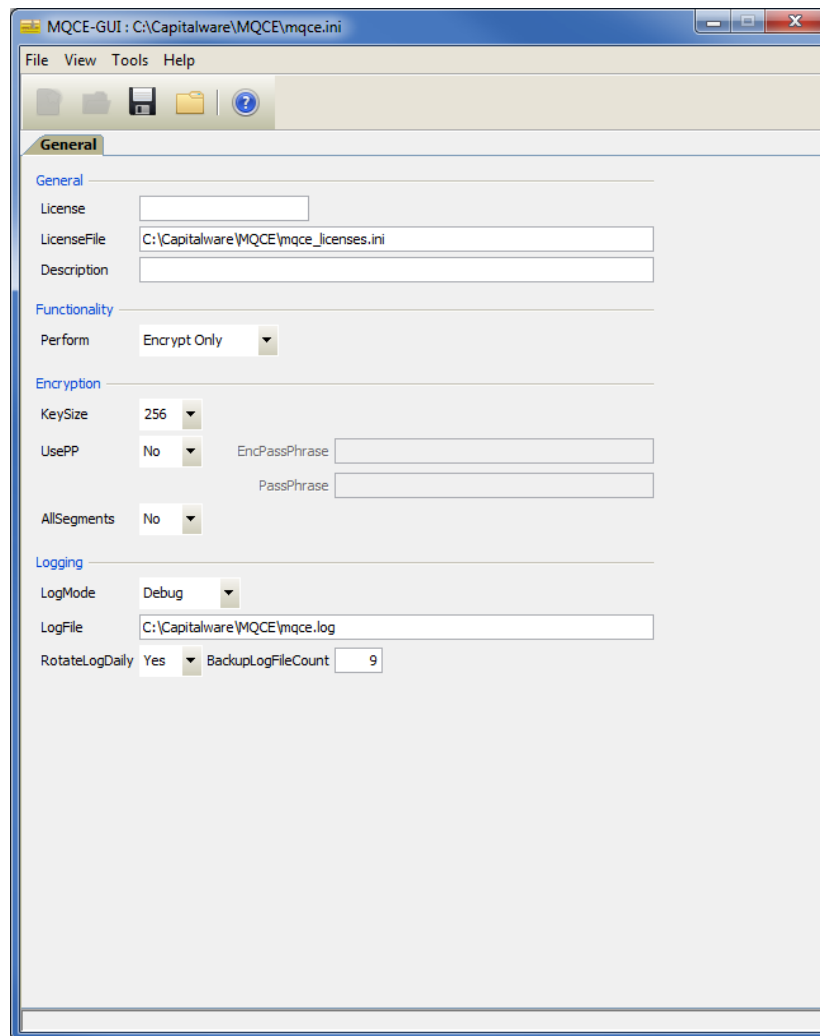


MQCE-GUI ***User Guide***



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1 Introduction

1.1 Overview

MQCE-GUI application allows the user to create or update MQCE IniFiles. MQCE-GUI can run on any platform that supports Java v1.6 (or higher): Linux, Mac OS X and Windows Vista/7/8/8.1/10.

MQ Channel Encryption (MQCE) provides encryption for MQ message data. In cryptography, encryption is the process of transforming information into an unreadable form (encrypted data). Decryption is the reverse process. It makes the encrypted information readable again. Only those with the key (PassPhrase) can successfully decrypt the encrypted data.

MQCE provides encryption for message data, which flows between IBM MQ resources. MQCE operates with IBM MQ v7.0, v7.1, v7.5, v8.0, v9.0, v9.1 and v9.2 in Windows, Unix, IBM i (OS/400) and Linux environments. It operates with Sender, Receiver, Server, Requester, Cluster-Sender, Cluster-Receiver, Server Connection and Client Connection channels of the MQ queue managers.

MQCE is a simple drop-in solution that provides cryptographic protection for MQ queue managers. The protection can be queue manager to queue manager or client application to queue manager.

- Queue manager to queue manager protection means all messages flowing over a channel between 2 queue managers will be encrypted.
- Client application to queue manager protection means application-level message data flowing between a MQ client application and queue manager will be encrypted.

The MQCE can be configured as a queue manager channel message exit or as a channel send/receive exit pair.

MQCE uses Advanced Encryption Standard (AES) to encrypt the data. AES is a data encryption scheme, adopted by the US government, that uses three different key sizes (128-bit, 192-bit, and 256-bit). AES was announced by National Institute of Standards and Technology (NIST) as U.S. FIPS PUB 197 (FIPS 197) on November 26, 2001 after a 5-year standardization process.

MQCE uses the SHA-2 to create a cryptographic hash function (digital signature) for the message data.

On AIX, HP-UX, Linux, Solaris and Windows, MQCE can be configured and used with a non-default installation of MQ in a multi-install MQ environment.

2 Installation

This chapter will describe the installation and configuration (optional) of MQCE-GUI. For Windows users, the installation of MQCE-GUI is very simple and straightforward. Other Operating Systems will need to unzip the downloaded software package.

2.1 Prerequisites

This section lists the required hardware and software components needed to run the MQCE-GUI application.

2.2 Software

The following third party software components must be installed in order to properly run MQCE-GUI:

- Java Runtime Environment (JRE) 1.6 (or higher) or Java 2 SDK, Standard Edition (J2SE) v1.6 (or higher)

2.3 Hardware / OS

MQCE-GUI is capable of running on the following hardware platforms that support Java v1.6 (or higher):

- Linux
- Mac OS X
- Windows Vista, 7, 8, 8.1 & 10

2.4 Setting Up and Running the Application

The following section provides instructions on installing and running the MQCE-GUI application.

2.4.1 For Windows Users:

- Run the install program called: **mqcegui-setup-withjre.exe**
- The installer should follow the standard Windows install procedures and provide default values for the users.
- When the install program has installed MQCE-GUI, there will be a newly created folder under **Start -> All Programs** called **MQCE-GUI**.
- To run **MQCE-GUI**, select the **MQCE-GUI** icon from within the **MQCE-GUI** folder.

2.4.2 For Linux and Max OS X (requires JRE/JDK):

- MQCE-GUI is provided as a zip file: **mqcegui.zip**
- To unzip the file, open a shell prompt and execute the following commands:

unzip mqcegui.zip

- When the unzip command has finished, there should be a directory tree as follows:

Capitalware/MQCE-GUI

- Change directory by typing the following:

cd Capitalware/MQCE-GUI

- Before running MQCE-GUI for the first time, you need to add the execute attribute to the mqcegui.sh shell scripts. Type the following:

chmod +x mqcegui.sh

- To run **MQCE-GUI** from the **Capitalware/MQCE-GUI** directory, then type the following:

./mqcegui.sh

3 Creating / Updating IniFiles

This chapter will describe the how to create and/or update IniFiles.

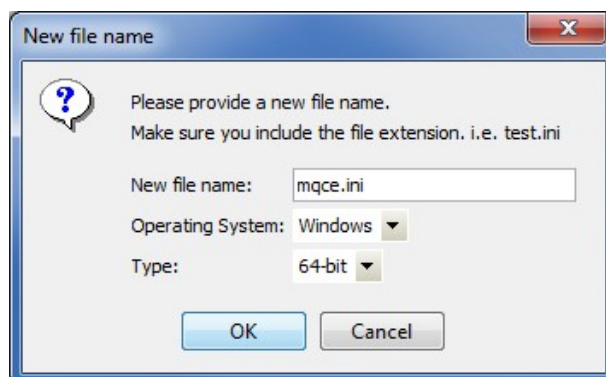
3.1 New IniFile

This section will describe how to create a new MQCE IniFile. The IniFile can be for a local or remote MQCE implementation.

