

Performance Data Investigator for IBM i



Dawn May - dmmay@us.ibm.com



ibm.com/power



Power is performance redefined

Deliver services faster, with higher quality
and superior economics

IBM Systems Director Navigator for i



- **IBM Systems Director Navigator for i is the Web console for managing IBM i**

- Much of the function that exists in System i Navigator, but with a browser user interface
- Simply point your browser to `http://systemname:2001`

The screenshot displays the IBM Systems Director Navigator for i web console. On the left, there is a login form with fields for 'User ID:' and 'Password:', and a 'Log in' button. The main content area is titled 'Welcome' and contains the following text:

Welcome to the IBM Systems Director Navigator for i [About Console](#)

The IBM Systems Director 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.

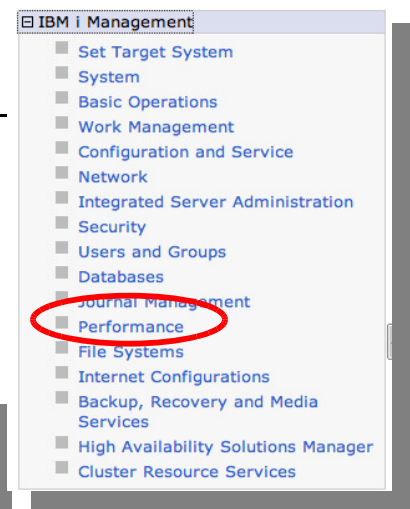
Expand IBM i Management in the left-hand navigation area to get started.

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

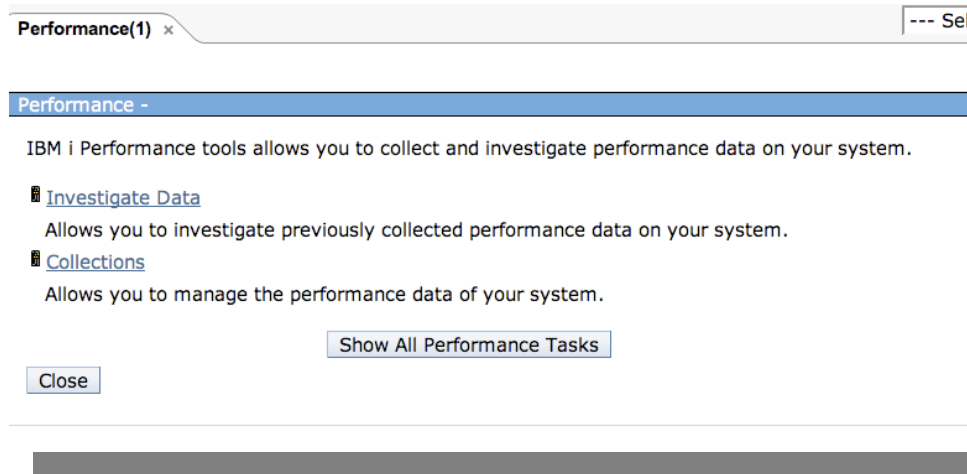
[IBM i Tasks Page](#)

Performance Tasks

- “Performance” is a major function within this Web console



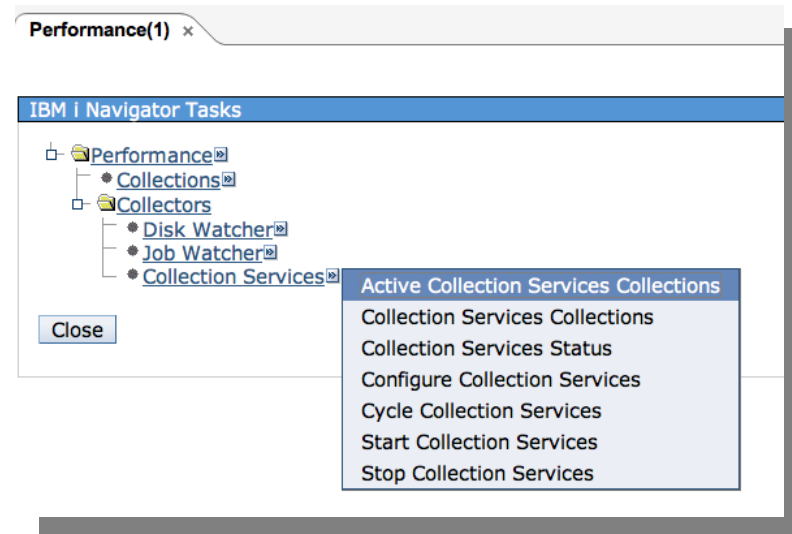
– Investigate Data



– Collections

– All Performance Tasks

- Active Jobs
- Disk Status
- System Status
- Define, start, stop and manage performance data collectors



Updates to the Performance Data Investigator



- **Visit the IBM i Performance Tools Technology Updates Wiki on developerWorks for more information about Performance Data Investigator's latest enhancements and a list of the latest PTFs**

<https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/IBM%20i%20Technology%20Updates/page/Performance%20Data%20Investigator>

- **IBM Systems Director Navigator for i typically releases updates every 6 months via Service Pack**

Prerequisites – Performance Tools Licensed Program Product

- IBM i for [Collection Services, Health Indicators](#)
 - Included with base OS

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

 - **Performance Tools - Manager Feature (Option 1)**
 - [Disk Watcher, Performance Explorer](#)
 - Performance Tools - Agent Feature
 - **Performance Tools - [Job Watcher](#) (Option 3)**

Prerequisites – Performance Tools Licensed Program Product

The screenshot shows the 'Investigate Data' section of the Performance Tools Manager. It includes a tree view under 'Perspectives' with items: Performance Explorer, Disk Watcher, Job Watcher, Health Indicators, and Collection Services. Below this is a 'Collection' dialog box with 'Collection Library' set to 'QPFRDATA' and 'Collection Name' set to 'Most Recent'. Callout boxes on the right link these elements to their prerequisites:

- Performance Explorer**: IBM Performance Tools – Manager feature
- Disk Watcher**: IBM Performance Tools – Manager feature
- Job Watcher**: IBM Performance Tools – Job Watcher feature
- Health Indicators**: IBM i 6.1 or later – Included with the base operating system
- Collection Services**: IBM i 6.1 or later – Included with the base operating system

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 authorization list

```

                                Edit Authorization List

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

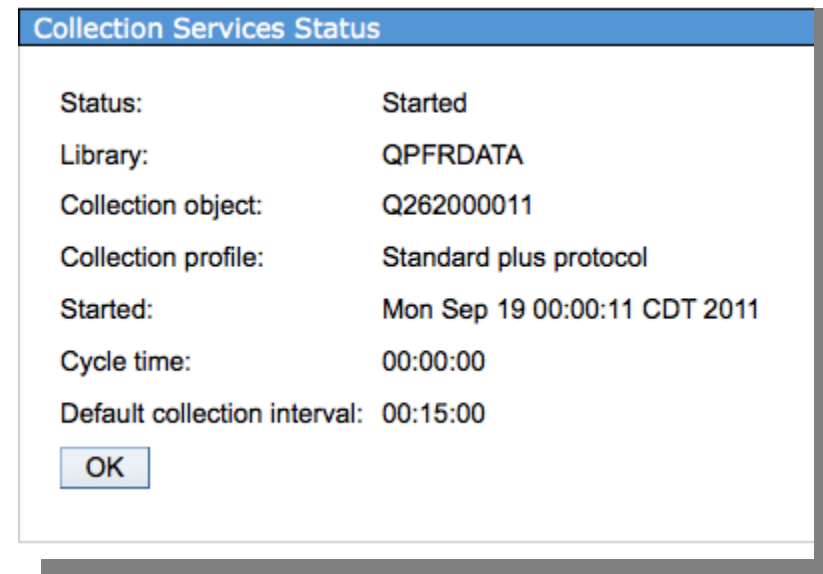
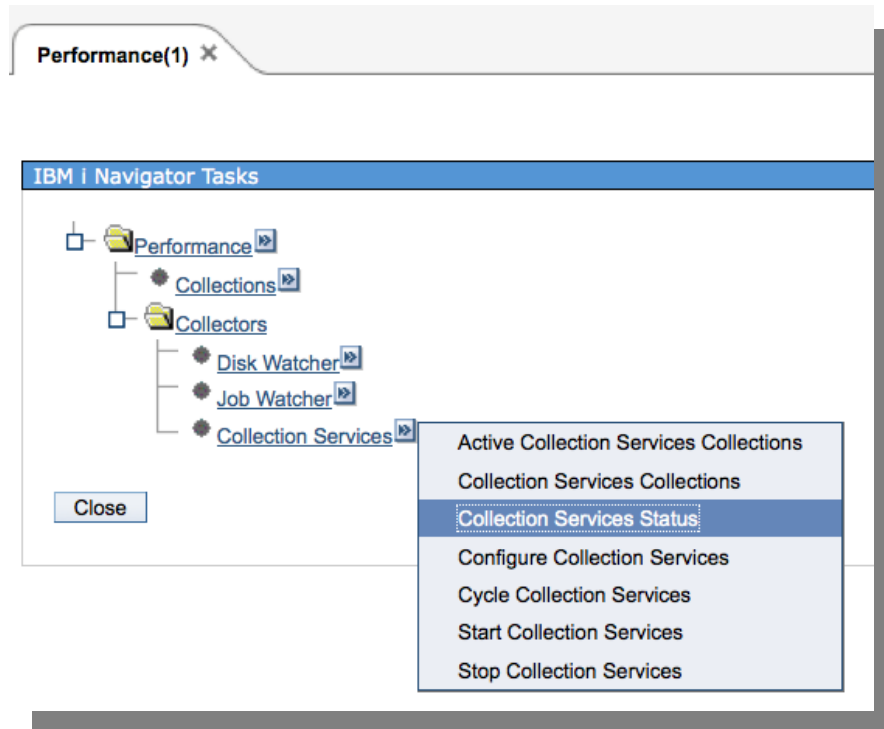
Type changes to current authorities, press Enter.

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

More...
```

Prerequisites – Collection Services must be Active

- Make sure Collection Services is active
 - Started by default with 6.1 and later



Prerequisites - Performance Summary Data

- Performance summary data will help the performance of PDI
 - Underlying queries will run faster with performance summary data
 - Graphical interface
 - Check the “Create performance summary data...” option within Configure Collection Services

– Command interface:

- Change the “Create Performance Summary” option for the Performance Collection
 - CFGPFRCOL command
 - » CRTPFRSUM(*YES)
- Or use the Create Performance Summary command
 - CRTPFRSUM

The screenshot shows the 'Configure Collection Services' interface. The 'General' tab is active, displaying the following settings:

- Library: QPFRDATA
- Default collection interval: 15 seconds / 5 minutes
- Cycling**
 - Cycle every day at: 12:00 AM (Example: 12:30 PM)
 - Cycle every: 24 hours
- System options**
 - Create database files during collection
 - Create performance summary data when collection is cycled (highlighted with a red arrow)
 - Send PM Agent data to IBM [View disclaimer](#)

Prerequisites – Create Database Files During Collection

- PDI requires data in the Collection Services DB2 files
 - Beginning with 6.1, the default is to create the database files during performance data collection
 - If you have turned this off, you will not be able to view performance data with PDI until the data is created in the files
 - Recommended to leave this setting at the default
 - Command interface:
 - CFGPFRCOL, CRTDBF(*YES)

Configure Collection Services

General

Library: QPFRDATA

Default collection interval: 15 seconds 5 minutes

Cycling

Cycle every day at: 12:00 AM Example: 12:30 PM

Cycle every: 24 hours

System options

- Create database files during collection
- Create performance summary data when collection is cycled
- Send PM Agent data to IBM [View disclaimer](#)

Tips for Best Performance (of your Performance tasks)

- Good system tuning practices are essential

		Single User	Multiple Users
– CPU	CPU	.5 processors uncapped	2 processors uncapped
– Memory	Memory	2 GB in *BASE	6-8 GB in *BASE
– Disk	Disk Arms	3	6

- IBM Systems Director Navigator tasks run primarily in the ADMIN2 job in the QHTTSPVR subsystem
- Ensure no bad DNS entries on the system
- PDI makes extensive use of SQL to gather data for charts and tables

Terminology

Collection Services is the mechanism used to gather performance data with little or no observable impact on the system performance. It allows you to control what data is collected and how that data is used.

Collection services data was generally analyzed by the Performance Tools LPP and Management Central Monitors in prior releases.

Collection Services data is available for performance analysis through the Web user interface and is the data used for initial analysis.

Standard Data is data from Collection Services which is normally collected on a 24 x 7 basis.

Wait Accounting is the technology used to collect wait time statistics. Wait points throughout the system are identified and categorized into groups, or 'buckets'. These wait statistics can then be analyzed to determine what a thread was doing when it was running as well as when it was not running.

IBM Systems Director Navigator for i Performance, Investigate Data

IBM® Systems Director Navigator for i

Welcome Help | Logout

View: All tasks

- Welcome
- My Startup Pages
- IBM i Management
 - Set Target System
 - System
 - Basic Operations
 - Work Management
 - Configuration and Service
 - Network
 - Integrated Server Administration
 - Security
 - Users and Groups
 - Databases
 - Journal Management
 - Performance**
 - File Systems
 - Internet Configurations
 - High Availability Solutions Manager
 - Cluster Resource Services
 - Backup, Recovery and Media Services
- Settings

Performance(1) x

Performance -

IBM i Performance tools allows you to collect and investigate performance data on your system.

- Investigate Data**
Allows you to investigate previously collected performance data on your system.
- Collections
Allows you to manage the performance data of your system.

Show All Performance Tasks

Close

Investigate Data

Perspectives are a logical grouping of similar or related views that benefit from being rendered side-by-side for reference or context.

Investigate Data

Perspectives

Selection

- [Performance Explorer](#)
- [Disk Watcher](#)
- [Job Watcher](#)
- [Health Indicators](#)
- [Collection Services](#)

Collection

Collection Library: Collection Name:

Content Package is a set of perspectives that share a commonality (major theme).

Investigate Data – Select Collection

Perspectives **Selection**

- Performance Explorer
- Disk Watcher
- Job Watcher
- Health Indicators
- Collection Services**

Collection

Collection Library: QPFRDATA Collection Name: Most Recent

Display Search Options Close

Perspectives **Selection**

- Dawn May
- Disk Watcher
- Performance Explorer
- Job Watcher
- 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
 - Page Faults
 - Logical Database I/O
 - Virtual I/O
 - Communications
 - 5250 Display Transactions
 - Physical System
 - Java
 - Collection Services Database Files
- Health Indicators
- Tech_Sales2

Name
Collection Services

Description
Chart and table views over a variety of performance statistics from Collection Services performance data.

Default Perspective
Resource Utilization Overview

Collection

Collection Library: QPFRDATA Collection Name: Most Recent

Display Search Options Close

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.

Selecting a Collection

The screenshot shows the 'Investigate Data' application window. The left pane displays a tree view under 'Collection Services' with the following items:

- CPU Utilization and Waits Overview
- CPU Utilization by Thread or Task
- Resource Utilization Overview
- Job Statistics
- Waits
- CPU
- Disk
- Physical Disks
- Synchronous I/O
- Page Faults
- Logical Data
- Virtual I/O
- Communication
- 5250 Display
- Physical System
- Java
- Collection Services

The right pane is titled 'Selection' and contains the following information:

Name
Resource Utilization Overview

Description
Charts that show utilizations and rates for some of the more common collection metrics on an interval by interval basis. Use this information to find and compare relationships and select a time frame for more detailed investigation.

Below the description is a list of collection files:

Collection Name	File Name
Most Recent	
	Q024000004 (*CSFILE)
	Q025000004 (*CSFILE)
	Q025105247 (*CSFILE)
	Q026000004 (*CSFILE)
	Q027000004 (*CSFILE)
	Q028000005 (*CSFILE)
	Q033124622 (*CSFILE)
	Q033130241 (*CSFILE)
	Q033131852 (*CSFILE)
	Q033132726 (*CSFILE)
	Q033133431 (*CSFILE)
	Q033133850 (*CSFILE)
	Q033135550 (*CSFILE)
	Q033150619 (*CSFILE)
	Q034094358 (*CSFILE)
	Q034104106 (*CSFILE)
	Q034105653 (*CSFILE)
	Q034201521 (*CSFILE)
	Q034202737 (*CSFILE)

At the bottom, there is a 'Collection Library' dropdown menu set to 'QPFRDATA' and a list box containing 'Q033150619 (*CSFILE)'. Below these are buttons for 'Display', 'Search', 'Options', and 'Close'.

Resource Utilization Overview - Percentages

Nice summary for general overall health:

- CPU Utilization
- Disk Utilization
- Disk Busy

Resource Utilization Overview

Perspective Edit View History

Collection

Time

Name(s): CS228229ND

Start: Feb 28, 20

Library: COMMON2

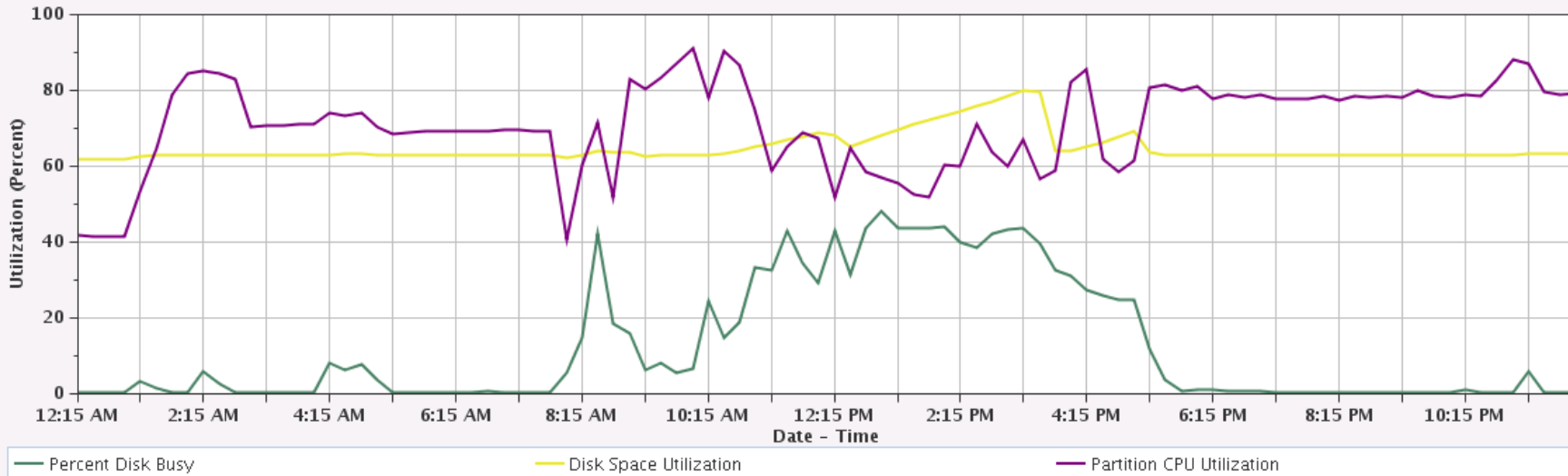
End: Feb 29, 20

Type: Collection Services File Based Collection

Resource Utilization Percentages

--- Select Action ---

Resource Utilization Percentages

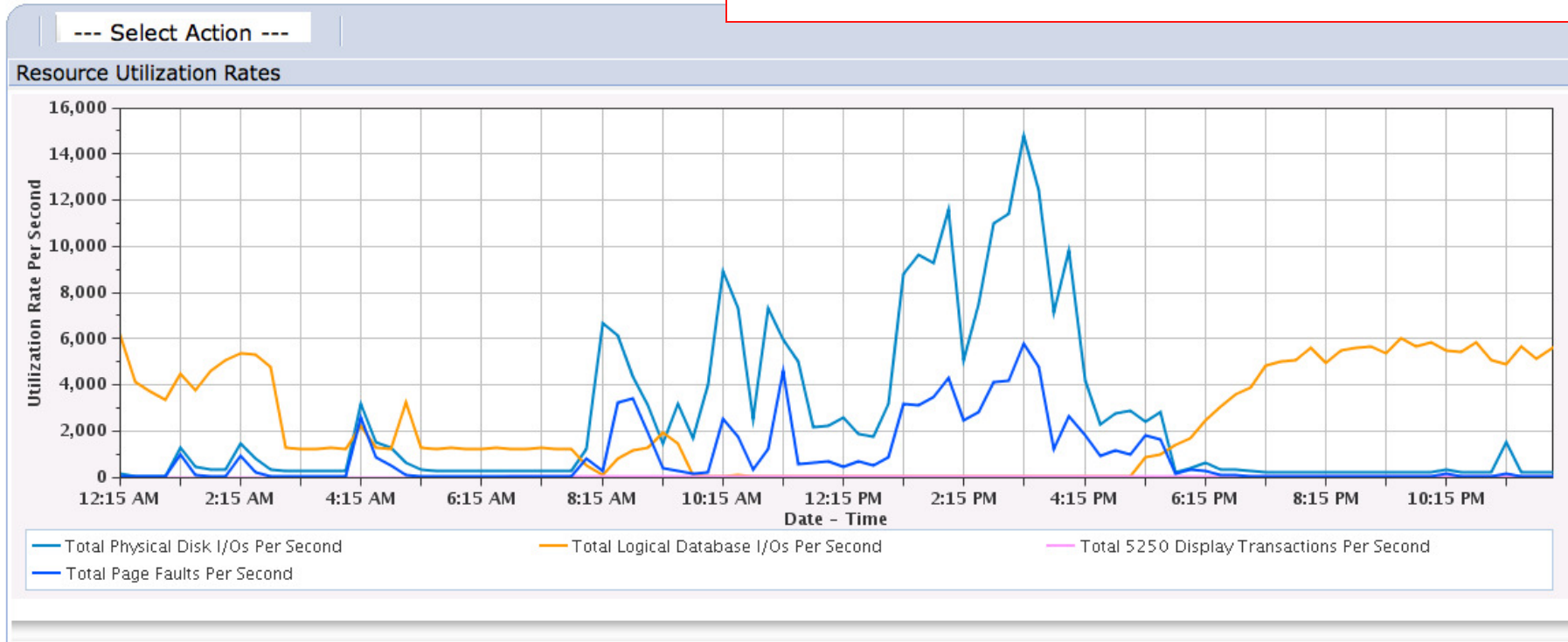


Resource Utilization Overview - Rates

Nice summary for general overall health:

- **5250 Transactions**
- **I/Os per Second**
- **Page Faults**

Resource Utilization Rates



Done Options Save As...

