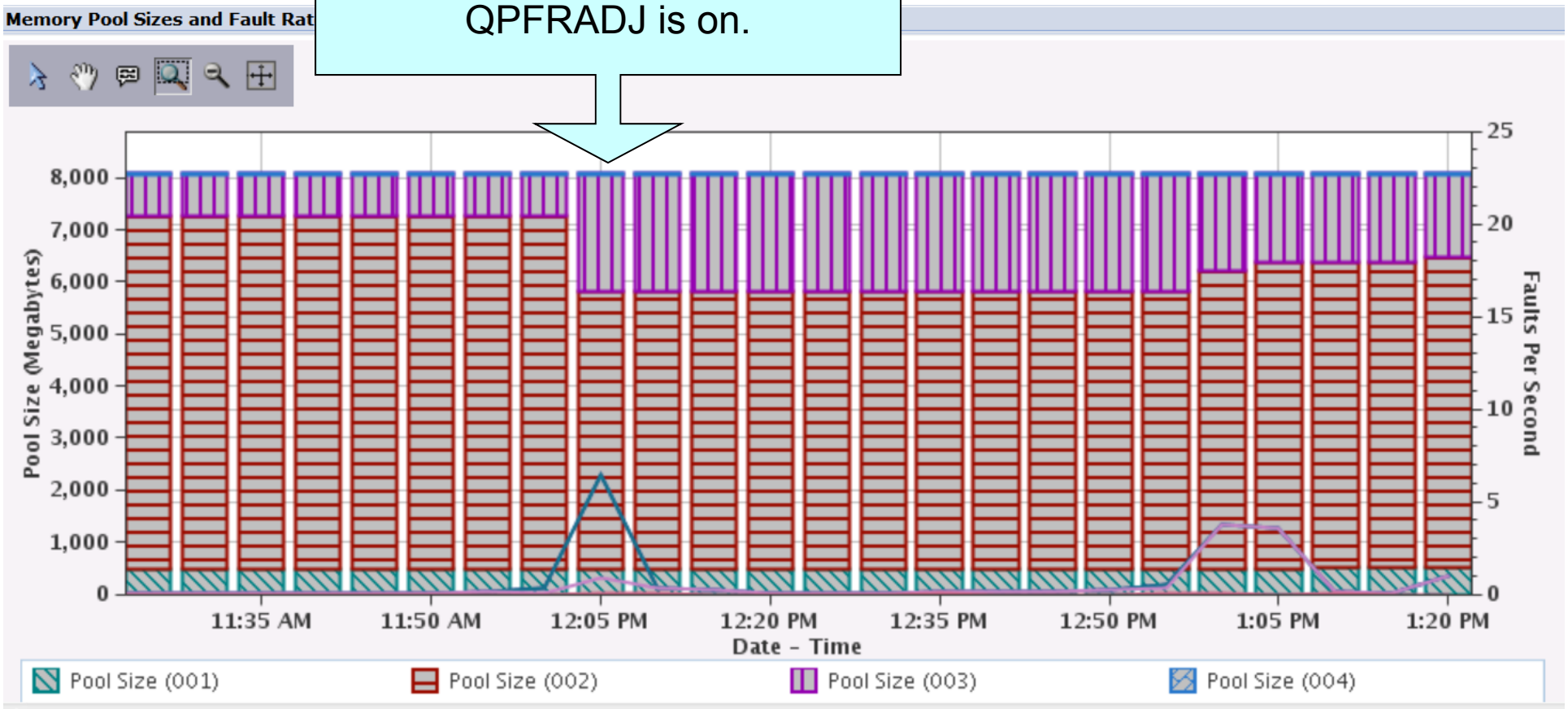
Power Systems



Memory

In a graphical view!

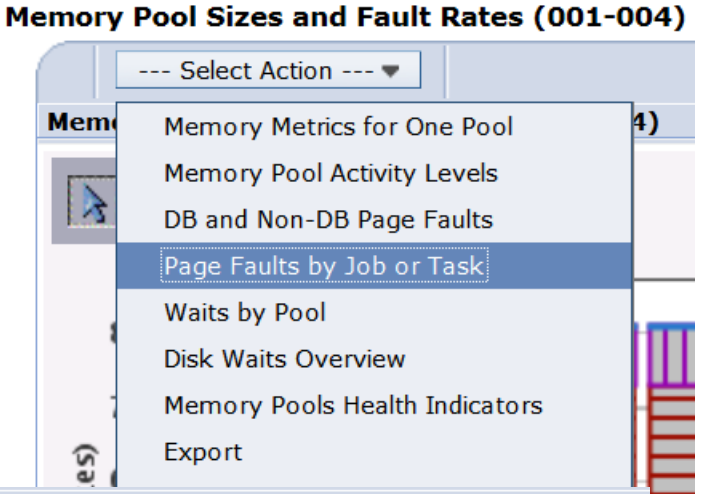
Note the change in pool sizes.
QPFRADJ is on.

