

Migrating a WebSphere MQ Workflow 3.6 System Group on AIX, using DB2, from WebSphere MQ 5.3 to WebSphere MQ 6.0

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About this document

This document is intended for WebSphere MQ Workflow 3.6 customers who want to migrate an MQ Workflow System Group that uses DB2 as database system, from WebSphere MQ Version 5.3 to WebSphere MQ Version 6.0 on the AIX platform.

Starting with Version 6, WebSphere MQ introduced or removed some features that have an impact on an MQ Workflow installation:

- On AIX, the 32-bit distributions is dropped.
- The template objects in the channel table were updated.

If you perform the initial setup of MQ Workflow using WebSphere MQ 6.0, all the new features are configured correctly. However, if the initial setup was done using a WebSphere MQ 5.3 installation, the MQ Workflow setup utilities used the old procedures to setup the queue manager. If you migrate the queue manager to WebSphere MQ 6, starting MQ Workflow will typically fail.

This document provides a step-by-step description on how to successfully migrate the queue manager for any MQ Workflow installation.

Migration Roadmap

To migrate an MQ Workflow System Group you must migrate the queue manager on each MQ Workflow system. The following sequence is recommended:

1. Start by migrating MQ Workflow's "First" system in the System Group.
2. Migrate any additional MQ Workflow systems where the queue manager holds a full repository.
3. Migrate all other MQ Workflow systems.
4. Migrate any client installations.

To migrate an MQ Workflow system to WebSphere MQ 6.0 you must perform the following steps:

1. Bring the MQ Workflow installation to the latest service level.
2. Stop your MQ Workflow system group (all Workflow servers, queue managers, and the database).
3. Migrate to WebSphere MQ 6.0
4. Update the database environment to work with the new WebSphere MQ install.
5. Modify the WebSphere MQ environment to work with 64-bit databases.
6. Modify the MQ Workflow setup to deal with WebSphere MQ 6.0 and 64-bit databases.
7. Refresh the objects in the channel table.
8. Start your MQ Workflow system.
9. Verify the system.

Before you migrate

To prepare for migrating your setup, perform the steps described below for a seamless migration with the option to fall-back to a backup in case of any problems.

Backup your MQ Workflow systems

As a precaution against the migration failing, create a backup of your MQ Workflow system. The backup should include at least the following:

- MQ Workflow databases (Runtime or Buildtime).
- Queue managers.
- MQ Workflow configurations.
- Optionally the operating system itself.

See the product documentation for details on how to backup your system.

Collect authorization information

The most parts of the migration require administrator permission for the operating system. In detail, the following authorities are required:

- Operating system administrator to install the new WebSphere MQ packages.
- WebSphere MQ administrator to modify the queue manager settings.
- Database administrator to modify the database installation.
- WebSphere MQ Workflow administrator to update the MQ Workflow configuration.

Consider the migration sequence for an MQ Workflow System Group

When migrating a System Group, you must first migrate the queue managers that have a full repository. If you have multiple full repositories, start with the repository for your first MQ Workflow system.

It is recommended to migrate the systems step-by-step instead of migrating them all at once. WebSphere MQ supports having a mixed cluster of version 5.3 and 6.0 queue managers, and for the MQ Workflow servers the version of WebSphere MQ being used is transparent. This helps to minimize the downtime of your System Group.

Think about third-party applications

During the migration, you must do significant changes to the items listed in *Consider the significant changes* below. These changes might break any third party applications that also use the queue manager, the database, or the workflow user ID.

Before you migrate, ensure that your other applications will also work on this new setup.

Consider the significant changes

There are the significant changes to be done to the system. Check with your system administrators if and how these changes impact other parts of the system. The major changes are:

- Update the environment of the WebSphere MQ user (default `mqm`) that starts the queue manager to remove references to the 32-bit libraries in the library path.
- Remove links for 32-bit WebSphere MQ libraries from `/usr/lib`.
- Update the environment of the WebSphere MQ Workflow user (default `fmw`) that starts the Workflow servers to remove the 32-bit DB2 libraries in the library path.
- Change the word length used by the DB2 instance to 64 bits.