CPU Utilization and Waits Overview

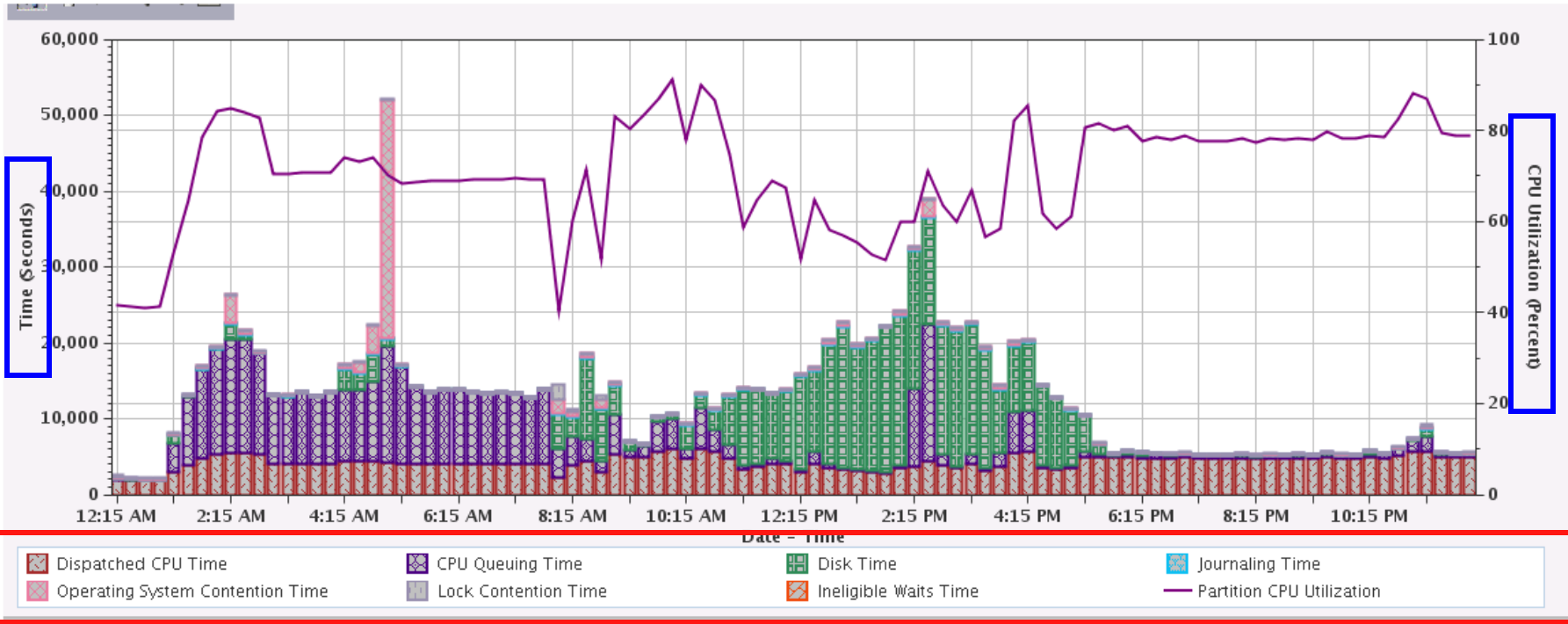
CPU Utilization and Waits Overview

Perspective Edit View History

Collection	Time	System
Name(s): CS228229ND	Start: Feb 28, 2008 12:00:02 AM	Name:
Library: COMMON2	End: Feb 29, 2008 12:00:00 AM	Release: V6R1M0
Type: Collection Services File Based Collection		

--- Select Action ---

CPU Utilization and Waits Overview



View Collection Information Details

Toggle on/off the detailed information regarding the collection
 Collection name, library and type
 Start and end time
 Name of the system the data was collected on
 The release level of the collection

Perspective ▾ Edit ▾ View ▾ **Show Context**

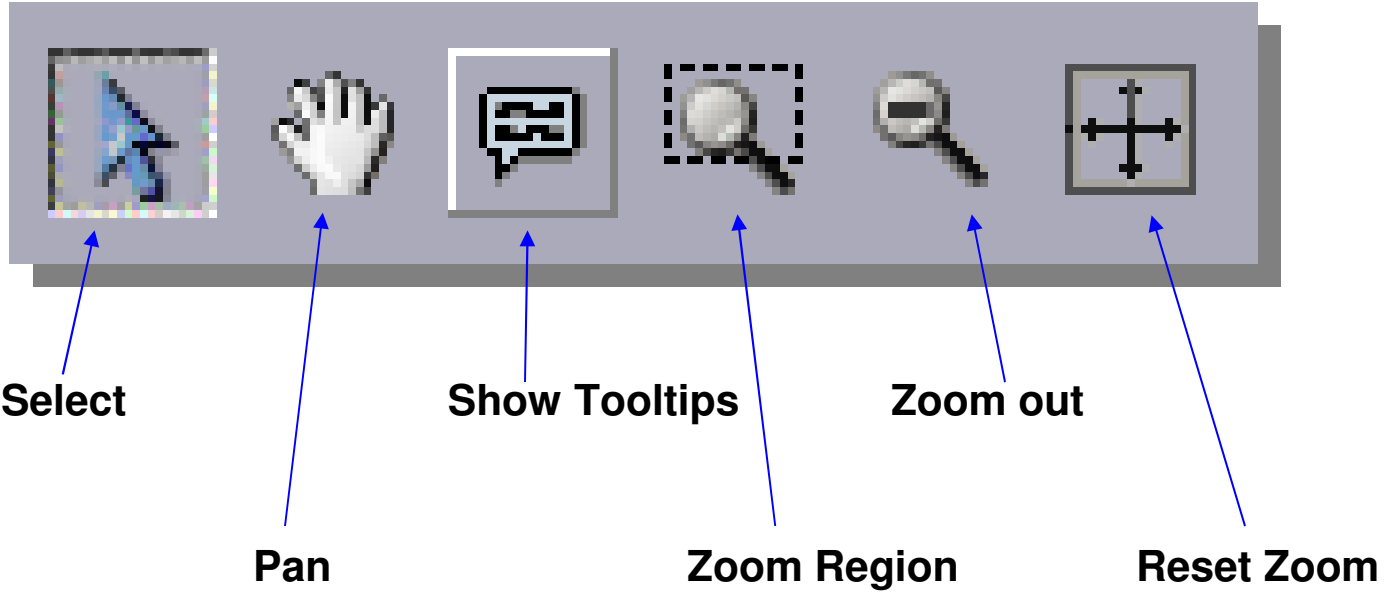
Collection	Time	System
Name(s): CS228229ND Library: COMMON2 Type: Collection Services File Based Collection	Start: Feb 28, 2008 12:00:02 AM End: Feb 29, 2008 12:00:00 AM	Name: Release: V6R1M0

--- Select Action ---

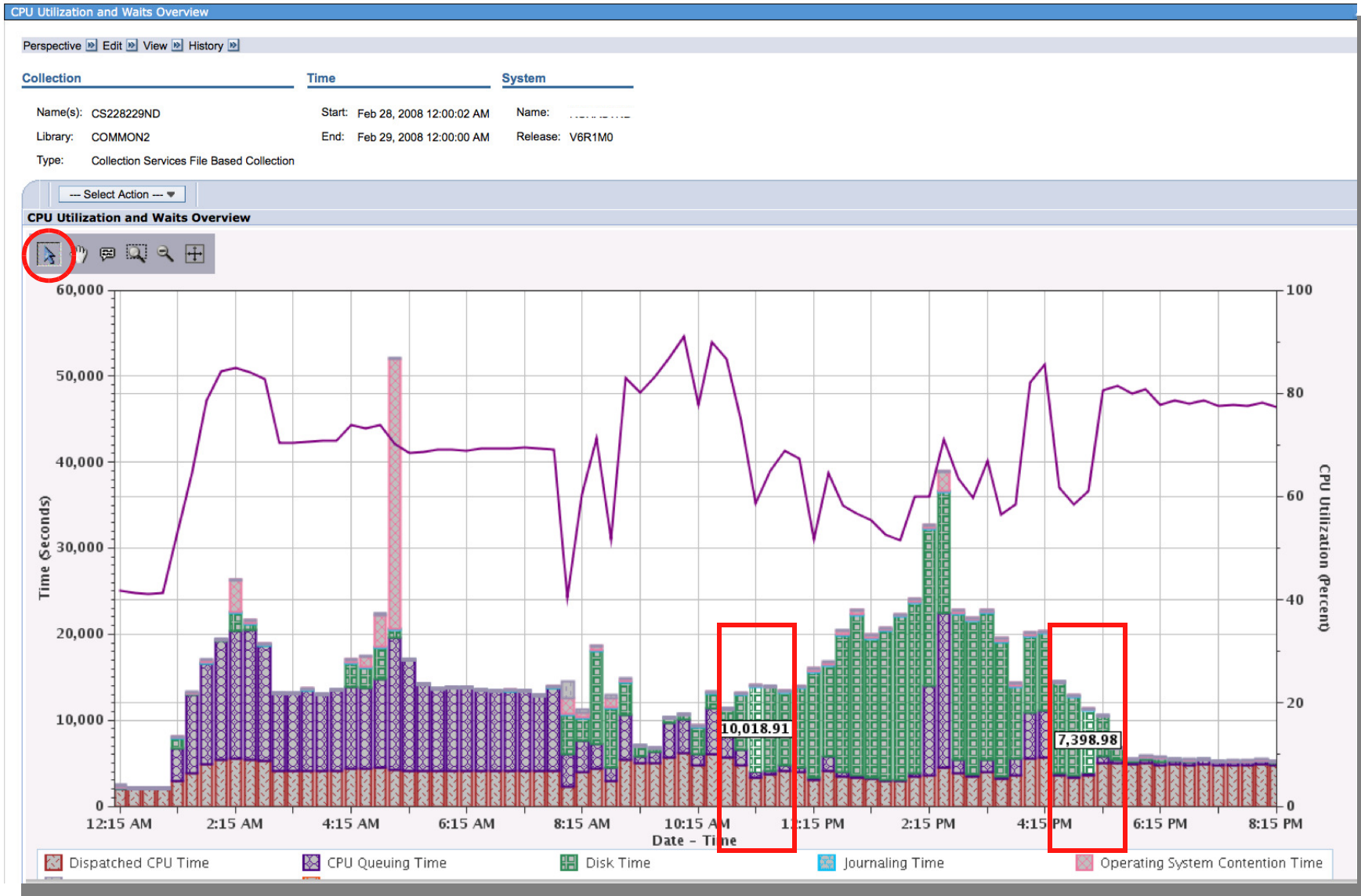
Perspective ▾ Edit ▾ View ▾ **Show Context**

--- Select Action ---

Tool Legend



Selection



Pan

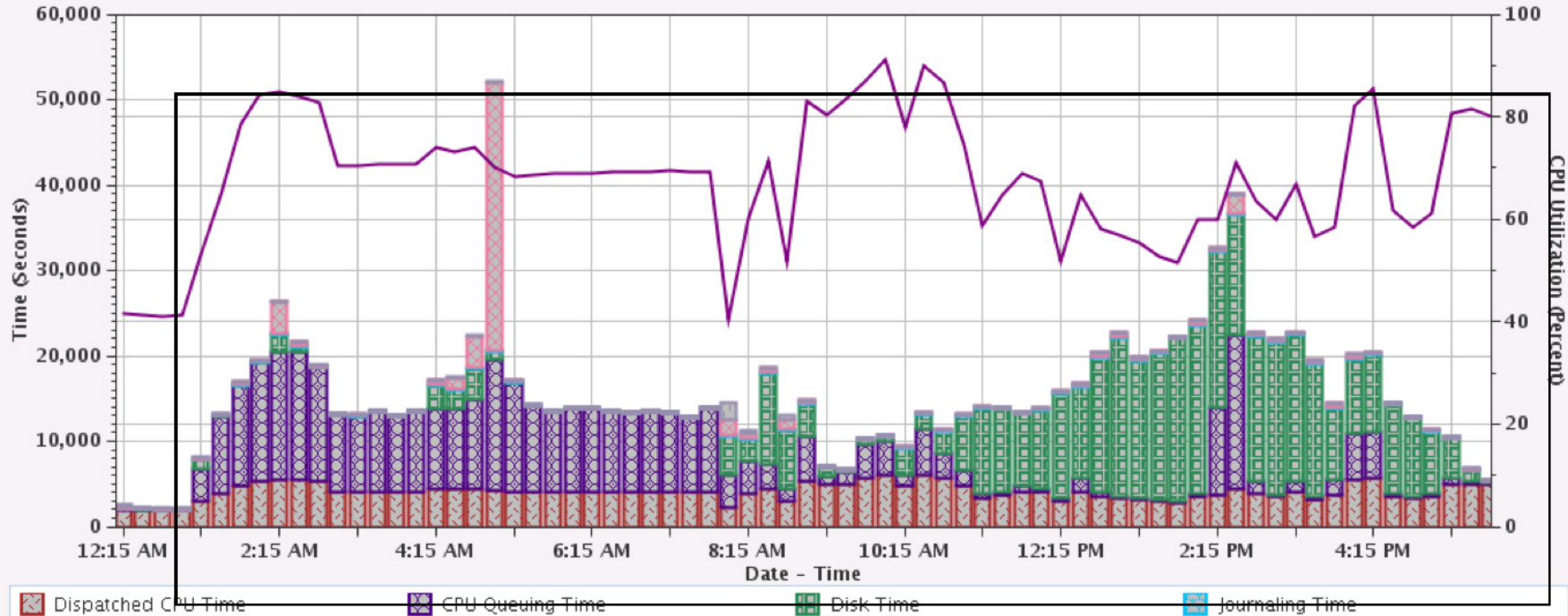
CPU Utilization and Waits Overview

Perspective Edit View History

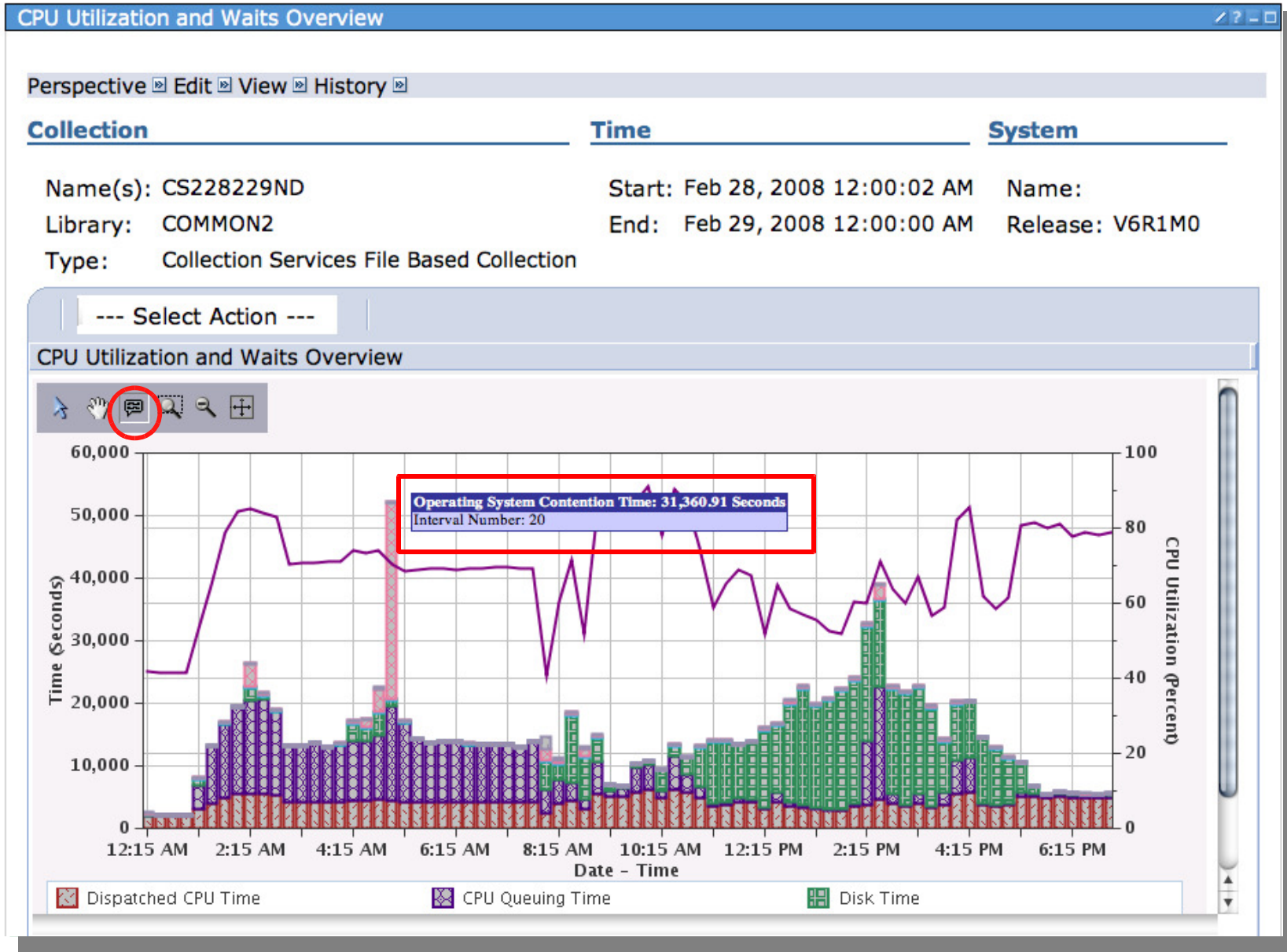
Collection	Time	System
Name(s): CS228229ND	Start: Feb 28, 2008 12:00:02 AM	Name:
Library: COMMON2	End: Feb 29, 2008 12:00:00 AM	Release: V6R1M0
Type: Collection Services File Based Collection		