From the main menu of MQCE-GUI, select **File** then **New File**



The following is the New IniFile panel:



Fill in the following information:

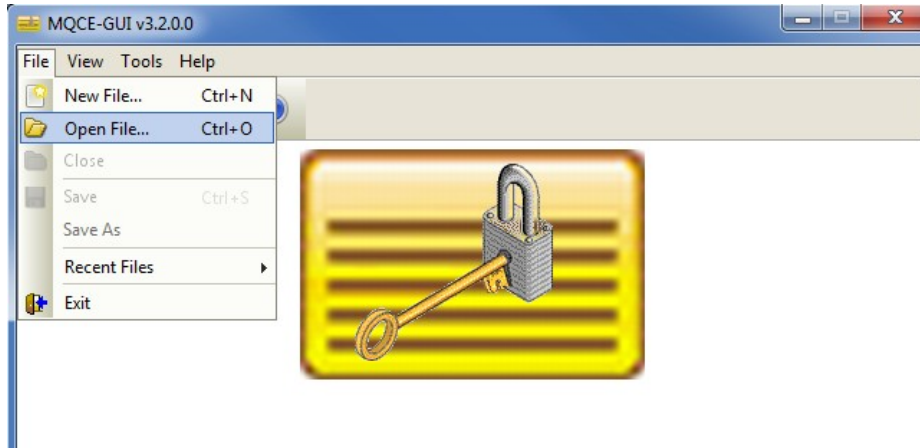
- Input a file name including the file extension of '.ini'
- Select the Operating System
- Choose between a 32-bit or 64-bit environment

Finally, click the **Ok** button to create and open the new MQCE IniFile.

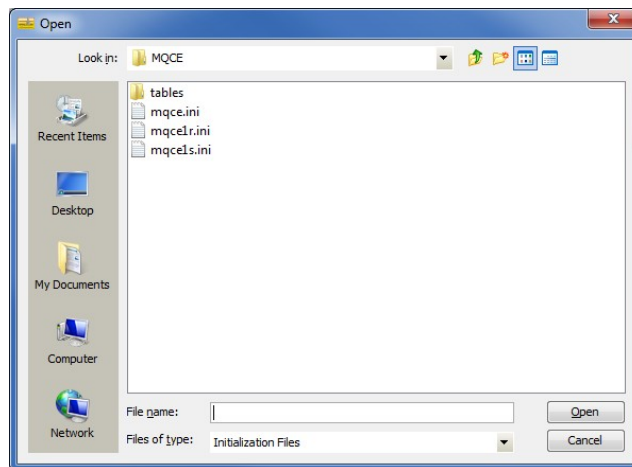
3.2 Open an IniFile

This section will describe how to open a MQCE IniFile to be viewed or edited. The IniFile can be for a local or remote MQCE implementation.

From the main menu of MQCE-GUI, select **File** then **Open File**



The following is the **Open** dialog box:

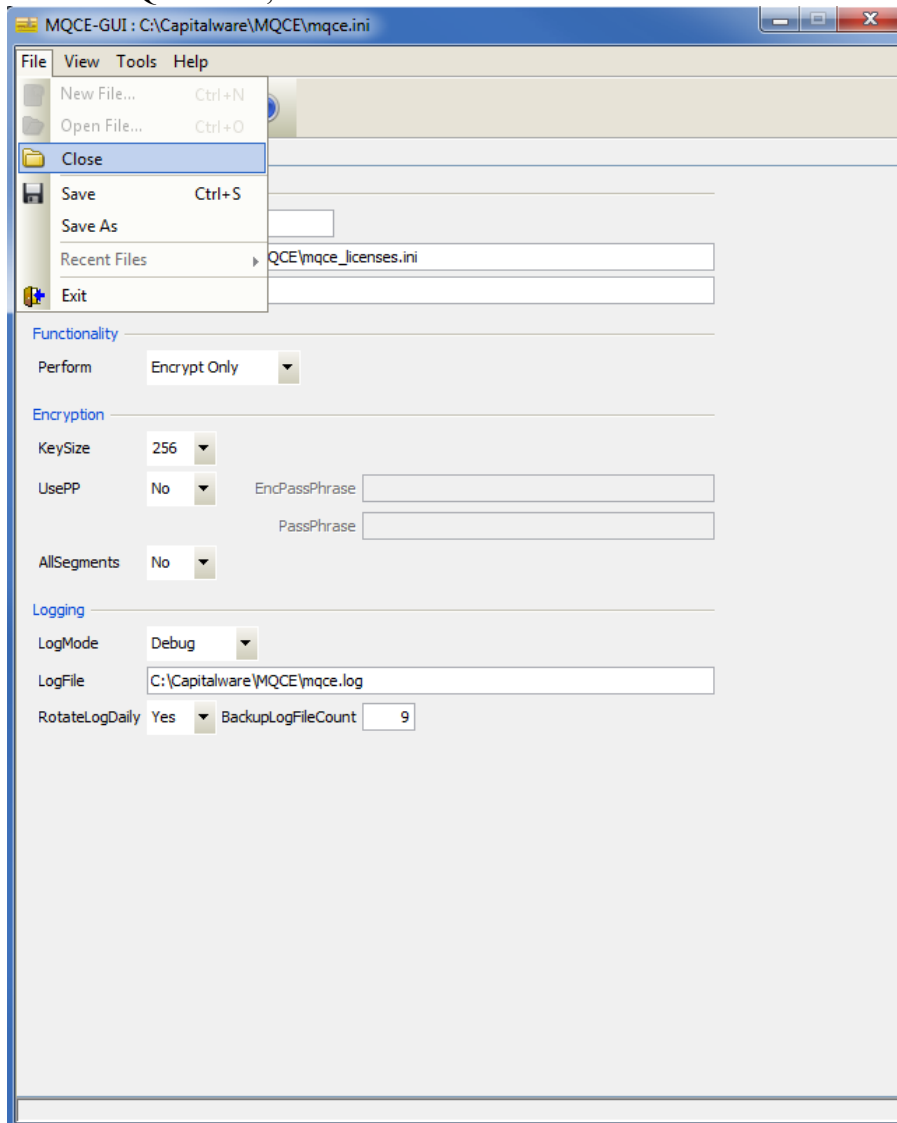


Select the IniFile that you wish to view / edit and then press the **Open** button.

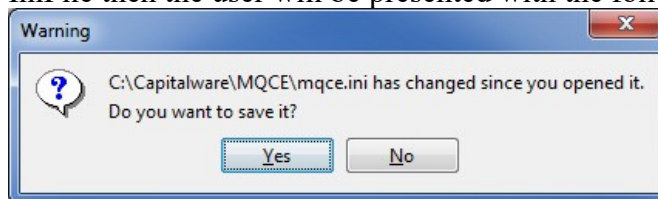
3.3 Close an IniFile

This section will describe how to close a MQCE IniFile.

