

IBM Navigator for i Performance Tasks

Latest and Greatest



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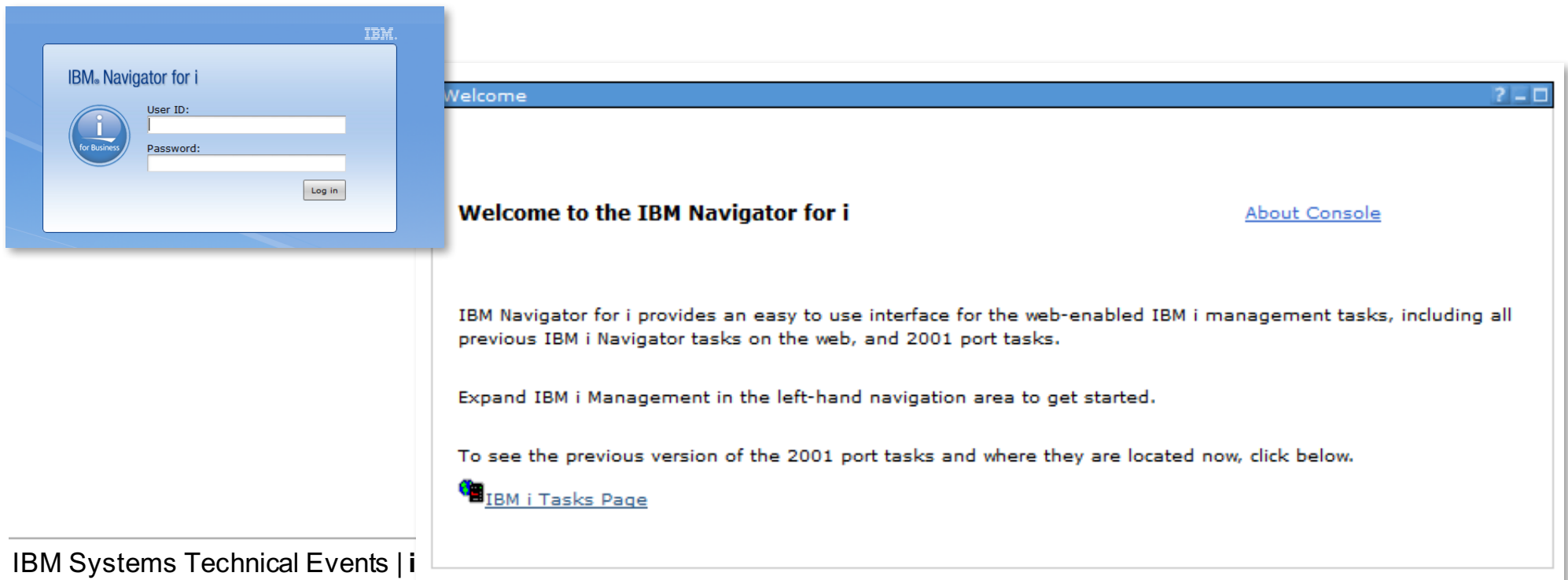
2016

IBM Systems Technical Events

ibm.com/training/systems

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>




The image shows a screenshot of the IBM Navigator for i web console. On the left, there is a login window titled "IBM Navigator for i" with fields for "User ID:" and "Password:" and a "Log in" button. The main console window has a blue header with "Welcome" and a "Welcome to the IBM Navigator for i" message. A link for "About Console" is visible. The main content area contains the following text:

IBM Navigator for i provides an easy to use interface for the web-enabled IBM i management tasks, including all previous IBM i Navigator tasks on the web, and 2001 port tasks.

Expand IBM i Management in the left-hand navigation area to get started.

To see the previous version of the 2001 port tasks and where they are located now, click below.

 [IBM i Tasks Page](#)

Updates to the Performance Data Investigator - PTFs

- Major enhancements have been made to **Navigator for i** and the **Performance Data Investigator**
 - IBM i 7.3!
 - HTTP Server group PTF SF99722
 - Java group PTF SF99725
 - Database group PTF SF99723
 - Performance Tools group PTF SF99703
 - For **7.2** - install the latest level of:
 - HTTP Server group PTF SF99713
 - Java group PTF SF99716
 - Database group PTF SF99702
 - Performance Tools group PTF SF99714
 - 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



June 2016 Service Pack is the latest... with the next update coming late this year






Java 64-bit Requirement

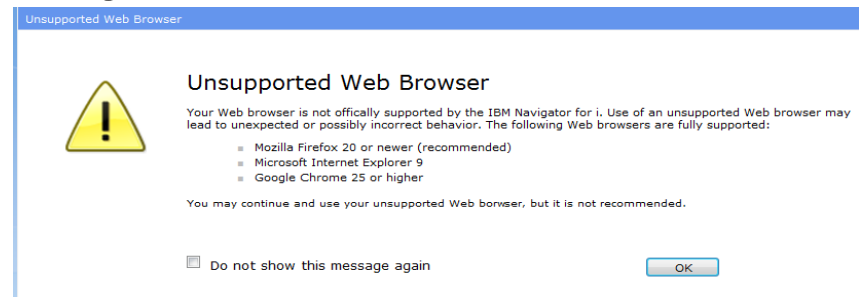
- Admin2 server was updated to use JDK 64bit in the December 2015 DG1 group (HTTP server for i)
- Java SE 6 or 7 64-bit must be installed in order for Admin2 server to function properly
- Product install requirements:
<https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM%20i%20Technology%20Updates/page/Product%20Install%20Requirements>



Browser Support

- Supported Browsers for the latest Navigator enhancements:

-  • Internet Explorer 9
-  • FireFox 20 or newer
-  • Google Chrome 25 or higher



- Unexpected results may 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 [browser tips](#)



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
- Use [Application Runtime Expert](#) to validate your environment
 - [Network health checker](#) can be run from QShell:

```
/QIBM/ProdData/OS/OSGi/templates/bin/areVerify.sh -network
```
- Use the [Web Performance Advisor](#) to validate your Web Performance



Performance Tasks

- “Performance” is a major function in Navigator
- Investigate Data
- Manage Collections
- And much more!

The screenshot shows a hierarchical menu structure for Performance tasks. The 'Performance' menu is expanded, showing several sub-items. 'Investigate Data' is highlighted in blue. Under 'All Tasks', there are several sub-items including 'Active Jobs', 'Disk Status', 'Investigate Data Search', 'Investigate Data', 'Manage Collections', 'Performance Management for Power Systems', and 'System Status'. Other main categories include 'Collections', 'Performance Data Reports', 'Collectors' (with sub-items 'Disk Watcher', 'Job Watcher', and 'Collection Services'), 'Graph History', and 'Sizing'.

- [-] Performance
 - [+] Investigate Data
 - [+] Manage Collections
 - Configure Collection Services
 - [+] Graph History
 - [-] All Tasks
 - Active Jobs
 - Disk Status
 - Investigate Data Search
 - Investigate Data
 - Manage Collections
 - Performance Management for Power Systems
 - System Status
 - [+] Collections
 - [+] Performance Data Reports
 - [-] Collectors
 - [+] Disk Watcher
 - [+] Job Watcher
 - [+] Collection Services
 - [+] Graph History
 - [+] Sizing



[https://www.ibm.com/developerworks/community/wikis/form/anonymous/api/wiki/beb2d3aa-565f-41f2-b8ed-55a791b93f4f/page/156bf04-39f6-434e-8977-a0baafd52f4/attachment/2d6e85a2-3cf1-4fe1-bd0e-af2f57d82a67/media/Intro to the Performance Data Investiga](https://www.ibm.com/developerworks/community/wikis/form/anonymous/api/wiki/beb2d3aa-565f-41f2-b8ed-55a791b93f4f/page/156bf04-39f6-434e-8977-a0baafd52f4/attachment/2d6e85a2-3cf1-4fe1-bd0e-af2f57d82a67/media/Intro%20to%20the%20Performance%20Data%20Investigation)

HELLO
my name is

Investigate
Data



Enhanced Left Frame Navigation

PDI Perspectives Tree

IBM® Navigator for i

- Performance
 - Investigate Data
 - Investigate Data Search
 - Health Indicators
 - Monitor
 - Collection Services
 - Database**
 - Job Watcher
 - Disk Watcher
 - Performance Explorer
 - Batch Model
 - Manage Collections
 - Configure Collection Services

Welcome x Database Locks Overview x

Database Locks Overview

Investigate Data - Performance Data Investigator

Selection

Name
Database Locks Overview

Description
This chart shows the database record lock contention time for all contributing jobs and tasks over time for the selected collection.

View List
Database Locks Overview

Collection

Collection
Library: QPFRDATA

Collection Name: Most Recent

Display Search

Q141132820 (*CSFILE)	- May 21, 2013 1:28:20 PM
Q141164450 (*CSFILE)	- May 21, 2013 4:44:50 PM
Q142000003 (*CSFILE)	- May 22, 2013 12:00:03 AM
Q143000002 (*CSFILE)	- May 23, 2013 12:00:02 AM



Packaging: Performance Tools Licensed Program Product

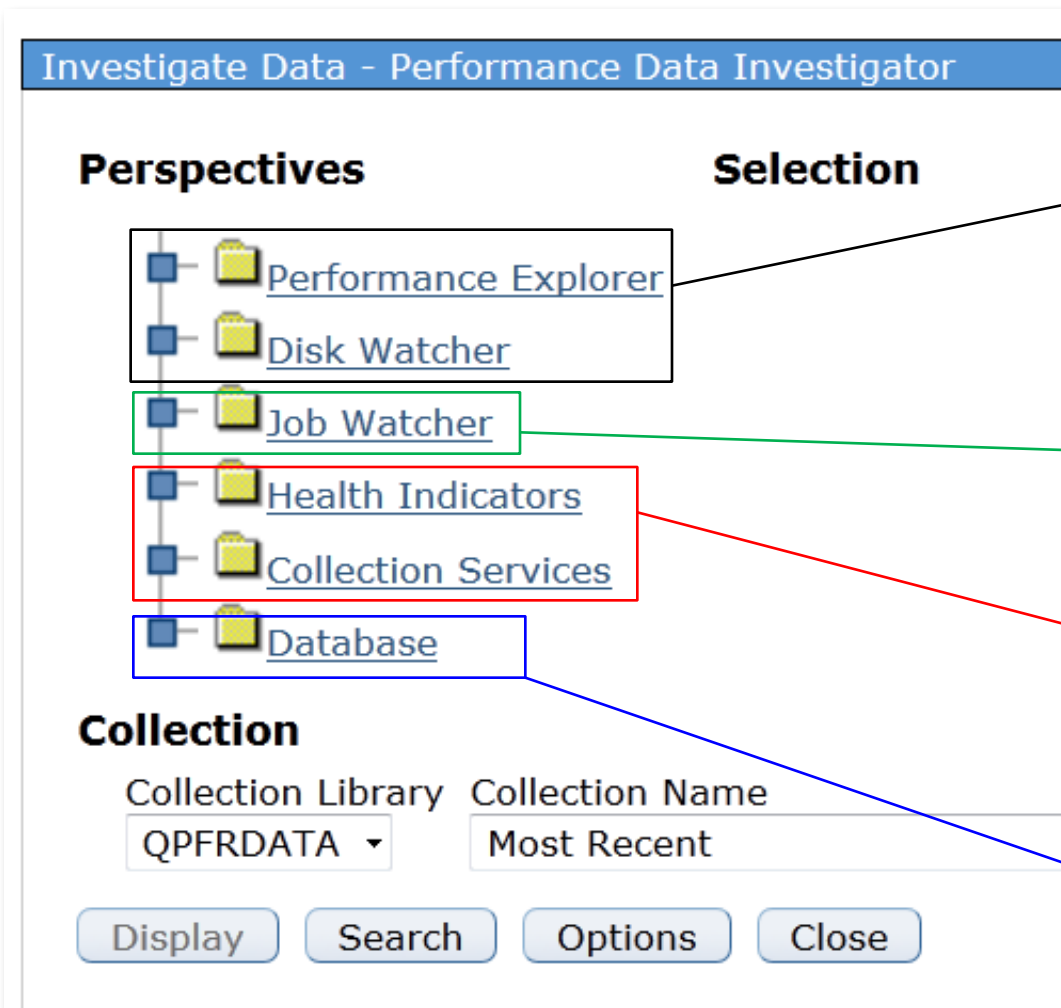
- IBM i for **Collection Services**, **Health Indicators**, **Monitors** 7.2
and **Graph History** 7.3

- Performance Tools Licensed Program Product
 - 5761PT1 for 6.1
 - 5770PT1 for 7.1, 7.2, and 7.3

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



Packaging - Performance Tools Licensed Program Product



7.1

IBM Performance Tools – Manager feature

IBM Performance Tools – Job Watcher feature

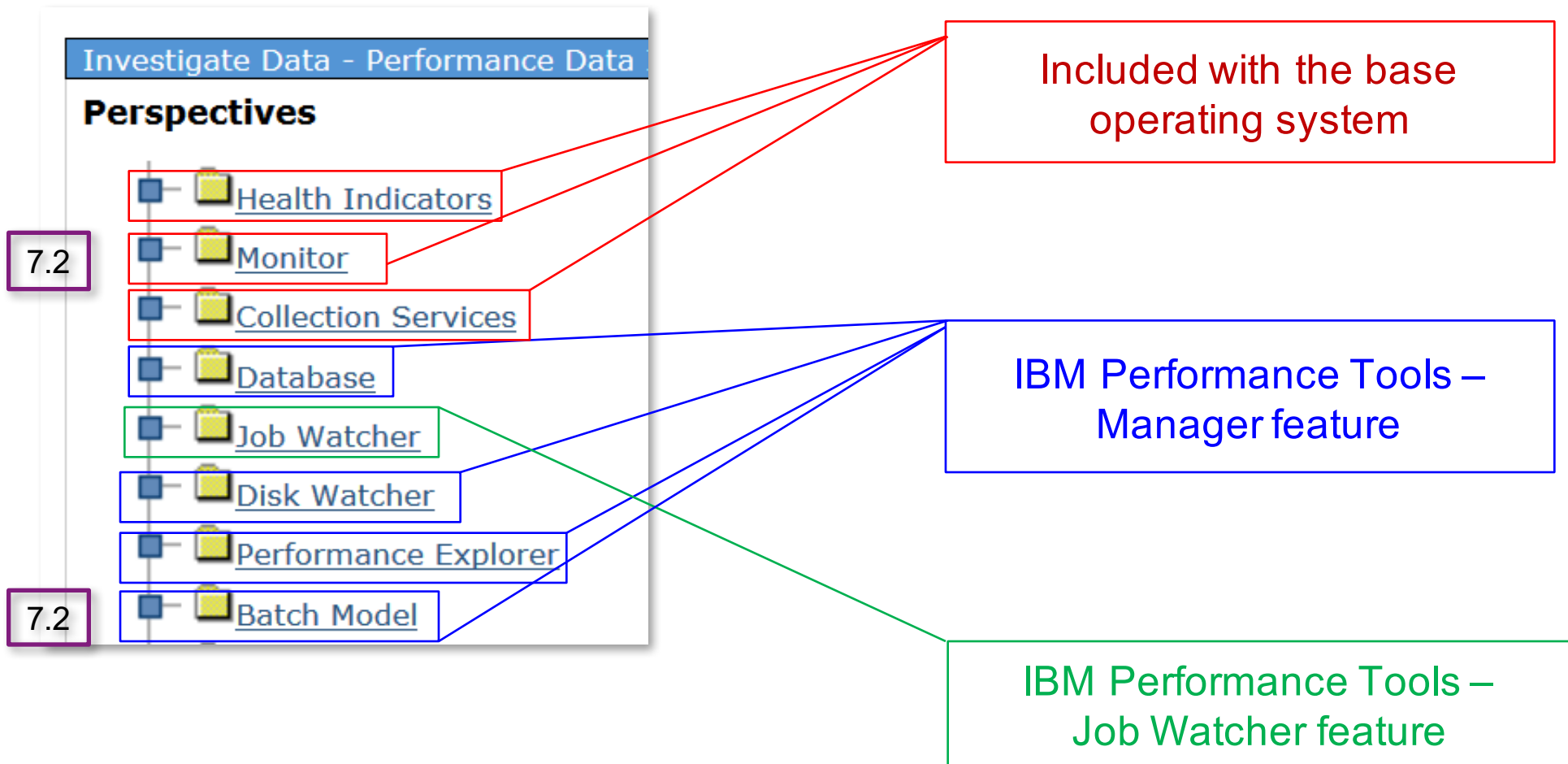
Included with the base operating system

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



Packaging: Performance Tools Licensed Program Product

7.2 and 7.3



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 QPMCCFCN 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.

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

Qpmccfcn.aut Permissions - Localhost

Object: /QSYS.LIB/Qpmccfcn.AUTL
 Type: Authorization list Owner: Qsys Primary group: (None)
 Authorities view: Details Go

Select	Name	AUTL Management	Use	Change	All	Exclude	Custom
<input checked="" type="checkbox"/>	(Public)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Qsys	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

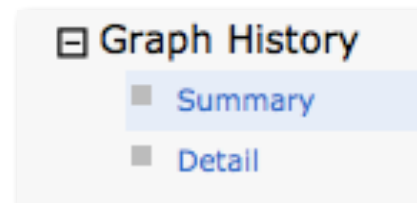
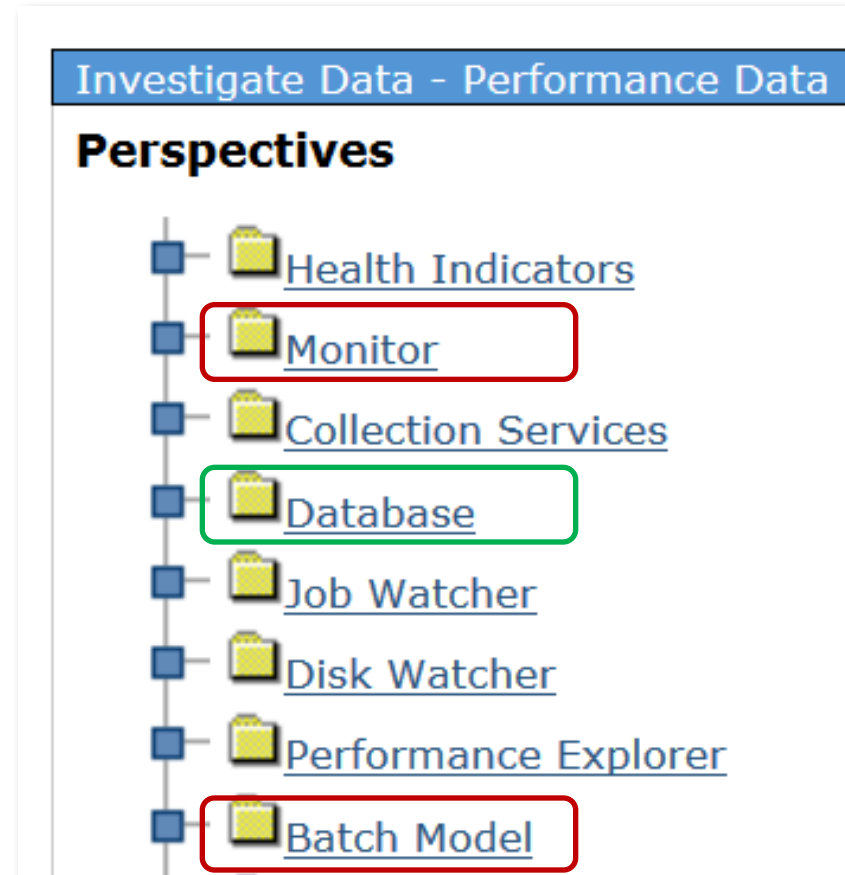
Buttons: Add... Remove Customize...
 Legend: Owner Primary Group Secured Objects
 Bottom buttons: OK Cancel Apply

Content Packages

- 7.1
 - Health Indicators
 - Database (with PTFs)
 - Job Watcher
 - Disk Watcher
 - Performance Explorer

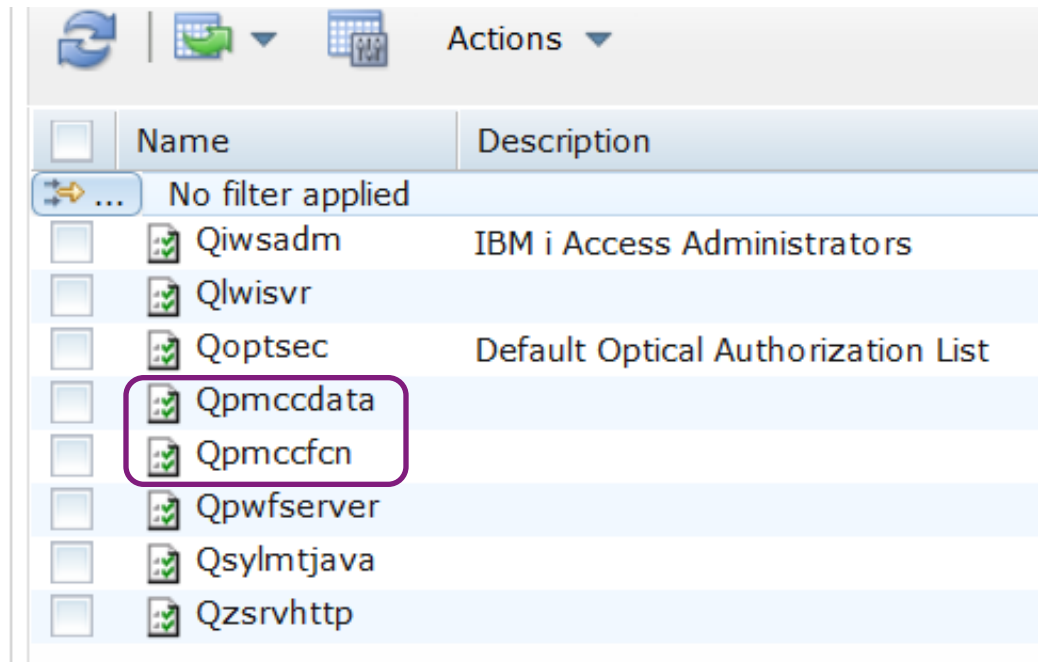
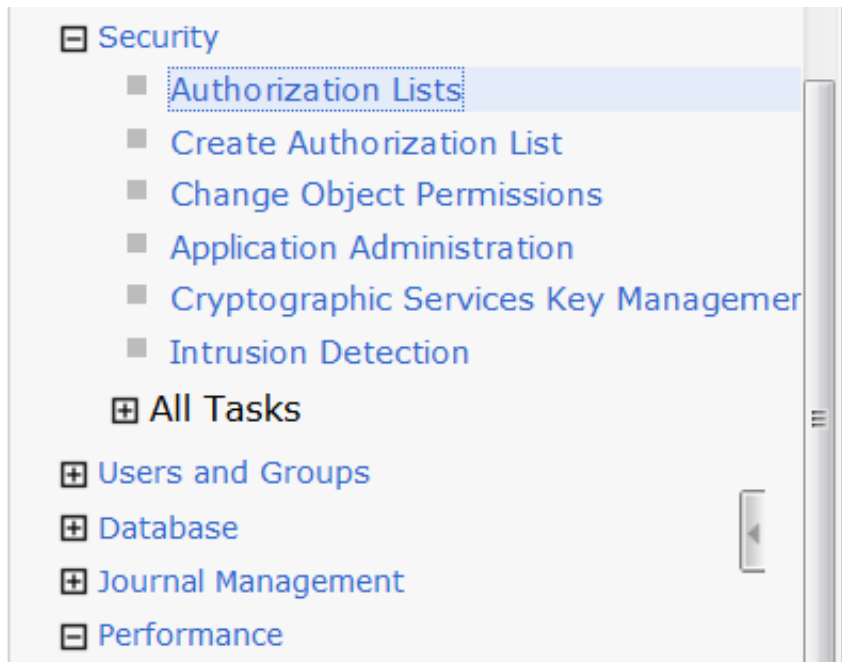
- New in 7.2
 - Monitor
 - Batch Model

- New in 7.3
 - Graph History



Prerequisites - Authorizing Users to the Performance Tasks

- Users need to be authorized to use the investigate data and collection manager performance tasks
https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM_i_Technology_Updates/page/Authority
- Include users on the QPMCCDATA and QPMCCFCN authorization lists
 - Can be done via GUI or green screen



Prerequisites - Authorizing Users to the Performance Tasks

```

                                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...
```



Application Administration for Performance Tasks

Welcome x Performance x Investigate Data x Application Administration x

Application Administration (Local Settings) - localhost ?

Select the functions or applications available to users.

IBM Navigator for i	Select	Function	Default Access	All Object Access	Customized Access
Client Applications	<input type="radio"/>	▶ File Systems ▶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Host Applications	<input type="radio"/>	▼ Performance ▶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="radio"/>	Investigate Data ▶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="radio"/>	Manage Collections ▶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="radio"/>	Disk Watcher ▶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="radio"/>	Job Watcher ▶	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

You can now customize the performance tasks available to users in the Navigator GUI



Investigate Data

Performance

- Investigate Data
 - Investigate Data Search
 - Health Indicators
 - Monitor
 - Collection Services
 - Database
 - Job Watcher
 - Disk Watcher
 - Performance Explorer
 - Batch Model

Investigate Data - Performance Data

Perspectives

- Health Indicators
- Monitor
- Collection Services**
- Database
- Job Watcher
- Disk Watcher
- Performance Explorer
- Batch Model

Investigate Data - Performance Data Investigator

Perspectives

- Health Indicators
- Monitor
- Collection Services
 - CPU Utilization and Waits Overview**
 - CPU Utilization by Thread or Task
 - Resource Utilization Overview
- Job Statistics Overviews
- Waits
- CPU
- Disk
- Physical Disk I/O
- Synchronous Disk I/O
- Memory
- Page Faults
- Logical Database I/O
- Virtual I/O
- Communications
- 5250 Display Transactions
- Physical System
- Java
- Timeline
- Workload Group
- Collection Services Database Files
- Database
- Job Watcher
- Disk Watcher
- Performance Explorer
- Batch Model
- Custom Perspectives - PDITEST0

Selection

Name
CPU Utilization and Waits Overview

Description
This chart shows CPU utilization and some categories of the more interesting waits for all contributing jobs and tasks over time for the selected collections. Use this chart to select a time frame for further detailed investigation.

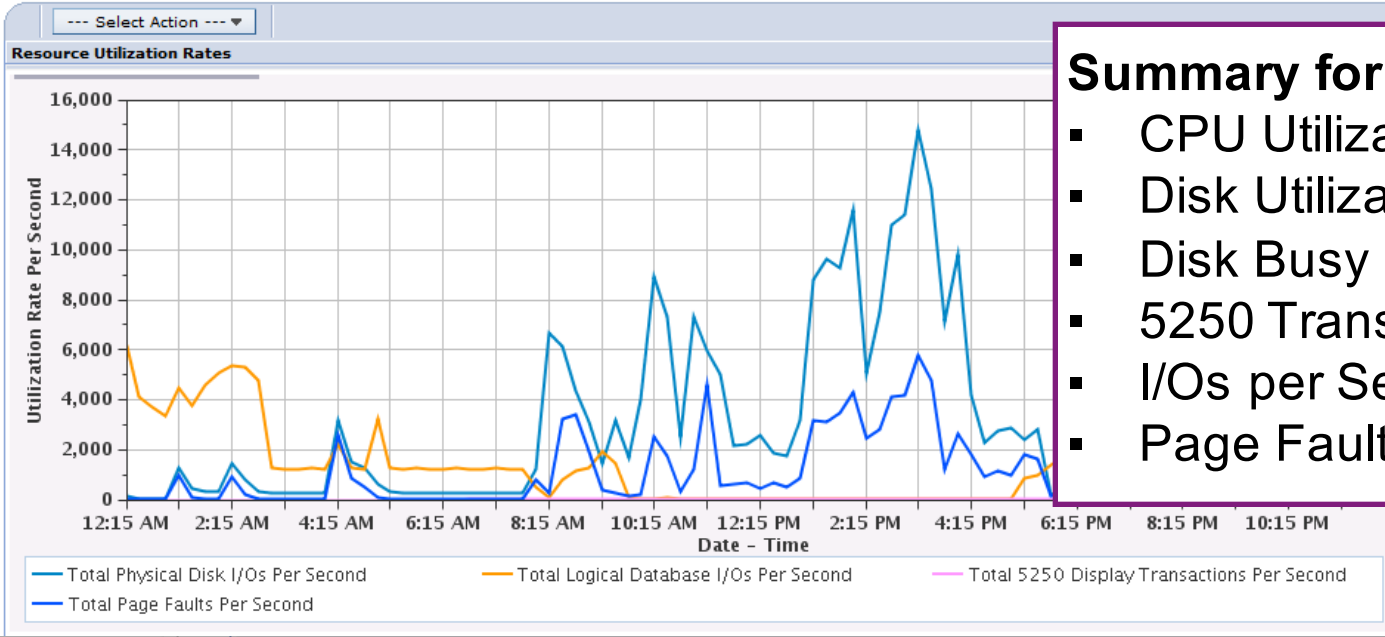
View List
CPU Utilization and Waits Overview

