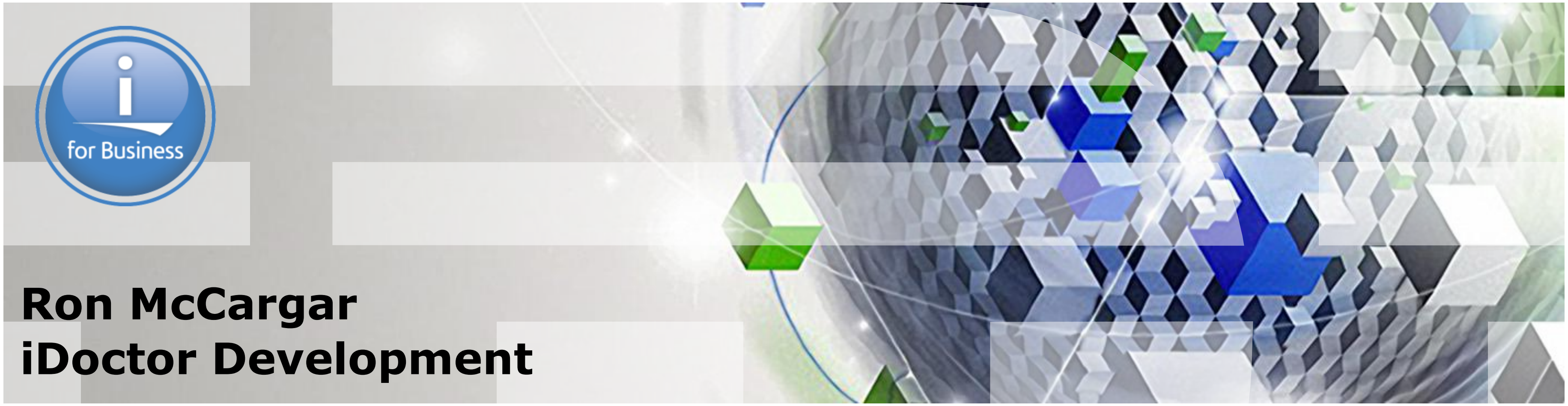
iDoctor What’s New Oct – Mar 2011


for Business

Ron McCargar
iDoctor Development

iDoctor resources

iDoctor e-mail list: usage tips, build updates, PTF info
Send join requests to mccargar@us.ibm.com

iDoctor update history: embedded into the GUI. *Tip: Search the update history on the area of interest to see if your question is answered there.*

YouTube Channel (20+ videos): http://www.youtube.com/user/IBMiDoctor?feature=mhum

IBM i 7.1 Technical Overview – Covers all updates from 6.1 GA to 7.1 GA: http://www.redbooks.ibm.com/redbooks.nsf/RedpieceAbstracts/sg247858.html?Open

iDoctor Forum: http://www.ibm.com/developerworks/forums/forum.jspa?forumID=871

Nov–Mar 2011 – New Builds

Released new builds on Feb 3rd.

Generally try to do 4 major updates a year.

7.2 internal builds not yet available, probably April or May.

Nov–Mar 2011 - Overview

Current Focus Areas

Side-by-side comparisons

GUI Performance Improvements

IASP support

Monitors

CSI/JW/PEX updates

Top 10 reasons to update to latest builds

Important things to know

Nov–Mar 2011 – Current Focus Areas

Making users more productive (always our #1 goal!)

Comparing data in iDoctor more effectively:

Side-by-side comparison mode

Monitors

Several updates based on customer requests

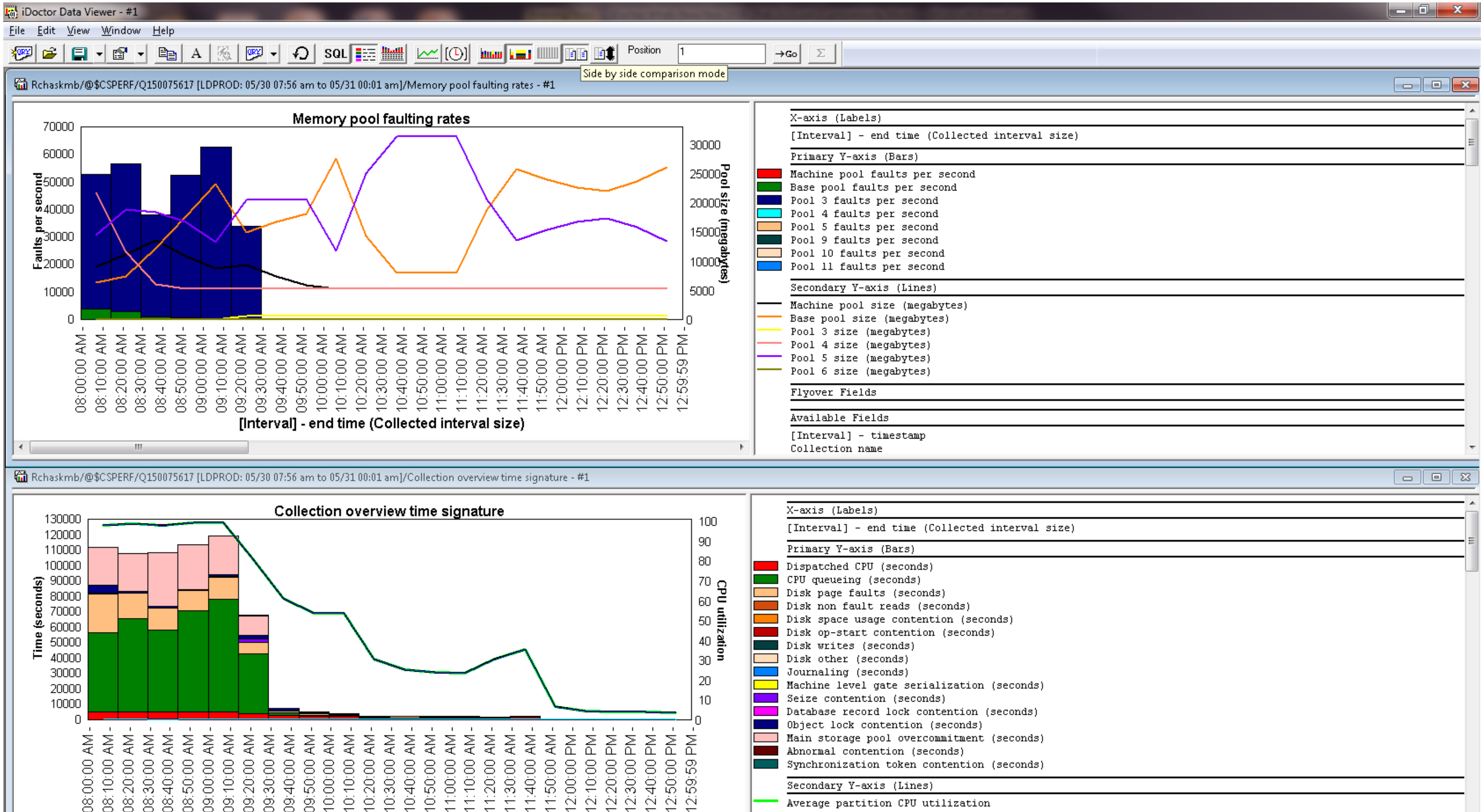
External storage

Server-side VIOS data collection enablement still in progress.
GUI development to start when server-side is done (May?).

Surface new metrics/features added to OS

Nov–Mar 2011 – Side-by-side comparisons

Side-by-side comparisons allow you to sync up the scrolling and Y axis scaling of any 2 graphs (or tables) in a Data Viewer.


iDoctor Data Viewer - #1
File Edit View Window Help
SQL
Position 1 →Go
Side by side comparison mode
Rchaskmb/@$CSPERF/Q150075617 [LDPROD: 05/30 07:56 am to 05/31 00:01 am]/Memory pool faulting rates - #1
Memory pool faulting rates
Faults per second
70000 60000 50000 40000 30000 20000 10000 0
Pool size (megabytes)
30000 25000 20000 15000 10000 5000 0
08:00:00 AM 08:10:00 AM 08:20:00 AM 08:30:00 AM 08:40:00 AM 08:50:00 AM 09:00:00 AM 09:10:00 AM 09:20:00 AM 09:30:00 AM 09:40:00 AM 09:50:00 AM 10:00:00 AM 10:10:00 AM 10:20:00 AM 10:30:00 AM 10:40:00 AM 10:50:00 AM 11:00:00 AM 11:10:00 AM 11:20:00 AM 11:30:00 AM 11:40:00 AM 11:50:00 AM 12:00:00 PM 12:10:00 PM 12:20:00 PM 12:30:00 PM 12:40:00 PM 12:50:00 PM 12:59:59 PM
[Interval] - end time (Collected interval size)
X-axis (Labels)
[Interval] - end time (Collected interval size)
Primary Y-axis (Bars)
Machine pool faults per second
Base pool faults per second
Pool 3 faults per second
Pool 4 faults per second
Pool 5 faults per second
Pool 9 faults per second
Pool 10 faults per second
Pool 11 faults per second
Secondary Y-axis (Lines)
Machine pool size (megabytes)
Base pool size (megabytes)
Pool 3 size (megabytes)
Pool 4 size (megabytes)
Pool 5 size (megabytes)
Pool 6 size (megabytes)
Flyover Fields
Available Fields
[Interval] - timestamp
Collection name
Rchaskmb/@$CSPERF/Q150075617 [LDPROD: 05/30 07:56 am to 05/31 00:01 am]/Collection overview time signature - #1
Collection overview time signature
Time (seconds)
130000 120000 110000 100000 90000 80000 70000 60000 50000 40000 30000 20000 10000 0
CPU utilization
100 90 80 70 60 50 40 30 20 10 0
08:00:00 AM 08:10:00 AM 08:20:00 AM 08:30:00 AM 08:40:00 AM 08:50:00 AM 09:00:00 AM 09:10:00 AM 09:20:00 AM 09:30:00 AM 09:40:00 AM 09:50:00 AM 10:00:00 AM 10:10:00 AM 10:20:00 AM 10:30:00 AM 10:40:00 AM 10:50:00 AM 11:00:00 AM 11:10:00 AM 11:20:00 AM 11:30:00 AM 11:40:00 AM 11:50:00 AM 12:00:00 PM 12:10:00 PM 12:20:00 PM 12:30:00 PM 12:40:00 PM 12:50:00 PM 12:59:59 PM
X-axis (Labels)
[Interval] - end time (Collected interval size)
Primary Y-axis (Bars)
Dispatched CPU (seconds)
CPU queueing (seconds)
Disk page faults (seconds)
Disk non fault reads (seconds)
Disk space usage contention (seconds)
Disk op-start contention (seconds)
Disk writes (seconds)
Disk other (seconds)
Journaling (seconds)
Machine level gate serialization (seconds)
Seize contention (seconds)
Database record lock contention (seconds)
Object lock contention (seconds)
Main storage pool overcommitment (seconds)
Abnormal contention (seconds)
Synchronization token contention (seconds)
Secondary Y-axis (Lines)
Average partition CPU utilization