From the main menu of MQCE-GUI, select **File** then **Close**



If the user has altered the IniFile then the user will be presented with the following dialog box:



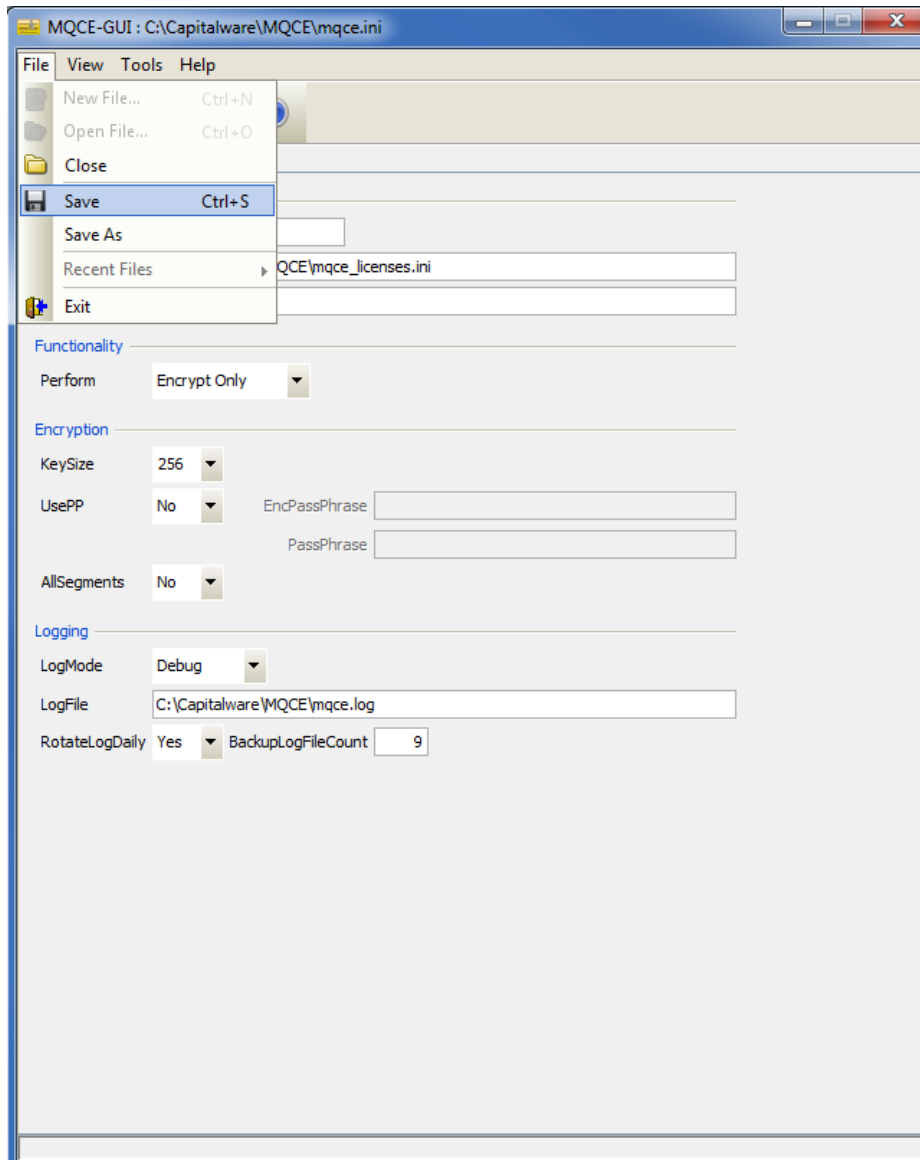
Select **Yes** to save the changes otherwise select **No**.

The MQCE-GUI program will make a backup of the original file in the same directory and call it: *{inifilename}.backup*

3.4 Save IniFile

This section will describe how to save an open MQCE IniFile.

From the main menu of MQCE-GUI, select **File** then **Save**



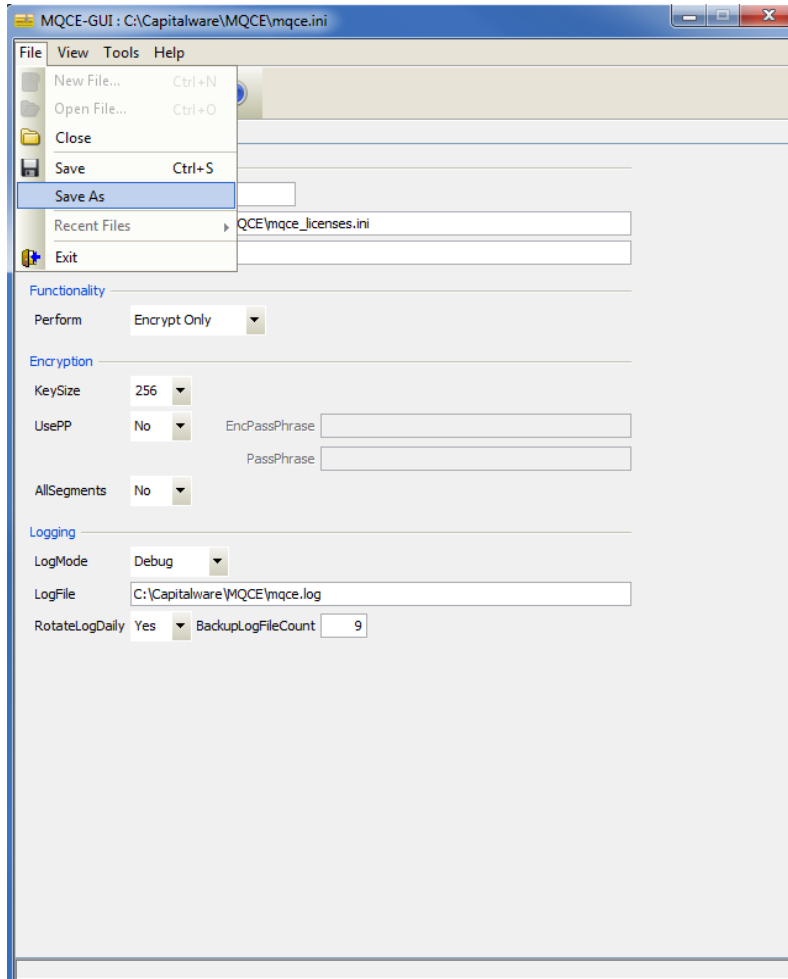
The parameter information will be saved to the IniFile.

The MQCE-GUI program will make a backup of the original file in the same directory and call it: *{inifilename}.backup*

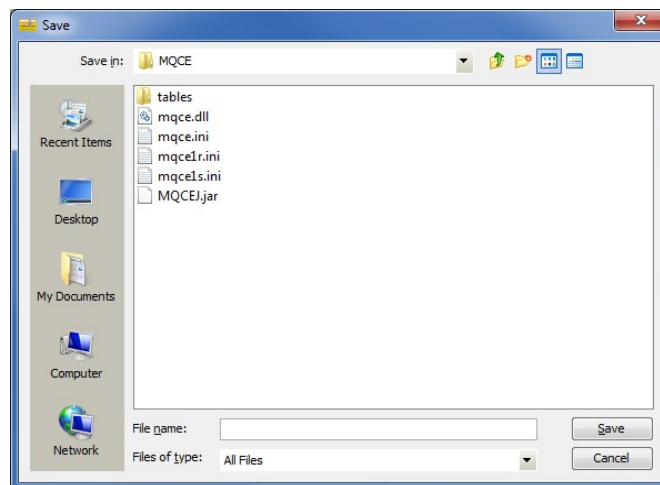
3.5 Save As IniFile

This section will describe how to save an open MQCE IniFile.