Collection

Collection Library: QPFRDATA | Collection Name: Most Recent

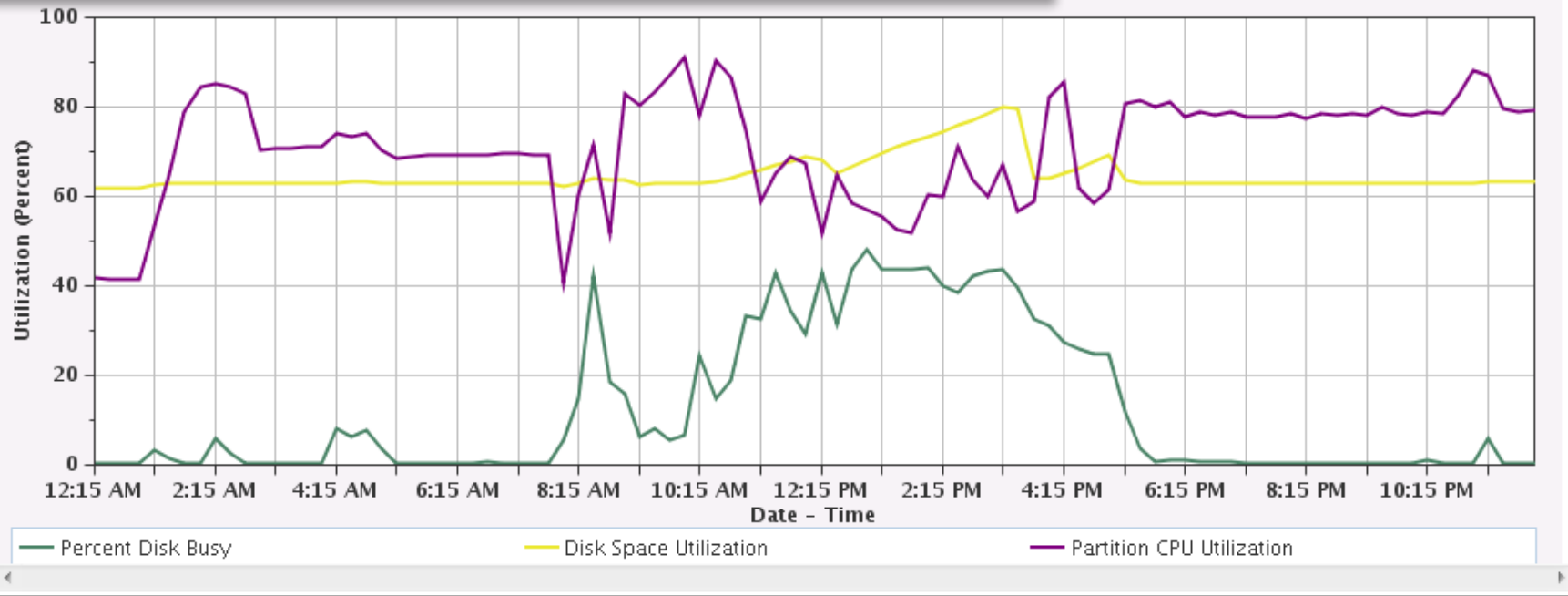
Resource Utilization Overview

Resource Utilization Rates

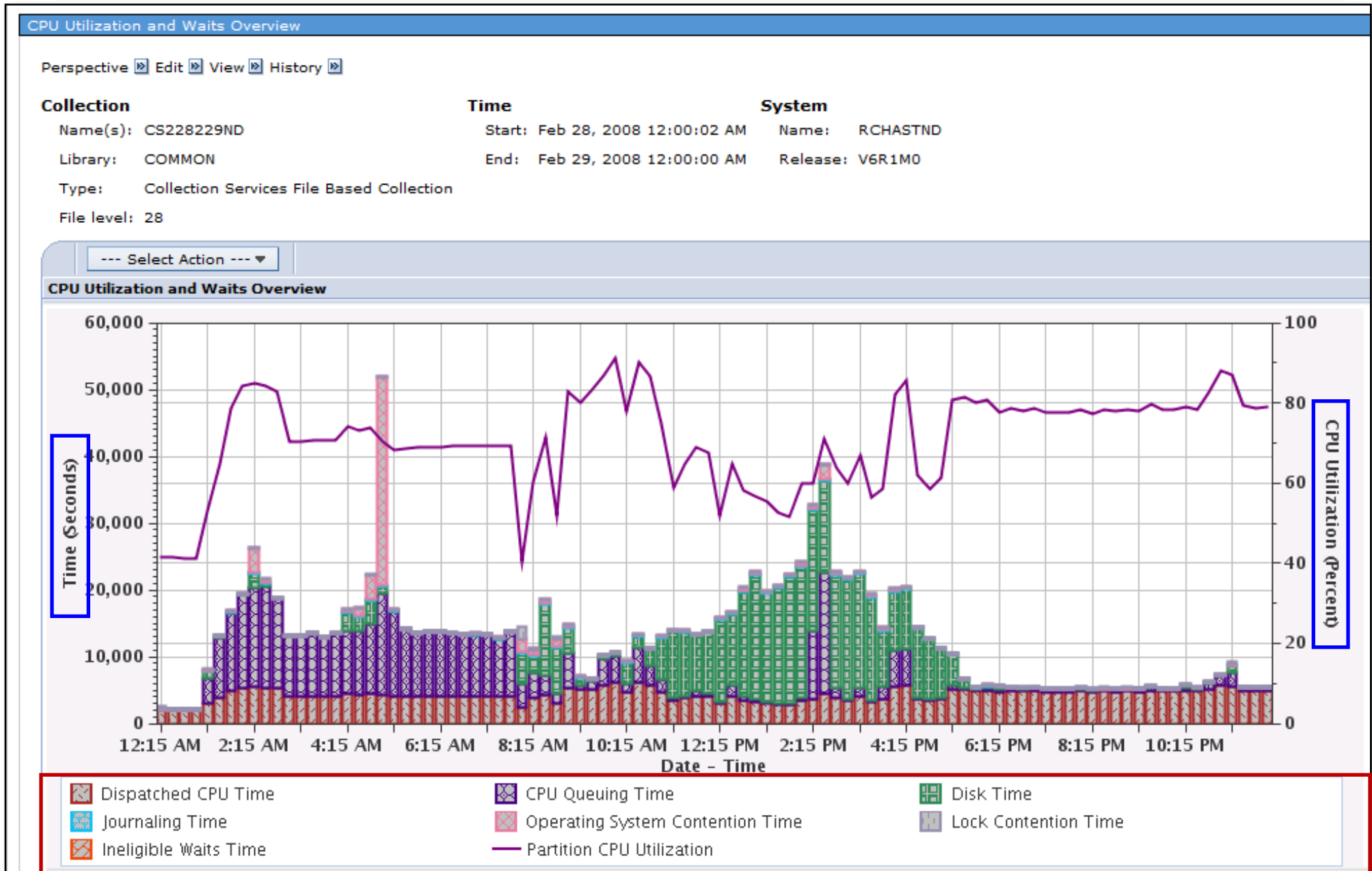


Summary for general overall health:

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



CPU Utilization and Waits Overview



Investigate Data Search



- [Investigate Data Search](https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM_i_Technology_Updates/page/Investigate_Data_Search_Function)

https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM_i_Technology_Updates/page/Investigate_Data_Search_Function

- Replaces the old search (aka “metric finder”)
- Searches in the:
 - Content package and perspective names
 - View
 - Description
 - Metrics
 - SQL
- Search without metrics and SQL for faster results
- Add metrics and SQL for more detail searches





Investigate Data Search

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)



Metric Finder

Collection

Collection Library: QPFRDATA Collection Name: Most Recent

Metric Finder

Metric

Metric Name:

- Primary Affinity Domain ID
- SMAPP Evaluations Serviced
- SMAPP Index Build Time Estimations
- SMT Hardware Threads:
- SQL Cursor Count
- SQL Cursor Reuse
- STRPFRMON Trace Type:
- Samples Taken
- SaveDocument URLs Received
- Scaled CPU Microseconds
- Scaled CPU Time**
- Scaled CPU Time Microseconds
- Scaled CPU Time Used
- Scaled CPU Utilization
- Search String Commands
- Second Most Frequent Journal Entry Type
- Secondary Affinity Domain ID
- Secondary Control Unit
- Secondary Line Description
- Secondary Thread Flag
- Secondary Thread Thresh (ms):

Metric Finder

Metric

Metric Name:

Scaled CPU Time

Perspective

Select	Perspective
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization Overview
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Generic Job or Task
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Job Current User Profile
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Job User Profile
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Job or Task
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Pool
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Server Type
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Subsystem
<input type="radio"/>	Collection Services --> CPU --> CPU Utilization by Thread or Task
<input type="radio"/>	Collection Services --> CPU Utilization by Thread or Task

Page 1 of 1

1 Go

Rows 10

Total:

Collection

Collection Library: QPFRDATA Collection Name: Most Recent

Options

Collection

Collection Library: QPFRDATA
Collection Name: Most Recent

Buttons: Display, Search, Save as Favorite, **Options**, Close

Investigate Data - Performance Data Investigator

Options

- Use patterns Use patterns where applicable in charts.
- Show charts Whenever possible, show charts instead of tables.
- Enable design mode Enable advanced features allowing design and development of new content.
- Show help Show help messages for many tasks.
- Show SQL error messages Show SQL error messages to user.
- Set table size Rows: Columns: Specify the number of visible rows and columns shown for tables.

Default library

Specify the default library that will be used when a collection is selected.

- Use Collection Services configured library
- Use last visited library
- Use library:

System Monitor

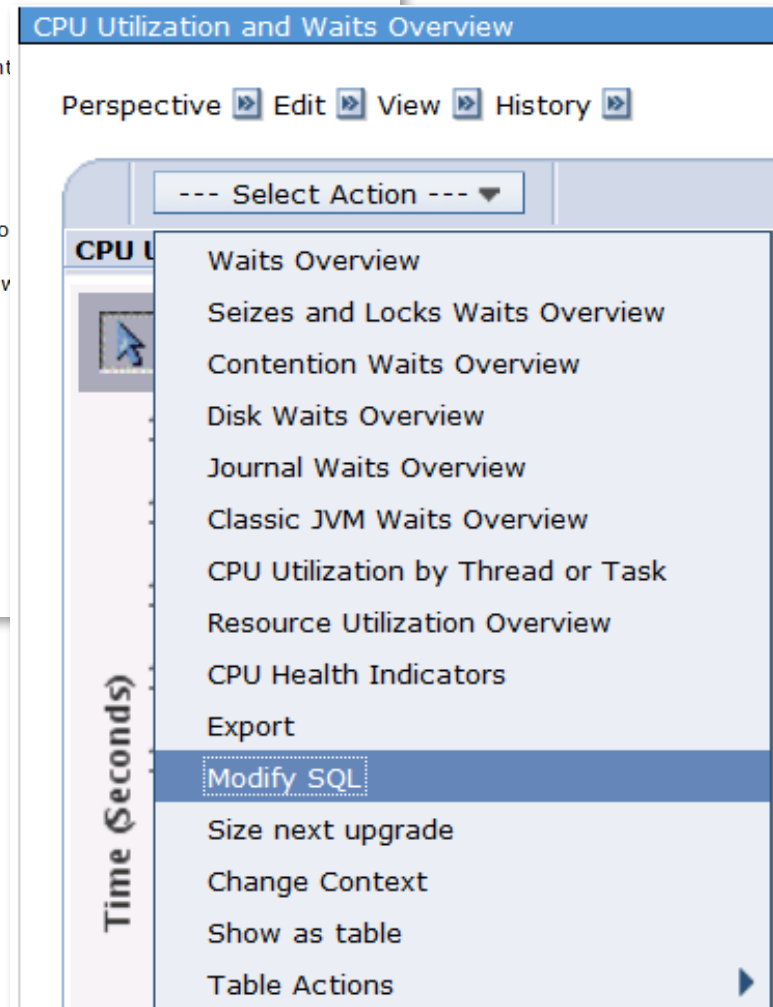
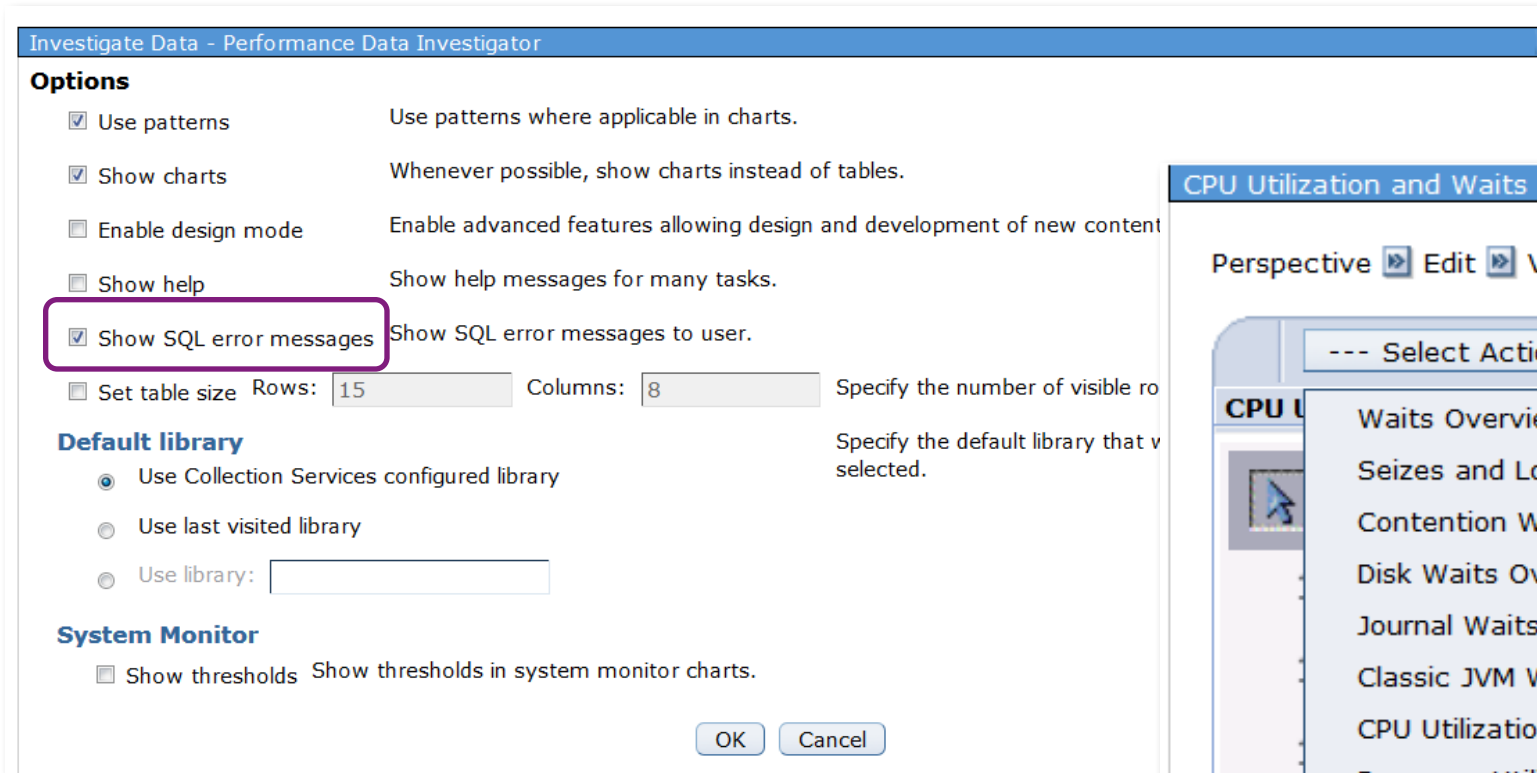
- Show thresholds Show thresholds in system monitor charts.

OK Cancel

7.2



Option – Show SQL Error Messages



“Show SQL error messages” -

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



Show SQL Error Messages

Modify SQL

SQL Statement

Reset

```

SELECT
  QSY.INTNUM,
  QSY.CSDTETIM AS CSDTETIM,
  MAX(PCTSYSCPU) AS PCTSYSCPU,
  SUM(TIME01) * .000001 AS WB01,
  SUM(TIME02) * .000001 AS WB02,
  SUM(TIME05 + TIME06 + TIME07 + TIME08 + TIME09 + TIME10) * .000001 AS WB050607080910,
  SUM(TIME11) * .000
  SUM(TIME14 + TIME15 + TIME16 + TIME17 + TIME18) * .000
  SUM(TIME18) * .000
  100 AS PCT100,
  DTETIM AS DTETIM,
  DTECEN AS DTECEN
FROM
  (
    SELECT
      DTECEN
      DOUBLE(DTECEN) AS DTECEN
      DOUBLE(DTECEN) AS DTECEN
  )
  
```

Allow collection choice

OK Cancel

Modify SQL window
Easier to see SQL errors

Modify SQL

The query you entered can not be understood by this application. Please correct and try again.

(LRPOWELL) - SQLQuery.executeQuery() - Select String: SELECT QSY.CSDTETIM AS CSDTETIM, QSY.PARTCPUUTIL, QDK.PCTDSKFULL, QDK.PCTDSKBUSY, QSY.INTNUM, QSY.DTETIM AS DTETIM, QSY.DTECE AS DTECEN FROM (SELECT DTETIM, DTECEN AS DTECEN, INTNUM, DTECEN || DTETIM AS CSDTETIM, DOUBLE(SYSPTU)/DOUBLE(SYSCTA) * 100 AS PARTCPUUTIL FROM QTEMP.QPFRDATAQAPMSYSTEMQ146000002 QSY) QSY INNER JOIN (SELECT CSDTETIM, CASE WHEN SUM(DSCAP) <> 0 THEN (SUM(DSCAP - DSAVL) / SUM(DSCAP)) * 100 ELSE 0 END AS PCTDSKFULL, AVG(PCTDSKBUSY) AS PCTDSKBUSY FROM (SELECT QSY.DTECEN || QSY.DTETIM AS CSDTETIM, DOUBLE(MAX(DSCAP)) AS DSCAP, DOUBLE(MIN(DSAVL)) AS DSAVL, AVG(CASE WHEN DSSMPL <> 0 THEN DOUBLE(DSSMPL - DSNBSY) / DOUBLE(DSSMPL) * 100 ELSE 0 END) AS PCTDSKBUSY FROM QTEMP.QPFRDATAQAPMSYSTEMQ146000002 QSY LEFT OUTER JOIN QTEMP.QPFRDATAQAPMDISKQ146000002 QDS ON QSY.INTNUM = QDS.INTNUM WHERE ((DSASP = '1')) GROUP BY QSY.DTETIM, QSY.DTECEN, DSARM, DMFLAG) A GROUP BY CSDTETIM) QDK ON QSY.CSDTETIM = QDK.CSDTETIM ORDER BY CSDTETIM

[SQL0205] Column DTECE not in table QSY in *N.

OK

Design Mode

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

The screenshot shows the 'Investigate Data - Performance Data Investigator' interface. On the left, a tree view under 'Perspectives' lists various categories, with 'Collection Services' selected and highlighted in blue. A purple box highlights the root folder icon in this tree. On the right, the 'Selection' panel displays details for 'Collection Services', including its name, description, and default perspective. A purple box highlights a set of control buttons: a 'Locked' checkbox (checked), 'New Folder...', 'New Perspective...', 'Edit', 'Advanced Edit', 'Delete', 'Move Up', and 'Move Down'. At the bottom, the 'Collection' section shows 'Collection Library' set to 'QPFRDATA' and 'Collection Name' set to 'Most Recent'. A row of buttons includes 'Display', 'Search', 'Save as Favorite', 'Options', 'Refresh Perspectives', and 'Close'.

Health Indicators



Health Indicators

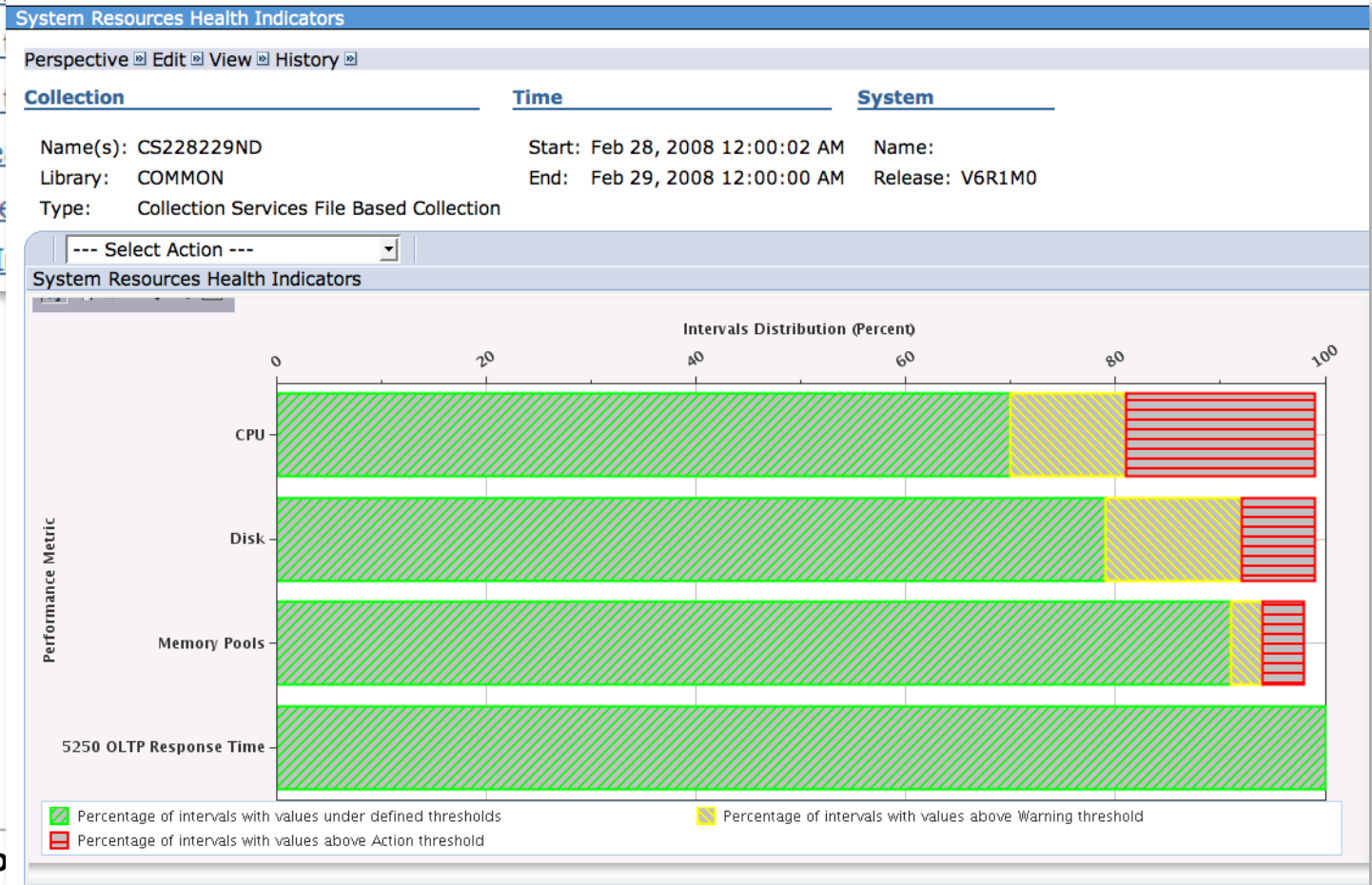


Investigate Data - Performance Data Investigator

Perspectives

- Health Indicators
 - System Resources Health Indicators
 - CPU Health Indicators
 - Disk Health Indicators
 - Memory Pools Health Indicators
 - Response Time Health Indicators
 - Database Health Indicators

System Resource Health Indicators



Database Health Indicators were introduced with 7.2

CPU Health Indicators

CPU Health Indicators

Perspective | Edit | View | History

Collection	Time	System
Name(s): CS228229ND	Start: Feb 28, 2008 12:00:02 AM	Name: RCHASTND
Library: COMMON	End: Feb 29, 2008 12:00:00 AM	Release: V6R1M0
Type: Collection Services File Based Collection		

--- Select Action ---

- Select Action ---
- System Resources Health Indicators
- CPU Utilization and Waits Overview
- CPU Utilization Overview
- Interactive Capacity CPU Utilization
- Define Health Indicators
- Export
- Modify SQL
- Size next upgrade
- Change Context
- Show as table

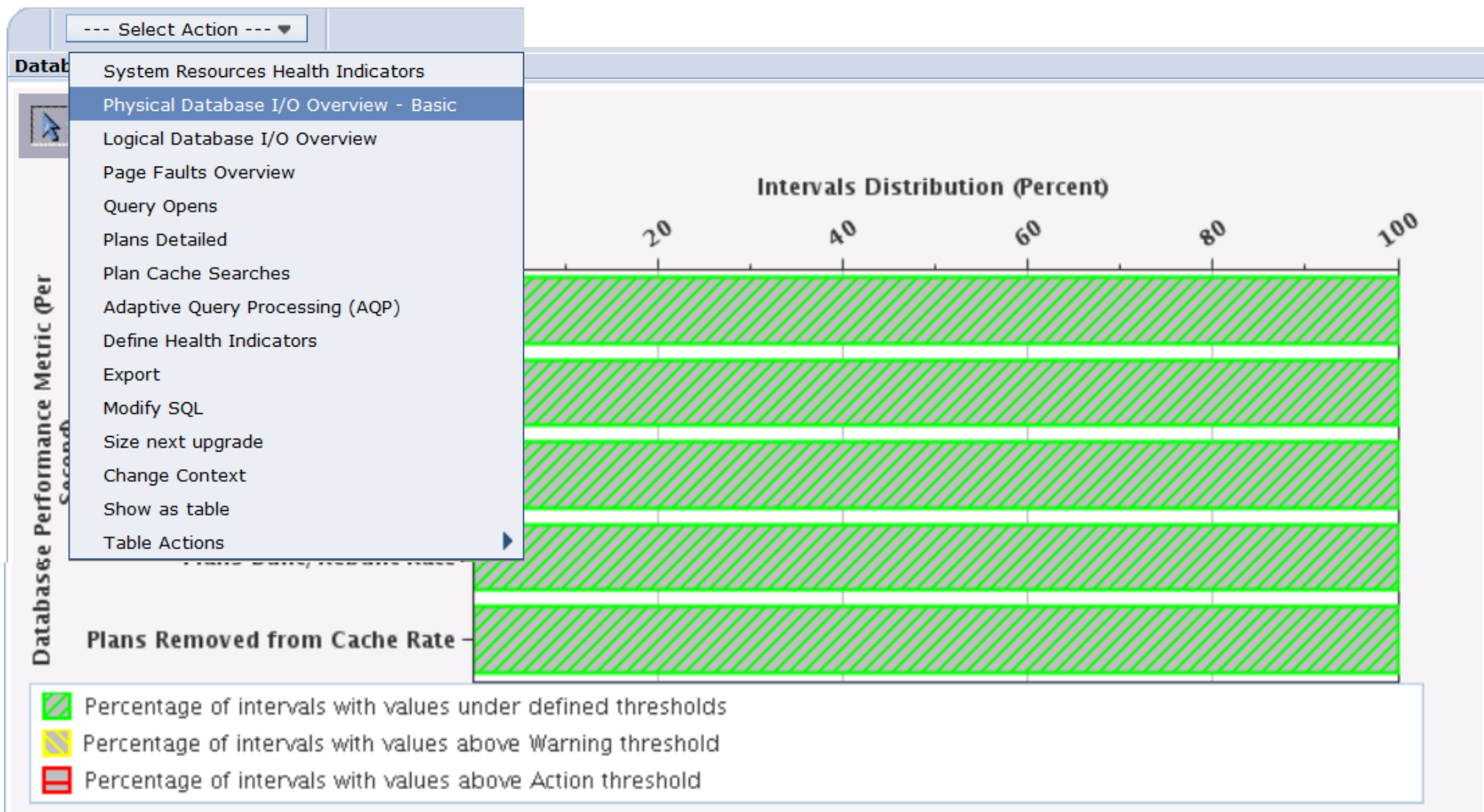
Intervals Distribution (Percent)

Metric	Under Threshold (%)	Above Warning Threshold (%)
Partition CPU Utilization	~90	~10
Jobs CPU Queuing Percent	~15	~30
Interactive CPU Utilization	100	0

Percentage of intervals with values under defined thresholds
 Percentage of intervals with values above Warning threshold

Done Options Save As...

Database Health Indicators 7.2+



Define Health Indicators

7.2 screen captures

Define Health Indicators

System Resources Health Indicators	Available Indicators		Selected Indicators	
CPU	[Empty]	Add >>	5250 OLTP Response Time	Warning 0
Disk		Remove <<	Memory Pools	Action 0
Memory Pools			Disk	
5250 OLTP Response Time			Database	
Database			CPU	

--- Select Action ---

- CPU Health Indicators
- Disk Health Indicators
- Memory Pools Health Indicators
- Response Time Health Indicators
- Database Health Indicators
- Define Health Indicators
- Export

Define Health Indicators

System Resources Health Indicators	Available Indicators		Selected Indicators	Current Threshold Values
CPU	[Empty]	Add >>	Jobs CPU Queuing Percent	Warning 10
Disk		Remove <<	Interactive CPU Utilization	Action 20
Memory Pools			Partition CPU Utilization	
5250 OLTP Response Time				
Database				

Define Health Indicators

System Resources Health Indicators	Available Indicators		Selected Indicators	Current Threshold Values
CPU	[Empty]	Add >>	Average Disk Percent Busy	Warning 20
Disk		Remove <<	Average Disk Response Time	Action 30
Memory Pools			Average Disk Space Percent Used	
5250 OLTP Response Time				
Database				

Define Health Indicators

7.2 screen captures

Define Health Indicators

System Resources Health Indicators	Available Indicators	Selected Indicators	Current Threshold Values
CPU	[Empty]	Faults Per Second	Warning: 4000
Disk		Page Faults Pending Per Second	Action: 5000
Memory Pools			
5250 OLTP Response Time			
Database			

Define Health Indicators

System Resources Health Indicators	Available Indicators	Selected Indicators	Current Threshold Values
CPU	[Empty]	5250 OLTP Response Time	Warning: 800
Disk			Action: 1000
Memory Pools			
5250 OLTP Response Time			
Database			

Define Health Indicators

System Resources Health Indicators	Available Indicators	Selected Indicators	Current Threshold Values
CPU	[Empty]	SQL Full Opens Rate	Warning: 200
Disk		Plans Built/Rebuilt Rate	Action: 500
Memory Pools		Native Full Opens Rate	
5250 OLTP Response Time		Physical Database I/O Rate	
Database		Plans Removed from Cache Rate	

7.2+
IBM Sys

Reports

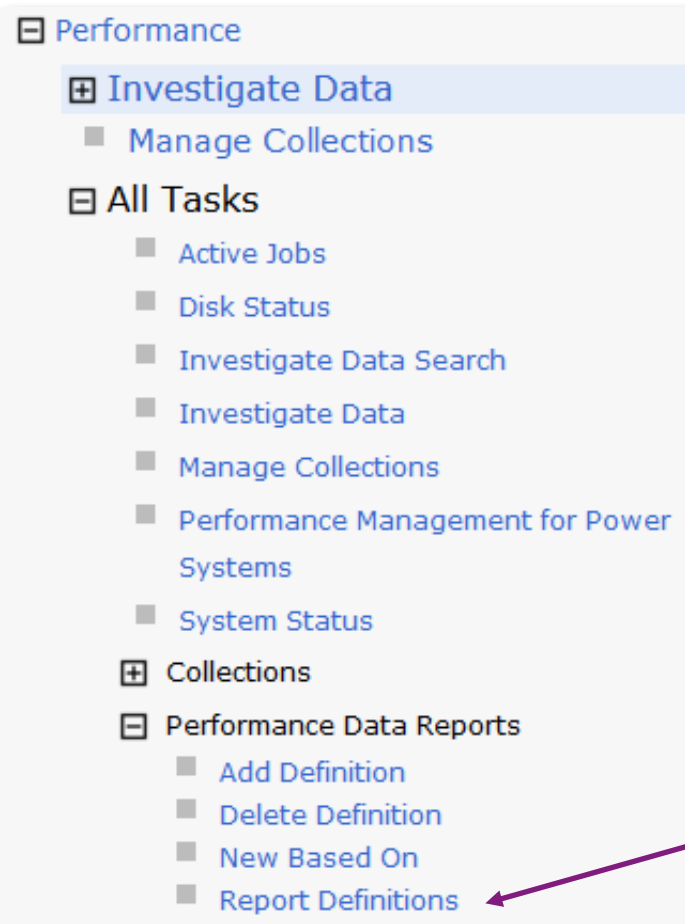


Performance Data Reports

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

“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 with Report Definitions



Performance Data Reports

Performance Data Report Definitions

IBM® Navigator for i

- Performance
 - Investigate Data
 - Manage Collections
 - Configure Collection Services
 - Graph History
 - All Tasks
 - Active Jobs
 - Disk Status
 - Investigate Data Search
 - Investigate Data
 - Manage Collections
 - Performance Management for Power Systems
 - System Status
 - Collections
 - Performance Data Reports**
 - Add Definition
 - Delete Definition
 - New Based On
 - Report Definitions

Welcome x Report Definitions x Add Definition x Delete Definition x New Based On x

Add Performance Data Report Definition

Name:

Description:

Perspectives

Select	Perspective	Package
<input type="checkbox"/>	None	

Collection

Collection:

Library:

Type:

Cover Page




Title:


Report Definitions allow you to view existing definitions
Add Definition to create your customized report




Report Definitions

Performance Data Report Definitions - Etc3t1.rchland.ibm.com




 Actions ▾



<input type="checkbox"/>	Name	Description
 ...	No filter applied ✕	
<input type="checkbox"/>	Health Indicators	A predefined performance
<input type="checkbox"/>	System Overview	A predefined performance
<input type="checkbox"/>	Resource Consumption	A predefined performance

Create Performance Data Report

Report definition:

Output type:

Collection:

Library:

Type:

Create your own Report Definition

1

Performance Data Report Definitions - Etc3t1.rchland.ibm.com

Actions

- New → Add Performance Data Report Definition...
- Refresh
- Advanced Filter → A predefined performance...
- Export → A predefined performance...
- Configure Options → A predefined performance...