-- Select Action --

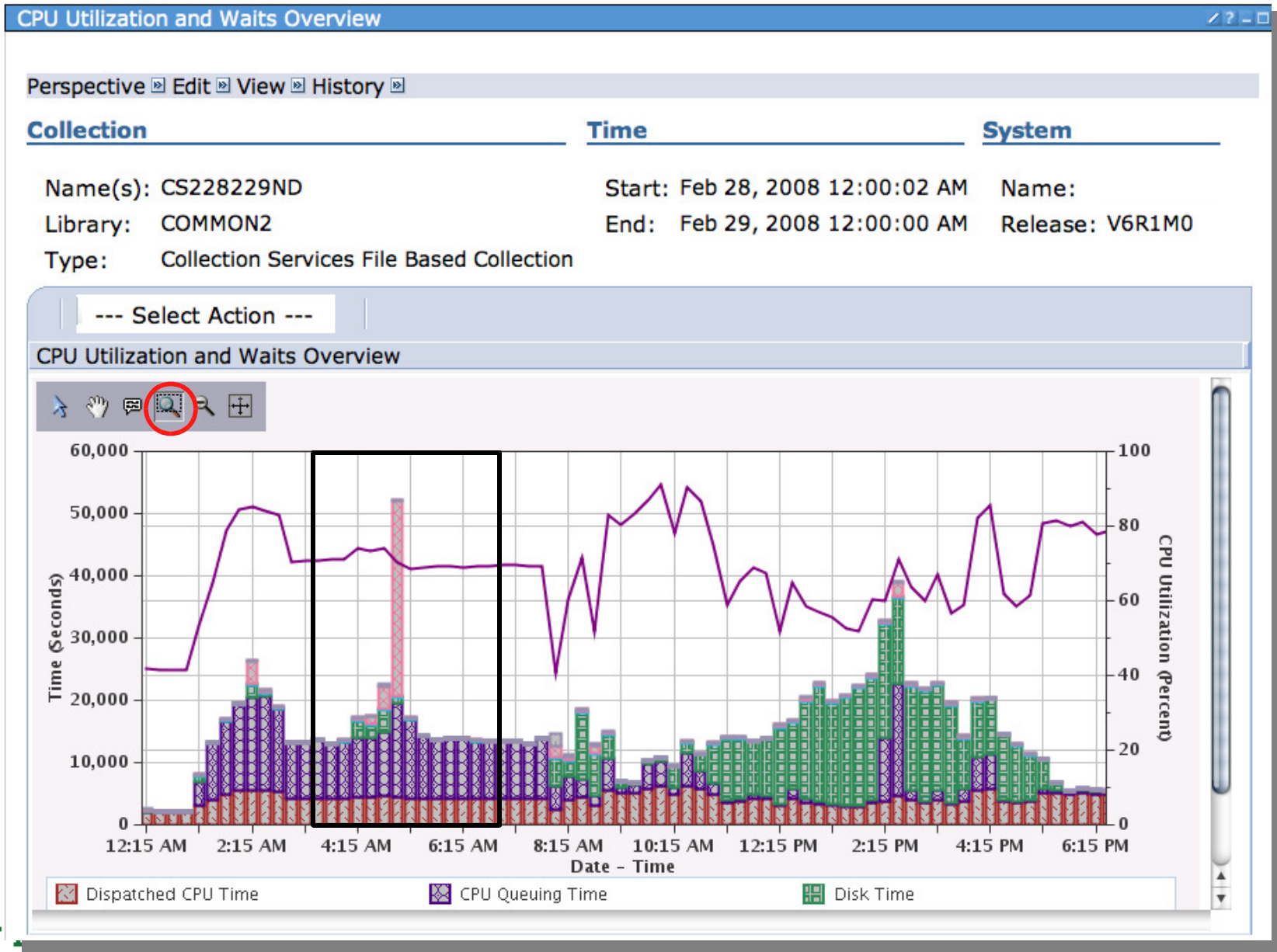
CPU Utilization and Waits Overview



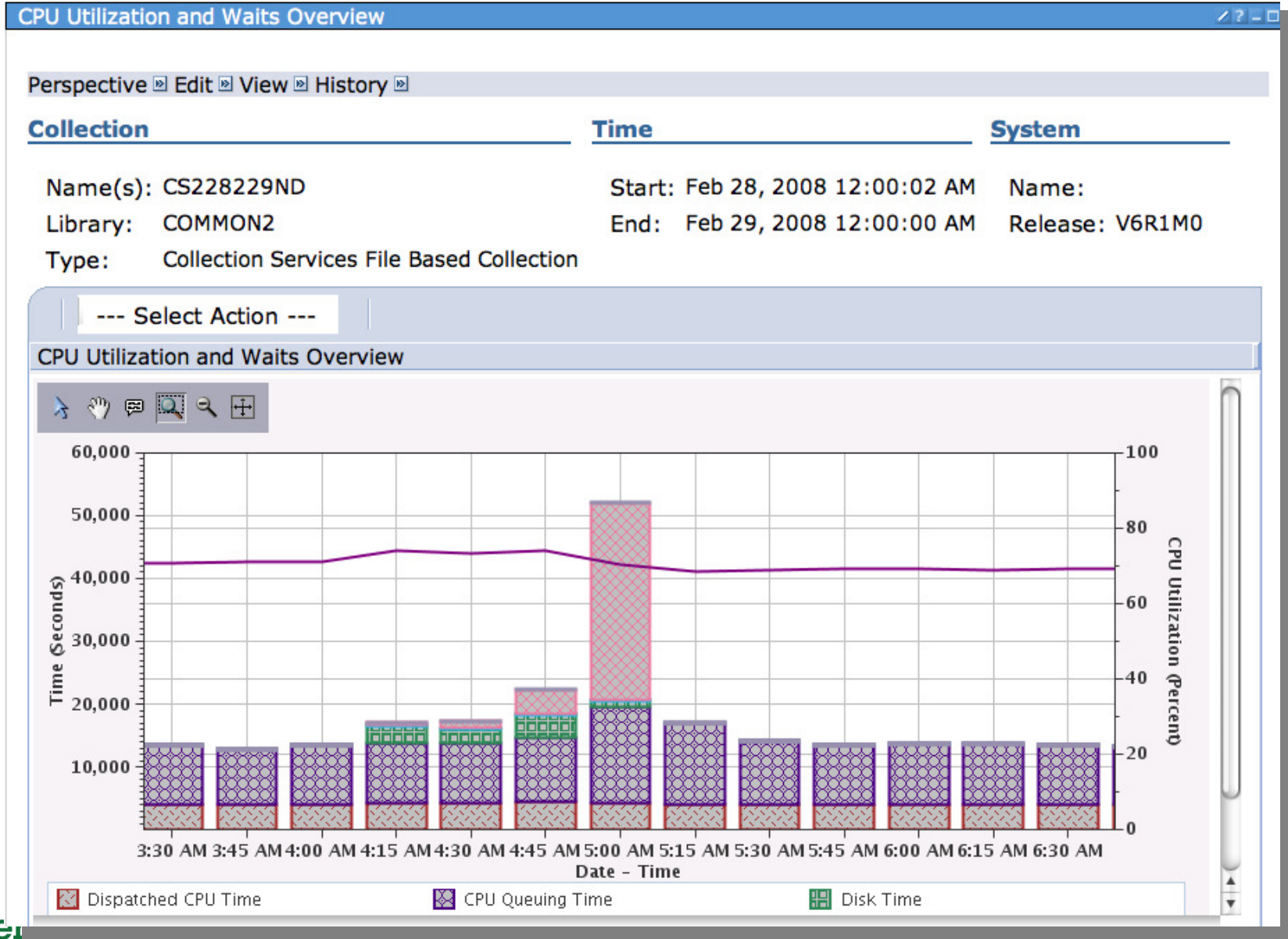
Tool Tips



Zoom

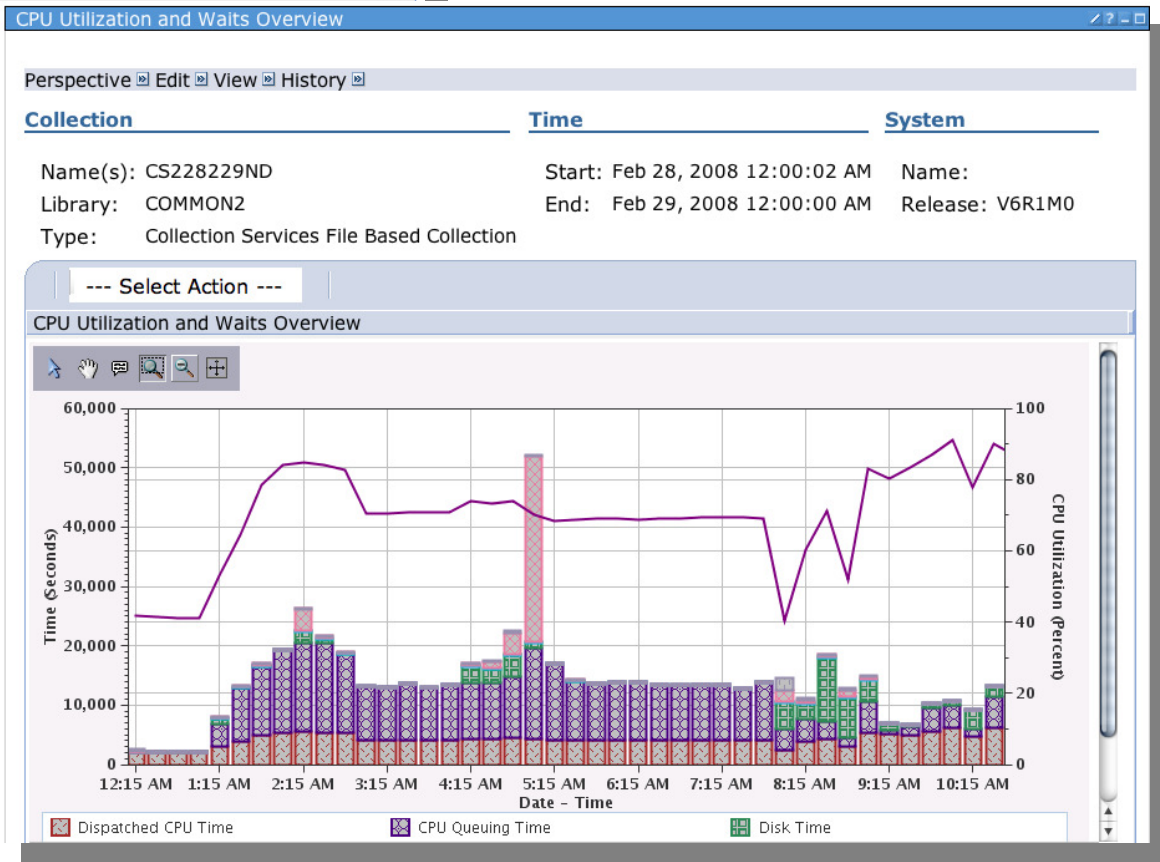


Zoom Results

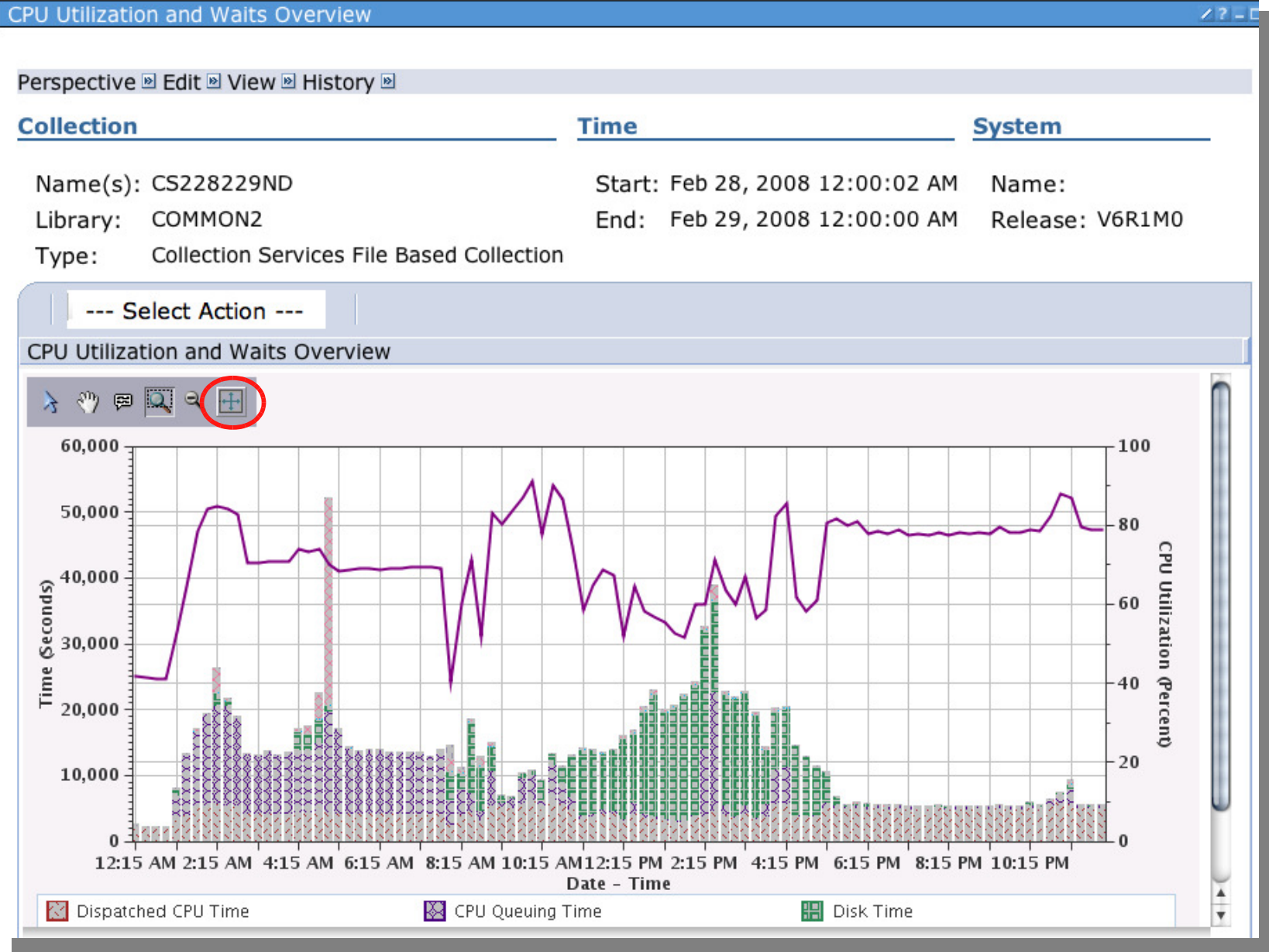


Zoom Out

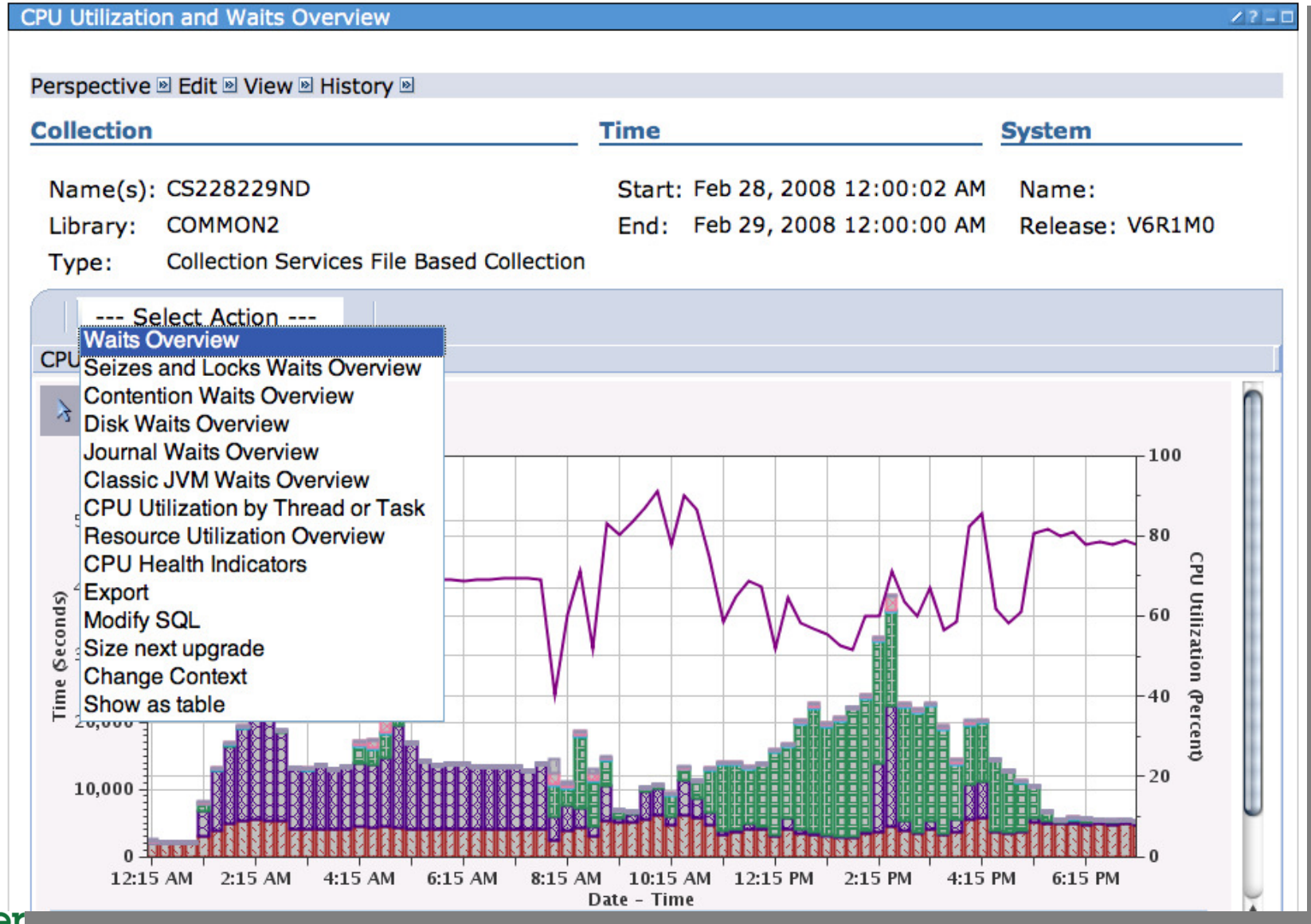
Zoom out expands the graph each time it is clicked



Full Zoom-out



Drill-down



Example of Drill-Down Options

The screenshot shows a menu with a blue header 'Waits Overview' and a list of options: 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, and CPU Health Indicators. Below this is a secondary menu with options: Export, Modify SQL, Size next upgrade, Change Context, and Show as table. Red boxes highlight the main menu and the secondary menu, with red arrows pointing to explanatory text boxes.

Graph options for next step in analysis

Other options to work with data or refine graphs

Show as Table

CPU Utilization and Waits Overview

Perspective Edit View History

--- Select Action ---

Select	Interval Number	Date - Time	Partition CPU Utilization (Percent)	Dispatched CPU Time (Seconds)	CPU Queuing Time (Seconds)	Disk Time (Seconds)	Journaling Time (Seconds)	Operating System Contention Time (Seconds)
<input type="checkbox"/>	1	Feb 28, 2008 12:15:00 AM	41.65	2125.7	12.25	64.4	35.71	22.6
<input type="checkbox"/>	2	Feb 28, 2008 12:30:00 AM	41.4	2110.42	12.16	10.72	34.68	3.62
<input type="checkbox"/>	3	Feb 28, 2008 12:45:00 AM	41.14	2096.73	12.38	5.32	35.3	3.5
<input type="checkbox"/>	4	Feb 28, 2008 1:00:00 AM	41.23	2104.27	11.71	5.67	35.35	3.29
<input type="checkbox"/>	5	Feb 28, 2008 1:15:00 AM	52.99	2959.23	3759.2	1180.33	47.49	141.01
<input type="checkbox"/>	6	Feb 28, 2008 1:30:00 AM	64.62	3847.86	9061.6	217.47	32.11	113.34
<input type="checkbox"/>	7	Feb 28, 2008 1:45:00 AM	78.58	4853.43	11796.74	41.63	41.27	308.02
<input type="checkbox"/>	8	Feb 28, 2008 2:00:00 AM	84.22	5367.69	13984.72	23.12	52.58	35.85
<input type="checkbox"/>	9	Feb 28, 2008 2:15:00 AM	84.89	5469.88	14931.39	2163.59	69.93	3686.04
<input type="checkbox"/>	10	Feb 28, 2008 2:30:00 AM	84.07	5406.56	15063.64	697.16	72.47	399.18
<input type="checkbox"/>	11	Feb 28, 2008 2:45:00 AM	82.82	5272.46	13472.69	57.49	48.64	46.06
<input type="checkbox"/>	12	Feb 28, 2008 3:00:00 AM	70.36	4141.47	9068.85	20.63	1.19	22.3

Total: 96 Filtered: 96

Original 6.1 Table drill-down

Table Drill-down Options

Nested Table Actions – New in 7.1

The screenshot shows a table with columns: Select, Interval Number, Date - T, and Utilization (Percent). A red box highlights the 'Table Actions' menu item in the table. A second red box highlights the nested menu options that appear when 'Table Actions' is selected.

Select	Interval Number	Date - T	Utilization (Percent)
<input type="checkbox"/>	1	Feb	41.65
<input type="checkbox"/>	2	Feb	41.4
<input type="checkbox"/>	3	Feb	41.14
<input type="checkbox"/>	4	Feb	41.23
<input type="checkbox"/>	5	Feb	52.99
<input type="checkbox"/>	6	Feb	64.62
<input type="checkbox"/>	7	Feb	78.58
<input type="checkbox"/>	8	Feb	84.22
<input type="checkbox"/>	9	Feb	84.89
<input type="checkbox"/>	10	Feb	84.07
<input type="checkbox"/>	11	Feb	82.82
<input type="checkbox"/>	12	Feb	

Table Actions Menu:

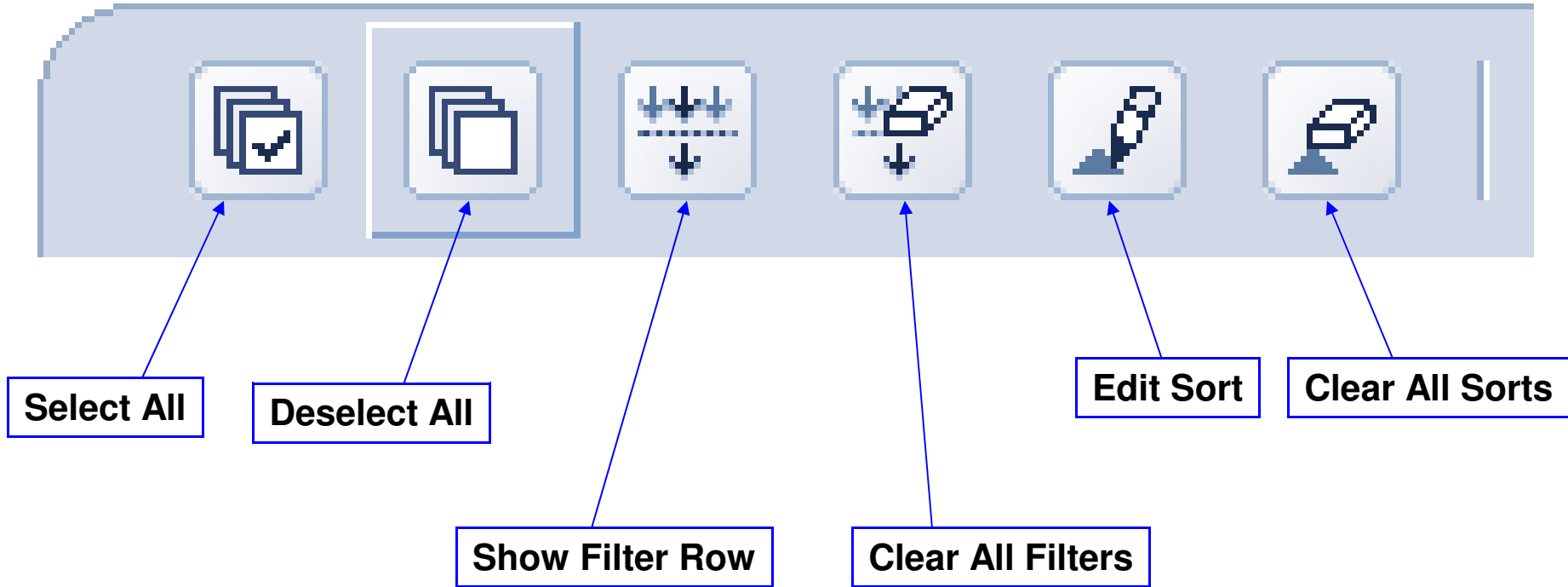
- Waits Overview
- Seizes and Locks Waits Overview
- Contention Waits Overview
- Disk Waits Overview
- Journal Waits Overview
- Classic JVM Waits Overview
- CPU Utilization by Thread or Task
- Resource Utilization Overview
- CPU Health Indicators
- Export
- Modify SQL
- Size next upgrade
- Change Context
- Show as chart
- Columns...
- Show find toolbar
- Table Actions**
 - Select All
 - Deselect All
 - Change All Selected
 - Show Filter Row
 - Clear All Filters
 - Edit Sort
 - Clear All Sorts
 - Restore Defaults

This screenshot shows the 'Select Action' dropdown menu with various options. A red box highlights the 'Table Actions' section.

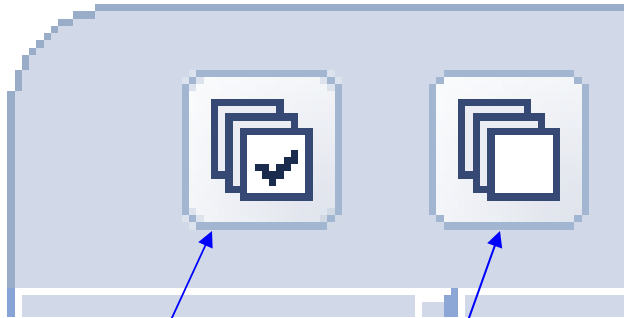
- Select Action ---
- Waits Overview
- Seizes and Locks Waits Overview
- Contention Waits Overview
- Disk Waits Overview
- Journal Waits Overview
- Classic JVM Waits Overview
- CPU Utilization by Thread or Task
- Resource Utilization Overview
- CPU Health Indicators
- Export
- Modify SQL
- Size next upgrade
- Change Context
- Show as chart
- Columns...
-
- Show find toolbar
- **Table Actions** ---
- Select All

With the latest PTFs for 6.1, actions are now nested

Table Features



Select / Deselect



Select All

Deselect All

Select	Interval Number	
<input checked="" type="checkbox"/>	1	F
<input checked="" type="checkbox"/>	2	F
<input checked="" type="checkbox"/>	3	F
<input checked="" type="checkbox"/>	4	
<input checked="" type="checkbox"/>	5	
<input checked="" type="checkbox"/>	6	
<input checked="" type="checkbox"/>	7	
<input checked="" type="checkbox"/>	8	
<input checked="" type="checkbox"/>	9	
<input checked="" type="checkbox"/>	10	
<input checked="" type="checkbox"/>	11	
<input checked="" type="checkbox"/>	12	

Filtering

Show Filter Row

Select	Interval Number	Date - Time	Partition CPU Utilization (Percent)	Dispatched CPU Time (Seconds)	CPU Queuing Time (Seconds)	Disk Time (Seconds)	Journaling Time (Seconds)	Operating System Contention Time (Seconds)
	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter

Select	Interval Number	Date - Time	Partition CPU Utilization (Percent)	Dispatched CPU Time (Seconds)	CPU Queuing Time (Seconds)	Disk Time (Seconds)	Journaling Time (Seconds)	Operating System Contention Time (Seconds)
	Filter	Filter	Filter		Filter	Filter	Filter	Filter

Condition

- All numbers
- Numbers less than
- Numbers less than or equal to
- Numbers greater than
- Numbers greater than or equal to
- Numbers equal to
- Numbers not equal to
- Numbers between
- Numbers between and including

Feb 28, 2008 12:05:00 AM		5:00 AM	41.65	2125.7	12.25	64.4	35.71	22.6
Feb 28, 2008 12:30:00 AM		0:00 AM	41.4	2110.42	12.16	10.72	34.68	3.62
Feb 28, 2008 12:35:00 AM		5:00 AM	41.14	2096.73	12.38	5.32	35.3	3.5

Sorting

--- Select Action ---

Select	Interval Number	Date - Time	Partition CPU Utilization (Percent)	Dispatched CPU Time (Seconds)	CPU Queuing Time (Seconds)	Disk Time (Seconds)	Journaling Time (Seconds)	Operating System Contention Time (Seconds)
			41.65	2125.7	12.25	64.4	35.71	
			41.4	2110.42	12.16	10.72	34.68	
			41.14	2096.73	12.38	5.32	35.3	
			41.23	2104.27	11.71	5.67	35.35	
			52.99	2959.23	3759.2	1180.33	47.49	
			64.62	3847.86	9061.6	217.47	32.11	
			78.58	4853.43	11796.74	41.63	41.27	
			84.22	5367.69	13984.72	23.12	52.58	

First Sort: Date - Time (Ascending)

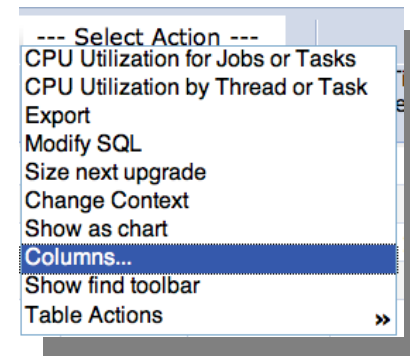
Second Sort: (Ascending)

Third Sort: (Ascending)

Dropdown menu items:

- Interval Number
- Date - Time
- Partition CPU Utilization (Percent)
- Dispatched CPU Time (Seconds)
- CPU Queuing Time (Seconds)
- Disk Time (Seconds)
- Journaling Time (Seconds)
- Operating System Contention Time (Seconds)
- Lock Contention Time (Seconds)
- Ineligible Waits Time (Seconds)
- 100 Percent Utilization (Percent)
- Interval Date And Time
- Century Digit

Columns ...



Columns

Available columns

[Empty]

Add Before

Add After

Current columns

Interval Number
 Date - Time
 Partition CPU Utilization
 Dispatched CPU Time
 CPU Queuing Time
 Disk Time
 Journaling Time
 Operating System Contention Time
 Lock Contention Time
 Ineligible Waits Time

Remove

Move Up

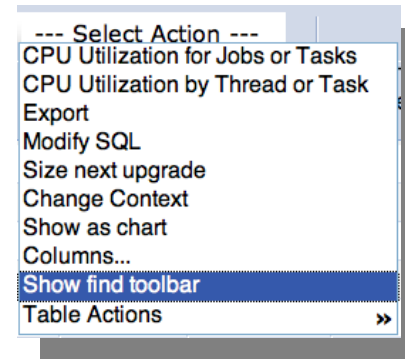
Move Down

OK

Cancel

Help

Show find toolbar



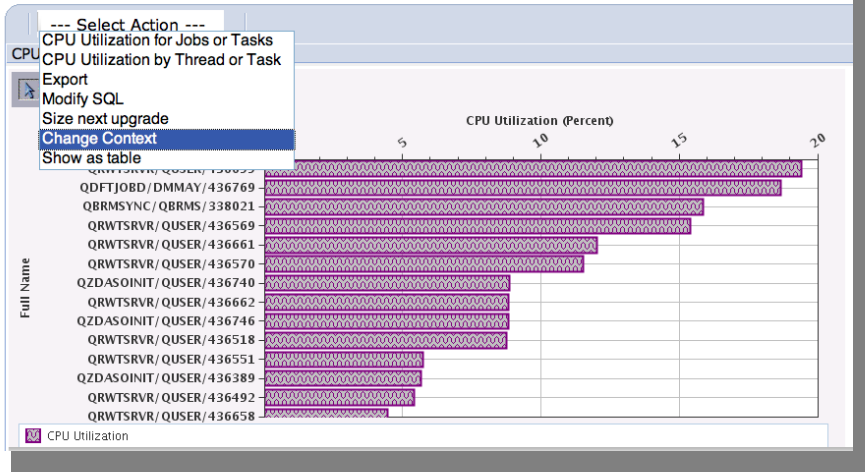
Type: Collection Services File Based Collection

Search for: Condition: Column: Direction:
 Match case

Select	Interval Number	Date - Time	Partition CPU Utilization (Percent)	Dispatched CPU Time (Seconds)	CPU Queuing Time (Seconds)	Disk Time (Seconds)	Journaling Time (Seconds)	Operating System Contention Time (Seconds)
<input type="checkbox"/>	92	Feb 28, 2008 11:00:00 PM	88.04	5670.59	1588.24	78.92	61.31	13.06
<input type="checkbox"/>	36	Feb 28, 2008 9:00:00 AM	82.9	5350.25	5274.46	3814.89	16.5	372.2
<input type="checkbox"/>	6	Feb 28, 2008 1:30:00 AM	64.62	3847.86	9061.6	217.47	32.11	113.34
<input type="checkbox"/>	75	Feb 28, 2008 6:45:00 PM	77.92	4801.75	398.55	178.88	64.01	6.28

Change Context

CPU Utilization by Job or Task



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.