Read the WebSphere MQ migration information

Read the migration chapters in the MQ documentation before starting the migration. You can find information about migration in the following manuals:

- WebSphere MQ for AIX Quick Beginnings
GC34-6478-01
- WebSphere MQ for HP-UX Quick Beginnings
GC34-6479-03
- WebSphere MQ for Solaris Quick Beginnings
GC34-6477-02
- Migration Information
Some issues affecting migration to IBM
WebSphere MQ, Version 6.0
SC34-6604-01

Read the DB2 instance migration information

During the migration you might need to switch the DB2 instance to be a 64-bit instance. Detailed information about the possible impacts of doing this can be found in the following DB2 manual:

- Administration Guide: Implementation
SC09-4820-01
Chapter 5. Altering a database, Altering an instance

Migrating an MQ Workflow server

This chapter contains a step-by-step description of how to migrate a single MQ Workflow system from WebSphere MQ 5.3 to WebSphere MQ 6.0. In a System Group with multiple systems, you must follow the instructions in this chapter once for each machine in the system group, with the following sequence:

1. Start with MQ Workflows "First" system of the System Group.
2. Migrate any additional MQ Workflow systems where the queue manager holds a full repository.
3. Migrate all other MQ Workflow systems in the system group.

1. Install MQ Workflow 3.6 SP6 and the queue manager migration tool `fmczqmig`

During this procedure you must use the tool `fmczqmig` to update several queue manager objects. This tool has been changed to allow you to update the migrated queue manager. The new version of `fmczqmig` is attached to the TechDoc and requires Service Pack 6. It will be part of later Service Packs. Therefore, if you have not already installed MQ Workflow Service Pack 6, you must install it as described in the product documentation, and then replace the file `MQ Workflow installation dir/bin/fmczqmig` with the version that is attached to this TechDoc.

If you have already a later Service pack available, just install the service pack.

2. Stop MQ Workflow

Before you can migrate the queue manager, you must stop all running MQ Workflow processes on the machine to ensure that there are no connections on the queue manager. To do this

1. Stop all MQ Workflow servers using the administration utility `fmcautil`.
2. Make sure that there are no processes left. To do this, enter the command:
`ps -ef | grep fmc`
3. Make sure that there are no process communications left. Enter the command:
`ipcs | grep fmc`. Cleanup any leftovers using `ipcrm`. (requires root authority).
4. On AIX, run `slibclean` as root user to unload the MQ Workflow libraries from the cache.

3. Update the DB2 instance to be a 64-bit instance

After the queue manager is migrated, it can no longer deal with a 32-bit DB2 instance. Thus, you first need to change your DB2 instance serving the MQ Workflow database to be a 64-bit instance. In a setup with a remote database, the client instance that MQ Workflow connects to must be a 64-bit instance. Follow the steps below to change your instance to a 64-bit instance:

1. If the instance to be migrated holds any databases, perform a backup.
2. Log on with the instance user ID (e.g. `db2inst1`)
3. Stop the instance using the `db2stop` command to ensure that all applications are disconnected.
4. Log on as `root` user
5. change to `db2_install_dir/instance`, e.g. on AIX to `/usr/opt/db2_08_01/instance`
6. Run `db2iupdt` to change the instance to 64-bits. For example, enter:

```
db2iupdt -w 64 -u db2fenc1 db2inst1
```

 where `db2inst1` is the name of the instance and `db2fenc1` is the fenced user ID for this instance. Refer to the DB2 product manuals for details about `db2iupdt`.
7. Again, log on as the instance user and verify the change with the `db2level` command.
8. Start the instance using the `db2start` command.

4. Migrate to WebSphere MQ 6.0

Migrate the WebSphere MQ installation as described in the WebSphere MQ documentation. Also install the latest WebSphere MQ fix packs. After you completed the installation, do not start the queue manager even if the manual tells you to do so.

Note: If you do not perform all the tasks in this document before you start the queue manager directly after migration, it might fail. Only restart the queue manager when this document explicitly instructs you to start the queue.

For the normal WebSphere MQ migration, refer to the following manuals:

- WebSphere MQ Migration Information
Some issues affecting migration to IBM WebSphere MQ, Version 6.0
SC34-6604-01, Oct. 2005
- WebSphere MQ for AIX Quick Beginnings
GC34-6478-01
- WebSphere MQ for HP-UX Quick Beginnings
GC34-6479-03
- WebSphere MQ for Solaris Quick Beginnings
GC34-6477-02

5. Update the user environments

After you have migrated the DB2 instance to 64-bits, you must change the environment settings for:

- The user ID that starts the queue manager.
- The user ID that starts the MQ workflow server `fmcamain`.

