



Migrating to Replication Version 9



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Note

Before using this information and the product that it supports, be sure to read the general information under “Notices and trademarks” on page 21.

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Migrating to replication and event publishing Version 9

The process of migrating a replication or event publishing environment to Version 9 is designed to provide you with as much flexibility as possible. You can upgrade your environment to Version 9 all at once or gradually, depending on your business needs.

The need to migrate your replication environment depends on your DB2® platform:

DB2 for z/OS®

IBM® WebSphere® Replication Server Version 9 and IBM Data Event Publisher Version 9 work with the following DB2 for z/OS versions:

- DB2 Version 9.1 for z/OS
- DB2 Universal Database™ for z/OS Version 8
- DB2 for z/OS and OS/390® Version 7

To work with a DB2 Version 9.1 for z/OS source server in new-function mode, you must install IBM WebSphere Replication Server Version 9 or IBM Data Event Publisher Version 9 and migrate your Q Capture control tables because of changes in the DB2 log record format for new-function mode.

Recommendation: If you plan to install DB2 Version 9.1 for z/OS on a server, install a Version 9 replication or event publishing product on the server and migrate your replication or publishing environment to Version 9 before you install the new version of DB2.

The Version 8 Q Apply program can continue to work with DB2 Version 9.1 for z/OS in new-function mode if you maintain the default setting for the Version 9 Q Capture **compatibility** parameter of 0802 (sends Version 8 messages).

You must also migrate your SQL Capture program to Version 9 if your source server is migrated to DB2 Version 9.1 for z/OS new-function mode. The Version 8 SQL Apply program can continue to work with DB2 Version 9.1 for z/OS in new-function mode.

DB2 for Linux®, UNIX®, and Windows®

You must migrate the DB2 instance to Version 9 before you can use a Version 9 Q Capture or Q Apply program. After you migrate the DB2 instance, the Q Capture and Q Apply programs will not run until their control tables are migrated to Version 9.

On Linux, UNIX, and Windows, after you migrate your DB2 instance to Version 9, any log files that were created by the Version 8 DB2 instance will be inaccessible to the Q Capture program. Any transactions that were not processed before migration will be lost. To avoid losing transactions, make sure to stop your DB2 applications and let the Q Capture program process any remaining transactions in the DB2 recovery log before you migrate the DB2 instance.

When you install a Version 9 replication or event publishing product, the control tables are not migrated automatically the first time that a Version 9 program is

started. Instead, you manually migrate the control tables by using SQL scripts that are provided with your product installation.

This manual migration process, combined with the ability of Version 9 replication and event publishing programs on one server to coexist with Version 8 programs on another server, lets you upgrade your environment in stages.

For example, Figure 1 depicts a source server that uses Q replication to send transactions to two different target servers. You might want to upgrade one target server to Version 9 now, and wait to upgrade the other target server later.

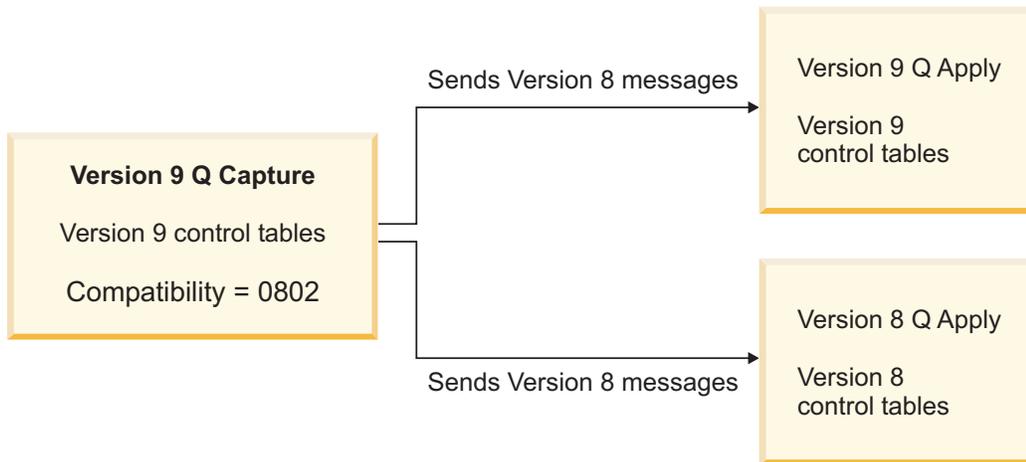


Figure 1. Version 9 Q Capture program replicating to Version 9 and Version 8 Q Apply programs

