

MQ Auditor Overview

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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, v8.0, v9.0 & v9.1 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.

What's new in MQ Auditor v3.0.0

- Added Topics keyword to control what topics will be audited.
- Added UseExcludeTopics and ExcludeTopics keywords to explicitly exclude topics from being audited.
- Enhanced the processing for Subscriptions.
- Fixed an issue with *large* usr folder for an MQRFH2 (JMS) message
- Fixed an issue with formatting of some MQCHARV fields for MQSD structure
- Fixed an issue with MQPut1 using the correct audit file.
- Fixed an issue with PMO 'NewMsgHandle' string being in the wrong location.
- Fixed an issue with determining the application name.
- Fixed an issue with PCF messages (>10KB) being converted to human-readable.
- Fixed an issue with PCF messages not being handled for MQCALLBACK.

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 MQSUBBRQ.

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/Topic Audit* file contains information for MQGET, MQCALLBACK, MQPUT, MQPUT1, MQINQ and MQSET.

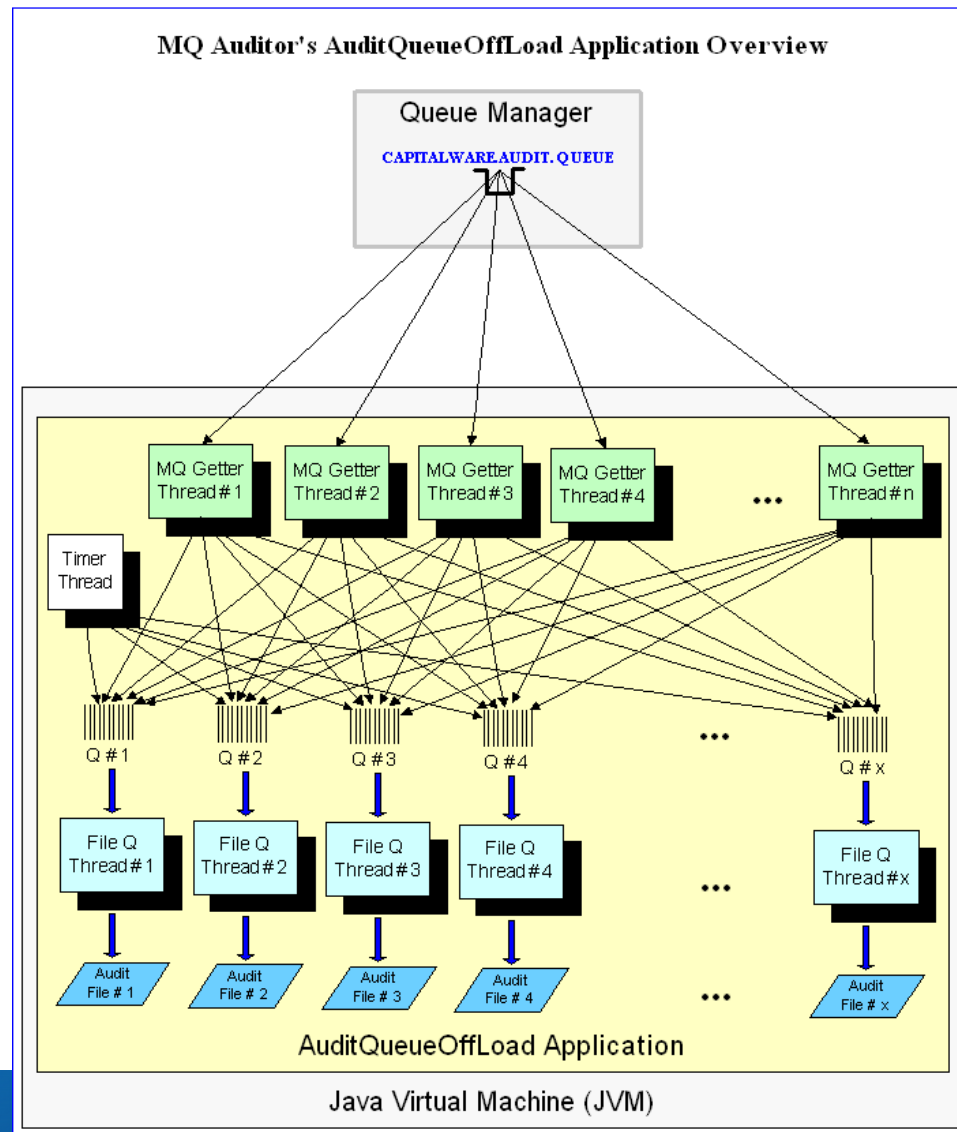
MQ Auditor Audit Record to a Queue

- The user can choose to have the output (audit) information written to a *local* or *remote* queue rather than to a file.
- If the audit data is written to a queue then this action can potentially cause an endless loop (MQA will audit itself, over and over again). Therefore, the "audit queue" is not audited / monitored nor is the transmit queue if remote queue is used.
- If the user is using a remote queue then it is strongly recommended that a separate channel and transmit queue be used so that the normal transmit queue can be audited / monitored.
- The user will need a program to read the messages from the 'audit queue' and write the information somewhere (i.e. DB).

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**, **MCAUserIDLONG=tester**, SecurityId=1D01010500000000000515000000FAE66C00D5EA80C2BF2341ACF2030000000000000000000000, OpenOptions=MQOO_BIND_AS_Q_DEF+MQOO_INQUIRE+MQOO_FAIL_IF QUIESCING, OD_ObjType=MQOT_Q, **OD_ObjName=TEST.Q1**, OD_DynamicQNames=AMQ.*, OD_ResolvedQMgrName=MQWT2, **OD_ResolvedQName=TEST.Q1**,

