Audit Queue Off Load Installation and Operation Manual

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1 Introduction

1.1 Overview

Audit Queue Off Load (AQOL) is a new companion application for MQ Auditor. The purpose of AQOL is to retrieve audit records from the audit queue and write the audit records to plain text CSV (Comma Separate Value) files. To use the new AQOL application, the user will activate the audit queue feature within MQ Auditor. Hence, all audit data will be written to the audit queue and will be processed by the new AQOL application.

On low volume queue managers, 8 MQ Getter threads may be enough but for busy queue managers, the user may need 50 or 75 MQ Getter threads. The idea is to never allow messages to pile up on the MQ audit queue.

The File Q threads are totally controlled by the number of processes and threads that are connecting to the queue manager. If you have 100 processes connecting to the queue manager, then the AQOL application will have 100 File Q threads running to write the audit data to the 100 files. If, on a very busy queue manager, you have 1000 processes connecting to the queue manager, then the AQOL application will have 1000 File Q threads running to write the audit data to the 1000 files.

There is a timer thread within the AQOL application that is used to place an "inactivity message" on each internal queue. The inactivity message causes each File Q thread to check if there has been any file activity within the last 20 minutes (user changeable). If there has not been any file activity within the last 20 minutes, then the audit file is closed and archived.

The AQOL application has been designed to be used via the MQ Service, so that AQOL will automatically start and stop when the queue manager starts and stops.

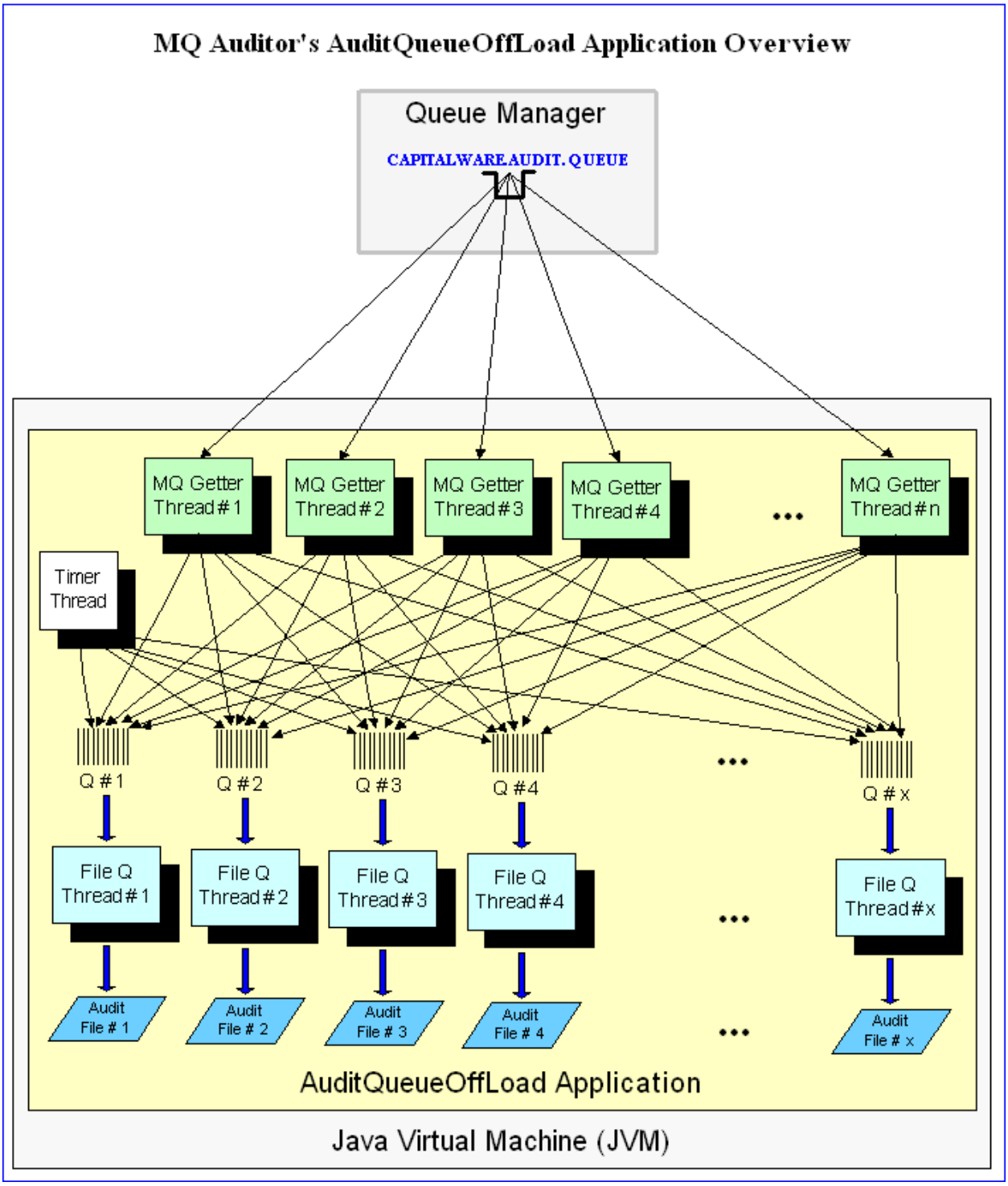
AQOL can connect to a IBM MQ queue manager in 3 possible ways:

- Locally in binding mode
- Remotely using a Client Channel Definition Table (CCDT)
- Remotely using a MQ XML file

AQOL supports both forms of IBM MQ security:

- SSL for connecting to remote queue managers via a CCDT file.
- 3rd party security exit for connecting to remote queue managers.

1.2 Context Diagram (Logical View)



1.3 Prerequisites

This section provides the minimum supported software levels.

1.3.1 Java

Audit Queue Off Load requires Java v1.4 or higher.

1.3.2 IBM MQ

Audit Queue Off Load requires IBM MQ v6.0, v7.0, v7.1, v7.5, v8.0, v9.0, v9.1 and v9.2.

1.4 File Definitions

The files used in AQOL are defined as follows:

- ***aqol.properties*** file is a java property file. It contains the configuration values for AQOL.

2 Installing Audit Queue Off Load

This section describes how to install Capitalware's Audit Queue Off Load.

2.1 Windows Installation

To install Audit Queue Off Load on Windows, do the following instructions:

- Run the install program called: **aqol-setup.exe**
- The installer follows the standard Windows install procedures and provides default values for the user.

2.2 Unix and Linux Installation

To install Audit Queue Off Load on Unix or Linux, do the following:

1. ftp or copy the selected aqol.tar.zip file to ***/var/mqm/*** directory of the target platform
2. Unzip and un-tar the aqol.tar.zip to an appropriate directory with the following commands:

```
unzip aqol.tar.zip
tar -xvf aqol.tar
```

3. Change directory to ***/var/mqm/AQOL/***
4. Next, do the following command:

```
chmod +x *.sh
```

2.3 IBM i Installation

To install Audit Queue Off Load on IBM i (OS/400), do the following:

1. ftp or copy the selected aqol.tar.zip fileto ***/QIBM/UserData/mqm/*** directory of the target platform
2. Unzip and un-tar the aqol.tar.zip to an appropriate directory with the following commands:

```
unzip aqol.tar.zip
tar -xvf aqol.tar
```

3. Change directory to ***/QIBM/UserData/mqm/AQOL/***
4. Next, do the following command:

```
chmod +x *.sh
```

3 Configuring AQOL Property File

This section describes how to create an ***aqol.property*** file for use by AQOL. The aqol.property file contains the AQOL configuration information.

3.1 MQ Property Keywords

- **MQThreadCount** specifies number of MQ Getter threads to be deployed
- **QMgrName** specifies the name of the queue manager
- **AuditQueue** specifies the name of the queue
- **CCDTFile** (optional) specifies a CCDT file
- **Hostname** (optional) specifies the hostname
- **Port** (optional) specifies the port number
- **ChannelName** (optional) specifies the channel name
- **UserID** (optional) specifies the UserID
- **Password** (optional) specifies the Password for the UserID
- **SecurityExit** (optional) specifies the security exit name
- **SecurityExitData** (optional) specifies the security data for the exit
- **SecurityExitPath** (optional) specifies the path to the security exit

3.2 Audit Property Keywords

- **AuditPath** specifies the path to the audit directory

  For Windows:
  ```
  AuditPath=C:/Capitalware/MQA/audit/
  ```

  For Unix and Linux:
  ```
  AuditPath=/var/mqm/audit/
  ```

  For IBM i:
  ```
  AuditPath=/QIBM/UserData/mqm/mqa/audit/
  ```

- **AuditFilePrefix** specifies a prefix value for each audit file

- **AuditFileInactivityTime** specifies that if there has been no file activity for 'x' minutes then the audit file will be closed and archive. The default value is 20 minutes.

