


**User Experience:
Aetna's Success with DB2
Query Monitor 3.1 for z/OS**
Session Number 1442A

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Introduction and Disclaimer



About Aetna

Aetna is one of the nation's leading diversified health care benefits companies, serving approximately 35.8 million people with information and resources to help them make better informed decisions about their health care. Aetna offers a broad range of traditional and consumer-directed health insurance products and related services, including medical, pharmacy, dental, behavioral health, group life and disability plans, and medical management capabilities and health care management services for Medicaid plans. Our customers include employer groups, individuals, college students, part-time and hourly workers, health plans, governmental units, government-sponsored plans, labor groups and expatriates. For more information, see www.aetna.com. To learn more about Aetna's innovative online tools, visit www.aetnatools.com.

Aetna Overview

- 3rd largest Health Insurer in US
- 2010 Revenue: \$34 Billion
- Employees worldwide : 34,000+
- Business locations : International (China, Dubai, London)
- Customers worldwide : 36 million Health and Dental



IT Overview



- IT employees: 5000+
- 60+ DBA's
- Total production CPU: Large
- Total production DASD: 1 PB +
- Number of production objects: 2700 DB, 28455 Tables, 20701 Indexes, 13528 Views, 112314 Packages, make heavy use of partitioning
- Prod transactions / day: approximately 66 million (DB3G)
- Prod DB2 Logging / day: >1 TB
- Getpages / day: approx. 128 billion DB3G
- DB2 Environments
 - 8-member Data Sharing Group - Transactional (DB3G)
 - 2-member Data Sharing Group – HMO
 - 6-member Data Sharing Group for Reporting
 - 2-member Data Sharing for E-Health Web access
 - 1 subsystem that is on hot-standby for E-Health
 - 41 miscellaneous DEV, QA, Stress, Performance DB2 environments



Query Monitor 3.1 Beta



- Why get involved with a Beta?
 - MR for host variable positional display, need column names if you have more than a few
 - Use of numbers and lettering combined in some of the screen navigation
- One stop view of DB2 via ISPF interface
 - DBA's excited about this feature
- CAE Browser Client - GUI Interface
 - Web client on Windows installation versus USS Based install
 - Set of new collection criteria
 - Looks very promising but DBA's divided on use
 - More research to be done





Query Monitor Usage at Aetna

- POC several years ago with overwhelming acceptance from DBA's!
- Typically started on an as needed basis
- Used for application problem resolution, instant information available
 - SQLCODES
 - SQL statement tuning
- Runs continuously during Application release weekends
- DBA Testimonial - We utilize limited collection windows and have experienced significant savings (peak hour MIPs) without having to pay the price of constant monitoring. If you feel you can afford the overhead, 24x7 usage is possible but, in our experience, not required.

Query Monitor Benefits

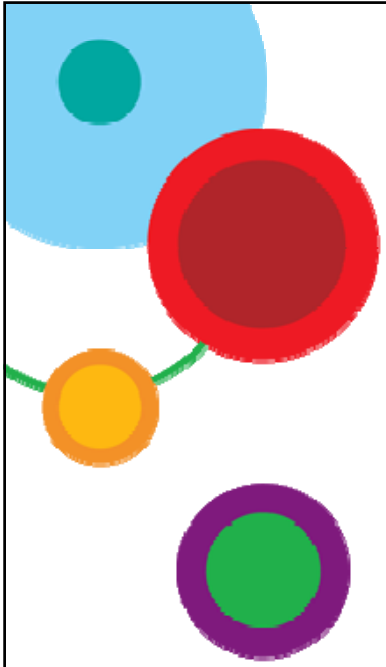
- Substantial monetary saving with SQL tuning
- Greatly improved mean time to problem resolution - PRICELESS
- See 2010 IOD presentation: Aetna's Success with QM Session 1774



Query Monitor Profile Example (Aetna)




- Set-up on each LPAR and Subsystem
 - Monitoring Profiles
 - **ONLINE:**
 - jobname: j8d1*
 - workload name to 'cics oltp'
 - Exception Elapsed 00 : 00 : 00 . 500000
 - Exception Getpages 500
 - Exception Limit 9999
 - Generate SQLCODE Exceptions Y
 - exclude sqlcode -104 -180 -181 -301 -305 -310 -501 -803 -811
 - override optkeys Y
 - OPTKEYS(CORRNAME) y (Y/N)
 - OPTKEYS(CALLS) Y (Y/N)
 - **BATCH:**
 - connid : batch
 - workload name: 'batch'
 - Exception Elapsed 00 : 01 : 00 . 000000
 - Exception Getpages 2000
 - Exception Limit 9999
 - Generate SQLCODE Exceptions Y (Y/N)
 - exclude sqlcode -104 -180 -181 -301 -305 -310 -501 -803 -811
 - OPTKEYS(TEXT) Y
 - OPTKEYS(CALLS) Y