In this case, you would install a Version 9 Q replication or event publishing product at the source and migrate the Q Capture control tables to Version 9, but leave the Q Capture **compatibility** parameter at the default setting of 0802. This default prompts the Q Capture program to continue sending Version 8 messages, which can be processed by both Version 8 and Version 9 Q Apply programs. When the second target server is migrated to Version 9, you change the value of the **compatibility** parameter to 0901, which prompts Q Capture to send Version 9 messages.

The migration process keeps all existing replication objects such as Q subscriptions, queue maps, registrations, monitors, and other definitions. You do not need to recover or reconfigure these objects.

The following sections provide an overview of the migration process for the different replication and event publishing technologies:

- “Migrating to Q replication and event publishing Version 9”
- “Migrating to SQL replication Version 9” on page 3
- “Migrating the Replication Alert Monitor to Version 9” on page 3

Migrating to Q replication and event publishing Version 9

Changes to the Q Capture and Q Apply control tables for Version 9.1 are not extensive. You use one SQL script to migrate the Q Capture control tables and another script to migrate the Q Apply control tables. The scripts differ depending upon your operating system. If your target is an Oracle, Sybase, Informix®, or Microsoft® SQL Server database, you use different scripts for migrating the Q Apply control tables.

The migration process differs for event publishing, unidirectional replication, and bidirectional or peer-to-peer replication. The following migration requirements are common to all topologies:

- One of the following products must be installed before you migrate:
 - IBM WebSphere Replication Server for z/OS V9.1
 - IBM WebSphere Replication Server V9.1
 - IBM WebSphere Data Event Publisher for z/OS V9.1
 - IBM WebSphere Data Event Publisher V9.1
- The Q Capture and Q Apply programs must be stopped during the migration process.

Migrating to SQL replication Version 9

The SQL replication control tables for Version 9 are identical to the SQL replication control tables for Version 8. Because of this, you do not need to migrate the control tables after you install WebSphere Replication Server for z/OS Version 9.1 or WebSphere Replication Server Version 9.1.

If your source server is migrated to DB2 Version 9.1 for z/OS new-function mode, you must migrate the Capture program to Version 9 to handle the new DB2 log record format for Version 9.1 new-function mode. The Version 8 SQL Apply program can continue to work with DB2 Version 9.1 for z/OS in new-function mode.

If you are upgrading to Version 9 replication from DataJoiner[®] Version 2 or DB2 Universal Database for Linux, UNIX, and Windows Version 7, you need only to migrate your replication environment to Version 8 to begin using the Version 9 replication programs. For details about migrating to Version 8, see *IBM WebSphere Information Integration Migrating to SQL Replication Version 8* (SC18-9413-00).

Version 8 and Version 9 SQL replication are completely compatible. You can use either the Version 8 or Version 9 ASNCLP command-line program or Replication Center to work with your Capture and Apply programs. The Version 8 Capture program works with the Version 9 Apply program without restriction. The Version 9 Capture program works with the Version 8 Apply program without restriction.

Migrating the Replication Alert Monitor to Version 9

You migrate the Replication Alert Monitor to enable a new Version 9 function that lets you suspend a monitor for defined periods.

Both Version 8 and Version 9 Monitor control tables will work with both Version 8 and Version 9 Q Capture and Q Apply programs. You do not need to migrate the Monitor when you migrate the Q Capture and Q Apply programs, but you must migrate the Monitor to use its new function.

The following topics provide more detailed steps for migrating your replication or event publishing environment. Although any migration will require some interruption of replication, these procedures are designed to keep any interruption as brief as possible.