3

Add Performance Data Report Definition

Add Perspective

Filter

Collection name: CS228229ND (*CSFILE)

Library: COMMON

Perspectives **Selection**

- Database
- Collection Services
 - CPU Utilization and Waits Overview
 - Resource Utilization Overview
 - Job Statistics Overviews
 - Waits
 - CPU
 - Disk
 - Physical Disk I/O
 - Synchronous Disk I/O

2

Add Performance Data Report Definition

Name:

Description:

Perspectives

Select	Perspective	Package
<input type="checkbox"/>	None	

Collection

Collection: Most Recent

Library: QPFRDATA

Type:

Cover Page

Title:

- Report definition name
- Date created
- Perspectives
- Collection name

OK Cancel

4

Add Performance Data Report Definition

Add Performance Data Report Definition

Name: Demo Report

Description: Report prepared for my presentation

Perspectives

--- Select Action ---

Select	Perspective	Package
<input type="checkbox"/>	CPU Utilization and Waits Overview	Collection Services
<input type="checkbox"/>	Page Faults Overview	Collection Services
<input type="checkbox"/>	Synchronous Disk I/O Overview	Collection Services



Create Performance Data Report

Report Definitions - Dmi1.rchland.ibm.com

|
 |
 |
 |
 Actions ▾

... No filter applied

<input type="checkbox"/>	Name	Description
<input type="checkbox"/>	Health Indicators	A predefined performance data
<input checked="" type="checkbox"/>	System Overview	A predefined performance data
<input type="checkbox"/>	Resource Consumption	data

Create Performance Data Report...
 New based on...
 Delete...
 Properties...

Create Performance Data Report

Report definition:

Output type:

Collection:

Library:

Type:

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:

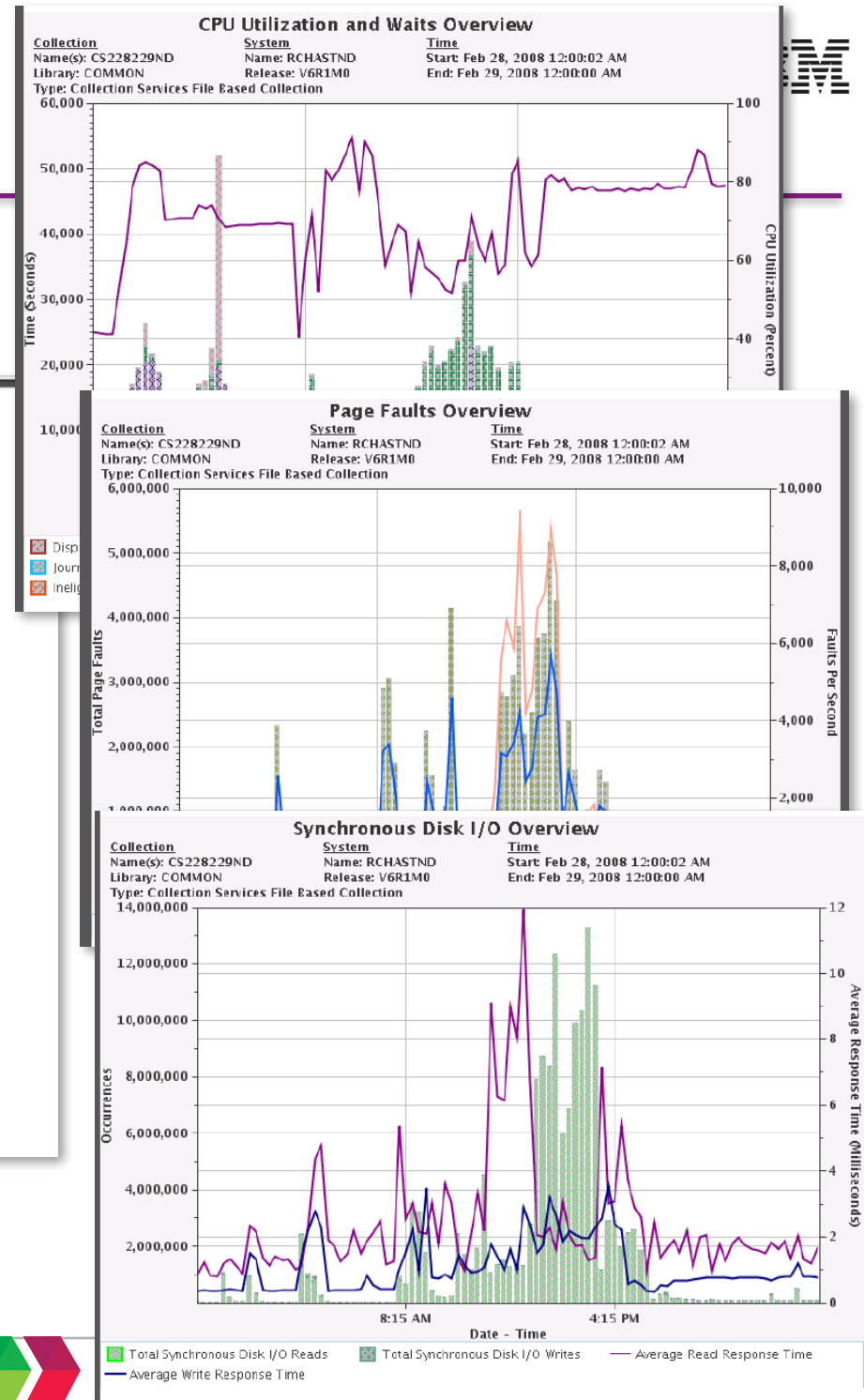
CPU Utilization and Waits Overview

Page Faults Overview

Synchronous Disk I/O Overview

Library/Collection used for report:

Common/Cs228229nd



7.2 and later System Monitors

Predictive Performance Management

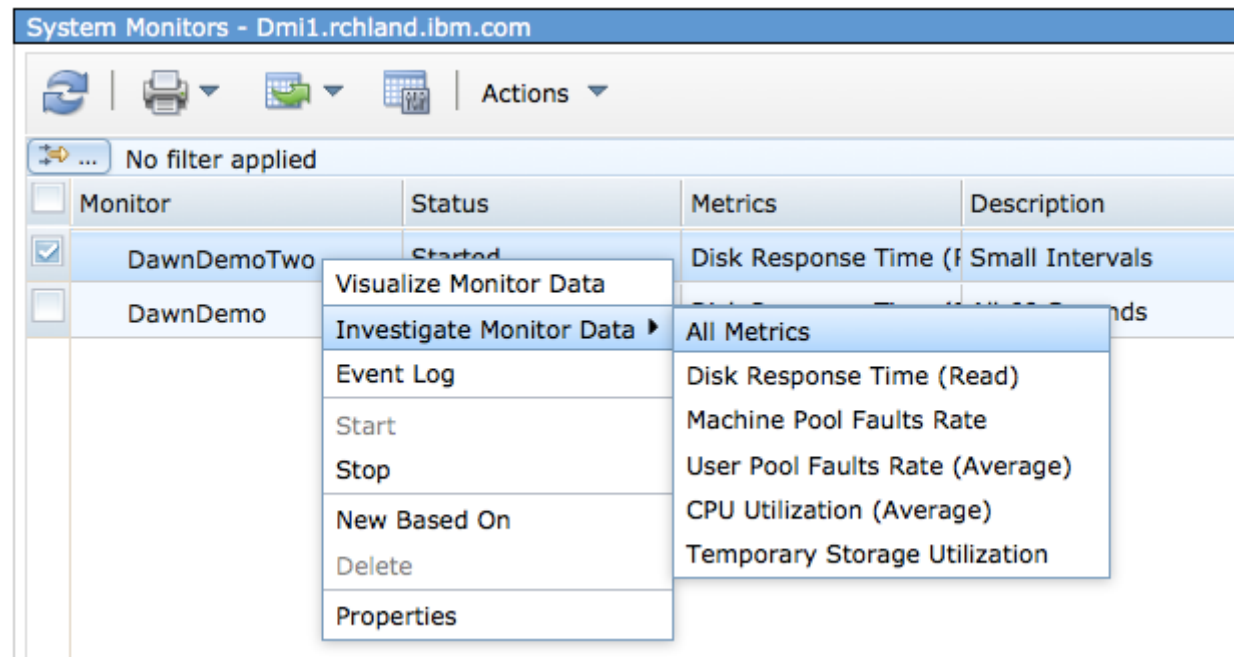
Tuesday – 15:00-16:00

Thursday – 8:45-9:45

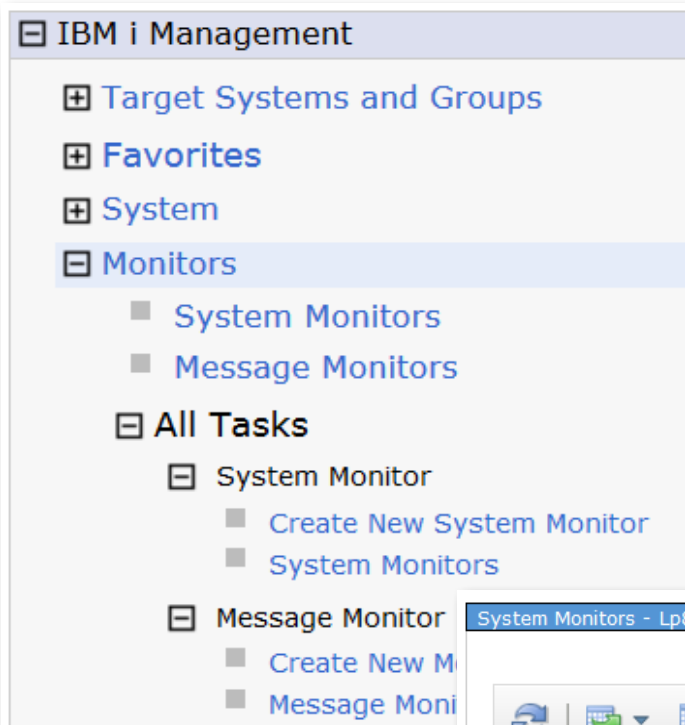


7.2 System Monitors

- System Monitors were introduced with Navigator in 7.2
- Similar to Management Central System Monitors
- System Monitor data comes from Collection Services
- You can view System Monitor data with the Performance Data Investigator



Monitors with IBM Navigator for i



Select **what** you want to monitor

Set monitoring **intervals**

Set **thresholds**

Define **actions** taken when a threshold is reached

Manage event **logs**

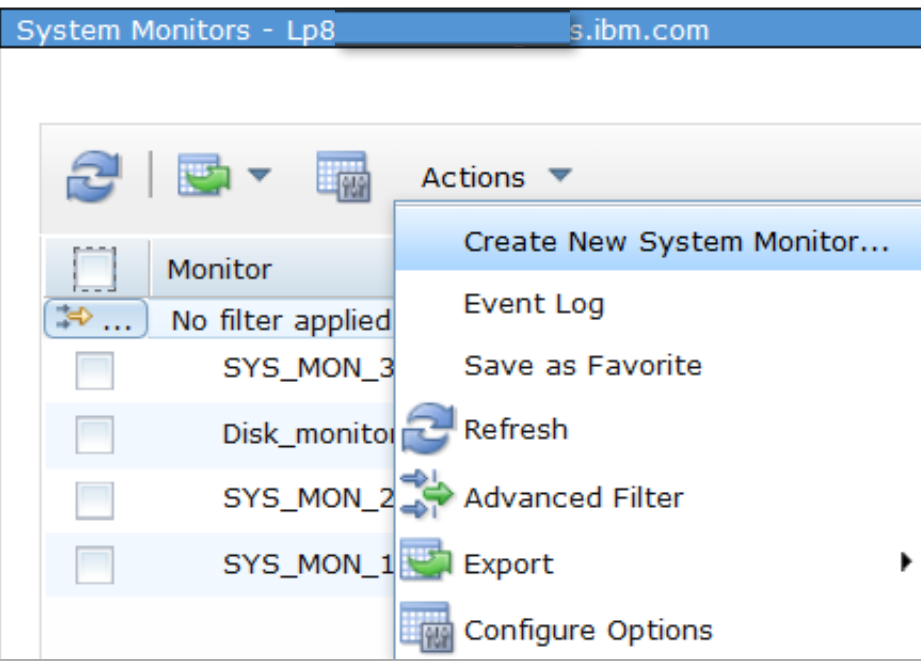
System Monitors - Lp89ut27.rch.stglabs.ibm.com

Monitor	Status	Metrics	Description	Creation Date/Time	Status Changed	Owner
No filter applied						
DawnMay	Started	Disk Arm Utilization for	Example CPU Monitor	2014-04-26 17:35:30.0	2014-04-26 17:40:22.07	DMMAY
SYS_MON_3	Stopped	LAN Utilization (Averag	System Monitor '1	2013-12-03 20:08:59.0	2013-12-03 20:10:02.03	
Disk_monitor	Stopped	Disk Arm Utilization (Av		2013-11-27 13:32:13.0	2013-11-27 13:32:29.11	LEWIS,LELL
SYS_MON_2	Stopped	Disk Arm Utilization (Av		2013-11-25 20:13:11.0	2013-11-25 20:13:11.12	
SYS_MON_1	Stopped	Disk Arm Utilization (Av		2013-11-25 20:09:42.0	2013-11-25 20:09:42.05	LEWIS,LELL

List of system monitors on the system



Create New System Monitor



- [-] Monitors
 - [-] System Monitors
 - [-] Message Monitors
- [-] All Tasks
 - [-] System Monitor
 - [-] Create New System Monitor
 - [-] System Monitors
 - [+] Message Monitor

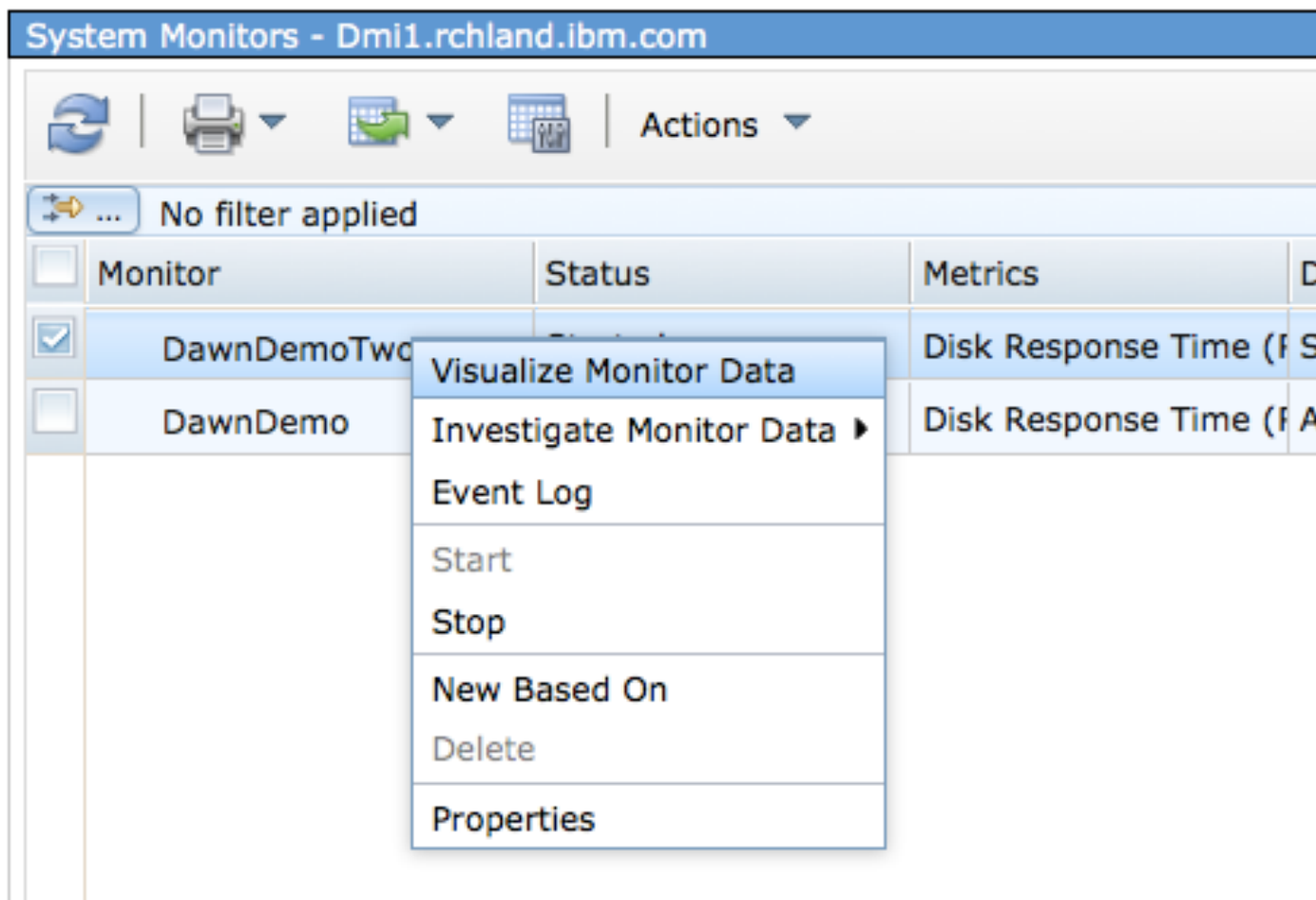
The "Set Monitor General Information" dialog box is shown. It has a tabbed interface with "General" selected. The "Name" field contains "DawnMay" and the "Description" field contains "Example System Monitor".

*General	
*Name	DawnMay
Description	Example System Monitor



Visualize Monitor Data

- Visualize Monitor Data
 - Added with 7.3, going back to 7.2 soon



The screenshot shows the 'System Monitors' interface for 'Dmi1.rchland.ibm.com'. At the top, there is a toolbar with icons for refresh, print, and actions. Below the toolbar, a filter bar indicates 'No filter applied'. The main area is a table with columns for 'Monitor', 'Status', and 'Metrics'. Two monitors are listed: 'DawnDemoTwo' and 'DawnDemo'. A context menu is open over the 'DawnDemoTwo' row, showing options: 'Visualize Monitor Data', 'Investigate Monitor Data', 'Event Log', 'Start', 'Stop', 'New Based On', 'Delete', and 'Properties'.

Monitor	Status	Metrics
<input checked="" type="checkbox"/> DawnDemoTwo		Disk Response Time (F S)
<input type="checkbox"/> DawnDemo		Disk Response Time (F A)

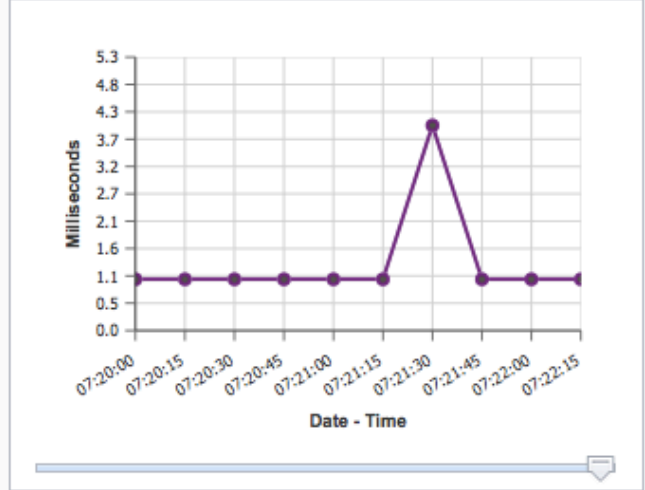


----- Actions ----- DawnDemo - All Metrics

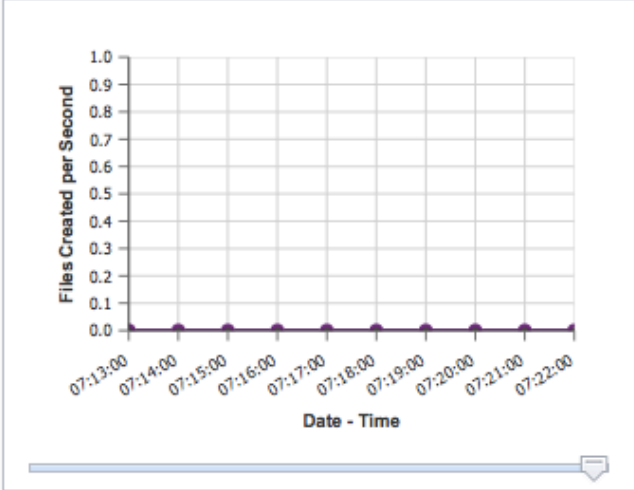
▼ Context

Collection Name: R297000002 Collection Date: 2016-10-23 Collection Type: *CSFILE
 Library: QPFRDATA Coordinate Scrolling Show Thresholds
 Layout(columns): 3 Automatic Refresh

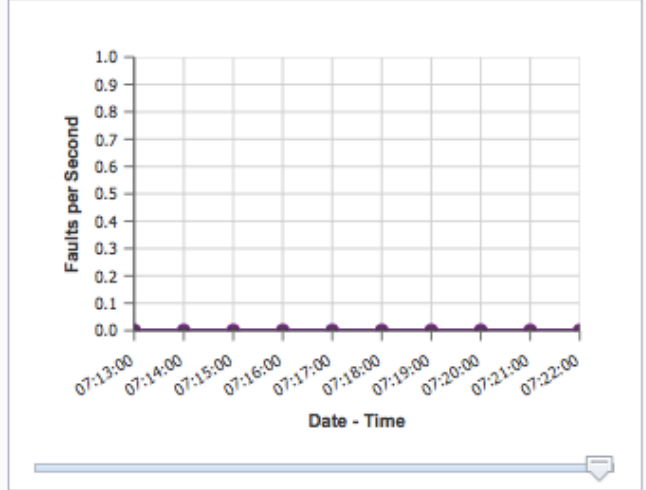
▼ Disk Response Time (Read)



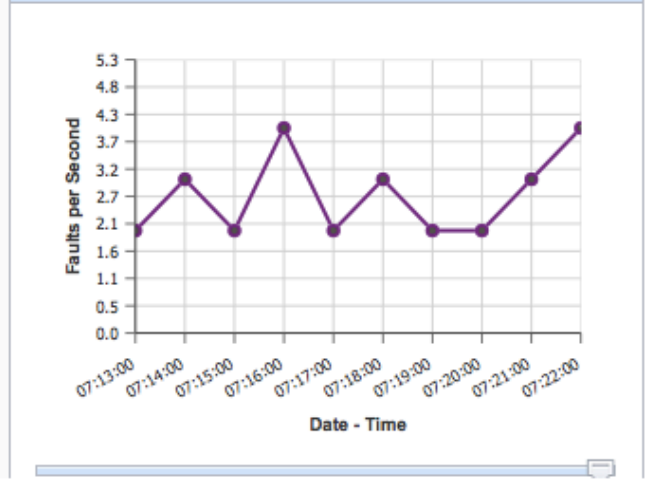
▼ Spool File Creation Rate



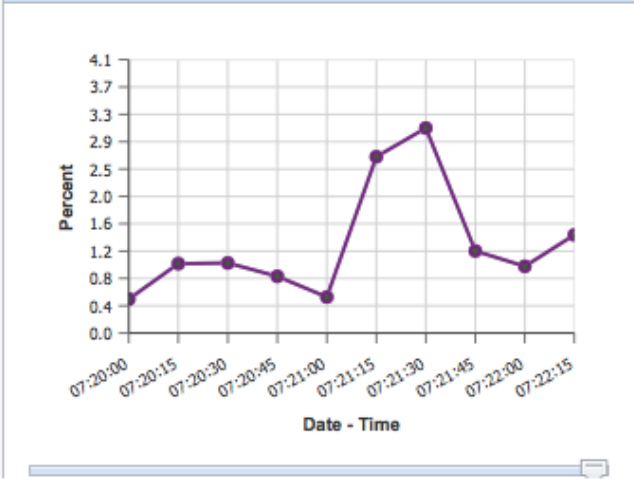
▼ Machine Pool Faults Rate



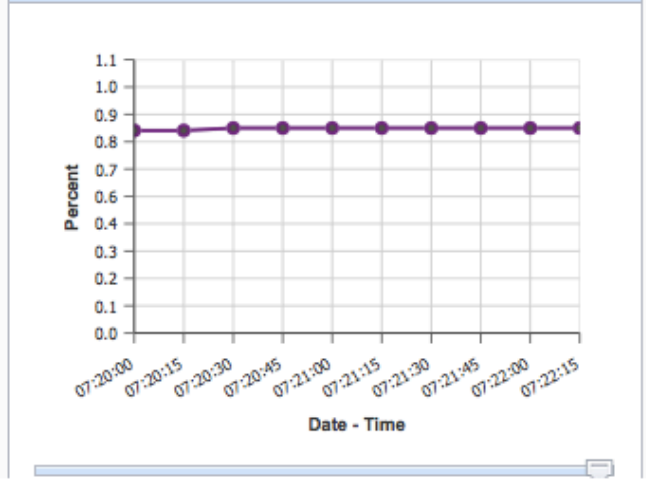
▼ User Pool Faults Rate (Average)



▼ CPU Utilization (Average)

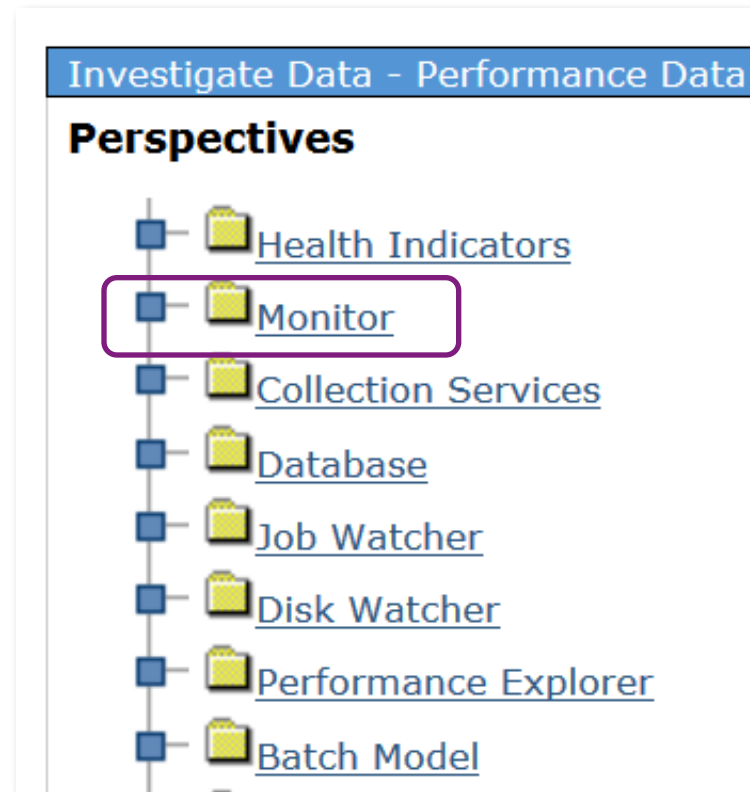


▼ Temporary Storage Utilization



Investigate Data - Monitor

- Investigate Monitor Data via the Performance Data Investigator
- This interface allows you to view monitor data without having set up a system monitor



7.2 and later

Batch Model



Batch Model

- Batch performance is important for many customers
- "What can I do to my system in order to meet my overnight batch run-time requirements?"
 - (also known as the *Batch Window*)
- A sizing tool
 - based on Collection Services performance data
 - predicts batch workload run times, resources used, and duration of the "batch window"



Batch Model

- [-] Performance
 - [+] Investigate Data
 - [+] Manage Collections
 - Configure Collection Services
 - [+] Graph History
 - [-] All Tasks
 - Active Jobs
 - Disk Status
 - Investigate Data Search
 - Investigate Data
 - Manage Collections
 - Performance Management for Power Systems
 - System Status
 - [+] Collections
 - [+] Performance Data Reports
 - [+] Collectors
 - [+] Graph History
 - [-] Sizing
 - [-] Batch Model
 - Analyze Batch Model
 - Batch Models
 - Calibrate Batch Model
 - Change Batch Model Calibration
 - Change Batch Model
 - Create Batch Model
 - Merge Batch Model
 - Reset Batch Model

Investigate Data - Performance Data Investigator

Perspectives

- [-] Health Indicators
- [-] Monitor
- [-] Collection Services
- [-] Database
- [-] Job Watcher
- [-] Disk Watcher
- [-] Performance Explorer
- [-] **Batch Model**
 - Measured/Modeled Resource Utilization Overview
 - Measured/Modeled Workload Timeline Overview

Collection

Collection Library: Collection Name:



PTFs for POWER8 Hardware Support

PTFs are needed for POWER8 hardware support

- SI54715
- SI54462
- You must restart the HTTP Server after these PTFs are applied for them to take affect
 - `ENDTCPSVR SERVER (*HTTP) HTTPSVR (*ADMIN)`
 - `STRTCPSVR SERVER (*HTTP) HTTPSVR (*ADMIN)`



Batch Model - *Change Batch Model*

- Change Batch Model
 - Model the workload
 - Growth
 - Processor
 - Storage
 - Other workload changes



Batch Model - Change Batch Model – Growth

Change Batch Model - BMDEMO/Q095130713

General	Batch model:	Q095130713
Processor	Library:	BMDEMO
Storage	Start date and time:	12/31/69 11:59:59 PM
Workloads	End date and time:	12/31/69 11:59:59 PM
	Workload growth rate(%):	<input type="text" value="0"/>

Workload growth rate(%): = 5% increase

Workload growth rate(%): = 5% decrease

Increase or decrease
growth rate of work
done by all jobs



Batch Model - Change Batch Model – Processor

Change Batch Model - BMDEMO/Q095130713

General	Original Processor Information	
*Processor	Model/Feature/Frequency/Cores:	570-9117-MMA 7388 5000 2-16
Storage	Partitioning type:	Partition dedicated processors
Workloads	Number of virtual processors:	2
	Processing units:	2.0
	SMT enabled:	Automatic
	Maximum number of SMT hardware threads:	0
	Model Processor Information	
	Model/Feature/Frequency/Cores:	<input type="text" value="570-9117-MMA 7388 5000 2-16"/>
	Partitioning type:	<input type="text" value="Partition dedicated processors"/>
	*Number of virtual processors:	<input type="text" value="2"/>
	*Processing units:	<input type="text" value="2"/>
	SMT enabled:	<input type="text" value="Automatic"/>
	Maximum number of SMT hardware threads:	<input type="text" value="0"/>



Batch Model - Change Batch Model – Storage

Add, Change, or Delete Disk Configurations

Change Batch Model - QKXKDATA/Q113000002

General

Processor

Storage

Workloads

Original Storage Configuration

--- Select Action ---

Disk Attachment Family Name	Storage Type	Disk Speed(RPM) or Generation	Number of Disks
IOA Feature #5705	HDD	7200	2
Dual POWER6 Cached DAS	SSD	3	2

Model Storage Configuration

--- Select Action ---

Select	Disk Attachment Family Name	Storage Type	Disk Speed(RPM) or Generation	Number of Disks
<input type="checkbox"/>	IOA Feature #5705	HDD	7200	2
<input type="checkbox"/>	Dual POWER6 Cached DAS	SSD	3	2