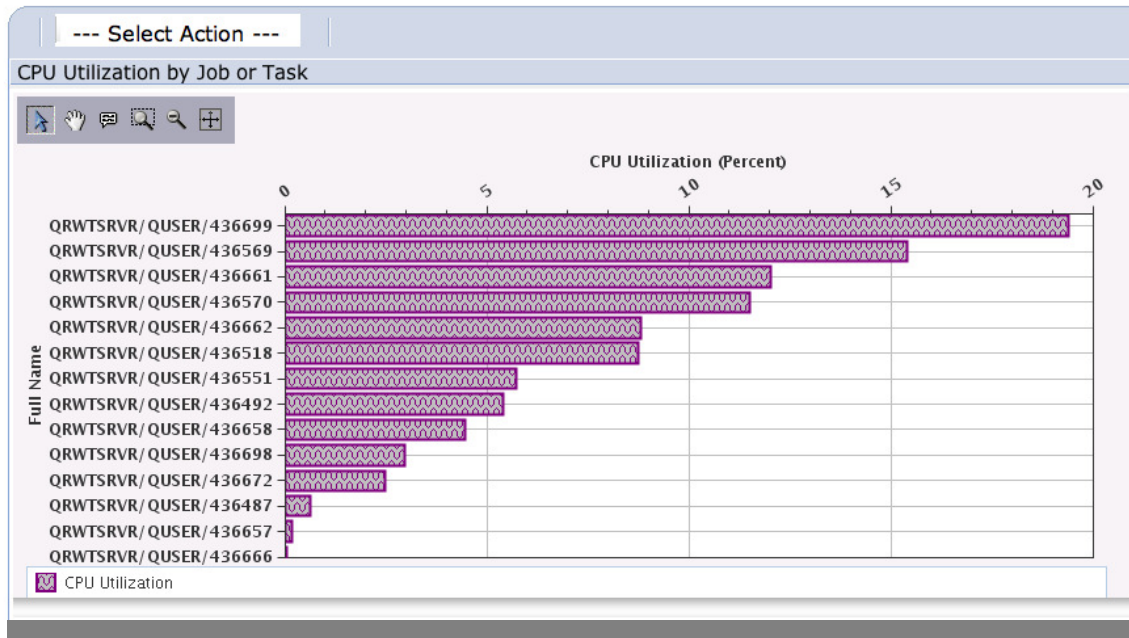
Variable

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		No
MAXDTETIM	Interval Date And Time		No
Collection Library		COMMON2	Yes
Collection Name		Q071123119	Yes

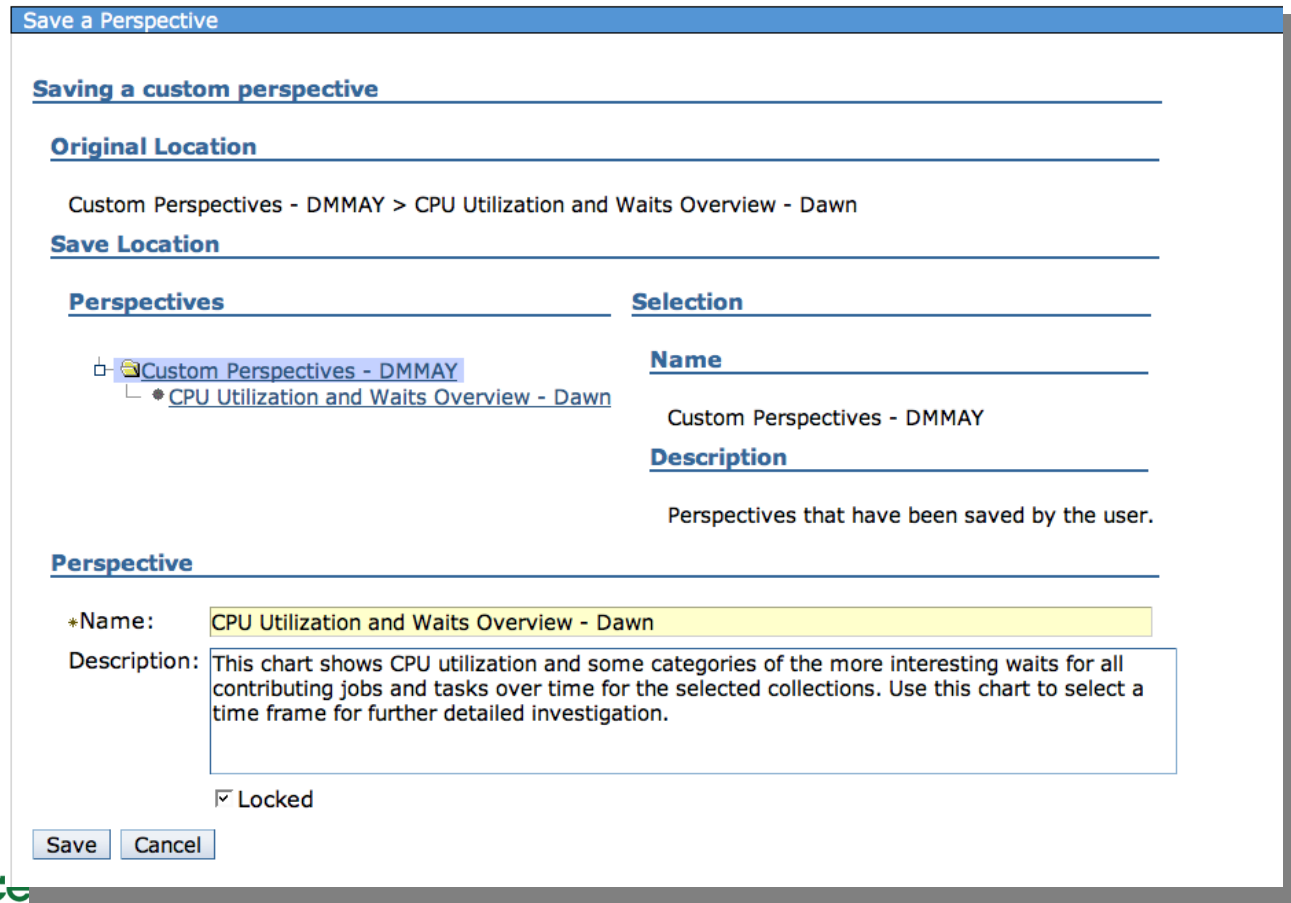
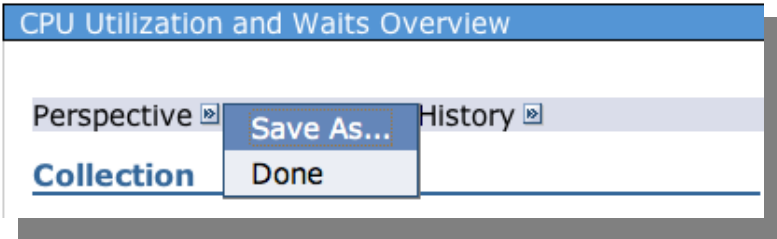
Page 1 of 1 | 1 | Go | Rows | 11 | Total: 11

OK Cancel



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...”



Perspective → Save As

i Save Complete

This perspective was saved successfully.

URL to saved perspective:

https://isz1lp13:2005/ibm/action/launch?pageID=com.ibm.i5OS.webnav.navigationElement.WebnavBasePortlet&system=localhost&WnLocale=en_US&W

[Close Message](#)

Perspectives

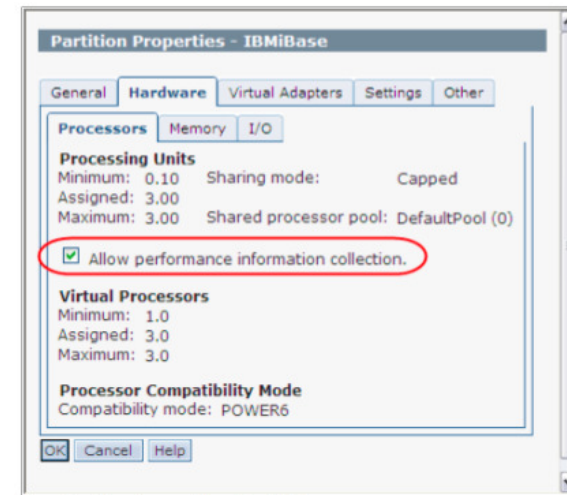
-  [Dawn May](#)
-  [Disk Watcher](#)
-  [Performance Explorer](#)
-  [Job Watcher](#)
-  [Collection Services](#)
-  [Health Indicators](#)
-  [Tech Sales2](#)
-  [Custom Perspectives - DMMAY](#)
 -  [CPU Utilization and Waits Overview - Dawn](#)

Physical System Charts

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".



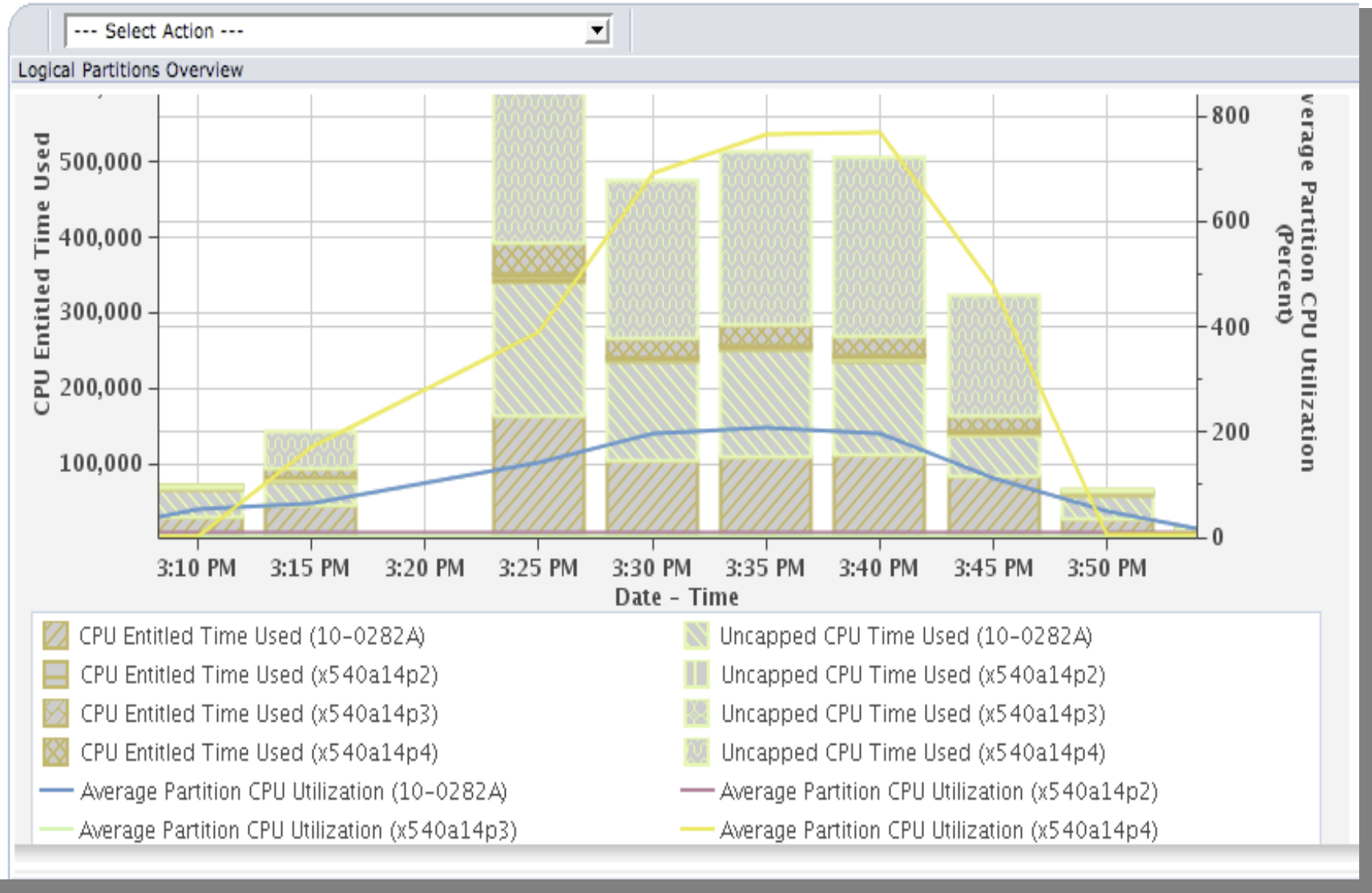
HMC option to enable performance collection must be turned on for the IBM i partition to collect the data



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

Logical Partitions Overview

Requires Power 6 and IBM i 6.1 or later



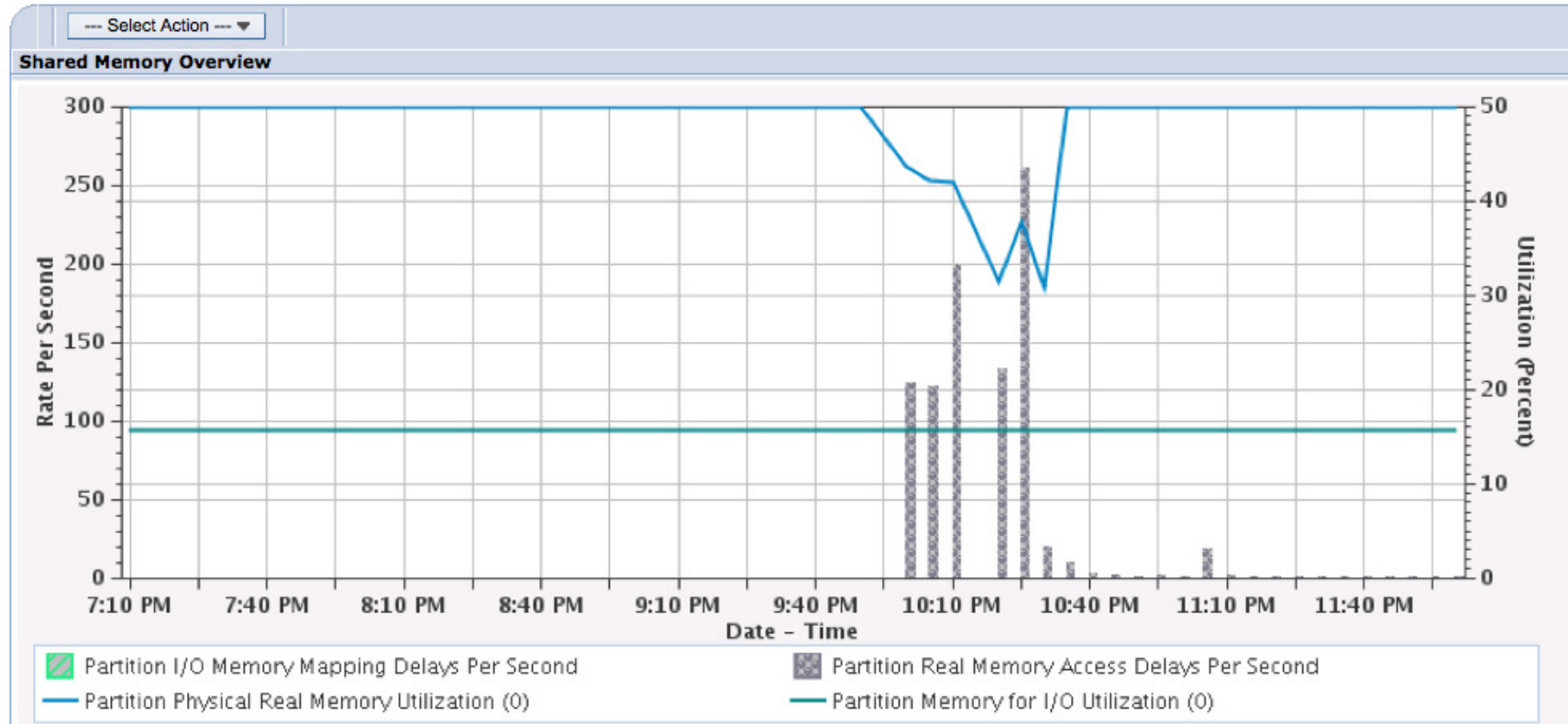
Shared Memory Overview

- Physical System
 - Logical Partitions Overview
 - Donated Processor Time by Logical Partition
 - Uncapped Processor Time Used by Logical Partition
 - Virtual Shared Processor Pool Utilization
 - Physical Processors Utilization by Physical Processor
 - Dedicated Processors Utilization by Logical Partition
 - Physical Processors Utilization by Processor Status Overview
 - Physical Processors Utilization by Processor Status Detail
 - Shared Memory Overview**

Shared Memory Overview

Perspective

Collection	Time	System
Name(s): AMS1	Start: Aug 11, 2008 7:06:22 PM	Name: A'
Library: AMSC	End: Aug 12, 2008 12:00:05 AM	Release: V6R1M0
Type: Collection Services File Based Collection		



Additional Content Packages

The screenshot shows a window titled "Investigate Data" with two main sections: "Perspectives" and "Collection".

Perspectives

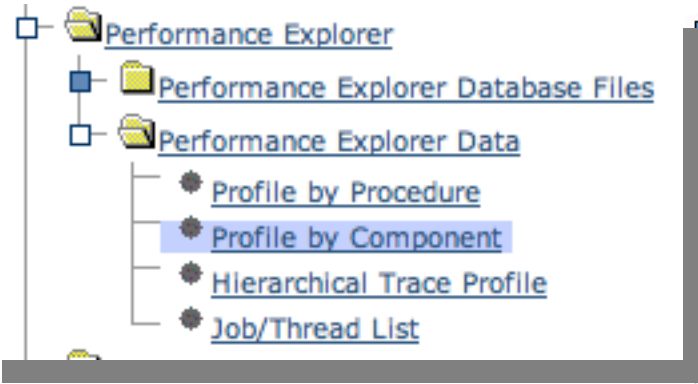
- Folder icon
- [-] Disk Watcher
- [-] Performance Explorer** (circled in red)
- [-] Job Watcher
- [-] Collection Services
- [-] Health Indicators** (circled in red)

Collection

Collection Library: COMMON
Collection Name: CS228229ND (*CSFILE)

Buttons: Display, Search, Options, Refresh Perspectives, Close

Performance Explorer



The Profile Perspectives provide function similar to what Performance Data Trace Visualizer offers

Profile by Component

Perspective Edit View History

Collection	Time	System
Name(s): MYTPROF	Start: Sep 25, 1997 2:16:32 PM	Name:
Library: PEXTPTST	End: Sep 25, 1997 2:18:16 PM	Release: V5R3M0
Type: Performance Explorer File Based Collection		

Profile by Component

Select	Total	Component	Procedure Name	Hit Count
<input type="checkbox"/>	Total			24112(100%)
<input type="checkbox"/>		SLIC Database		5228(21.68%)
<input type="checkbox"/>		SLIC Index		4354(18.06%)
<input type="checkbox"/>		SLIC Common Functions		1525(6.32%)
<input type="checkbox"/>		SLIC Storage Management		1404(5.82%)
<input type="checkbox"/>		SLIC Activation/Invocation		1170(4.85%)
<input type="checkbox"/>		Unknown		1058(4.39%)
<input type="checkbox"/>		XPF Message Handler		990(4.11%)
<input type="checkbox"/>		XPF DB2/400 Query Optimizer		805(3.34%)
<input type="checkbox"/>		SLIC String Functions		799(3.31%)
<input type="checkbox"/>		XPF Database Other		783(3.25%)
<input type="checkbox"/>		SLIC Seize/Release		757(3.14%)

Page 1 of 6 1 Go Total: 71 Displayed: 12

Done Options Save As...

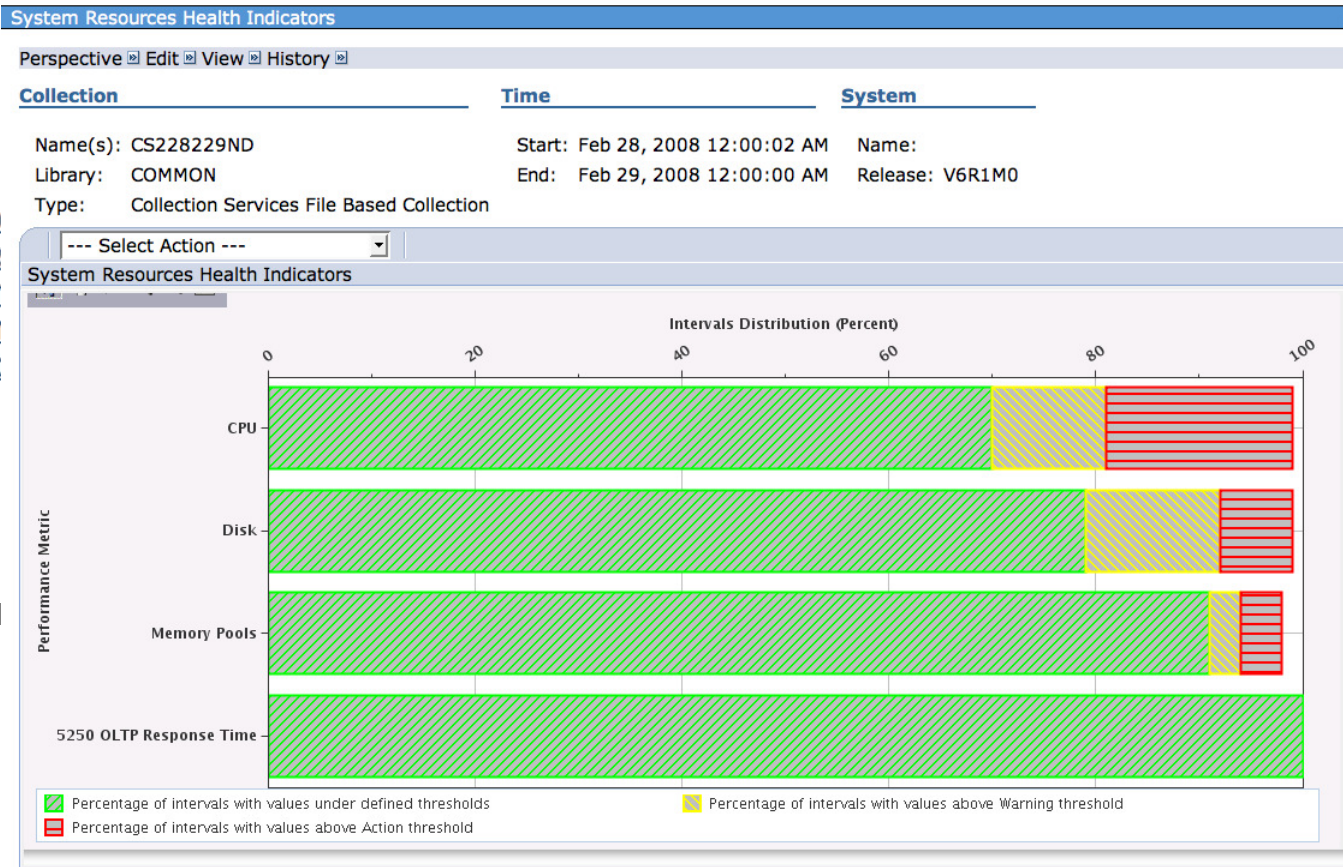
Health Indicators

Investigate Data

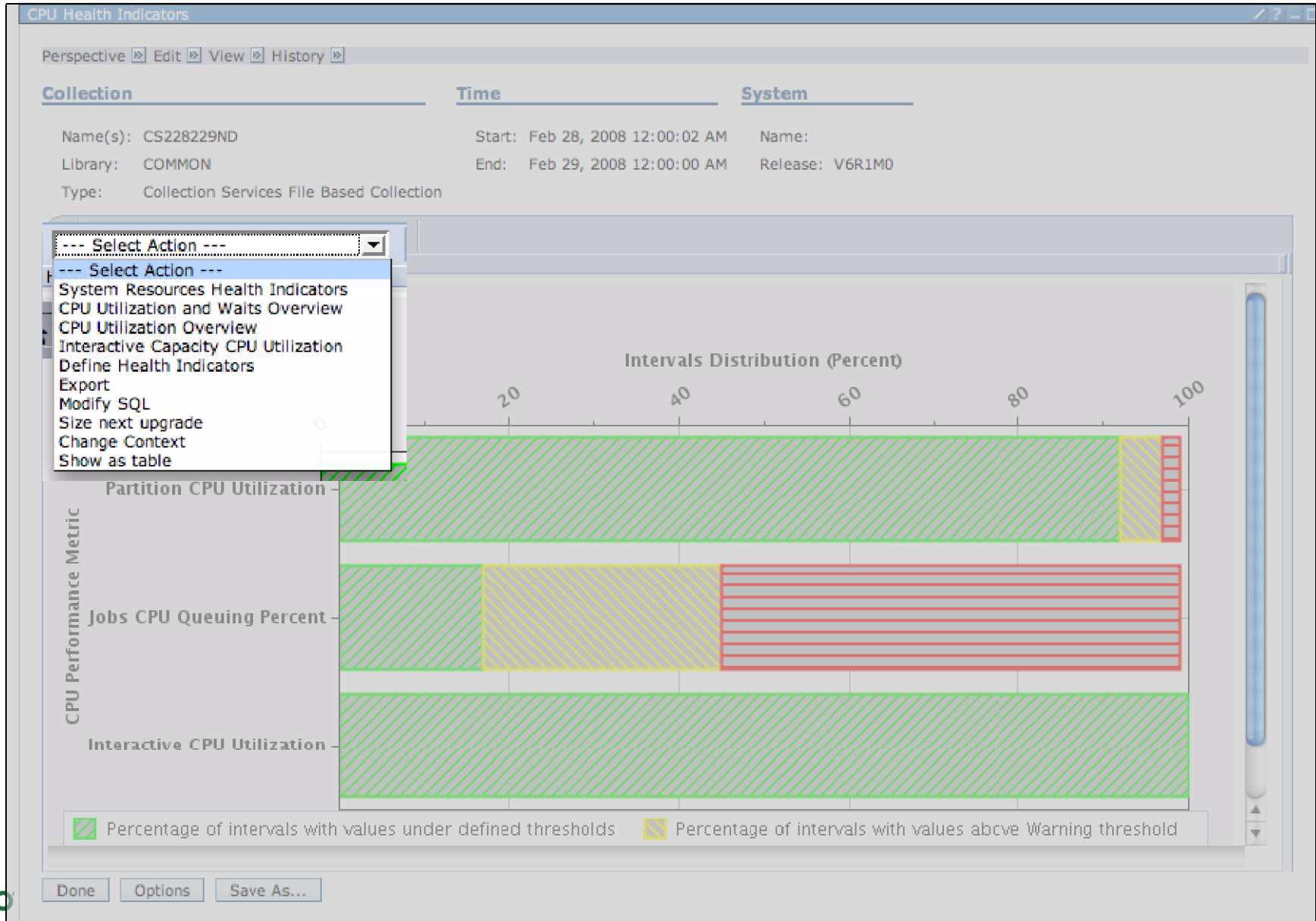
Perspectives

System Resource Health Indicators

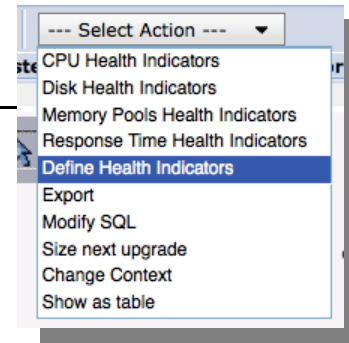
- Disk Watcher
- Performance Explorer
- Job Watcher
- Collection Services
- Health Indicators**
 - System Resources H
 - CPU Health Indicator
 - Disk Health Indicator
 - Memory Pools Health
 - Response Time Health