- “Migrating the Q replication and event publishing programs to Version 9 (z/OS)” on page 10
- “Migrating Q replication and event publishing programs to Version 9 (Linux, UNIX, and Windows)” on page 13

- “Migrating different Q replication and event publishing environments to Version 9” on page 6
- “Coexistence support in Version 9 Q replication and event publishing”

Coexistence support in Version 9 Q replication and event publishing

The Q Capture and Q Apply programs support full interoperability between Version 8 and Version 9.

- Changes to source tables that are captured by a Version 9 Q Capture program can be applied to target tables by a Version 8 Q Apply program.
- Changes that are captured by a Version 8 Q Capture program can be applied to target tables by a Version 9 Q Apply program.

The coexistence support in Q replication and event publishing allows you to upgrade your environment all at once or gradually, depending on your business needs.

Prerequisite: To work with a Version 9 Q Capture program, the Q Apply program must be at APAR PK10373 or higher for z/OS or Version 8 Fix Pack 10 or higher for Linux, UNIX, and Windows.

To give you control of when to migrate and which servers to upgrade, a new Q Capture parameter is added for Version 9. The **compatibility** parameter specifies whether the WebSphere MQ messages that contain transactions and control information from the source are at Version 9 or Version 8 level.

Figure 2 shows relationships between Version 8 and Version 9 replication programs and the effect of the **compatibility** parameter.

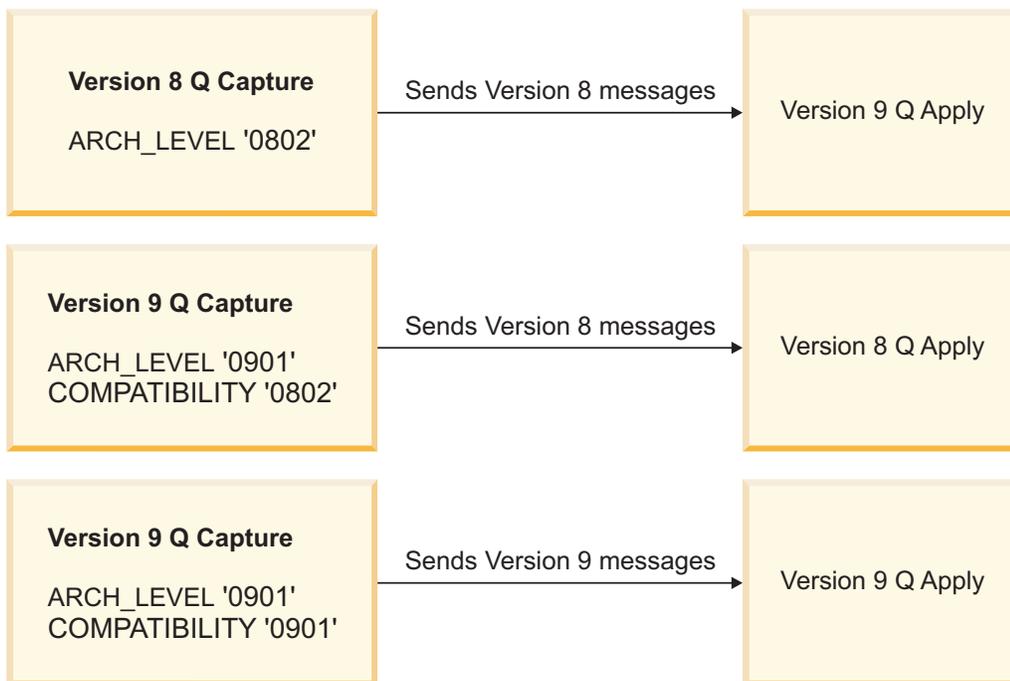


Figure 2. Effect of compatibility parameter on level of messages sent from Q Capture to Q Apply

After you install a Version 9 Q replication or event publishing program on the system where Q Capture runs, you migrate the Q Capture control tables to Version

9. You might need to change the value of the **compatibility** parameter depending on the version of your Q Apply program or programs.