- **AuditFileMaxSize** specifies how large an Audit file can become before it is moved to the archive directory. The value represents the maximum number of MB (MegaBytes) that the Audit file is to become before it is archived (moved to the Archive directory). The default value is 100.

- **UseOneMasterCSVFile** specifies that the MQAdmin wishes to have all audit information for every connecting application be outputted to a single audit file. The default value is N.

- **SharedQueueAuditFile** specifies that the MQAdmin wishes to have all audit information for a particular queue outputted to a single audit queue file. The default value is N.

- **OneFilePerConnection** specifies that the MQAdmin wishes to have all audit information outputted only to the Queue Manager Audit file. The default value is N.

3.3 AuditArchive Property Keywords

- **AuditArchivePath** specifies the path to the audit archive directory

  For Windows:
  ```
  AuditArchivePath=C:/Capitalware/MQA/audit/archive/
  ```

  For Unix and Linux:
  ```
  AuditArchivePath=/var/mqm/audit/archive/
  ```

  For IBM i:
  ```
  AuditArchivePath=/QIBM/UserData/mqm/mqa/audit/archive/
  ```

- **ArchiveCleanUp** turns on cleanup of the archive directory. The default value is Y.

- **ArchiveDays** specifies the number of days that the archive files will be kept. The default value is 7.

3.4 Sample

To create an ***aqol.property*** file, open a text editor and input one or more of the above elements into the aqol.property file.

For Windows:

```
QMgrName = MQW1
AuditQueue = CAPITALWARE.AUDIT.QUEUE

MQThreadCount = 16

AuditPath = C:/Capitalware/MQA/audit/
AuditArchivePath = C:/Capitalware/MQA/audit/archive/
SharedQueueAuditFile = N
OneFilePerConnection = N
AuditFileInactivityTime = 20
```

Note: On Windows, the path values must be specified using a forward-slash rather than a back-slash.

For Unix and Linux::

```
QMgrName = MQL1
AuditQueue = CAPITALWARE.AUDIT.QUEUE

MQThreadCount = 16

AuditPath = /var/mqm/audit/
AuditArchivePath = /var/mqm/audit/archive/
SharedQueueAuditFile = N
OneFilePerConnection = N
AuditFileInactivityTime = 20
```

For IBM i::

```
QMgrName = MQI1
AuditQueue = CAPITALWARE.AUDIT.QUEUE

MQThreadCount = 16

AuditPath = /QIBM/UserData/mqm/mqa/audit/
AuditArchivePath = /QIBM/UserData/mqm/mqa/audit/archive/
SharedQueueAuditFile = N
OneFilePerConnection = N
AuditFileInactivityTime = 20
```

4 Defining Audit Queue

This section describes how to define an Audit Queue.

4.1 NPMCLASS Set to Normal

Setting NPMCLASS to normal means that when a queue manager is restarted, all non-persistent messages in a local queue will be removed.

Use the following MQSC command to define an Audit Queue with NPMCLASS set to normal:

```
DEFINE QUEUE(CAPITALWARE.AUDIT.QUEUE) +
       TYPE(QLOCAL) +
       MAXDEPTH(5000000) +
       MAXMSGL(4194304) +
       DEFPSIST(NO) +
       NPMCLASS(NORMAL) +
       REPLACE
```

4.2 NPMCLASS Set to High

Setting NPMCLASS to high means that when a queue manager is restarted, all non-persistent messages in a local queue will remain (not deleted).