Nov–Mar 2011 – Side-by-side comparisons

Example usage:

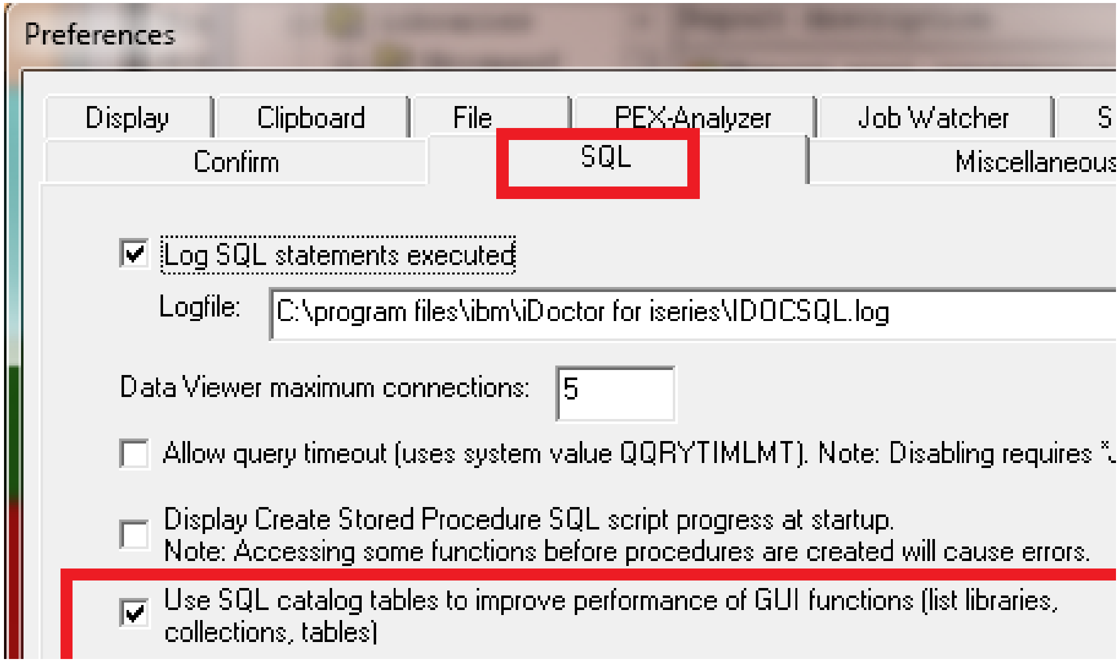
http://www.youtube.com/watch?v=0qkg_cmgIAo&feature=channel_video_title

Future plans:

1. Make SSD Estimator invoke a side-by-side comparison
2. Possibly replace “graph compare mode” with side-by-side comparisons. The advantage of being able to compare any graph or table makes it a better choice in most cases.

Nov–Mar 2011 – GUI Performance Improvements

New preference on SQL tab controls whether SQL methods are used to replace older ones. This has performance advantages in most cases but doesn't always work on some systems (due to various issues).



Preferences
Display
Clipboard
File
PEX-Analyzer
Job Watcher
S
Confirm
SQL
Miscellaneous

☑ Log SQL statements executed

Logfile: C:\program files\ibm\iDoctor for iseries\IDOCSQL.log

Data Viewer maximum connections: 5

☐ Allow query timeout (uses system value QQRYTIMLMT). Note: Disabling requires *J

☐ Display Create Stored Procedure SQL script progress at startup.
Note: Accessing some functions before procedures are created will cause errors.

☑ Use SQL catalog tables to improve performance of GUI functions (list libraries, collections, tables)