WebSphere MQ runs in 64-bit mode, it also uses the 64-bit DB2 API. However, because MQ Workflow runs in 32-bit mode, it needs the 32-bit DB2 API.

Both MQ Workflow and WebSphere MQ can load the correct DB2 API libraries using the built-in paths. However, the library loader searches the libraries in the following order:

1. All directories listed in the LIBPATH environment variable.
2. All directories listed in the LD_LIBRARY_PATH environment variable.
3. All directories listed in the built-in search path of the module.

Because of this, to allow the loader to find the DB2 API libraries using built-in search path, the LIBPATH and LD_LIBRARY_PATH must not contain any DB2 libraries.

Since both MQ Workflow and WebSphere MQ deal with DB2, the user that starts them must have a call to the db2profile shell script in her .profile (or somewhere else during the environment setup). The db2profile shell script sets the library path to contain the 32-bit DB2 libraries, even your instance is now a 64-bit instance.

- Because of the 32-bit DB2 libraries, the startup of the queue manager will fail loading the correct (64-bit) DB2 libraries.
- The MQ Workflow servers need the 32-bit DB2 libraries. The DB2 libraries however reload 64-bit libraries since the DB2 instance is a 64 bit instance. If the LIBPATH is set, there is a mixture of 32 and 64-bit libraries, and the loading fails.

To overcome this, you must undo the settings for the LIBPATH done by the db2profile script. Below is an example how to do it. Do this twice if the starter of the queue manager is not also the starter of the MQ Workflow servers.

If the solution given below does not fit your needs, read the section "Implications of a 64-bit queue manager" in the WebSphere MQ Quick Beginnings book.

Modify the .profile as follows:

1. Log on as the user who starts the queue manager or the MQ Workflow server.
2. Open the logon profile (for example .profile) in any editor.
3. Locate the line where db2profile is called.
4. Before this line, depending on your platform, save the values of the following environment variables in other variables:
 - On AIX: LIBPATH and LD_LIBRARY_PATH
 - On HP_UX: SHLIB_PATH
 - On Solaris: LD_LIBRARY_PATH
5. After the line containing the call to db2profile, restore the saved variables.

Example of a modified profile (AIX):

```
if [ -s "$MAIL" ]      # This is at Shell startup.  In normal
  then echo "$MAILMSG" # operation, the Shell checks
fi                    # periodically.

# Save the LIBPATHs to avoid a mixture of 32 and 64 libraries for
# the MQ Workflow libs
SAVE_LIBPATH=$LIBPATH
SAVE_LD_LIBRARY_PATH=$LD_LIBRARY_PATH
```

```

. /home/db2inst1/sqllib/db2profile

# undo the modifications db2profile did to the LIBPATHs
LIBPATH=$SAVE_LIBPATH
LD_LIBRARY_PATH=$SAVE_LD_LIBRARY_PATH

```

To completely remove a LIBPATH value you can also use the unset command. For example, on AIX enter:

```

unset LIBPATH
unset LD_LIBRARY_PATH

```

After your changes to the environment, ensure that the changes get activated by closing and reopening all command line sessions.

6. Create links for the DB2 libraries

As described in “Update the user environments”, to ensure the correct loading of the 32- and 64-bit libraries, the built-in paths are used. If your DB2 is not installed in the default location `/usr/opt/db2_08_01` or `/opt/IBM/db2/V9.1`, you must provide additional links for MQ Workflow.

All MQ Workflow libraries have `/usr/lpp/fmc/lib/workflow` in the built-in path to allow this. The 64-bit switch file has `/usr/lpp/fmc/lib/workflow64` instead in its built-in path. Thus, to enable the MQ Workflow binaries to find the correct DB2 libraries:

1. Log on with a user ID that has permissions to create directories and links in the MQ Workflow installation directory.
2. Change to the *MQ Workflow installation directory/lib* directory.
3. Create the directory `workflow` for the 32-bit libraries by entering `mkdir workflow`.
4. Create the directory `workflow64` for the 64-bit libraries by entering `mkdir workflow64`.
5. Set the correct permissions for the newly created directories by entering `chmod 755 workflow workflow64`.
6. Create links for the 32-bit DB2 libraries in the `workflow` directory by entering `ln -s DB2 installation directory/lib_dir/* ./workflow` where *DB2 installation directory* is the directory where the DB2 product is installed and *lib_dir* is the directory of the 32-bit DB2 libraries. When using DB2 v8, use `lib` as *lib_dir*, when using DB2 v9, use `lib32`.
7. Create links for the 64-bit DB2 libraries in the `workflow` directory by entering `ln -s DB2 installation directory/lib64/* ./workflow` where *DB2 installation directory* is the directory where the DB2 product is installed.

7. Remove links in /usr/lib

If you need to include `/usr/lib` in your LIBPATH, then to avoid errors running 64-bit WebSphere MQ applications or WebSphere MQ commands, consider removing the symbolic links from `/usr/lib` to the 32-bit WebSphere MQ libraries using the `dltmqlnk` command .

8. Copy the channel table from earlier migrated systems

If you are migrating an additional MQ Workflow system in your System Group, and your clients connect using a WebSphere MQ client channel table, copy the channel table from the already migrated queue manager to the system you are currently migrating. If you have multiple systems, copy the channel table from the last migrated system. This ensures that all objects for all MQ Workflow servers in the channel tables are refreshed.

After all systems are migrated, distribute the updated channel table to the clients.

9. Migrate the queue manager for MQ Workflow

To migrate the WebSphere MQ workflow settings for the queue manager, you can invoke the MQ Workflow queue manager migration utility `fmczqmig`. `fmczqmig` was enhanced to support the WebSphere MQ 5.3 to 6.0 migration in several ways. When invoked, `fmczqmig` performs the following:

- Checks the availability of the different WebSphere MQ exit paths under `/var/mqm` and creates them if necessary.
- Reruns `fmczinsx` to create new links for the 64-bit switch files within `/var/mqm/exits64`
- Updates the `qm.ini` file to refer to the exit path for 64-bit libraries (key `ExitsDefaultPath64`)
- Updates the `qm.ini` to contain a relative path to the MQ Workflow switch file instead of a fully qualified path.
- Refreshes the server channel table (using `strmqm -c`).
- Recreates all MQ Workflow objects on the queue manager using the replace option.
Note: This will overwrite any modifications to the MQ Workflow objects you did after the initial MQ Workflow configuration.

Because these changes modify system resources, root authority is required.

Note: If your security guidelines do not allow a tool to make such changes to your system, you can do them manually as described in *Appendix A. Updating the environment manually*.

To indicate that `fmczqmig` should migrate the queue manager for a configuration from WebSphere MQ 5.3 to 6.0, you must specify the newly added command line flag `-q`. `fmczqmig` can update all configurations that have an associated queue manager (i.e. MQ Workflow server and client configurations).

10. To migrate all queue managers for all MQ Workflow configurations, issue the command below. `fmczqmig` iterates then through all MQ Workflow configurations and migrates all associated queue managers.

As root user, enter

```
fmczqmig -q
```

11. To migrate only the queue manager of a specific MQ Workflow configuration, issue the following command while logged on as root user:

```
fmczqmig -q -y config_id
```

where *config_id* is the ID of the MQ Workflow configuration that owns the queue manager.

fmczqmig logs messages and informations in the following folders and files:

12. General information is stored in the general log file `fmczkcfg.log`, located in *configuration root directory*/log, where *configuration root directory* is typically `/var/fmc`.
13. While updating a specific configuration, the information is written into the different log files of the configuration, located in *configuration root directory*/*config_id*/log, where *configuration root directory* is the directory where the MQ Workflow configurations are stored and *config_id* is the name of the updated MQ Workflow configuration.

10. Start the MQ Workflow system

After fmczqmig completed successfully, the migration of the MQ Workflow system is complete. You can now start the system again:

10.1 Start the queue manager

To be able to find any errors quickly, clean up the error log files for your queue manager, located under *qmgr_home*/errors, where *qmgr_home* is the location of the queue manager files, typically `/var/mqm/qmgrs/qmgrname`. If you want to keep the old log files, copy them to a different directory. Then delete all files in the errors directory.

Now start the queue manager using the `strmqm` command for your queue manager.

