IBM MQ Error Log, FFST and Dump Locations

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+++ Objective +++

As it runs, IBM MQ logs error messages, creates FFSTs (also known as FDC files), and generates other diagnostic output files such as IBM i job logs, Windows minidumps and z/OS dumps.

In addition, the IBM MQ Administrator can also generate data such as FFSTs, z/OS dumps, and IBM MQ line trace CDF files.

This document explains where those files can be found on different platforms.

There is a separate section for:
- Clarification of the term "log file": text error log file? binary recovery/transaction log file?
- Linux and AIX
- Windows
- IBM i
- IBM z/OS
- HPe NonStop Server
- MQ Classes for JMS

+++ Clarification of the term "log file": text error log file? binary recovery/transaction log file?

Note:
In the text below, the environment variable MQ_DATA_PATH that is
- already set in Windows or
- it is set by the MQ utility "setmqenv"

Sometimes, new MQ users say that they are looking for the log files to find out error messages, but go to the wrong directory and find binary log files that are not human readable.
The purpose of this section is to offer a clarification.

The term "log file" could be a bit ambiguous because there are 2 different things that many users call "log file".

1) The "error log files" which are TEXT (human readable) files and which contain informational, warnings, and errors.

There are 2 kinds:

1.a) The "general" error log, which is used to indicate a generation of an FDC file and it is used by MQ client applications.

The "general" IBM MQ error logs are named AMQERR01.LOG, AMQERR02.LOG, and AMQERR03.LOG.
The file AMQERR01.LOG contains the most recent messages.

+ Windows:
To display the location:
 C:\> set MQ_DATA_PATH
MQ_DATA_PATH=C:\ProgramData\IBM\MQ

The location for the FDC files and the general/client error can be specified as:
        %MQ_DATA_PATH%\errors

+ Linux:
To display the location:

$. /opt/mqm/bin/setmqenv -n Installation1

$ echo $MQ_DATA_PATH
/var/mqm

The location for the FDC files and the general/client error can be specified as:
        $MQ_DATA_PATH/errors

1.b) The error log files of the queue manager.

If the name of the queue manager is QMGRNAME then the location is:

+ Windows:
%MQ_DATA_PATH%\qmgrs\QMGRNAME\errors
Such as:
C:\ProgramData\IBM\MQ\qmgrs\QMGRNAME\errors

+ Linux:
$MQ_DATA_PATH/qmgrs/QMGRNAME/errors
Such as:
/var/mqm/qmgrs/QMGRNAME/errors

2) The "recovery log files" (also known as the "transaction log files') are BINARY files that are NOT human readable and they are used by the MQ component called "logger" to internally keep track of persistent messages, transactions and units of work.

+ Windows:

```
cd C:\ProgramData\IBM\MQ\log\QMGRNAME
dir
09/12/2023  08:58 AM    <DIR>         active
11/04/2023  12:08 PM            5,244 amqhlctl.lfh

cd active
dir
01/26/2024  09:55 AM        16,785,408 S0000000.LOG
07/22/2022  08:08 AM        16,785,408 S0000001.LOG
07/22/2022  08:08 AM        16,785,408 S0000002.LOG
```


+ Linux:

```
$ cd /var/mqm/log/QMGRNAME
$ ls -l
drwxrws--- 2 mqm mqm   66 Jan 15 15:04 active
-rw-rw---- 1 mqm mqm 6268 Feb  1 12:29 amqhlctl.lfh

$ cd active
$ ls -l
-rw-rw---- 1 mqm mqm 16785408 Feb  1 12:29 S0000000.LOG
-rw-rw---- 1 mqm mqm 16785408 Jan 15 15:04 S0000001.LOG
-rw-rw---- 1 mqm mqm 16785408 Jan 15 15:04 S0000002.LOG
```

+++ Linux and AIX

Note - The same principles apply to:
HP-UX (MQ 9.0 was the last version.release)
Solaris (MQ 9.1 was the last version.release)

IBM MQ maintains a set of error logs and writes FFSTs (FDC files) and other diagnostic files to the directory:

/var/mqm/errors

The following MQ environment variable set by "setmqenv" indicates the top directory for the MQ data:
  echo $MQ_DATA_PATH

The value is: MQ_DATA_PATH=/var/mq

Thus, the location for the FDC files can be specified as:
  $MQ_DATA_PATH/errors

IBM MQ error logs are named AMQERR01.LOG, AMQERR02.LOG, and AMQERR03.LOG, with AMQERR01.LOG containing the most recent messages.
The messages roll over into AMQERR02.LOG and AMQERR03.LOG files when AMQERR01.LOG reaches a threshold size.

MQ FFST files are named AMQnnnnn.mm.FDC, where nnnnn is the id of the process reporting the error and mm is a sequence number, normally 0.

+ Queue Managers:

The error logs for the queue manager have the same name and behavior, but are located in the corresponding directory of the queue manager (the token QMGRNAME is a placeholder for the true name)

The default location is:
/var/mqm/qmgrs/QMGRNAME/errors

If you are not using the default location, you will need to look at the Master Index of the queue managers (var/mqm/mqs.ini) to find out the directory of the data for the queue manager.

+ For more information see:

https://www.ibm.com/docs/en/ibm-mq/9.3?topic=ffst-mq-aix-linux
IBM MQ / 9.3
FFST: IBM MQ for AIX or Linux

+++ Windows

IBM MQ diagnostic dumps are written to the errors subdirectory of the IBM MQ data directory, which was selected when IBM MQ was first installed on the system as the default location for queue managers.
> C:\ProgramData\IBM\MQ\errors

Note that when using Windows File Explorer the following directory is hidden by default:
> C:\ProgramData

You can change directories to this location at the command prompt,
or enter %PROGRAMDATA% in the Windows File Explorer location bar to browse it,
or configure the Windows Explorer to show hidden files and directories.