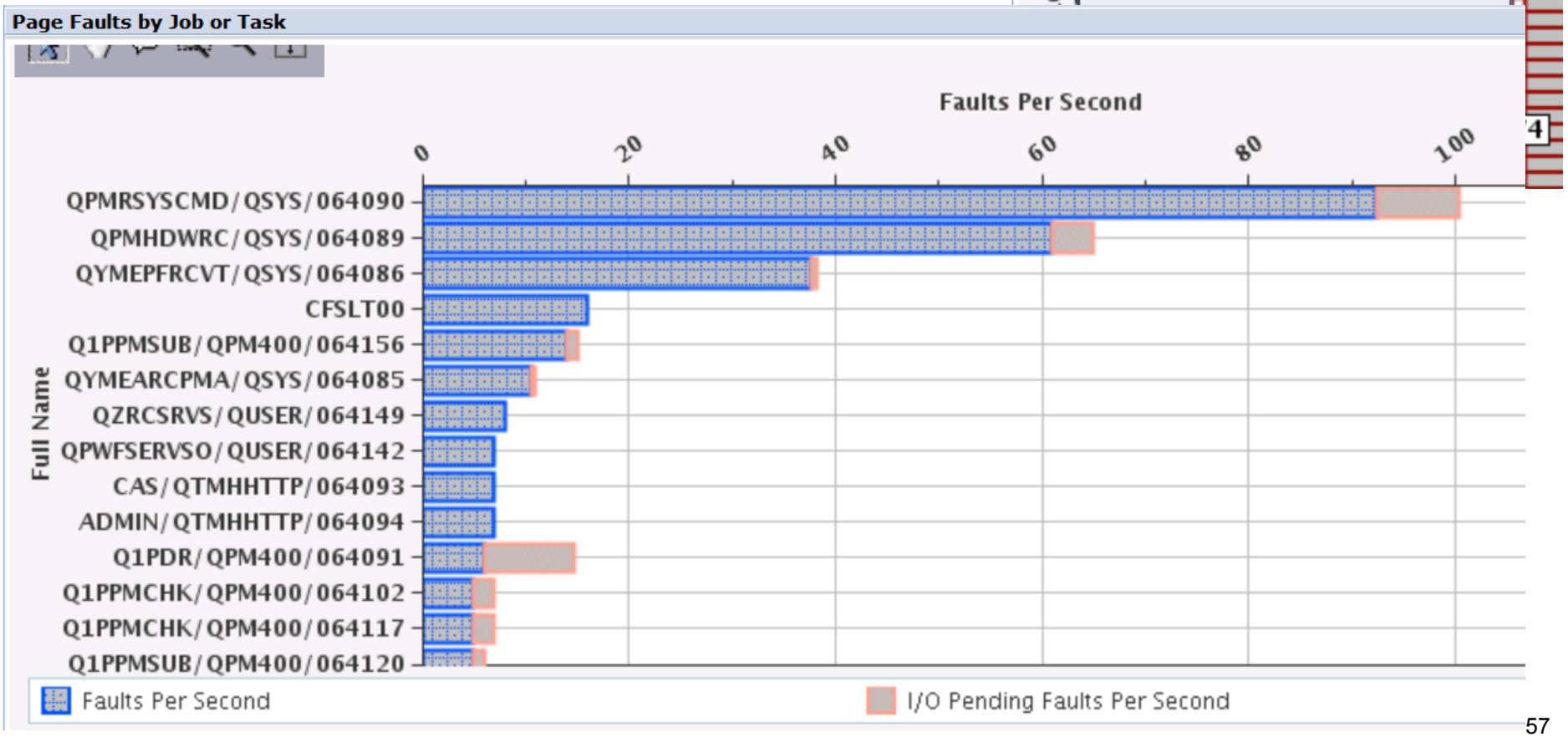


Power Systems

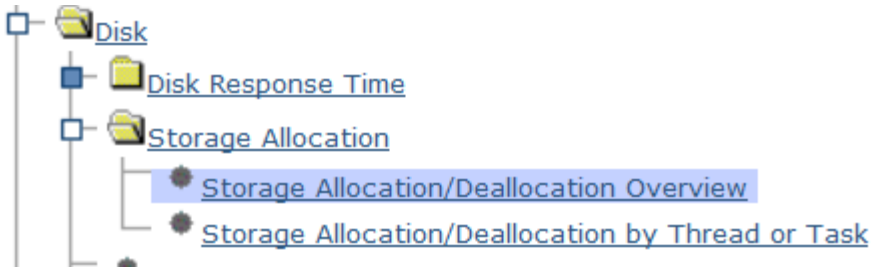
Memory - Drilldown

Find that jobs that are faulting…





Storage Allocation Perspectives



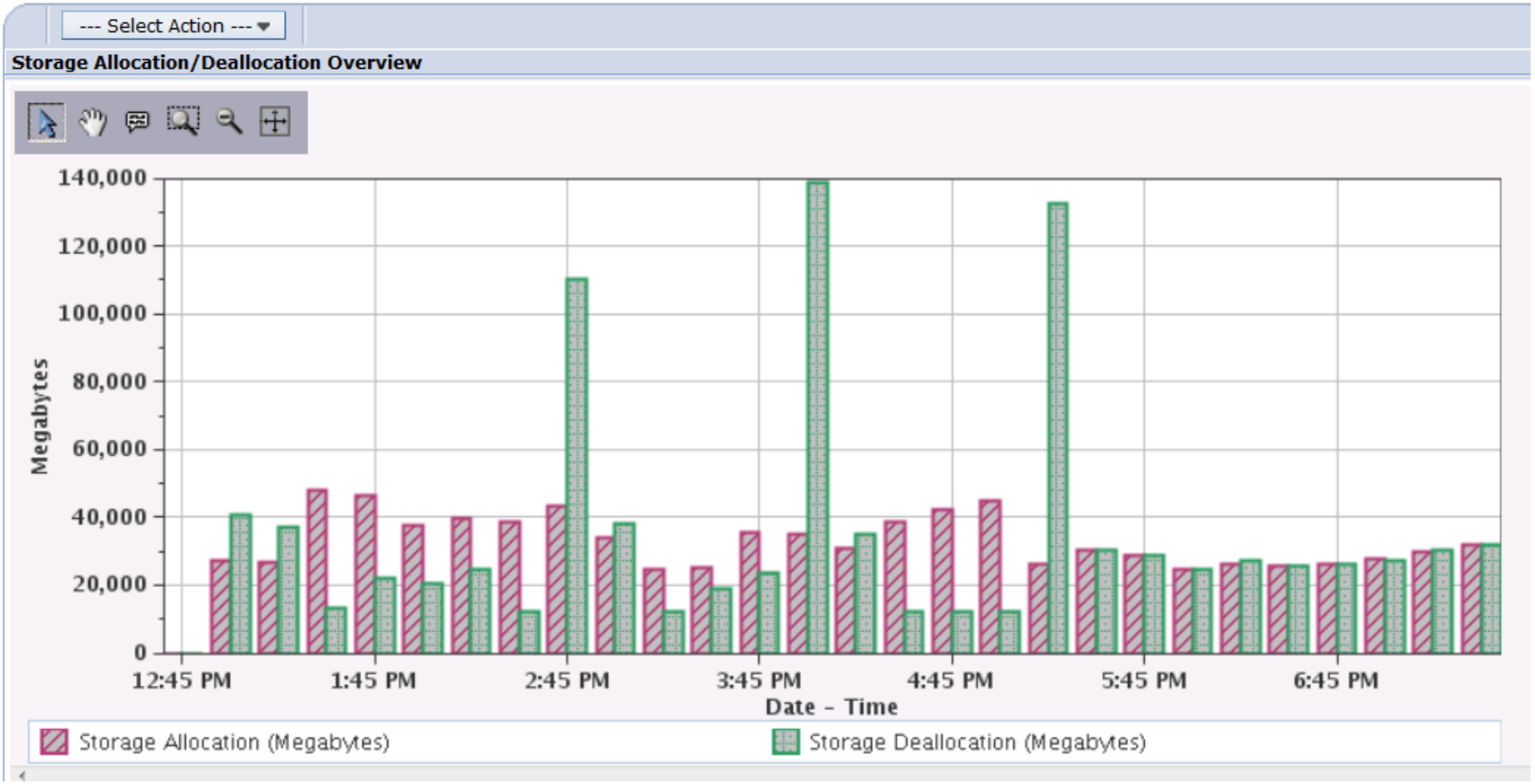
Selection

Name

Storage Allocation/Deallocation Overview

Description

This chart shows allocation and deallocation of the temporary and permanent storage for all contributors over time for the selected collections. Use this chart to select a time frame for further detailed investigation.



Storage Allocation by Thread or Task

Selection

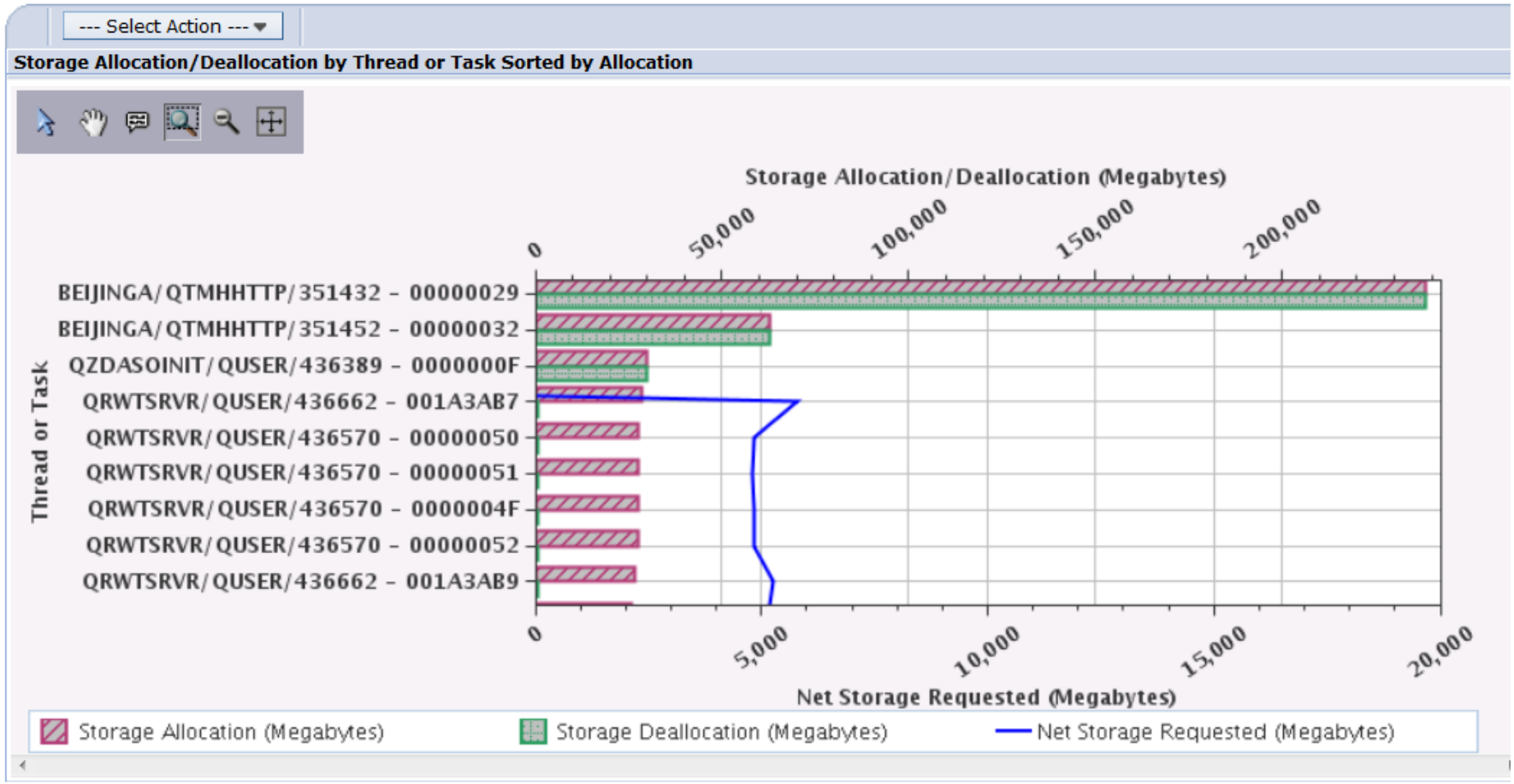
Name

Storage Allocation/Deallocation by Thread or Task

Description

This chart shows allocation and deallocation of the temporary and permanent storage, net frames requested by thread or task. Use this chart to select a thread or task for viewing its storage statistics over time.