After the queue manager has started, check the error log files of the queue manager for any errors. You must resolve any errors, before you can start the MQ Workflow server. If you see any errors, use *Appendix B. Errors and solutions* to resolve them. Also the WebSphere MQ documentation might be helpful.

If no errors are logged, start the trigger monitor for the queue manager using

```
runmqtrm -m qmgrname -q FMCTRIGGER &
```

Then proceed with starting the MQ Workflow server.

10.2 Start MQ Workflow

For information about how to start and verify the MQ Workflow system refer to the *IBM WebSphere MQ Workflow Installation Guide, Chapter 8. Installing and configuring an MQ Workflow server on UNIX, Verifying the MQ Workflow server on UNIX*.

Migrating an MQ Workflow client

If your System Group contains any MQ Workflow client concentrator or Client with Queue Manager setups, for each of these clients, perform the steps described in *Migrating a client with queue manager or client concentrator*.

If your System Group has MQ Workflow clients that use a client channel table to connect to the MQ Workflow servers, for each of these clients, perform the steps described in *Migrating a client that connects via the client channel table*.

Migrating a client with queue manager or client concentrator

1. Install MQ Workflow 3.6 SP6

Even though it is not required to install the MQ Workflow Service Pack 6 before migrating a client queue manager, it is recommended to do so.

2. Stop all clients connecting to the queue manager

Before you can migrate the client queue manager to WebSphere MQ 6.0, stop all running MQ Workflow clients that connect to the queue manager.

3. Migrate to WebSphere MQ 6.0

Migrate the WebSphere MQ installation as described in the WebSphere MQ documentation. Install the latest WebSphere MQ fix packs.

For the normal WebSphere MQ migration, refer to the following manuals:

- WebSphere MQ Migration Information
Some issues affecting migration to IBM WebSphere MQ, Version 6.0
SC34-6604-01, Oct. 2005
- WebSphere MQ for AIX Quick Beginnings
GC34-6478-01
- WebSphere MQ for HP-UX Quick Beginnings
GC34-6479-03
- WebSphere MQ for Solaris Quick Beginnings
GC34-6477-02

4. Update the channel table

In a setup where the client channel table accessed by the clients contains information about one or more MQ Workflow server queue managers, copy the updated server channel table to the clients. Even though this is not mandatory, it is recommended because the updated channel table contains the new templates.

5. Refresh the templates in the channel table

In a client concentrator setup where the client channel table accessed by the clients only contains information about the client concentrator queue manager (and not the MQ Workflow server queue managers), update the channel table to contain the new templates. To do this,

1. Check the location of the channel table for your MQ Workflow client. This is the file named in the key `FMLClientChannelTable` of your Workflow configuration (file `fmcrc`).
2. Log on as a WebSphere MQ administrator, for example `mqm`.
3. Set the environment variables `MQCHLTAB` and `MQCHLLIB` to point to your channel table. For example, if your channel table file is `/var/fmc/chltabs/MQWFCHL.TAB`, issue the following commands:

```
export MQCHLTAB=MQWFCHL.TAB
export MQCHLLIB=/var/fmc/chltabs
```

4. Recreate the templates using the `strmqm -c` command. For example, enter `strmqm -c qmgrName` where `qmgrName` is the name of your queue manager.

6. Start the queue manager and clients

To be able to find any errors quickly, clean up the error log files for your queue manager, located under `qmgr_home/errors`, where `qmgr_home` is the location of the queue manager files, typically `/var/mqm/qmgrs/qmgrname`. If you want to keep the old log files, copy them to a different directory. Then delete all files in the errors directory.

Now start the queue manager using the `strmqm` command for your queue manager.

After the queue manager has started, check the error log files for the queue manager for any errors. You must resolve any errors, before you can start the MQ Workflow server. If you see any errors, use *Appendix B. Errors and solutions* to resolve them. Also the WebSphere MQ documentation might be helpful.

If no errors logged, start the clients. When all clients have been started successfully, the migration of the client queue manager is complete.

Migrating a client that connects via the client channel table

How to migrate an MQ Workflow client that connects via a client channel table is completely covered by the normal WebSphere MQ migration description.

The only thing while migrating an MQ Workflow client from WebSphere MQ 5.3 to 6.0 is to think about the updated channel tables on the queue manager. It is recommended to replace the client channel table accessed by the clients with the updated channel table from the migrated queue managers. This is to get the new templates in the channel table which prevents errors during further configuration actions on the table.