Add Storage

Disk attachment family name: IOA Feature #5705

Storage type: HDD

Disk speed (RPM): 7200

*Number of disks: 2

OK Cancel

Change Storage

Disk attachment family name: Dual POWER6 Cached DAS

Storage type: SSD

Disk Generation: 3

*Number of disks: 1

OK Cancel



Batch Model - Change Batch Model – Workloads

Copy, Change, Delete, or Move Workloads

Welcome x Batch Models x

Change Batch Model - SBSPLAY/Q095130713

General
Processor
Storage
Workloads

Select	Job Name	Job User	Job Number	Thread ID	Job Type	Job Priority	Growth Rate	Start Time	End Time
<input type="checkbox"/>	▼ PCOMBDA001	OPRTEMP	006810	00000005	Batch	25	0%	4/5/11 1:22:38 PM	4/5/11 5:16:25 PM
<input type="checkbox"/>	PCOMCUD00	OPRTEMP	006817	00000002	Batch	52	0%	4/5/11 2:00:23 PM	4/5/11 2:11:36 PM
<input type="checkbox"/>	PCOMFTD00	OPRTEMP	006819	00000003	Batch	52	0%	4/5/11 2:11:49 PM	4/5/11 2:14:29 PM
<input type="checkbox"/>	▼ PCOMTMD00	OPRTEMP	006824	00000004	Batch	52	0%	4/5/11 2:14:19 PM	4/5/11 2:16:05 PM
<input type="checkbox"/>	PTM9525	OPRTEMP	006831	00000006	Batch	50	0%	4/5/11 2:16:05 PM	4/5/11 2:16:12 PM
<input type="checkbox"/>	PTA0110M02	OPRTEMP	006834	00000007	Batch	50	0%	4/5/11 3:13:57 PM	4/5/11 3:34:51 PM
<input type="checkbox"/>	PTA0110M01	OPRTEMP	006833	00000004	Batch	50	0%	4/5/11 3:13:57 PM	4/5/11 3:48:40 PM
<input type="checkbox"/>	PTA0110M04	OPRTEMP	006836	00000007	Batch	50	0%	4/5/11 3:13:58 PM	4/5/11 3:35:31 PM
<input type="checkbox"/>	PTA0110M03	OPRTEMP	006835	00000009	Batch	50	0%	4/5/11 3:13:58 PM	4/5/11 3:33:29 PM
<input type="checkbox"/>	PTA0110M05	OPRTEMP	006837	00000006	Batch	50	0%	4/5/11 3:13:58 PM	4/5/11 3:29:24 PM
<input type="checkbox"/>	PFT0500	OPRTEMP	006847	00000005	Batch	50	0%	4/5/11 4:20:58 PM	4/5/11 4:23:37 PM
<input type="checkbox"/>	PCOPYTA001	OPRTEMP	006850	00000005	Batch	52	0%	4/5/11 4:26:47 PM	4/5/11 4:28:01 PM
<input type="checkbox"/>	PCOMTAP001	OPRTEMP	006861	00000002	Batch	52	0%	4/5/11 4:28:52 PM	4/5/11 4:34:20 PM
<input type="checkbox"/>	PCOMTAD001	OPRTEMP	006862	00000002	Batch	52	0%	4/5/11 4:28:52 PM	4/5/11 5:05:24 PM
<input type="checkbox"/>	▼ PCOMTAM001	OPRTEMP	006863	00000002	Batch	52	0%	4/5/11 4:28:52 PM	4/5/11 4:30:47 PM

Page 1 of 5 | 1 | Go | Rows 15 | Total: 71 Selected: 0

OK Cancel



Batch Model - Change Batch Model – Workloads

Change Workload

Job name:

Job user:

Job number:

Thread ID:

Job type:

Previous workload:

Job priority:

Growth rate(%):

Exceptional wait time (microseconds):

Start time: Example: 12:30:00 PM

End time: 4/5/11 5:16:25 PM

Workload Details

Priority	Start Time	End Time	CPU Time(Microseconds)	Synchronous Disk Reads
25	4/5/11 1:22:38 PM	4/5/11 5:16:25 PM	3138727248	2543111

Total: 1

Change Workload &
Change Workload Details

Can change

- Priority
- Growth rate
- Start time
- CPU time
- Reads/writes
- IO waits
- Transactions
- Page faults

Change Workload Details

Priority:

CPU time (microseconds):

Synchronous disk reads:

Synchronous disk writes:

Asynchronous disk reads:

Asynchronous disk writes:

Asynchronous IO waits:

Interactive transactions:

Page faults:

Start time: Example: 12:30:00 PM

End time: 4/5/11 5:16:25 PM

Batch Model - Workload Timeline Overview

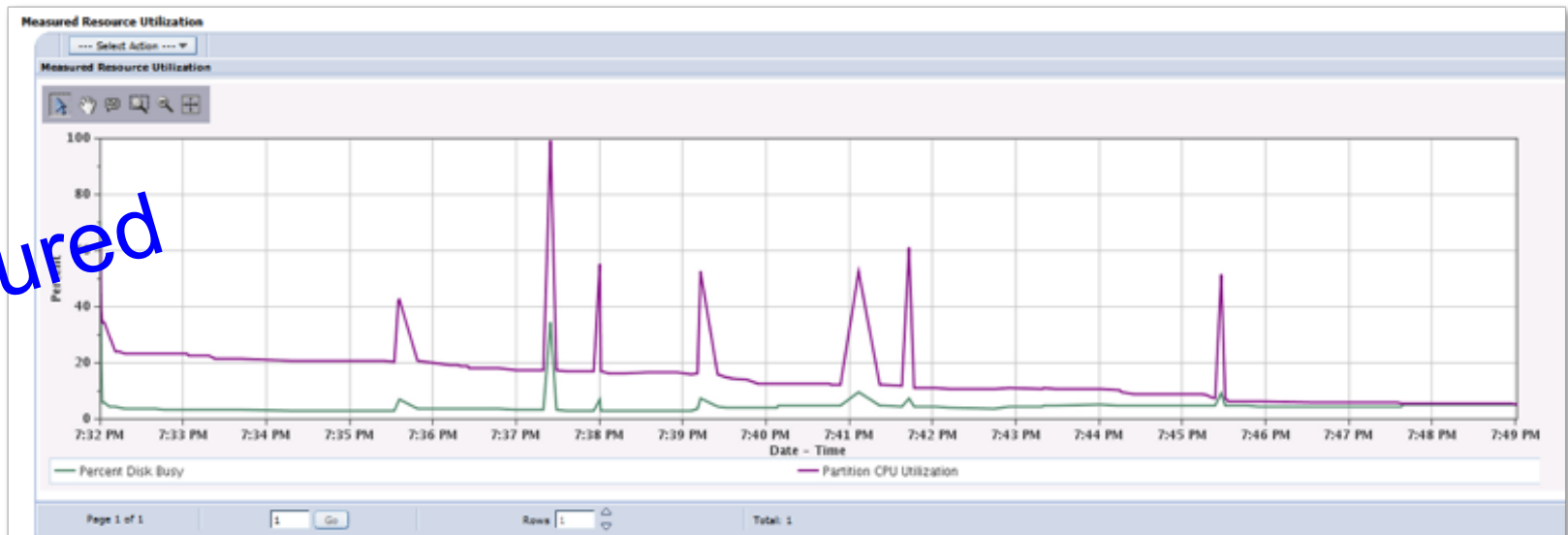
Compare Measured vs Modeled Workload Timelines



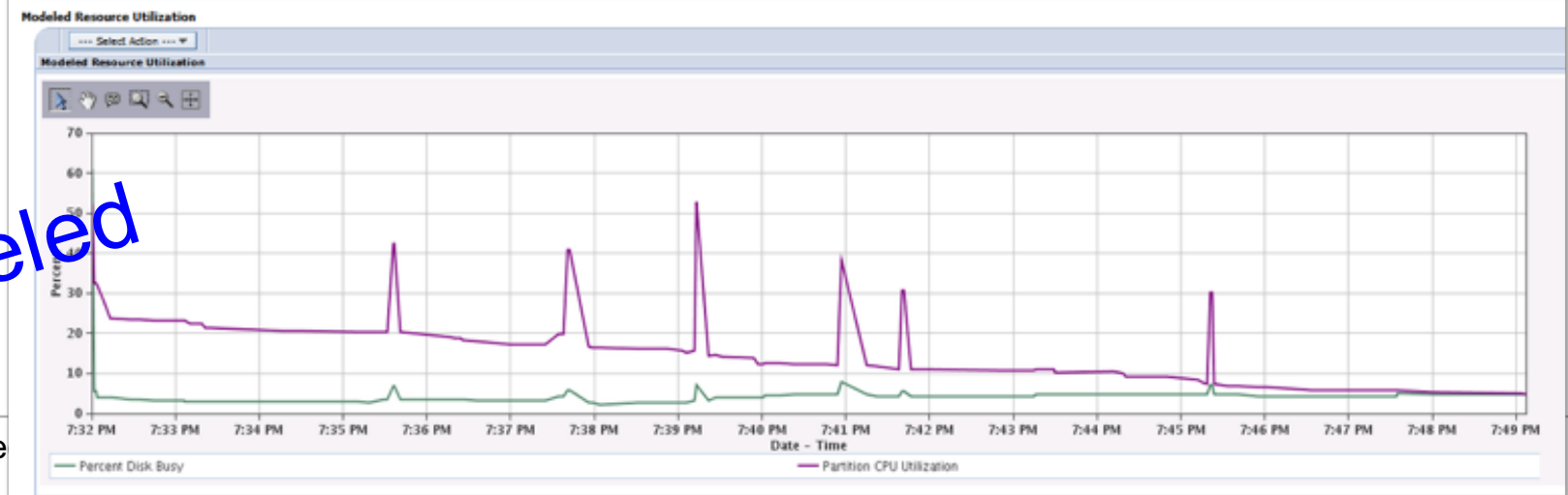
Batch Model - Resource Utilization Overview

Compare the Measured vs Modeled Resource Utilization

Measured



Modeled



Batch Model with Prior Release Collections

- You can restore Collection Services data from 6.1 or 7.1 onto a 7.2 partition
- ... and use batch model with that prior release data
- Support for data from 5.4 is also available
 - PTF SI55981
- [Batch Model Support for 5.4 and 6.1 Collections](https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM_i_Technology_Updates/page/Batch_Model_support_for_5.4_and_6.1_collections)
[https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM i Technology Updates/page/Batch Model support for 5.4 and 6.1 collections](https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM_i_Technology_Updates/page/Batch_Model_support_for_5.4_and_6.1_collections)



Performance Tasks and Work Management



Investigate Data for an Active Job

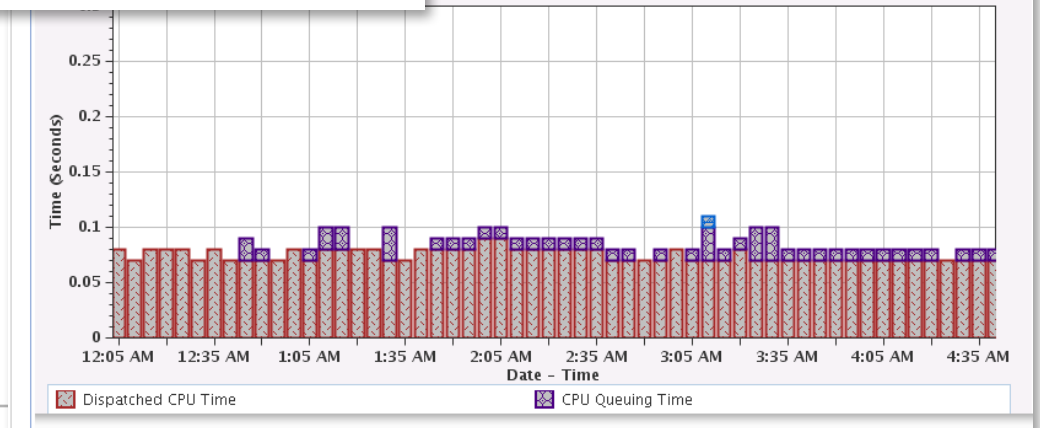
The screenshot shows a list of active jobs in a table. The selected job is 'Qzdacoinit', which is 'Waiting for time interval' and has a priority of 'Dmmay'. A context menu is open over this job, showing options like 'Reset Statistics', 'Printer Output', 'Job Log', 'Details', 'Reply...', 'Hold...', 'Release', 'Move...', 'Delete/End...', 'Performance', and 'Properties'. The 'Performance' option is expanded, showing sub-options: 'Elapsed Performance Statistics', 'Investigate Job Wait Data', and 'Start Job Watcher'. The 'Investigate Job Wait Data' option is highlighted. At the bottom of the table, there are filters for job counts: '5 | 10 | 25 | 50 | 100 | All'.

Active jobs – what's happening *right now*

The screenshot shows the 'System' overview page. It displays the date and time as 'Oct 1, 2009 12:00:06 AM' and the system status as 'Ongoing'. It also shows the system name and release version: 'Name: Release: V7R1M0'.

Job wait data
Collection Services job data

How did I get here?



Integration with System Status

System Status - etc3t2.rchland.ibm.com

Last refresh: 3/6/15 9:50:28 AM

General	Jobs
Jobs	Total: 3,315
Processors	Active: 214
Memory	Addresses used
Disk Space	Permanent: 0.007 %
Addresses	Temporary: 0.013 %
	Total disk space: 95.44 GB
	System disk pool
	Capacity: 95.44 GB
	Usage: 93.706 %

[System Resources Health Indicators](#)

System Status - etc3t2.rchland.ibm.com

Last refresh: 3/6/15 9:50:28 AM

General	Total memory: 8,119.00 MB
Jobs	Active Memory Pools
Processors	Memory Pools Health Indicators
Memory	
Disk Space	
Addresses	

System Status - etc3t2.rchland.ibm.com

Last refresh: 3/6/15 9:50:28 AM

General	CPU usage (elapsed):	0.0 %
Jobs	Type of processors:	Shared - uncapped
Processors	Processing power:	0.50 processing units
Memory	Virtual processors:	1
Disk Space	Interactive performance:	0 %
Addresses	Shared processor pool usage (elapsed):	0.0 %
	Uncapped CPU capacity pool usage (elapsed):	0.0 %

[CPU Health Indicators](#)

System Status - etc3t2.rchland.ibm.com

Last refresh: 3/6/15 9:50:28 AM

General	Total disk space:	95.44 GB
Jobs	System disk pool	
Processors	Capacity:	95.44 GB
Memory	Usage:	93.706 %
Disk Space	Temporary storage used	
Addresses	Current:	7,335 MB
	Maximum since last system restart:	7,528 MB

[Temporary Storage Details](#)

[Disk Status](#)

[Storage System Values](#)

[Disk Health Indicators](#)

Integration with Disk Status

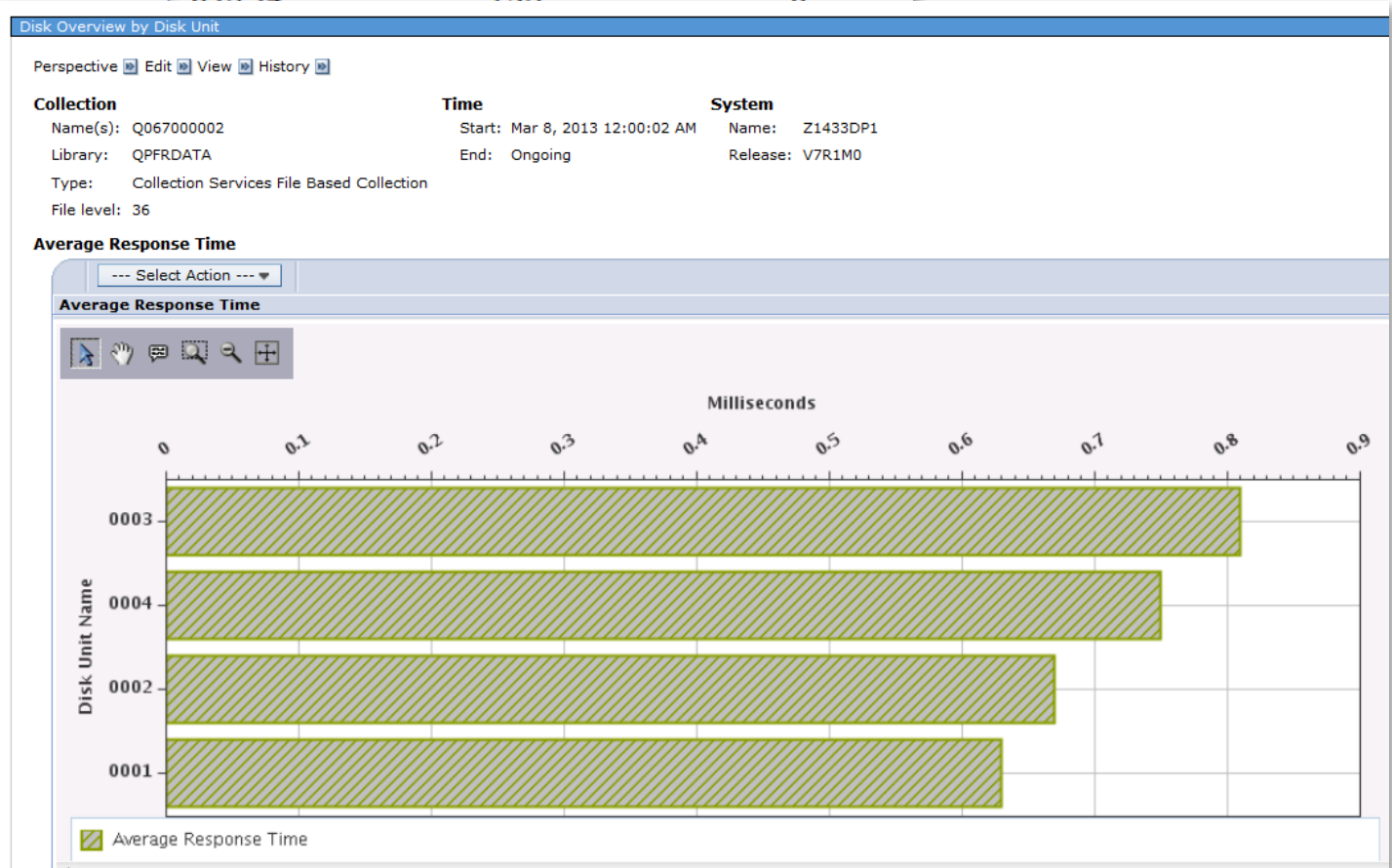
Disk Status - Z1

Refresh Elapsed time: 00:00:00

Actions

- Investigate Disk Data
- Start Disk Watcher
- Reset Statistics
- Columns...
- Refresh
- Advanced
- Export
- Configure

Unit	Size (MB)	% Used	% Busy
1	69.794	75.7	0



Investigate Data Database



Need latest PTF groups, including the **database group**

Must have the **Performance Tools LPP, Manager feature** installed

Available on IBM i 7.1 with
additional enhancements on 7.2 and later

Investigate Database Performance the Navigator Way
Thursday – 15:00-16:00



Database Perspectives

Investigate Data - Performance Data Investigator

Perspectives	Selection
<input type="checkbox"/> Performance Explorer	
<input type="checkbox"/> Disk Watcher	
<input type="checkbox"/> Job Watcher	
<input type="checkbox"/> Health Indicators	
<input type="checkbox"/> Collection Services	
<input checked="" type="checkbox"/> Database	

Collection

Collection Library: QPFRDATA
 Collection Name: Most Recent



Integration with Database

7.1 examples

Launch Investigate Performance Data from database tasks (available on all releases)

SQL Performance Monitors - Z1422dp1

Database: Zh22dp1

Name	Type	Status
No filter applied		
amonitor2	Detailed	Ended
<input checked="" type="checkbox"/> amonitor3	Detailed	Ended
as		Imported
asmalltest		E
asum		E

Context menu for amonitor3:

- End
- Analyze...
- Investigate Performance Data...

SQL Plan Cache Event Monitors - Z1422dp1

Database: Zh22dp1

Name	Status	Schema
No filter applied		
myeventmon1	Ended	FLANAGAN
<input checked="" type="checkbox"/> SQL Plan Cache Event		PDITESTLIB
SQL Plan Cache PDI		ZZLIB

Context menu for SQL Plan Cache Event:

- End
- Analyze...
- Investigate Performance Data...

SQL Plan Cache Snapshots - Z14

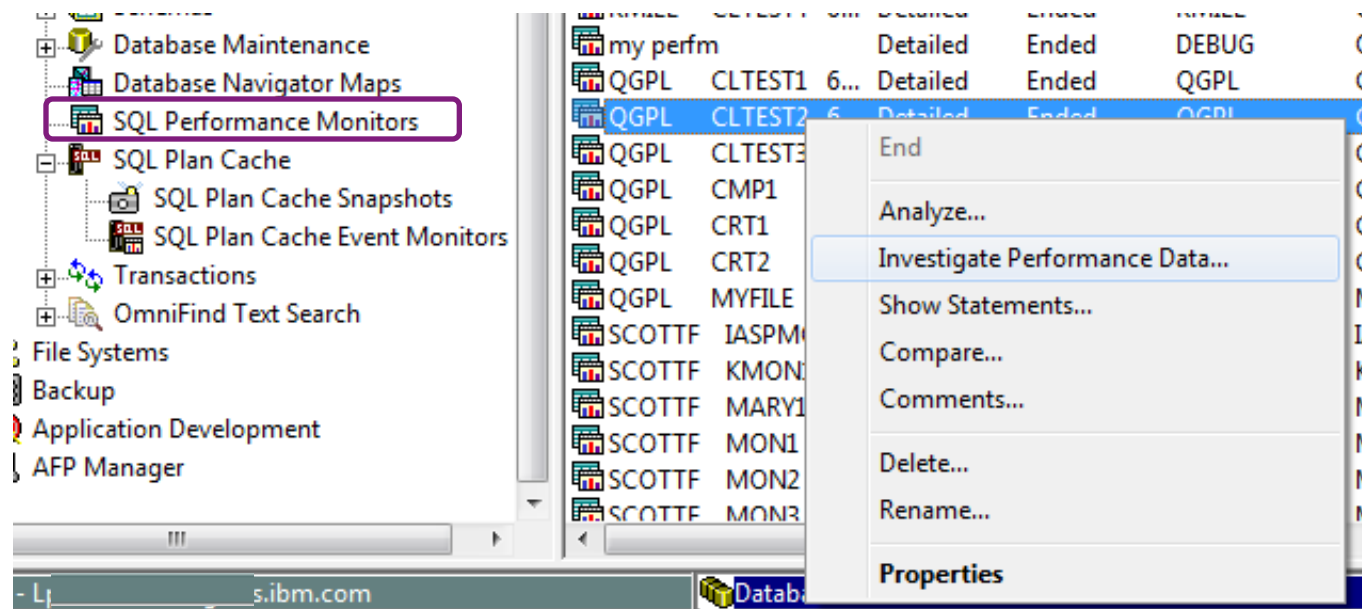
Database: Zh22dp1

Name	Schema
No filter applied	
asmalltest2	QGPL
<input checked="" type="checkbox"/> kxkSnapshot	ZZLIB
lrp1	LRP
my snap1	

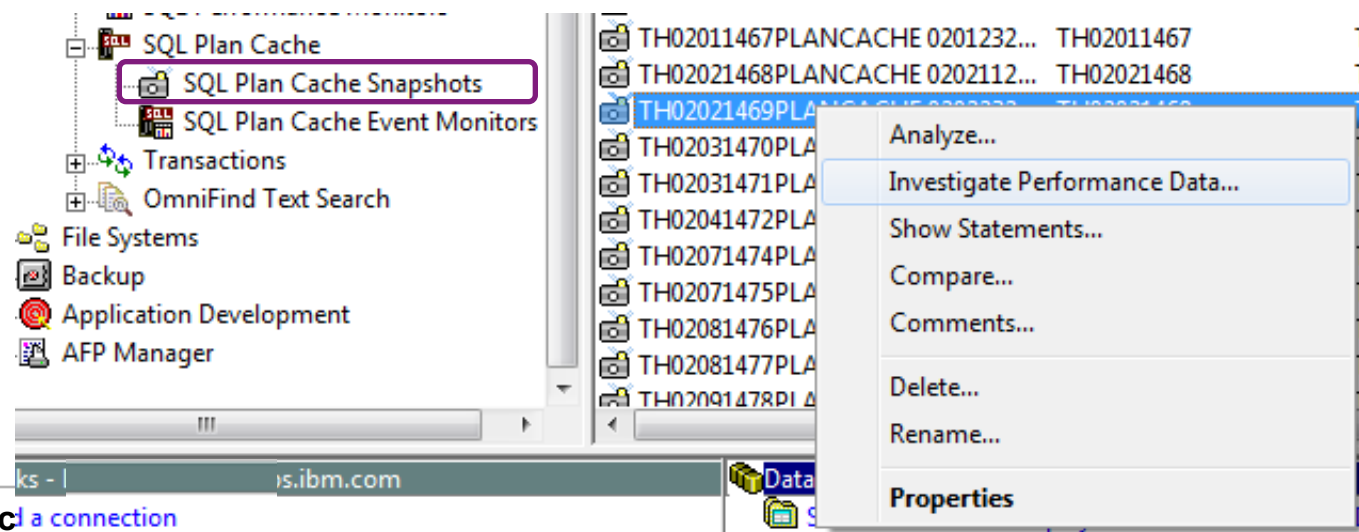
Context menu for kxkSnapshot:

- Analyze...
- Investigate Performance Data...

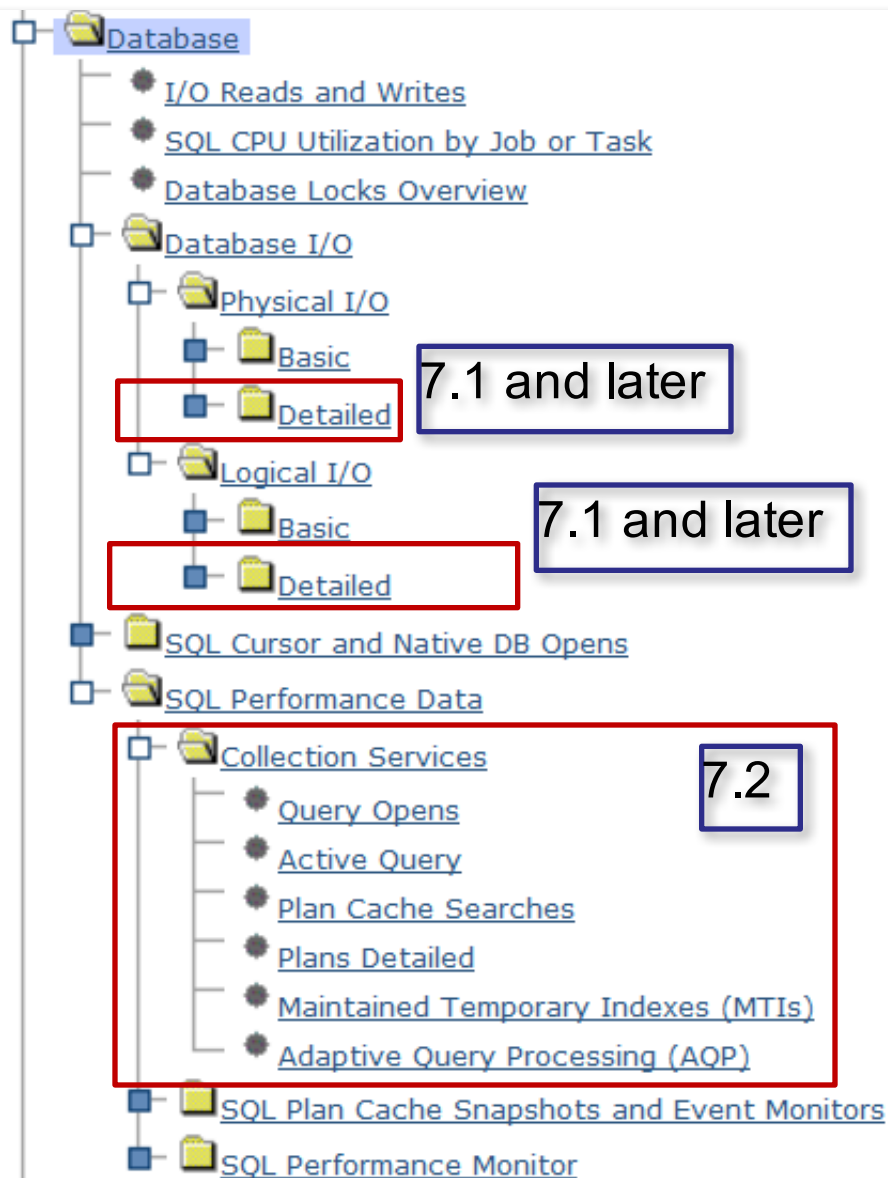
Launch from System i Navigator client



7.1 examples



Database Perspectives



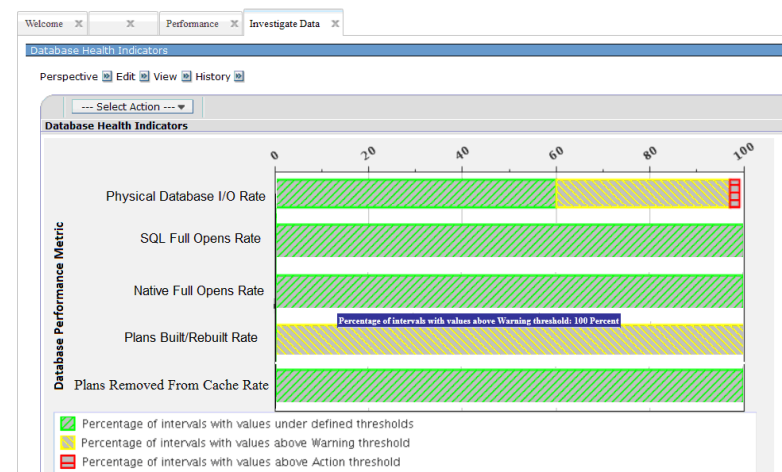
Database Package

- I/O Reads and Writes
- Physical Database I/O - Detailed
- Logical Database I/O – Detailed
- SQL Performance Data – Collection Services

Health Indicators Package

7.2

- Database Health Indicators



Investigate Data Examples

Dawn's Favorite Collection Services Perspectives

(PDI is for more than Performance)

New Perspectives

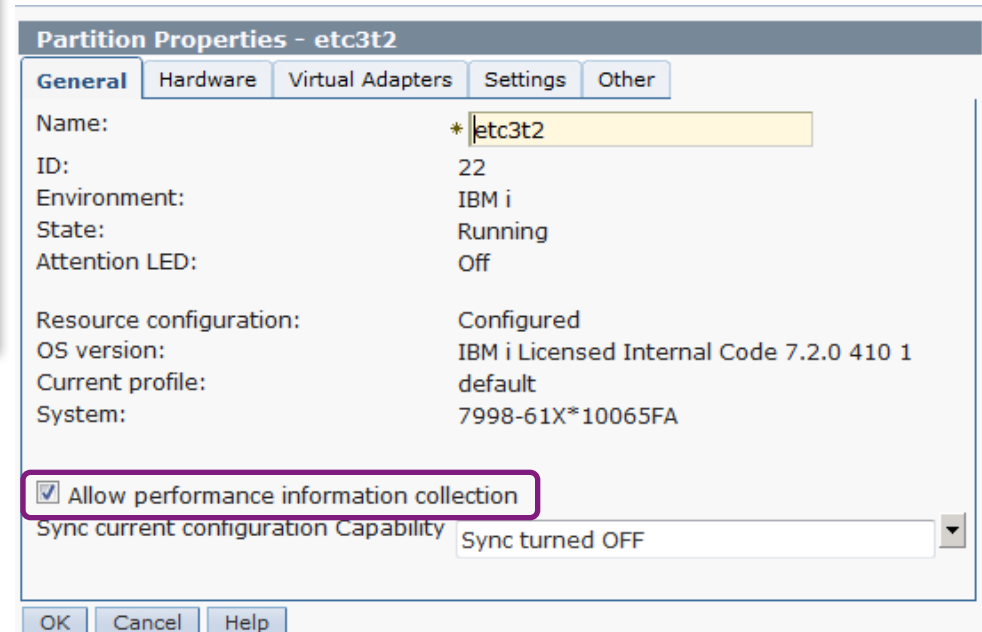


Physical System Charts – Frame view of Utilization!

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".