Use the following MQSC command to define an Audit Queue with NPMCLASS set to high:

```
DEFINE QUEUE(CAPITALWARE.AUDIT.QUEUE) +
       TYPE(QLOCAL) +
       MAXDEPTH(5000000) +
       MAXMSGL(4194304) +
       DEFPSIST(NO) +
       NPMCLASS(HIGH) +
       REPLACE
```

5 Configuring AQOL as an MQ Service

This section describes how to configure AQOL as an MQ Service.

5.1.1 Windows

On Windows, use the following MQSC command to enable the MQ Service for AQOL:

```
DEFINE SERVICE(AQOL)  +
       CONTROL(STARTONLY) +
       SERVTYPE(SERVER)   +
       STARTCMD('C:\Capitalware\AQOL\aqol.bat')   +
       STOPCMD('C:\Capitalware\AQOL\PutQuit.bat') +
       DESCR('AuditQueueOffLoad') +
       REPLACE
```

5.1.2 Unix and Linux

On Unix and Linux, use the following MQSC command to enable the MQ Service for AQOL:

```
DEFINE SERVICE(AQOL)  +
       CONTROL(STARTONLY) +
       SERVTYPE(SERVER)   +
       STARTCMD('/var/mqm/AQOL/aqol.sh')   +
       STOPCMD('/var/mqm/AQOL/PutQuit.sh') +
       DESCR('AuditQueueOffLoad') +
       REPLACE
```

5.1.3 IBM i

On IBM i, use the following MQSC command to enable the MQ Service for AQOL:

```
DEFINE SERVICE(AQOL)  +
       CONTROL(STARTONLY) +
       SERVTYPE(SERVER)   +
       STARTCMD('/QIBM/UserData/mqm/AQOL/aqol.sh')   +
       STOPCMD('/QIBM/UserData/mqm/AQOL/PutQuit.sh') +
       DESCR('AuditQueueOffLoad') +
       REPLACE
```

6 Starting AQOL

By using an MQ Service, AQOL will automatically start and stop when the queue manager starts and stops.

7 Appendix A – Summary of aqol.property File

The sample file below is the aqol.property file supplied for Windows.

```
QMgrName = MQW1
AuditQueue = CAPITALWARE.AUDIT.QUEUE

MQThreadCount = 16

AuditPath = C:/Capitalware/MQA/audit/
AuditArchivePath = C:/Capitalware/MQA/audit/archive/
SharedQueueAuditFile = N
OneFilePerConnection = N
AuditFileInactivityTime = 20
```

Note: Keywords are case sensitive.

The aqol.property supports the following keywords and their values:

Keyword	Description of Server-side keywords
ArchiveCleanUp	**ArchiveCleanUp** turns on cleanup of the archive directory. **ArchiveCleanUp** supports 2 values [Y / N]. The default value is Y. e.g. **ArchiveCleanUp**=N
ArchiveDays	**ArchiveDays** specifies the number of days that the archive files will be kept. The default value is 7. e.g. **ArchiveDays**=7 Note: Only used if **ArchiveCleanUp** is set to 'Y'.

Keyword	Description of Server-side keywords
AuditArchivePath	**AuditArchivePath** specifies the path to the Audit Archives files. Setting this parameter will override the default value for **AuditArchivePath**. The default values are as follows: For Windows: **AuditArchivePath**=C:/Capitalware/MQA/audit/archive/ For Unix and Linux: **AuditArchivePath**=/var/mqm/audit/archive/ For IBM i: **AuditArchivePath**=/QIBM/UserData/mqm/mqa/audit/archive/ e.g. **AuditArchivePath**=C:/Capitalware/MQA/audit/archive/ On Windows, the path values must be specified using a forward-slash rather than a back-slash.
AuditFileMaxSize	**AuditFileMaxSize** specifies how large an Audit file can become before it is moved to the archive directory. The value represents the maximum number of MB (MegaBytes) that the Audit file is to become before it is archived (moved to the Archive directory). The default value is 100. e.g. **AuditFileMaxSize**=100
AuditFilePrefix	**AuditFilePrefix** specifies a prefix to be used with each audit file name. This is an optional keyword. e.g. **AuditFilePrefix**=XYZ