For more information refer to *Migrating an MQ Workflow client*, *Refresh the templates in the channel table* and *Update the channel table*.

Appendix

Appendix A. Updating the environment manually

If you don't want the `fmczqmig` utility to modify your system, you can make the modifications manually as described in this appendix.

Refreshing the templates in the channel table

There are some changes in the templates of the WebSphere MQ channel table from WebSphere MQ 5.3 to 6.0. You must refresh the channel table to allow the MQ Workflow utilities to update the channels. To do this:

1. Check the location of the channel table for your MQ Workflow server. This is the file named in the key `FMLServerChannelTable` of your Workflow configuration (file `fmcrc`)
2. Log on as an WebSphere MQ administrator, for example `mqm`
3. Set the environment variables `MQCHLTAB` and `MQCHLLIB` to point to your channel table. For example, if your channel table file is `/var/fmc/chltabs/MQWFCHL.TAB`, issue the following commands:

```
export MQCHLTAB=MQWFCHL.TAB
export MQCHLLIB=/var/fmc/chltabs
```

4. Recreate the templates using the `strmqm -c` command:
`strmqm -c qmgrName`
where `qmgrName` is the name of your queue manager

Updating the `qm.ini` file

The `qm.ini` must be changed to allow WebSphere MQ to work with 64-bit switch file as follows:

Create an entry "ExitsDefaultPath64" in the section `ExitPath`

The specified path must be `/var/mqm/exits64`. After updating the section, it should read as follows:

```
ExitPath:
  ExitsDefaultPath=/var/mqm/exits/
  ExitsDefaultPath64=/var/mqm/exits64/
```


Make the path to the switch file to be a relative path

The MQ Workflow utilities configure WebSphere MQ 5.3 queue managers with absolute paths. Because you migrated to WebSphere MQ 6.0, the switch file is resolved using the `ExitPath` section. To change the path, locate the key `SwitchFile` in the `XAResourceManager` section for your runtime database, then cut off any paths except for the file name. After updating the section, it should read as follows:

```
XAResourceManager:
  Name=db2inst1 FMCDDB
  SwitchFile=db2swit
  XAOpenString=DB=FMCDDB, toc=t, UID=db2inst1, PWD=*****
  ThreadOfControl=THREAD
```

Running `fmczinsx` to create 64-bit switch file links

While installing MQ Workflow, `fmczinsx` was run to create links for the correct database switch file. Due to the change to 64-bits, you need to rerun `fmczinsx` as root user. Depending on your database type, invoke one of the following commands:

- `fmczinsx -o db2`
- `fmczinsx -o oracle9` or
- `fmczinsx -o oracle10`

This creates an additional link in `/var/mqm/exits64` to the MQ Workflow 64-bit switch file.

Appendix B. Errors and solutions

This appendix contains a collection of errors that occurred while writing this document and their possible causes and solutions.

Error:

When using command `strmqm` to start the queue manager, you see:
`exec(): 0509-036 Cannot load program strmqm because of the following errors:`
`0509-150 Dependent module /usr/lib/libmqmcs_r.a(shr.o) could not be loaded.`
`0509-103 The module has an invalid magic number.`

Reason:

The `LIBPATH` (or `LD_LIBRARY_PATH` / `SHLIB_PATH`) variable contains links to `/usr/lib`, and `/usr/lib` contains links to 32bit WebSphere MQ libraries. Display the `LIBPATH` to check this:

```
echo $LIBPATH
/usr/lib:/lib:/home/db2inst1/sqllib/lib
```

Solution:

Unset the `LIBPATH` (or `LD_LIBRARY_PATH` / `SHLIB_PATH`) variable or remove the links from `/usr/lib` using `dltmqlnk`. See *Migrating an MQ Workflow server, Update the user environments* and *Remove links in /usr/lib* for details.

Error:

During startup of the queue manager, you see message AMQ7626, and the queue manager does not start. You see the following messages:
WebSphere MQ queue manager 'FMCQM' starting.
AMQ7626: XA resource manager initialization failure. Refer to the error log for more information.

Reason:

DB2 instance might be a 32-bit instance. To check this, log on as the instance user and issue "db2level".