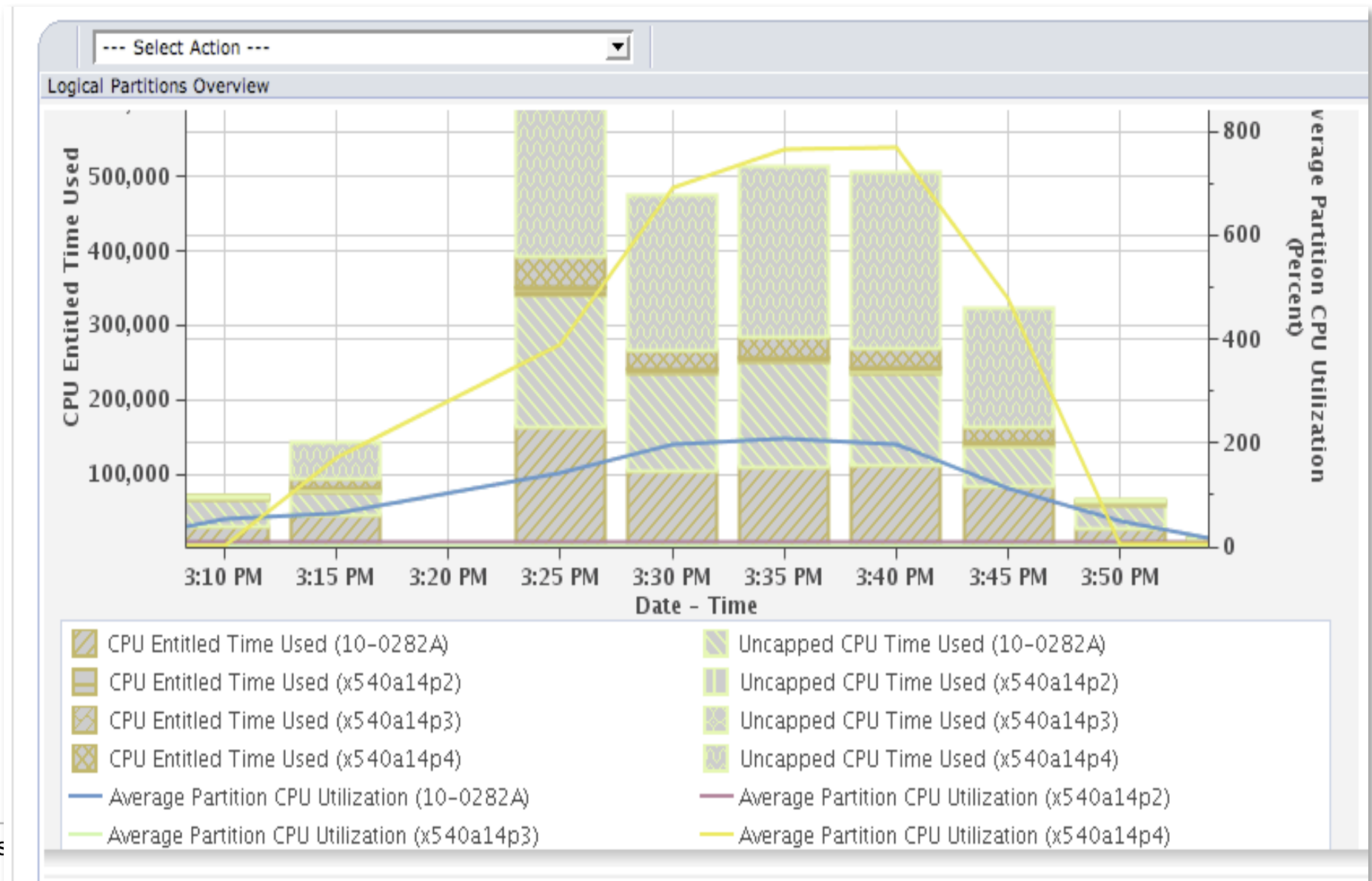
HMC option – “Allow performance information collection” must be turned on for the IBM i partition to collect the data



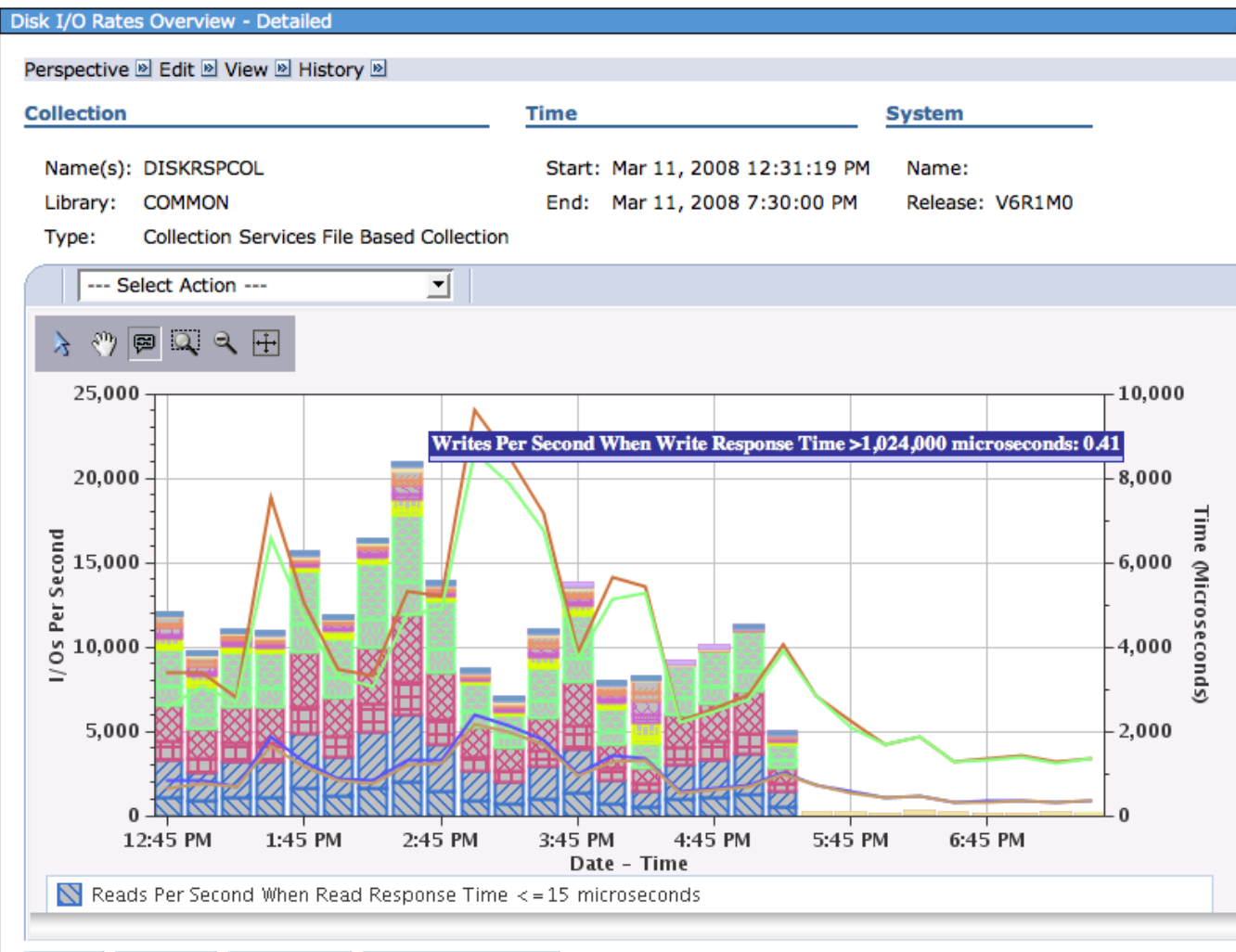


Logical Partitions Overview

Requires Power 6 and IBM i 6.1 or later

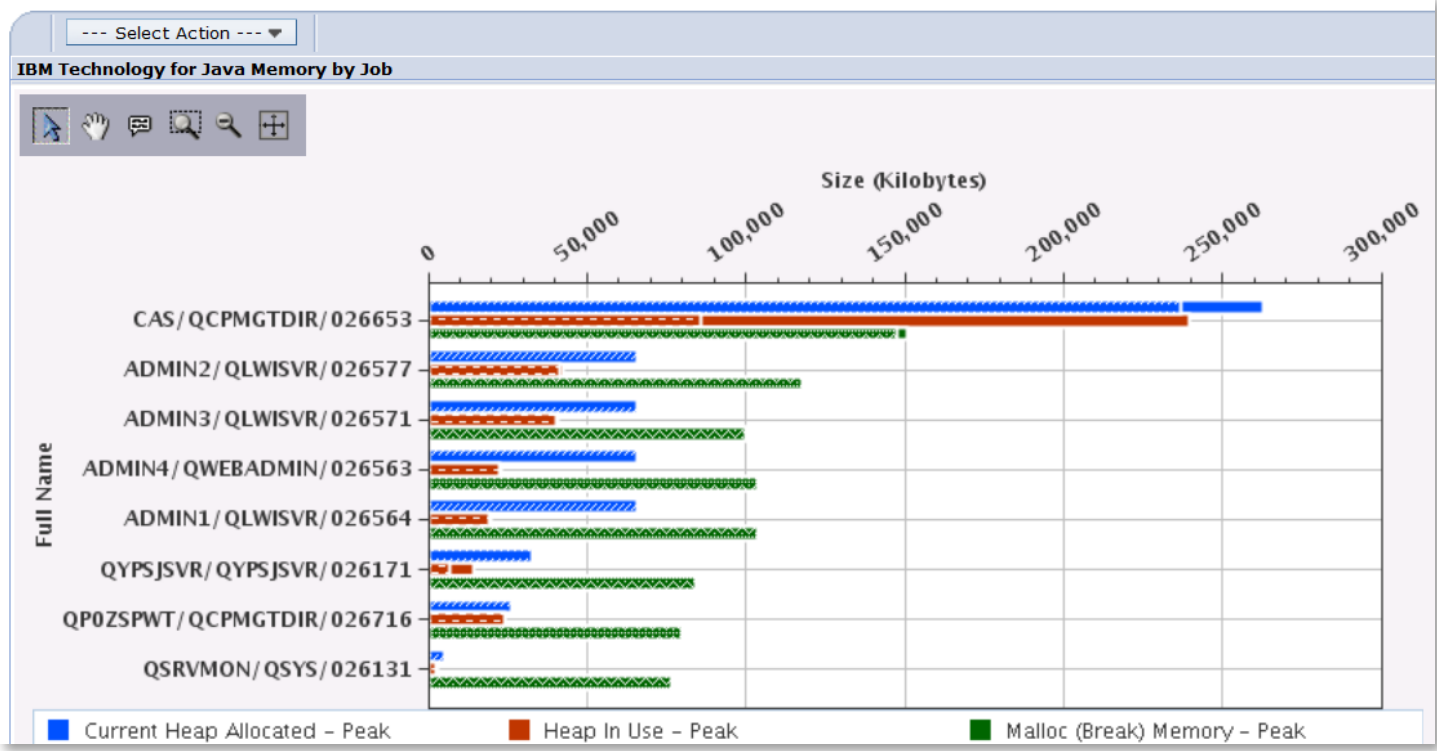
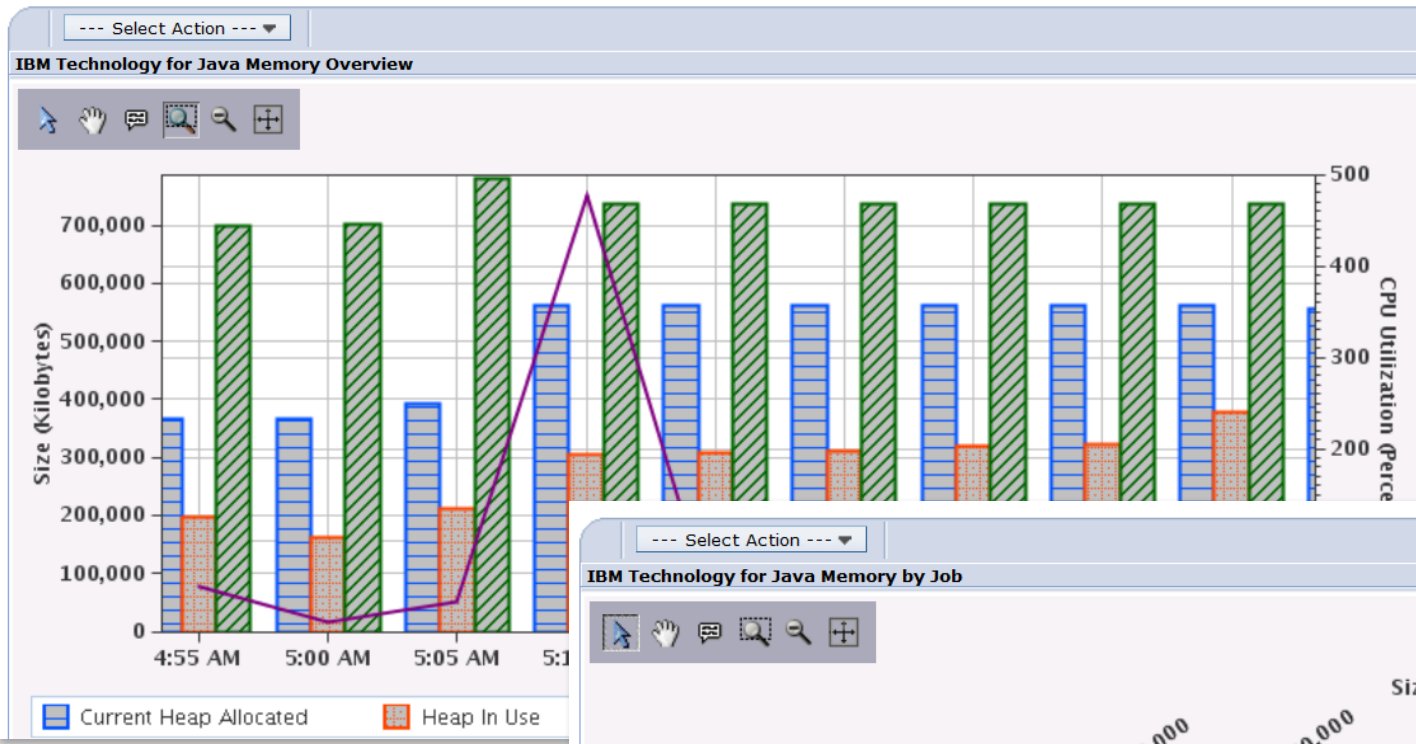


Disk Response Time Charts



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

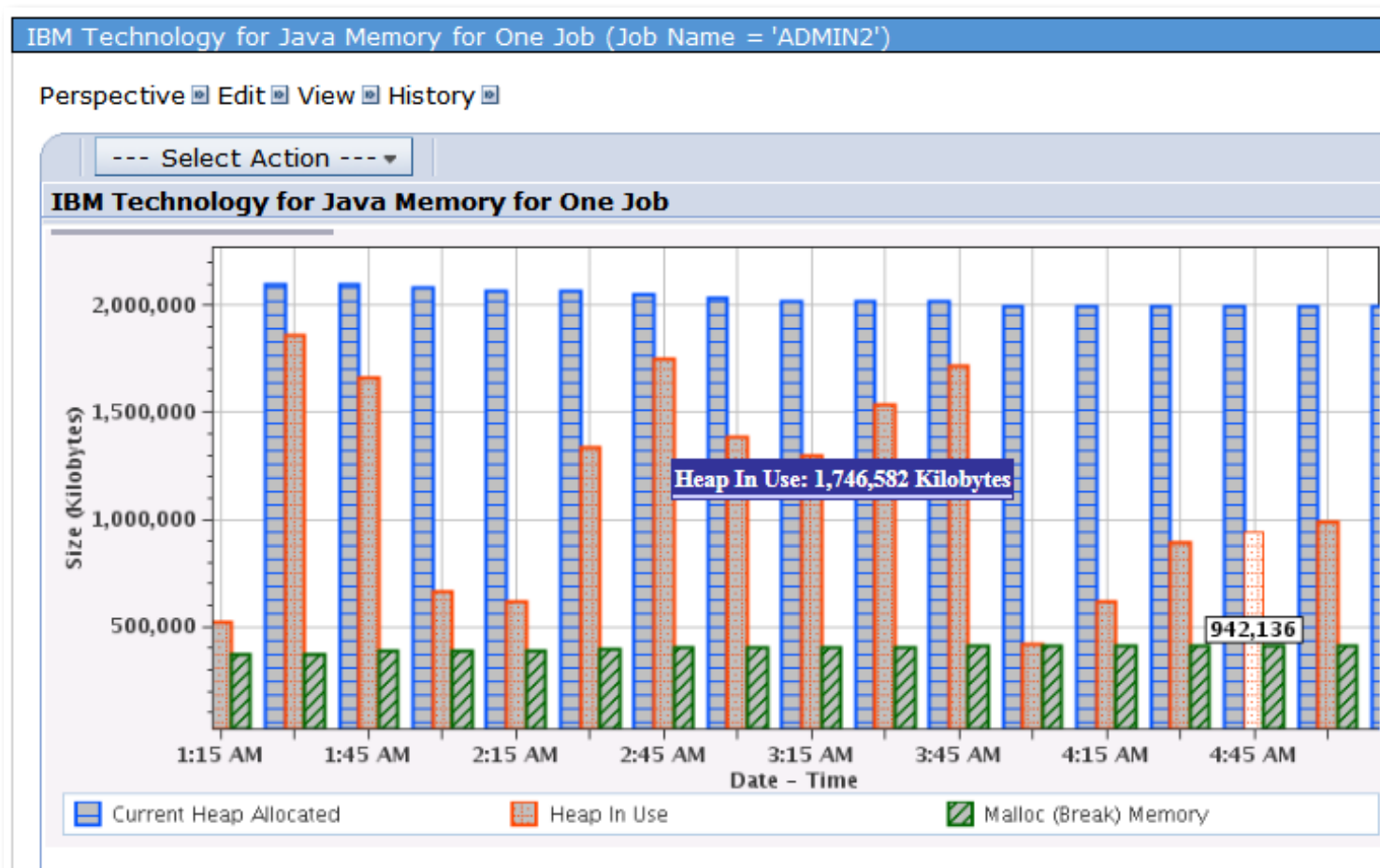
Java Perspectives



Find that job using a lot of heap...

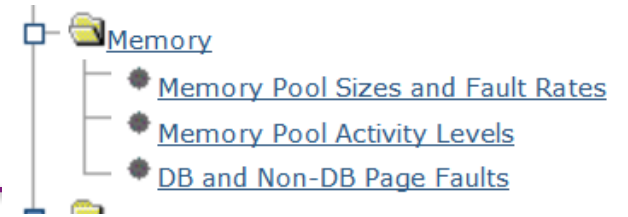
Java Perspectives

Drilldown for one job -
 Look at the heap and memory usage over time for one selected job.



IBM Technology for Java Memory for One Job





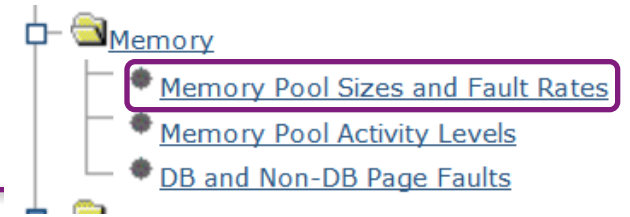
Memory

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

System Pool	Pool Size (M)	Reserved Size (M)	Max Active	-----DB-----		---Non-DB---	
				Fault	Pages	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



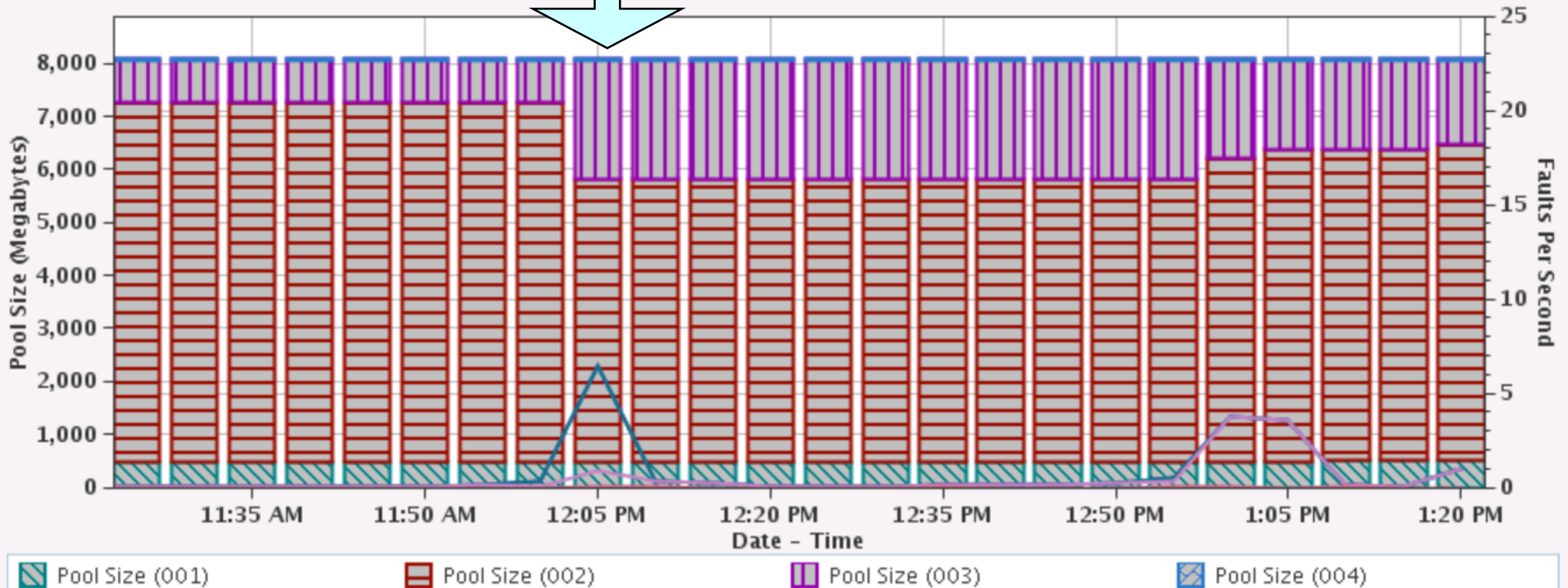
Memory



In a graphical view!

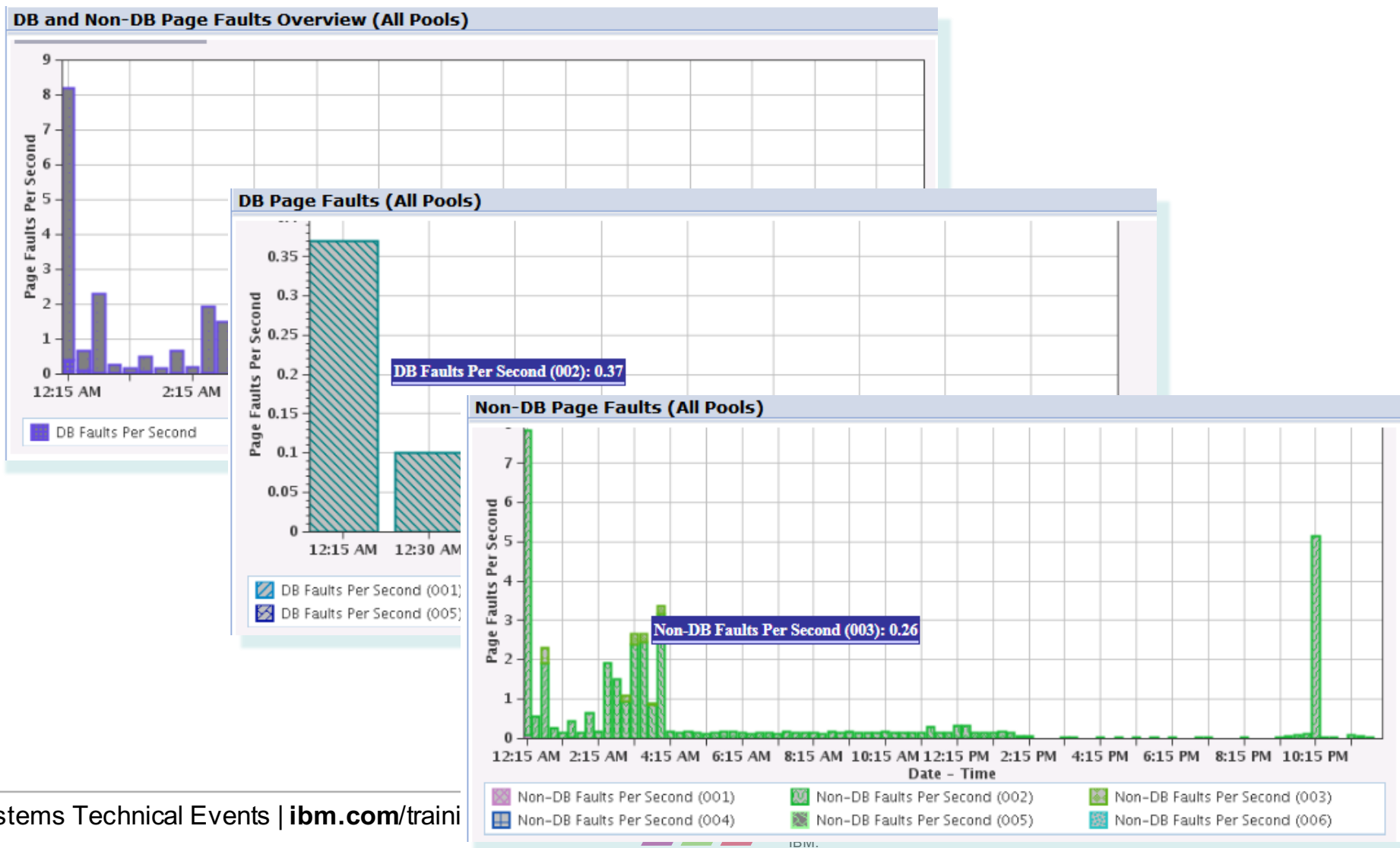
Note the change in pool sizes.
QPFRADJ is on.

Memory Pool Sizes and Fault Rates



Memory Perspectives – DB and non-DB Page Faults

3 views



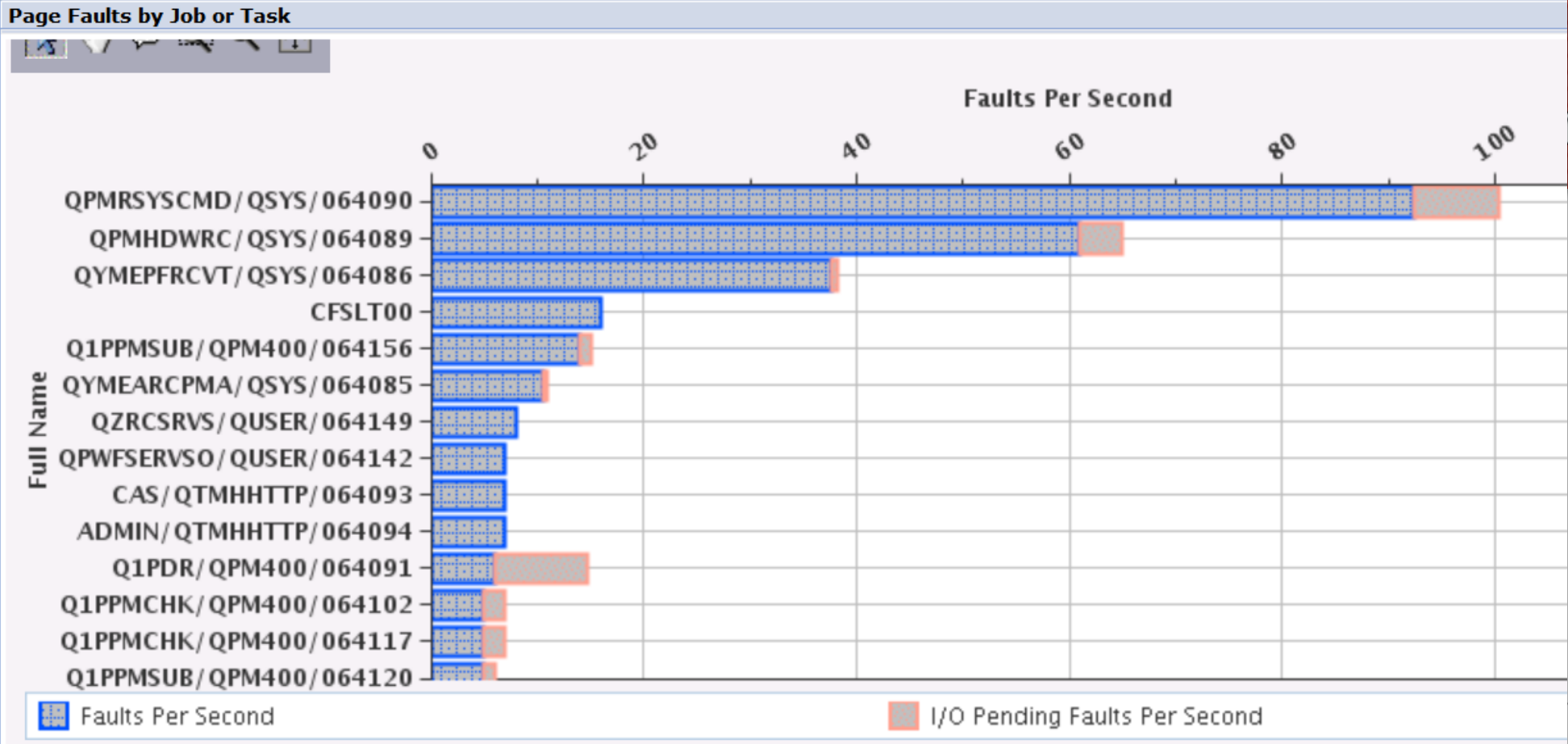
Memory - Drilldown

Find the jobs that are faulting

Memory Pool Sizes and Fault Rates (001-004)

--- Select Action --- ▼

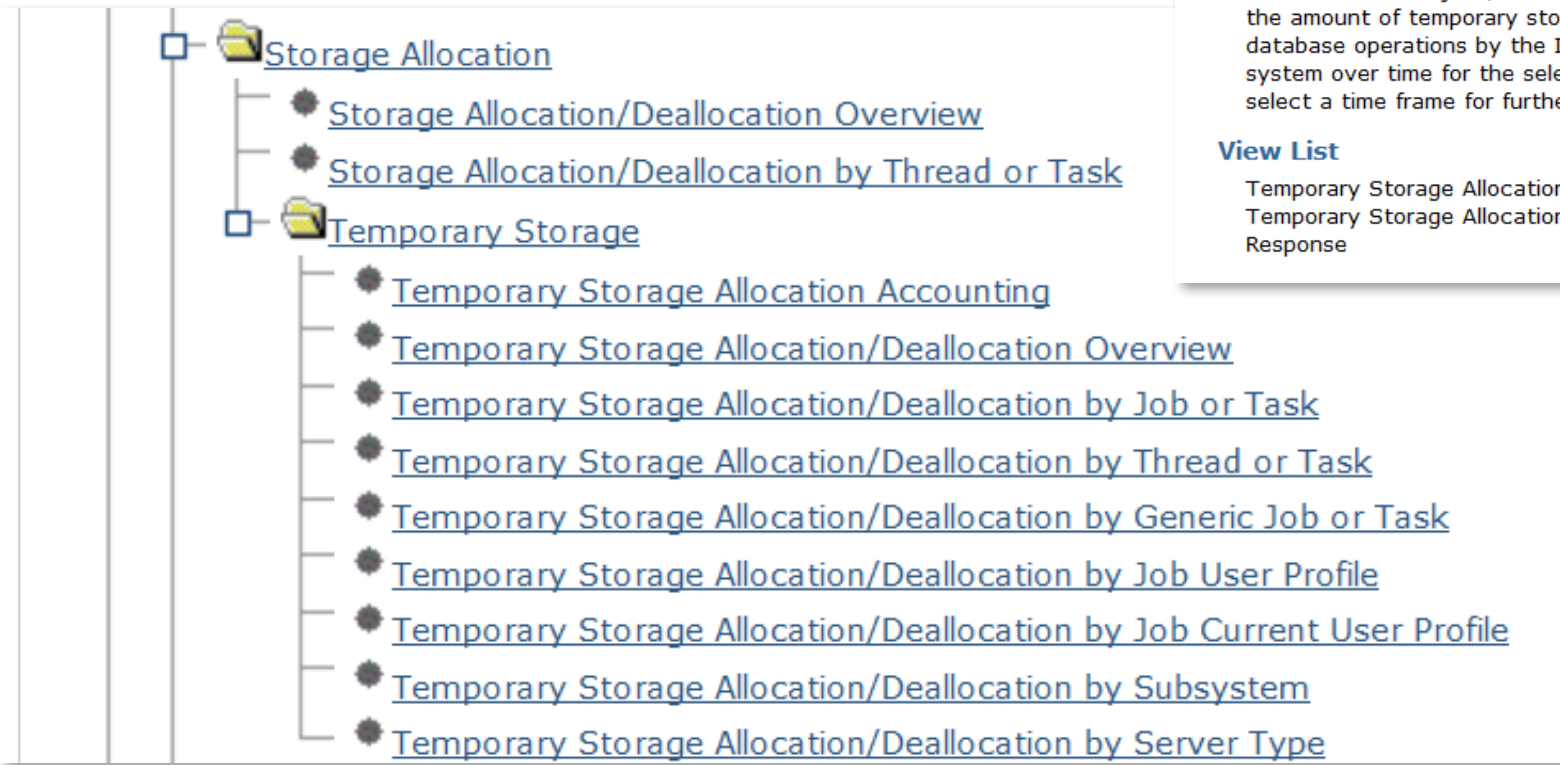
- Memory Metrics for One Pool
- Memory Pool Activity Levels
- DB and Non-DB Page Faults
- Page Faults by Job or Task**
- Waits by Pool
- Disk Waits Overview
- Memory Pools Health Indicators
- Export