The following MQ environment variable set by "setmqenv" indicates the top directory for the MQ data:
C:\> **set MQ_DATA_PATH**
MQ_DATA_PATH=C:\ProgramData\IBM\MQ

Thus, the location for the FDC files can be specified as:
  %MQ_DATA_PATH%\errors

IBM MQ error logs are named AMQERR01.LOG, AMQERR02.LOG, and AMQERR03.LOG, with AMQERR01.LOG containing the most recent messages.
The messages roll over into AMQERR02.LOG and AMQERR03.LOG files when AMQERR01.LOG reaches a threshold size.

MQ FFST files are named AMQnnnnn.mm.FDC, where nnnnn is the id of the process reporting the error and mm is a sequence number, normally 0.

+ Queue Managers:

The error logs for the queue manager have the same name and behavior, but are located in the corresponding directory of the queue manager (the token QMGRNAME is a placeholder for the true name)
   %MQ_DATA_PATH%\qmgrs\QMGRNAME\errors

If you are not using the default location, you will need to look at the Master Index of the queue managers (%MQ_DATA_PATH%\mqs.ini) to find out the directory of the data for the queue manager.

+ For more information see:
https://www.ibm.com/docs/en/ibm-mq/9.3?topic=ffst-mq-windows
IBM MQ / 9.3
FFST: IBM MQ for Windows

+++ IBM i

IBM MQ diagnostic dumps are written to the directory:
 /QIBM/UserData/mqm/errors

IBM MQ FFST files are named AMQnnnnn.mm.FDC, where nnnnn is the id of the process reporting the error and mm is a sequence number, normally 0.

IBM MQ also records the job log to this directory when a job generates an FFST. Job logs are named AMQnnnnn.mm.JOB, where nnnnn is the id of the job reporting the error and mm is a sequence number, normally 0.

+ For more information see:

https://www.ibm.com/docs/en/ibm-mq/9.3?topic=ffst-mq-i
IBM MQ / 9.3
FFST: IBM MQ for IBM i

+++ IBM z/OS

IBM MQ dumps are located in a system dump data set and can be identified by their title. The title for a dump requested by IBM MQ starts with the four-character subsystem name of the queue manager. For example:

```
Dump Title for a Queue Manager with a Subsystem Name of CSQ1
CSQ1,ABN=5C6-00E20016,U=SYSOPR ,C=MQ900.910.DMC -
CSQIALLC,M=CSQGFRCV,LOC=CSQSLD1 .CSQSVSTK+00000712
```

Comm dumps requested by the operator might not contain the queue manager name, depending on the comment the operator specifies in the dump command. Check for message IEA611I or IEA911E in the syslog to determine the dump data set name and also to see whether the dump is complete or partial. For example:

```
Syslog messages for dumps

IEA611I COMPLETE DUMP ON DUMP.MQT1MSTR.DMP00074
DUMPID=074 REQUESTED BY JOB(MQT1MSTR)
FOR ASID(005E)

IEA911E PARTIAL DUMP ON SYS1.MCEVS4.DMP00039
DUMPID=039 REQUESTED BY JOB(DMSGTODI)
FOR ASID(00D2)
```

+ For more information see:

https://www.ibm.com/docs/en/ibm-mq/9.3?topic=problems-mq-zos-dumps
IBM MQ / 9.3
IBM MQ for z/OS dumps

+++ HPe NonStop Server

MQ for HPe NonStop Server writes its diagnostic dumps to the subdirectory
        var/mqm/errors
… of the queue manager subvolume.

In OSS, this subdirectory is accessible as $MQNSKVARPATH/errors.

MQ FFST files are named AMQccppppp.mm.FDC, where cc is the number of the CPU in which the process reporting the error is running, ppppp is the process identification number (PIN) and mm is a sequence number, normally 0.

+ For more information see:

https://www.ibm.com/docs/en/mq-for-hpe-nonstop/8.1.0?topic=problem-handling
IBM MQ for HPE NonStop / 8.1.0
Problem handling

https://www.ibm.com/docs/en/mq-for-hpe-nonstop/8.1.0?topic=manager-environment-variables-path
IBM MQ for HPE NonStop / 8.1.0
Environment variables and PATH

+++ MQ Classes for JMS

When using the IBM MQ classes for JMS, FFST information is recorded in a file in a directory that is called FFDC, which by default is a subdirectory of the current working directory for the IBM MQ classes for JMS application that was running when the FFST was generated. The FFST information is recorded whether you are using Jakarta Messaging 3.0 or JMS 2.0. If the property com.ibm.msg.client.commonservices.trace.outputName has been set in the IBM MQ classes for JMS configuration file, the FFDC directory is a subdirectory of the directory that the property points to. For more information, see The IBM MQ classes for JMS/Jakarta Messaging configuration file.

An FFST file contains one FFST record. Each FFST record contains information about an error that is normally severe, and possibly unrecoverable. These records typically indicate either a configuration problem with the system or an internal error within the IBM MQ classes for JMS .

FFST files are named JMSC nnnn.FDC, where nnnn starts at 1. If the full file name already exists, this value is incremented by one until a unique FFST file name is found.

An instance of an IBM MQ classes for JMS application writes FFST information to multiple FFST files. If multiple errors occur during a single execution of the application, each FFST record is written to a different FFST file.

+ For more information see:

https://www.ibm.com/docs/en/ibm-mq/9.3?topic=ffst-mq-classes-jms
IBM MQ / 9.3
FFST: IBM MQ classes for JMS

+++ end +++