Solution:

Change the DB2 instance to be a 64-bit instance as described in *Migrating an MQ Workflow server, Update the DB2 instance to be a 64-bit instance*.

Error:

After starting the queue manager, you see message AMQ6175 in the queue manager log file but the queue manager started:

```
----- amqtrmca.c : 256 -----
11/29/07 15:32:02 - Process(507992.1) User(mqm) Program(amqzma0_nd)
AMQ6175: The system could not dynamically load the shared library
```

```
 '/usr/lpp/fmc/db2swit/db2swit'. The system returned error number '8' and
error message
'0509-022 Cannot load module usr/lpp/fmc/db2swit/db2swit.
0509-103 The module has an invalid magic number.'
The queue manager will continue without this module.
```

Reason 1:

There are no links to the MQ Workflow switch file in `/var/mqm/exits64`

Solution 1:

Logged on as root, rerun `fmczinsx -o db2` to create the links to the 64-bit switch files.
See also *Appendix A. Updating the environment manually, Running fmczinsx to create 64-bit switch file links.*

Reason 2:

In the `qm.ini` file of the queue manager, the reference to `exits64` is missing.

Solution 2:

In the `qm.ini` file of the queue manager, add the line

```
ExitsDefaultPath64=/var/mqm/exits64/
```

to the section `ExitPaths`. See also *Appendix A. Updating the environment manually, Updating the qm.ini file.*

Reason 3:

In the `qm.ini` file of the queue manager, the MQ Workflow switch file is specified fully qualified instead of relative.

Solution 3:

In the `qm.ini` of the queue manager, locate the key `SwitchFile` in the `XAResourceManager` section for your runtime database, then cut off any paths except for the file name. See *Appendix A. Updating the environment manually, Updating the qm.ini file* for details.

Error:

```
During startup of the MQ Workflow server fmcmain, you see an exec () error:
fmcmain -y FMC &
exec(): 0509-036 Cannot load program fmcmain because of the following
errors:
    0509-022 Cannot load module
/home/db2inst1/sqllib/lib/libdb2.a(shr.o) .
    0509-150   Dependent module
/home/db2inst1/sqllib/lib/libdb2trcapi.a(shr.o) could not be loaded.
    0509-152   Member [1] 479332
```

Reason :

There are 32-bit libs in `LIBPATH/LD_LIBRARY_PATH/SHLIB_PATH`.

Solution :

Unset the `LIBPATH` (or `LD_LIBRARY_PATH/SHLIB_PATH`) variable or remove the links from `/usr/lib` using `dltmqlnk`. See *Migrating an MQ Workflow server, Update the user environments and Remove links in /usr/lib* for details.

Error:

During the update of a queue manager or when creating a new one, you see the following error in the MQ Workflow configuration log files:

```
DEFINE CHANNEL('FMCQM3.CL.TCP') CHLTYPE(CLNTCONN)
CONNNAME('tambo7(14005)')
```

```
AMQ8147: WebSphere MQ object not found.
```

Reason:

There are some changes in the templates of the MQ channel table from MQ 5.3 to 6.0.

Solution:

Refresh the channel table to allow the MQ Workflow utilities to update the channels. This is described in *Appendix A. Updating the environment manually, Refreshing the templates in the channel table.*

Appendix C. References

WebSphere MQ documentation:

- WebSphere MQ Migration Information
Some issues affecting migration to IBM WebSphere MQ, Version 6.0
SC34-6604-01, Oct. 2005
- WebSphere MQ for AIX Quick Beginnings
GC34-6478-01
- WebSphere MQ for HP-UX Quick Beginnings
GC34-6479-03
- WebSphere MQ for Solaris Quick Beginnings
GC34-6477-02
- WebSphere MQ for Windows Quick Beginnings
GC34-6476-01

DB2 documentation:

- Administration Guide: Implementation
SC09-4820-01

WebSphere MQ Workflow documentation:

For troubleshooting and general MQ Workflow installation and configuration issues refer to

- IBM WebSphere MQ Workflow Installation Guide Version 3.6
SH12-6288-11

Appendix D. Used product versions

This document is based on systems that had the following versions installed:

- WebSphere MQ Workflow Version 3.6.0.6
- WebSphere MQ 5.3 and 6.0
- DB2 Version 8.2