Performance Data Investigator - *Storage Allocation Perspectives*

7.2 and later

Expand Collection Services



Selection

Name
Temporary Storage Allocation Accounting

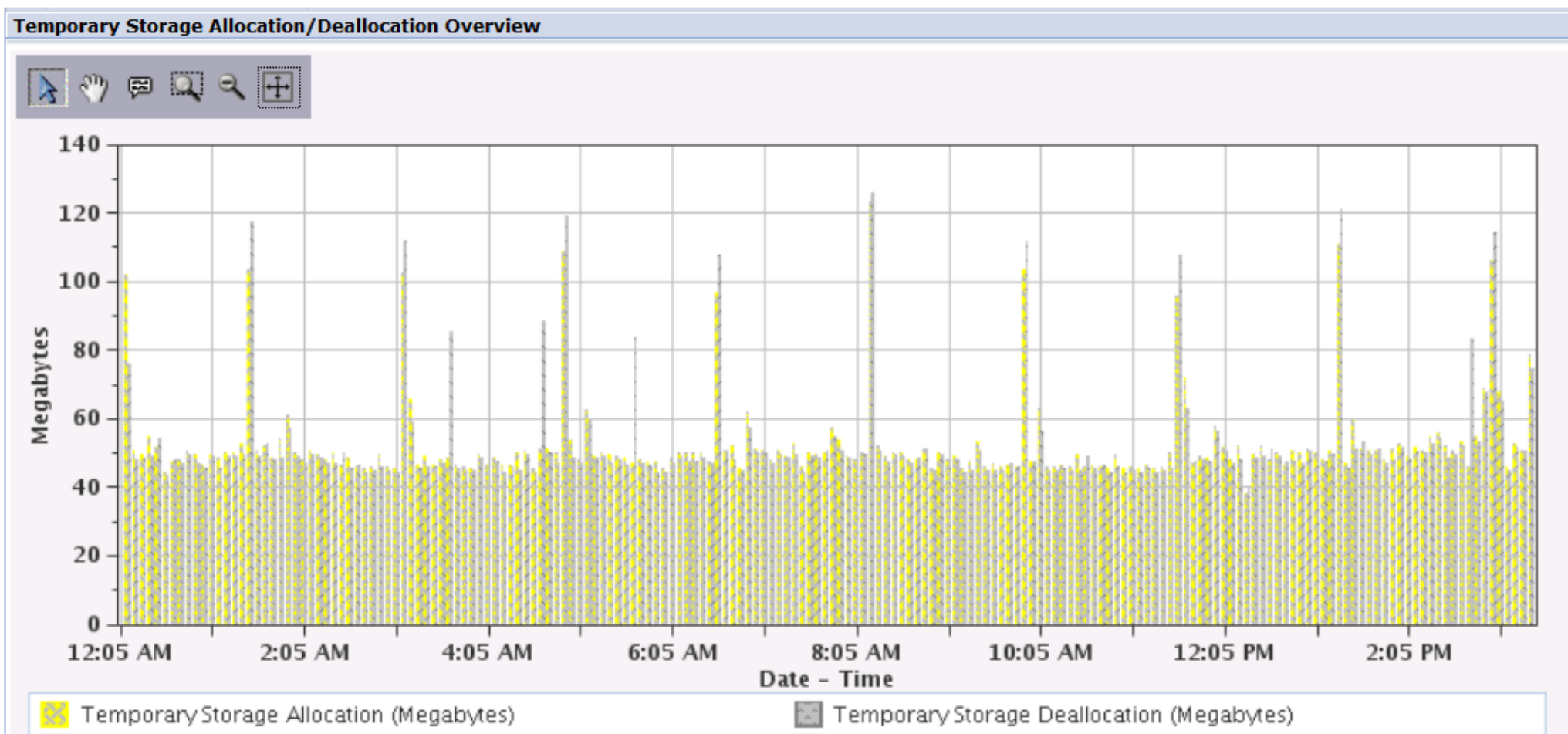
Description
This chart shows the amount of temporary storage charged to active and ended jobs, the amount of user temporary storage, and the amount of temporary storage used for database and non database operations by the IBM i operating system across the system over time for the selected collections. Use this chart to select a time frame for further detailed investigation.

View List
Temporary Storage Allocation Accounting and SQL Statements
Temporary Storage Allocation Accounting and Disk Average Response

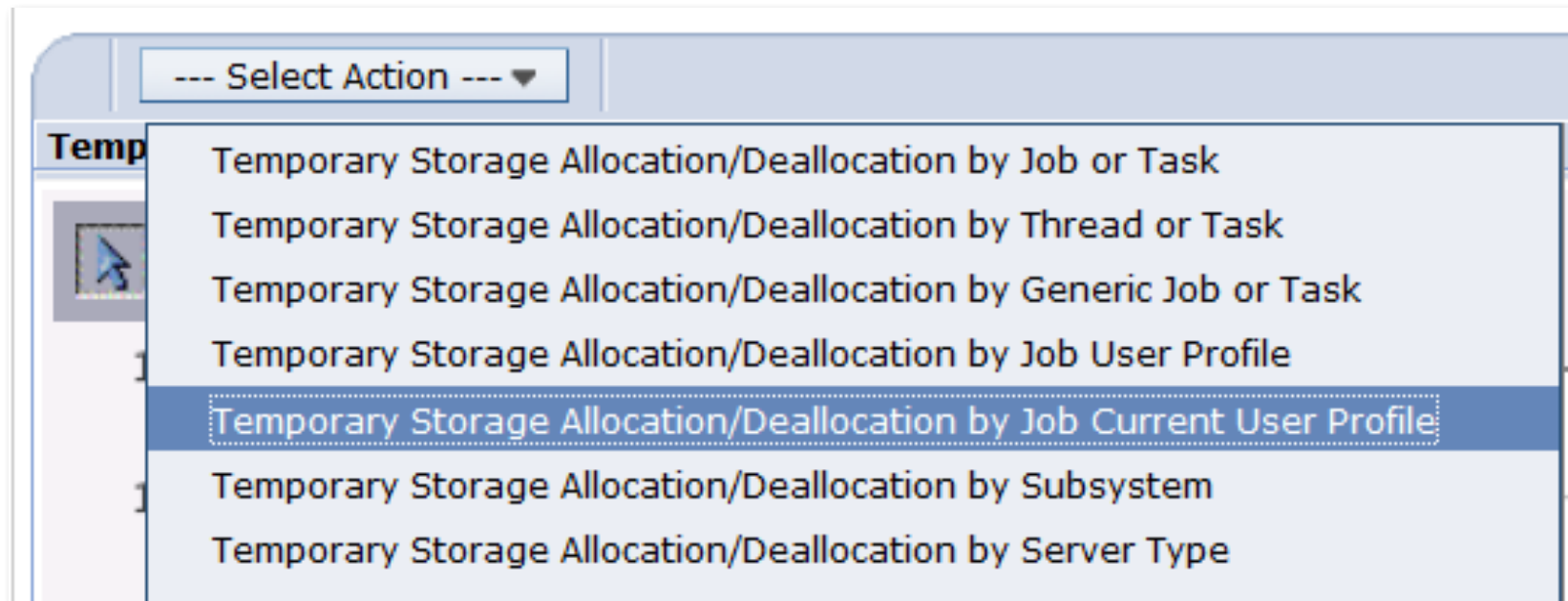


Temporary Storage Allocation / Deallocation Overview

Generally, allocations and deallocations following a similar pattern



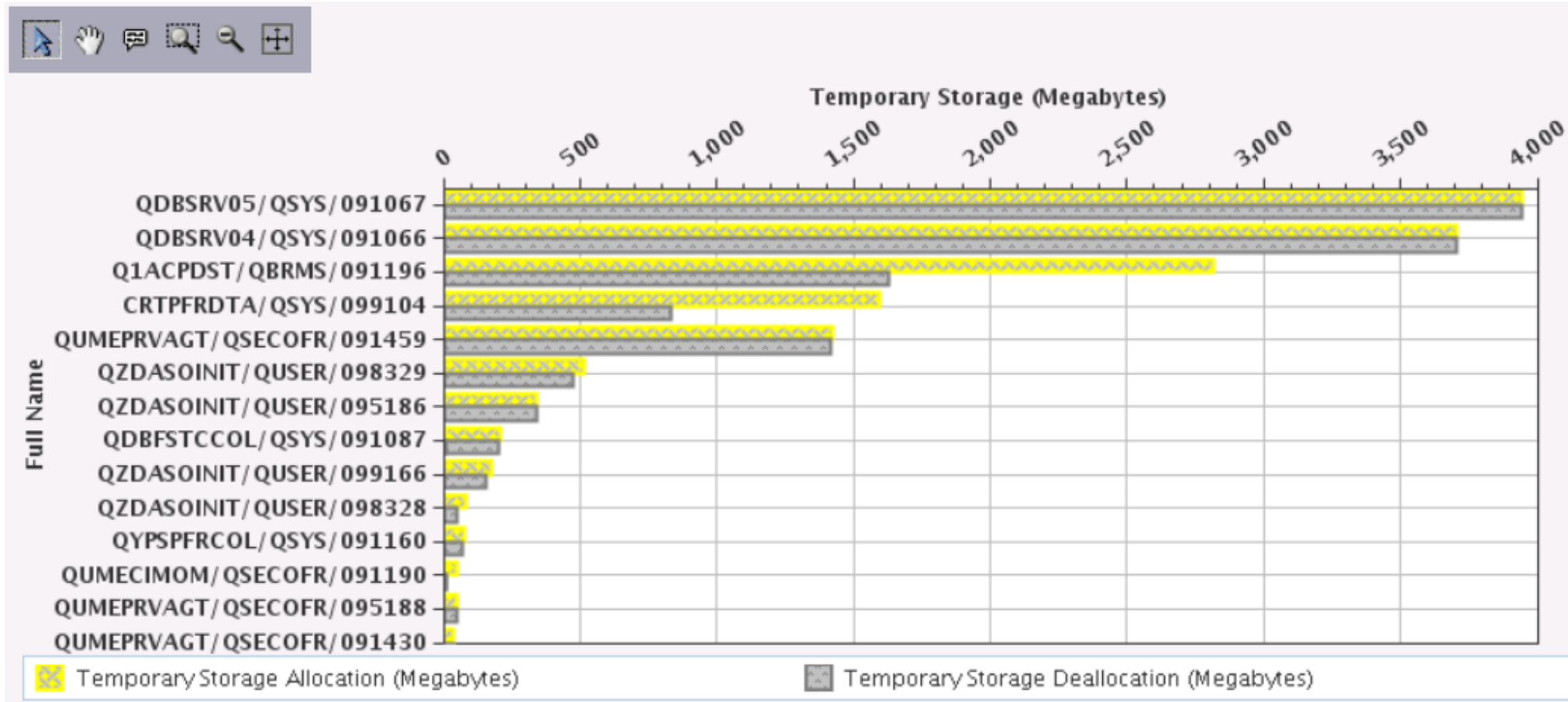
From an overview perspective, drill down to more detail



Temporary Storage Allocation by Job or Task

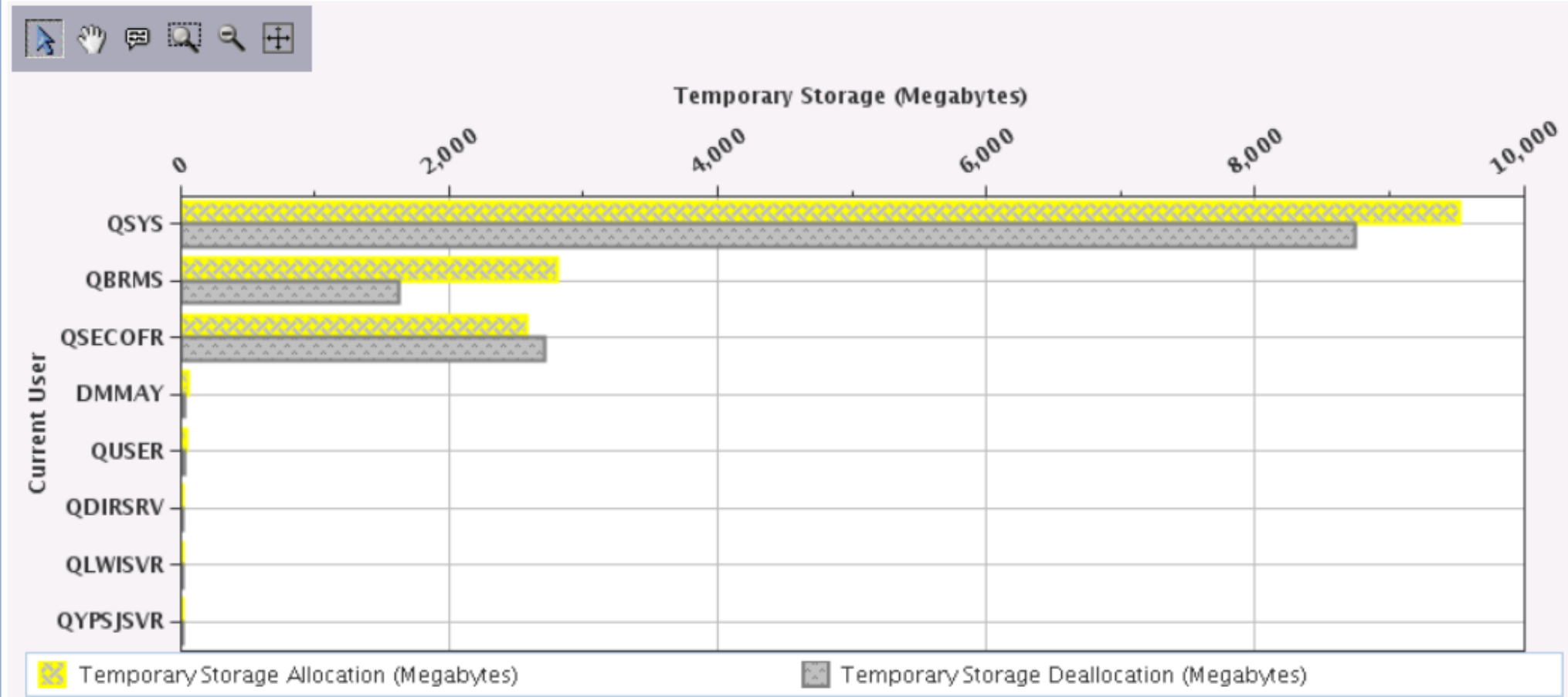
Generally, allocations and deallocations following a similar pattern

Temporary Storage Allocation by Job or Task



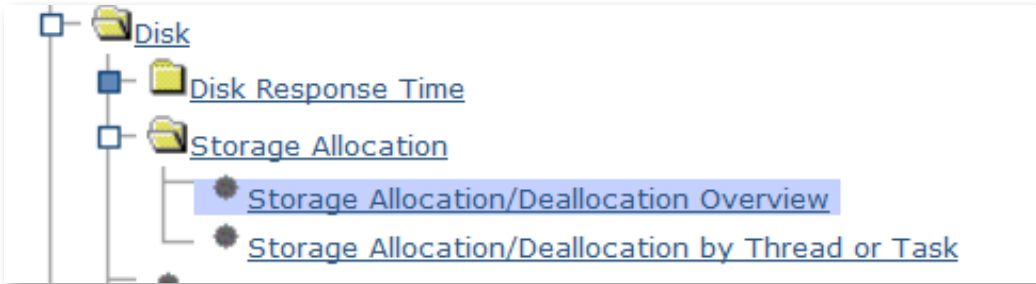
Temporary Storage Allocation by Job Current User Profile

Temporary Storage Allocation by Job Current User Profile



Storage Allocation Perspectives

7.2 and earlier



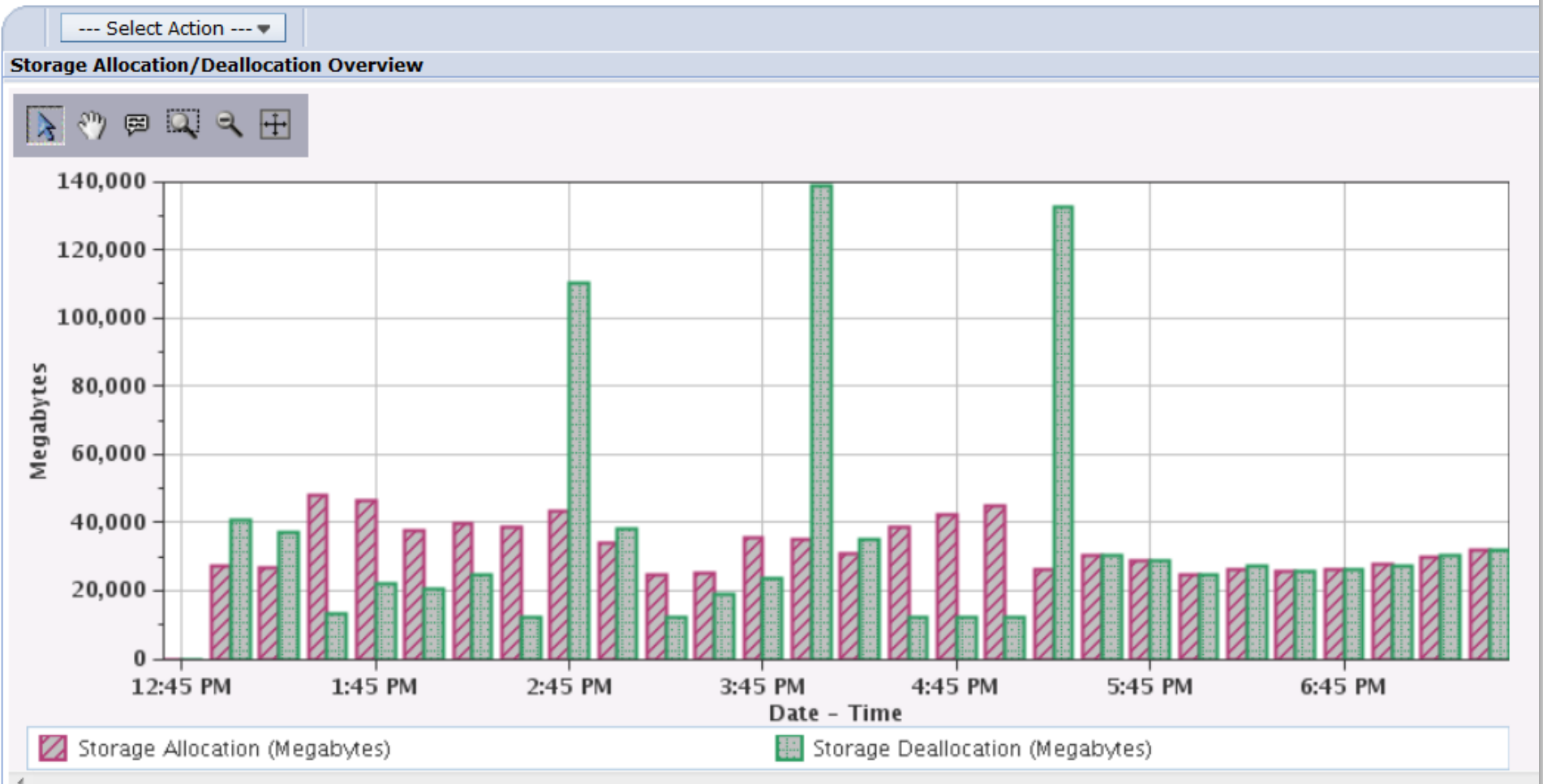
Selection

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

7.2 and earlier



Selection

Name

Storage Allocation/Deallocation by Thread or Task

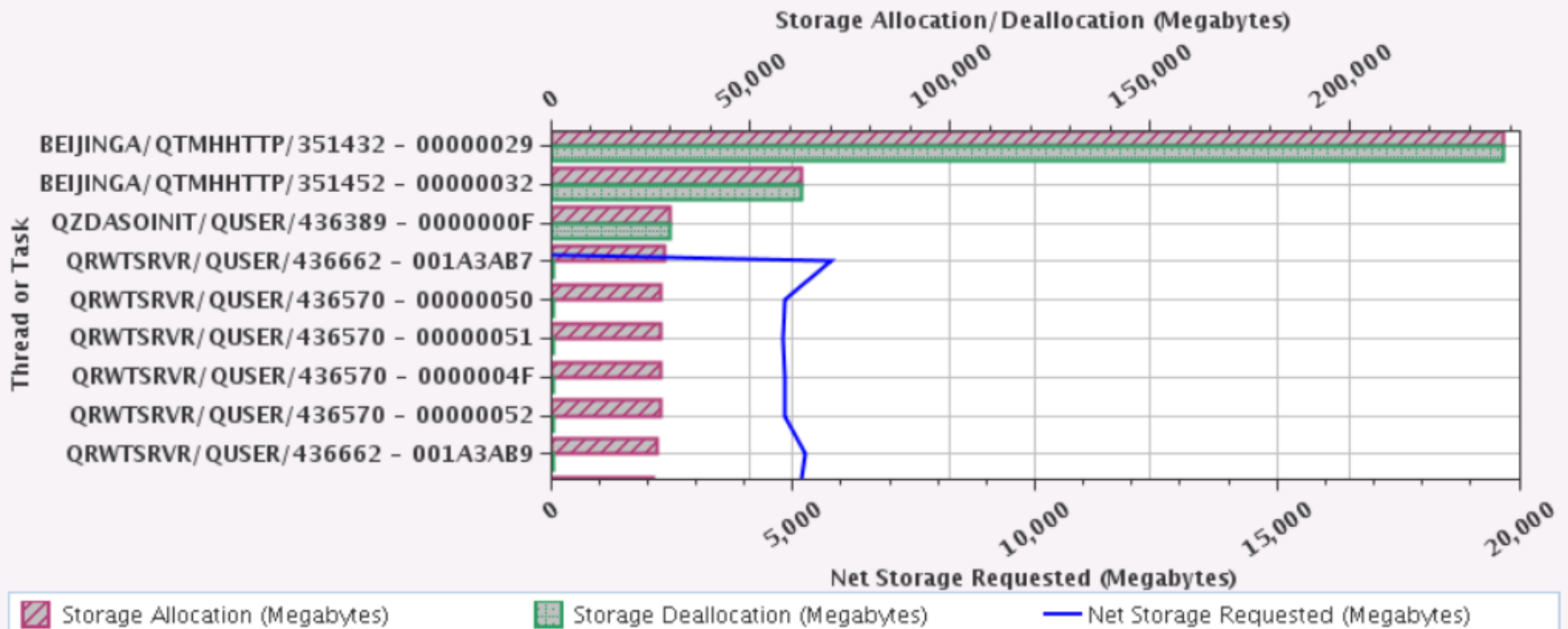
Description

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

--- Select Action ---

Storage Allocation/Deallocation by Thread or Task Sorted by Allocation

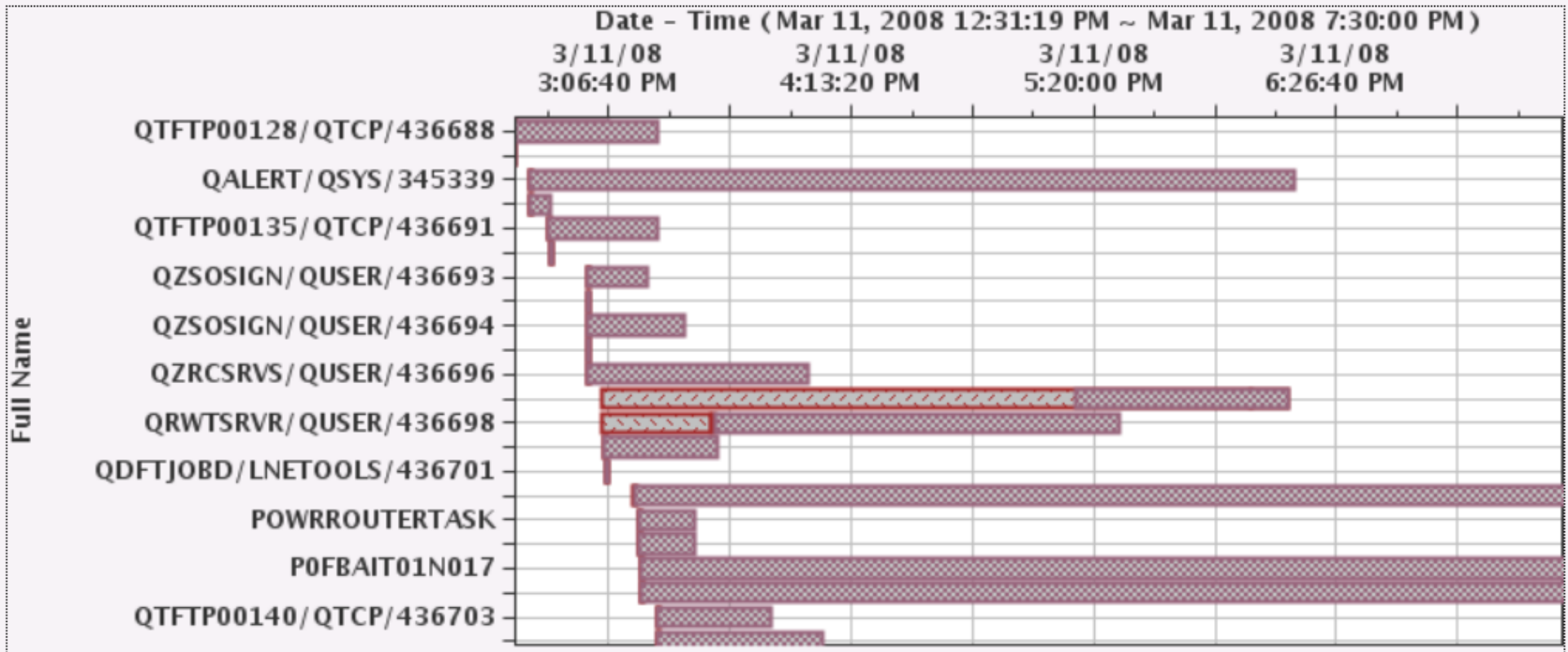


Timeline Perspective

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

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

Timeline Overview for Jobs or Tasks - Top 10000



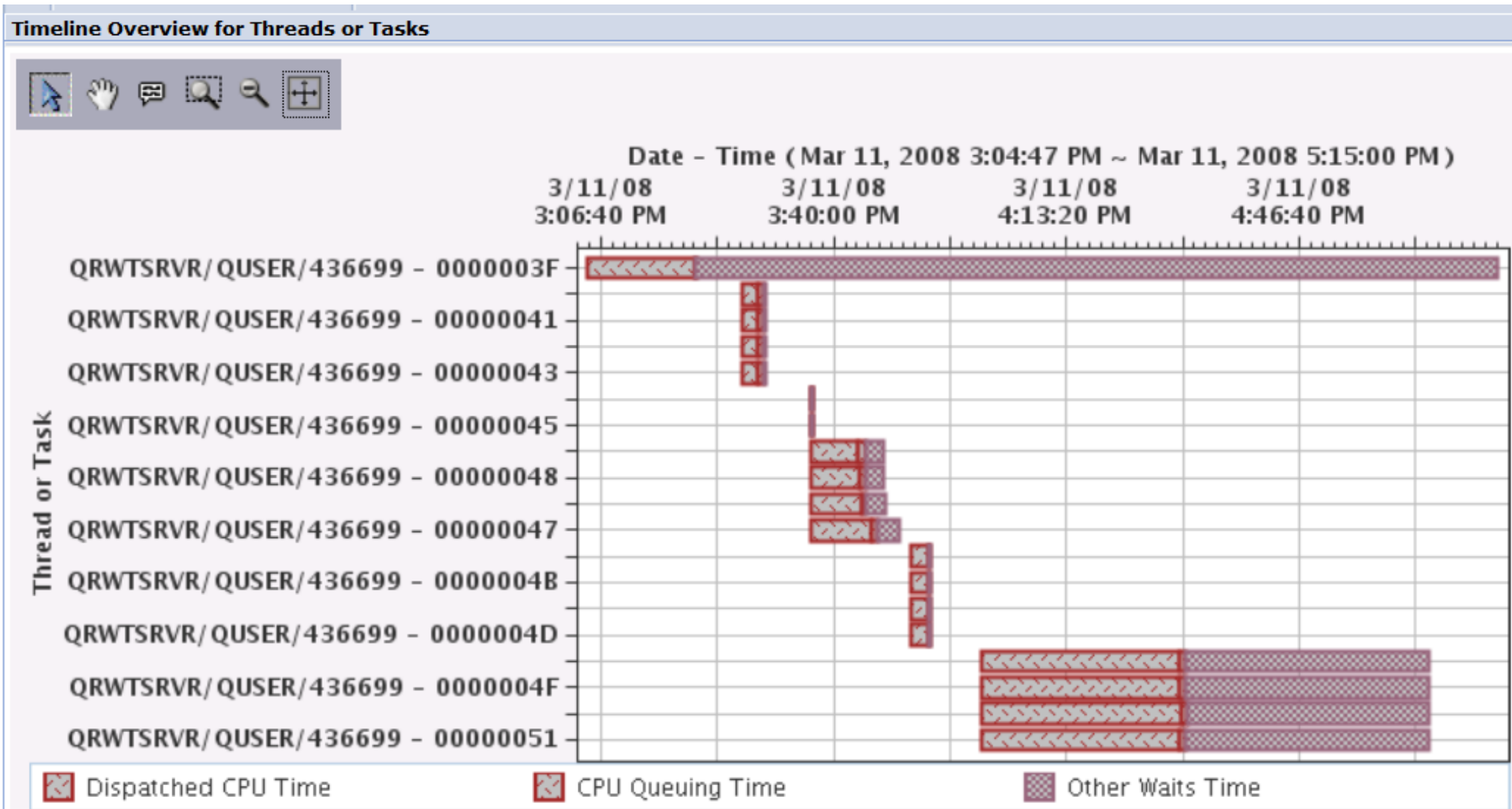
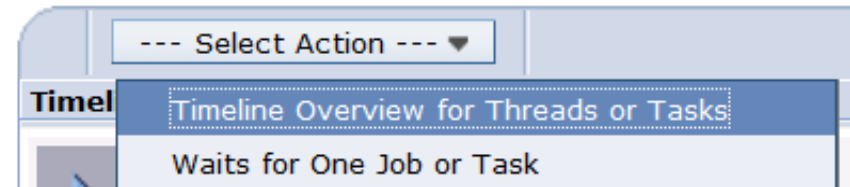
Dispatched CPU Time
 CPU Queuing Time
 Other Waits Time

Timeline Overview for Jobs or Tasks - Top 10000

Select a job for drilldown ...