The following list shows the values for **compatibility**.

compatibility=0802 (default)

The Q Capture program sends data and informational messages in Version 8 format. This is the default option and should be used if at least one of the Q Apply programs that receives the messages is at Version 8.

compatibility=0901

The Q Capture program sends data and informational messages in Version 9 format. Specify this value after all of the Q Apply programs that receive the messages are at Version 9.

New functions that are introduced in Version 9 are not enabled until both the Q Capture and Q Apply control tables are migrated to Version 9. So, for example, if you want to replicate to a consistent-change data (CCD) target table, you must migrate both the source and target servers.

Other coexistence features for Version 9

The following list details other coexistence features of Version 9 Q replication and event publishing:

Bidirectional and peer-to-peer replication

Servers in a bidirectional or peer-to-peer replication environment can operate at a mixed level, with some servers at Version 9 and some at Version 8. When you migrate a server to Version 9, you must migrate both the Q Capture and Q Apply control tables at that server.

ASNCLP and Replication Center

You can use replication administration tools at the Version 9 level to manage both Version 8 and Version 9 Q replication and publishing environments. If your tools are at Version 8, you can use them only to manage Version 8 environments.

z/OS: You can use the ASNCLP and Replication Center to create Version 9 control tables on DB2 for z/OS Version 7 and Version 8, but the tools cannot create Version 8 replication control tables on these DB2 for z/OS versions. You must use Version 8 replication tools to create control tables on DB2 for z/OS Version 7 and Version 8.

Replication Alert Monitor

Both Version 8 and Version 9 monitors can work with replication programs at either Version 8 or Version 9. You can continue to monitor replication in this mixed environment until you are ready to migrate.

Queue formatting program

The Version 9 `asnqmfmt` program will format and display both Version 9 and Version 8 messages. The Version 8 `asnqmfmt` program supports only Version 8 messages.

Migrating different Q replication and event publishing environments to Version 9

The steps that are required to migrate to Version 9 differ for unidirectional Q replication, bidirectional or peer-to-peer replication, and event publishing.

The following topics describe the migration steps for these three configurations.

- “Migrating a unidirectional Q replication environment to Version 9”
- “Migrating a bidirectional or peer-to-peer Q replication environment to Version 9” on page 7
- “Migrating an event publishing environment to Version 9” on page 9

Migrating a unidirectional Q replication environment to Version 9

The recommended approach to migrating a unidirectional Q replication environment is to migrate the Q Apply program at the target server first, and then to migrate the Q Capture program at the source server.

About this task

When you migrate the Q Apply program first, Q Apply can continue to process Version 8 messages from the Q Capture program until you migrate the Q Capture program. After you migrate Q Capture, you can change the value of the Q Capture **compatibility** parameter from 0802 to 0901 so that Q Capture begins to send Version 9 messages.

These instructions can be used with any of the following replication scenarios:

- One Q Capture program that replicates to one Q Apply program
- One Q Capture program that replicates to multiple Q Apply programs
- Multiple Q Capture programs that replicate to one Q Apply program

Procedure

To migrate a unidirectional Q replication environment to Version 9 (Q Apply first):

1. **Recommended:** If you run the ASNCLP command-line program or Replication Center on a separate system from the Q Capture and Q Apply programs, upgrade the administration first. A Version 8 ASNCLP or Replication Center cannot work with Version 9 control tables.

You upgrade the administration tools by installing the appropriate Version 9 product that contains the replication administration tools. For example, the DB2 Administration Client, DB2 Connect™ Personal Edition, WebSphere Replication Server, and WebSphere Data Event Publisher contain these tools.

2. **Optional:** Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration. Migration of the monitor to Version 9 is optional, and you can wait to migrate the monitor until after your Q Capture and Q Apply programs are migrated.
3. Migrate the Q Apply program. See one of the following topics for details:
 - “Migrating the Q Apply program to Version 9 (z/OS)” on page 11
 - “Migrating the Q Apply program to Version 9 (Linux, UNIX, Windows)” on page 15

If you have more than one Q Apply program, migrate each set of Q Apply control tables. You do not need to migrate all of your Q Apply programs at once. However, all of the Q Apply programs that work with a Version 9 Q Capture program must be migrated before you update the Q Capture **compatibility** parameter to 0901.