What's new in QM 3.1 review

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DB2 Query Monitor 3.1

- DB2 Query Monitor 3.1
 - Release is Evolution not rewrite
 - Stability
 - Minimum Collection code changes
 - performance improvements in 2.3 maintenance stream are in 3.1 base code
 - Major enhancements to non-collector code



What's new in QM 3.1

- ISPF view of data sharing group
- Full CAE Web Browser Client
 - View offload data as if it were backstore data
 - Customizable views
 - Analysis tab
 - Pie charts
- Additional new CAE enhancements
 - Support for Windows 7
 - IPv6 Support
 - CAE Server deployment on read-only file system under USS
- MASTER_PROCNAME
- zIPP metrics
- ISPF guideline updates
- Batch reports



ISPF viewing of data sharing groups

- option to view the Query Monitor data from a single DB2 subsystem or a DB2 Data Sharing group (including data sharing members on other LPARS)
- Users will be able to view QM data from both current and prior intervals using this feature
- The Data Sharing group will display on the Discovery Panel
- Cross-System Support for 3.1 only enables ISPF views of Data Sharing and **not other non-data sharing DB2's on other LPARs at this time**

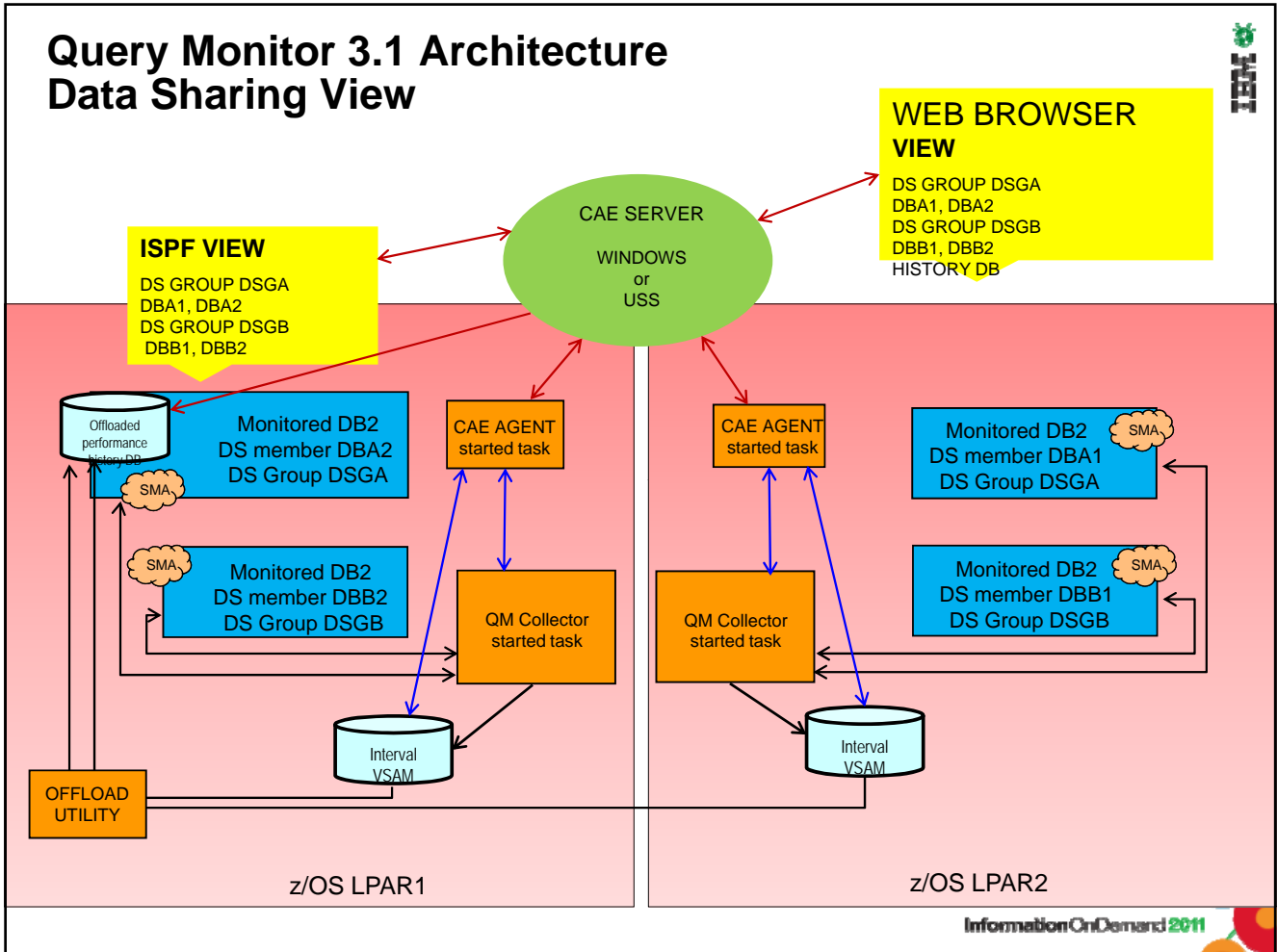


Data Sharing View Implementation



- Requires a CAE server to be running
- Requires CAE Agent to be running on each LPAR
- CQMPARMS New startup parameters
 - CAE_SERVER_ADDRESS(cae_server_address)
 - CAE_SERVER_PORT(cae_port_number)
 - instructs an instance of Query Monitor to connect to the CAE Server
 - Once the Query Monitor subsystem has connected to the CAE server, data will be available for DB2 Data Sharing Members that are being monitored by other Query Monitor instances that are also connected to the CAE Server.





Query Monitor 3.1- Components



- Consolidation and Analysis Engine (CAE)
 - CAE Server for SYSPLEX
 - Can run on Windows Server or USS
 - Consolidates data from DB2 Query Monitors on multiple systems
 - Manages alerts and associated functions
 - Contains embedded WEB Server
 - CAE Agent
 - required on every MVS image hosting Query Monitor subsystems
- Query Monitor subsystem
 - Data collector started task
 - Backstores (VSAM datasets for storage of performance metrics)
- ISPF Clist
 - Drives ISPF interface
- SUPPORT SERVICES ADDRESS SPACE (CQMMSTR)
 - Used to anchor control blocks, no CPU consumption associated with this, the address space is started when the Query Monitor Collector starts first time



ISPF View of Data Sharing Group