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 4 types of filters: Applications, UserIDs, Queues & Topics
- *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 topics from being monitored.
- Explicitly exclude UserIDs from being monitored.
- The user can select to not have audit information written for particular reason codes (i.e. 2033).

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 IniFile

```
[default]
Active=Y
LogMode=N
LogFile=C:\Capitalware\MQA\mqa.log
#
MonitorType=A
MsgDataAsHex=N
MsgDataLength=-1
AuditFileMaxSize=400
UseRollingAuditFile=Y
OneFilePerConnection=N
SharedQueueAuditFile=Y
StartupCleanup=N
ArchiveCleanup=Y
ArchiveDays=14
MonitorInterval=N
#
ShowAPI=MQGET;MQCALLBACK;MQPUT;MQPUT1
##ShowAPI=MQGET;MQCALLBACK;MQPUT;MQPUT1;MQOPEN;MQDISC;MQCLOSE;MQCONN;MQCONNX
#
ShowCNO = Options;SSLConfigPtr;SecurityParmsPtr
ShowGMO = MatchOptions;Options;ResolvedQName;WaitInterval
ShowPMO = Options;ResolvedQMGrName;ResolvedQName
ShowMD=PutDate;PutTime;MsgType;Format;Persistence;MsgId;CorrelId;ReplyToQ;ReplyToQMGr;UserId
#
UseExcludeQueues=Y
ExcludeQueues=AMQ* ;SYSTEM*; MQMON* ;
```

MQA IniFile Configuration via MQA-GUI

The image shows the MQA-GUI application window, titled "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 are tabs: "General", "Filters", "Show API", "Show Structures", "Show Embedded Messages", and "Overrides". The "General" tab is selected, showing the following configuration sections:

- 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
 - IniFileRecheckTime: 60
 - ExitPath: C:\Capitalware\MQA\
- UserID Handling**
 - UserIDFormatting: As Is (dropdown)
- 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]
 - [Update button]

MQA IniFile Configuration via MQA-GUI

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. Below the toolbar is a tabbed interface with tabs for "General", "Filters", "Show API", "Show Structures", "Show Embedded Messages", and "Overrides". The "Filters" tab is currently selected.

The "Filters" tab is divided into two sections: "Include Filters" and "Exclude Filters".