CPU Health Indicators



Define Health Indicators



Define Health Indicators

System Resources Health Indicators	Available Indicators		Selected Indicators	Current Threshold Values
CPU	[Empty]	Add >>	Interactive CPU Utilization	Warning: 70
Disk		Remove <<	Jobs CPU Queuing Percent	Action: 90
Memory Pools			Partition CPU Utilization	
5250 OLTP Response Time				

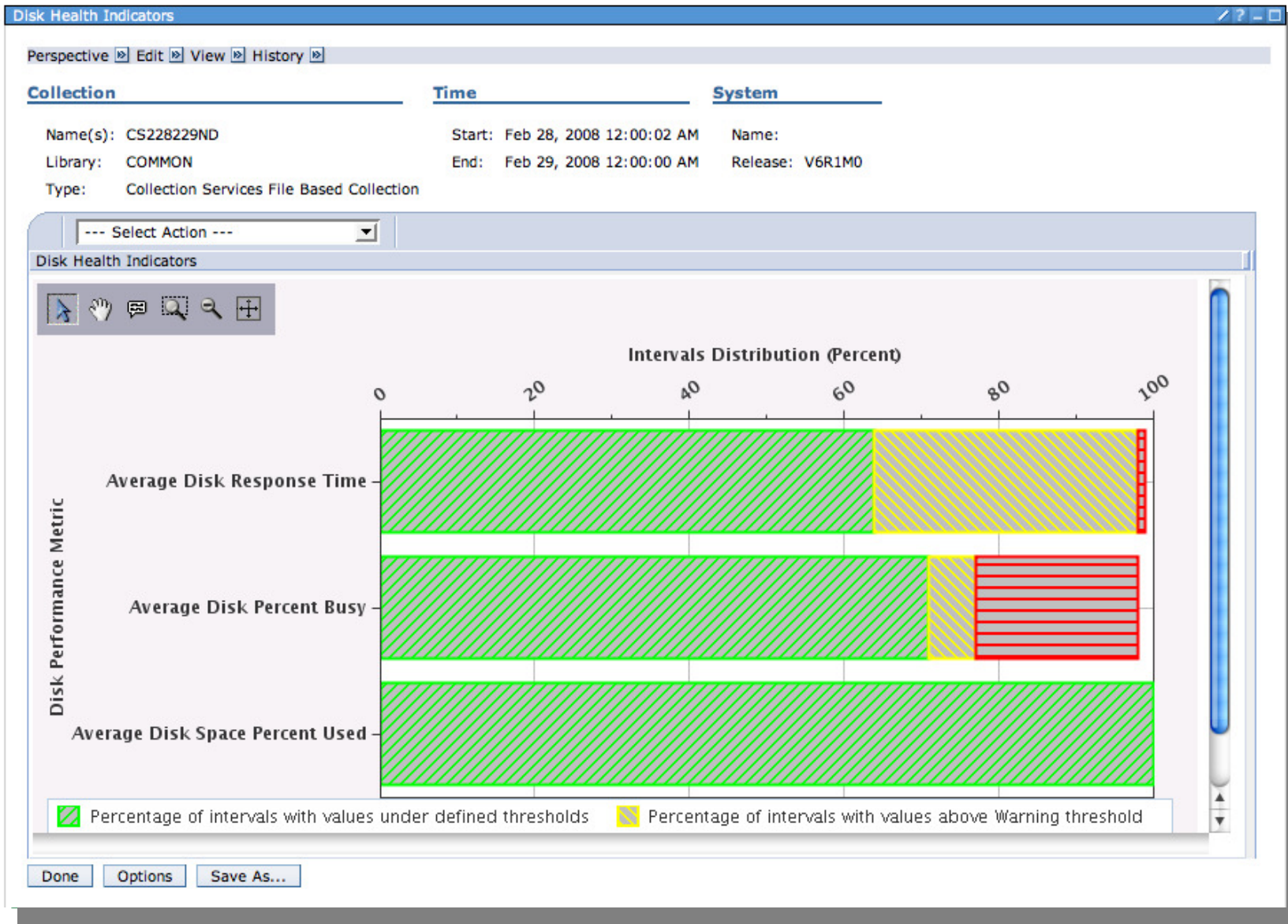
Define Health Indicators

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

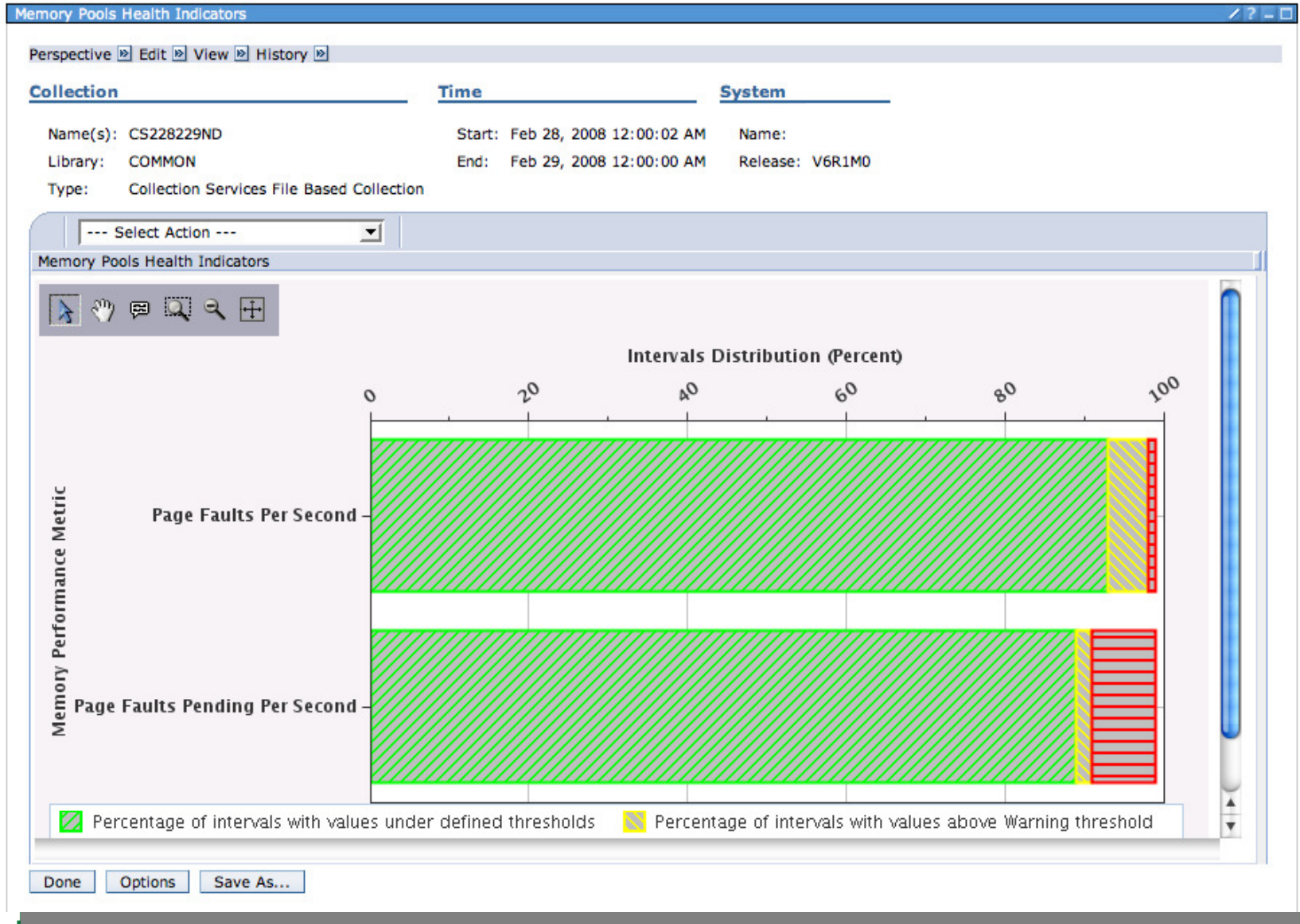
Define Health Indicators

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

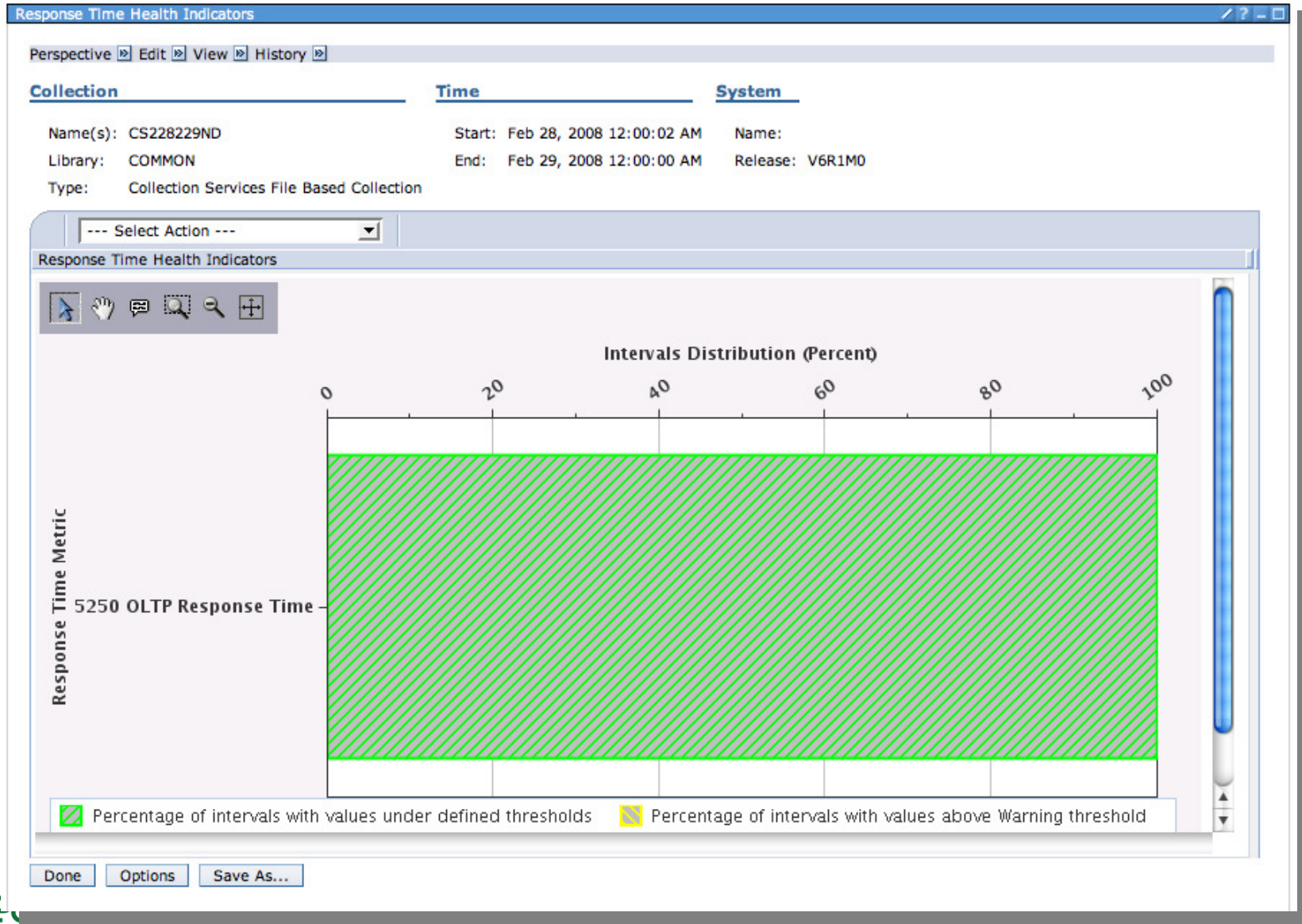
Disk Health Indicators



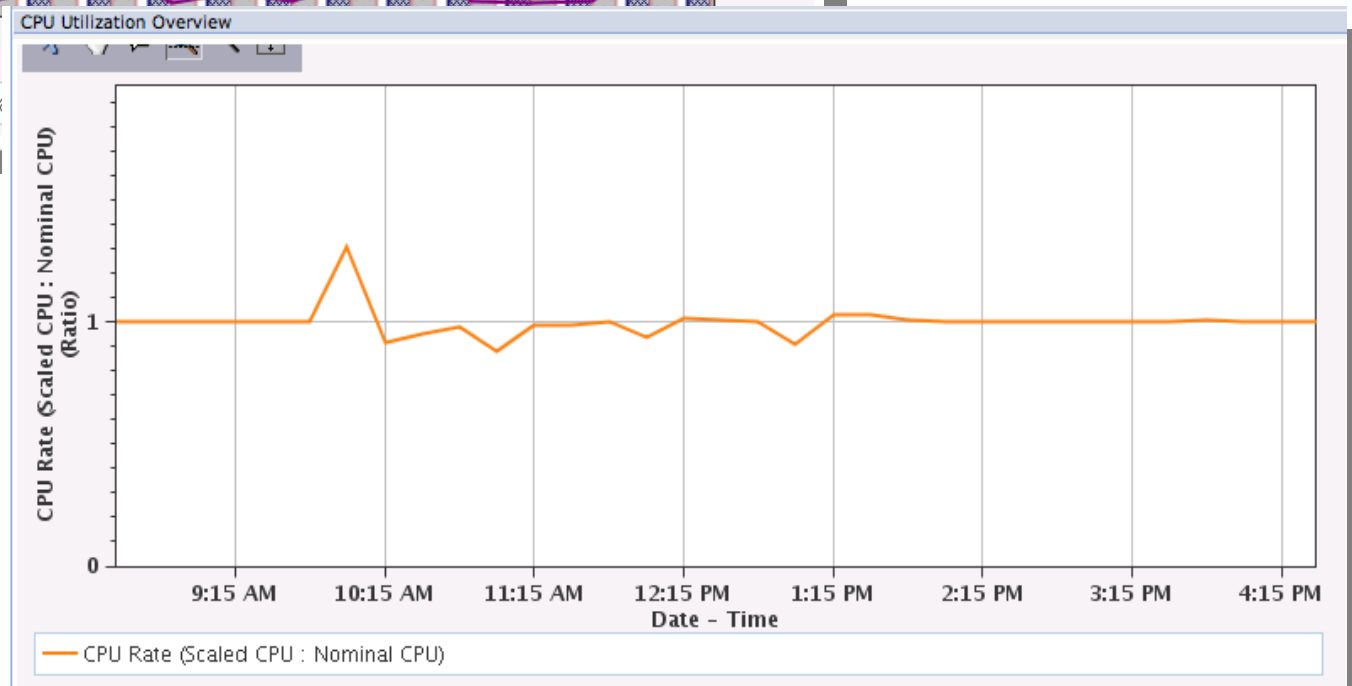
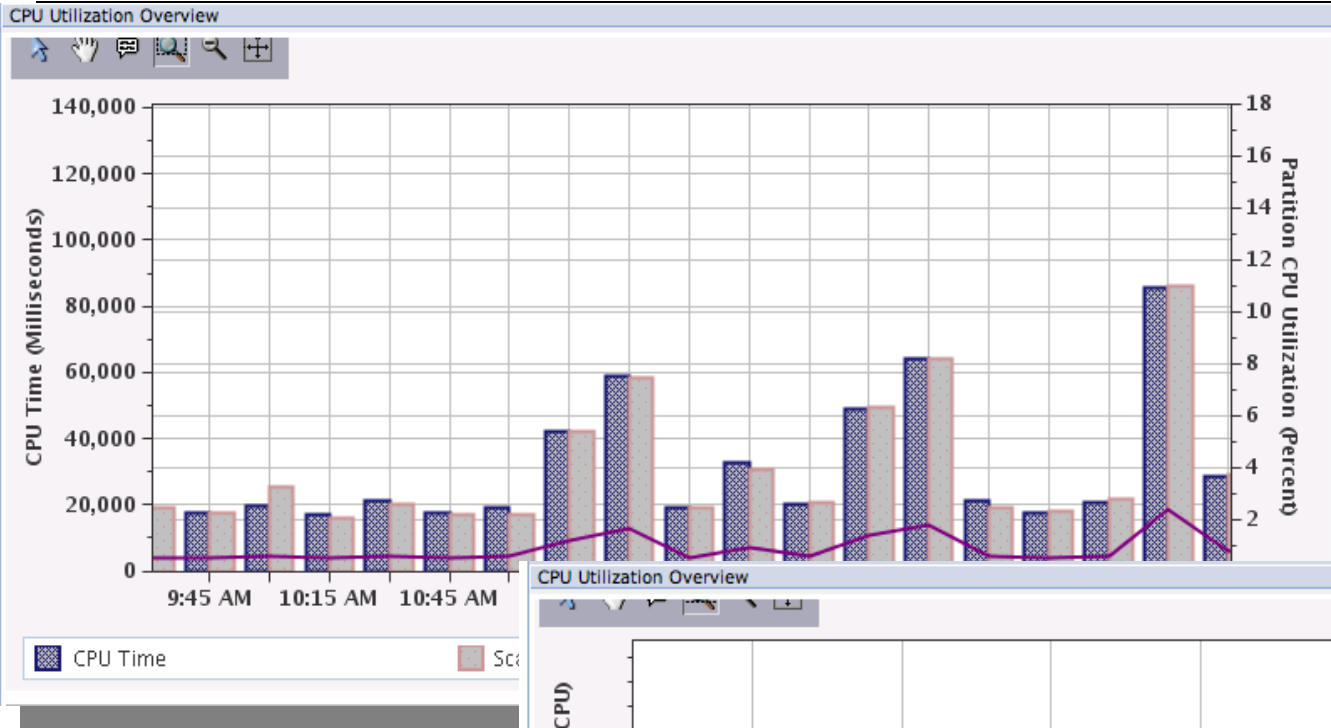
Memory Pool Health Indicators



Response Time Health Indicators



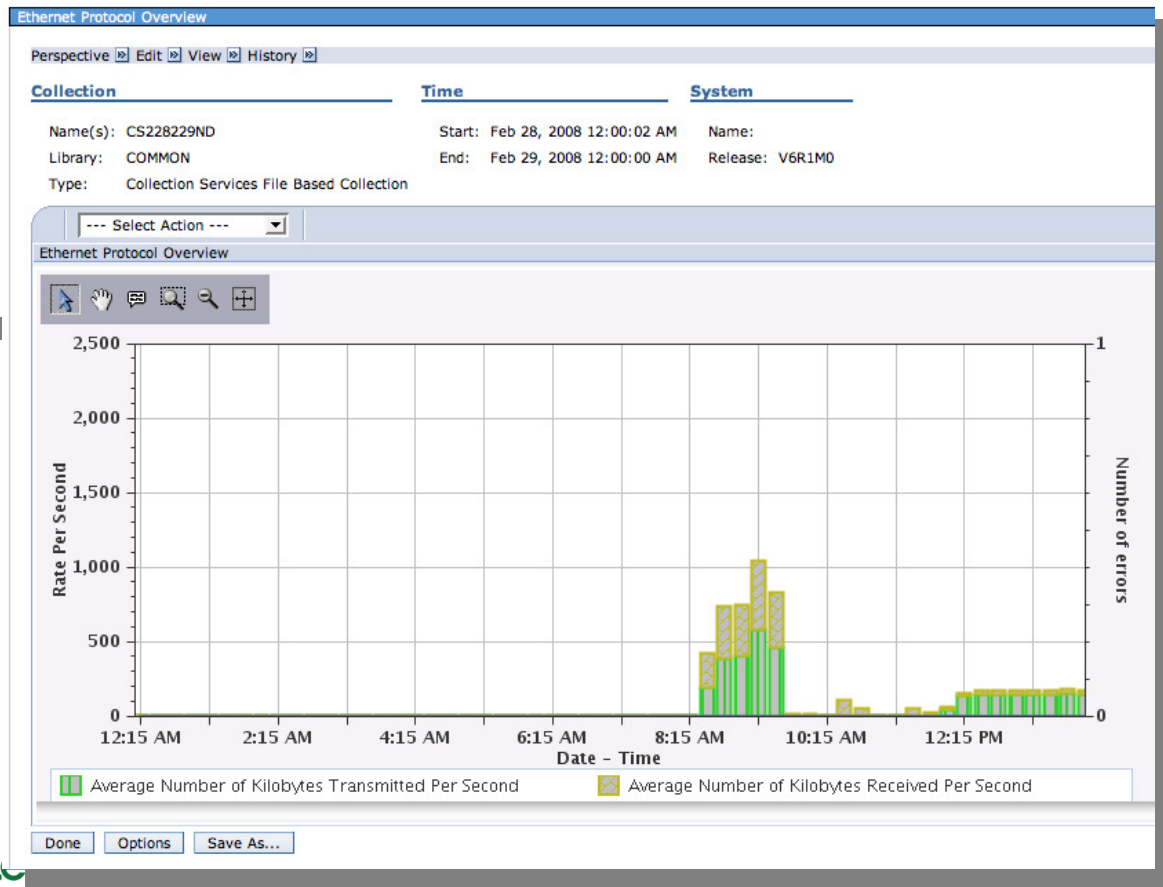
Scaled CPU



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



Options

Investigate Data

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.

Set Table Size Rows: Columns: Specify the number of visible rows and columns shown for tables.

Default library

Use Collection Services configured library

Use last visited library

Use library:

OK Cancel

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' application window. On the left, under the 'Perspectives' section, a tree view lists several perspectives: Disk Watcher, Performance Explorer, Job Watcher, Collection Services, and Health Indicators. The 'Disk Watcher' icon is circled in red. The right pane, titled 'Selection', displays details for the selected 'Disk Watcher' perspective, including its name, description, and a set of control buttons.