- Users will be able to view data from the perspective of a data sharing group
 - DB2 Data Sharing Group perspective valid for:
 - Summaries, Exception, DB2 commands, SQLCODES and Current Activity
 - New Columns added to the Current Activity and Exception to display the data sharing group name and SMFID
 - Note: Filtering by data sharing group is currently listed as an outplan item for this feature



ISPF View of Data Sharing Group Implementation



- Requires a CAE server to be running
- Requires CAE Agent to be running on each LPAR
- Must select CAE Server at first usage or after CLEARCAE command
 - Popup screen to select server from a list
 - CAE Server selection saved as user ISPF Variable
- Select DB2 QM Subsystem ID
 - Enter “?” for DB2 QM Subsystem ID to get QM Subsystem Discovery display which now shows ‘QM Subsystems’ and ‘Data Sharing Groups’
 - Make selection from either QM Subsystems list or Data Sharing Group list
 - Selection status display in upper RH of panels
 - “DB2 DS Group : QDS4” or “DB2 QM Subsystem: PM31”
 - To change selection, repeat for selection list or type in DSG or QM name
- QM Main Menu selection 6 (Work with Monitoring Agents) is disable if in Data Sharing Group perspective
- Interval QM_GROUP



ISPF Main Menu

```
2011/06/07 12:50:38 ---- IBM DB2 Query Monitor for z/OS -----
Option ==> _____
DB2 QM Subsystem ID: ?_ ( ? to Select)                               User: CSTHUB
                                                                    Release: CQM V3R1M0
-----
0.  Settings
1.  View Activity Summaries           2.  View SQLCODEs
3.  View Current Activity             4.  View DB2 Command Activity
5.  View Exceptions

6.  Work with Monitoring Agents       7.  Setup
8.  Work with Profiles                9.  Exit Query Monitor

Enter END command to return to ISPF.
```

MR a 04/025

Connected to remote server/host rs01.rocketsoftware.com using k/pool 501TCP19 and port 23

QM System Selection

```
2011/06/07 12:57:30 ----- QM Subsystem Discovery ----- Row 1 of 8
Option ==> _ Scroll ==> PAGE
C:\S-Select
-----
                        QM Subsystems
-----
CMD  QM      VER DB2  VER      DS GROUP MSTATUS  CURRENT INTERVAL  STRT
-----
_   QMR1    310 I9A2 V09R1M0 IDS2     ACTIVE   06/06/2011 - 23:58:58

                        Data Sharing
-----
DS GROUP VER DB2  VER      MSTATUS  CURRENT INTERVAL  STRT
-----
_   IDS2    310 I9A2 V09R1M0 ACTIVE   06/07/2011 - 3:59:58
_   IDS2    310 I9B2 V09R1M0 ACTIVE   06/07/2011 - 3:59:58
***** Bottom of Data *****
```