From the main menu of MQCE-GUI, select **File** then **Save As**



Select or Input the IniFile name that you wish use then press the **Save** button.

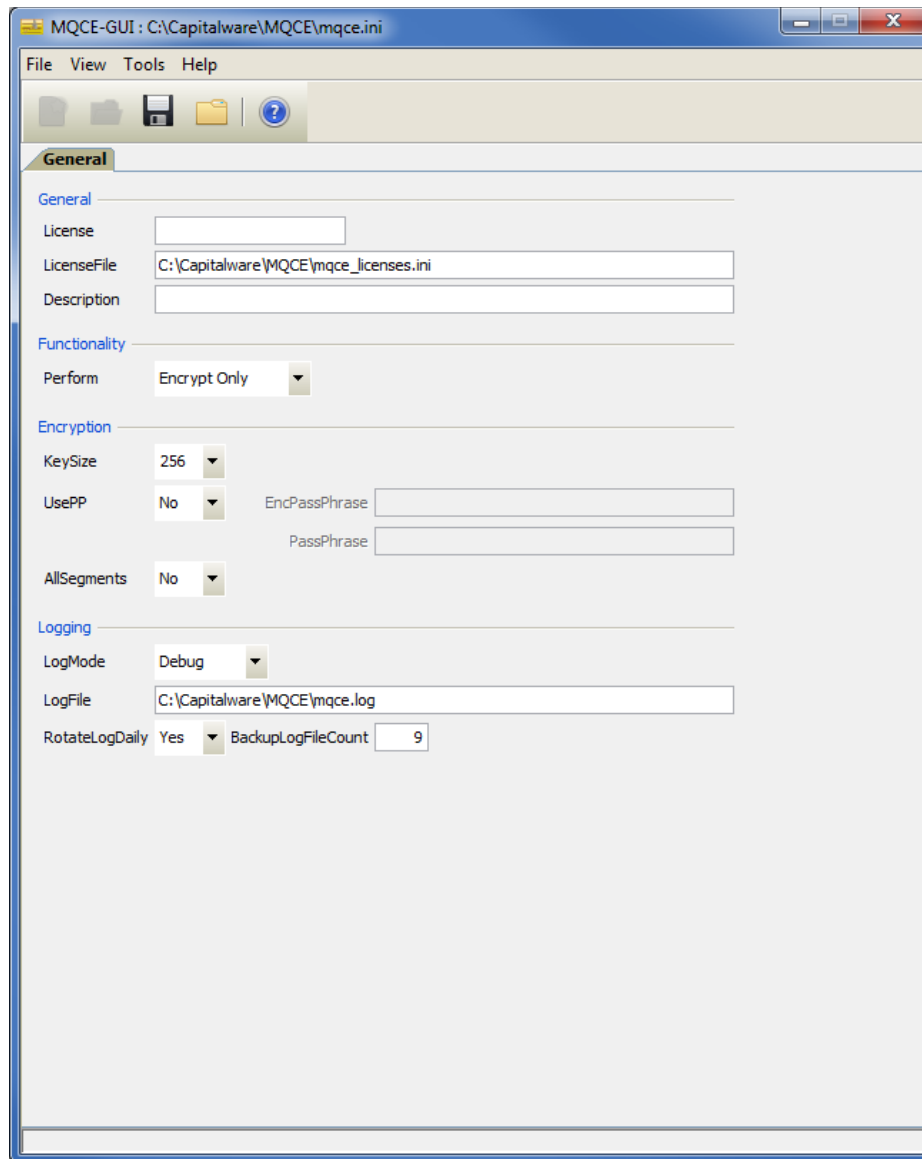


4 Tabs

This chapter will describe the various parameters on each tab.

4.1 General Tab

This section will describe various parameters on the General tab of a MQCE IniFile. The following is a General Tab with default values:



The IniFile keywords and their values on the General Tab are discussed below.

4.1.1 General

This section describes the general keywords and their values.

- **License key** is provided by Capitalware Inc. The license is for a particular queue manager. Your license will look something like: 1000-AAAA-BBBBBBBB (Note: This is a sample license only and will NOT work).
- **LicenseFile** specifies the location of License file that contains all of the customer's license keys. The following are the default values for LicenseFile:
 - For Windows: **C:\Capitalware\MQCE\mqce_licenses.ini**
 - For IBM MQ 32-bit on Unix & Linux: **/var/mqm/exits/mqce_licenses.ini**
 - For IBM MQ 64-bit on Unix and Linux: **/var/mqm/exits64/mqce_licenses.ini**
 - For IBM i: **/QIBM/UserData/mqm/mqce/mqce_licenses.ini**
- **Description** parameter is optional and is not used by MQCE. It can be used to provide a brief description / purpose of the IniFile.

4.1.2 Functionality

This section describes the keywords related to functionality.

- **Perform** indicates what functionality that MQCE will perform. Perform supports 3 values [S / E / B]. The default value is E.
 - **S** means that MQCE will only sign the message
 - **E** means that MQCE will only encrypt the message
 - **B** means that MQCE will sign and encrypt the message

When signing the message, MQCE creates the digital signature using cryptographic hash function of SHA-2.

4.1.3 Encryption

This section describes the keywords for the global encryption / decryption settings.

- **KeySize** specifies the AES key size used for the encryption / decryption of the message data. Valid values are 128, 192 or 256.
- **UsePP** allows the use of a user specified PassPhrase
- **EncPassPhrase** specifies a global encrypted PassPhrase for this IniFile that will be used for the protected queues/topics.
- **PassPhrase** specifies the actual 16, 24 or 32-byte PassPhrase that will be used for the message encryption and / or decryption.
- **AllSegments** specifies whether or not all TSH segments will be encrypted. AllSegments supports 2 values [Y / N]. The default value is N.

4.1.4 Logging

This section describes the keywords related to logging and their values.

- **LogMode** specifies what type of logging the user wishes to have. LogMode supports 4 values: Quiet, Normal, Verbose and Debug. The default value is Normal.
- **LogFile** specifies the location of the log file. The default is as follows:
 - For Windows: C:\Capitalware\MQCE\mqce.log
 - For IBM MQ 32-bit on Unix and Linux: /var/mqm/exits/mqce.log
 - For IBM MQ 64-bit on Unix and Linux: /var/mqm/exits64/mqce.log
 - For IBM I: /QIBM/UserData/mqm/mqce/mqce.log
- **RotateLogDaily** specifies whether or not MQCE when auto-rotate the log files. The default value is Yes.
- **BackupLogFileCount** specifies the number of backup log files to be kept / retained. The default value is 9.

5 Other Tools

This chapter will describes how the other tools included with MQCE-GUI.

