

IBM Power Systems

IBM i 7.1 Overview – Performance

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Tooling Overview

- Collecting Performance Data
 - Collection Services
 - IBM i Job Watcher
 - IBM i Disk Watcher
 - Performance Explorer
- Analyzing Performance Data
 - Display Performance Data (5250 interface)
 - Reports for Collection Services (performance data and trace data)
 - Performance Tools Graphics (5250 interface)
 - IBM System Director Navigator for IBM i
 - Investigate data
 - Job Watcher
 - Disk Watcher
 - IBM iDoctor for IBM i
 - IBM Performance Management for Power Systems - support for IBM i

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Collection Profiles for Collection Services

- The Standard profile now gets additionally:
 - External storage, containing non-standardized data for disk units externally attached to an IBM i partition
 - System internal data, containing internal data for the system
 - Removable storage, containing data about removable storage devices connected to the system, more specifically tape device data.
- The Standard Plus gets, information about the Logical partition, containing performance data that is collected from eligible partitions if the IBM Director Server (5761-DR1) licensed program is installed on the partition that is running Collection Services. To collect data from other partitions, the IBM Director Agent (5761-DA1) licensed program must be installed on the other partitions and the server must be authorized to the other partitions.
- For the Custom profile, you can now also specify the intervals. This means that you can have different categories of data collected at different intervals

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Changes to Tables

- QAPMBUSINT:
 - Support for GX+ and GX++ bus data
 - Set by the *Allow performance information collection option* within the HMC partition configuration
- QAPMDISK:
 - Path total read operations
 - Path total write operations
 - World Wide Node name (external disks only)
- QAPMJOBMI
 - Locks per thread
 - Resource affinity level changes
- QAPMSYSTEM
 - Improved accounting for server tasks, SMT, and virtualization
 - Energy management settings

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New Tables

- QAPMSHRMP contains info about shared memory pool usage:
 - Reports both the partition's use of the pool as well as pool metrics that are the sum of activity caused by all partitions using the pool
 - Available with POWER6 system and firmware level xx340_075
- QAPMJOBSR: save or restore operations

Job name	Date	Time	Operations started	Operations completed	Operations terminated	Objects successful	Objects failed
QAPMSHRMP	2010/03/24	11:20:00	10	0	1	1453	0
QAPMSHRMP	2010/03/24	11:50:00	1	1	0	43	0
QAPMSHRMP	2010/03/24	11:55:00	1	1	0	24	0
QAPMSHRMP	2010/03/24	15:45:00	1	1	0	7	0

- QAPMTAPE: tape device data collected in the Removable storage (*RMVSTG) collection category
- QAPMXSTGD: LUN statistics and advanced Logsensestats for storage servers
- QAPMDISKRB: similar to QAPMDISK but:
 - 11 buckets vs 6 in QAPMDISK
 - Values expressed in microseconds

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External Storage Table

The chart displays 'Ranks IO counts totals' with 'Total I/Os (thousands)' on the left Y-axis (0 to 26000) and 'Ranks IO counts totals' on the X-axis (Ranks 01 to 14). The bars are stacked with blue (Primary I/Os), green (Total reads), and red (Secondary I/Os). A line graph shows 'Total I/Os (thousands)' and 'Ranks IO counts totals' over time.

Rank ID	Primary I/Os (thousands)	Total reads (thousands)	Secondary I/Os (thousands)
01	1000	1000	1000
02	1000	1000	1000
03	1000	1000	1000
04	1000	1000	1000
05	1000	1000	1000
06	1000	1000	1000
07	1000	1000	1000
08	1000	1000	1000
09	1000	1000	1000
10	1000	1000	1000
11	1000	1000	1000
12	1000	1000	1000
13	1000	1000	1000
14	1000	1000	1000

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IBM Systems Director Navigator for i Performance interface

- General health of a partition, configurable for user-defined health thresholds.
- 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 POWER6 and above systems, with a minimum firmware level xx340_061
- Export to an image (charts only), comma delimited, or tab delimited file
- Send data to Workload Estimator for sizing
- Develop new charts and tables
- Searching for a metric name
- New perspectives with new metrics including SAN, Virtual I/O, Energy Management, Virtual Memory, and Communication data
- Miscellaneous changes
 - Persistent options
 - New collection context at the top of each perspective
 - New menu bar which allows for quicker navigation and more-complete History data.

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Disk Response Times

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Java Perspective

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Integration with Active Jobs

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Improved Integration with System and Disk Status


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Analysis Tools – iDoctor for IBM i


Function	Performance Tool
Capacity planning	PM for Power Systems IBM Workload Estimator
High-level system/job monitoring	iDoctor – Collection Services Investigator IBM i Performance Tools (PT1) Management Central Monitors
Medium-level system/job monitoring	iDoctor – Job Watcher WRKSYSACT IBM i Job Watcher (PT1) / STRJW
Low-level system/job tracing, stats, profiling	iDoctor – PEX Analyzer IBM i Performance Explorer / PRTPREXPT
Disk stats/tracing	iDoctor – Disk Watcher iDoctor – Collection Services Investigator IBM i Disk Watcher (PT1) / STRDW
“Classic” JVM Heap Analysis	iDoctor – Heap Analyzer DMPJVM


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The iDoctor GUI


- Windows client offers flexibility and functionality not yet in web version
- All components offer a similar user experience
- The GUI provides access for iDoctor components installed on servers running IBM i V5R3 or higher
- Requirements:
 - System i access for Windows
 - License keys for Job Watcher (includes DW, CSI) and PEX Analyzer component usage.


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New Collection Services Investigator Features


- Graphs added for External Storage DS8K/DS6K statistics (cache, links, ranks)
- Disk graphs for read/write response time buckets.
- Launch Workload Estimator option for upgrade sizings
- Collection Search option (job name, user, etc)
- Situational Analysis (7 situations defined)
- Hypervisor data graphs (entire system/Virtual Real Memory)


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Situational Analysis


- Identifies any potential problem jobs found in the collection
- Built on the vast knowledge of IBM performance experts and past experiences
- Included with Collection Services Investigator and Job Watcher
- Different background colors/flyovers on the overview graphs indicate jobs of interest for occurring time periods


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New Job Watcher Features


- Collection search over multiple collections
- Create job summary function
- Configurable thresholds in Situational Analysis
- Concurrent write support and journal cache situations added to Situational Analysis
- STRIDRSUM command for batch summarizations
 - For all collections in a library
- J9 JVM (heap) graphs


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New PEX Analyzer Features


- All analyses rewritten to SQL stored procedures.
- Physical disk I/Os analysis offers detailed disk analysis with by object, by unit, ASP, path, etc.
- New call stacks, hot sectors and save/restore analyses added.
- Collection properties – System tab has new info from QAYPERUNI file.
- PEX monitors (24x7 collection but retaining only the most recent set of data)

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The iDoctor GUI

- Update History
- Automatic checking for new PTFs / client updates
- SQL Editor
- Monitors
 - Graph compare mode
 - Time range toggling
 - Alternate views
 - Dynamic graph legend
 - Super Collections
 - Situational Analysis
 - Link with Workload Estimator

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Demo