4. Migrate the Q Capture program. See one of the following topics for details:
 - “Migrating the Q Capture program to Version 9 (z/OS)” on page 10
 - “Migrating the Q Capture program to Version 9 (Linux, UNIX, Windows)” on page 13

If you have more than one Q Capture program, migrate each program. You do not need to migrate all of your Q Capture programs at once.

5. Start the Replication Alert Monitor if you stopped it in Step 2.

Migrating a bidirectional or peer-to-peer Q replication environment to Version 9

You migrate a bidirectional or peer-to-peer environment one server at a time. After you migrate the Q Capture and Q Apply control tables at each server, you instruct the Q Capture programs to begin sending Version 9 messages.

About this task

You can migrate each peer server at a different time based on your business needs. The coexistence rules for Version 9 replication allow Version 8 and Version 9 servers to participate together in a bidirectional or peer-to-peer replication environment.

Procedure

To migrate a bidirectional or peer-to-peer Q replication environment to Version 9:

1. **Recommended:** If you run the ASNCLP command-line program or Replication Center on a separate system from the Q Capture and Q Apply programs, it is recommended that you upgrade the administration first. A Version 8 ASNCLP or Replication Center cannot work with Version 9 control tables.

You upgrade the administration tools by installing the appropriate Version 9 product that contains the tools. For example, the DB2 Administration Client, DB2 Connect Personal Edition, WebSphere Replication Server, and WebSphere Data Event Publisher contain the tools.

2. **Optional:** Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration.

Migration of the monitor to Version 9 is optional, and you can wait to migrate the monitor until after your Q Capture and Q Apply programs are migrated.

3. At one of the peer servers, migrate the Q Capture and Q Apply control tables. Follow these steps:
 - a. Install IBM WebSphere Replication Server for z/OS V9.1 or IBM WebSphere Replication Server V9.1.
 - b. Stop the Q Capture and Q Apply programs.

The other peer servers can continue to replicate while you migrate the first server.

- c. **Optional:** Back up the database that contains the Q Capture and Q Apply control tables to allow for fallback and recovery.

From this point, do not use the replication administration tools to change your configuration (for example, do not add a Q subscription) until the Q Capture and Q Apply control tables are migrated.

- d. Migrate the Q Capture and Q Apply programs at the server. Take the following steps depending on the operating system of server:

z/OS

- 1) Run the ASNQMZV9 sample job in the SASNSAMP partitioned data set. The sample contains SQL statements for migrating Q Capture, Q Apply, and Monitor control tables. Follow instructions in the script to replace the schema name and table space names as required.
- 2) Start the Q Capture program and Q Apply program at the migrated server. Ensure that you start the Version 9 Q Capture and Q Apply programs instead of the Version 8 Q Capture and Q Apply programs that you stopped before you migrated the control tables.

Linux, UNIX, Windows

- 1) Migrate the DB2 instance that your Q Capture and Q Apply programs runs under. See Migration overview for DB2 servers in the DB2 Information Center for details.
- 2) Run the migration script for your DB2 platform. Follow instructions in the script to replace the schema name and table space names as required.

Table 1 and Table 2 show the scripts for various platforms.

Table 1. SQL scripts for migrating Q Capture control tables on Linux, UNIX, and Windows

Platform	SQL script file
Linux, UNIX	sqllib/samples/repl/mig9/q/asnqcapluw.sql
Windows	sqllib\samples\repl\mig9\q\asnqcapluw.sql

Table 2. SQL scripts for migrating Q Apply control tables on Linux, UNIX, and Windows

Platform	SQL script file
Linux, UNIX	sqllib/samples/repl/mig9/q/asnqappluw.sql
Windows	sqllib\samples\repl\mig9\q\asnqappluw.sql

