MA1L: WebSphere MQ – IMS Trigger Monitor User Guide
Version 1.0

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Take Note!
Before using this User Guide and the product it supports, be sure to read the general information under "Notices".

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This edition applies to Version 1.0 of *WebSphere MQ – IMS Trigger Monitor* and to all subsequent releases and modifications until otherwise indicated in new editions.

Notices

The following paragraph does not apply in any country where such provisions are inconsistent with local law.

Contents

Chapter 1. About This SupportPac

This book describes how to operate the sample program *WebSphere MQ – IMS Trigger Monitor* and to install and run the trigger monitor on z/OS.

This SupportPac provides the source code for a IMS trigger monitor. Websphere MQ for z/OS does include an IMS trigger monitor which can be turned on and off (refer to book) this is just the machine code. By supplying the source code for a C version it allows customers to adapt the program to their requirements.

The SupportPac also comes with a piece assembler code which is required to enable the trigger monitor to be stopped. (Due to the fact that the trigger monitor runs within IMS and cancel will not work with IMS MPPs or BMPs).

There is also a debug option which allows the user to debug the trigger monitor, this can be enabled by changing a value in the set-up option (see Chapter 3. Controlling the Trigger Monitor).

If there is a problem with the code or another user may find an adaptation useful, please inform the SupportPac author (contact details are shown on the front page).

Chapter 2. Installation

WebSphere MQ – IMS Trigger Monitor Pre-requisites

This SupportPac will run with Websphere MQ V5.3.1 or greater.

How to Install the SupportPac

Follow the steps below to install this SupportPac.

1. On the PC workstation use the appropriate INFOZIP unzip program to unpack the
    MA1L.zip file. The following files should be produced:

    *   MA1L.doc   - this manual
    *   getecb.asm   - the assembler module required
    *   csq4trmn.jcl   - sample JCL to assemble, compile and link
    *   csq4trmn.c   - the sample C code

2. The csq4trmn.asm, csq4trmn.c and csq4trmn.jcl need to be transferred to the
    destination TSO system as a text file that has either PDS or PDSE datasets with a
    record format of FB 80. Use one of the following methods to accomplish this:

    *   To send them via ftp, ensure the ASCII option is set and then use the
        following commands:

        ascii

        quote site fixrecfm 80

        put getecb.asm ++HLQ++.ma1l.asm(getecb)

        put csq4trmn.c ++HLQ++.ma1l.c(csq4trmn)

        put csq4trmn.jcl ++HLQ++.ma1l.jcl(csq4trmn)

    *   To send to TSO using IBM Personal Communications, use the "Send Files to
        Host" option under the Transfer menu item

        PC File   csq4trmn.c etc
        Host File   '++HLQ++.ma1l.c(csq4trmn)' etc
        Transfer Type   pdslib

The Transfer type of "pdslib" will need to be correctly setup. To do this, use the "Setup.Define Transfer Types" option under the Transfer menu item and create the "pdslib" type with the ASCII, CRLF and Append checkboxes all unselected, the Fixed radio button selected and the LRECL set to 80.

3. COMPILATION AND LINKAGE

An example of the JCL required to compile and link the code is given in csq4trmn.jcl. Replace the ++variable++ values with the correct values. Once done submit the job. This will first assemble and link the assembler code and then compile and link the C code.

Note: if the trigger monitor is being complied on z/OS version 1.3 or earlier the JCL needs to be altered to use compiler program CCNDRVR to CBCDRVR and the dataset 'PP.CBC.++OS++.SCBCCMP' needs to be 'PP.CBC.++OS++.SCCNCMP'.

4. DEFINING CSQ4TRMN TO IMS

The instructions below are a guide to define CSQ4TRMN to IMS, for further information please refer to the IMS reference manuals.

Define the application to IMS using the model CSQQTAPL in the ++MQHLQ++.SCSQPROC library (see figure 1).

Generate the PSB and ACB using the model CSQQTPSB in the ++MQHLQ++.SCSQPROC library (see figure 2).

```
* This is the application definition *
* for the IMS Trigger Monitor BMP    *

APPLCTN PSB=CSQ4TRMN,
        PGMTYPE=BATCH,
        SCHDTYP=PARALLEL
```

Figure 1 – Example transaction definition for CSQ4TRMN

```
        PCB TYPE=TP,           ALTPCB for transaction messages
            MODIFY=YES,        To "triggered" IMS transaction
            PCBNAME=CSQ4TRMN
        PCB TYPE=TP,           ALTPCB for diagnostic messages
            MODIFY=YES,        To LTERM specified or "MASTER"
            PCBNAME=CSQ4TRMG,
            EXPRESS=YES
        PSBGEN LANG=ASSEM,
            PSBNAME=CSQ4TRMN,  Runs program CSQ4TRMN
            CMPAT=YES
```

Figure 2 – Example PSB definition for CSQ4TRMN

<u>Note</u>

If the queue manager hasn't been defined to IMS the steps described in WebSphere MQ for z/OS System Setup Guide - Chapter 7. Setting up the IMS adapter.