Keyword	Description of Server-side keywords
AuditPath	**AuditPath** specifies the path to the Audit files. Setting this parameter will override the default value for **AuditPath**. The default values are as follows: For Windows: **AuditPath**=C:/Capitalware/MQA/audit/ For Unix and Linux: **AuditPath**=/var/mqm/audit/ For IBM i: **AuditPath**=/QIBM/UserData/mqm/mqa/audit/ e.g. **AuditPath**=C:/Capitalware/MQA/audit/ On Windows, the path values must be specified using a forward-slash rather than a back-slash.
AuditQueue	**AuditQueue** specifies the name of the queue that MQA will write the audit information to. e.g. **AuditQueue**=CAPITALWARE.AUDIT.QUEUE
OneFilePerConnection	**OneFilePerConnection** specifies that the MQAdmin wishes to have all audit information outputted only to the Queue Manager Audit file. **OneFilePerConnection** supports 2 values [Y / N]. The default value is N. e.g. **OneFilePerConnection**=Y
ChannelName	**ChannelName** specifies channel name to be used when connecting to a remote queue manager. This is an optional keyword. e.g. **ChannelName**=TEST.CHL
Hostname	**Hostname** specifies the hostname to be used when connecting to a remote queue manager. This is an optional keyword. e.g. **Hostname**=server123.acme.com

Keyword	Description of Server-side keywords
MQThreadCount	**MQThreadCount** specifies number of MQ Getter threads to be deployed. The default value is 8. e.g. **MQThreadCount**=32
Password	**Password** specifies the password when connecting to a remote queue manager. This is an optional keyword. e.g. **Password**=xxxx
Port	**Port** specifies the port number to be used when connecting to a remote queue manager. The default value is 1414. e.g. **Port**= 1415
QMgrName	**QMgrName** specifies the name of the queue manager to connect to. There is no default value. e.g. **QMgrName**=MQA1
SecurityExit	**SecurityExit** specifies the name of an MQ security exit. This is an optional keyword. e.g. **SecurityExit**=biz.capitalware.mqausx.MQAUSXJ2EE
SecurityExitData	**SecurityExitData** specifies the data for the security exit. This is an optional keyword. e.g. **SecurityExitData**=u=fred;p=yyyy
SecurityExitPath	**SecurityExitPath** specifies the path to the security exit. This is an optional keyword. e.g. **SecurityExitPath**=C:/Capitalware/MQAUSX/
UseOneMasterCSVFile	**UseOneMasterCSVFile** specifies that the MQAdmin wishes to have all audit information outputted one master Audit file. **UseOneMasterCSVFile** supports 2 values [Y / N]. The default value is N. e.g. **UseOneMasterCSVFile**=Y

Keyword	Description of Server-side keywords
UserID	**UserID** specifies the UserID when connecting to a remote queue manager. This is an optional keyword. e.g. **UserID**=fred

8 Appendix B – Audit Queue Off Load Upgrade Procedures

To upgrade an existing installation of Audit Queue Off Load, please do the following in the appropriate section below.

8.1 Windows Upgrade

- Stop AQOL
- Backup all AQOL data files in the AQOL install directory
- Delete the AQOL install directory
- Unzip aqol.zip archive
- Restore the AQOL data files if necessary

8.2 Unix and Linux Upgrade

- Stop AQOL
- Backup all AQOL data files in the AQOL install directory
- Delete the AQOL install directory
- Unzip aqol.zip archive
- Restore the AQOL data files if necessary

8.3 IBM i Upgrade

- Stop AQOL
- Backup all AQOL data files in the AQOL install directory
- Delete the AQOL install directory
- Unzip aqol.zip archive
- Restore the AQOL data files if necessary

9 Appendix C – Support

The support for Audit Queue Off Load can be found at the following location.

By email at:
support@capitalware.com

By regular mail at:

Capitalware Inc.
Attn: Audit Queue Off Load Support
Unit 11, 1673 Richmond Street, PMB524
London, Ontario N6G2N3
Canada

10 Appendix D – Summary of Changes

- Audit Queue Off Load v2.1.0
  - Changed the file writing from string to binary.

- Audit Queue Off Load v2.0.0
  - Fixed an issue with archiving of messages
  - Changed the timer thread for handling file inactivity

- Audit Queue Off Load v1.0.1
  - Added the UseOneMasterCSVFile keyword.

- Audit Queue Off Load v1.0.0
  - Initial release.

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