Storage Allocation/Deallocation by Thread or Task Sorted by Allocation

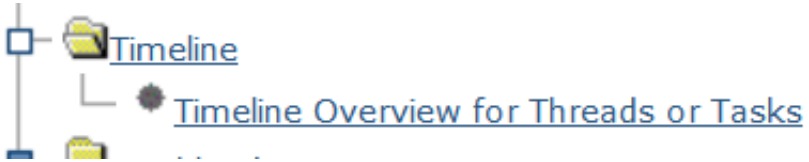


Power Systems

Timeline Perspective

The timeline bars on the chart represent the elapsed time of threads or tasks

- Dispatched CPU Time
- CPU Queuing Time
- Other Waits Time



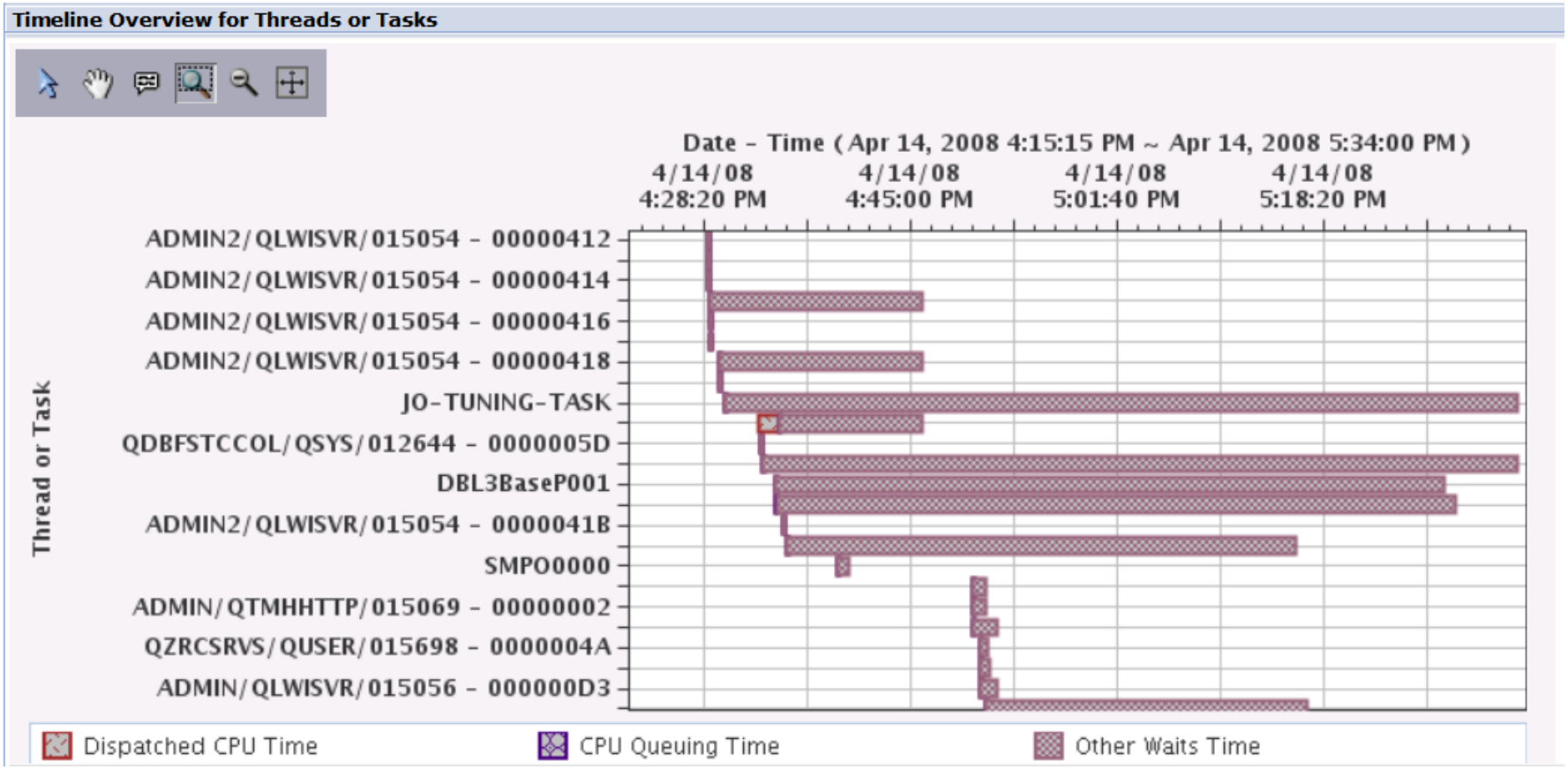
Selection

Name

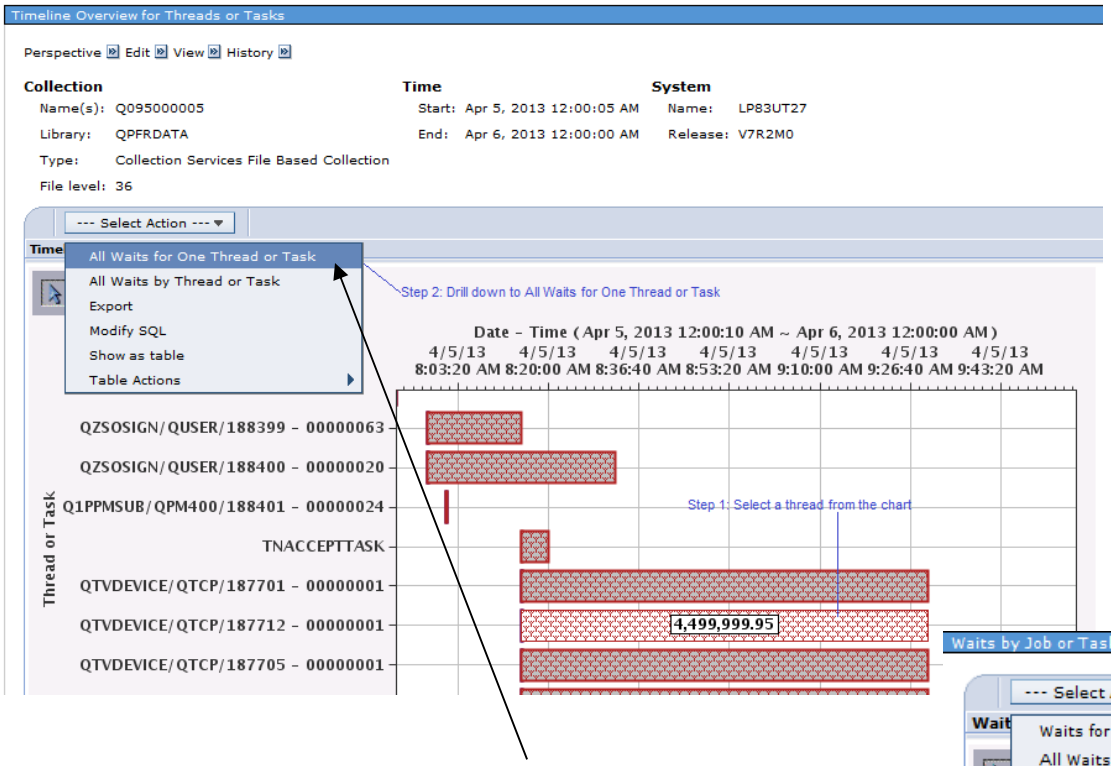
Timeline Overview for Threads or Tasks

Description

This chart shows the timeline overview for threads or tasks. Use this chart to select a thread or task for viewing its detailed run and wait contributions.



Timeline Overview for Threads or Tasks



Drilldown to this new chart from existing charts

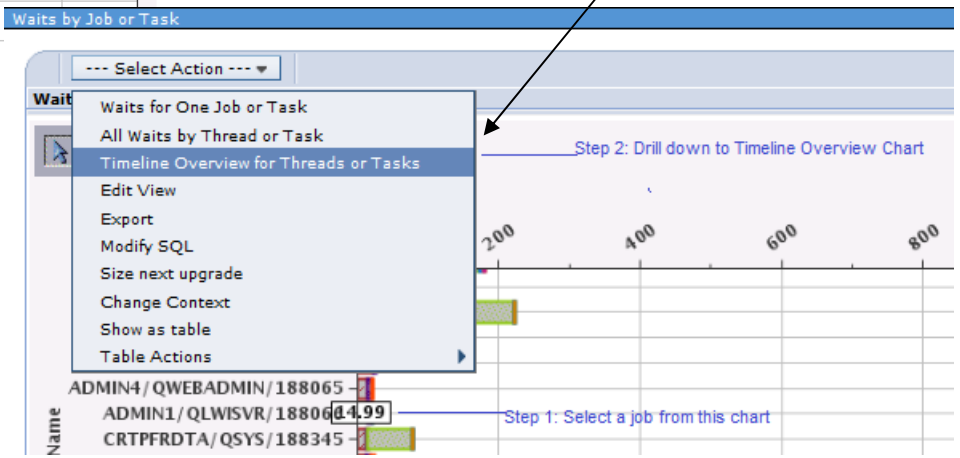
- Waits by Job or Task
- All Waits by Thread or Task

Select one thread or task and drill down to

"All Waits for One Thread or Task"

or

"All Waits by Thread or Task"

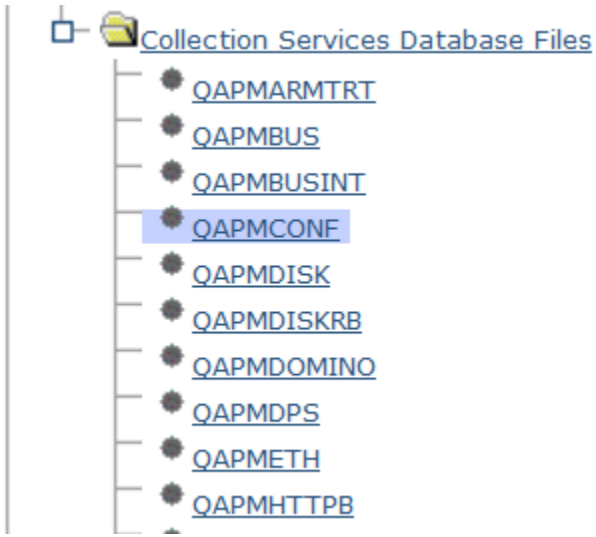


Power Systems

Display Collection Services Database Files .... QAPMCONF

Navigation:

Collection Services → Collection Services Database Files → QAPMCONF



QAPMCONF

Perspective » Edit » View » History »

Collection
Name(s): Q067000002
Library: QPFRDATA
Type: Collection Services File Based Collection
File level: 36

Time
Start: Mar 8, 2013 12:00:02 AM
End: Ongoing

System
Name: ETC3T1
Release: V7R1M0

QAPMCONF Panel View

Library Name:	QPFRDATA	Processor Firmware Time:	No
Member Name:	Q067000002	Task Threshold Value (ms):	1,000
Start Time:	Mar 8, 2013 12:00:02 AM	Secondary Thread Thresh (ms):	1,000
Model Number:	61X	Disk Response Time Boundary 1 (us):	15
System Type:	7998	Disk Response Time Boundary 2 (us):	250
Partition Memory (KB):	4194304	Disk Response Time Boundary 3 (us):	1,000
Comm Data Collected:	Y	Disk Response Time Boundary 4 (us):	4,000
Machine Serial Number:	10-065FA	Disk Response Time Boundary 5 (us):	8,000
Response Time Boundary 1 (ms):	1000	Disk Response Time Boundary 6 (us):	16,000
Response Time Boundary 2 (ms):	2000	Disk Response Time Boundary 7 (us):	64,000
Response Time Boundary 3 (ms):	4000	Disk Response Time Boundary 8 (us):	256,000
Response Time Boundary 4 (ms):	8000	Disk Response Time Boundary 9 (us):	500,000
System ASP Capacity (KB):	93,206,752	Disk Response Time Boundary 10 (us):	1,024,000
Checksum Protection On:	N	Hypervisor Memory (MB):	640
Virtual Processors:	2	SMT Hardware Threads:	0
Installed Processors:	4	Time Interval (minutes):	5
Remote Response Boundary 1 (ms):	-	Interactive Limit (%):	100.00
Remote Response Boundary 2 (ms):	-	Time Interval (seconds):	300
Remote Response Boundary 3 (ms):	-	Interactive Threshold (%):	100.00
System ASP Capacity (KB):	93,206,752	Processor Multi-tasking Capability:	System Controlled
Perm 16MB Addr Remaining:	274,848,547,584	Output File System:	ETC3T1
Temp 16MB Addr Remaining	274,814,995,200	Partition Count:	3
Disk Resp Time Boundary 1 (ms):	1	Processor Folding Support:	No
Disk Resp Time Boundary 2 (ms):	16	Partition ID:	2
Disk Resp Time Boundary 3 (ms):	64	Primary Partition ID:	0
Disk Resp Time Boundary 4 (ms):	256	Processor Units:	0.2
Disk Resp Time Boundary 5 (ms):	1,024	System Version:	7
Collection Data:	Consistent with *SYS	System Release:	1.0
Collect Internal Data:	N	System Name:	ETC3T1
*CSMGTCOL Collection Library:	QPFRDATA	Performance Monitor Select Job:	
*CSMGTCOL Collection Name:	Q067000002	Shared Processor Pool:	Yes
Database Consistency:		Partition Sharing Capped:	Uncapped
Database Limit (% of CPU):	100.0	Variable Processor Speed Capability:	1
		QPFRADJ System Value:	2

QAPMCONF … a closer look….

QAPMCONF Panel View

Library Name:	QPFRDATA
Member Name:	Q258000002
Start Time:	Sep 15, 2014 12:00:02 AM
Model Number:	FHB
System Type:	9119
Partition Memory (KB):	1048576000
Comm Data Collected:	Y
Machine Serial Number:	02-88C55
Virtual Processors:	32
Installed Processors:	128
Partition Count:	109
Processor Folding Support:	Yes
Partition ID:	89
Primary Partition ID:	0
Processor Units:	32.00
System Version:	7
System Release:	2.0
System Name:	LP89UT27

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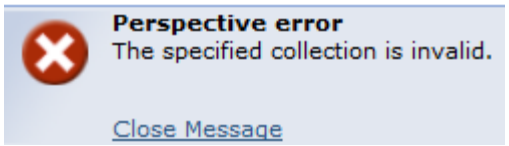
Considerations for Viewing Prior Release Performance data

- Performance data from earlier releases can be viewed with the Performance Data Investigator at the latest release
  - **Note**: Not all graphs and charts will be available after conversion due to changes in data content and format

- If prior release data has not been converted, you may get errors when trying to display charts



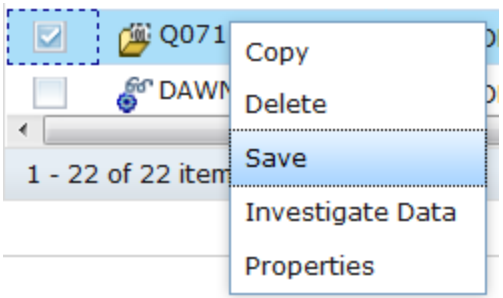
- Use the Convert Performance Collection (CVTPFRCOL) command
  - Supports Collection Services, Job Watcher, Disk Watcher, and Performance Explorer data
  - Data from 6.1 can be converted and viewed with PDI on 7.1 or 7.2
  - Data from 7.1 can be converted and viewed with PDI on 7.2

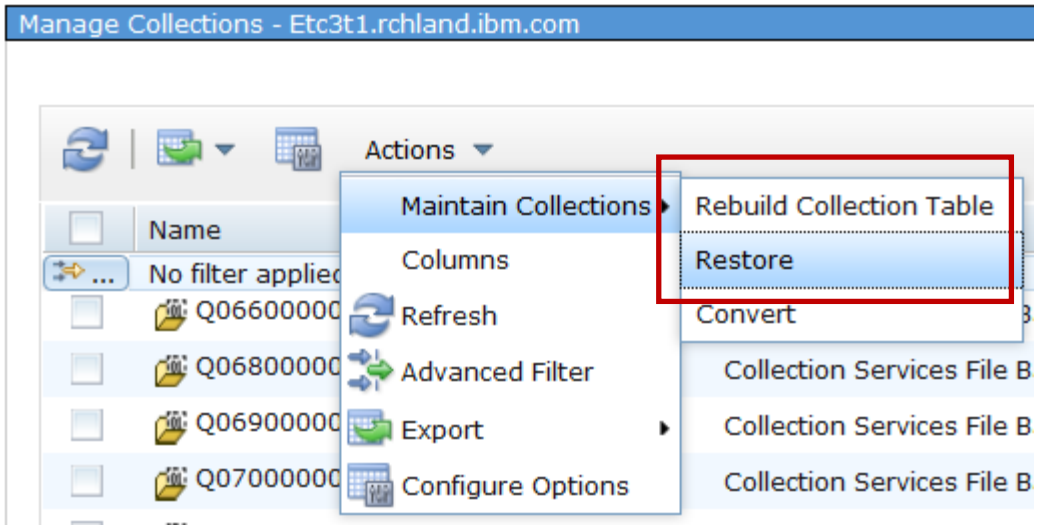
Considerations for Viewing Prior Release Performance data

- Convert the performance data to the current release format (commands)
  - For Collection Services data
    - The preferred approach is to save the Management Collection object to a save file
      - `SAVOBJ OBJ(MYMGTCOL) LIB(MYLIB) DEV(*SAVF) SAVF(MYLIB/MYSAVF)`
      - FTP the save file to the 7.1 or 7.2 partition
      - Use the Restore Performance Collection command (RSTPFRCOL) to restore the *CSMGTCOL collection
      - Use the Create Performance Data (CRTPFRDTA) command to get the data into database files
        - » Create Performance Data will create the data at the current release format
      - Note: the library in which the performance data is restored into needs to be at the current release level
  - For Job Watcher, Disk Watcher, or Performance Explorer collections
    - Save the performance data using the Save Performance Collection (SAVPFRCOL) command
    - FTP the save file to the 7.1 or 7.2 partition
    - Use the Restore Performance Collection (RSTPFRCOL) command to restore the data on the 7.1 or 7.2 partition.
    - Use the Convert Performance Collection (CVTPFRCOL) command to convert the prior release database files to the current release.