How to Uninstall the SupportPac

To uninstall the SupportPac delete the following (where ++HLQ++ is the high level qualifier of the SupportPac or owner): -

- ++HLQ++.ma1l.asm(getecb)
- ++HLQ++.ma1l.c(csq4trmn)
- ++HLQ++.ma1l.jcl(csq4trmn)

Also remember to delete the executable files that were compiled. The location of these can be found in one of the datasets pointed to by the SYSLMOD statement in the linkage step but also ensure that there are no object code belongs to the SupportPac in the dataset pointed to by the SYSMOD statement in the pre-link-edit step.

Chapter 3. Controlling the trigger monitor

The trigger monitor runs as a BMP within IMS, there are only two actions which the operator can perform, either start or stop. The trigger monitor will produce some messages that are either sent to IMS or printed in the CSQQUT2.

Starting the trigger monitor CSQ4TRMN

1. Start a batch oriented BMP running the program CSQ4TRMN for each initiation queue you want to monitor.
2. Modify your batch JCL (described in the *WebSphere MQ for z/OS System Setup Guide*) to add a DDname of CSQQUT1 that points to a data set containing the following information:
   where:

QMGR=q_manager_name	Comment: queue manger name
INITQUEUENAME_init_q_name	Comment: initiation queue name
LTERM=lterm	Comment: LTERM to remove error messages
CONSOLEMESSAGES=YES	Comment: Send error messages to console
DEBUGLEVEL=debug_value	Comment: The debug level to use

q_manager_name	The name of the queue manager (if this is blank, the default nominated in CSQQDEFV is assumed).
init_q_name	The name of the initiation queue to be monitored.
Lterm	The IMS LTERM name for the destination of error messages (if this is blank, the default value is MASTER).
CONSOLEMESSAGES=YES	Requests that messages sent to the nominated IMS LTERM are also sent to the z/OS console. If this parameter is omitted or misspelled, the default is NOT to send messages to the console.
debug_value	The value of this attribute can be in the range 0 to 3 depending on the amount of debug information required. See the debug section for more information.

3. Add a DD name of CSQQUT2 if you want a printed report of the processing of CSQQUT1 input.
4. Add a DD name of CSQQUT3 if you want a debug information produced.

Notes:

1. The data set CSQQUT1 is defined with LRECL=80. Other DCB information is taken from the data set. The DCB for data set CSQQUT2 is RECFM=VBA and LRECL=125.
2. You can put only one keyword on each record. The keyword value is delimited by the first blank following the keyword; this means that you can include comments. An asterisk in column 1 means that the whole input record is a comment.
3. If you misspell either of the QMGRNAME or LTERM keywords, CSQQTRMN uses the default for that keyword.
4. Ensure that the subsystem is started in IMS (by the /START SUBSYS command) before submitting the trigger monitor BMP job. If it is not started, your trigger monitor job terminates with abend code U3042.
5. The DEBUGLEVEL parameter can be left out, if so, the DEBUGLEVEL of 0 is used.
6. The only difference with this version of the trigger monitor and the version shipped with MQ is that the DEBUGLEVEL parameter has been added.

Debug Levels

CSQ4TRMN has 4 pre-defined debug levels (shown below). The greater the level the more information will be generated, information from the required level and all lower levels will be included.

Value	CSQ4TRMN Constant	Notes
0	DEBUG_LEVEL_NONE	No debug information will be generated.
1	DEBUG_LEVEL_MINIMUM	All error return codes from IMS and MQ will be generated.
2	DEBUG_LEVEL_RETURN_CODES	All return codes from IMS and MQ will be generated.
3	DEBUG_LEVEL_FULL	Program flow will be recorded.

If CSQQUT3 is supplied or the dataset can't be opened then no debug information will be produced.

When CSQ4TRMN is started the default debug level which is set by a #define in the program. This will be used until the CSQQUT1 dataset is read and parsed. This can be altered but a compile is required. The shipped version has the default debug level set to DEBUG_LEVEL_MINIMUM so that error messages will appear during start-up.

Stopping the trigger monitor CSQ4TRMN

Once started, CSQ4TRMN runs until either the connection between WebSphere MQ and IMS is broken due to one of the following events:
- the queue manager ending
- IMS ending
- a z/OS STOP jobname command is entered (e.g. /p csq4trmn)

Return Codes

CSQ4TRMN is designed to pass back a return code when it terminates indicating the seriousness of the termination. These are shown below: -

Value	CSQ4TRMN Constant	Notes
0	RETURN_OK	The trigger monitor was asked to stop by the operator.
2	RETURN_STOP	The trigger monitor terminated because a connection has been broken. Consult output for further information.
4	RETURN_WARN	The trigger monitor terminated with a warning. Consult output for further information.
8	RETURN_FAIL	The trigger monitor terminated because the environment is configured wrong. Consult output for further information.

Appendix A – Further References

For further WebSphere MQ application programming information see…
- Websphere MQ Application Programming Guide Version 6.0 (SC34-6596-00)
- Websphere MQ Application Programming Guide Reference Version 6.0 (SC34-6599-00)
- Websphere MQ for z/OS System Setup Guide Version 6.0 (SC34-6583-00)
- Websphere MQ for z/OS Messages and Codes Version 6.0 (GC34-6602-00)

For further IMS application programming information see…
- IMS Application Programming: Transaction Manager Version 8 (SC27-1289-03)