

MQ Application API Tracking

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MQ Auditor Overview

- MQ Auditor (MQA) allows a company to audit / track all MQ API calls performed by MQ applications (local & remote) that are connected to a queue manager.
- The API Exit operates with IBM MQ v7.0, v7.1, v7.5 or v8.0 in Windows, Unix, IBM i and Linux environments.
- It is designed to provide the user with all of the information of an MQ API call in "human readable" format.
- It will convert Command Server / PCF messages into human readable messages.

Trackable MQ API Calls

- V6 & lower MQ API calls: MQCONN, MQCONNX, MQOPEN, MQGET, MQPUT, MQPUT1, MQINQ, MQSET, MQCLOSE, MQDISC, MQBACK, MQBEGIN and MQCMIT.
- MQ API calls added in MQ v6.0.2.7: XASTART, XAEND, XAOPEN, XACLOSE, XACOMMIT, XACOMplete XAFORGET, XAPREPARE, XARECOVER, XAROLLBACK, AX_REG and AX_UNREG.
- MQ API calls added in MQ v7: MQCALLBACK, MQCB, MQCTL, MQSTAT, MQSUB and MQSUBRQ.

Trackable MQ Structures

- V6 & lower: MQCNO, MQOD, MQGMO, MQPMO and MQMD.
- Embedded MQ structures: MQCIH, MQDH, MQDLH, MQIIH, MQRFH, MQRFH2, MQRMH, MQTM, MQWIH, MQXQH, MQHSAP & SMQBAD.
- Since MQ v7: MQCBC, MQCBD, MQSTS and MQSD.

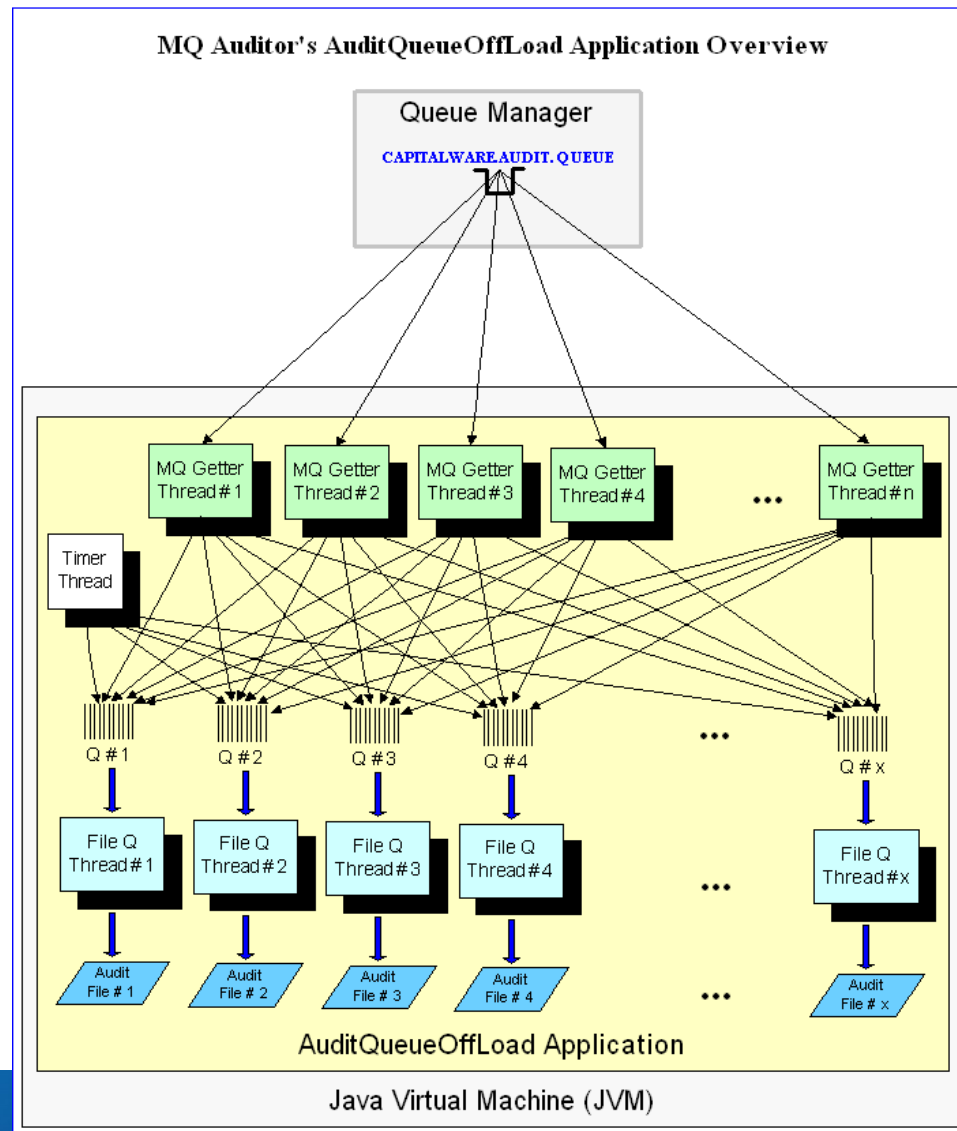
MQ Auditor Audit Files

- The output (audit) information is written to plain text CSV (Comma Separate Value) files.
- There are 2 Audit CSV file types:
 - ♦ *Queue Manager Audit* file contains information for MQCONN/X, MQDISC, MQOPEN, MQCLOSE, MQCMIT, MQBACK, etc...
 - ♦ *Queue Audit* file contains information for MQGET, MQCALLBACK, MQPUT, MQPUT1, MQINQ and MQSET.

MQ Auditor Audit Files

- The user can choose to have the output (audit) information written to a local or remote queue rather than to a file.
- Use *Audit Queue Off Load* (AQOL) on a different queue manager to collect and write audit records to audit files.
- You can deploy MQA to 20 queue managers who all send their audit records to a single (different) queue manager where AQOL collects and writes audit records to audit files.