Considerations for Viewing Prior Release Performance data

- Convert the performance data to the current release format via the GUI
  - The steps are similar to the prior slide:
    - Save the performance collection
    - FTP the save file to the desired partition
    - Restore the collection via the Collection Manager
    - Convert the collection to the current release format





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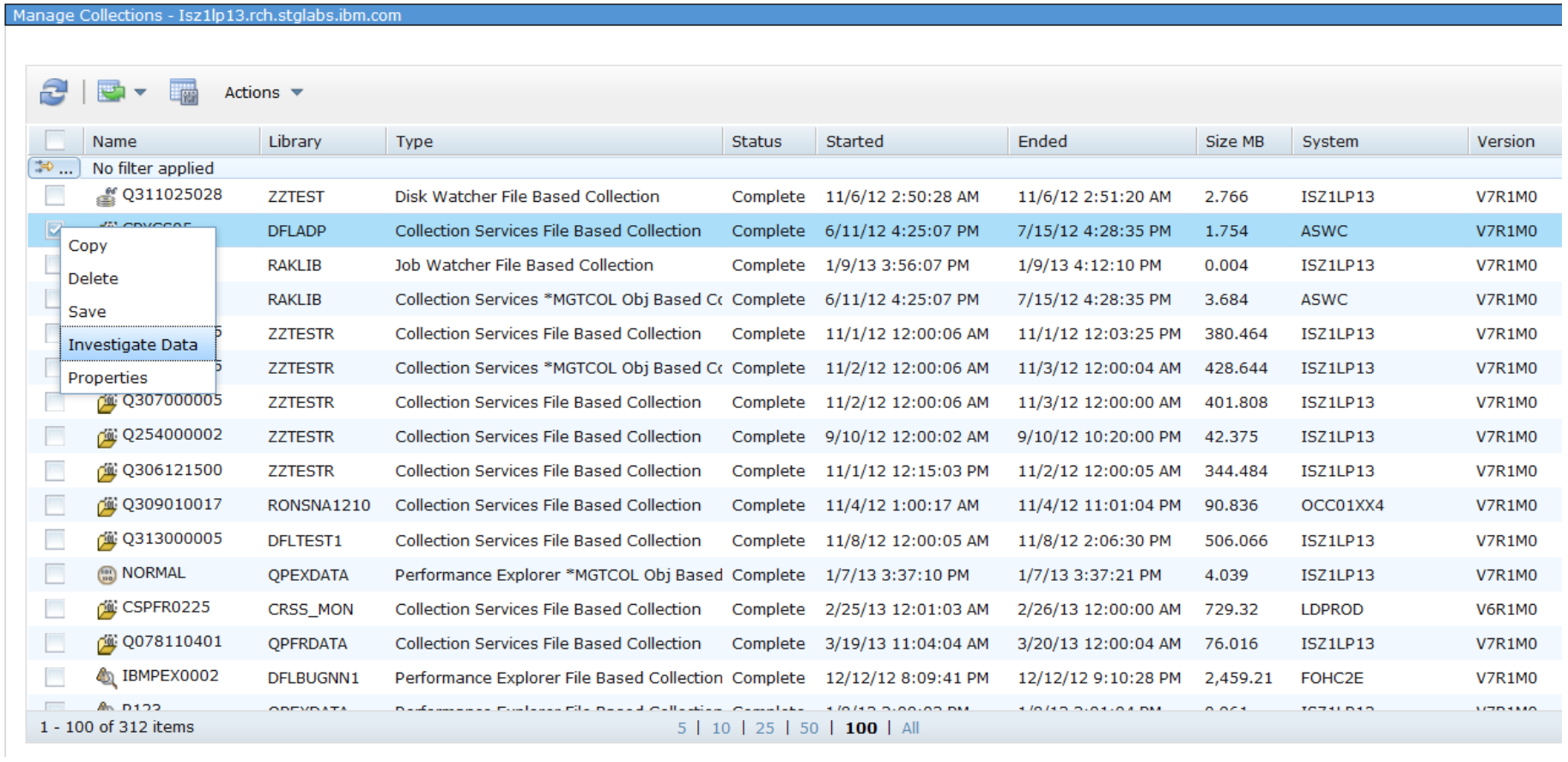
Manage Collections

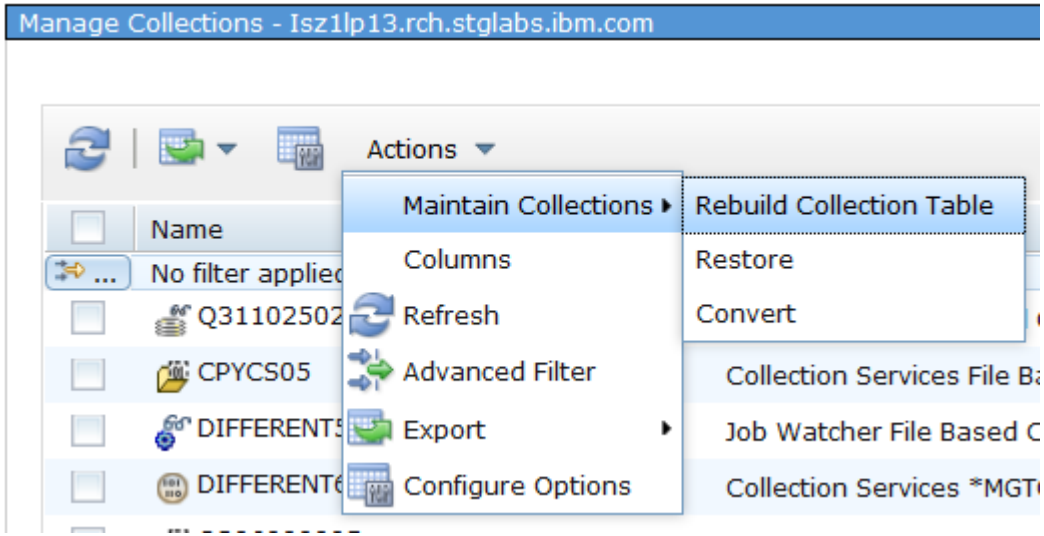
- The Manager Collections tasks allows you to see and manage all of your performance data from one central location
- Various tasks can be launched from the Manage Collections task, including the Performance Data Investigator



Manage Collections

- If you restore performance data without using the Restore Performance Collection interface, collections may not display in the Manage Collections view.

- The “Rebuild Collection Table” option will rebuild the meta-data used for the Manage Collections task and then your performance data should be visible.



Performance Data - Analysis

Performance Diagnostics with the Performance Data Investigator

Analyzing Performance Data Using PDI

- Now that you know all that PDI can do….
  - How do you really use it to analyze performance data?
  - There are no specific steps – it all depends upon what you see in the performance data
  - If you look at your performance data on a regular basis, you will learn your "normal" pattern which makes it easier to identify something unusual
  - Experience is the best teacher.

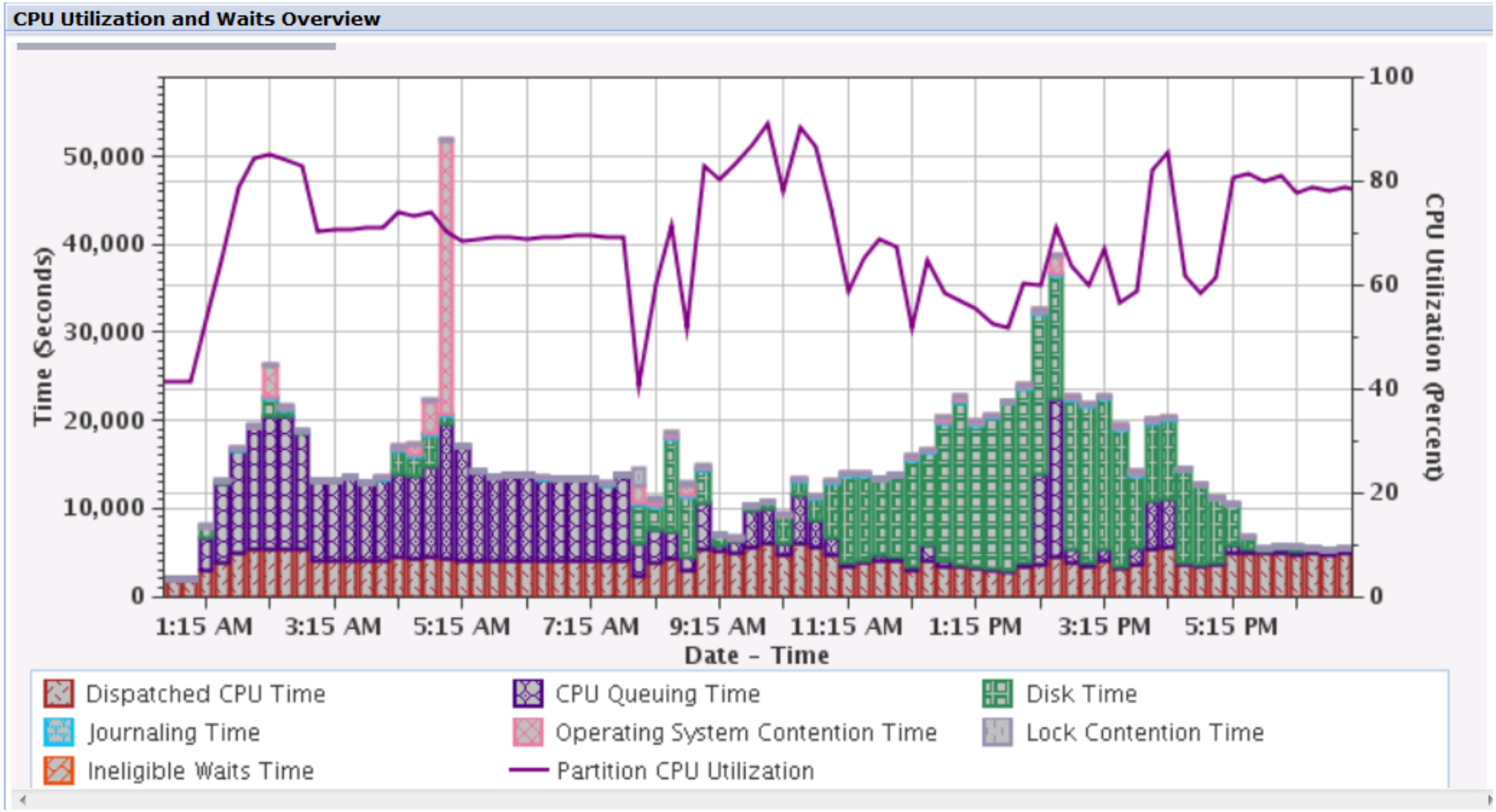
Analyzing Performance Data Using PDI

- Start by asking questions:
  - What was the symptom of the problem?
  - Who reported the problem?
  - What time did it occur?
  - How long did it last?
  - Have there been any recent changes?
    - New or changed workload?
    - Any application changes?
    - Any recent hardware configuration changes?
  - What was the scope?
    - Did it impact the entire system?
    - Did it impact some subset of work?
      - Specific users?
      - Specific applications?