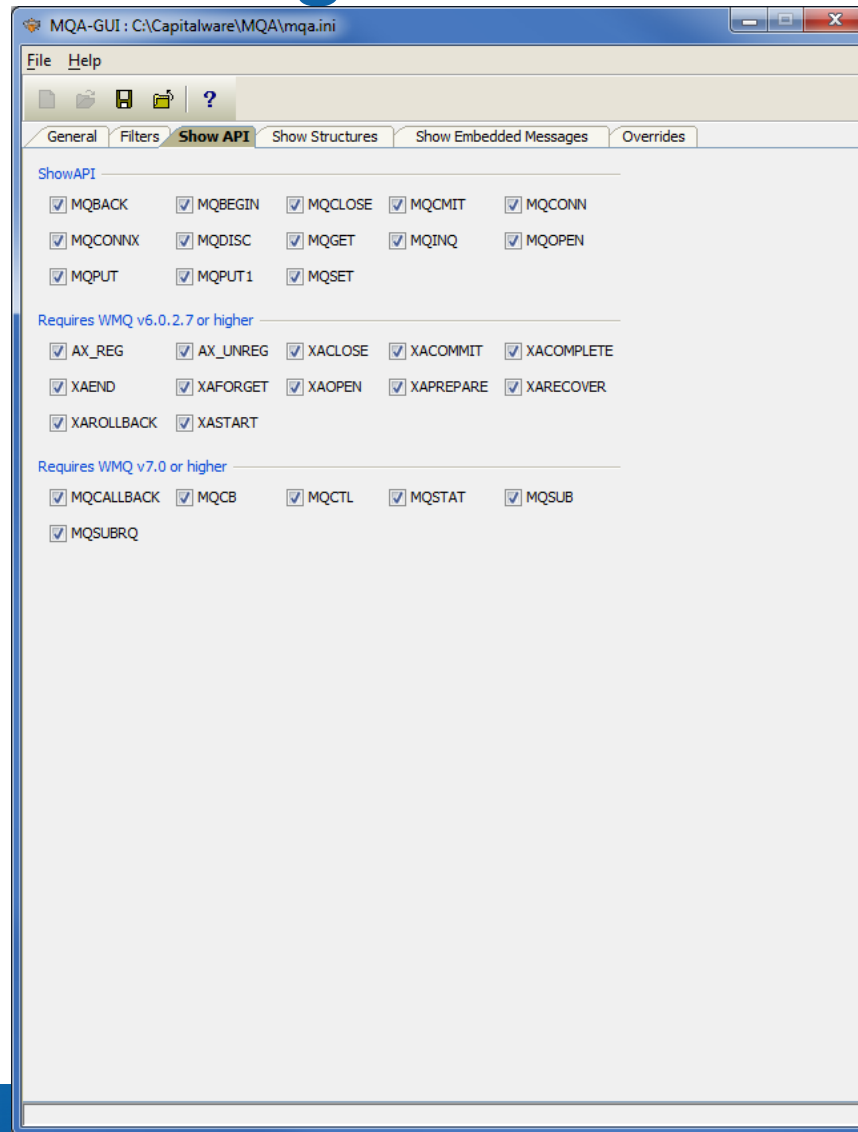
Include Filters

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

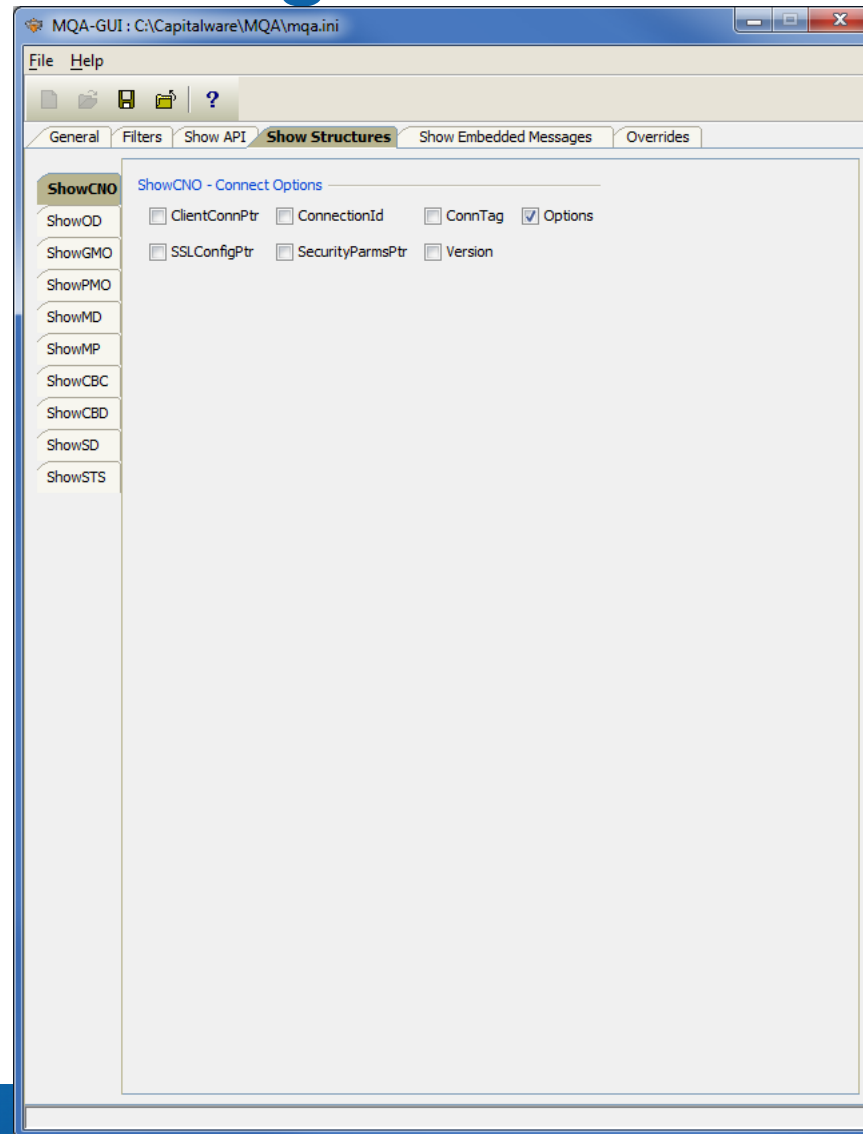
Exclude Filters

- UseExcludeQueues:** A dropdown menu set to "No" with an "Update" button to its right.
- ExcludeQueues:** A text field with an "Update" button to its right.
- UseExcludeTopics:** A dropdown menu set to "No" with an "Update" button to its right.
- ExcludeTopics:** A text field with an "Update" button to its right.
- UseExcludeUserIDs:** A dropdown menu set to "No" with an "Update" button to its right.
- ExcludeUserIDs:** A text field with an "Update" button to its right.
- UseExcludeApplications:** A dropdown menu set to "No" with an "Update" button to its right.
- ExcludeApplications:** A text field containing "mo71;mqve" with an "Update" button to its right.
- ExcludeRC:** A text field with an "Update" button to its right.