Nov–Mar 2011 – GUI Performance Improvements

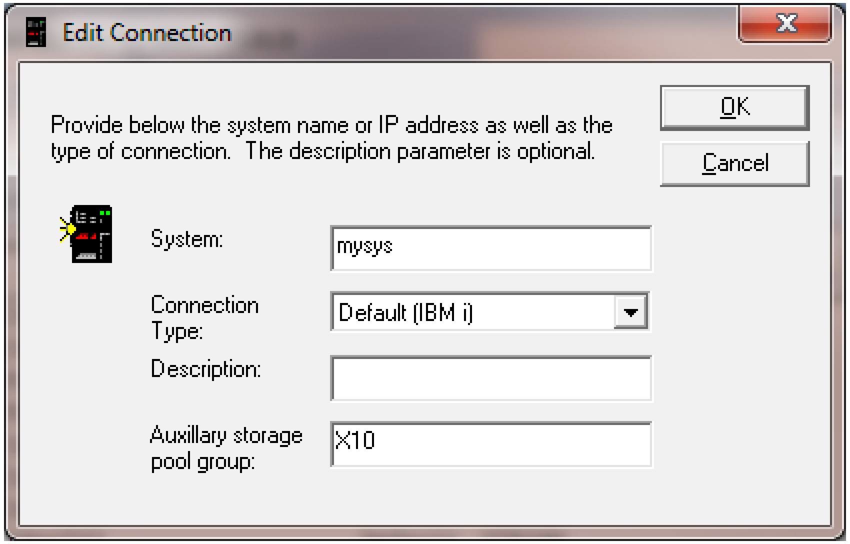
The following features are faster if the previously mentioned option is enabled:

1. Listing libraries that contain performance data.
2. Listing collections in libraries for 5.4+ JW, CSI
3. Listing collections in libraries for 5.4+ PEX is only faster if the ‘Hide-classic analysis options’ preference is enabled.
4. Listing the contents of the server-side output files folder (in all components)

Nov–Mar 2011 – IASP Support

Added support to view collections stored in libraries created in Independent ASPs:
http://www.youtube.com/watch?v=43OauwCub3k&feature=channel_video_title

1. Controlled using the ASP group parameter on the Add/Edit Connection Window.



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

System: mysys

Connection Type: Default (IBM i)

Description:

Auxillary storage pool group: X10

2. ASP group value used must be the IASP database name shown in System i Navigator and the ASP group name shown in WRKDEVD *ASP

Nov–Mar 2011 – Monitors Enhancements

These enhancements apply to 5.4+ STRJWMON, STRPAMON, STRDWMON.

1. The Collection Overlap (OVRLAP) parameter is obsolete. Monitor will detect that new collection has started before ending prior.
2. The Collection Duration (STRGAP) parameter can now be specified in minutes with a decimal point (i.e. 59.5 minutes)
3. When restarting a monitor if the max historical collections has been reduced added checks to delete the extra ones.
4. Deleting collections (or other time consuming tasks) is done in submitted jobs to not increase each collection’s duration beyond the specified time limit.

Nov–Mar 2011 – JW Monitors Enhancements

These apply to 5.4+ STRJWMON.

1. Added Resubmit Collections (RESUBMIT) parameter to submit new collections if a collection fails to start or quits early.

2. Added Max Consecutive Resubmits (MAXTRIES) parameter to indicate the number of times collections will be resubmitted if the RESUBMIT parameter is set to *YES and the current collection has ended prematurely.

Nov–Mar 2011 – Collection Services Investigator (CSI)

Added Interval Detail pages (wait buckets, I/Os, etc) similar to the ones in Job Watcher to CSI.

Added J9 JVM graphs showing heap consumption and more.
http://www.youtube.com/watch?v=_4zPOshEwzE&feature=related

Added Virtual I/O graphs
http://www.youtube.com/watch?v=zrpG0b0af78&feature=channel_video_title

Added a new report to the disk configuration folder called "Capacity (in GBs) by ASP with paths“

In the disk graphs, added a new graph (for each disk graph type) called Total queue elements and average length.

Nov–Mar 2011 – Job Watcher (JW)

Job Watcher Installation video
http://www.youtube.com/watch?v=pURHegItOTQ&feature=channel_video_title

Job Waits and IBM i White Paper for 6.1/7.1
https://www-912.ibm.com/i_dir/idoctor.nsf/3B3C112F7FBE774C86256F4000757A8F/$FILE/Job_Waits_White_Paper_61_71.pdf

Discussion Video http://www.youtube.com/watch?v=7t5qoPlUUlw&feature=related

In the Interval Details interface, added a button to go to primary thread from a secondary thread.
http://www.youtube.com/watch?v=A_PZFK9Idl8&feature=related

Added a new Call Stack Summary analysis to identify the call stacks, waits and objects associated with the most frequently occurring call stacks found in the collection.
http://www.youtube.com/watch?v=NyycbX6eCL4&feature=more_related

Added new reports under the Detail reports -> Opens menu that shows the top programs causing opens (as detected by the Job Watcher call stacks captured).