CPU Utilization and Waits Overview

I generally start with CPU Utilization and Waits Overview and look for *interesting* points

Next steps will depend upon the answer to the prior questions, along with what you see.



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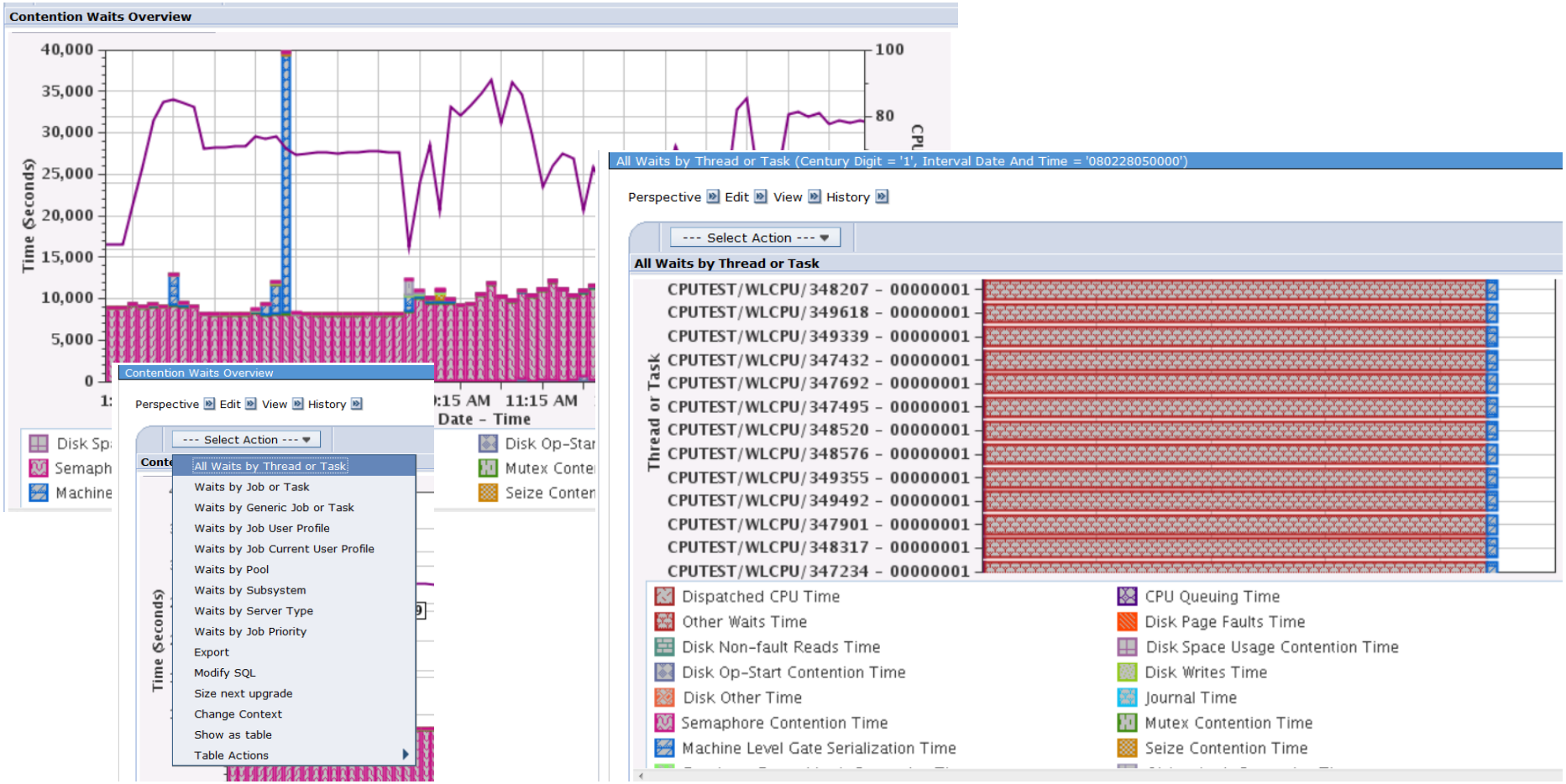
Using PDI, you can learn how to navigate through your data

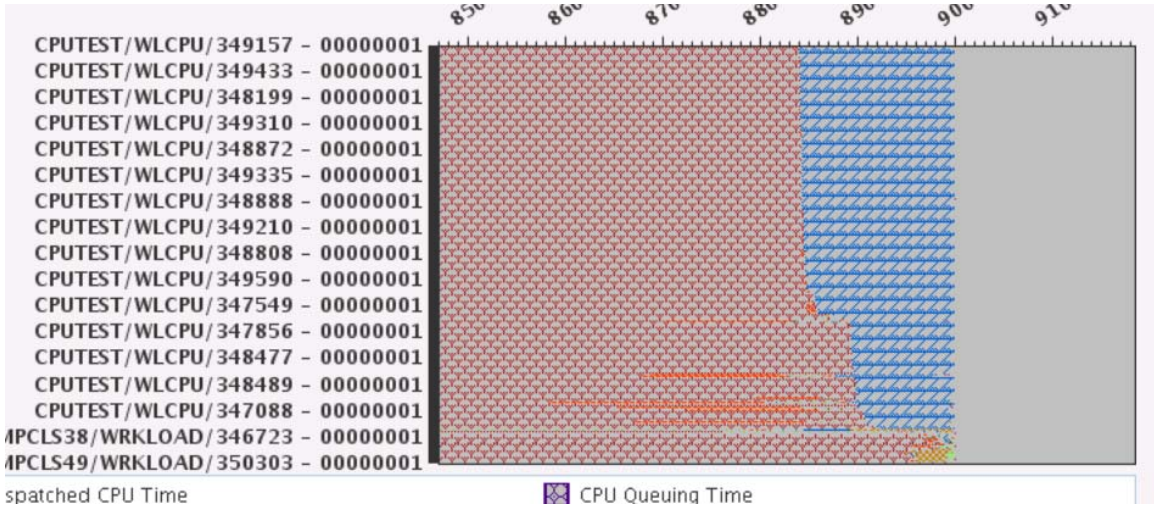
Collection Services data may not be able to resolve your problem, but it may very well help to identify areas where more detailed analysis is needed.



Drill-down based upon what you see

- While no one job was causing the spike in contention, we can find out many jobs were affected during that interval.

- This is an example where Collection Services can show us something is going on, but Job Watcher data is necessary to identify the root cause.



Some questions and examples

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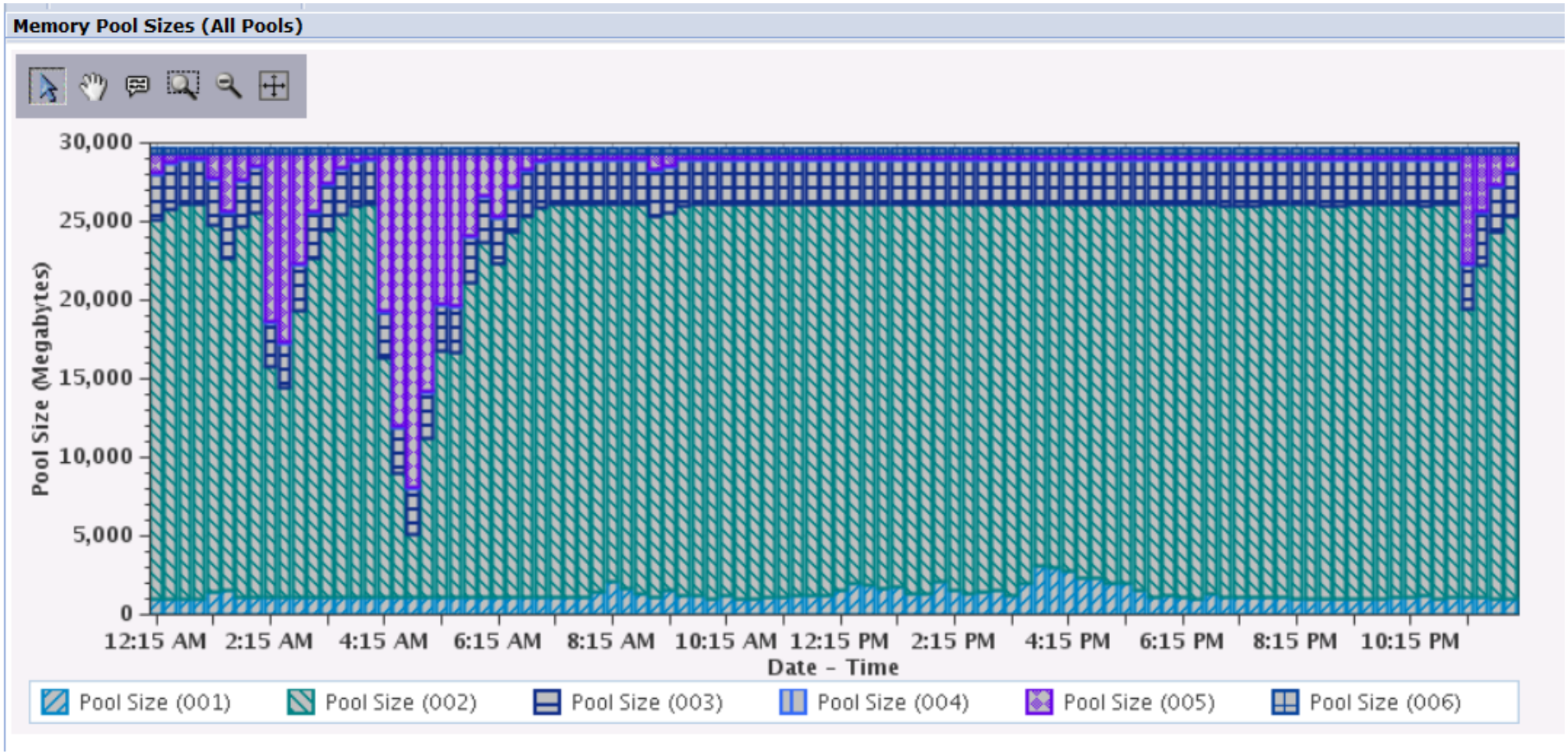
What has the performance adjuster been doing to my pools?