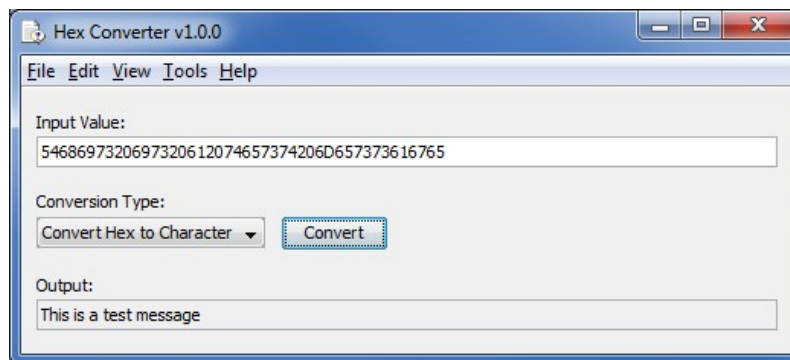
5.1 Hex Converter

This section will describe how to invoke and use the Hex Converter tool. Hex Converter tool can convert a hexadecimal number to its corresponding string representation and vice versa. i.e. 0x'3132333041424344' to '1230ABCD'.

For the Other Tools, you can have unlimited number of them running (up to what your box can support). Also, while any of the Other Tools are running, the user can still use MQCE-GUI.

From the main panel of MQCE-GUI, select **Tools**, then **Hex Converter**.

This is the main panel of the Hex Converter.



- The user first selects the Conversion type: "Hex to Character" or "Character to Hex"
- Input the value hex or character value into the "Input Value" field
- Click the Convert button to convert the data

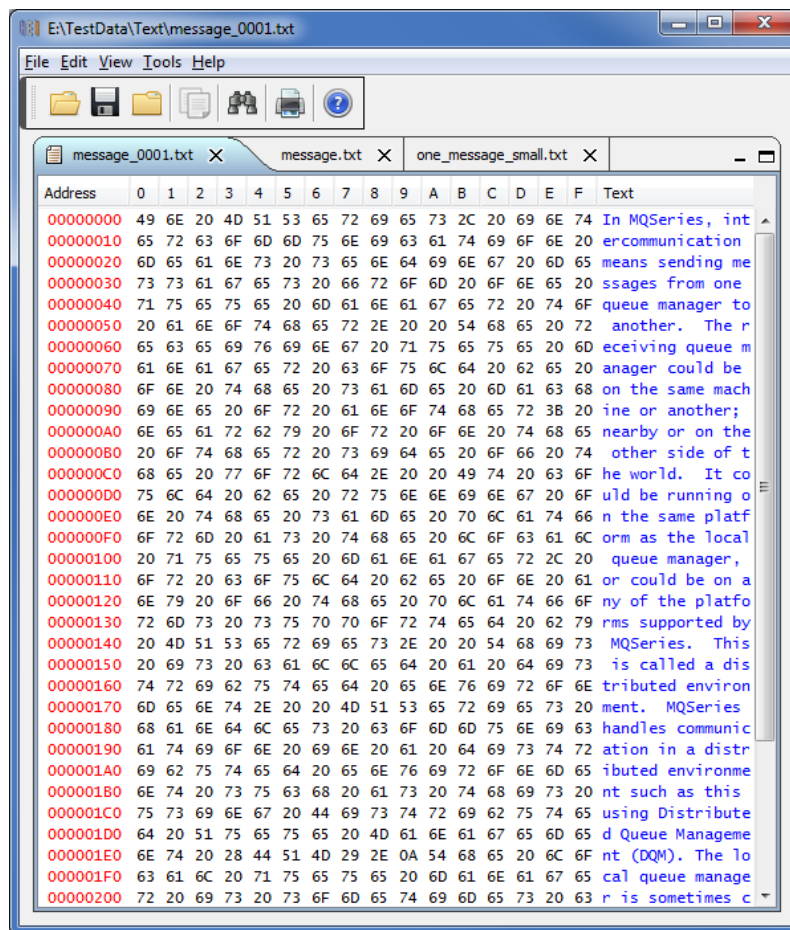
5.2 Hex Editor

This section will describe how to invoke and use the Hex Editor tool. The Hex Editor is a simple multipurpose hex editor. The Hex Editor supports multi-file editing.

For the Other Tools, you can have unlimited number of them running (up to what your box can support). Also, while any of the Other Tools are running, the user can still use MQCE-GUI.

From the main panel of MQCE-GUI, select **Tools**, then **Hex Editor**.

This is the main panel of the Hex Editor and it has 3 open files.



Supported features:

- Open / editing of multiple files
- Recent File List
- Copy, Find and Find Next
- Save, Save As and Print

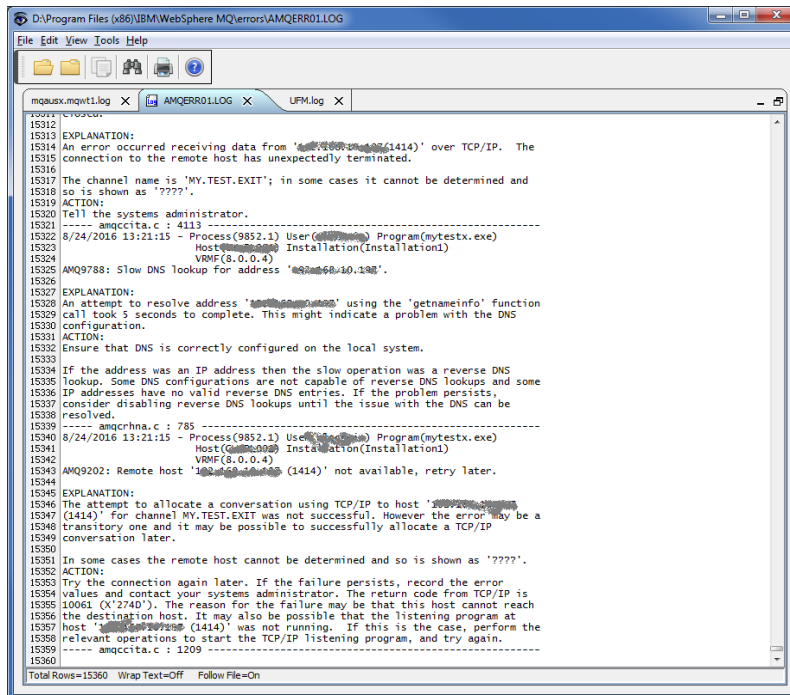
5.3 Tail File

This section will describe how to invoke and use the Tail File tool. The Tail File is a simple multipurpose file monitoring viewer. The Tail File supports monitoring of multiple files at the same time.

For the Other Tools, you can have unlimited number of them running (up to what your box can support). Also, while any of the Other Tools are running, the user can still use MQCE-GUI.

From the main panel of MQCE-GUI, select **Tools**, then **Tail File**.

This is the main panel of the Tail File and it has 3 open files.