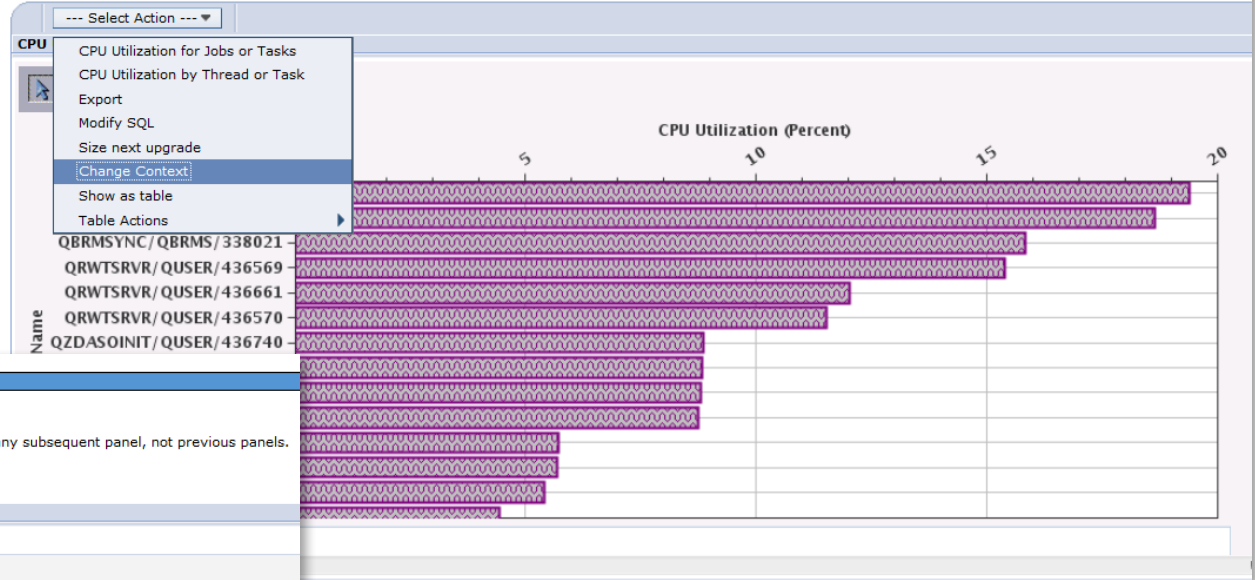
You can see when the threads for that job ran

Tip: *you can select more than one job for your drilldown selection*



Change Context

CPU Utilization by Job or Task



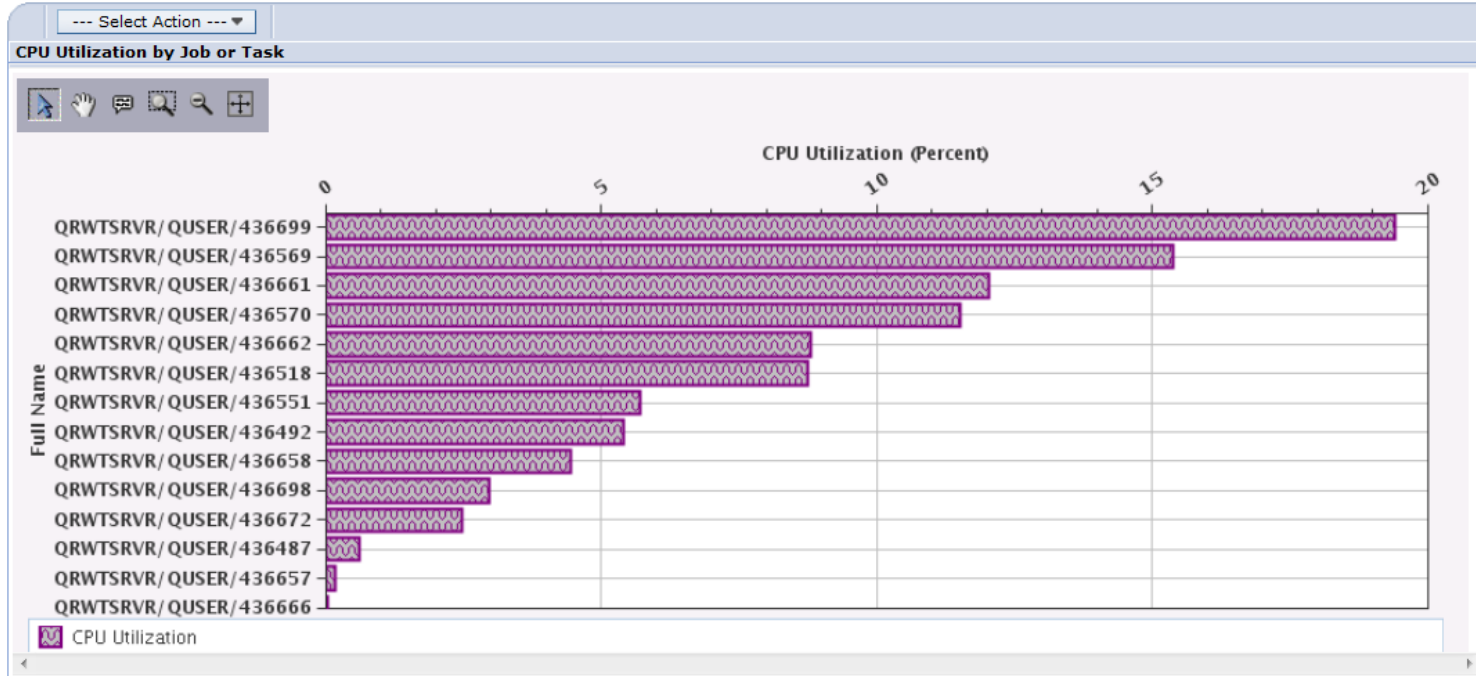
Change Context

Details
Use the fields below to adjust your current context. These changes will only affect this panel and any subsequent panel, not previous panels.

Variable
Variable

Variable	Description	Value	Required
▼ Set 1			
▼ Case 1			
JBNAME	Name	QRWTSRVR	No
JBNBR	Job Number		No
JBUSER	Job User		No
MINDTECEN	Century Digit		No
MINDTETIM	Interval Date And Time		No
MAXDTECEN	Century Digit		
MAXDTETIM	Interval Date And Time		
Collection Library		PDIDEMO	
Collection Name		Q071123119	

CPU Utilization by Job or Task



Perspective → Save As

When a table or chart is modified, you can save that table or chart for your own custom perspective using “Save As...”

Saving a custom perspective

Original Location
Collection Services > CPU > CPU Utilization by Job or Task

Save Location

Perspectives	Selection
<ul style="list-style-type: none"> Custom Perspectives - DMMAY <ul style="list-style-type: none"> [Empty] 	<p>Name Custom Perspectives - DMMAY</p> <p>Description Perspectives that have been saved by the user.</p>

Perspective

*Name: CPU Utilization by Job or Task - QRWTSRVR

Description: This chart shows CPU usage by job or task and ranked by the largest contributors, limited to QRWTSRVR jobs. Use this chart to select contributors for further detailed investigation.

Locked

Save Cancel

Perspective → Save As

CPU Utilization by Job or Task

Perspective Edit View History



Save Complete

This perspective was saved successfully.

URL to saved perspective:

https://isz1p13.rch.stglabs.ibm.com:2005/ibm/action/launch?pageID=com.ibm.i5OS.webnav.navigationElement.WebnavBasePortlet&system=localhost&WnLocale=en_US&WnSTM=true&task=perf.invdta&packid=ccp_DMMAY&persid=perspective_ID_213976_ccp&collection=PDIDEMO.Q071123119

[Close Message](#)

Investigate Data - Performance Data Investigator

Perspectives

- [Performance Explorer](#)
- [Disk Watcher](#)
- [Job Watcher](#)
- [Collection Services](#)
- [Health Indicators](#)
- [Custom Perspectives - DMMAY](#)
 - [CPU Utilization by Job or Task - QRWTSRVR](#)

Selection

Name

Custom Perspectives - DMMAY

Description

Perspectives that have been saved by the user.

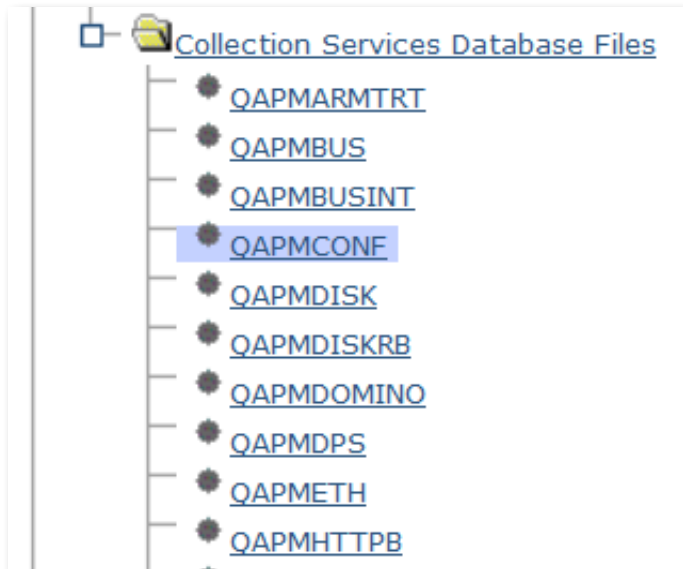
Collection

Collection Library: Collection Name:

[Display](#) [Search](#) [Options](#) [Close](#)

Display Collection Services Database Files QAPMCONF

Navigation:
Collection Services →
Collection Services Database
Files → QAPMCONF



QAPMCONF

Perspective Edit View History

Collection	Time	System
Name(s): Q067000002	Start: Mar 8, 2013 12:00:02 AM	Name: ETC3T1
Library: QPFRDATA	End: Ongoing	Release: V7R1M0
Type: Collection Services File Based Collection		
File level: 36		

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		
Virtual Processors:	2	Hypervisor Memory (MB):	640
Installed Processors:	4	SMT Hardware Threads:	0
Remote Response Boundary 1 (ms):	-	Time Interval (minutes):	5
Remote Response Boundary 2 (ms):	-	Interactive Limit (%):	100.00
Remote Response Boundary 3 (ms):	-	Time Interval (seconds):	300
		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

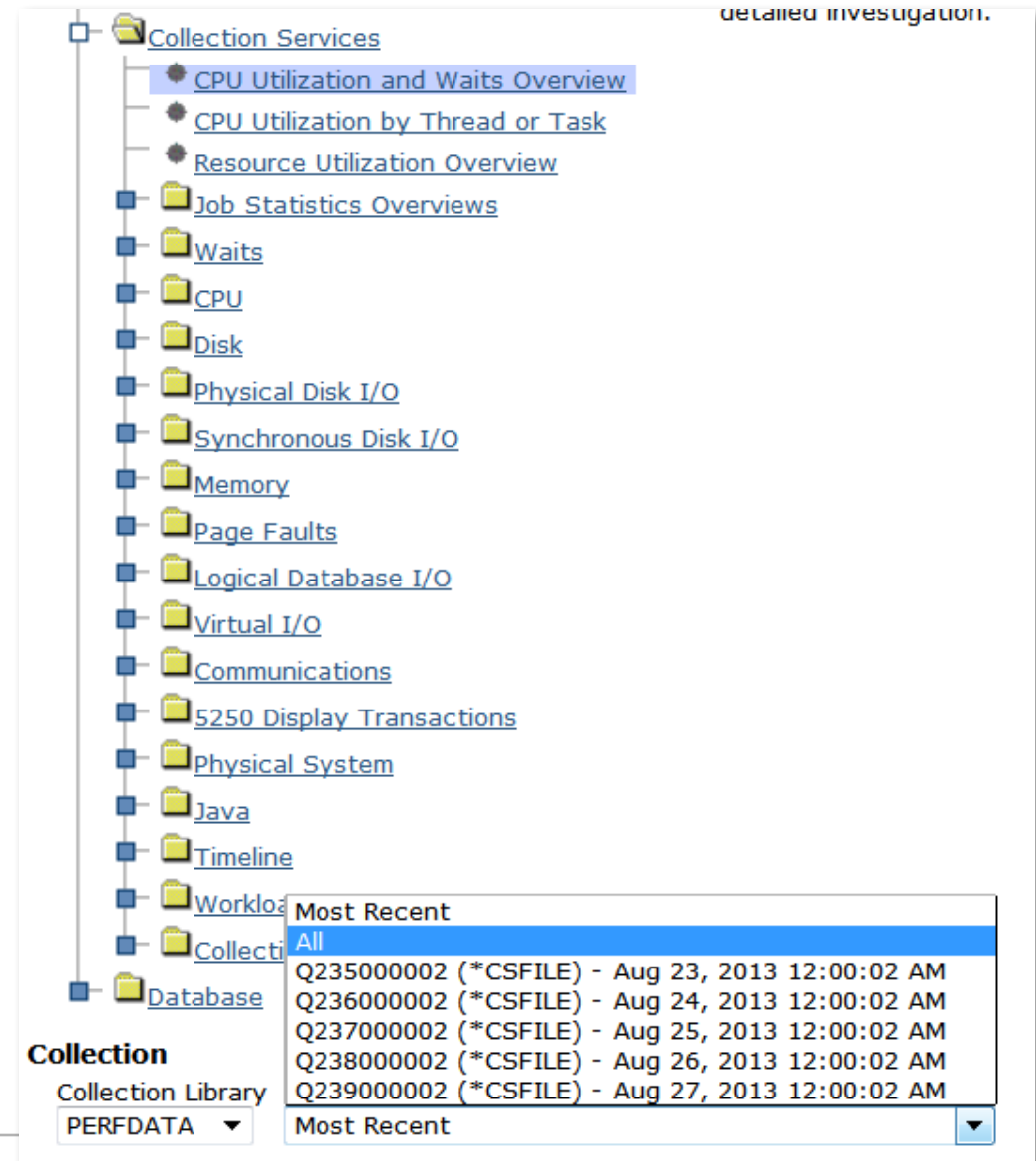
Virtual Processors:	32
Installed Processors:	128

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



Graphing Multiple Collections

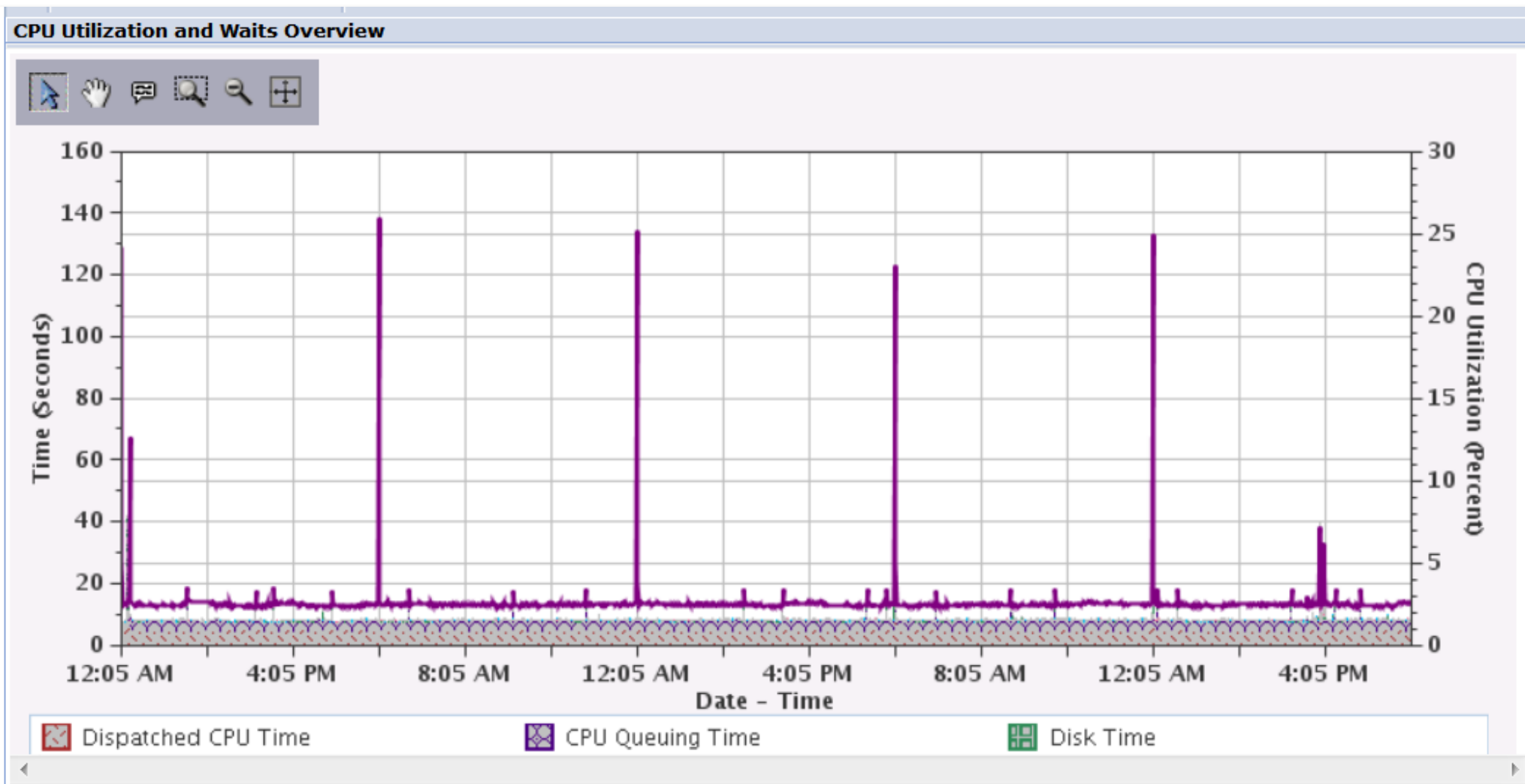
- If your collection library has 5 or fewer collections, an **All** option is available to display all the collections in one graph
- It will take longer to display the graph
 - Multiple collections means larger queries!
- **Hint:** when the graph appears, you need to use the “full zoom out” tool to display all the data.



Graphing Multiple Collections

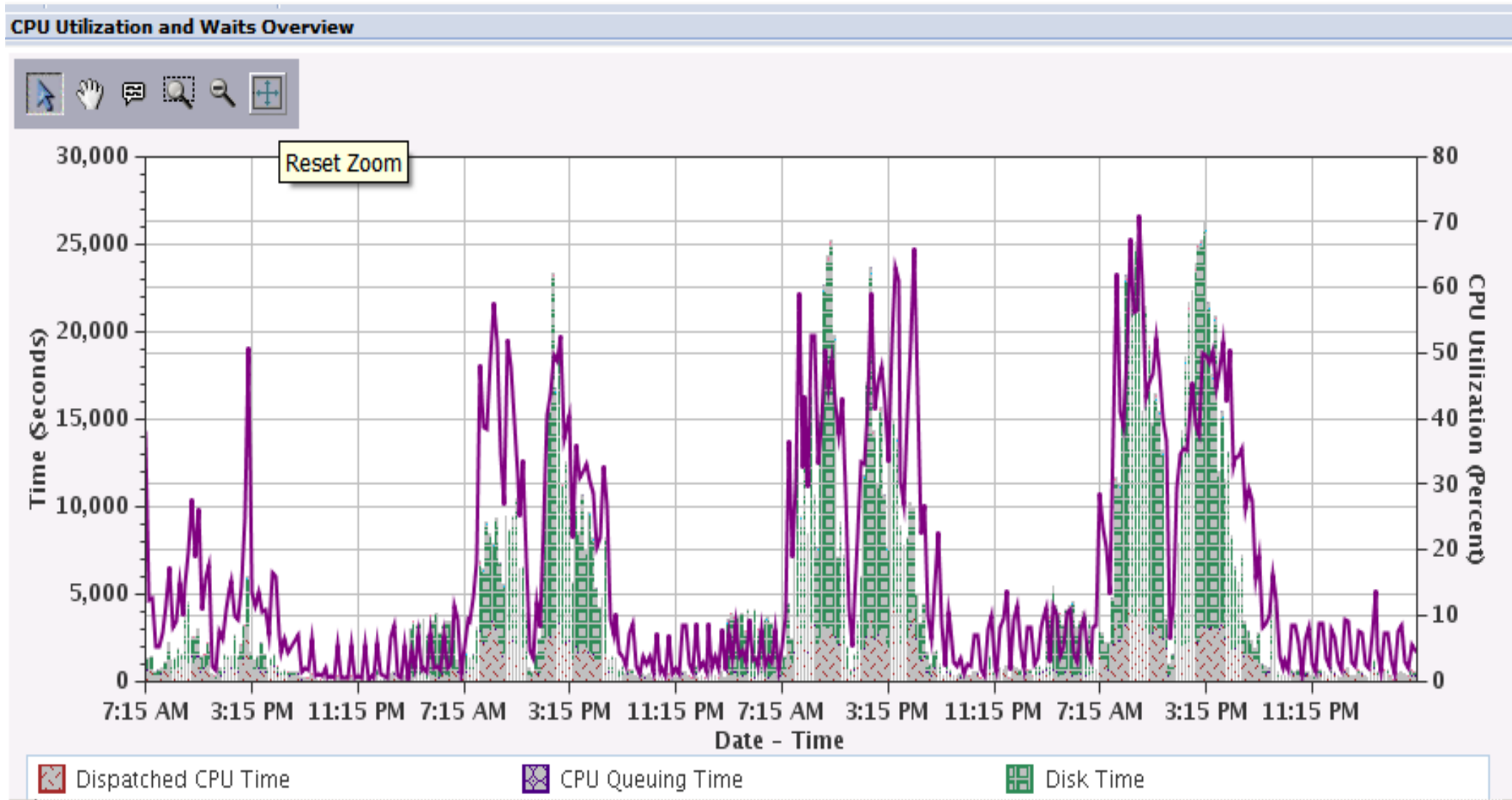
This example shows five days of (uninteresting) Collection Services data

Do you know what ran each day at midnight?



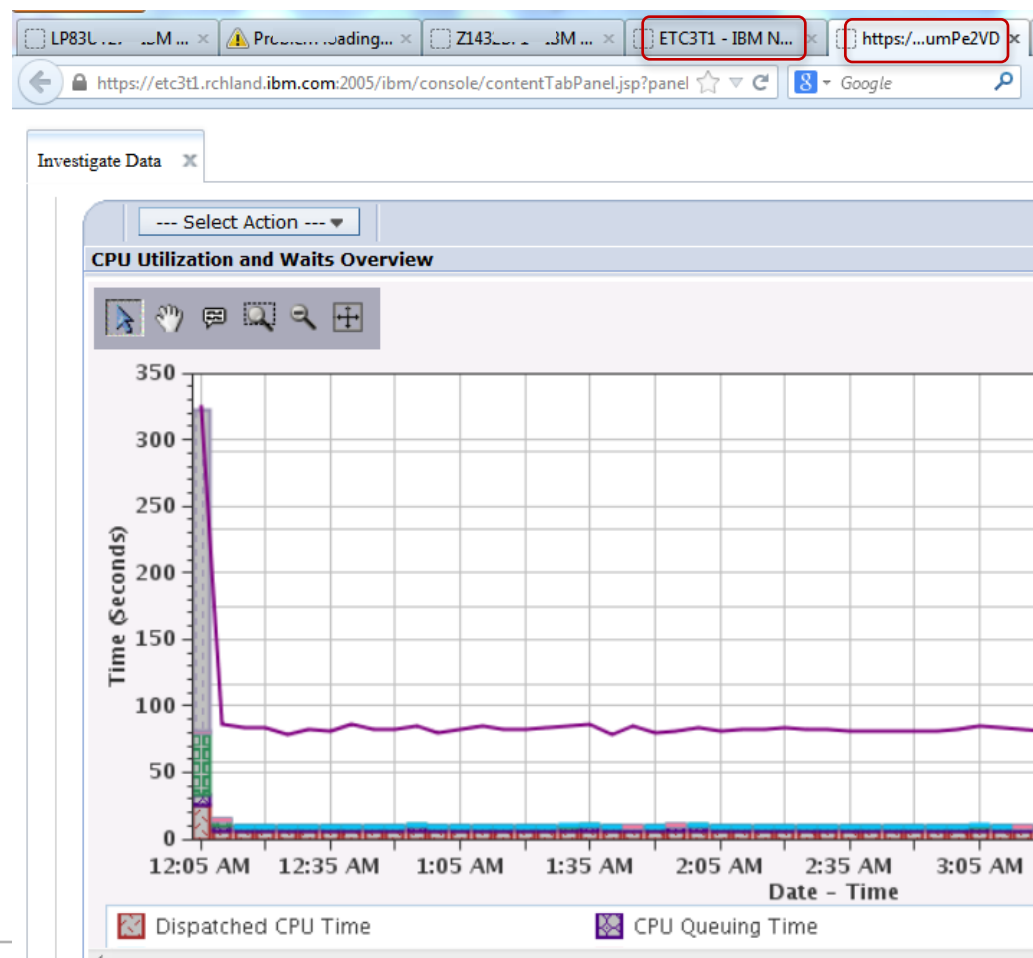
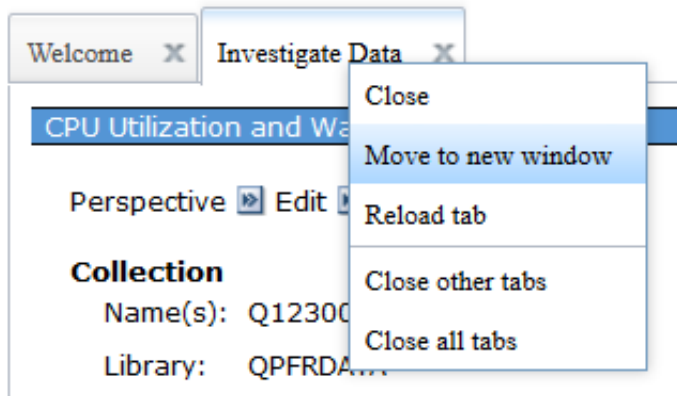
A More Interesting Example

4 days of more interesting performance data.
Observe the pattern...

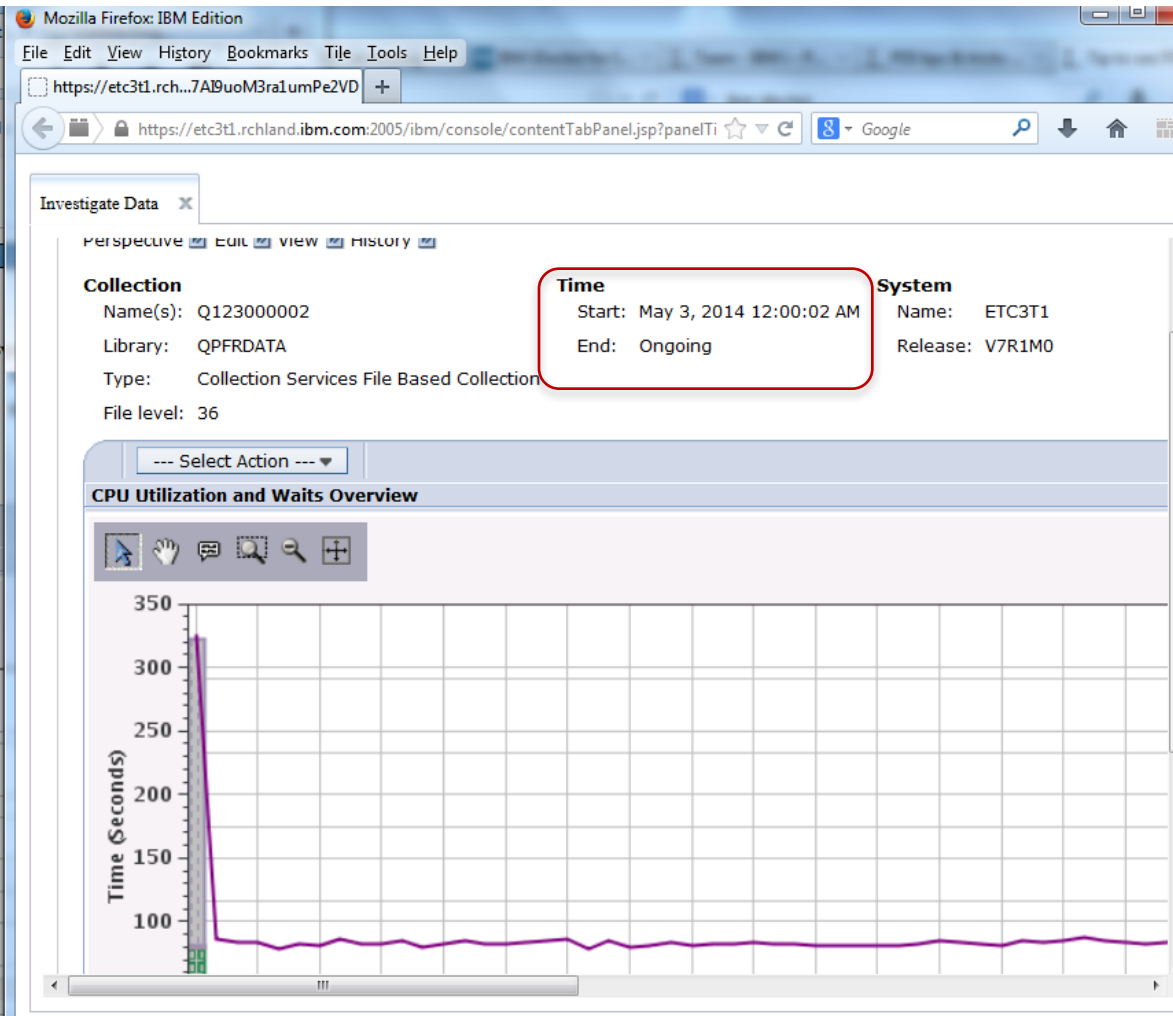
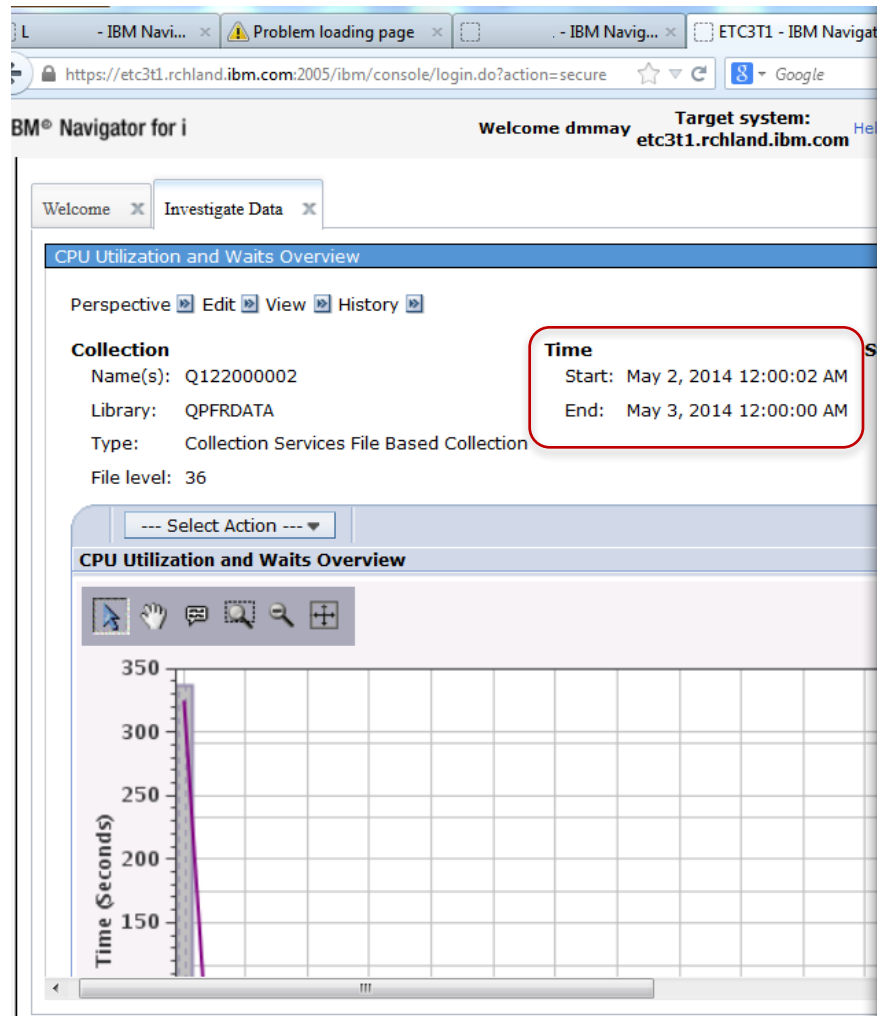