Audit Queue Off Load



Queue Manager Audit File

2014/09/25 18:01:24.037716, **MQXF_CONNX**, A, PID=12612, TID=7, CC=0, RC=0, UserId=MUSR_MQADMIN, HConn=20971533, **QMGrName=MQWT2**, CNO_Options=MQCNO_HANDLE_SHARE_BLOCK+MQCNO_SHARED_BINDING+MQCNO_RECONNECT_AS_DEF, SecurityId=1D01010500000000000515000000FAE66C00D5EA80C2BF2341ACF2030000000000000000000000, **PgmName=Sphere MQ\bin64\amqrmppa.exe**, PgmType=MQXACT_EXTERNAL, Env=MQXE_MCA_SVRCONN

2014/09/25 18:01:24.047716, **MQXF_OPEN**, A, PID=12612, TID=7, CC=0, RC=0, UserId=tester, HConn=20971533, HObj=4, **ChannelName=SYSTEM.DEF.SVRCONN**, **ConName=127.0.0.1**, **LongRemoteUserId=tester**, **MCAUserLIDLong=tester**, SecurityId=1D01010500000000000515000000FAE66C00D5EA80C2BF2341ACEE030000000000000000000000, OpenOptions=MQOO_BIND_AS_Q_DEF+MQOO_INQUIRE+MQOO_FAIL_IF QUIESCING,

2014/09/25 18:01:24.047716, **MQXF_INQ**, A, PID=12612, TID=7, CC=0, RC=0, UserId=tester, HConn=20971533, HObj=4, SelectorCount=5, Selectors=MQIA_COMMAND_LEVEL+MQIA_PLATFORM+MQIA_CODED_CHAR_SET_ID+MQCA_Q_MGR_NAME+MQCA_Q_MGR_IDENTIFIER, MQWT2 MQWT2_2012-11-26_17.26.13

2014/09/25 18:01:24.147716, **MQXF_CLOSE**, A, PID=12612, TID=7, CC=0, RC=0, UserId=tester, HConn=20971533, HObj=-1, CloseOptions=MQCO_NONE,

2014/09/25 18:01:24.147716, **MQXF_CMIT**, A, PID=12612, TID=7, CC=0, RC=0, UserId=tester, HConn=20971533

2014/09/25 18:01:24.147716, **MQXF_DISC**, A, PID=12612, TID=7, CC=0, RC=0, UserId=tester, HConn=20971533

Queue Audit File

2014/09/25 18:01:24.047716, **MQXF_PUT**, A, PID=12612, TID=7, CC=0, RC=0, UserId=tester, HConn=20971533, HObj=4, PMO_Options=MQPMO_NO_SYNCPOINT+MQPMO_SYNC_RESPONSE+MQPMO_RESPONSE_AS_Q_DEF+MQPMO_RESPONSE_AS_TOPIC_DEF, PMO_ResolvedQMgrName=MQWT2, PMO_ResolvedQName=TEST.Q1, MD_PutDate=2014/09/25, MD_PutTime=22:01:24.04, MD_MsgId=414D51204D514131202020202020201DB6094120000501, MD_Format=MQSTR, MD_MsgType=MQMT_DATAGRAM, MD_Persistence=MQPER_NOT_PERSISTENT, MD_ReplyToQMgr=MQA1, MD_UserId=tester, BufferLength=23, **MsgData=This is test message #1**

2014/09/25 18:01:24.077716, **MQXF_PUT**, A, PID=12612, TID=7, CC=0, RC=0, UserId=tester, HConn=20971533, HObj=4, PMO_Options=MQPMO_NO_SYNCPOINT+MQPMO_SYNC_RESPONSE+MQPMO_RESPONSE_AS_Q_DEF+MQPMO_RESPONSE_AS_TOPIC_DEF, PMO_ResolvedQMgrName=MQWT2, PMO_ResolvedQName=TEST.Q1, MD_PutDate=2014/09/25, MD_PutTime=22:01:24.07, MD_MsgId=414D51204D514131202020202020201DB6094120000502, MD_Format=MQSTR, MD_MsgType=MQMT_DATAGRAM, MD_Persistence=MQPER_NOT_PERSISTENT, MD_ReplyToQMgr=MQA1, MD_UserId=tester, BufferLength=23, **MsgData=This is test message #2**

MQ Auditor Secondary Features

- The user can define 3 types of filters: Applications, UserIDs and Queues
- *One File Per Connection* will cause MQA to output all audit information to the Queue Manager Audit file (the Queue Audit file will not be used).
- *Shared Queue Audit File* will cause MQA to output all audit queue information to a single Queue Audit file.
- *Use Rolling Audit File* enables MQA to manage of the Audit (QMgr and Queue) file size.

MQ Auditor Secondary Features

- MQA will automatically archive Audit files to an archive directory. The number of days for saved archived Audit files is 7.
- Explicitly exclude queues from being monitored.
- Explicitly exclude UserIDs from being monitored.
- The user can select to not have audit information written for particular reason codes.

MQ Auditor IniFiles

- MQ Auditor use an initialization files (IniFile) to configure how the API exit is to run.
- One IniFile is used for each queue manager.
- MQ Auditor has a large number of keywords and values that can be used. Hence, it is best to use the MQA-GUI to update the values for keywords.