Supported features:

- Opening of multiple files
- Wrap Text and Recent File List
- Copy, Find, Find Next and Print

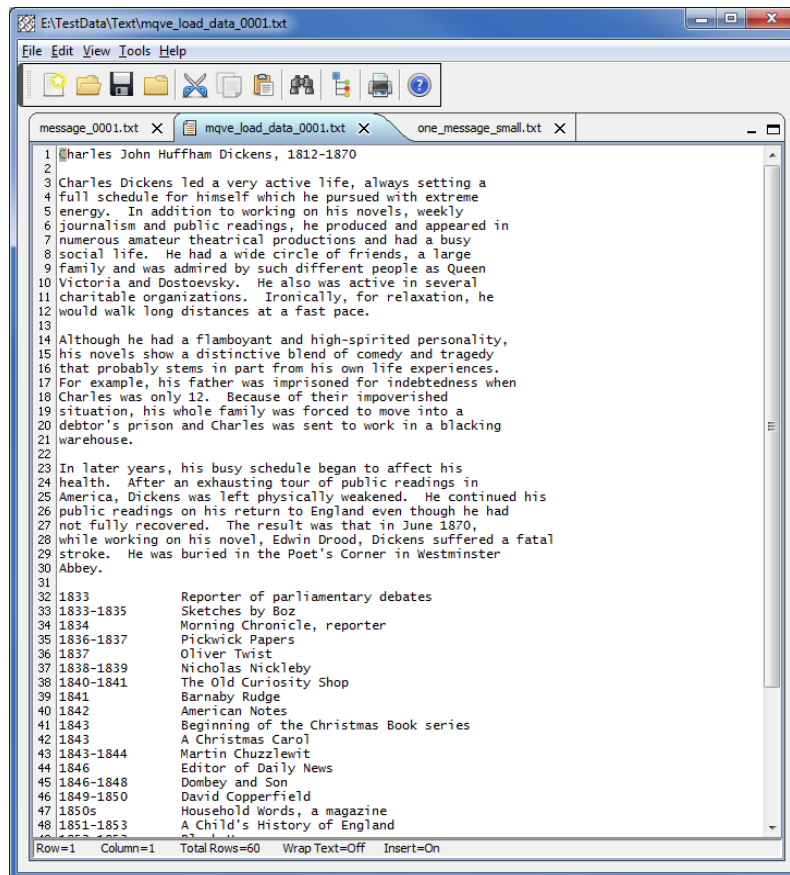
5.4 Text Editor

This section will describe how to invoke and use the Text Editor tool. The Text Editor is a simple multipurpose plain-text editor. The Text Editor supports multi-file editing.

For the Other Tools, you can have unlimited number of them running (up to what your box can support). Also, while any of the Other Tools are running, the user can still use MQCE-GUI.

From the main panel of MQCE-GUI, select **Tools**, then **Text Editor**.

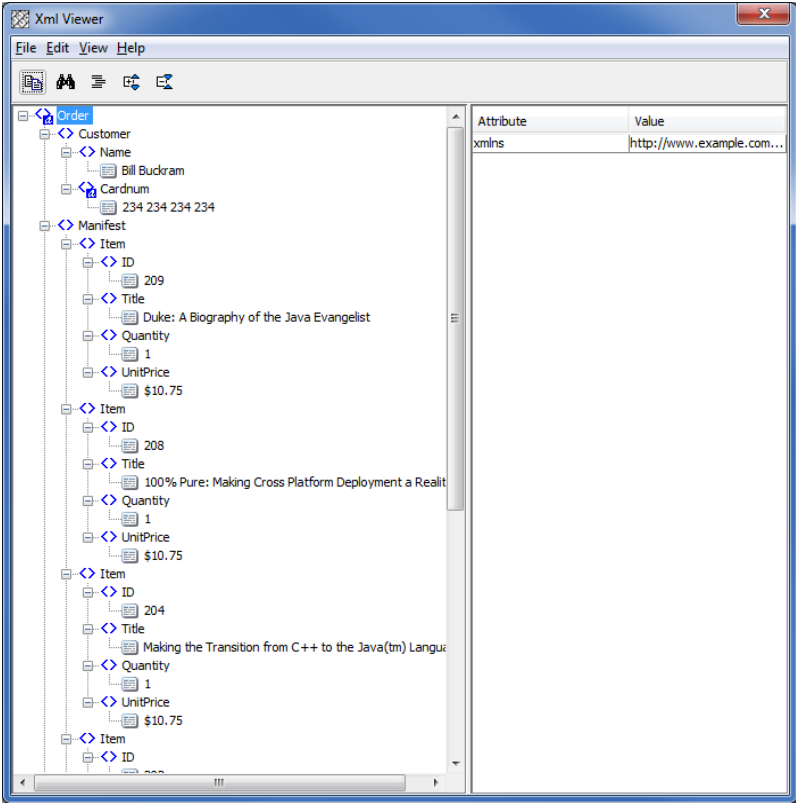
This is the main panel of the Text Editor and it has 3 open files.



Supported features:

- Open / editing of multiple files
- Builtin XML Viewer, Wrap Text
- Recent File List
- Cut, Copy, Paste, Find and Find Next
- Save, Save As and Print

The following shows the Text Editor's builtin XML Viewer.



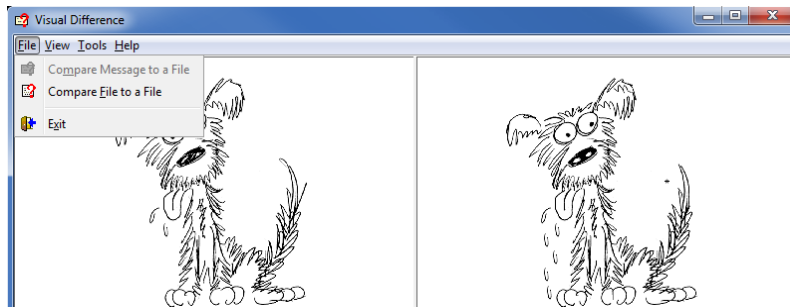
5.5 Visual Difference

This section will describe how to invoke and use the Visual Difference tool. The Visual Difference is a simple file to file comparison tool.

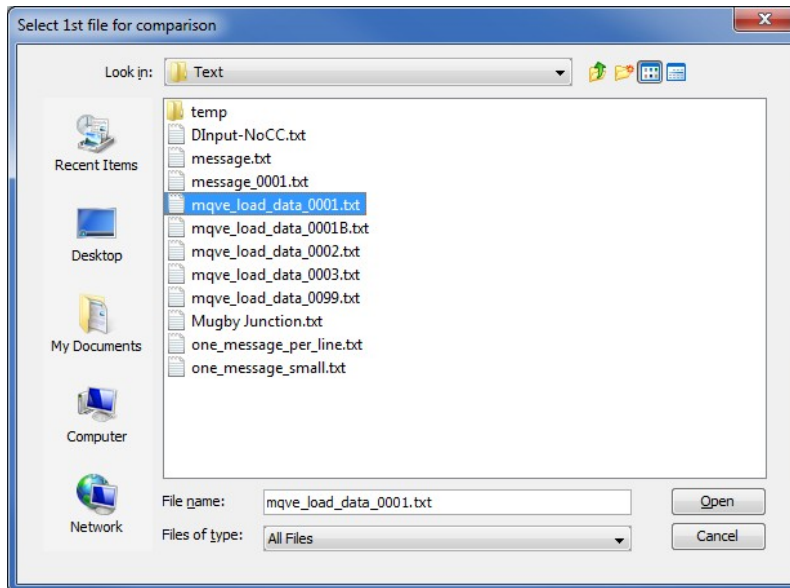
For the Other Tools, you can have unlimited number of them running (up to what your box can support). Also, while any of the Other Tools are running, the user can still use MQCE-GUI.

From the main panel of MQCE-GUI, select **Tools**, then **Visual Difference**.