- 3) Start the Q Capture program and Q Apply program at the migrated server.
 You must start Q Capture with the **migrate** parameter and specify **startmode=warmns** after migrating the control tables. Using this parameter tells the Q Capture program to read from the beginning of the DB2 recovery log after a migration.
 The **migrate** parameter is not supported by the Replication Center. You must use the **asnqcap** command to start Q Capture. For example, the following command starts a Q Capture program on the SAMPLE database after you migrated control tables in the ASN1 Q Capture schema:

```
asnqcap capture_server=SAMPLE capture_schema="ASN1" migrate=y startmode=warmns
```

Attention: Use the **migrate** parameter only once, when you start the Q Capture program after a migration. If you stop and restart the Q Capture program again, do not use this parameter.

4. Repeat Step 3 for each remaining peer server (you can migrate the servers at different times).
5. After you migrate all of the peer servers to Version 9, follow these steps at each server to inform the Q Capture programs that all of the Q Apply programs are migrated:
 - a. Stop the Q Capture program.
 - b. Change the value of the Q Capture **compatibility** parameter to 0901. Use one of the following methods:

Method	Description
SQL	Run the following statement: <pre>UPDATE schema.IBMQREP_CAPPARMS SET COMPATIBILITY = '0901';</pre>
Replication Center	Use the Change Parameters - Saved window for Q Capture. To open the window, right-click the Q Capture server that contains the newly migrated control tables and select Change Parameters → Saved .

- c. Start the Q Capture program in warm mode.

Migrating an event publishing environment to Version 9

When you migrate an event publishing environment you migrate the Q Capture program and then set the **compatibility** parameter to 0901 to prompt Q Capture to begin sending Version 9 messages to the subscribing application.

Procedure

To migrate an event publishing environment to Version 9:

1. **Recommendation:** If you run the ASNCLP command-line program or Replication Center on a separate system from the Q Capture program, it is recommended that you upgrade the administration first. A Version 8 ASNCLP or Replication Center cannot work with Version 9 control tables.

You upgrade the administration tools by installing the appropriate Version 9 product that contains the tools. For example, the DB2 Administration Client, DB2 Connect Personal Edition, WebSphere Replication Server, and WebSphere Data Event Publisher contain the tools.

2. **Optional:** Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration. Migration of the monitor to Version 9 is optional, and you can wait to migrate the monitor until after your Q Capture programs are migrated.
3. Migrate the Q Capture program. See one of the following topics for details:
 - “Migrating the Q Capture program to Version 9 (z/OS)” on page 10
 - “Migrating the Q Capture program to Version 9 (Linux, UNIX, Windows)” on page 13

If you have more than one Q Capture program, migrate each program. You do not need to migrate all of your Q Capture programs at the same time.

4. Start the Replication Alert Monitor if you stopped it in Step 2.

Migrating the Q replication and event publishing programs to Version 9 (z/OS)

After you install a Version 9 Q replication or event publishing product, the migration process involves running SQL scripts to update the Q Capture, Q Apply, or Replication Alert Monitor control tables to the Version 9 level.

For the Q Capture program, you also set the **compatibility** parameter when all of the Q Apply programs or subscribing applications that the Q Capture program works with are migrated to Version 9.

The following topics describe the steps for migrating the Q replication and event publishing programs to Version 9.

- “Migrating the Q Capture program to Version 9 (z/OS)”
- “Migrating the Q Apply program to Version 9 (z/OS)” on page 11
- “Migrating the Replication Alert Monitor to Version 9 (z/OS)” on page 12

Migrating the Q Capture program to Version 9 (z/OS)

You migrate the Q Capture program to Version 9 by running an SQL script that updates the Q Capture control tables at the source server. You also change the value of the Q Capture **compatibility** parameter.

About this task

Your Q Capture programs must be migrated to Version 9 to work with a DB2 Version 9.1 for z/OS source server in new-function mode because of changes in the DB2 log record format for Version 9.

If you have more than one Q Capture program, migrate all of the Q Capture programs with this procedure. You do not need to migrate all Q Capture programs and their associated control tables at the same time.