MQ Auditor Configuration via MQA-GUI

The screenshot displays the MQA-GUI configuration window, titled "MQA-GUI : C:\Capitalware\MQA\mqa.ini". The window features a menu bar with "File" and "Help", and a toolbar with icons for file operations. Below the toolbar are several tabs: "General", "Filters", "Show API", "Show Structures", "Show V7 Structures", "Show Embedded Messages", and "Overrides". The "General" tab is currently selected, showing the following configuration options:

- General**
 - License: [Empty text box]
 - LicenseFile: C:\Capitalware\MQA\mqa_licenses.ini
 - Description: [Empty text box]
 - Active: Yes (dropdown) | MonitorInternal: No (dropdown) | MonitorType: Conversion (dropdown)
 - MsgDataAsHex: Yes (dropdown) | MsgDataLength: 25
 - MQAPILevel: 7
 - IniFileRecheckTime: 60
 - ExitPath: C:\Capitalware\MQA\
- Audit Data to a Queue**
 - UseAuditQueue: No (dropdown) | AuditQueue: [Empty text box]
- Audit Data to Files**
 - AuditPath: C:\Capitalware\MQA\audit\
 - OneFilePerConnection: No (dropdown)
 - SharedQueueAuditFile: No (dropdown)
 - UseRollingAuditFile: Yes (dropdown) | AuditFileMaxSize: 100 in MB
 - StartUpCleanUp: No (dropdown)
- Audit Archive Files**
 - AuditArchivePath: C:\Capitalware\MQA\audit\archive\
 - ArchiveCleanUp: Yes (dropdown) | ArchiveDays: 7
- Logging**
 - LogMode: Normal (dropdown)
 - LogFile: C:\Capitalware\MQA\mqa.log
 - RotateLogDaily: Yes (dropdown) | BackupLogFileCount: 9
 - DebugUserID: [Empty text box]

An "Update" button is located at the bottom right of the configuration area.

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The screenshot shows the MQA-GUI application window with the title bar "MQA-GUI : C:\Capitalware\MQA\mqa.ini". The window has a menu bar with "File" and "Help", and a toolbar with icons for file operations and help. Below the toolbar is a tabbed interface with tabs for "General", "Filters", "Show API", "Show Structures", "Show V7 Structures", "Show Embedded Messages", and "Overrides". The "Filters" tab is currently selected.

Under the "Filters" tab, there are two sections: "Include Filters" and "Exclude Filters".

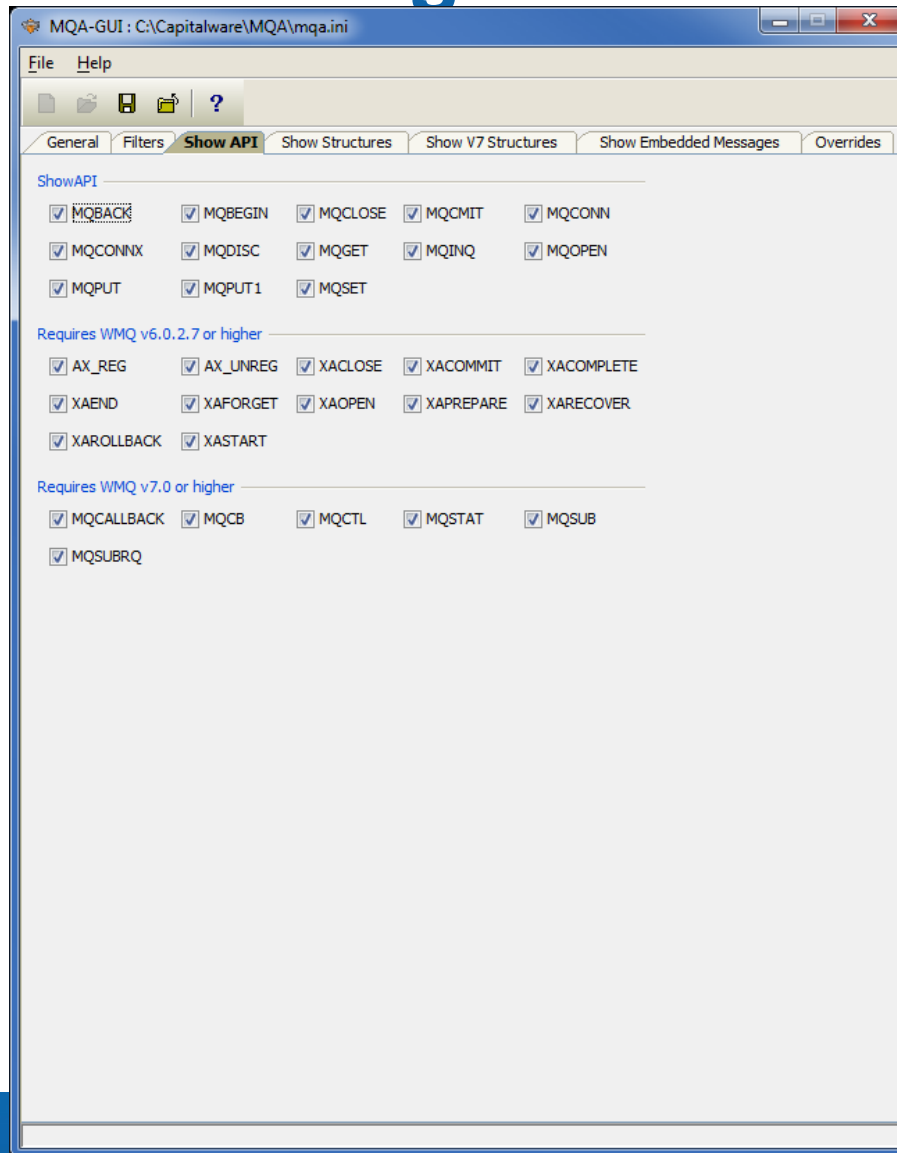
Include Filters:

- Applications:** A text box containing "*" with an "Update" button to its right.
- Queues:** A text box containing "*" with an "Update" button to its right.
- UserIDs:** A text box containing "*" with an "Update" button to its right.