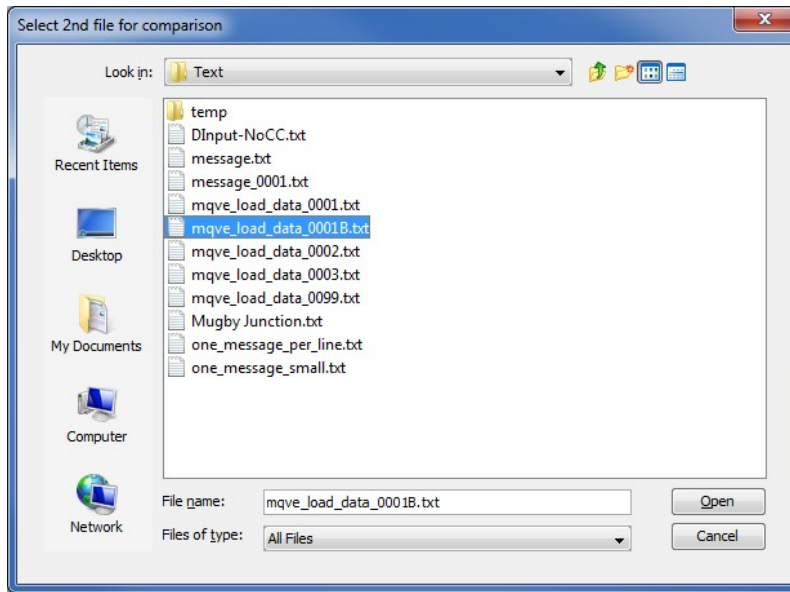
This is the main panel of the Visual Difference. To initiate the file comparison process, click File and then click Compare File to File



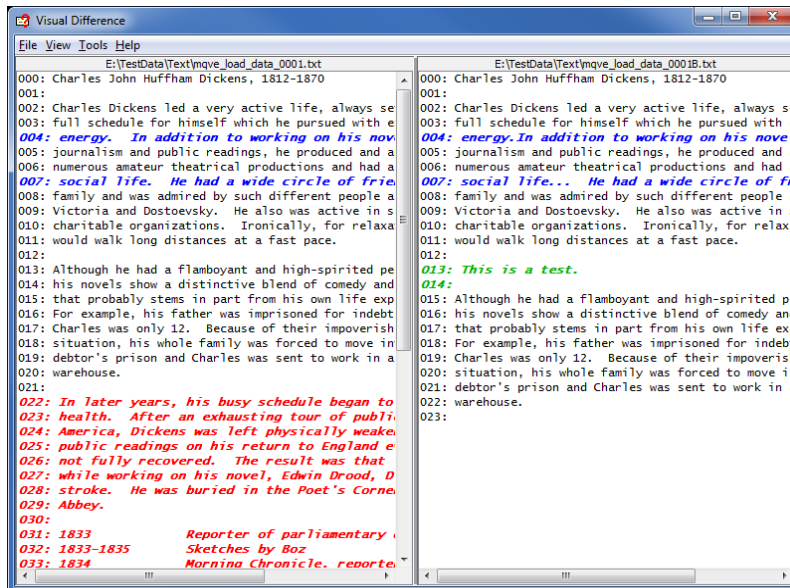
First the user needs to select the first file for the comparison.



Next, the user needs to select the second file for the comparison.



The following shows the difference between 2 files. Differences are highlighted: Green for inserts, Red for deletions and Blue for changes.



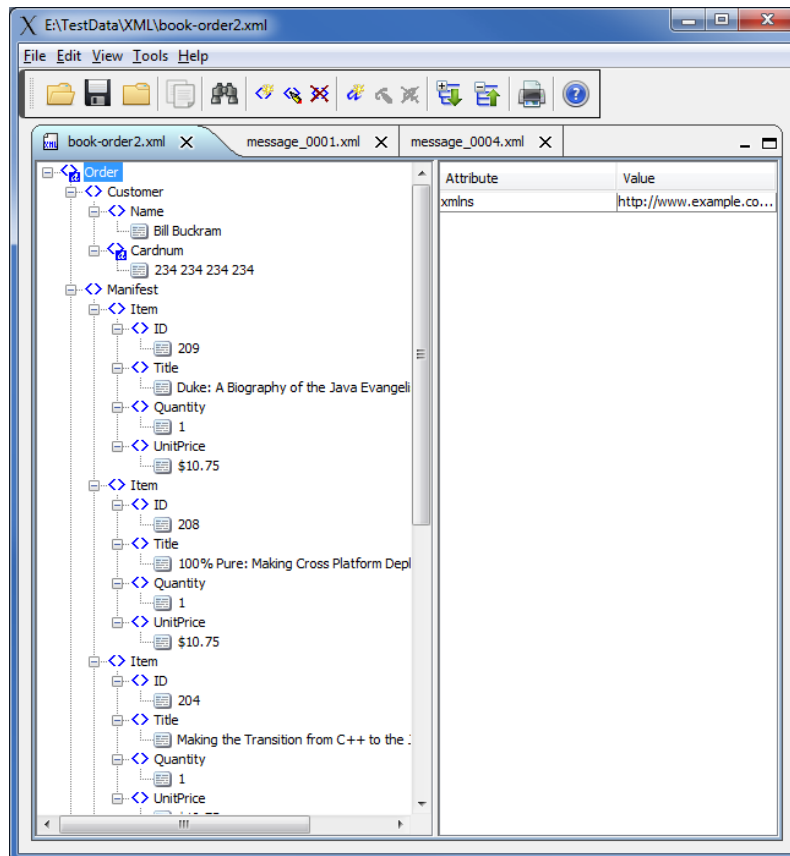
5.6 XML Editor

This section will describe how to invoke and use the XML Editor tool. The XML Editor is a simple multipurpose plain-text editor. The XML Editor supports multi-file editing.

For the Other Tools, you can have unlimited number of them running (up to what your box can support). Also, while any of the Other Tools are running, the user can still use MQCE-GUI.

From the main panel of MQCE-GUI, select **Tools**, then **XML Editor**.

This is the main panel of the XML Editor and it has 3 open files.



Supported features:

- Open / editing of multiple files
- Recent File List
- Copy, Find and Find Next
- Save, Save As and Print

6 Miscellaneous

This chapter will describes how the miscellaneous features of MQCE-GUI.

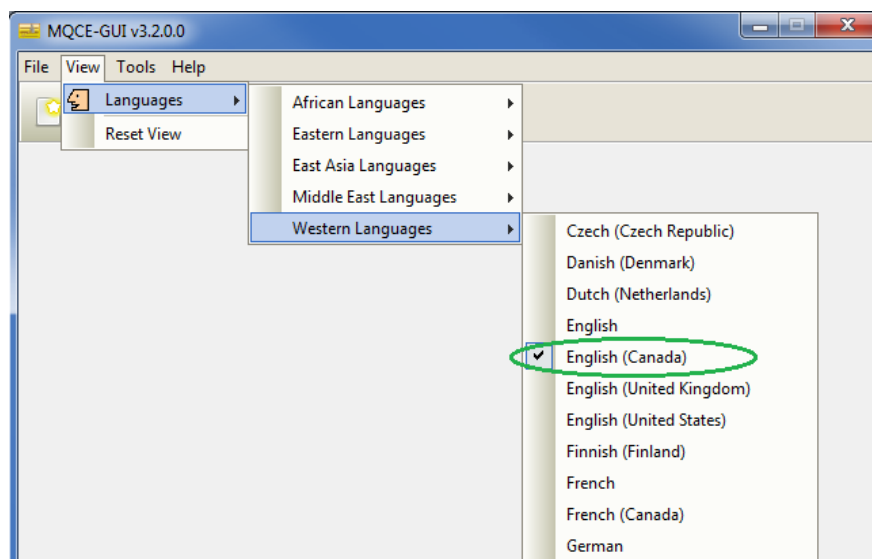
6.1 Language

This section will describe how to switch MQCE-GUI's Language Text to another Language Text.