- Collection Services allows you to look *backward in time*

QPFRADJ System Value: 2



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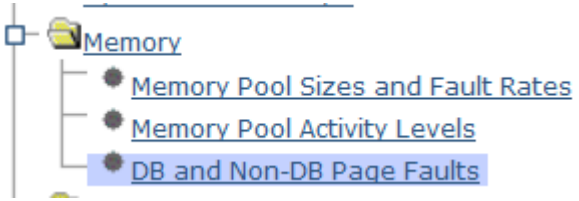
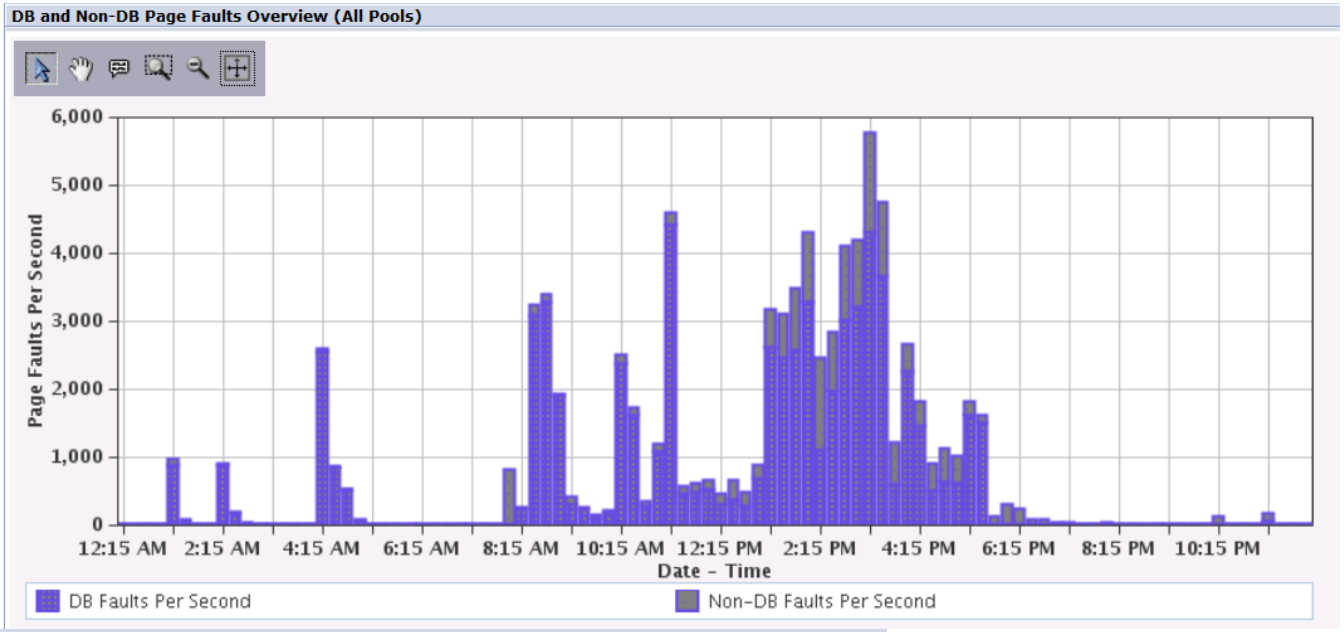
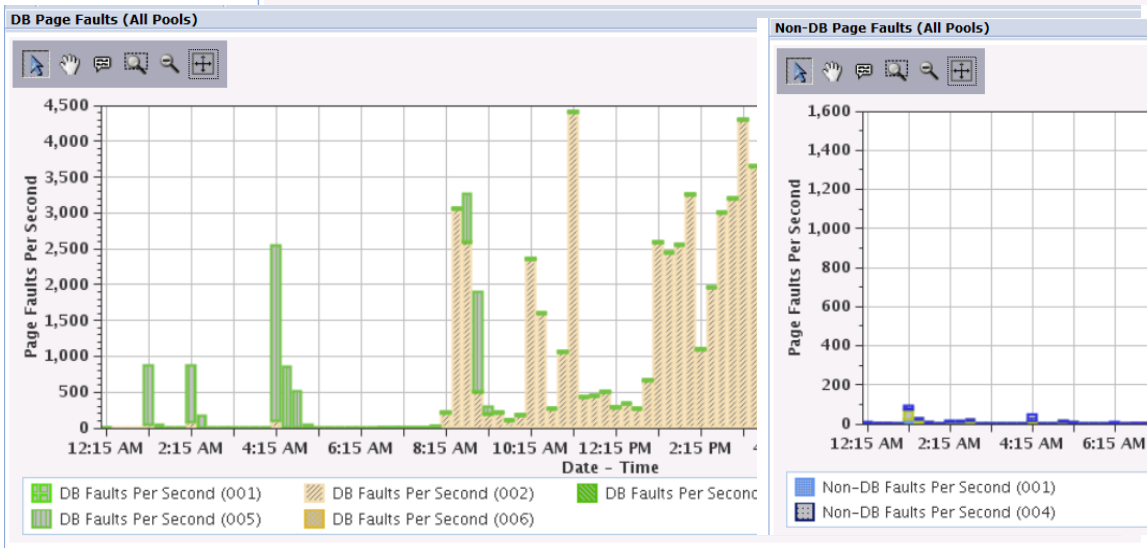
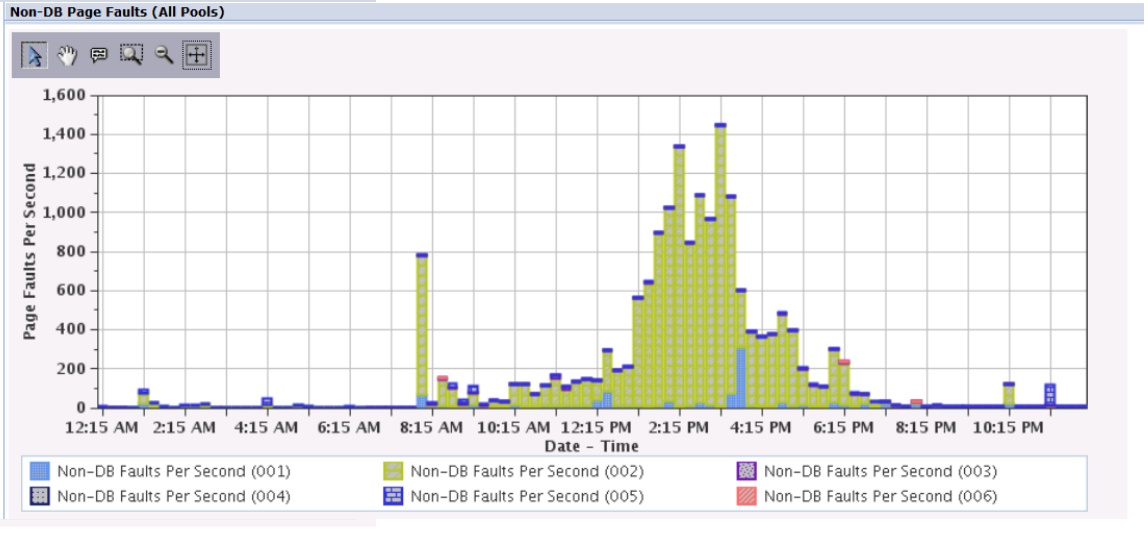


What does the faulting look like when I was testing?







Who was the guilty party in that faulting??

- You can drill down into job statistics from the prior charts
- Or you can start directly with page faulting perspectives

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I had a System Slowdown at 4:00 PM yesterday. Why?

- Common places to start:
  - Health Indicators
  - CPU Utilization and Waits Overview
  - Timeline overview for Threads and Tasks

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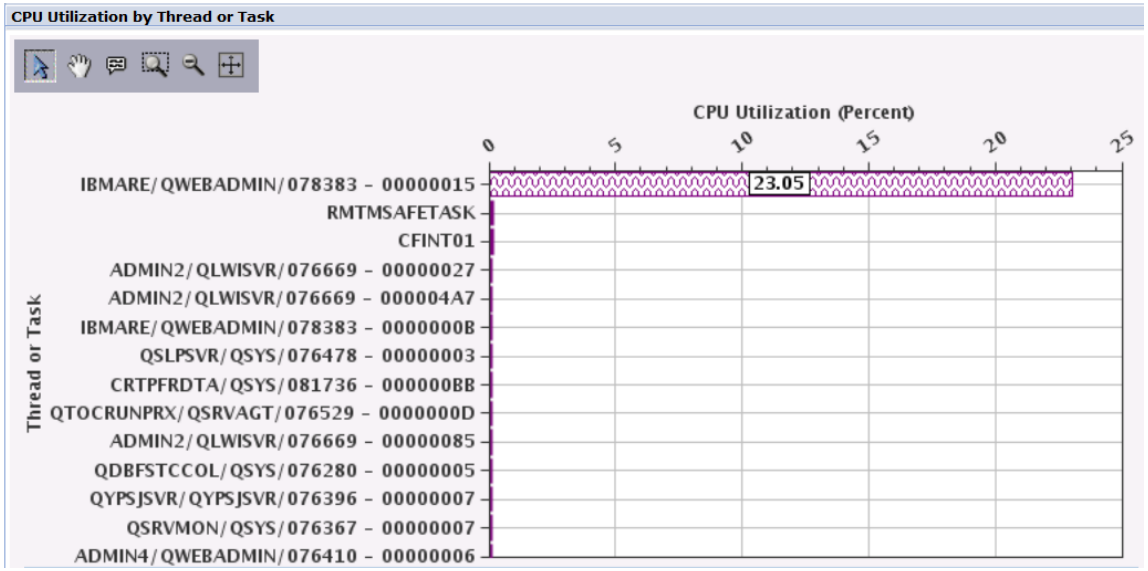
I had a System Slowdown at 4:00 PM yesterday. Why?

- Start with a system-wide view –
  - CPU Utilization and waits overview
- Select the starting and ending times
- Drill-down into the desired metric
  - CPU Utilization by Thread or Task
- Does one particular job stand out?



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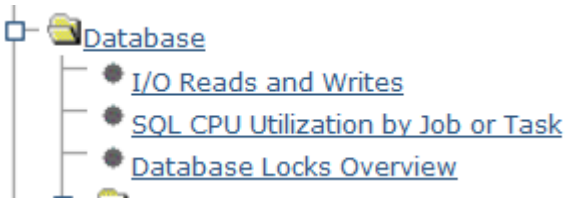
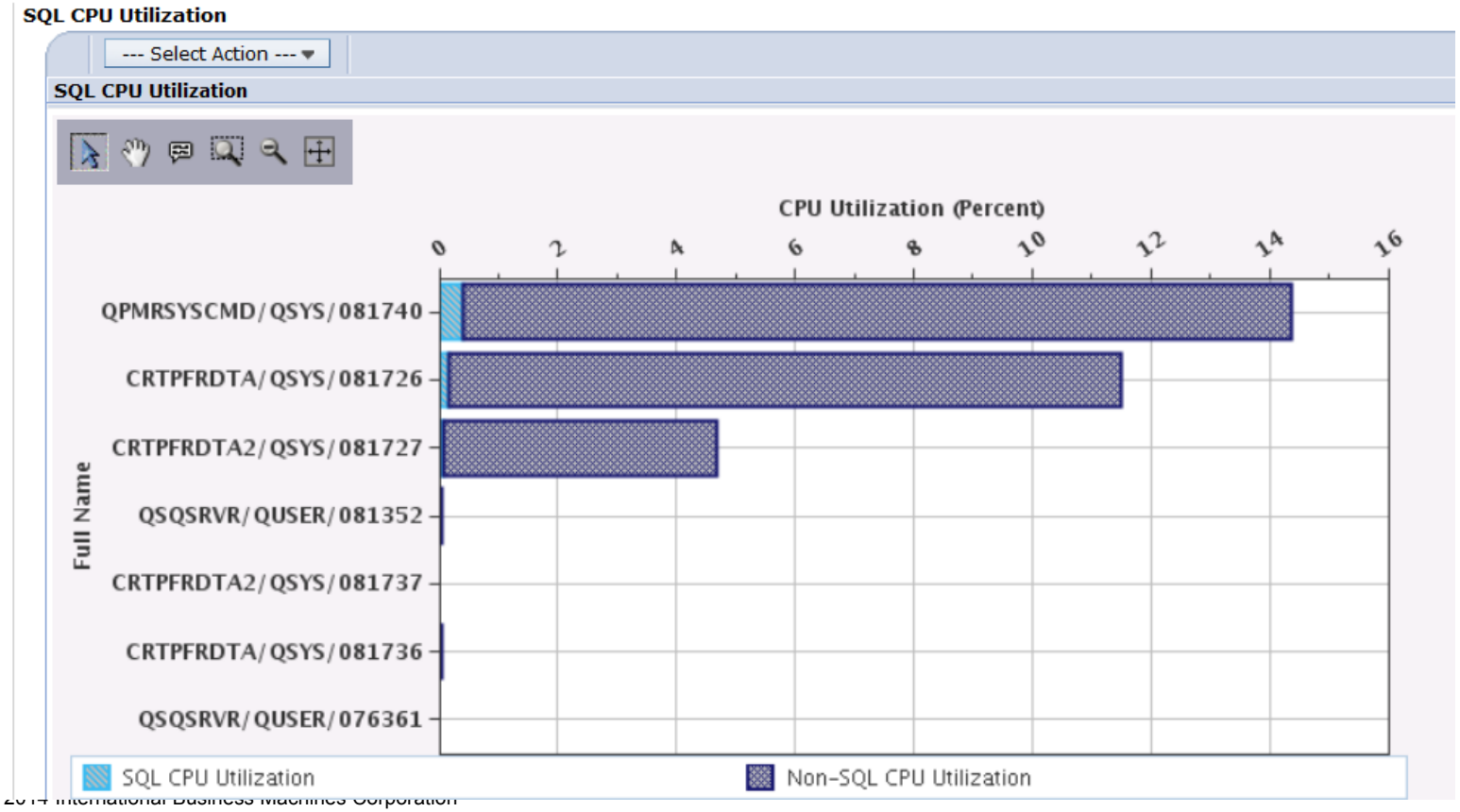
Was my CPU usage related to SQL?