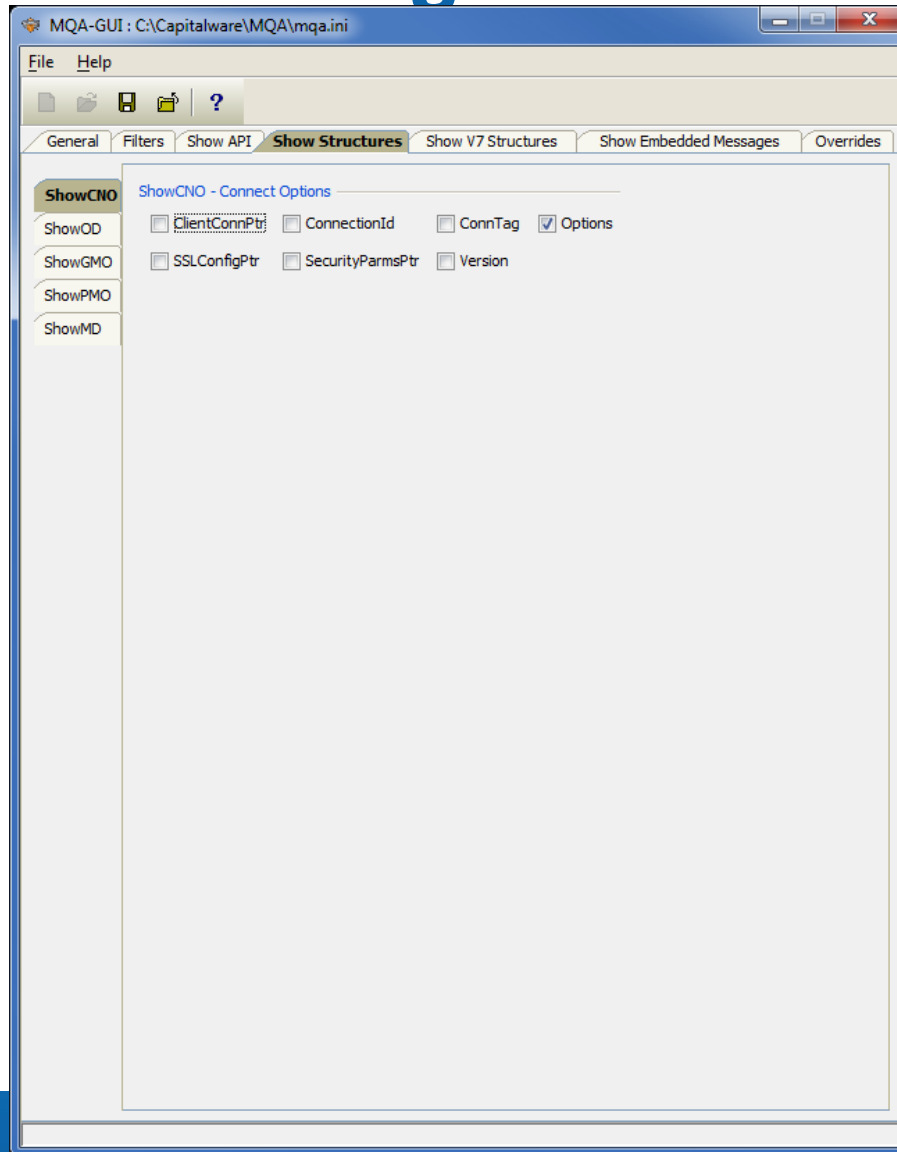
Exclude Filters:

- UseExcludeQueues:** A dropdown menu set to "No", with an "ExcludeQueues" text box and an "Update" button below it.
- UseExcludeUserIDs:** A dropdown menu set to "No", with an "ExcludeUserIDs" text box and an "Update" button below it.
- ExcludeRC:** A text box with an "Update" button to its right.