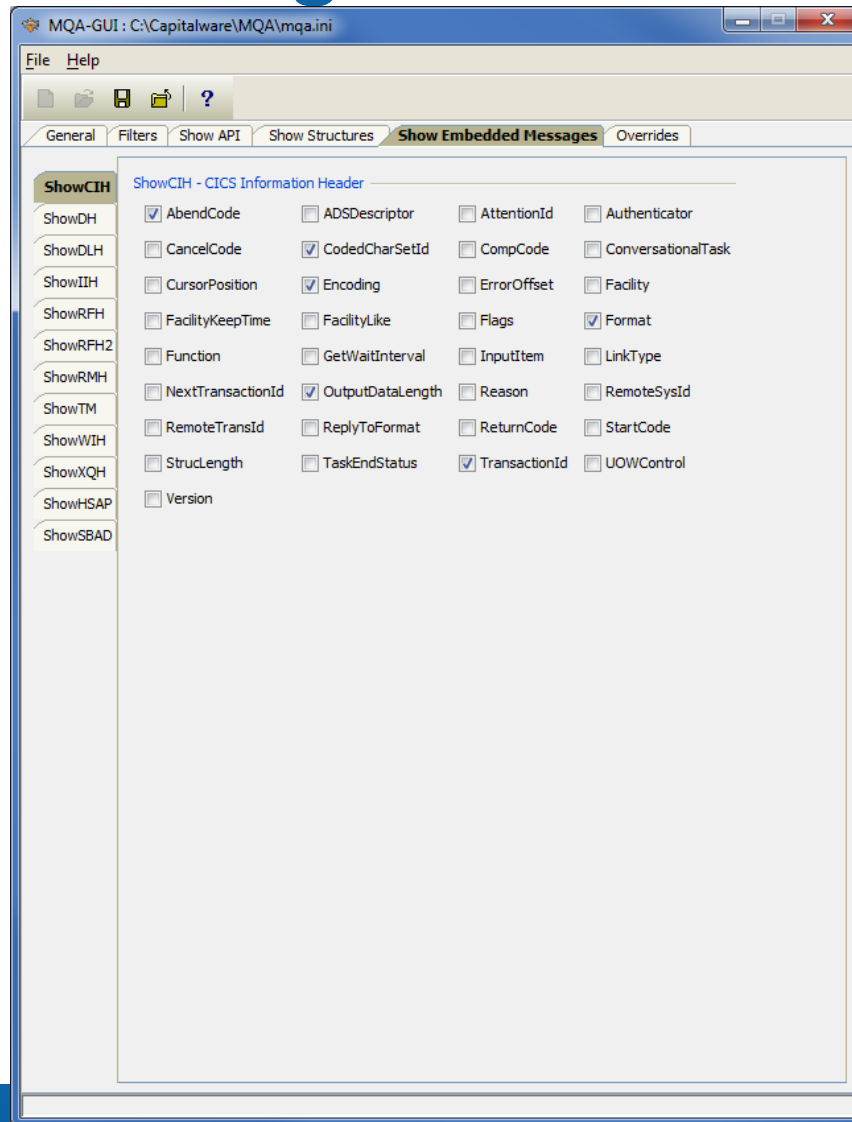
MQA IniFile Configuration via MQA-GUI



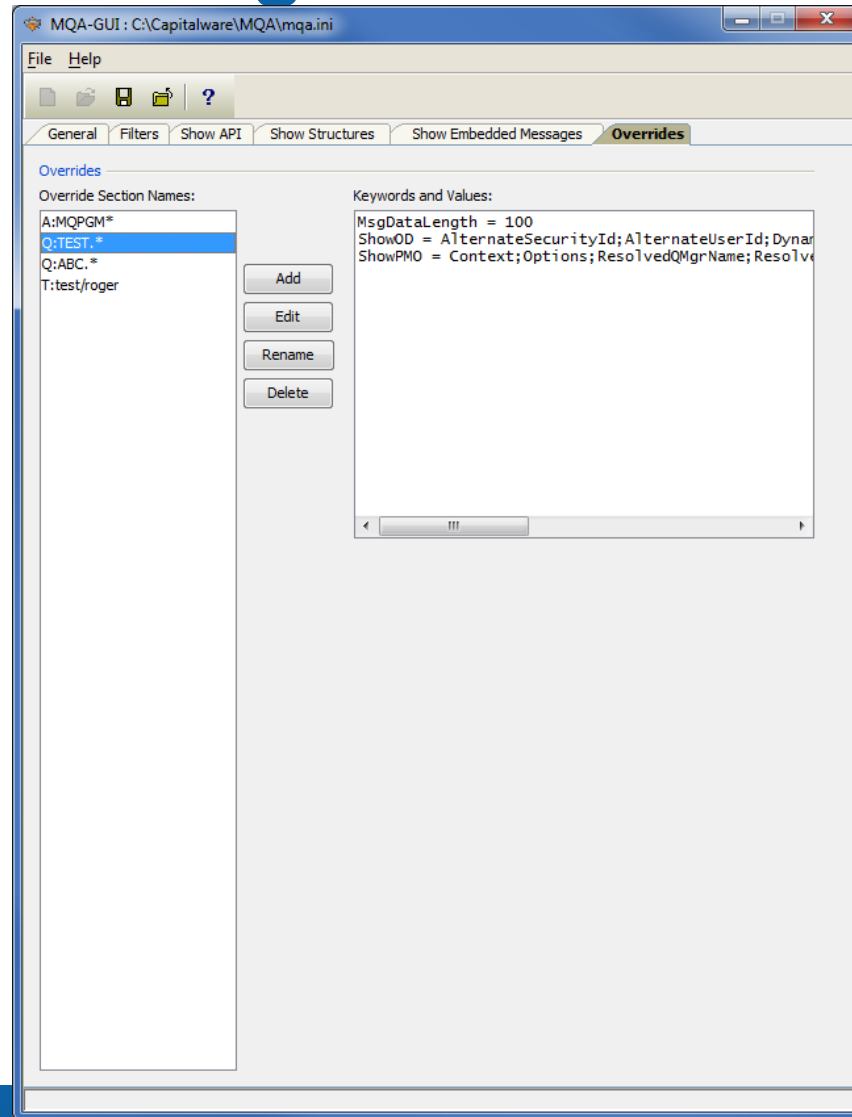
MQA IniFile Configuration via MQA-GUI