Investigate Data	
Perspectives	Selection
<ul style="list-style-type: none"> Disk Watcher Performance Explorer Job Watcher Collection Services Health Indicators 	<p>Name</p> <p>Disk Watcher</p> <p>Description</p> <p>Chart and table views over a variety of performance statistics from Disk Watcher performance data.</p> <p><input checked="" type="checkbox"/> Locked</p> <p> <input type="button" value="New Folder..."/> <input type="button" value="New Perspective..."/> </p> <p> <input type="button" value="Edit"/> <input type="button" value="Advanced Edit"/> <input type="button" value="Delete"/> </p> <p> <input type="button" value="Move Up"/> <input type="button" value="Move Down"/> </p>
<p>Collection</p> <p>Collection Library: COMMON Collection Name: Most Recent</p> <p> <input type="button" value="Display"/> <input type="button" value="Search"/> <input type="button" value="Options"/> <input type="button" value="Refresh Perspectives"/> <input type="button" value="Close"/> </p>	

Creating Custom Content Packages

New Package

Name *

Description

Add View

View

Name:

Type: Table Chart

Data Set

Drilldown

- Health Indicators
- Collection Services
- Dawn May

Chart Properties

Transpose Axes

Data Series

[Empty]

Thresholds

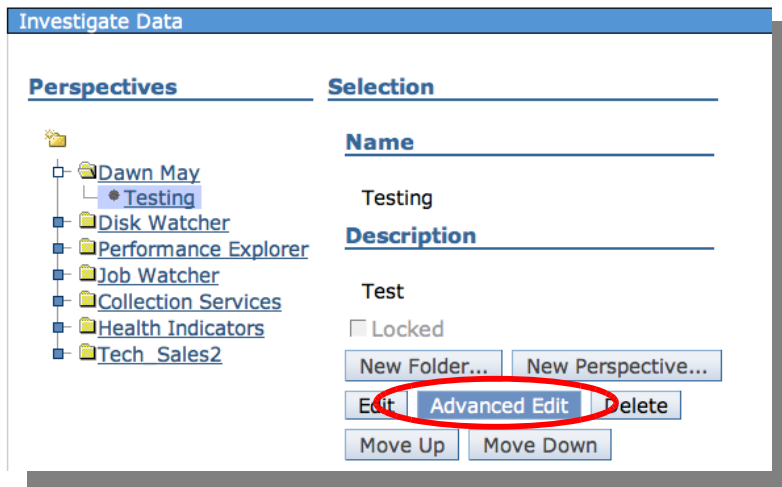
[Empty]

Investigate Data

Perspectives Selection

- Dawn May
- Disk Watcher
- Performance Explorer
- Job Watcher
- Collection Services
- Health Indicators
- Tech_Sales2

Advanced Edit – Edit the markup language directly

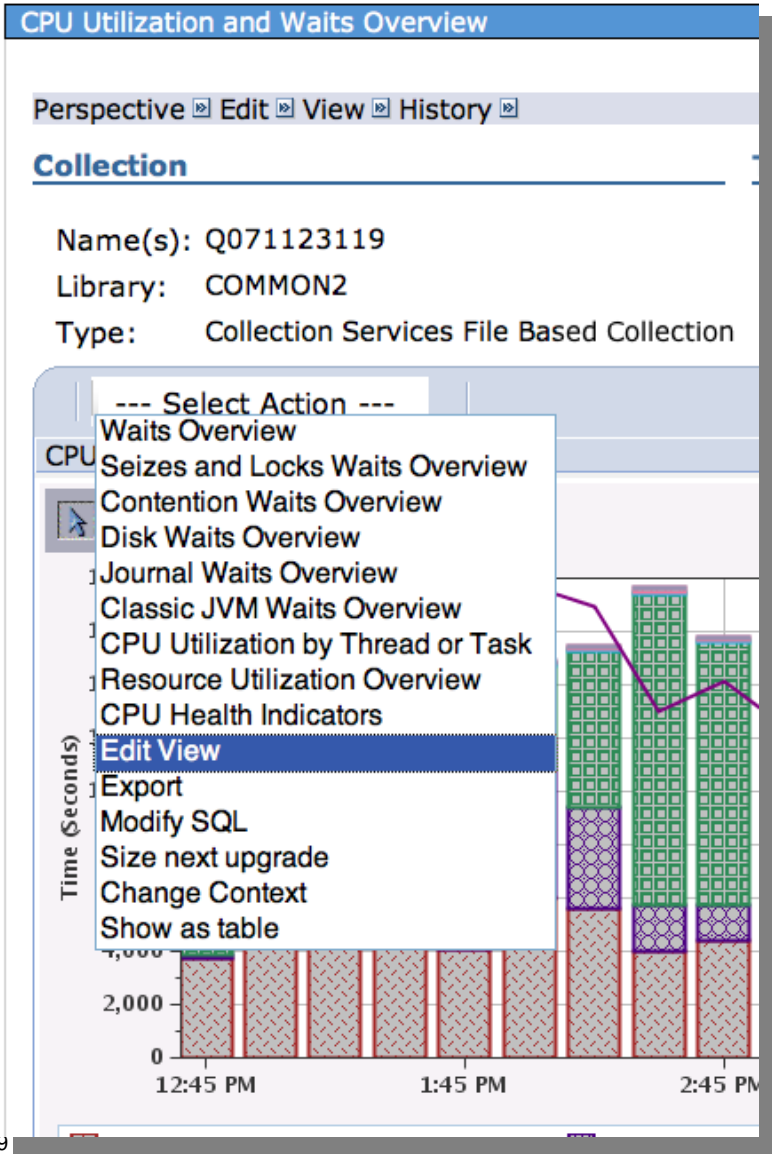


Edit PML

Performance Markup Language (PML) Text:

```
<?xml version="1.0" encoding="UTF-8"?>
<perspective description="Test" id="perspective_ID_504772_ccp"
  label="Testing" locked="false">
  <view class="com.ibm.as400.pt.viewer.views.ChartView"
    id="view_ID_504773_ccp" label="Custom Chart">
    <chartProperties transposeAxes="false">
      <dataSeries chartType="line" renderMode="clustered">
        <domain>
          <field value="INTNUM"/>
        </domain>
        <range>
          <field backgroundColor="RANDOM" color="RANDOM"
            pattern="RANDOM" value="JBLWT"/>
        </range>
      </dataSeries>
    </chartProperties>
    <dataSet>
      <from>
        <value>
          <collection file="QAPMJOBOS"/>
        </value>
      </from>
      <select>
        <field value="INTNUM"/>
        <field value="DTETIM"/>
        <field value="INTSEC"/>
        <field value="DTECEN"/>
        <field value="JBNAME"/>
        <field value="JBUSER"/>
        <field value="JBNBR"/>
      </select>
    </dataSet>
  </view>
</perspective>
```

Design Mode – Edit View



Edit View

View

Name: CPU Utilization and Waits Overview

Type: Table Chart

Data Set

Modify SQL

Drilldown

- Tech_Sales2
- Health Indicators
 - System Resources Health Indicators
 - CPU Health Indicators
 - Disk Health Indicators
 - Memory Pools Health Indicators
 - Response Time Health Indicators
- Collection Services
 - CPU Utilization and Waits Overview
 - CPU Utilization by Thread or Task
 - Resource Utilization Overview
- Job Statistics Overviews
- Waits
 - Waits Overview
 - Seizes and Locks Waits Overview
 - Contention Waits Overview
 - Disk Waits Overview
 - Journal Waits Overview
 - Classic JVM Waits Overview
 - All Waits by Thread or Task

Design Mode – Edit View

Chart Properties

Transpose Axes

Data Series

Group0
Partition CPU Utilization

Add...

Edit...

Delete

Move Up

Move Down

Thresholds

[Empty]

Add...

Edit...

Delete

OK

Add Data Series

Domain: The domain is locked since this chart already has a domain specified.

Range: Available Selected

Available	Selected
Interval Number	Select
100 Percent Utilization	Name
	Color
	Background Color
	Pattern
	None

Buttons: Add >> Remove <<

Type:

Breakdown:

Tooltip fields: None

- Interval Number
- Date - Time
- Partition CPU Utilization
- Dispatched CPU Time
- CPU Queuing Time

Buttons: OK Cancel

Add Threshold

Name:

Field:

Color:

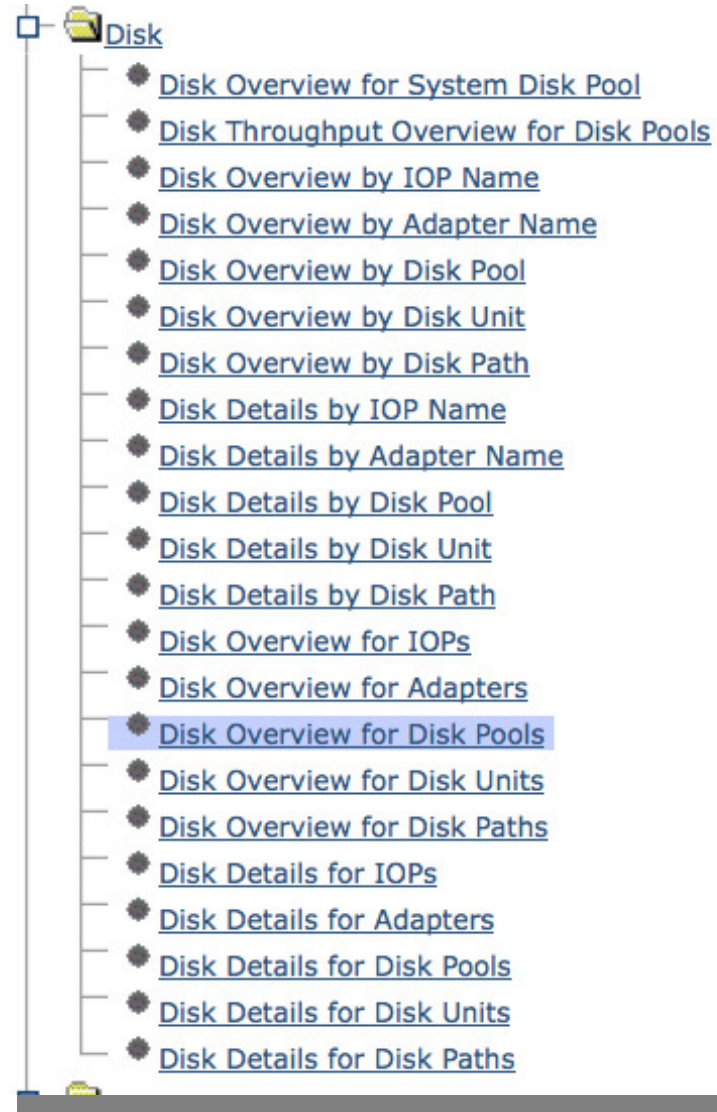
Current Value: Seconds

Default Value: Seconds

Buttons: OK Cancel

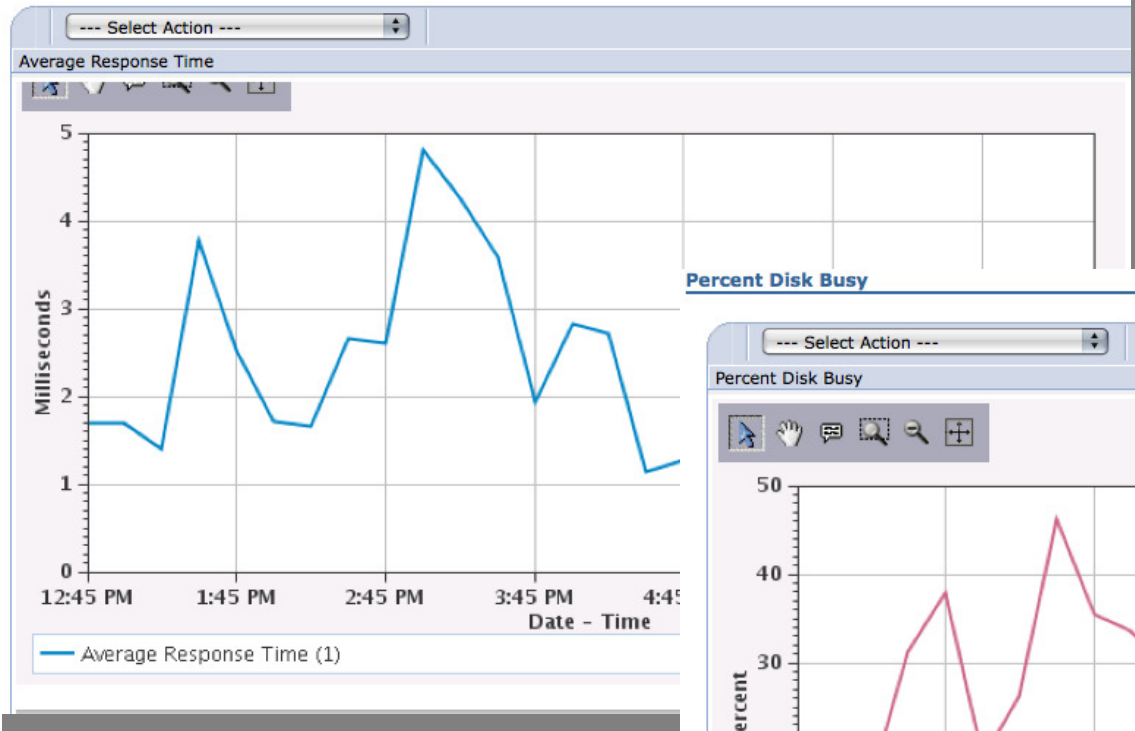
Design Mode - Add Data Series

- The Add Data Series option allows you to add additional data to your graphs for customization
- Example: Use Design Mode for Edit View actions
 - Start with ...
Disk → Disk Overview for Disk Pools
- We can combine the Average Response Time and Percent Disk Busy metrics to be on one chart

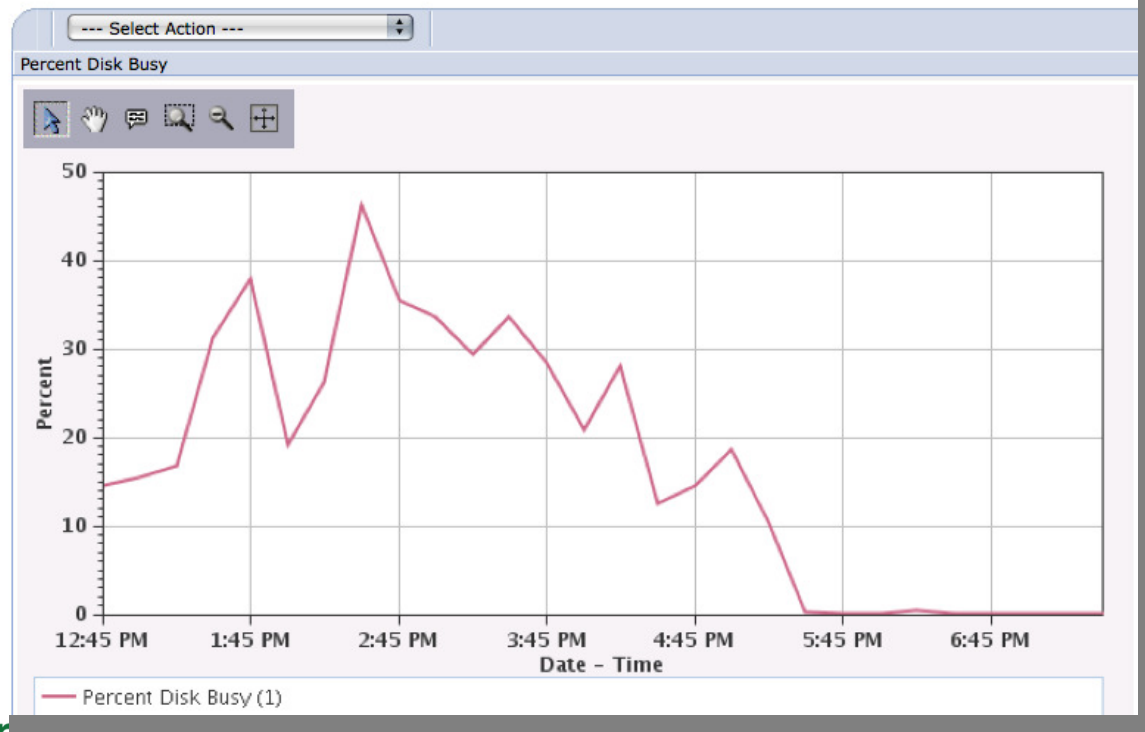


Disk Overview for Disk Pools gives us two charts we want this in one...

Average Response Time

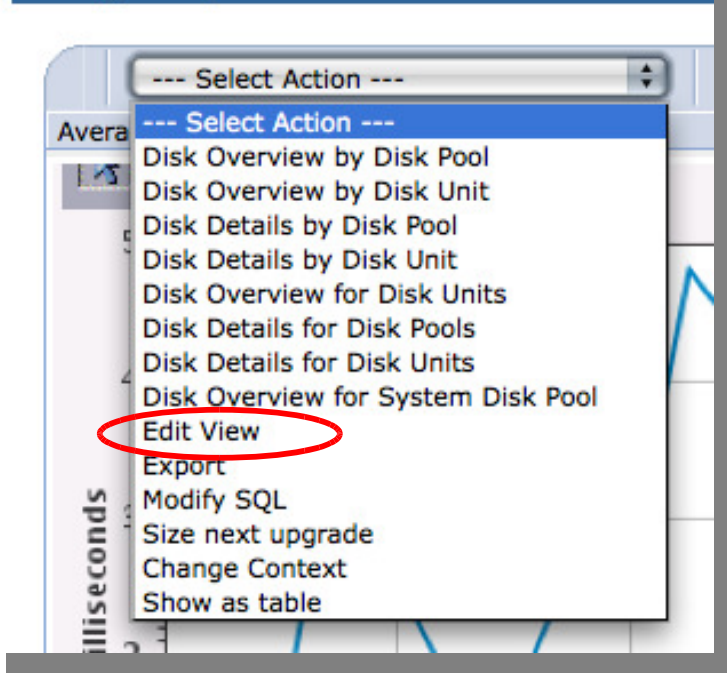


Percent Disk Busy



Select Edit View from the Average Response Time chart's action drop-down

Average Response Time



Scroll down and find the “Data Series” Box and take “Add...”

Chart Properties

Transpose Axes

Data Series

Average Response Time	Add...
	Edit...
	Delete
	Move Up
	Move Down

Thresholds

Select the new Range “Percent Disk Busy” then click on “Add”

then click on “Add”

Add Data Series

Domain: The domain is locked since this chart already has a domain specified.

Range: Available

- Interval Number
- Drive Capacity
- Percent Disk Capacity Full
- Percent Disk Busy**
- Reads Per Second

Selected

Select	Name	Color	Backg
	None		

Type:

Breakdown:

Tooltip fields:

- None
- Interval Number
- Interval Date And Time

Select Random for the pattern, use a bar Type graph, and turn on Tooltips for “Percent Disk Busy”

Add Data Series

Domain: The domain is locked since this chart already has a domain specified.

OK

Range: Available

- Interval Number
- Drive Capacity
- Percent Disk Capacity Full
- Reads Per Second
- Writes Per Second

Selected

Select	Name	Color	Background Color	Pattern
<input type="checkbox"/>	Percent Disk Busy	Use entry from below 498366	Random	Random

Type: **Bar (clustered)**

Breakdown:

Tooltip fields:

- None
- Disk Pool Identifier
- Drive Capacity
- Percent Disk Capacity Full
- Average Response Time
- Percent Disk Busy**
- Reads Per Second
- Writes Per Second

OK Cancel



Information

The data series has been added.

[Close Message](#)

Modify the View title and click Ok

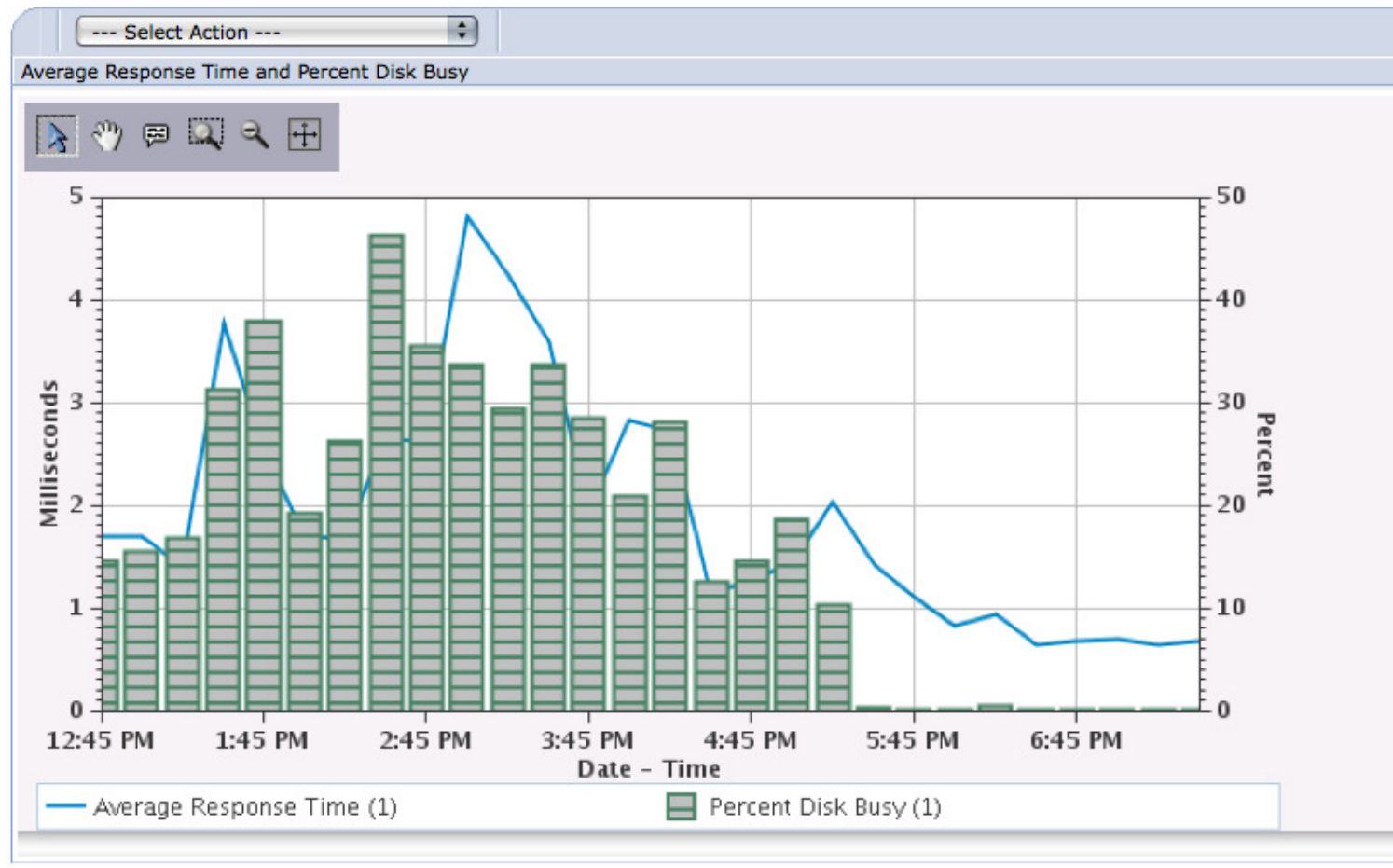
You now have the customized chart

View

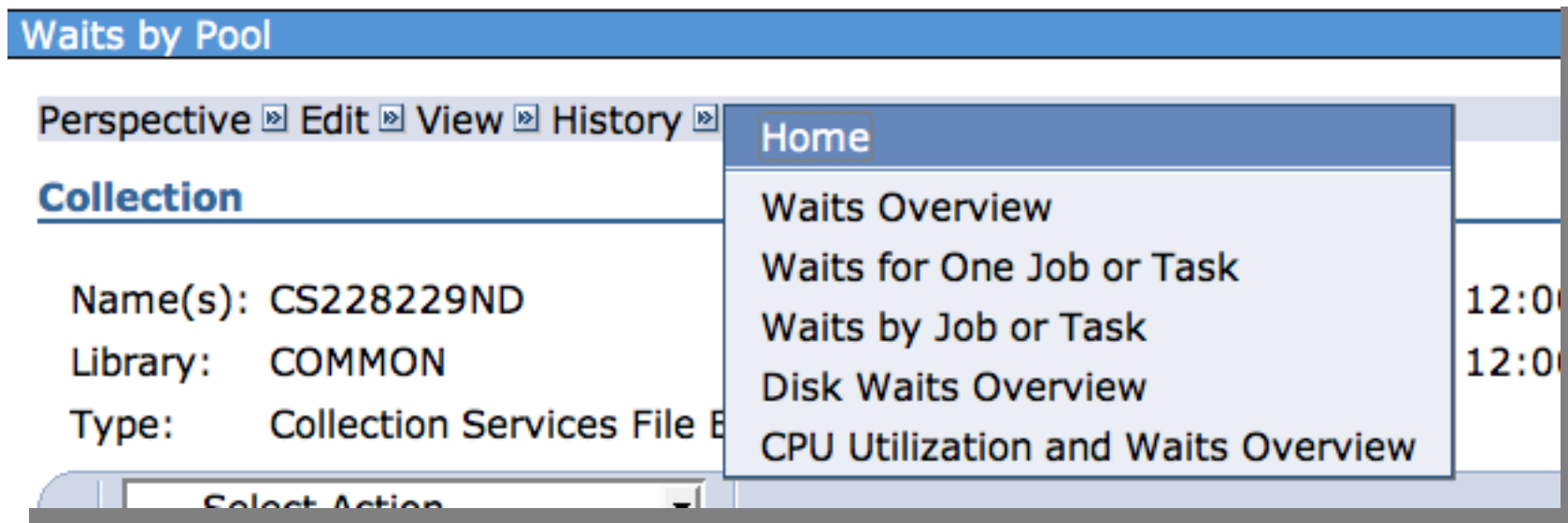
Name:

Type: Table Chart

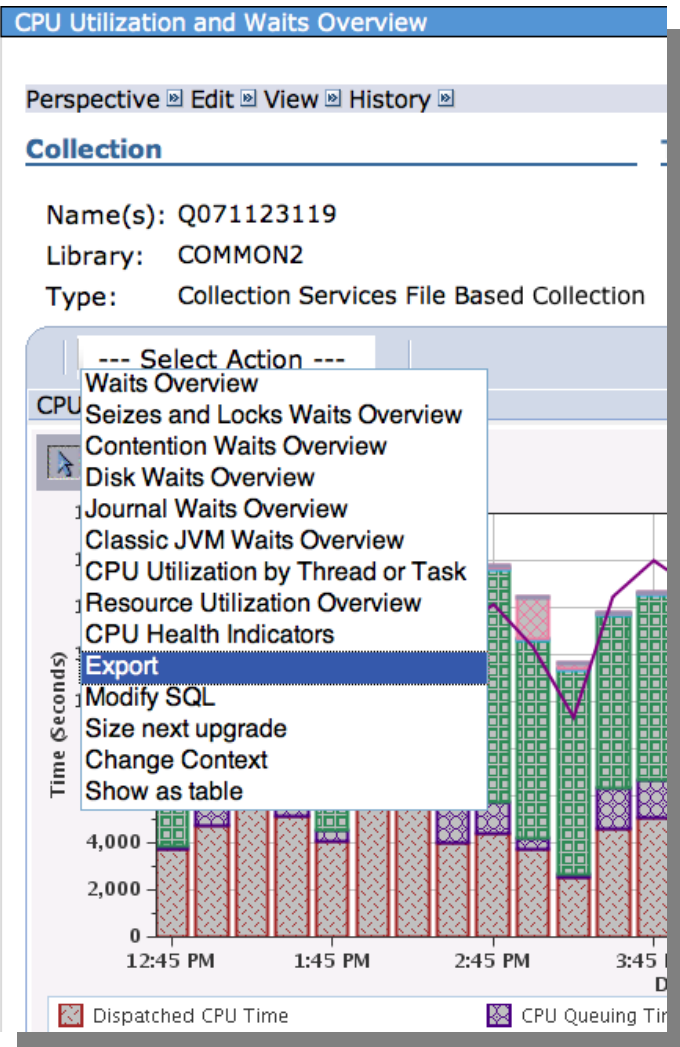
Average Response Time and Percent Disk Busy



History – Navigation history and other easily-accessible options



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



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

CPU Utilization and Waits Overview

Perspective » Edit » View » History »