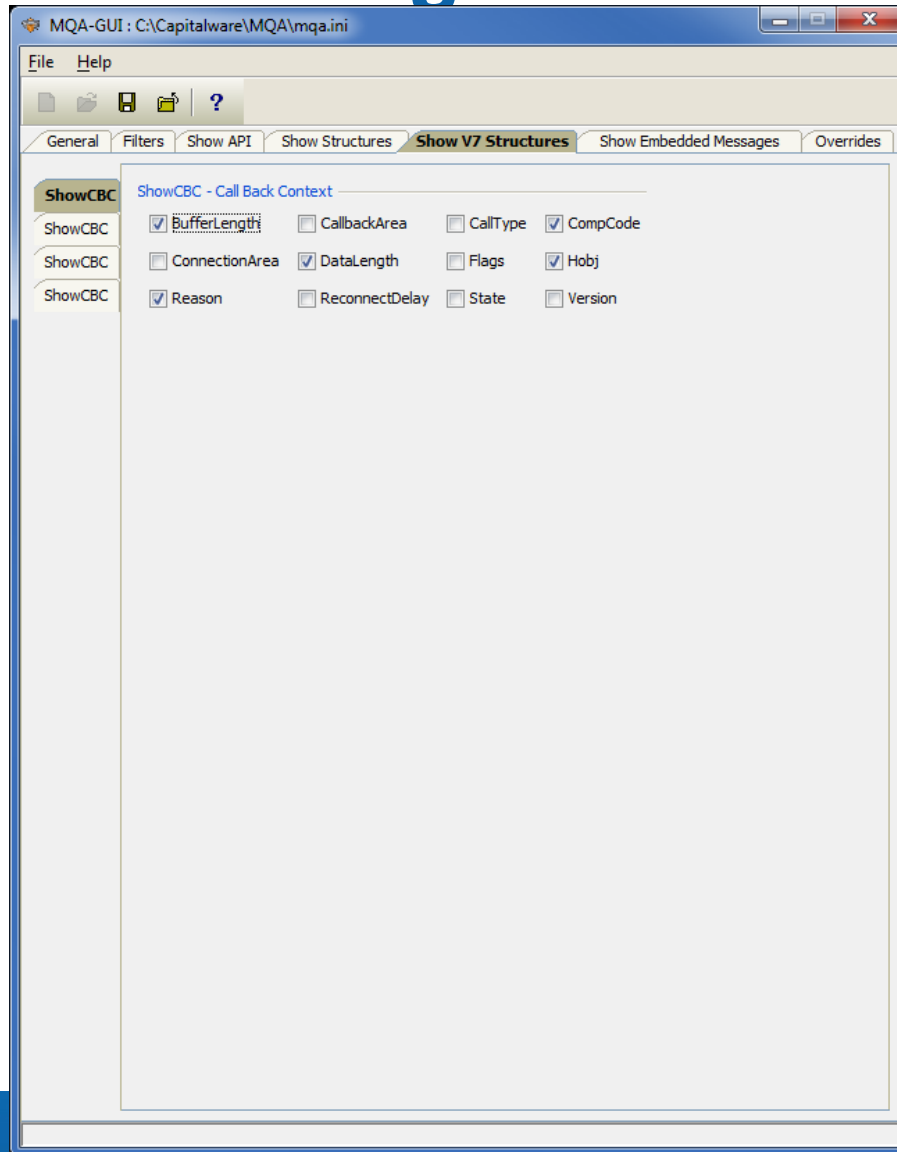
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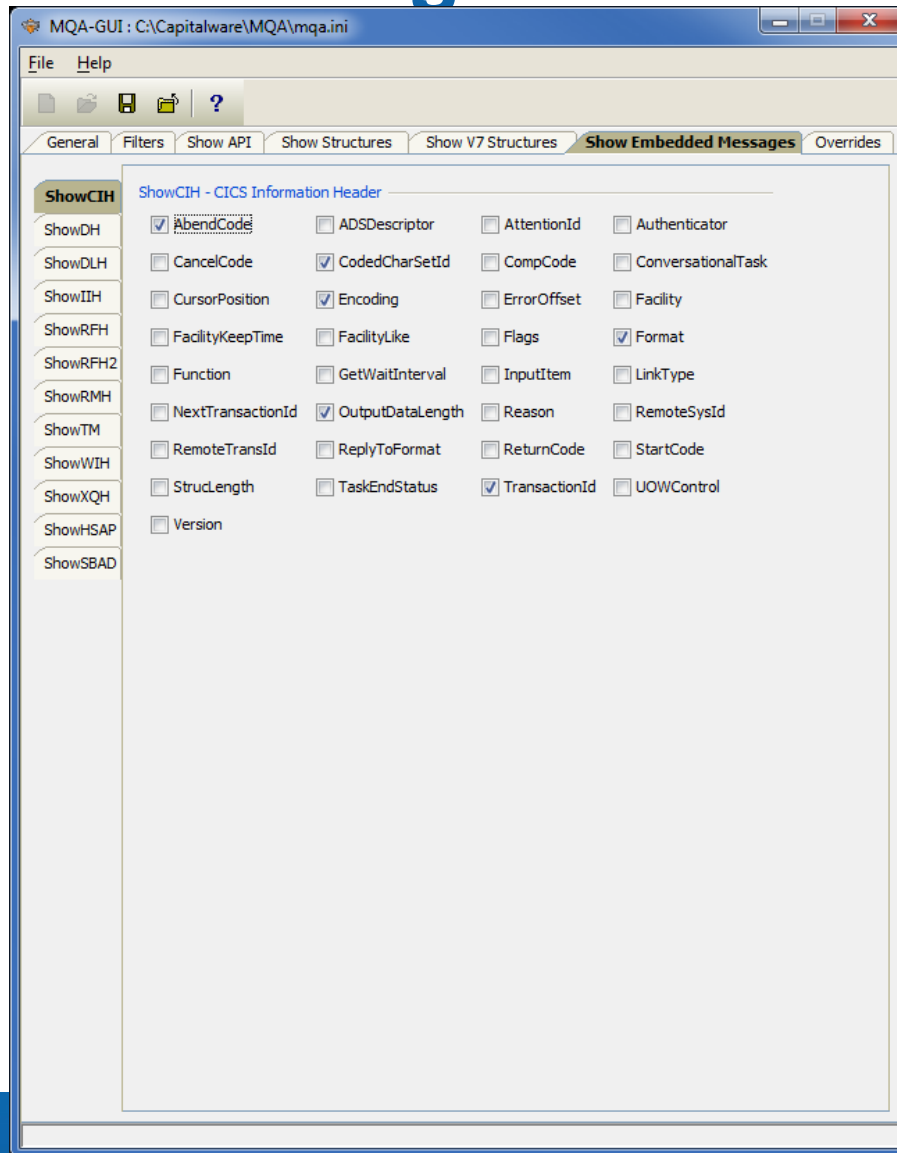
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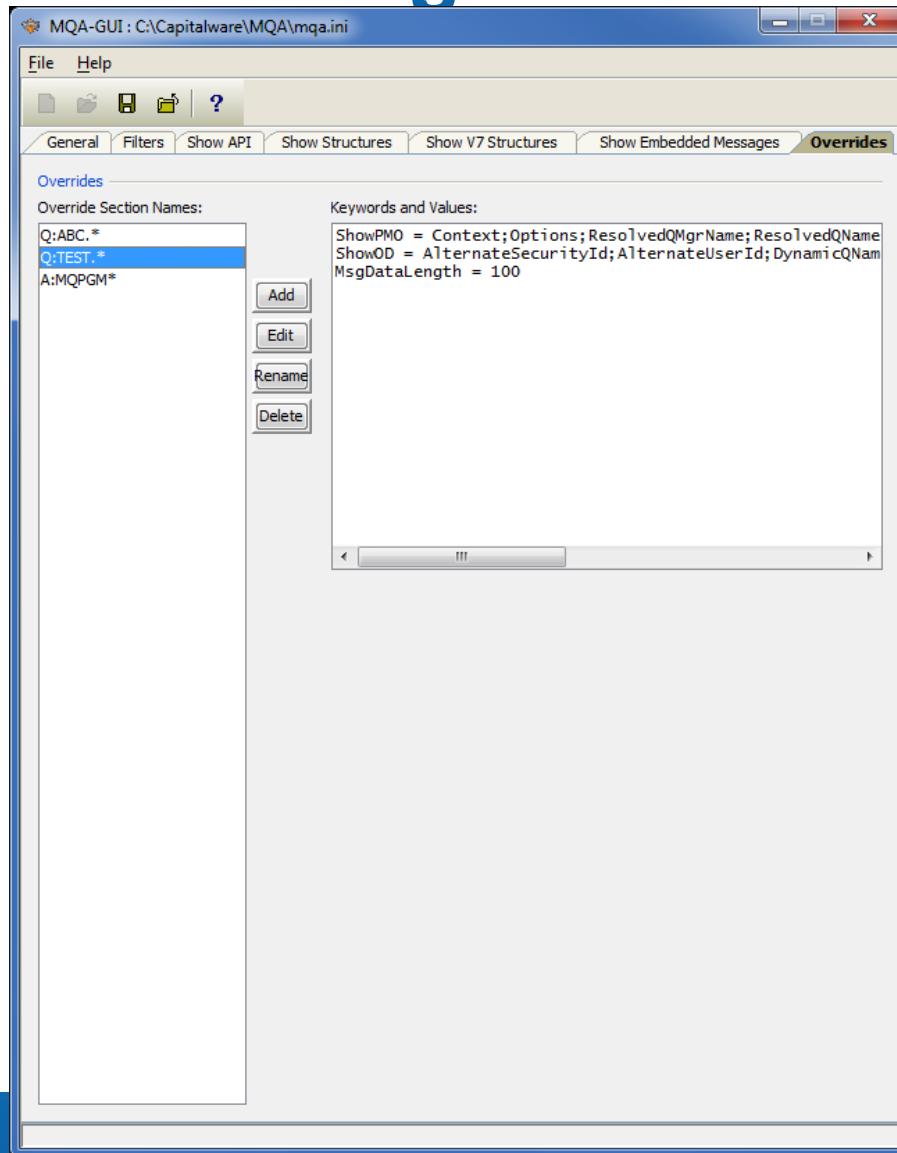