Nov–Mar 2011 – SQL Tables

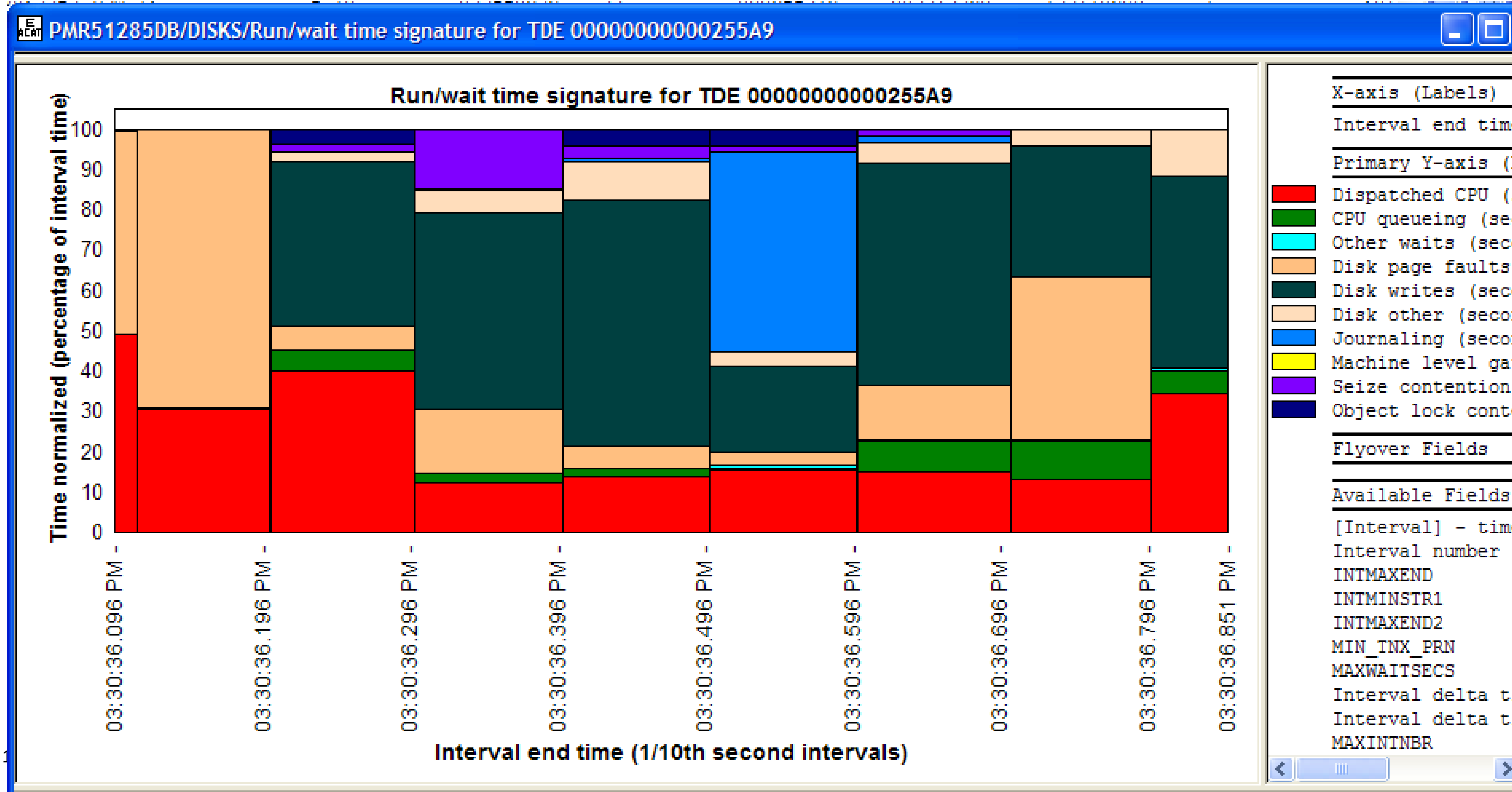
Added New Options to the SQL Tables Interface

1. Create Merged Table – Create a new SQL table from all selected.
2. Open Merged Table – Runs a query to ‘union all’ selected tables together.
3. Launch Compare Wizard – Build customized reports over the desired tables to summarize and compare data.
    - Added special comparison options based on this for PEX Stats