The order in which you migrate the Q Capture and Q Apply programs might differ depending upon your Q replication or event publishing configuration. For details, see “Migrating different Q replication and event publishing environments to Version 9” on page 6.

Procedure

To migrate the Q Capture program to Version 9:

1. Install one of the following products on the system where the Q Capture program runs:
 - IBM WebSphere Replication Server for z/OS V9.1
 - IBM WebSphere Data Event Publisher for z/OS V9.1
2. Stop the Q Capture program.

Any Q Apply programs or subscribing applications that the Q Capture program works with can be running or stopped.
3. **Optional:** Back up the database that contains your Q Capture control tables to allow for fallback and recovery.

From this point, do not change your configuration (for example, do not add a Q subscription) until the Q Capture control tables are migrated.

4. Migrate the Q Capture control tables by running the migration script. Follow these steps:
 - a. Locate the ASNQMZV9 sample job in the SASNSAMP partitioned data set. You can also use the asnqmzv9.sql sample on the server that contains your Version 9 replication administration tools. The path is sqllib/samples/repl/mig9/q/ on Linux and UNIX and sqllib\samples\repl\mig9\q\ on Windows.
The sample contains SQL statements for migrating Q Capture, Q Apply, and Monitor control tables.
 - b. Edit the sample to replace the schema name and table space names as required. Complete instructions are in the sample.
 - c. Run the Q Capture statements.
5. **Optional:** If all of the Q Apply programs that this Q Capture program replicates to are migrated to Version 9, change the value of the Q Capture **compatibility** parameter to 0901. Use one of the following methods:

Method	Description
SQL	Run the following statement: <pre>UPDATE schema.IBMQREP_CAPPARMS SET COMPATIBILITY = '0901';</pre>
Replication Center	Use the Change Parameters - Saved window for Q Capture. To open the window, right-click the Q Capture server that contains the newly migrated control tables and select Change Parameters → Saved .

6. Start the Q Capture program in warm mode.
Ensure that you start the Version 9 Q Capture program instead of the Version 8 Q Capture program that you stopped before you migrated the Q Capture control tables.

Migrating the Q Apply program to Version 9 (z/OS)

You migrate the Q Apply program to Version 9 by running an SQL script that updates the Q Apply control tables at the target server.

About this task

If you have more than one Q Apply program, migrate each Q Apply program with this procedure. You do not need to migrate all Q Apply programs and their associated control tables at the same time.

The order in which you migrate the Q Capture and Q Apply programs might differ depending upon your Q replication or event publishing configuration. For details, see “Migrating different Q replication and event publishing environments to Version 9” on page 6.

Procedure

To migrate the Q Apply program to Version 9:

1. Install IBM WebSphere Replication Server for z/OS V9.1 on the system where the Q Apply program runs.
2. **Optional:** Stop the Q Capture program and let Q Apply process any remaining transaction in its receive queues.

3. Stop the Q Apply program.
4. **Optional:** Back up the database that contains your Q Apply control tables to allow for fallback and recovery.
From this point, do not change your configuration (for example, do not add a Q subscription) until the Q Apply control tables are migrated.
5. Migrate the Q Apply control tables by running the migration script. Follow these steps:
 - a. Locate the ASNQMZV9 sample job in the SASNSAMP partitioned data set. You can also use the asnqmzv9.sql sample on the server that contains your Version 9 replication administration tools. The path is sqllib/samples/repl/mig9/q/ on Linux and UNIX and sqllib\samples\repl\mig9\q\ on Windows.
The sample contains SQL statements for migrating Q Apply, Q Capture, and Monitor control tables.
 - b. Edit the sample to replace the schema name and table space names as required. Complete instructions are in the sample.
 - c. Run the Q Apply statements.
6. Start the Q Apply program.
Ensure that you start the Version 9 Q Apply program instead of the Version 8 Q Apply program that you stopped before you migrated the Q Apply control tables.
7. Start the Q Capture program if you stopped it on Step 2.