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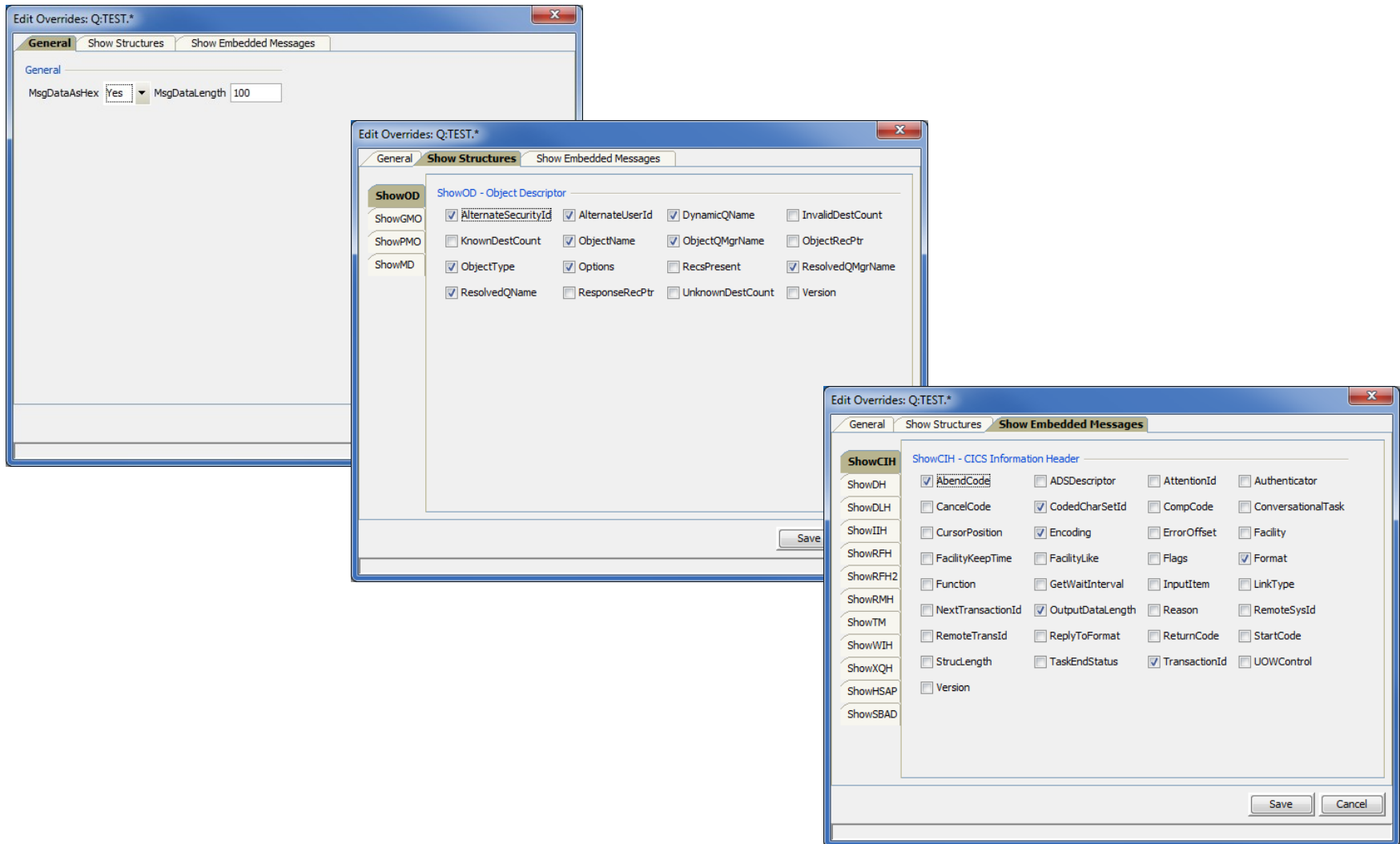
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MQ Auditor Configuration via MQA-GUI