Nov–Mar 2011 – PEX Taskswitch

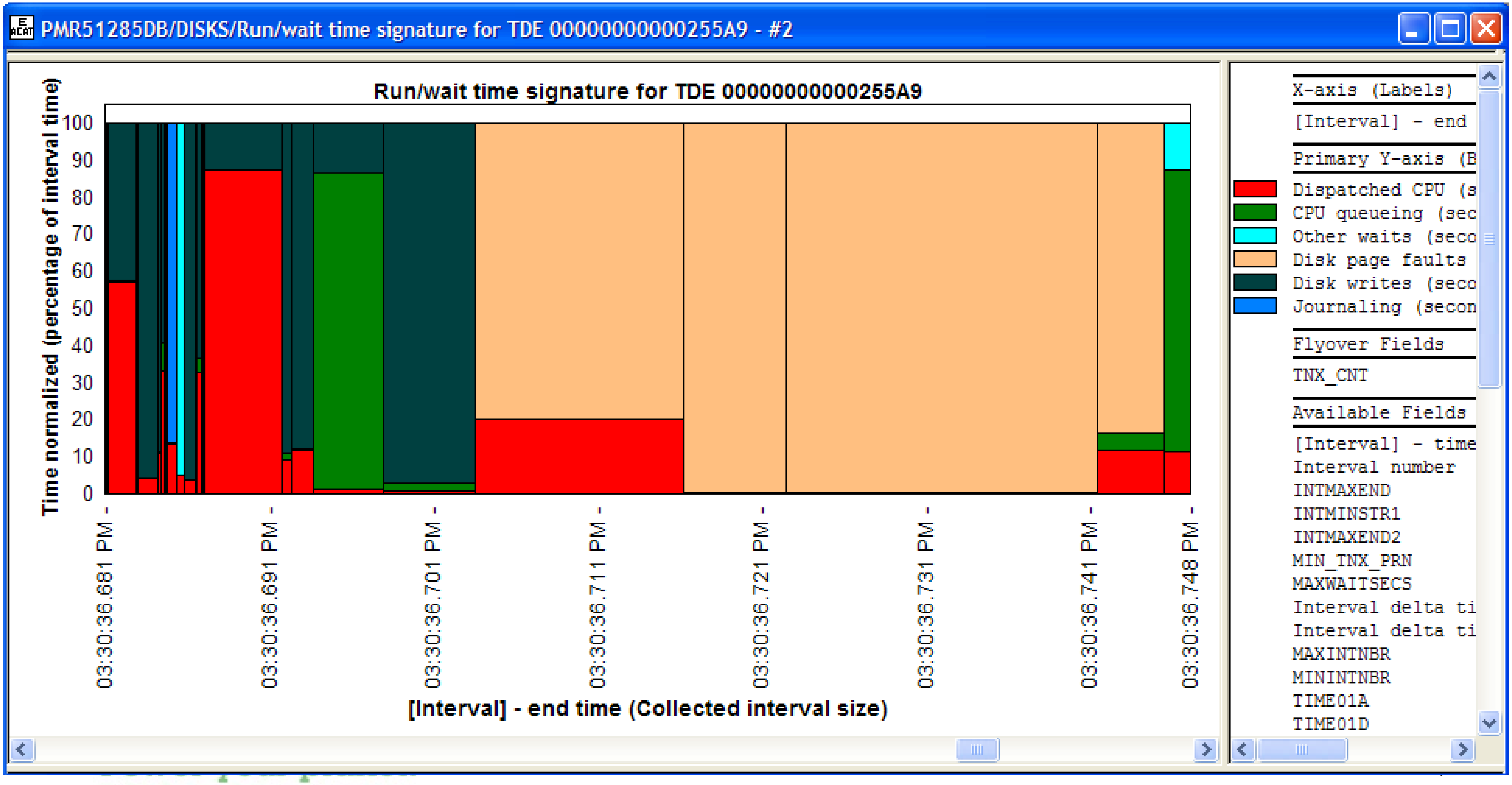
In PEX Taskswitch, added new graphs to show wait bucket times for a desired job/task (TDE). Also added several additional drill downs from this graph in the Taskswitch analysis.

New overview reports also added.


PMR51285DB/DISKS/Run/wait time signature for TDE 00000000000255A9
Run/wait time signature for TDE 00000000000255A9
Time normalized (percentage of interval time)
0
10
20
30
40
50
60
70
80
90
100
03:30:36.096 PM
03:30:36.196 PM
03:30:36.296 PM
03:30:36.396 PM
03:30:36.496 PM
03:30:36.596 PM
03:30:36.696 PM
03:30:36.796 PM
03:30:36.851 PM
Interval end time (1/10th second intervals)
X-axis (Labels)
Interval end tim
Primary Y-axis (
Dispatched CPU (
CPU queueing (se
Other waits (sec
Disk page faults
Disk writes (sec
Disk other (seco
Journaling (seco
Machine level ga
Seize contention
Object lock cont
Flyover Fields
Available Fields
[Interval] - tim
Interval number
INTMAXEND
INTMINSTR1
INTMAXEND2
MIN_TNX_PRN
MAXWAITSECS
Interval delta t
Interval delta t
MAXINTNBR

Nov–Mar 2011 – PEX Taskswitch

This graph shows each taskswitch “transaction” because the X-axis indicates the time range is “Collected interval size”. Some transactions can be very long and some are very small.