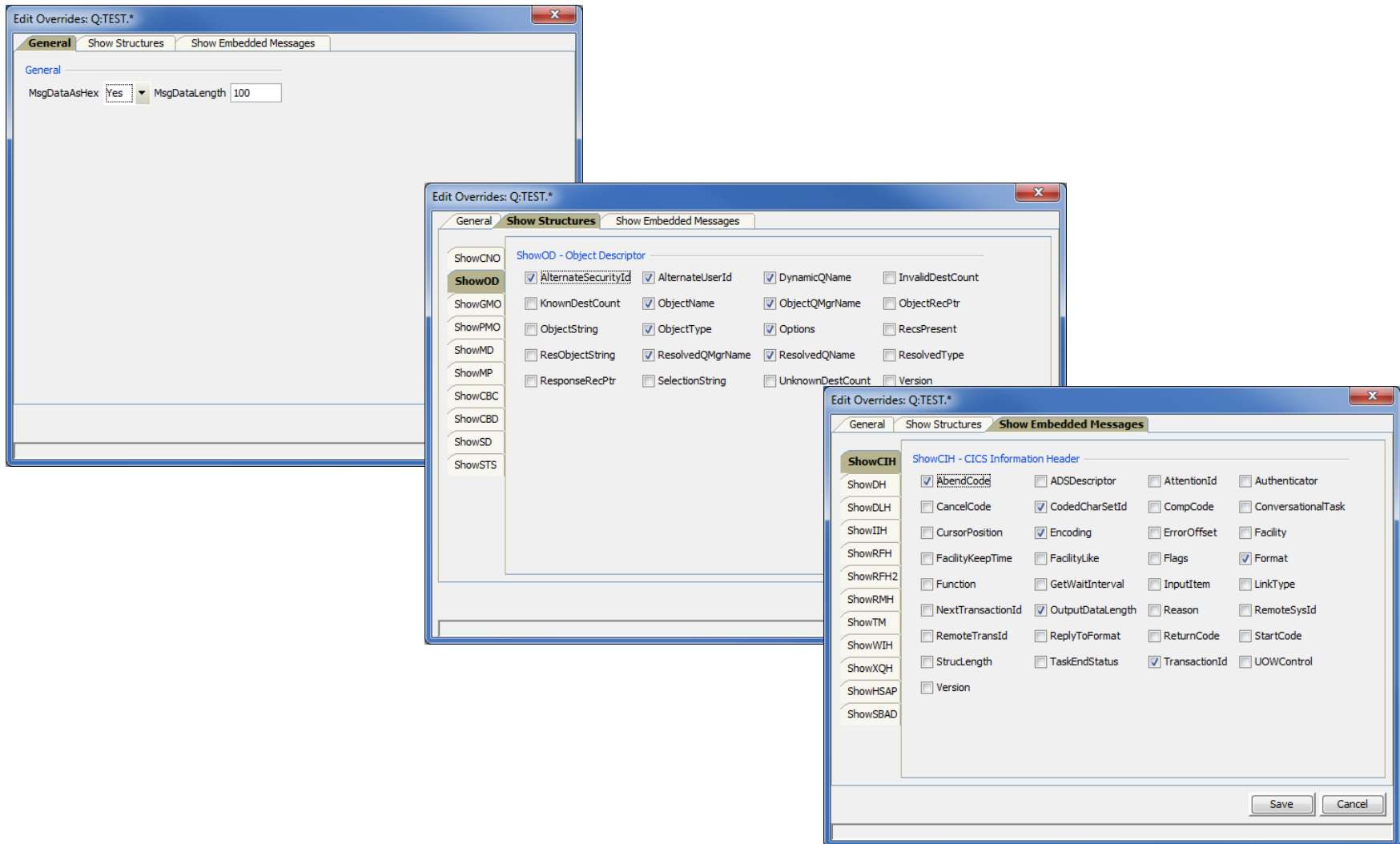
MQA IniFile Configuration via MQA-GUI



MQA IniFile Configuration via MQA-GUI



MQA IniFile Configuration via MQA-GUI



Questions & Answers