Questions & Answers



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Capitalware's MQ Technical Conference v2.0.1.4

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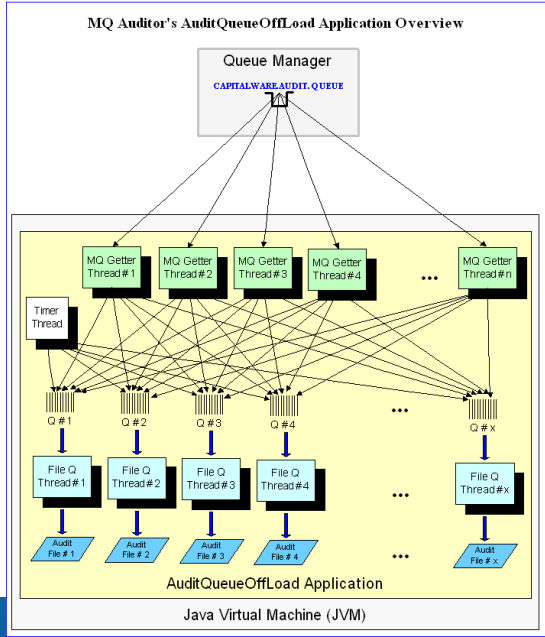
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MQ Auditor Configuration via MQA-GUI

MQA-GUI : C:\Capitalware\MQA\mqgui.ini

File Help

General Filters Show API Show Structures Show V7 Structures Show Embedded Messages Overrides

General

License

LicenseFile C:\Capitalware\MQA\mqgui_licenses.ini

Description

Active Yes MonitorInternal No MonitorType Conversion

MsgDataAsHex Yes MsgDataLength 25

MQAPILevel 7

InFileRecheckTime 60

ExiPath C:\Capitalware\MQA\

Audit Data to a Queue

UseAuditQueue No AuditQueue

Audit Data to Files

AuditPath C:\Capitalware\MQA\audit\

OneFilePerConnection No

SharedQueueAuditFile No

UseRollingAuditFile Yes AuditFileMaxSize 100 in MB

StartupCleanUp No

Audit Archive Files

AuditArchivePath C:\Capitalware\MQA\audit\archive\

ArchiveCleanUp Yes ArchiveDays 7

Logging

LogMode Normal

LogFile C:\Capitalware\MQA\mqgui.log

RotateLogDaily Yes BackupLogFileCount 9

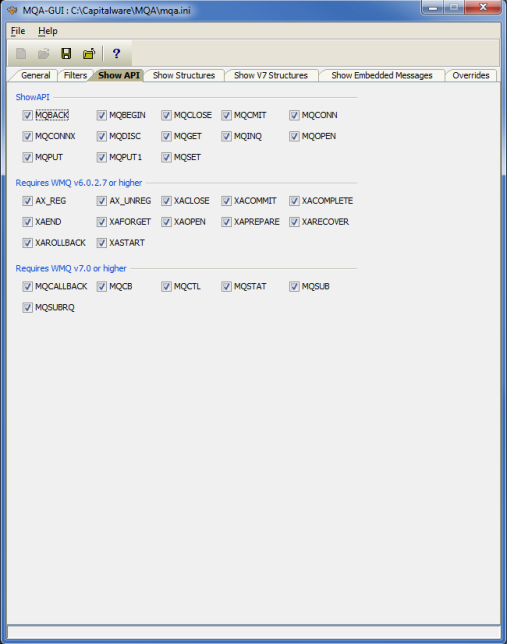
DebugUserID Update

MQ Auditor Configuration via MQA-GUI

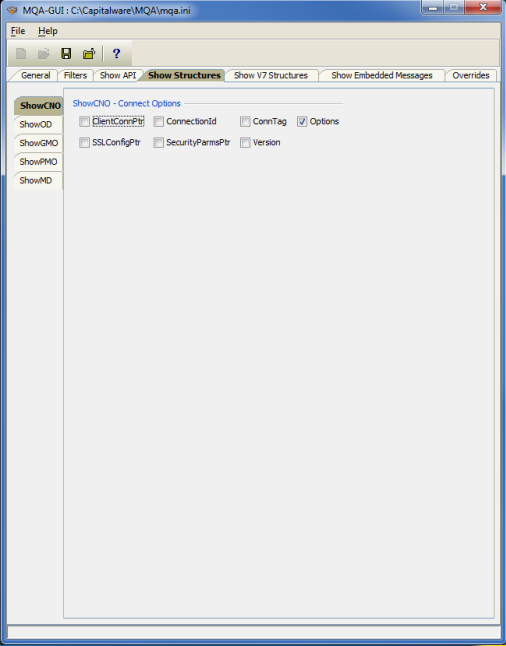
The screenshot shows the MQA-GUI application window with the title bar 'MQA-GUI : C:\Capitalware\MQA\mqgui.ini'. The 'Filters' tab is selected, displaying configuration options for including and excluding filters. The 'Include Filters' section has three text boxes for 'Applications', 'Queues', and 'UserIDs', each with an 'Update' button. The 'Exclude Filters' section has three sections: 'UseExcludeQueues' with a dropdown set to 'No' and an 'ExcludeQueues' text box; 'UseExcludeUserIDs' with a dropdown set to 'No' and an 'ExcludeUserIDs' text box; and 'ExcludeRC' with an empty text box. Each of these three sections has an 'Update' button.