Display Charts in Separate Window

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



Two Different Charts from Two Different Days



Export - *.png, *.jpeg, *.csv, *.txt

Format

- Image (*.png)
- Image (*.jpeg)
- Comma Delimited (*.csv)
- Tab Delimited (*.txt)
- Displayed data

CPU Utilization and Waits Overview

Perspective Edit View History

--- Select Action ---

- Waits Overview
- Seizes and Locks Waits Overview
- Contention Waits Overview
- Disk Waits Overview
- Journal Waits Overview
- Classic JVM Waits Overview
- CPU Utilization by Thread or Task
- Resource Utilization Overview
- CPU Health Indicators
- Export**
- Modify SQL
- Size next upgrade
- Change Context
- Show as table
- Table Actions

Time (Seconds)

Export

Title
CPU Utilization and Waits Overview

Format
Image (*.png)

Data Range

- All data
- Displayed data
- User-defined range: **Data Series**

- Dispatched CPU Time
- CPU Queuing Time
- Disk Time
- Journaling Time
- Operating System Contention Time

First Record Number 1,2,3...28

Last Record Number 1,2,3...28

OK Cancel



Modify SQL – customize the queries

The screenshot shows the 'CPU Utilization and Waits Overview' window with a context menu open. The 'Modify SQL' option is selected, opening a dialog box. The dialog box contains the following SQL statement:

```

SQL Statement
Reset

SELECT
  QSY.INTNUM,
  QSY.CSDTETIM AS CSDTETIM,
  MAX(PCTSYSCPU) AS PCTSYSCPU,
  SUM(TIME01) * .000001 AS WB01,
  SUM(TIME02) * .000001 AS WB02,
  SUM(TIME05 + TIME06 + TIME07 + TIME08 + TIME09 + TIME10) * .000001 AS WB050607080910,
  SUM(TIME11) * .000001 AS WB11,
  SUM(TIME14 + TIME15 + TIME19 + TIME32) * .000001 AS WB14151932,
  SUM(TIME16 + TIME17) * .000001 AS WB1617,
  SUM(TIME18) * .000001 AS WB18,
  100 AS PCT100,
  DTETIM AS DTETIM,
  DTECEN AS DTECEN
FROM
  (
    SELECT
      DTECEN || DTETIM AS CSDTETIM,
      DOUBLE(JWTM01) AS TIME01,
      DOUBLE(JWTM02) AS TIME02,

```

Below the SQL statement, there is a checked checkbox labeled 'Allow collection choice'. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

Size Next Upgrade

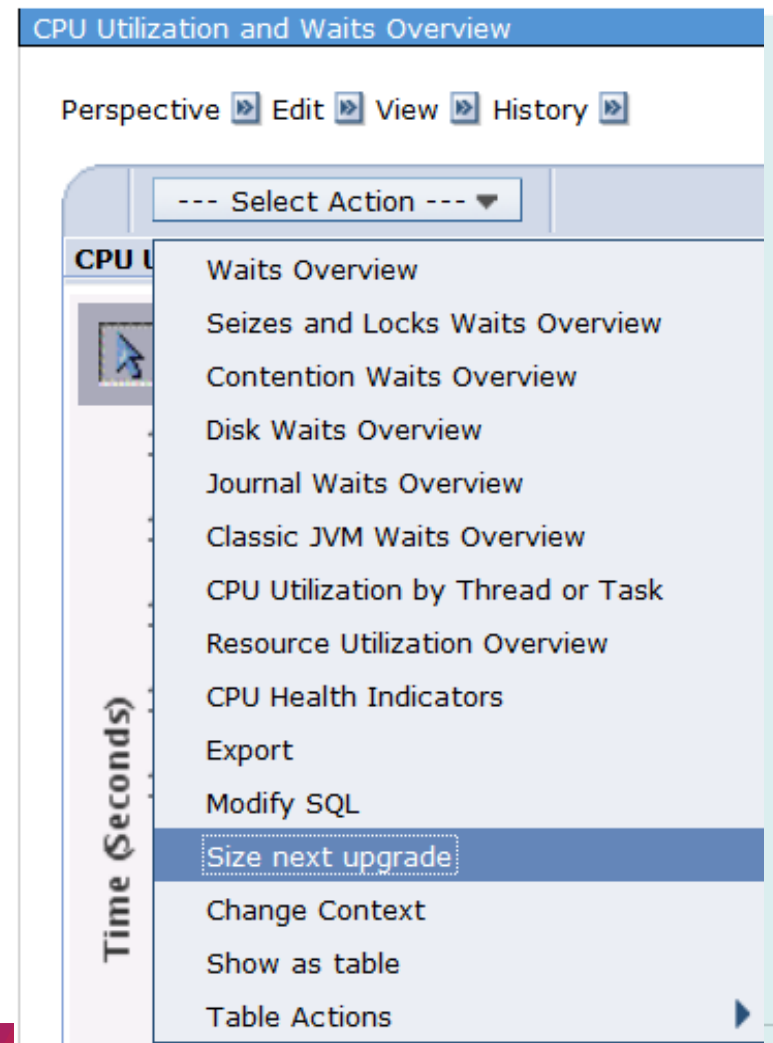
Send data directly to the IBM Workload Estimator

Using the **Performance Data Investigator**

you can send measured data from **Collection Services**

and input it to the **IBM Systems Workload Estimator (WLE)**

Intended for a one-time sizing activity





[← Back](#) [→ Continue](#)

PDI COMMON2/CS228229ND

PDI Workload Definition

Note: The partition information specified above reflects the target partition, in the same manner as the other workload definitions within the Estimator. Please ensure that the target partition is what is desired (name, type, OS level); this can be changed by clicking on the partition name.

The data below is a summary of the data passed to the Estimator from PDI. Please see the [help text](#) for more best practices for using PDI data in a WLE sizing.

Model: i570-9406-MMA
Feature: 5462
Clock Speed: 4700 MHz

- 1. [Total CPU Utilization](#) 68.04
- 2. [Processor cores activated](#) 16
- 3. [Assigned Processor Cores](#) 4
- 4. [Memory \(MB\)](#) 30404.7
- 5. [Disk Configuration](#)

Group Name	Storage Used(GB)	Storage Consumed	Read Ops	Read IOPSize (bytes)	Write Ops	Write IOPSize (bytes)	Attachment	Protection	Type	Disk unit type
Group 1		88	366	14,896.0	325	4,843.0	External Storage	No Protection	15,000 RPM	2107
Group 2		2,474	4,950	15,046.0	4,537	4,792.0	External Storage	RAID-5	15,000 RPM	2107

[← Back](#) [→ Continue](#)

Workload Estimator Solutions - *Immediate and growth options*

IBM Workload Estimator v2015.1

Solution Overview | **Workload Questions** | Server Consolidation | Sizing Report | Help

File User Options

MySolution

- Tier Name - IBM Power System
 - RCHASTND - 720-8202-E4D - PowerVM
 - RCHASTND - OS400 6.1 LPAR Dedic
 - Workload - PDI COMMON2/CS22

Solution Summary

Tier Name RCHASTND

	Immediate System	Growth System
System	720-8202-E4D	720-8202-E4D
Available Cores	6 cores	6 cores
MHZ	3600 MHz	3600 MHz
Cores Allocated	3.0	4.0
Processor Utilization	31 % utilized	46 % utilized

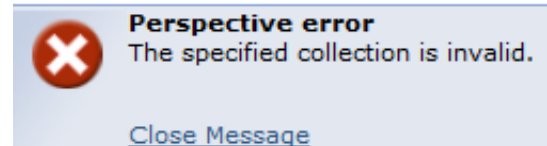
Do you know why WLE didn't recommend a POWER8 system?

The operating system this came from is on 6.1.



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



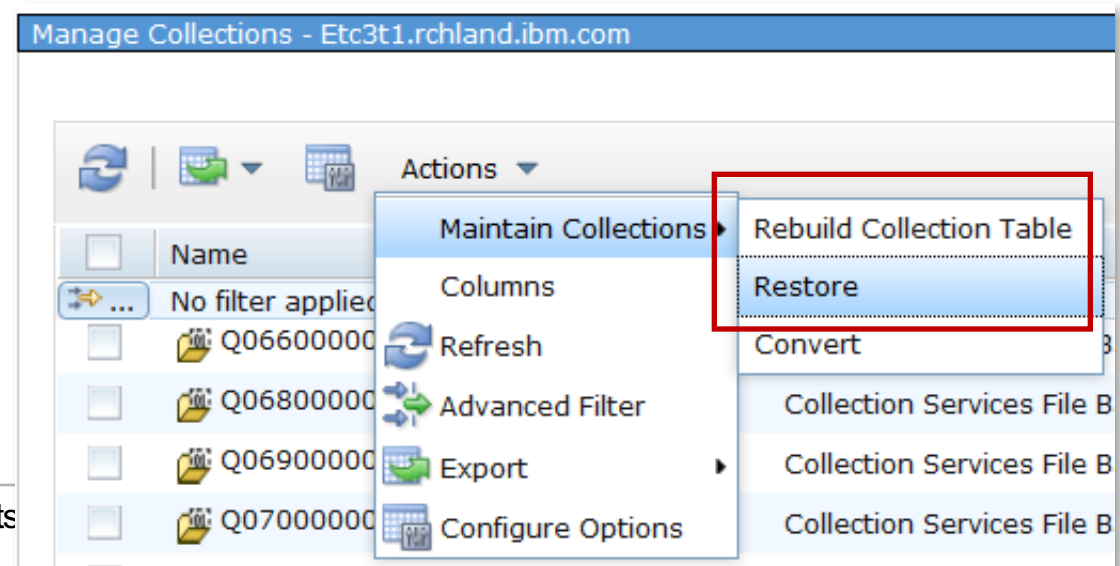
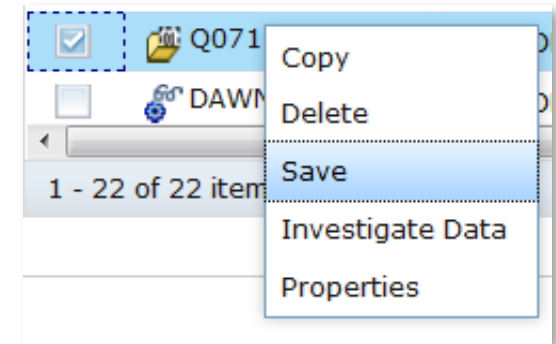
Considerations for Viewing Prior Release Performance data

- 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



Manage Collections

- The Manage 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 - Isz1lp13.rch.stglabs.ibm.com

Actions ▾

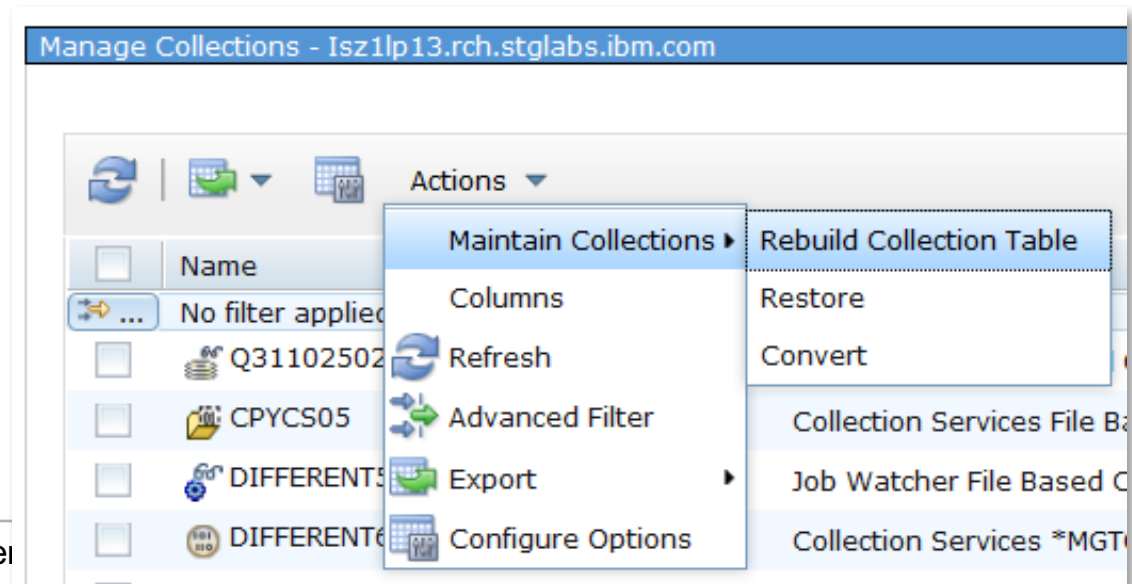
Name	Library	Type	Status	Started	Ended	Size MB	System	Version	
No filter applied									
Q311025028	ZZTEST	Disk Watcher File Based Collection	Complete	11/6/12 2:50:28 AM	11/6/12 2:51:20 AM	2.766	ISZ1LP13	V7R1M0	
Q311025028	DFLADP	Collection Services File Based Collection	Complete	6/11/12 4:25:07 PM	7/15/12 4:28:35 PM	1.754	ASWC	V7R1M0	
Q311025028	RAKLIB	Job Watcher File Based Collection	Complete	1/9/13 3:56:07 PM	1/9/13 4:12:10 PM	0.004	ISZ1LP13	V7R1M0	
Q311025028	RAKLIB	Collection Services *MGTCOL Obj Based Cc	Complete	6/11/12 4:25:07 PM	7/15/12 4:28:35 PM	3.684	ASWC	V7R1M0	
Q311025028	ZZTESTR	Collection Services File Based Collection	Complete	11/1/12 12:00:06 AM	11/1/12 12:03:25 PM	380.464	ISZ1LP13	V7R1M0	
Q311025028	ZZTESTR	Collection Services *MGTCOL Obj Based Cc	Complete	11/2/12 12:00:06 AM	11/3/12 12:00:04 AM	428.644	ISZ1LP13	V7R1M0	
Q307000005	ZZTESTR	Collection Services File Based Collection	Complete	11/2/12 12:00:06 AM	11/3/12 12:00:00 AM	401.808	ISZ1LP13	V7R1M0	
Q254000002	ZZTESTR	Collection Services File Based Collection	Complete	9/10/12 12:00:02 AM	9/10/12 10:20:00 PM	42.375	ISZ1LP13	V7R1M0	
Q306121500	ZZTESTR	Collection Services File Based Collection	Complete	11/1/12 12:15:03 PM	11/2/12 12:00:05 AM	344.484	ISZ1LP13	V7R1M0	
Q309010017	RONNSA1210	Collection Services File Based Collection	Complete	11/4/12 1:00:17 AM	11/4/12 11:01:04 PM	90.836	OCC01XX4	V7R1M0	
Q313000005	DFLTEST1	Collection Services File Based Collection	Complete	11/8/12 12:00:05 AM	11/8/12 2:06:30 PM	506.066	ISZ1LP13	V7R1M0	
NORMAL	QPEXDATA	Performance Explorer *MGTCOL Obj Based	Complete	1/7/13 3:37:10 PM	1/7/13 3:37:21 PM	4.039	ISZ1LP13	V7R1M0	
CSPFR0225	CRSS_MON	Collection Services File Based Collection	Complete	2/25/13 12:01:03 AM	2/26/13 12:00:00 AM	729.32	LDPROD	V6R1M0	
Q078110401	QPFRRDATA	Collection Services File Based Collection	Complete	3/19/13 11:04:04 AM	3/20/13 12:00:04 AM	76.016	ISZ1LP13	V7R1M0	
IBMPLEX0002	DFLBUGNN1	Performance Explorer File Based Collection	Complete	12/12/12 8:09:41 PM	12/12/12 9:10:28 PM	2,459.21	FOHC2E	V7R1M0	
B122	QPEXDATA	Performance Explorer File Based Collection	Complete	1/8/13 3:00:03 PM	1/8/13 3:01:04 PM	0.061	ISZ1LP13	V7R1M0	

1 - 100 of 312 items

5 | 10 | 25 | 50 | 100 | All

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.



Collection Services ... Status

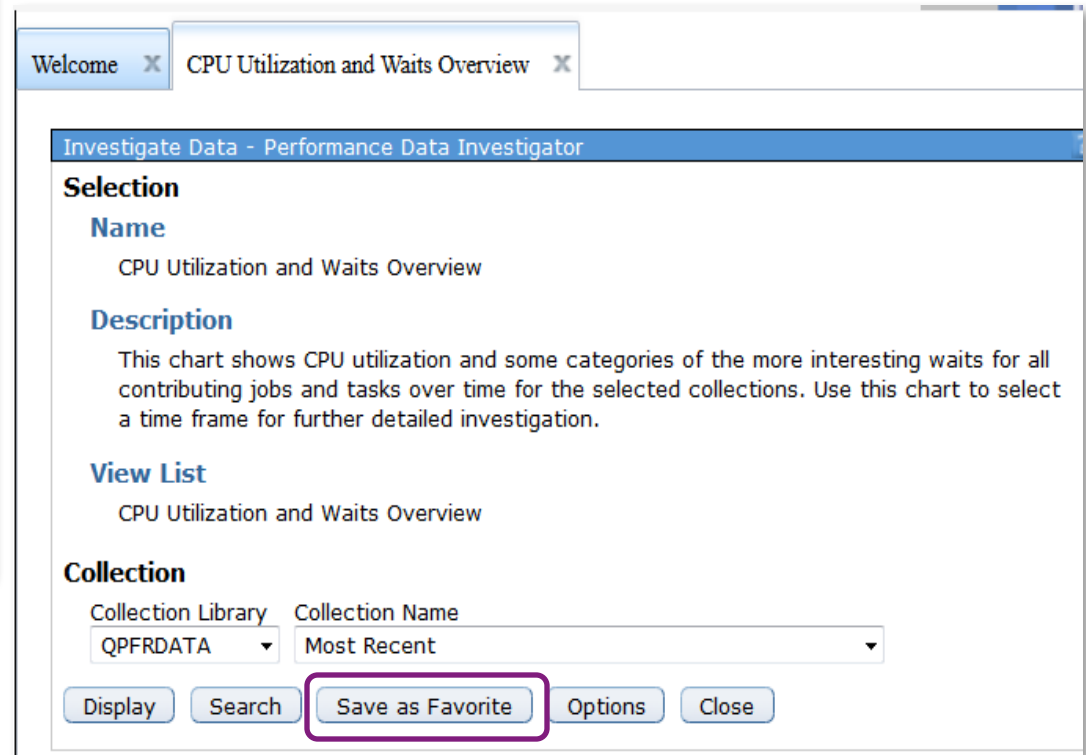
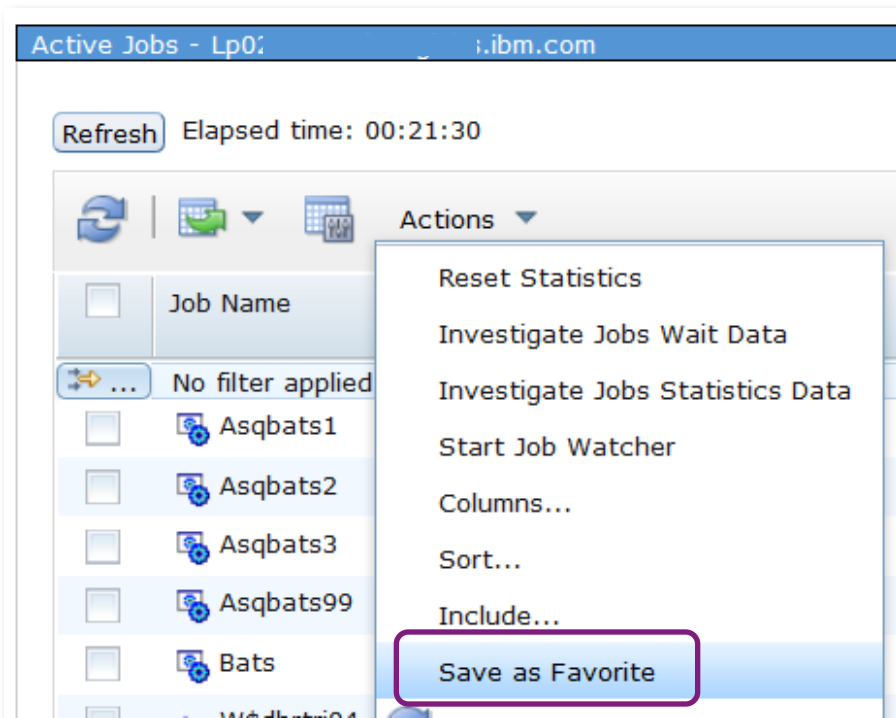
- [-] Collectors
 - [+] Disk Watcher
 - [+] Job Watcher
 - [-] Collection Services
 - Active Collection Services Collections
 - Collection Services Collections
 - Collection Services Status
 - Configure Collection Services
 - Cycle Collection Services
 - Start Collection Services
 - Stop Collection Services

Collection Services Status	
Status:	Started
Library:	QPFRDATA
Collection object:	Q261000002
Collection profile:	Standard plus protocol
Started:	Sep 18, 2014 12:00:02 AM
Cycle time:	00:00:00
Default collection interval:	00:05:00
<input type="button" value="OK"/>	



Navigator Favorites

- Throughout Navigator, can save favorites
 - Including favorite Performance Data Investigator perspectives
 - Action drop-down or a “Save as Favorite” button



Favorites

Save As Favorite

Save As Favorite

Specify the name to appear in the Favorites list in the left navigation area.

*Favorite name:

Category:

None

New

Existing

Favorites

- PDI Favorites**
 - Logical Partitions Overview
 - Disk IO Rates Overview
 - Page Faults Overview
 - CPU Utilization and Waits Over
 - Health Indicators

Saved by **user**



Documentation

How do I learn about all the *new* stuff??

- Technology Refreshes
- *Add function* PTFs
- New release

and there's all that *old* stuff too...



Knowledge Center

http://www.ibm.com/support/knowledgecenter/en/ssw_ibm_i



IBM Knowledge Center

The screenshot shows the IBM Knowledge Center interface. At the top left, the text "IBM i" is displayed. Below it is a dropdown menu with "Select" as the current selection. The dropdown menu is open, showing the following options: "Select", "Version 7.3", "Version 7.2", "Version 7.1", "Version 6.1", "Version IBM i V5R4", and "Version IBM i V5R3". To the right of the dropdown menu, there is a faint text overlay that reads "edition of IBM i documentation from the drop-down menu."



IBM i 7.2 and 7.3 Documentation



Performance is a major topic

IBM Knowledge Center



IBM i

IBM i 7.3

Welcome

- + About IBM i information
- + Availability
- + Basic system operations
- + Blade and System x
- + Connecting to your system
- + Database
- + Electronic business and Web serving
- + Files and file systems
- + IBM i and related software
- + Networking
- + Performance
- + Printing

Navigator is under Connecting to your system

IBM i

IBM i 7.3

Welcome

- + About IBM i information
- + Availability
- + Basic system operations
- + Blade and System x
- Connecting to your system
 - + Choose your connection
 - + IBM i Access

System i Navigator

- IBM Navigator for i

- What's new for IBM Navigator for i
- PDF file for IBM Navigator for i
- Working with IBM Navigator for i
- Related information for IBM Navigator for i
- + Application Administration



7.1

- ▼ **Systems management**
 - ▶ Backup and recovery
 - ▶ Common Information Model
 - ▶ Disk management
 - ▶ Journal management
 - ▶ Logical partitions
 - Management Central
 - ▶ Performance
 - ▶ System values
 - ▶ Time management
 - ▶ Work management

Table of Contents

- ▶ Availability
- ▶ Basic system operations
- ▶ Blade and System x
- ▼ **Connecting to your system**
 - ▶ Choose your connection
 - ▶ IBM i Access
 - ▼ **System i Navigator**
 - ▶ Getting to know System i Navigator
 - ▶ System i Navigator tasks on the Web
 - ▼ **IBM Navigator for i**
 - What's new for IBM Navigator for i
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 - ▶ Application Administration
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 - Intelligent agents
 - Operations Console



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/>
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Featured

IBM wiki

IBM i Technology Updates

IBM i operating system (OS) levels and related software products are frequently enhanced via Program Temporary Fixes (PTFs). This wiki contains a centralized list of all enhancements for IBM i.

[Find updates](#)

IBM i Technology Updates

Updated Oct 11, 2016 at 10:16 AM by Timme | Tags: db2, enhancements, firmware, hardware, i, bsm, operating, systems, technology, updates

Page Actions -

IBM i operating system (OS) levels and related software products are frequently enhanced via PTFs. Prior to the existence of this wiki, IBM did not provide a single point for clients to learn about all IBM i enhancements.

	Enhancement Landing Pages
IBM i 7.3	TR1 - Base Enhancements
IBM i 7.2	TR5 - TR4 - TR3 - TR2 - TR1 - Base Enhancements
IBM i 7.1	TR11 - TR10 - TR9 - TR8

The following links take you to landing pages for various products and subjects. Each subject area contains extended details about existing and new support.

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)
IBM Cloud Storage Solutions for i
General IBM i operating system
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Performance Tools

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Page Actions -

This section contains information about the most recent enhancements to IBM i Performance Tools. This topic includes Performance collection tools, the performance components of IBM 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: Batch Model, Work with System Activity (WRKSYSACT), Dump Main Memory Information (DMPMEMINF), and Analyze Command Performance (ANZCMDPPR).

Performance on the Web

The Performance components of IBM Navigator for i include the **Investigate Data** task which is used to start **Performance Data Investigator (PDI)** and the **Manage Collections** task used to manage performance collections. Other tasks provide access to the 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 common is known as Performance Tools Reports. More information on this licensed program is contained in the [IBM Knowledge Center - IBM Performance Tools for i](#).



IBM i Performance FAQ - a MUST read!

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

IBM Power Systems Performance



IBM i on Power - Performance FAQ

October 3, 2016





ithankyou

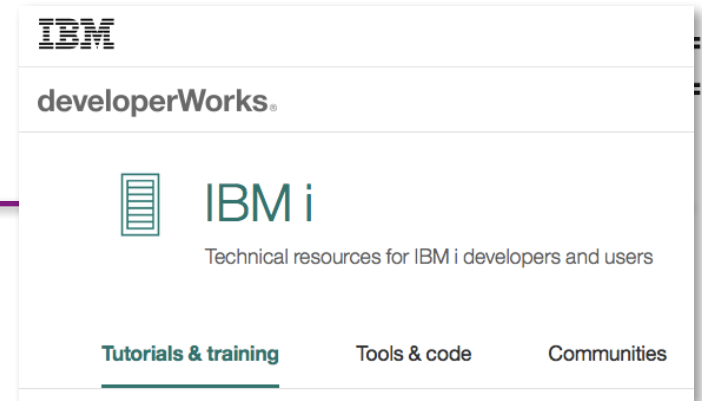
www.ibm.com/power/i



References





IBM i Performance on developerWorks



- developerWorks
<http://www.ibm.com/developerworks/ibmi/>
- Performance Tools
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<http://www.ibm.com/developerworks/ibmi/library/i-ibmi-wait-accounting/>
- How to use the Batch Model performance tool
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IBM i Web Sites with Performance Information

-  IBM i Knowledge Center
http://www.ibm.com/support/knowledgecenter/ssw_ibm_i/welcome
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[IBM i 7.3 System Monitor Enhancements](#)
[IBM i 7.3 Enhancement With Binder Language Export Source Workload Group Configuration with IBM i 7.3](#)
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[IBM i 7.2 Improved Temporary Storage Tracking \(Part 7\)](#)
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[IBM i Access Client Solutions and Performance FAQ Updates](#)
[Everything is Design: The Work of Paul Rand](#)



What Happened to the PCRMR?

- Performance Capabilities Reference Manual – “*PCRMR*”
- Was *THE* reference manual for all things related to IBM i performance considerations
 - Content was carried forward but not always updated
- Beginning in 2014, the PCRMR only covers **CPW information**
 - Updates for new hardware models and CPW ratings
 - Older versions are still available for download
- Use other sources for IBM i performance information:
 - The IBM i Performance FAQ
 - Knowledge Center
 - developerWorks



IBM i 7.1 Technical Overview with Technology Refresh Updates

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

Covers the 7.1 content through
Technology Refresh 7

Chapter 6 – Performance Tools

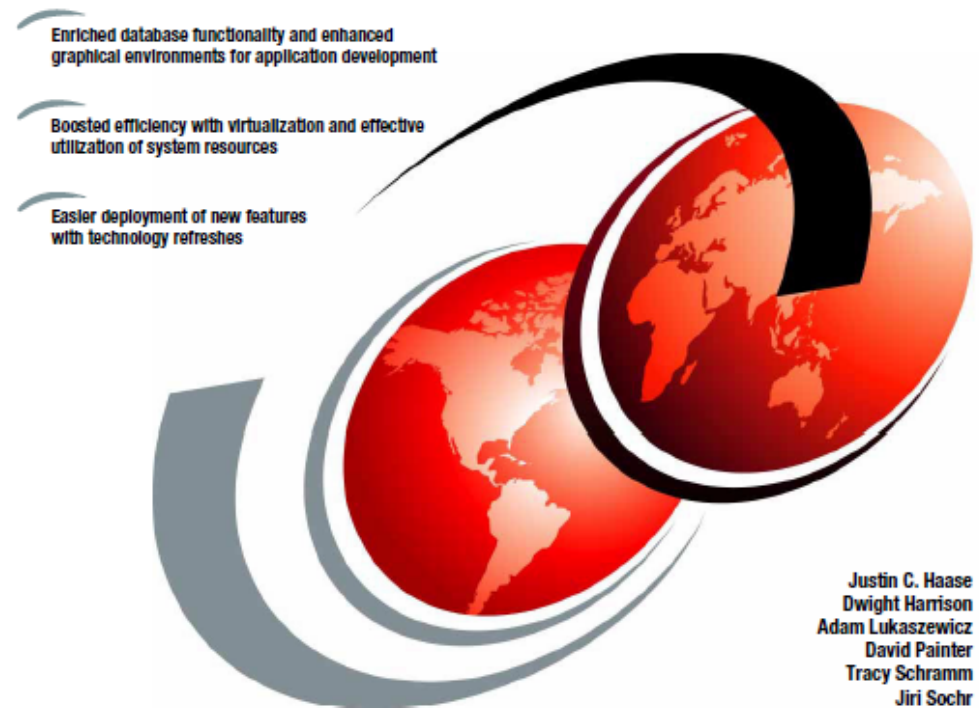
Chapter 17, Section 6 –
Performance in Navigator for i



SG24-7858-03

Draft Document for Review February 14, 2014 1:17 pm

IBM i 7.1 Technical Overview with Technology Refresh Updates



ibm.com/redbooks

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IBM i 7.2 Technical Overview with Technology Refresh Updates

<http://www.redbooks.ibm.com/redbooks.nsf/RedpieceAbstracts/sg248249.html?Open>

Covers the 7.2 content through
Technology Refresh 1

Section 2.8 – Performance

Section 8.6.7 – Job level SQL
stats in Collection Services

IBM

SG24-8249-00

Draft Document for Review December 10, 2014 2:51 pm

IBM i 7.2 Technical Overview with Technology Refresh Updates

Covers new functions and enhancements
through IBM i 7.2 TR1

Easy to use web-based system
management

Integrated Data-Centric
approach



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Revised September 26, 2006



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