MQCE-GUI has been designed to support Java's multi-language environment. Currently, MQCE-GUI has language support (menu items, buttons and titles) for the following 55 languages:

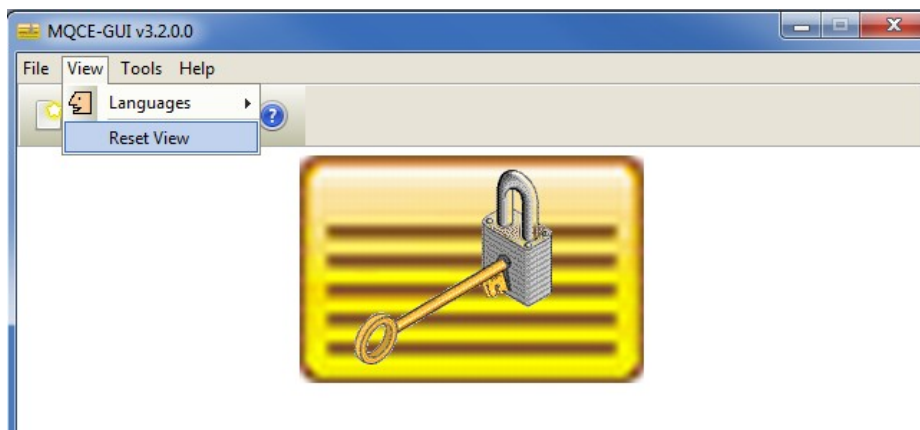
➤ Amharic (am)	➤ Hungarian (hu)	➤ Shona (sn)
➤ Arabic (ar)	➤ Igbo (ig)	➤ Sindhi (sd)
➤ Azerbaijani (az)	➤ Indonesian (in)	➤ Spanish (es)
➤ Bengali (bn)	➤ Italian (it)	➤ Sundanese (su)
➤ Cebuano (ceb)	➤ Japanese (ja)	➤ Swahili (sw)
➤ Chinese (China) (zh)	➤ Javanese (jv)	➤ Swedish (sv)
➤ Chinese (Taiwan) (zh)	➤ Kannada (kn)	➤ Tamil (ta)
➤ Czech (cs)	➤ Korean (ko)	➤ Telugu (te)
➤ Danish (da)	➤ Malay (ms)	➤ Thai (th)
➤ Dutch (nl)	➤ Malayalam (ml)	➤ Turkish (tr)
➤ English (en)	➤ Marathi (mr)	➤ Ukrainian (uk)
➤ Finnish (fi)	➤ Norwegian (no)	➤ Urdu (ur)
➤ French (fr)	➤ Panjabi (pa)	➤ Uzbek (uz)
➤ German (de)	➤ Pashto (ps)	➤ Vietnamese (vi)
➤ Greek (el)	➤ Persian (fa)	➤ Xhosa (xh)
➤ Gujarati (gu)	➤ Polish (pl)	➤ Yoruba (yo)
➤ Hausa (ha)	➤ Portuguese (pt)	➤ Zulu (zu)
➤ Hebrew (iw)	➤ Romanian (ro)	
➤ Hindi (hi)	➤ Russian (ru)	

From the main panel of MQCE-GUI, select **View**, then **Language**.



6.2 Reset View

This section will describe how to reset the view of MQCE-GUI if the display is not correct.



The user can also reset the view from the command line by passing in the *RG* parameter.

6.2.1 Windows Command Line

On Windows, issue the following command to reset the view of MQCE-GUI:

```
mqcegui.exe RG
```

6.2.2 Linux and macOS Command Line

On Linux and macOS, issue the following command to reset the view of MQCE-GUI:

```
./mqcegui.sh RG
```

7 Appendix A – Frequently Asked Questions (FAQ)

Q. Can IniFiles be create on Windows for MQCE on Unix?

A. Yes. Once the IniFile has been saved, the user can copy or ftp (in ASCII mode) the file to the remote server.

8 Appendix B – MQCE-GUI Upgrade Procedures

To upgrade an existing installation of MQCE-GUI, please do the following in the appropriate section below.

8.1 Windows Upgrade

- Stop all instances of MQCE-GUI
- Backup any MQCE-GUI data files in the MQCE-GUI install directory
- Go to the Windows **Control Panel** and select **Program and Features**
- Select MQCE-GUI and then click the **Uninstall** button
- Run the install program called: **mqcegui-setup-withjre.exe**
- The installer follows the standard Windows install procedures and provides default values for the user.
- When the install program has completed execution, there will be a newly created folder under **Start -> All Programs** called **MQCE-GUI**.
- Restore the MQCE-GUI data files if necessary
- To run MQCE-GUI, select the MQCE-GUI icon from within the MQCE-GUI folder.

8.2 Linux or macOS Upgrade

- Stop all instances of MQCE-GUI
- Backup any MQCE-GUI data files in the MQCE-GUI install directory
- Remove the installation i.e. `rm -Rf Capitalware/MQCE-GUI/`
- Unzip the file, open a shell prompt and execute the following commands:

```
unzip mqcegui.zip
```

- When the unzip command has finished, there should be a directory tree as follows:

```
Capitalware/MQCE-GUI
```

- Change directory by typing the following:

```
cd Capitalware/MQCE-GUI
```

- Before running MQCE-GUI for the first time, you need to add the execute attribute to the mqcegui.sh shell scripts. Type the following:

```
chmod +x mqcegui.sh
```

- To run MQCE-GUI from the Capitalware/MQCE-GUI directory, then type the following:

```
./mqcegui.sh
```

9 Appendix C – Support

The support for MQCE-GUI can be found at the following location:

By email at:

support@capitalware.com

By regular mail at:

Capitalware Inc.
Attn: MQCE-GUI Support
Unit 11, 1673 Richmond Street, PMB524
London, Ontario N6G2N3
Canada

10 Appendix D – Summary of Changes

- MQCE-GUI v3.4.0
 - Version number change only to keep in alignment with MQCE.

- MQCE-GUI v3.3.0
 - Added the ‘Recent Files’ menu option under the File menu option.
 - Added images to buttons for more user-friendly display.
 - Added support for 55 languages for the menu options, buttons and titles (not IniFile keywords).
 - Added the ‘Reset View’ menu option under the View menu option.
 - Added 6 tools under the Tools menu option:
 - Compare File to a File
 - Hex Converter
 - Hex Editor
 - Tail File
 - Text Editor
 - XML Editor

- MQCE-GUI v3.2.0
 - Initial release.

11 Appendix E – License Agreement

This is a legal agreement between you (either an individual or an entity) and Capitalware Inc. By opening the sealed software packages (if appropriate) and/or by using the SOFTWARE, you agree to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement, promptly return the disk package and accompanying items for a full refund.

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