SQL CPU Utilization by Job or Task





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End of questions and examples

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IBM i developerWorks

- IBM i developerWorks is the web site to go to find out about
  - Latest function delivered via Technology Refreshes
  - Enhancements delivered via PTFs

  - http://www.ibm.com/developerworks/ibmi/

PDI Enhancements via PTFs

1. IBM i developerWorks
   http://www.ibm.com/developerworks/ibmi/

2. Technology Updates
   https://www.ibm.com/developerworks/ibmi/techupdates

3. Performance Tools
   https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM%20i%20Technology%20Updates/page/Performance%20Tools

4. Performance on the Web
   https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM%20i%20Technology%20Updates/page/Performance%20on%20the%20web

You will find a list of enhancements by timeframe with links to the details.

developerWorks®

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IBM i Technology Updates - by IBM i product or subject matter

- Backup Recovery and Media Services (BRMS)
- Collaboration and Social for i (Lotus)
- DB2 for i (Database)
- General IBM i operating system
- Hardware and Firmware (including Technology Refresh content)
- IBM i Access Client Solutions
- IBM Integrated Web Services for i
- Integration with BladeCenter and System x
- Java on IBM i
- Navigator
- Performance Tools
- PowerHA SystemMirror for i
- Systems Director for i
- Web Integration on i

IBM i Technology Updates

Performance Tools

| Updated February 6, 2013 by ShaunaRollings | Tags: performance_tools

Page Actions

This section contains information about the most recent enhancements to IBM i Performance Tools. This topic includes Performance data collection tools, the performance components of IBM Systems Director Navigator for i and the Performance Tools LPP (Licensed program 57xxPT1).

Performance Data Collectors

Collection Services, Disk Watcher, Job Watcher and Performance Explorer are the primary performance data collection tools supported on IBM i. Other performance related tools include: Work with System Activity (WRKSYSACT), Dump Main M and Analyze Command Performance (ANZCMDPFR).

Performance on the Web

The Performance components of IBM Navigator for i include the **Investigate Data** task which is used to **Investigator (PDI)** and the **Manage Collections** task used to manage performance collections. Other web-based GUI interface for Collection Services, Job Watcher and Disk Watcher.

Performance Tools LPP (57xxPT1)

Performance Tools is a licensed program product that contains additional performance tools. The most Tools Reports. More information on this licensed program is contained in the IBM i information center - I

Additional IBM i Performance Tools Resources

Performance on the web

| Updated December 6, 2013 by mmlitvin | Tags: collection_manager, pdi, performance_data_investigator

Page Actions

Performance Tools GUI:

The performance components in **IBM Navigator for i** include **Performance Data Investigator (PDI)**, Performance **Collection Manager** and web-based GUI interfaces for Collection Services, Job Watcher and Disk Watcher.

Getting Started:

The main page for Performance Tools and this sub-page "Performance on the web" provide enhancement information.

The Resources sub-page contains a significant resource list. A good place to start for learning PDI is to document titled "Getting started with the Performance Data Investigator".

PTFs:

PTFs for these functions are part of the set of PTFs for IBM Navigator for i. They are listed in the table below, grouped by date of release. Check against the PTFs listed for IBM Navigator for i.

Performance Task Enhancements	Release Date	7.1 PTFs - 5770SS1	6.1 PTFs	PTF Description	Notes
Fall 2013	Nov 2013	SF99368 level 24 or higher *(includes but not limited to:* • *SI50752* • *SI50753* • *N/A)*	SF99115 level 35 *(includes but not limited to:* • *SI50848* • *SI50847* • *SI50846)*	HTTP Group PTF *(includes but not limited to:* • *Common PTF* • *Navigator for i* • *IBM i Navigator tasks on the Web PTF)*	The Navigator for i PTFs are shipped in the HTTP group, and it is recommended that you keep current on this PTF group.

ithankyou

www.ibm.com/power/i

References

iDoctor versus Performance Data Investigator

There are two graphical interfaces for performance data analysis…which should you use?

Feature	iDoctor	PDI
Interface	Windows client	Browser
Wait Analysis	Yes	Yes
Collection Services	Yes	Yes
Job Watcher	Yes	Yes
Disk Watcher	Yes	Yes
Performance Explorer	Yes	Profile collections only
Database	Yes	Yes
Job Watcher Monitors	Yes	No
Customizable	Yes	Yes
User Defined graphs and queries	Yes	Yes
Update Frequency	Monthly Experimental features	Twice Yearly
Support	Defect only	Standard SWMA
Chargeable	Yearly license	•Collection Services at no additional charge with i •Disk Watcher, Database, and Performance Explorer included with base PT1 product •Job Watcher is an additional option of PT1 and has an additional charge
Experimental Features	Yes (e.g., VIOS Investigator)	No
Multinational language support	No	Yes

IBM i Performance on developerWorks

developerWorks

- developerWorks - http://www.ibm.com/developerworks/ibmi/
- Performance Tools
  - Additional performance tools resources
  - Performance on the Web
  - Performance Data Collectors

- Forum
  https://www.ibm.com/developerworks/forums/forum.jspa?forumID=2751
- IBM i Performance Data Investigator
  http://www.ibm.com/developerworks/ibmi/library/i-pdi/index.html
- IBM i Performance Data Investigator – Edit Perspectives
  http://www.ibm.com/developerworks/ibmi/library/i-pdiedit/index.html
- IBM i Wait Accounting
  http://www.ibm.com/developerworks/ibmi/library/i-ibmi-wait-accounting/
- How to use the Batch Model performance tool **New!**
  https://www.ibm.com/developerworks/ibmi/library/i-how-to-use-the-batch-model-performance-tool/

IBM i Performance FAQ – a MUST read!

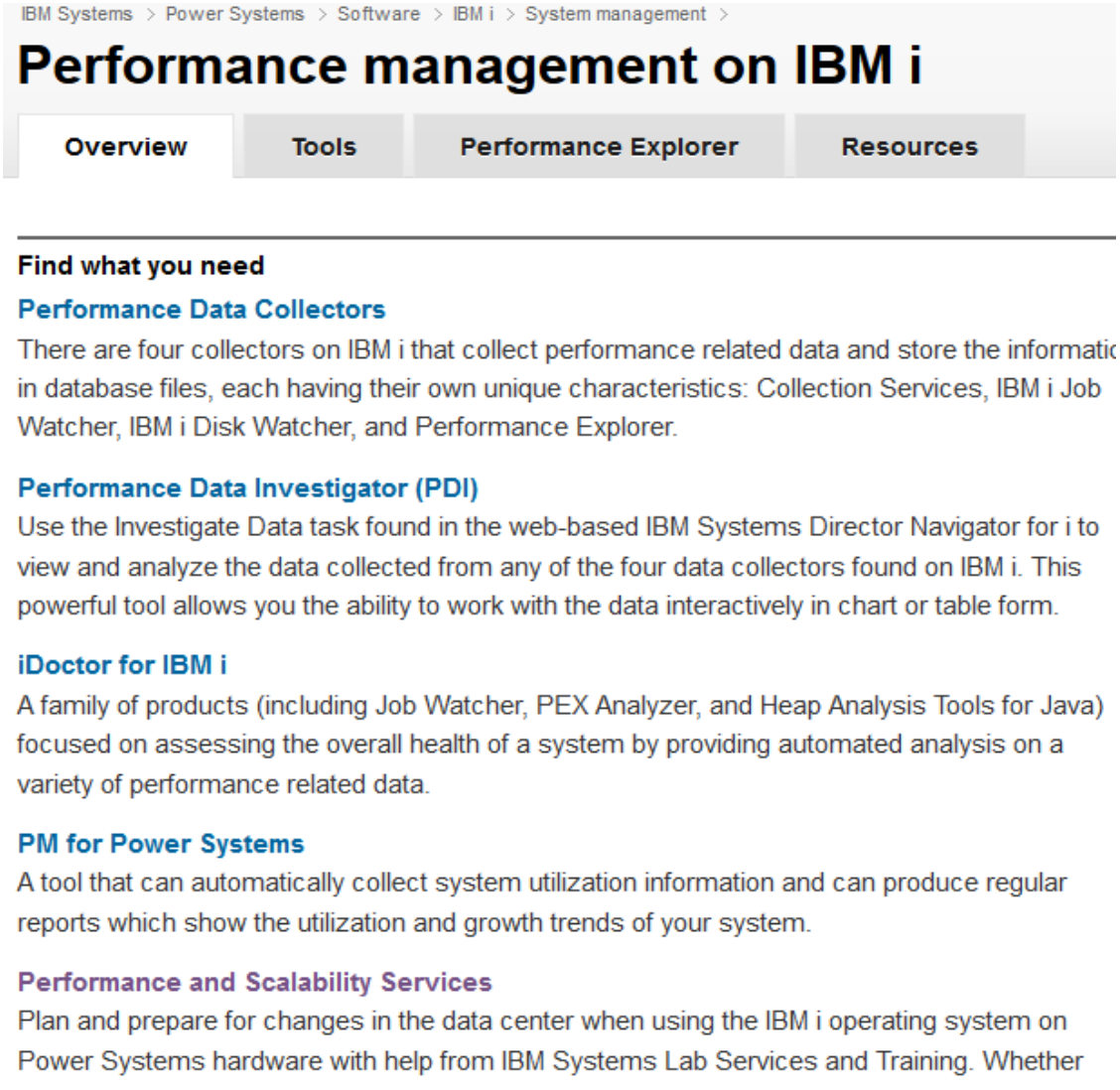
http://www.ibm.com/common/ssi/cgi-bin/ssialias?subtype=WH&infotype=SA&appname=STGE_PO_PO_USEN&htmlfid=POW03102USEN&attachment=POW03102USEN.PDF