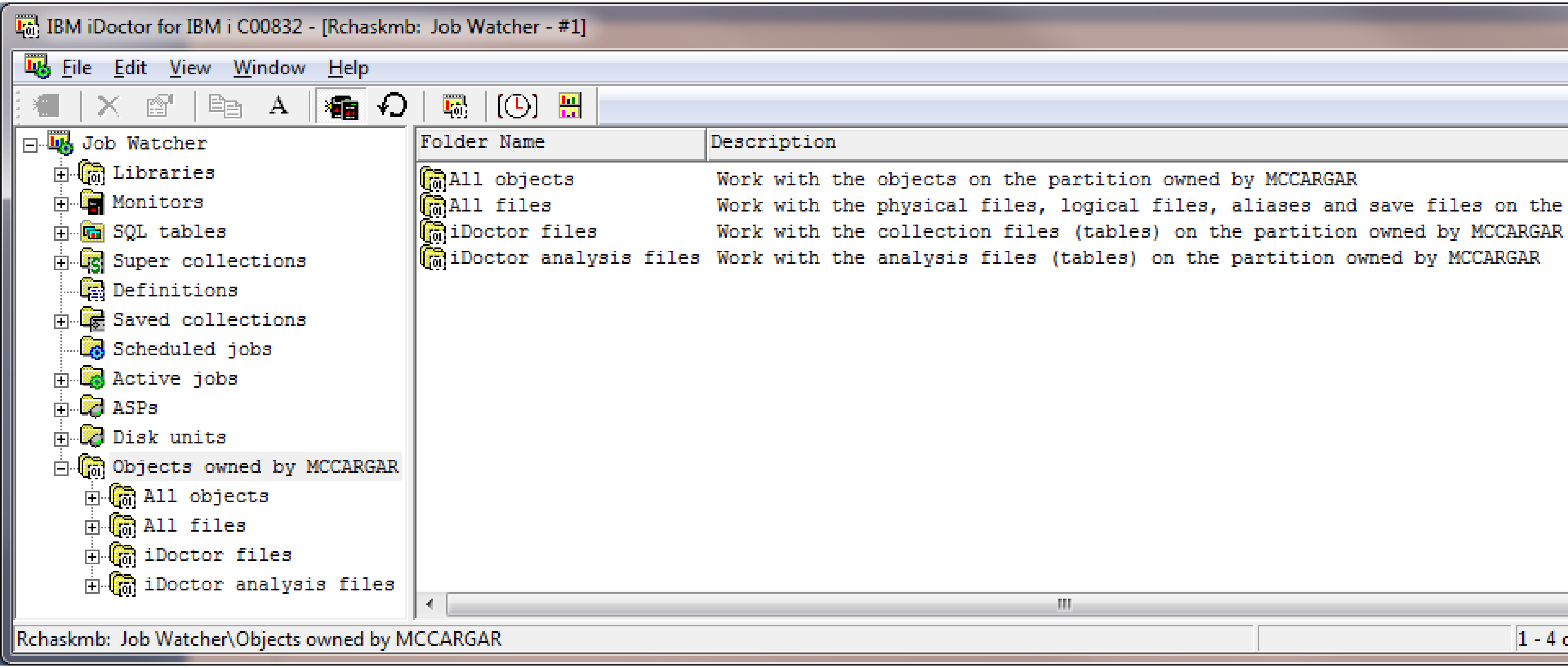
Nov–Mar 2011 – PEX Call Stacks

1. When displaying call stacks in PEX Analyzer, added call level 0 from qaypebase (if the call stack is a base event and it's available)

2. On the PEX Call Stack Window, added a text box with the current QRECN and a refresh button that allows you to display a different call stack for a different user-entered QRECN within the current collection

Nov–Mar 2011 – Objects owned by User

Utility function to manage/cleanup iDoctor data or other data stored on the system.


IBM iDoctor for IBM i C00832 - [Rchaskmb: Job Watcher - #1]
File
Edit
View
Window
Help
Job Watcher
Libraries
Monitors
SQL tables
Super collections
Definitions
Saved collections
Scheduled jobs
Active jobs
ASPs
Disk units
Objects owned by MCCARGAR
All objects
All files
iDoctor files
iDoctor analysis files

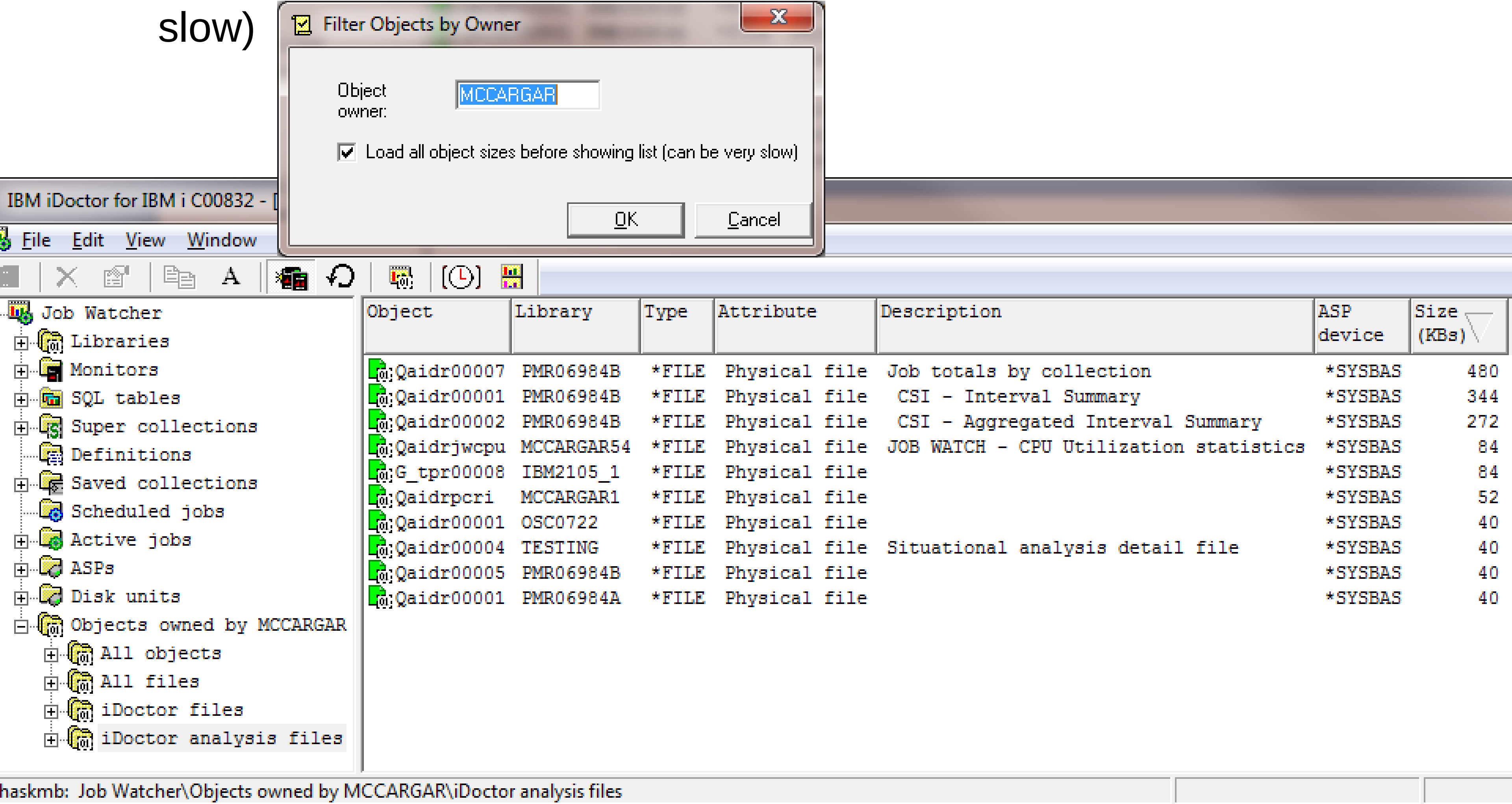
Folder Name	Description
All objects	Work with the objects on the partition owned by MCCARGAR
All files	Work with the physical files, logical files, aliases and save files on the
iDoctor files	Work with the collection files (tables) on the partition owned by MCCARGAR
iDoctor analysis files	Work with the analysis files (tables) on the partition owned by MCCARGAR