Collection

Name(s): Q071123119
 Library: COMMON2
 Type: Collection Services File Based

--- 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

Time (seconds)

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) * .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,
  DTECIM AS DTECIM,
  DTECEN AS DTECEN
FROM
  (
    SELECT
      DTECEN || DTECIM AS CSDTETIM,
      DOUBLE(JWTIM01) AS TIME01,
      DOUBLE(JWTIM02) AS TIME02,
    
```

Allow collection choice

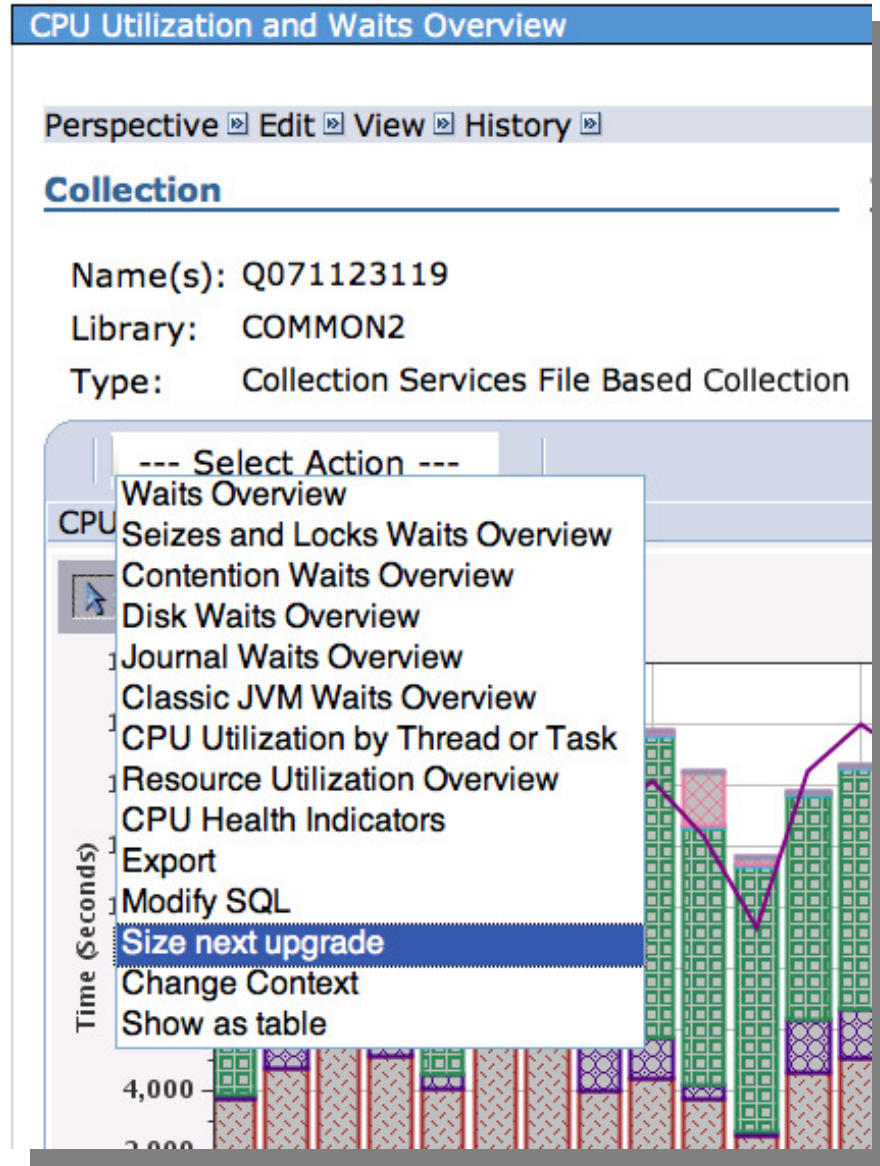
OK Cancel

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



Metric Finder

Collection

Collection Library: QPFRDATA
Collection Name: Most Recent

Buttons: Display, Search, Options, Refresh Perspectives, Close

Investigate Data

Metric Finder

Metric

Metric Name:

Scaled CPU Microseconds

SQL Statement

SQL Statement CCSID

SQL Statement Full Length

SQL Statement In Progress

STRDW Command String

STRJW Command String

Samples Taken

SaveDocument URLs Received

Scaled CPU Microseconds

Scaled CPU Time

Scaled CPU Time Microseconds

Scaled CPU Time Used

Scaled CPU Utilization

Screen Width

Search String Commands

Second Most Frequent Journal Entry Type

Secondary Control Unit

Secondary GC Threads

Secondary Line Description

Secondary Thread Flag

Investigate Data

Metric

Scaled CPU Time [Go]

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

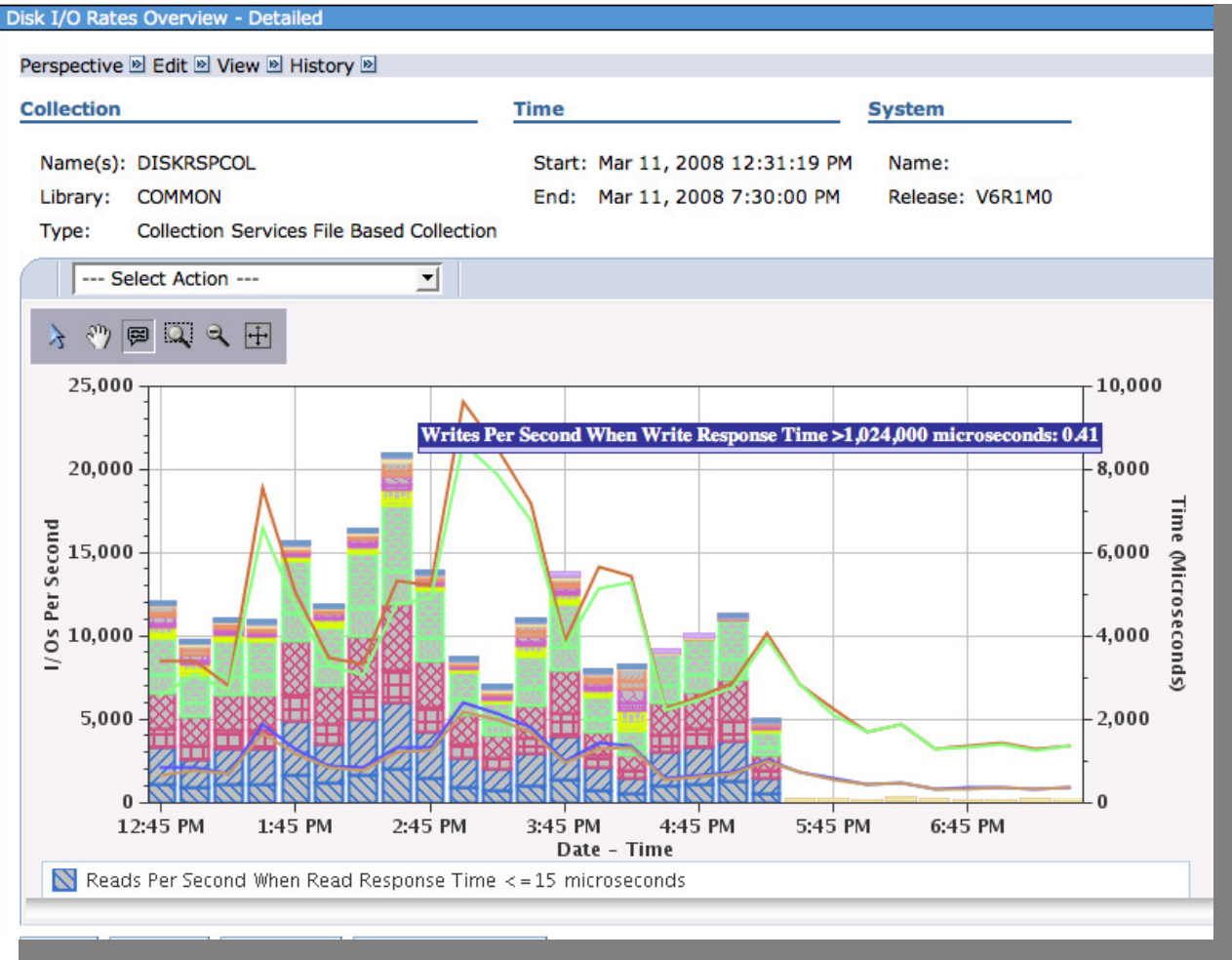
Collection

Collection Library: QPFRDATA
Collection Name: Most Recent

Buttons: Display, List, Options, Refresh Perspectives, Close

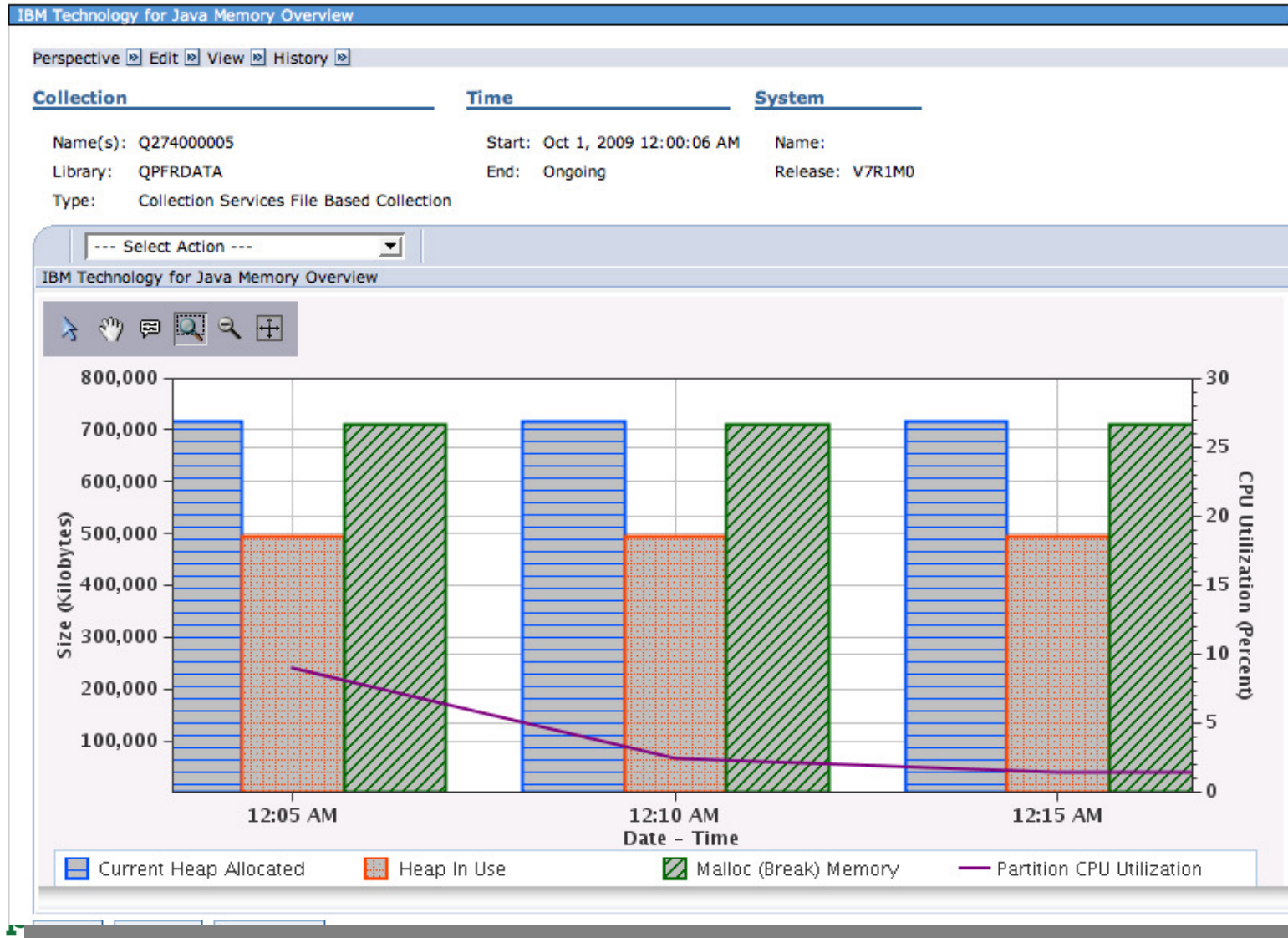
Disk Response Time Charts – New in 7.1

- Disk I/O Rates Overview - Detailed
 - Disk I/O Rates Overview With Cache
 - Disk I/O Average Response Time Overview
 - Disk I/O Total Response Time Overview
 - Disk I/O Total Service Time Overview
 - Disk I/O Rates Overview
 - Disk I/O Rates Overview With Cache Sta
 - Disk I/O Average Response Time Overview
 - Disk I/O Total Response Time Overview
 - Disk I/O Total Service Time Overview



Power is performance r

Java Perspectives – New in 7.1



Display Collection Services DB Files

QAPMCONF – New in 7.1

Collection Services Database Files

- QAPMARMTRT
- QAPMBUSINT
- **QAPMCONF**
- QAPMDISK
- QAPMDISKRB
- QAPMDOMINO
- QAPMDPS
- QAPMETH
- QAPMHDWR
- QAPMHTTPB
- QAPMHTTPD
- QAPMIOPD
- QAPMISUM
- QAPMJOBMI
- QAPMJOBOS
- QAPMJOBOSR
- QAPMJOBWT
- QAPMJOBWTD
- QAPMJOBWTDG
- QAPMJSUM
- QAPMJVM
- QAPMLPARH
- QAPMMIOP
- QAPMPOOLB
- QAPMPOOLT
- QAPMPPP
- QAPMSHRMP
- QAPMSYSCPU
- QAPMSYSRPC
- QAPMSYSTEM
- QAPMTAPE
- QAPMTCP
- QAPMTCPIEC
- QAPMUSRTNS

IBM® Systems Director Navigator for i

Performance(1) Investigate...

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		

QAPMCONF Panel View

Library Name:	COMMON	Processor Firmware Time:	-
Member Name:	CS228229ND	Task Threshold Value (ms):	0
Start Time:	Feb 28, 2008 12:00:02 AM	Secondary Thread Thresh (ms):	0
Model Number:	MMA	Disk Response Time Boundary 1 (us):	0
System Type:	9406	Disk Response Time Boundary 2 (us):	0
Partition Memory (KB):	30670848	Disk Response Time Boundary 3 (us):	0
Comm Data Collected:	Y	Disk Response Time Boundary 4 (us):	0
Machine Serial Number:	10-2C7B0	Disk Response Time Boundary 5 (us):	0
Response Time Boundary 1 (ms):	1000	Disk Response Time Boundary 6 (us):	0
Response Time Boundary 2 (ms):	2000	Disk Response Time Boundary 7 (us):	0
Response Time Boundary 3 (ms):	4000	Disk Response Time Boundary 8 (us):	0
Response Time Boundary 4 (ms):	8000	Disk Response Time Boundary 9 (us):	0
System ASP Capacity (KB):	2,067,333,120	Disk Response Time Boundary 10 (us):	0
Checksum Protection On:	N	Hypervisor Memory (MB):	6,656
Virtual Processors:	4	SMT Hardware Threads:	0
Installed Processors:	16	Time Interval (minutes):	15
Remote Response Boundary 1 (ms):	-	Interactive Limit (%):	100.00
Remote Response Boundary 2 (ms):	-	Time Interval (seconds):	900
Remote Response Boundary 3 (ms):	-	Interactive Threshold (%):	100.00
System ASP Capacity (KB):	2,067,333,120	Processor Multi-tasking Capability:	-
Perm 16MB Addr Remaining:	274,852,741,632	Output File System:	RCHASTND
Temp 16MB Addr Remaining:	274,362,038,016	Partition Count:	9
Disk Resp Time Boundary 1 (ms):	1	Processor Folding Support:	-
Disk Resp Time Boundary 2 (ms):	16	Partition ID:	1,077,952,576
Disk Resp Time Boundary 3 (ms):	64	Primary Partition ID:	1,077,952,576
Disk Resp Time Boundary 4 (ms):	256	Processor Units:	4.00
Disk Resp Time Boundary 5 (ms):	1,024	System Version:	6
Collection Data:	Consistent with *SYS	System Release:	1.0
Collect Internal Data:	N	System Name:	RCHASTND
*CSMGTCOL Collection Library:	QMPGDATA	Performance Monitor Select Job:	-
		Shared Processor Pool:	No
		Partition Sharing Capped:	Capped

Improved Integration with Active Jobs

New in 7.1 (and on 6.1 with latest PTFs)

The screenshot displays the 'Active Jobs' window. At the top, there is a 'Refresh' button and 'Elapsed time: 00:00:00'. Below this is a toolbar with various icons and a dropdown menu labeled '--- Select Action ---'. The main area is a table with columns: 'Select', 'Job Name', 'Detailed Status', 'Current User', and 'Type'. A context menu is open over the first job, listing actions such as 'Reset Statistics', 'Printer Output', 'Job Log', 'Details', 'Hold...', 'Delete/End...', 'Performance', and 'Properties'. The 'Performance' submenu is expanded, showing 'Elapsed Performance Statistics', 'Investigate Job Wait Data', and 'Start Job Watcher'. A red box highlights the 'Performance > Investigate Job Wait Data' option. A red arrow points from this option to a larger, detailed view of the 'Performance > Investigate Job Wait Data' menu. Below the table, there is a 'Collection' section with fields for 'Name(s)', 'Library', 'Type', 'Start', 'End', 'System', and 'Release'. At the bottom, a performance graph shows 'Time (Seconds)' on the y-axis (0 to 0.3) and 'Date - Time' on the x-axis (12:05 AM to 4:35 AM). The graph displays two data series: 'Dispatched CPU Time' (red bars) and 'CPU Queuing Time' (purple bars).

Improved Integration with System and Disk Status – New in 7.1

System Status -

Last refresh: 10/8/09 8:18:28 AM

General	Jobs
Jobs Processors Memory Disk Space Addresses	Total: 798 Active: 280 <hr/> Addresses used Permanent: 0.022 % Temporary: 0.053 % Total disk space: 176.30 GB <hr/> System disk pool Capacity: 176.30 GB Usage: 89.587 %

System Resources Health Indicators

System Status -

Last refresh: 10/8/09 8:23:16 AM

General	Total memory: 4,051.50 MB
Jobs	Active Memory Pools
Processors	Memory Pools Health Indicators
Memory	
Disk Space	
Addresses	

Disk Status -

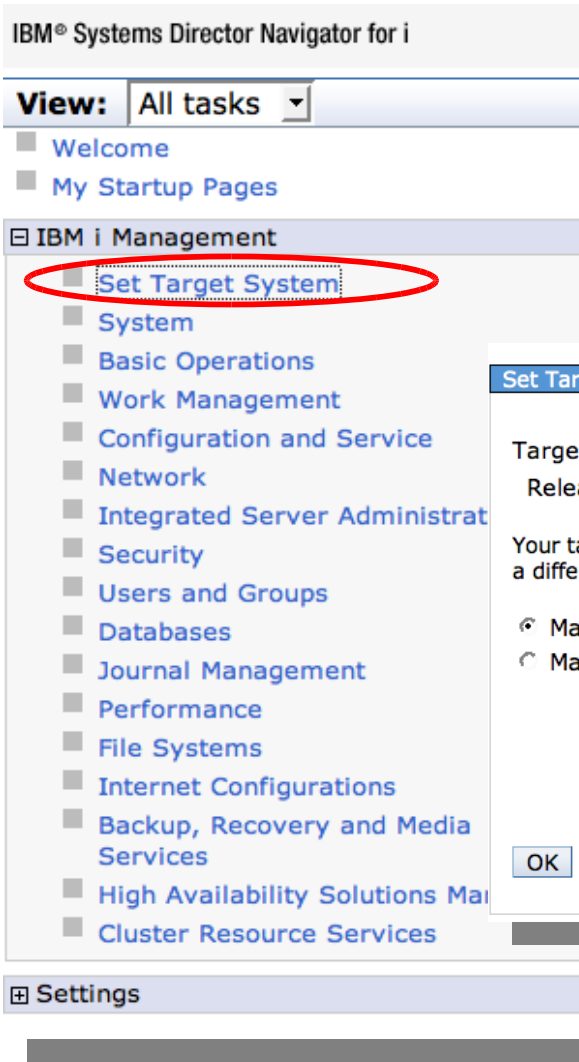
Refresh Elapsed time: 00:00:00

Select	Unit	Type	Size (MB)	Select Action	I/O Requests	R
<input type="checkbox"/>	1	4326	35156	Investigate Disk Data	0	
<input type="checkbox"/>	2	4327	70565	Start Disk Watcher	0	
<input type="checkbox"/>	3	4327	70565	Reset Statistics	0	
				Columns...	0	

Page 1 of 1

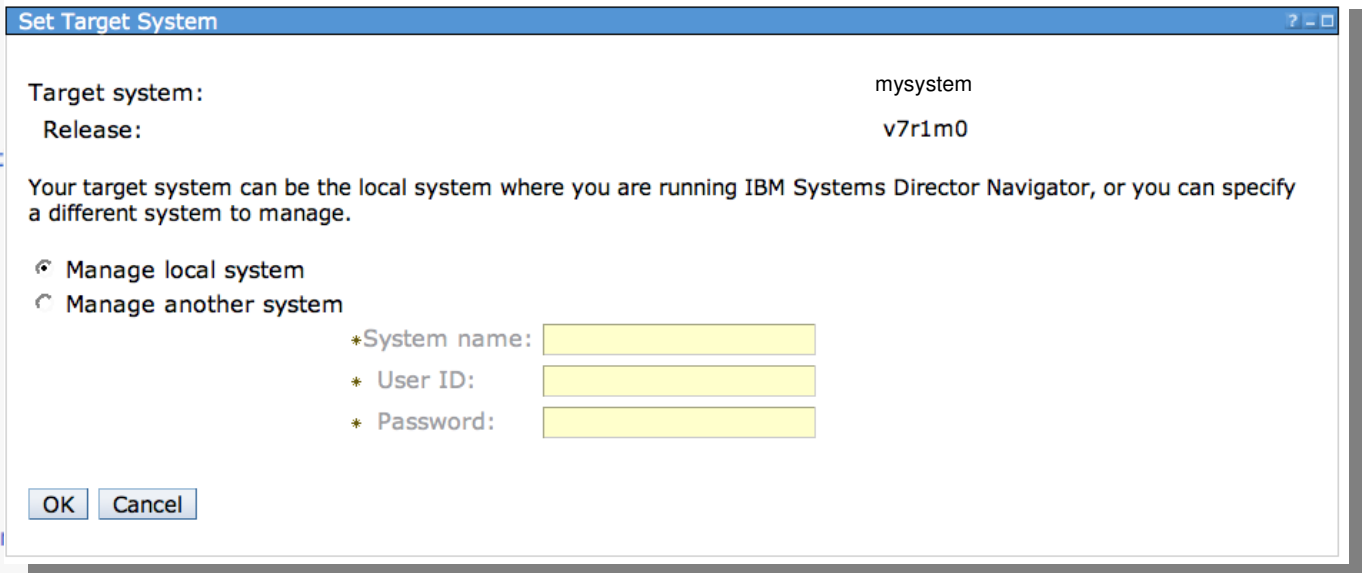
Close

Set Target System – New in 7.1 (and on 6.1 with latest PTFs)



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

Allows you to manage 5.4 and 6.1 partitions.



Considerations for Viewing V5R3 or 5.4 Collection Services data

▪ **Collection Services data from V5R3 or 5.4 releases can be viewed with the Performance Data Investigator**

- Note: Not all graphs and charts are available due to changes in data content and format

- 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 6.1 or 7.1 partition
 - Use the Restore Performance Collection command to restore the *CSMGTCOL collection type
 - Use the Create Performance Data command to get the data into database files

- Alternatively,
 - Use SAVOBJ to save the collected collection services database files into a save file
 - SAVOBJ OBJ(QAPM*) LIB(MYLIB) DEV(*SAVF) OBJTYPE(*FILE) SAVF(MYLIB/MYSAVF)
FILEMBR((*ALL (MYDATA)))
 - FTP the save file to the 6.1 or 7.1 partition
 - Restore Collection capability on Performance Tasks GUI

or

 - Use the Restore Performance Collection (RSTPFRCOL) command to restore the data on the 6.1 or 7.1 partition. The type of the collection will be *CSFILE
 - Use the “Convert Performance Collection” capability to convert the V5 database files to the 6.1 or 7.1 format

Disk Watcher

Investigate Data

Perspectives

- [-] Disk Watcher
 - [-] **Statistical Overviews**
 - [Disk Statistical Overview](#)
 - [Disk Statistical Overview by Disk Pool](#)
 - [Disk Statistical Overview by Disk Unit](#)
 - [Disk Statistical Overview by Disk Path](#)
 - [-] **Statistical Details**
 - [Disk Statistical Details by Disk Pool](#)
 - [Disk Statistical Details by Disk Unit](#)
 - [Disk Statistical Details by Disk Path](#)
 - [-] **Trace**
 - [-] **Disk Watcher Database Files**
 - [-] **Job Watcher**
 - [-] **Collection Services**

Selection

Statistical Overviews

Description

Charts that show a variety of performance statistics from Disk Watcher statistical data.

Default Perspective

[Disk Statistical Overview](#)

Collection

Collection Library	Collection Name
COMMON	Most Recent

- Most Recent
- All
- DAWNDW (*DWFILE)
- DAWNDWFULL (*DWFILE)
- DAWNDWSTAT (*DWFILE)
- DAWNFULL (*DWFILE)

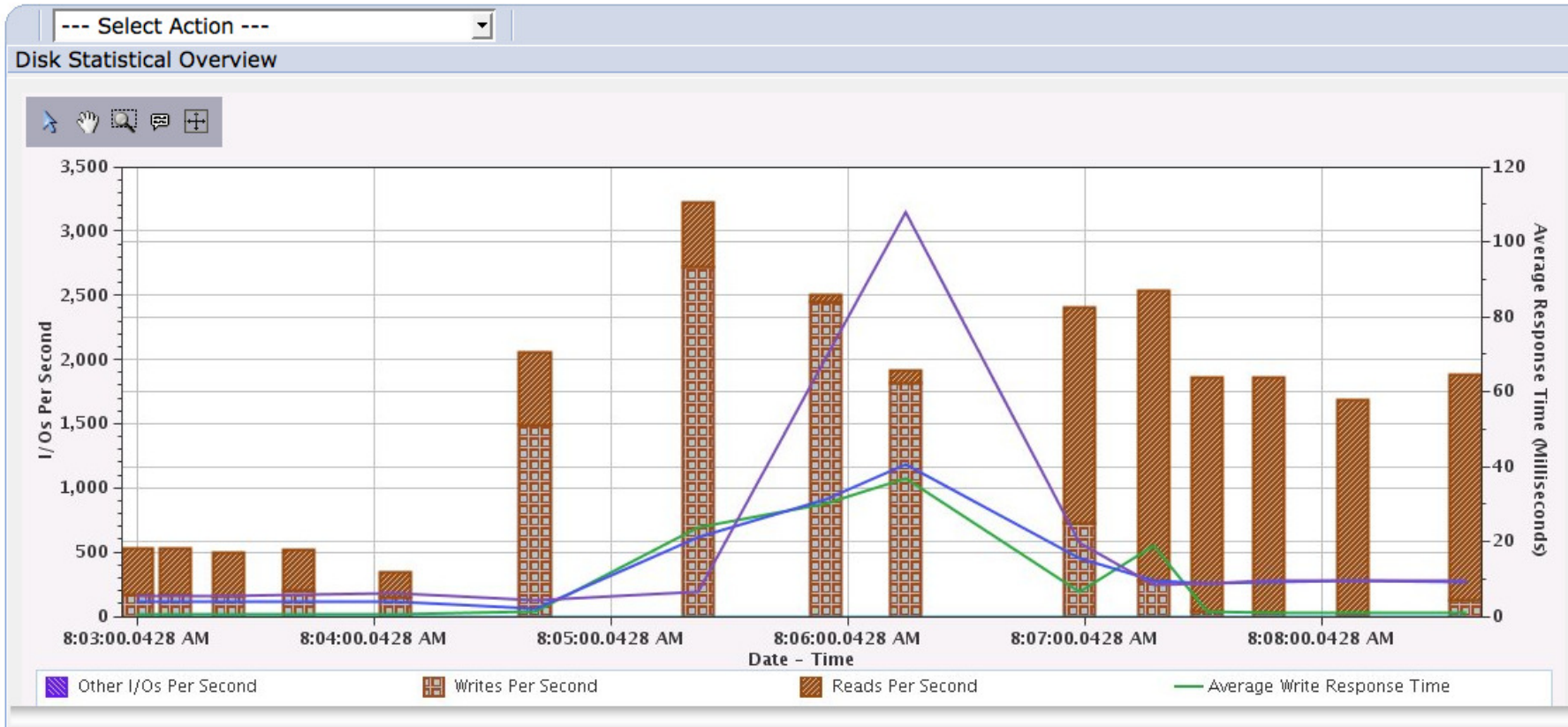
Display
Close

Disk Watcher – Statistical Overviews

Investigate Data

Perspectives > Disk Statistical Overview

Disk Statistical Overview



Job Watcher

Investigate Data

Perspectives

- [-] Disk Watcher
- [-] Job Watcher
 - [-] CPU Utilization and Waits Overview
 - [-] CPU Utilization by Thread or Task
 - [-] Resource Utilization Overview
 - [-] Job Statistics Overviews
 - [-] Waits
 - [-] CPU
 - [-] Physical Disk I/O
 - [-] Synchronous Disk I/O
 - [-] Page Faults
 - [-] Logical Database I/O
 - [-] 5250 Display Transactions
 - [-] Job Watcher Database Files
- [-] Collection Services

Selection

Job Watcher

Description

Chart and table views over a variety of performance statistics from Job Watcher performance data.

Default Perspective

[Resource Utilization Overview](#)

Collection

Collection Library	Collection Name