IBM i on Power - Performance FAQ

May 29, 2014

Performance Management on IBM i Web Site

http://www-03.ibm.com/systems/power/software/i/management/performance/index.html



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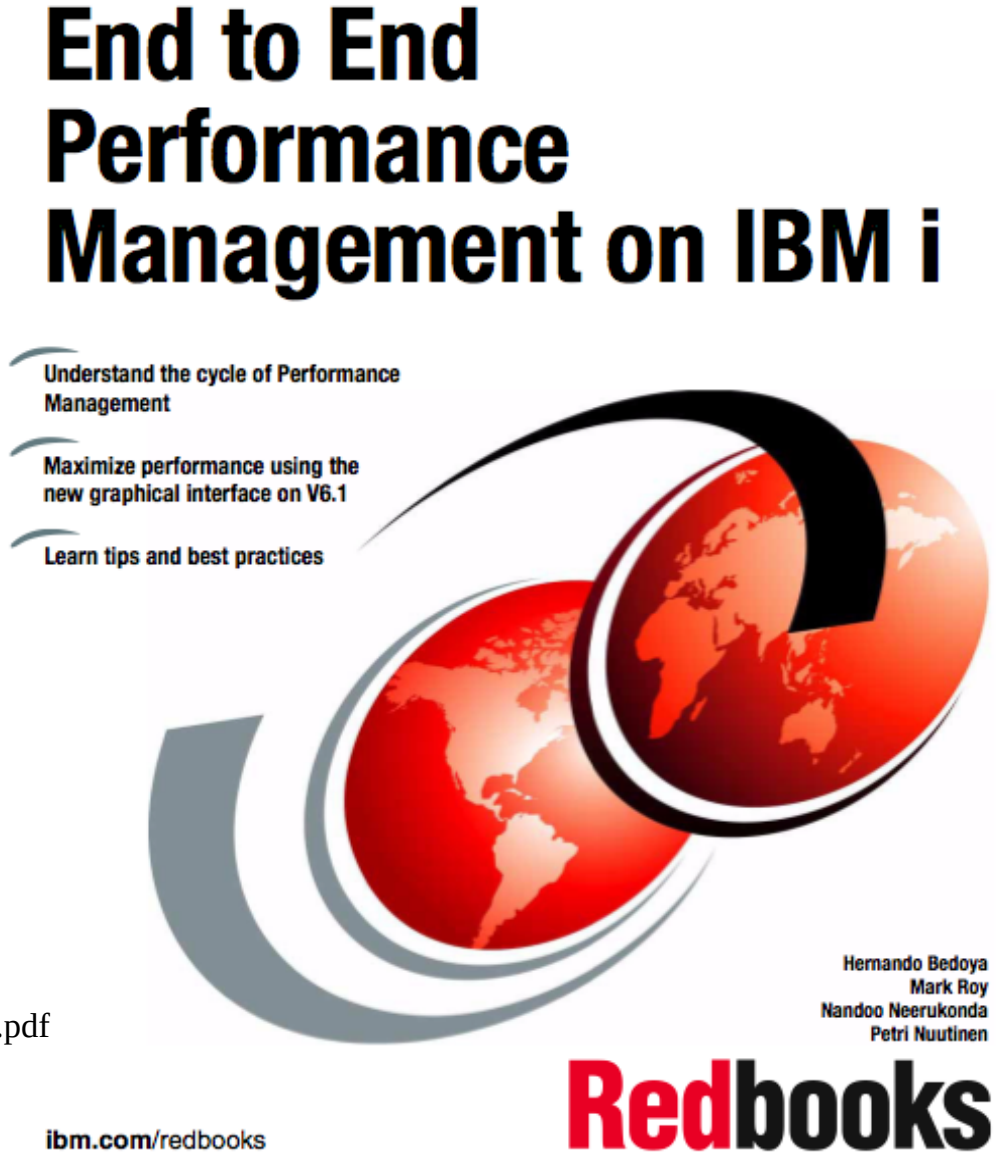
A Redbooks publication!



http://www.redbooks.ibm.com/redbooks/pdfs/sg247808.pdf

Power Systems

IBM i 7.1 Technical Overview with Technology Refresh Updates

Covers the 7.1 content through Technology Refresh 7

Chapter 6 – Performance Tools

Chapter 17, Section 6 – Performance in Navigator for i

http://www.redbooks.ibm.com/redpieces/abstracts/sg247858.html

IBM i 7.2 Technical Overview …. Coming!

IBM Systems Lab Services

Leverage the skills and expertise of IBM's technical consultants to implement projects that achieve faster business value

- ✓ Ensure a smooth upgrade
- ✓ Improve your availability
- ✓ Design for efficient virtualization
- ✓ Reduce management complexity
- ✓ Assess your system security
- ✓ Optimize database performance
- ✓ Modernize applications for iPad
- ✓ Deliver customized workshops
- ✓ Leverage training & events

How to contact us

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- Follow us at @IBMSLST
- Learn more ibm.com/systems/services/labservices

IBM i Performance and Optimization Services

The IBM i Performance and Optimization team specializes in resolving a wide variety of performance problems. Our team of experts can help you tune your partition and applications, including:

- Reducing batch processing times
- Resolving SQL query and native IO performance problems
- Tuning RPG, COBOL, C, and Java (including WebSphere Application Server) programs
- Removing bottlenecks, resolving intermittent issues
- Resolving memory leaks, temporary storage growth problems, etc.
- Tuning memory pools, disk subsystems, system values, and LPAR settings for best performance
- Optimizing Solid State Drive (SSD) performance
- Tuning client interfaces such as ODBC, JDBC, .Net and more

Skills transfer and training for performance tools and analysis also available!

Contact Eric Barsness at ericbar@us.ibm.com for more details.

www.**ibm**.com/systems/services/labservices

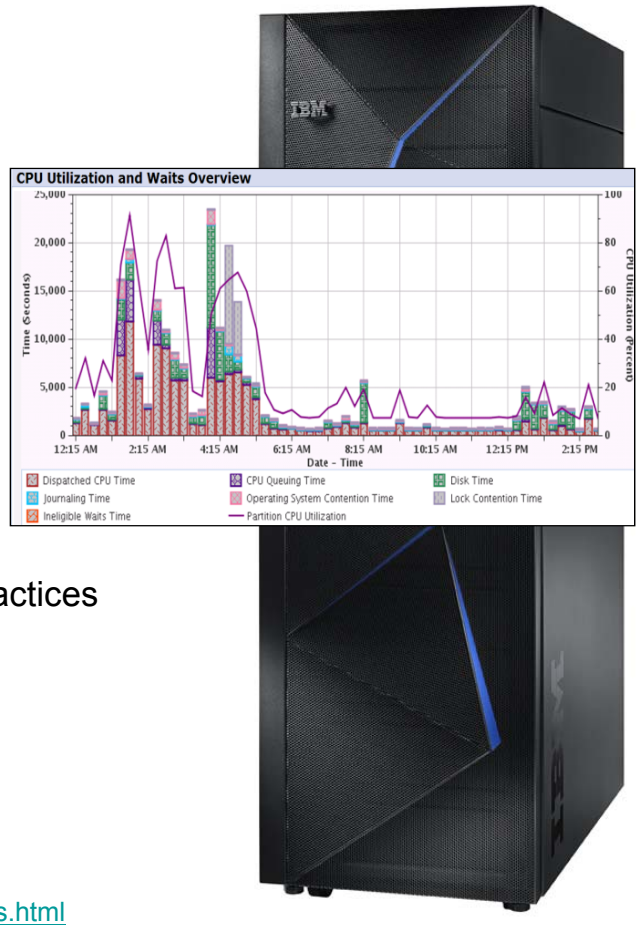
Learn the science and art of performance analysis, methodology and problem solving

IBM i Performance Analysis Workshop

Managing and analyzing the data can be quite complex. During this workshop, the IBM Systems Lab Services IBM i team will share useful techniques for analyzing performance data on key IBM i resources, and will cover strategies for solving performance problems. It will aid in building a future foundation of performance methodology you can apply in your environment.

Overview:

- Topics covered include:
  - Key performance analysis concepts
  - Performance tools
  - Performance data collectors (Job Watcher, Disk Watcher, etc.)
  - Wait accounting
- Core methodology and analysis of:
  - Locks
  - Memory
  - I/O subsystem
  - CPU
- Concept reinforcement through case studies and lab exercises
- May include discussions on theory, problem solving, prevention and best practices



Workshop details:

- Intermediate IBM i skill level
- 3 day workshop, public or private (on-site)
  - For public workshop availability and enrollment: http://www-03.ibm.com/systems/power/software/i/support/workshops/performance-analysis.html
  - For additional information regarding private workshops, please contact Mike Gordon, STG Lab Services, at mgordo@us.ibm.com

Performance and Scalability Services

- The IBM i Performance and Scalability Services Center can provide facilities and hardware **IN ROCHESTER** to assist you in testing hardware or software changes
  - "Traditional" benchmarks
  - Release-to-release upgrades
  - Assess and tune application and database performance
  - Stress test your system
  - Determine impact of application changes
  - Proofs of Concept (e.g. HA alternatives; SSD analysis, external storage, etc.)
  - Evaluate application scalability
  - Capacity planning
- … all with the availability of Lab Services IBM i experts and development personnel
- To request any of these services, submit at: http://www-03.ibm.com/systems/services/labservices/psscontact.html

Power Systems

IBM i Solid State Drive Performance Services

Evaluate the benefits of SSD technologies with IBM i based applications

Features

- Three options to best meet client needs:
  1. Data collection on the client system with analytical services to determine the benefit SSDs will provide. The analysis also identifies which specific objects should be stored on SSDs to optimize benefits.
  2. Remote access to a fixed Power IBM i configuration to load and test client workloads on both SSDs and traditional disk drives (HDDs). Assessment is made of the delta between workload performance on SSDs and HDDs.
  3. Hardware configured to client specifications with client workloads run on a system in the Performance and Scalability Services Center in Rochester, MN. Client has onsite access to state of the art test center. Optimal SSD configuration for current and future workload requirements is determined from analysis of workload runs.

Typical Benefits

- "Real data" available to assess if SSDs are for you.
- Multiple offerings provide flexibility in the scope and depth of the analysis you choose to perform.
- With the assistance of our Lab Services experts, clients will learn how to optimize the use of SSDs to meet their processing and business requirements.

Contact

- To initiate these services, submit a request form at url:

http://www.ibm.com/systems/services/labservices/psscontact.html

Why IBM® Rochester?

- **Deep skills in IBM i implementation and integration**
- **Experience in system, database, and application performance gleaned from hundreds of engagements with clients across most industries**
- **Ability to deliver skills transfer as part of your service engagement**

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http://ibmsystemsmag.blogs.com/i_can/performance/

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IBM i Web Sites with Performance Information

- IBM i Information Center *** Start using the **Knowledge Center** instead ***
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  - Systems Management → Performance

- IBM Knowledge Center
  - http://www-01.ibm.com/support/knowledgecenter/ssw_ibm_i_71/welcome.html
  - http://www-01.ibm.com/support/knowledgecenter/ssw_ibm_i_72/rzahg/ic-homepage.htm

- IBM i Performance Management
  This web site has a lot of GREAT references and papers – see the resources tab
  http://www-03.ibm.com/systems/power/software/i/management/performance/index.html
  Performance Capabilities Reference
  http://www-03.ibm.com/systems/resources/systems_power_software_i_perfmgmt_pcrm_jun2014.pdf
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- IBM iDoctor iSeries Job Watcher: Advanced Performance Tool (this is a bit outdated)
  http://www.redbooks.ibm.com/abstracts/sg246474.html?Open
- Best Practices for Managing IBM i Jobs and Output (and a few other special tips)
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