Plan Listing

```

2011/06/07 13:00:39 ----- Operational Summaries ----- Row 1 of 20
Option ==> - Scroll ==> PAGE
DB2 DS Group : IDS2 Interval Start Date: 06/06/2011 Time: 23:59:58
Filters Enabled : N Interval End Date: CURRENT Time: CURRENT
DB2: Plan: Pgm: Authid:
Section: Call: Type:
WSUser: WSName:
WSTran: CorrID:
C: 2-DB2(0p), R-Pgm, U-Auth, 5-DB2(St), J-DBase, F-Buff, G-PSet, 0-Objs, I-Corr,
T-Sect, C-Call, W-WSUs, M-WSNm, N-WSTR, S-SQL, D-Delay, L-Lock, Q-Misc, B-BStat,
E-Excp, A-CAct
-----+>
CMD Plan Calls Elapsed %Elap Avg Elapsed
-- --
--- ADB 3293 1.210916 27.85 0.000367
--- CQMPG02A 21 0.000827 0.01 0.000039
--- CQMPG01A 997 0.108339 2.49 0.000108
--- CQMPG02B 21 0.000676 0.01 0.000032
--- CQMPG02C 21 0.000735 0.01 0.000035
--- CQMPG02D 21 0.000653 0.01 0.000031
--- CQMPG02E 21 0.000709 0.01 0.000033
--- CQMPG02F 21 0.007929 0.18 0.000377
--- CQMPG02G 21 0.000599 0.01 0.000028

```

MR a 02/015

Connected to remote server/host.rs01.rocketsoftware.com using k/pool 501TCP23 and port 23

Members Where the Plans Have Run

```

2011/06/07 13:01:27 ----- Operational Summaries ----- Row 1 of 2
Option ==> - Scroll ==> PAGE
DB2 DS Group : IDS2 Interval Start Date: 06/06/2011 Time: 23:59:58
Filters Enabled : N Interval End Date: CURRENT Time: CURRENT
DB2: Plan: ADB Pgm: Authid:
Section: Call: Type:
WSUser: WSName:
WSTran: CorrID:
C: P-Plan, R-Pgm, U-Auth, 5-DB2 (St), J-DBase, F-Buff, G-PSet, 0-Objs, I-Corr,
T-Sect, C-Call, W-WSUs, M-WSNm, N-WSTr, S-SQL, D-Delay, L-Lock, Q-Misc, B-BStat,
E-Excp, A-CAct
----->
CMD DB2 Calls Elapsed %Elap Avg Elapsed CPU
----->
I9A2 2033 1.051752 86.85 0.000517 0.029871
I9B2 1260 0.159163 13.14 0.000126 0.014070
***** Bottom of Data *****

```

MR a 02/015

Connected to remote server /host, n01.rocketsoftware.com using k/pool 501TCP23 and port 23

Full-Featured Web Browser Client


- Provides access via a web browser to all functionality currently provided by the CAE Client (QM 2.3)
- Provides access to Archive (offloaded intervals) performance metrics
- Custom views allowing user to manage column preferences
- Charts and Analysis



Full-Featured Web Browser Client Implementation

- Requires a CAE server to be running
- Requires CAE Agent to be running on each LPAR
- IE 8 or Firefox 3.6.x or higher
- point web browser at the host running the CAE server



DB2 Query Monitor for z/OS v3.1 Welcome PDDAVI [About](#) [Help](#) [Logout](#) 

[HOME](#) [ACTIVITY BROWSER](#) [ALERTS](#) [CONFIGURATION](#) [TOOLS](#)

Welcome to the Query Monitor (QM) Web Client. The QM Web Client provides you with access to QM's Web-based functionality which includes the Activity Browser, Message Board, Profiles, and CAE Configurations.

Access Your Query Monitor Web Components

Select from the following QM Web components:

- [Activity Browser](#) - Browse data about SQL and DB2 command activity in your monitored DB2 Subsystems.
- [Alerts](#) - View and manage message boards and important alerts about activity in your DB2 Subsystems.
- [Configuration](#) - Edit and Manage Configuration Information
- [Tools](#) - View Tools
- [Help](#) - Access online help for the Query Monitor Consolidation and Analysis Engine (CAE).

Status

Status

You are currently running: **Query Monitor 3.1 (build 3054)** PM39680

Login Status: Logged in as: PDDAVI (role: Administrator). [Logout >](#)

Local Date/Time: Tue Oct 11 2011 11:13:23 GMT-0400 (Eastern Daylight Time)

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