COMMON	DAWNJW2 (*JWFILE)
	Most Recent
	All
	JWOBJLOCKC (*JWFILE)
	DAWNJW229 (*JWFILE)
	DAWNJW2 (*JWFILE)

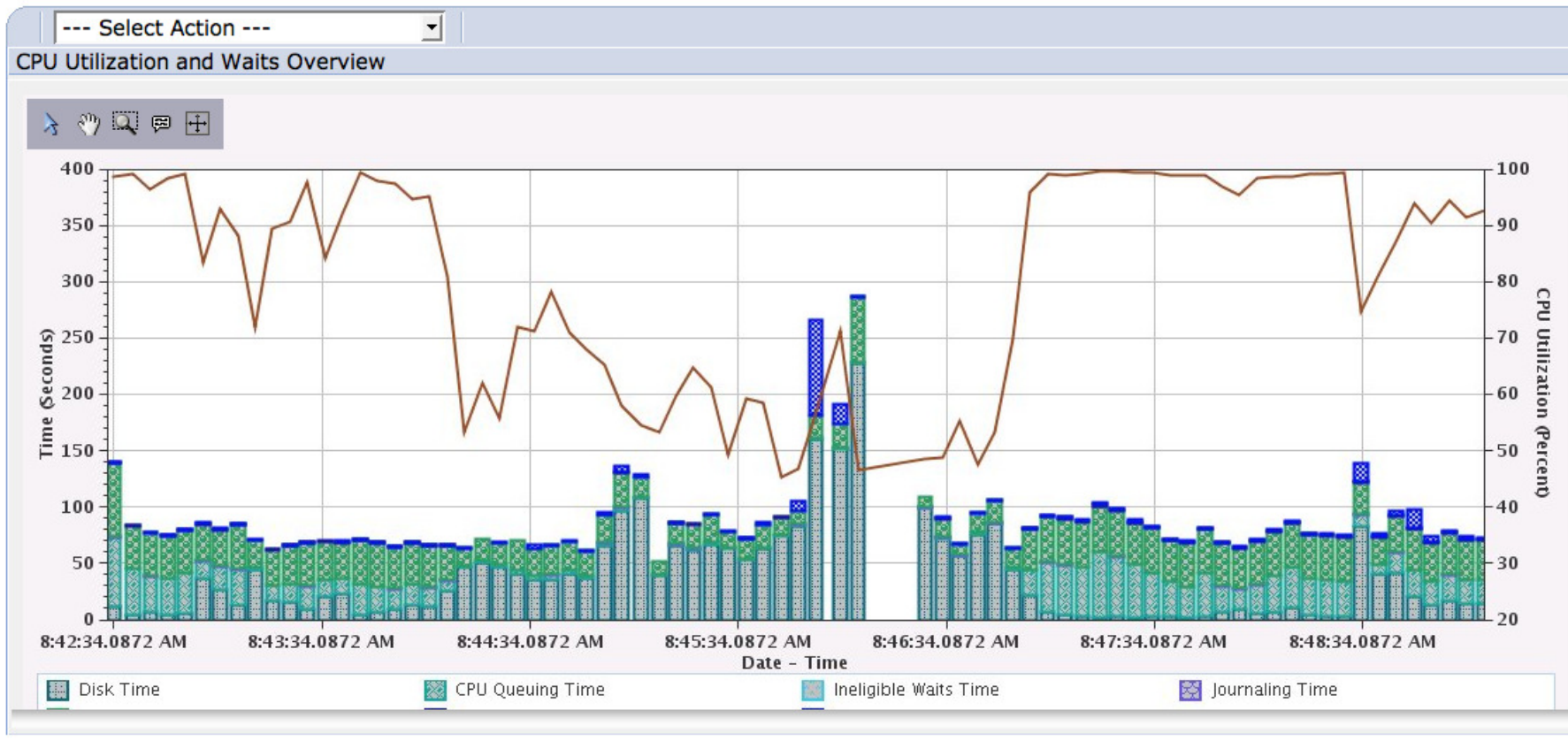
Display Close

Job Watcher - CPU Utilization and Waits Overview

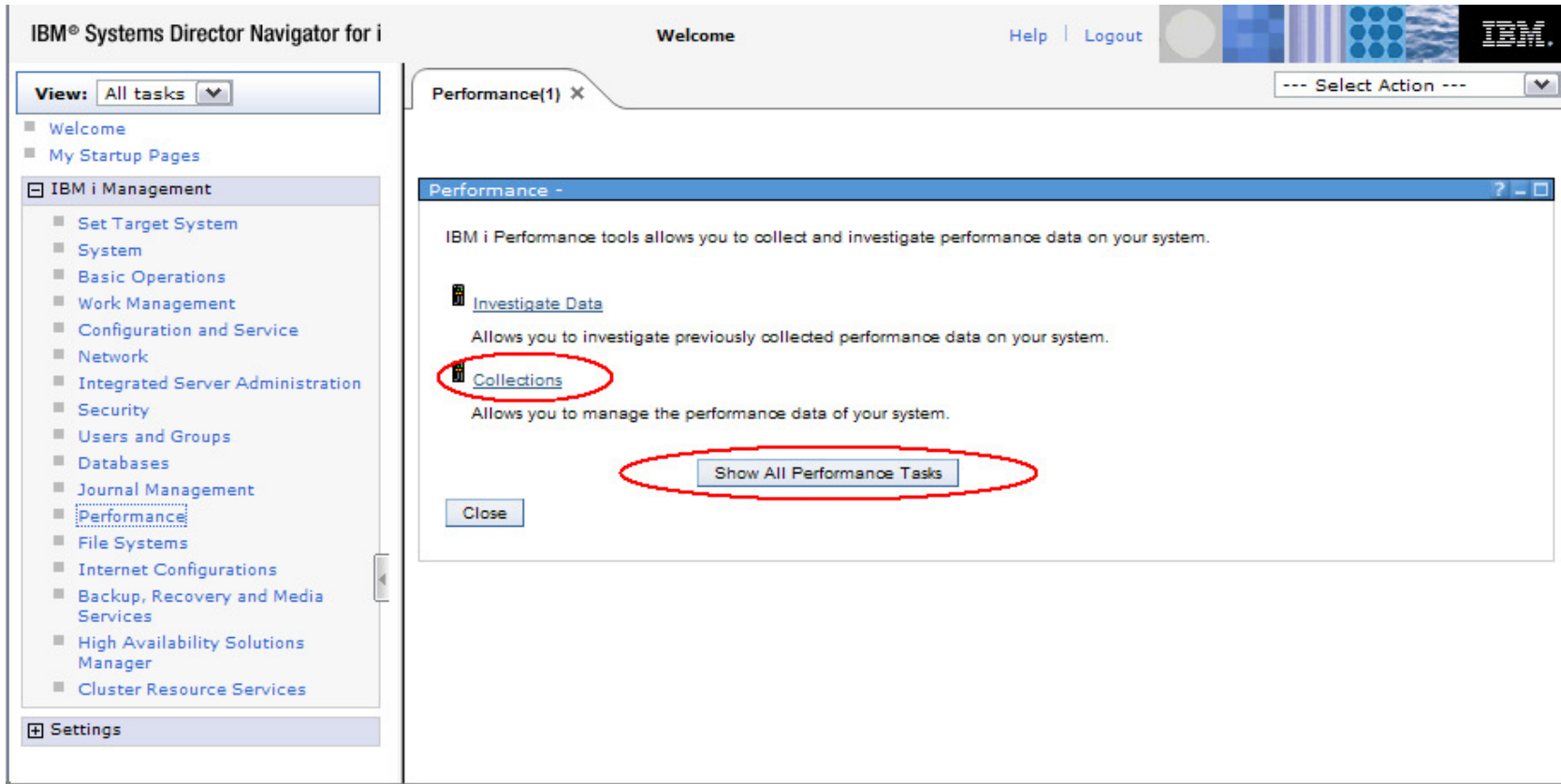
Investigate Data

Perspectives > CPU Utilization and Waits Overview

CPU Utilization and Waits Overview



Collections and All Performance Tasks



Collections

- Provides a central place to manage and work with all of the performance data that is on the system.
- Contains performance data collections from:
 - Collection Services
 - Job Watcher
 - Disk Watcher
 - Performance Explorer

Actions available on a collection typically include:

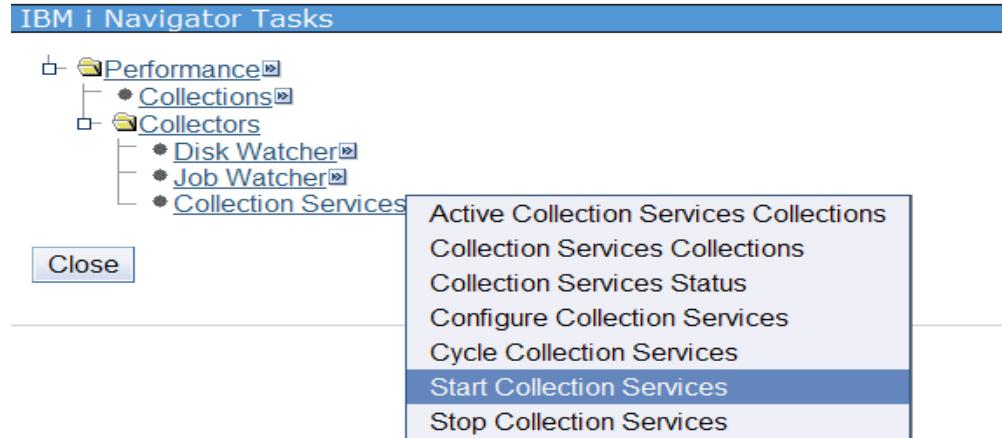
- Copy
- Delete
- Save
- Investigate Data
- Properties

Select	Name	Library	Type	Status	Started	Ended	Size MB	Version
<input type="checkbox"/>	DFLPMCO	DFLPMCO	Performance Explorer File Based Collection	Complete	Jan 5, 2009 9:47:54 AM	Jan 5, 2009 9:51:18 AM	6.47656	V6R1M0
<input type="checkbox"/>	Q005093146	PMR09934B	Collection Services File Based Collection	Complete	Jan 5, 2009 9:31:46 AM	Jan 5, 2009 10:09:12 AM	28.8437	V5R3M0
<input type="checkbox"/>	Q005093146	PMR09934B	Collection Services *MGTCOL Obj Based Collection	Complete	Jan 5, 2009 9:31:46 AM	Jan 5, 2009 10:09:12 AM	36.0976	V5R3M0
<input type="checkbox"/>	DFLPMCO	QPEXDATA	Performance Explorer File Based Collection	Complete	Jan 5, 2009 9:29:26 AM	Jan 5, 2009 9:31:58 AM	5.22656	V6R1M0
<input type="checkbox"/>	QYPEMGTCOL	QSYS	Performance Explorer *MGTCOL Obj Based Collection	Complete	Jan 5, 2009 9:29:25 AM	Jan 5, 2009 9:29:25 AM	1.60546	V6R1M0
<input type="checkbox"/>	Q005092053	DFLDATA1	Job Watcher File Based Collection	Complete	Jan 5, 2009 9:20:57 AM	Jan 5, 2009 9:21:02 AM	2.82287	V6R1M0
<input type="checkbox"/>	Q005092015	DFLDATA1	Job Watcher File Based Collection	Complete	Jan 5, 2009 9:20:18 AM	Jan 5, 2009 9:20:29 AM	2.7275	V6R1M0
<input type="checkbox"/>	Q005091848	DFLDATA1	Job Watcher File Based Collection	Complete	Jan 5, 2009 9:18:55 AM	Jan 5, 2009 9:19:07 AM	3.01361	V6R1M0
<input type="checkbox"/>	SQL	DFLDATA1	Job Watcher File Based Collection	Complete	Jan 5, 2009 1:48:25 PM	Jan 5, 2009 1:48:31 PM	5.72204	V6R1M0
<input type="checkbox"/>	SQL1	DFLDATA1	Job Watcher File Based Collection	Complete	Jan 5, 2009 10:54:40 AM	Jan 5, 2009 10:54:51 AM	2.92778	V6R1M0
<input type="checkbox"/>	Q005105043	DFLDATA1	Job Watcher File Based Collection	Complete	Jan 5, 2009 10:51:05 AM	Jan 5, 2009 10:51:21 AM	3.18527	V6R1M0
<input type="checkbox"/>	Q005100932	DFLDATA1	Job Watcher File Based Collection	Complete	Jan 5, 2009 10:09:35 AM	Jan 5, 2009 10:09:46 AM	2.88009	V6R1M0
<input type="checkbox"/>	DFLSTATS	DFLTEST1	Performance Explorer File Based Collection	Complete	Dec 4, 2008 11:24:41 AM	Dec 4, 2008 11:24:53 AM	0.30468	V6R1M0
<input type="checkbox"/>	Q325161153	JLUISV	Disk Watcher File Based Collection	Complete	Nov 20, 2008 4:11:53 PM	Nov 20, 2008 4:11:57 PM	9.53674	V6R1M0
<input type="checkbox"/>	Q325155428	JLUISV	Disk Watcher File Based Collection	Complete	Nov 20, 2008 3:54:28 PM	Nov 20, 2008 3:54:32 PM	9.53674	V6R1M0

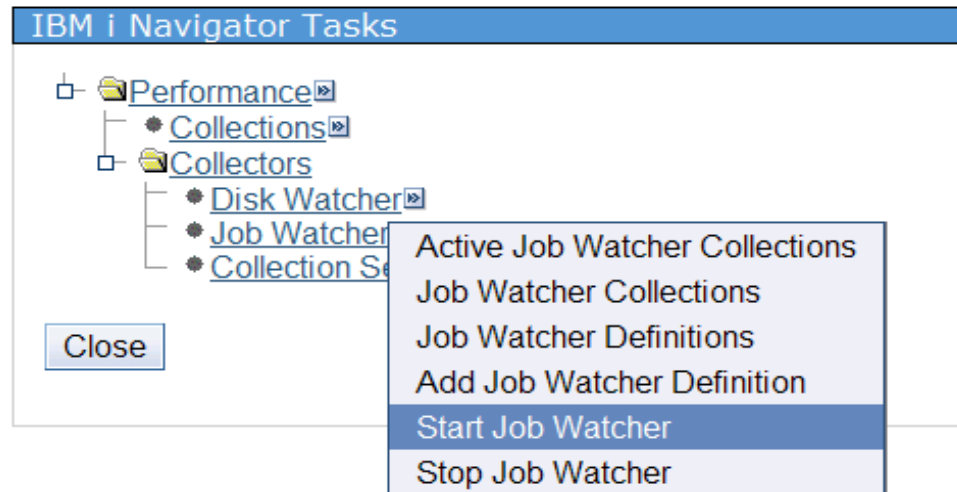
All Performance Tasks

- Includes ability to Start, Stop, and Configure Collectors

- Collection Services:



- Disk Watcher / Job Watcher – Wizards to Add a definition and to Start:



developerWorks and PDI



developerWorks®

- developerWorks - <http://www.ibm.com/developerworks/ibmi/>
 - IBM i Technology Updates Wiki – Performance Tools
<https://www.ibm.com/developerworks/ibmi/techupdates/perftools>
 - IBM i Performance Data Investigator – Getting Started
<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 Performance Tools and Performance Data Investigator Forum
<http://www.ibm.com/developerworks/forums/forum.jspa?forumID=2751&cat=493>

Performance Management Redbook



SG24-7808-00

Draft Document for Review September 11, 2009 4:03 pm

End to end Performance Management on IBM i

Understanding the cycle of
Performance Management

Maximize performance using the
new graphical interface on 6.1

Learn tips and best practices



Hernando Bedoya
Mark Roy
Nandoo Neerukonda
Petri Nuutinen

Redbooks

ibm.com/redbooks

Focuses on 6.1 tools
with Oct 2009 enhancements

Redbook number:
SG24-7808

IBM Systems Director Navigator for i Redbook

Released December
2009

Chapter 9 focuses on
Performance tasks

Redbook number:
SG24-7789-00

IBM Systems Director Navigator for i

Learn about the new Web console
for IBM i

Explore the functionality of the
new Web console

Leverage this new powerful tool to
manage IBM i



Giancarlo Omati
Morten Buur Rasmussen
Johnnie Talamantes
Claudio Villalobos
Brian Younger

ibm.com/redbooks

Redbooks

Special notices

This document was developed for IBM offerings in the United States as of the date of publication. IBM may not make these offerings available in other countries, and the information is subject to change without notice. Consult your local IBM business contact for information on the IBM offerings available in your area.

Information in this document concerning non-IBM products was obtained from the suppliers of these products or other public sources. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. Send license inquires, in writing, to IBM Director of Licensing, IBM Corporation, New Castle Drive, Armonk, NY 10504-1785 USA.

All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

The information contained in this document has not been submitted to any formal IBM test and is provided "AS IS" with no warranties or guarantees either expressed or implied.

All examples cited or described in this document are presented as illustrations of the manner in which some IBM products can be used and the results that may be achieved. Actual environmental costs and performance characteristics will vary depending on individual client configurations and conditions.

IBM Global Financing offerings are provided through IBM Credit Corporation in the United States and other IBM subsidiaries and divisions worldwide to qualified commercial and government clients. Rates are based on a client's credit rating, financing terms, offering type, equipment type and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension or withdrawal without notice.

IBM is not responsible for printing errors in this document that result in pricing or information inaccuracies.

All prices shown are IBM's United States suggested list prices and are subject to change without notice; reseller prices may vary.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

Any performance data contained in this document was determined in a controlled environment. Actual results may vary significantly and are dependent on many factors including system hardware configuration and software design and configuration. Some measurements quoted in this document may have been made on development-level systems. There is no guarantee these measurements will be the same on generally-available systems. Some measurements quoted in this document may have been estimated through extrapolation. Users of this document should verify the applicable data for their specific environment.

Revised September 26, 2006

Special notices (cont.)

IBM, the IBM logo, ibm.com AIX, AIX (logo), AIX 6 (logo), AS/400, Active Memory, BladeCenter, Blue Gene, CacheFlow, ClusterProven, DB2, ESCON, i5/OS, i5/OS (logo), IBM Business Partner (logo), IntelliStation, LoadLeveler, Lotus, Lotus Notes, Notes, Operating System/400, OS/400, PartnerLink, PartnerWorld, PowerPC, pSeries, Rational, RISC System/6000, RS/6000, THINK, Tivoli, Tivoli (logo), Tivoli Management Environment, WebSphere, xSeries, z/OS, zSeries, AIX 5L, Chiphopper, Chipkill, Cloudscape, DB2 Universal Database, DS4000, DS6000, DS8000, EnergyScale, Enterprise Workload Manager, General Purpose File System, , GPFS, HACMP, HACMP/6000, HASM, IBM Systems Director Active Energy Manager, iSeries, Micro-Partitioning, POWER, PowerExecutive, PowerVM, PowerVM (logo), PowerHA, Power Architecture, Power Everywhere, Power Family, POWER Hypervisor, Power Systems, Power Systems (logo), Power Systems Software, Power Systems Software (logo), POWER2, POWER3, POWER4, POWER4+, POWER5, POWER5+, POWER6, POWER7, pureScale, System i, System p, System p5, System Storage, System z, Tivoli Enterprise, TME 10, TurboCore, Workload Partitions Manager and X-Architecture are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml

The Power Architecture and Power.org wordmarks and the Power and Power.org logos and related marks are trademarks and service marks licensed by Power.org.

UNIX is a registered trademark of The Open Group in the United States, other countries or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries or both.

Microsoft, Windows and the Windows logo are registered trademarks of Microsoft Corporation in the United States, other countries or both.

Intel, Itanium, Pentium are registered trademarks and Xeon is a trademark of Intel Corporation or its subsidiaries in the United States, other countries or both.

AMD Opteron is a trademark of Advanced Micro Devices, Inc.

Java and all Java-based trademarks and logos are trademarks of Sun Microsystems, Inc. in the United States, other countries or both.

TPC-C and TPC-H are trademarks of the Transaction Performance Processing Council (TPPC).

SPECint, SPECfp, SPECjbb, SPECweb, SPECjAppServer, SPEC OMP, SPECviewperf, SPECcapc, SPECchpc, SPECjvm, SPECmail, SPECimap and SPECsfs are trademarks of the Standard Performance Evaluation Corp (SPEC).

NetBench is a registered trademark of Ziff Davis Media in the United States, other countries or both.

AltiVec is a trademark of Freescale Semiconductor, Inc.

Cell Broadband Engine is a trademark of Sony Computer Entertainment Inc.

InfiniBand, InfiniBand Trade Association and the InfiniBand design marks are trademarks and/or service marks of the InfiniBand Trade Association.

Other company, product and service names may be trademarks or service marks of others.

Revised February 9, 2010