Section	Field	Value	Action
Include Filters	Applications	*	Update
	Queues	*	Update
	UserIDs	*	Update
Exclude Filters	UseExcludeQueues	No	
	ExcludeQueues		Update
	UseExcludeUserIDs	No	
	ExcludeUserIDs		Update
	ExcludeRC		Update

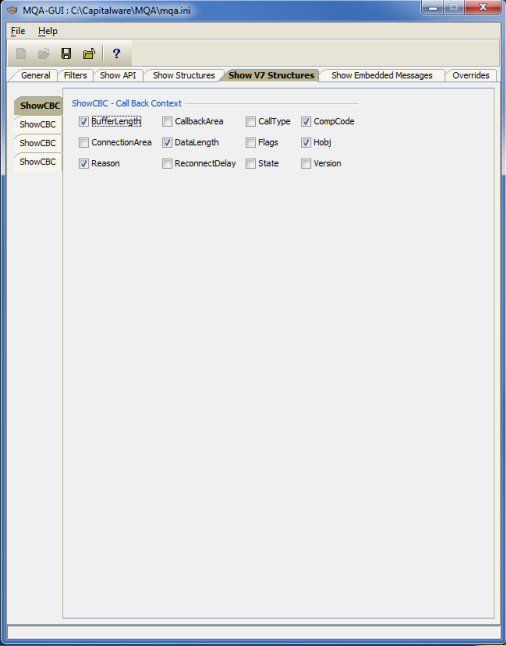
MQ Auditor Configuration via MQA-GUI



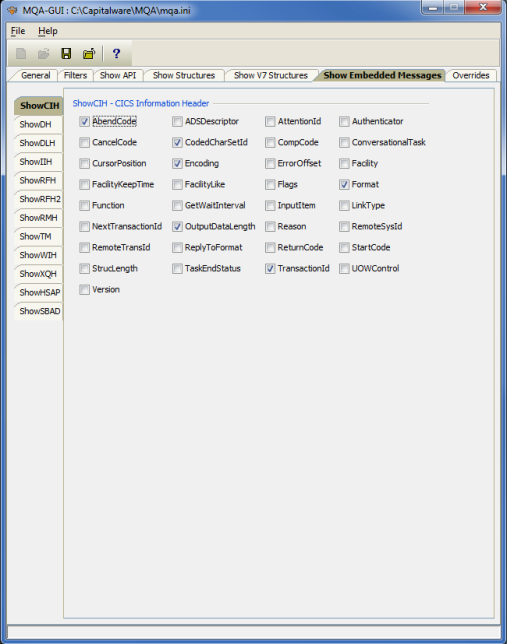
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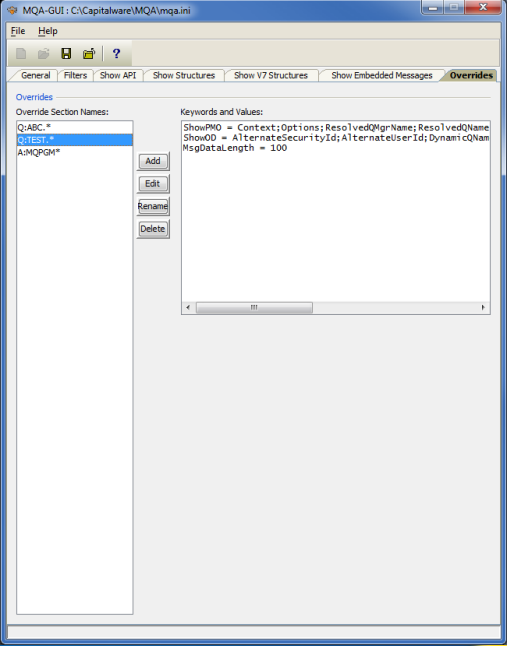
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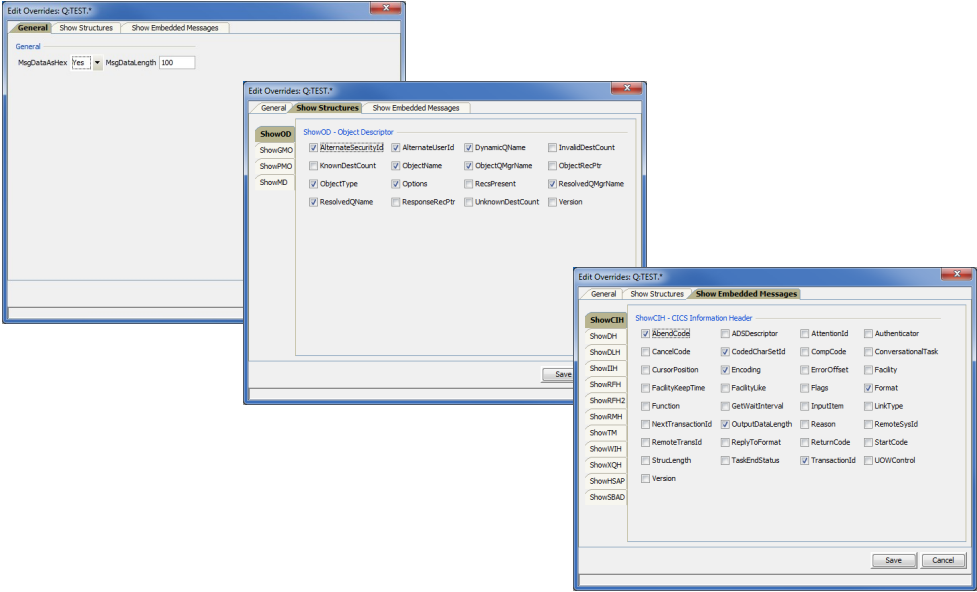
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Questions & Answers