Rchaskmb: Job Watcher\Objects owned by MCCARGAR

1 - 4 o

Nov–Mar 2011 – Objects owned by User

- Object sizes initially not all loaded, right-click and choose Filter Objects by Owner to preload object sizes owned by the user (often slow)



Object owner: MCCARGAR

☑ Load all object sizes before showing list (can be very slow)

- Job Watcher
  - Libraries
  - Monitors
  - SQL tables
  - Super collections
  - Definitions
  - Saved collections
  - Scheduled jobs
  - Active jobs
  - ASPs
  - Disk units
  - Objects owned by MCCARGAR
    - All objects
    - All files
    - iDoctor files
    - iDoctor analysis files

Object	Library	Type	Attribute	Description	ASP device	Size (KBs)
Qaidr00007	PMR06984B	*FILE	Physical file	Job totals by collection	*SYSBAS	480
Qaidr00001	PMR06984B	*FILE	Physical file	CSI - Interval Summary	*SYSBAS	344
Qaidr00002	PMR06984B	*FILE	Physical file	CSI - Aggregated Interval Summary	*SYSBAS	272
Qaidrjwcpu	MCCARGAR54	*FILE	Physical file	JOB WATCH - CPU Utilization statistics	*SYSBAS	84
G_tpr00008	IBM2105_1	*FILE	Physical file		*SYSBAS	84
Qaidrpcri	MCCARGAR1	*FILE	Physical file		*SYSBAS	52
Qaidr00001	OSC0722	*FILE	Physical file		*SYSBAS	40
Qaidr00004	TESTING	*FILE	Physical file	Situational analysis detail file	*SYSBAS	40
Qaidr00005	PMR06984B	*FILE	Physical file		*SYSBAS	40
Qaidr00001	PMR06984A	*FILE	Physical file		*SYSBAS	40

haskmb: Job Watcher\Objects owned by MCCARGAR\iDoctor analysis files

Nov–Mar 2011 – Top 10 reasons to update to latest builds

1. In CSI SQL aliases were moved to QTEMP to resolve problems with them residing in collection library.

2. Graphing data with ‘variable-width’ mode now support microseconds accuracy instead of just seconds.

3. Fixed a hang if starting a JW collection on the system that did not have any definitions created yet. (Workaround was to do ADDJWDFN once first).

4. In JW 6.1 when listing collections in a library, if QAIDRJWRI file was present in the library but had no records it would cause the GUI to not show the collections in the library.

5. Fix for a lack of hits in PEX TPROF "Hits by component" report

Nov–Mar 2011 – Top 10 reasons to update to latest builds

6. In JW, in the unsummarized collection overview graphs, the CPU utilization was calculated as the maximum CPU within each time period, instead of the average.

7. STRPACOL (or the Start PEX collection Wizard) would fail to start a collection if the IFS additional event types (*IFSEVTS) had been included.

8. The rates in CSI disk path rankings graphs were double what they should have been if graphing multiple collections.

9. In the ASPs folder, expanding an asp with no disk units configured within would cause the GUI to hang.

10. QIDRPA/STRPACOL infinite loop and possible system crash if library QIDRGUI does not exist!!

Nov–Mar 2011 – Important things to know

1. The JW Collection Summary analysis no longer tries to hide wait times in the Collection overview graph for system tasks that report bad waits that normally really aren't (like SMLOGICALDASDADM.)

2. Data stored on libraries that contain a dot/period cannot be analyzed with iDoctor.

3. Added a Preference on the PEX Analyzer tab called "Hide classic analysis options at 5.4 and 6.1" which is checked by default. With this option checked, only the SQL-based analysis options will be shown, and the analyses will be shown directly under the collection rather than under the SQL-based analyses folder.