If you migrated the Q Apply program first, the program can continue to work with a Version 8 Q Capture program. If you migrate the Q Capture program, you can then change the value of the compatibility parameter from 0802 to 0901. This change prompts the Q Capture program to begin sending Version 9 messages to the Q Apply program and allows you to use the full functionality of Version 9.

Migrating the Replication Alert Monitor to Version 9 (z/OS)

You migrate the Replication Alert Monitor to enable a new Version 9 function that lets you suspend a monitor for defined periods.

About this task

When you migrate the Monitor control tables to Version 9, two new tables are created to support defined monitor suspensions: the IBMSNAP_TEMPLATES table and IBMSNAP_SUSPENDS table.

Both Version 8 and Version 9 Monitor control tables will work with both Version 8 and Version 9 Q Capture and Q Apply programs. You do not need to migrate the Monitor when you migrate the Q Capture and Q Apply programs, but you must migrate the Monitor to use its new function.

Procedure

To migrate the Replication Alert Monitor to Version 9:

1. Install one of the following products on the system that contains the Monitor control server:
 - IBM WebSphere Replication Server for z/OS V9.1
 - IBM WebSphere Data Event Publisher for z/OS V9.1
2. Stop all Monitor programs that use the Monitor control server.

3. **Optional:** Back up the database that contains your Monitor control tables to allow for fallback and recovery.

From this point, do not use the replication administration tools to change your configuration (for example, do not add a new alert condition) until the Monitor control tables are migrated.

4. Migrate the Monitor control tables by running the migration script. Follow these steps:
 - a. Locate the ASNQMZV9 sample job in the SASNSAMP partitioned data set. You can also use the asnqmzv9.sql sample on the server that contains your Version 9 replication administration tools. The path is sqllib/samples/repl/mig9/q/ on Linux and UNIX and sqllib\samples\repl\mig9\q\ on Windows.
The sample contains SQL statements for migrating Monitor, Q Capture, and Q Apply control tables.
 - b. Edit the sample to replace the schema name and table space names as required. Complete instructions are in the sample.
 - c. Run the Monitor statements.
5. Start any Monitors that you stopped.

Migrating Q replication and event publishing programs to Version 9 (Linux, UNIX, and Windows)

After you install a Version 9 Q replication or event publishing product, the migration process involves running SQL scripts to update the Q Capture, Q Apply, or Replication Alert Monitor control tables to the Version 9 level.

On Linux, UNIX, and Windows, you must migrate your DB2 instance to Version 9 before you run the scripts to migrate the control tables. After you migrate your DB2 instance to Version 9, all Q Capture and Q Apply programs within the instance must be migrated to Version 9 in order to operate.

For the Q Capture program, you also set the **compatibility** parameter when all of the Q Apply programs or subscribing applications that the Q Capture program works with are migrated to Version 9.

The following topics describe the steps for migrating the Q replication and event publishing programs to Version 9.

- “Migrating the Q Capture program to Version 9 (Linux, UNIX, Windows)”
- “Migrating the Q Apply program to Version 9 (Linux, UNIX, Windows)” on page 15
- “Migrating the Replication Alert Monitor to Version 9 (Linux, UNIX, Windows)” on page 16

Migrating the Q Capture program to Version 9 (Linux, UNIX, Windows)

You migrate the Q Capture program to Version 9 by running an SQL script that updates the Q Capture control tables at the source server. You also change the value of the Q Capture **compatibility** parameter.

About this task

After you migrate your DB2 instance to Version 9, you must migrate all of the Q Capture control tables that are defined in the instance to Version 9. If you have more than one Q Capture program, migrate each Q Capture program with this procedure.

The order in which you migrate the Q Capture and Q Apply programs may differ depending upon your Q replication or event publishing configuration. For details, see “Migrating different Q replication and event publishing environments to Version 9” on page 6.

Procedure

To migrate the Q Capture program to Version 9:

1. Stop your applications and let the Q Capture program process any remaining transaction in the DB2 recovery log.
Attention: After you migrate your DB2 instance to Version 9, any log files that were created by the Version 8 DB2 instance will be inaccessible to the Q Capture program. Any transactions that were not processed before migration will be lost. To avoid losing transactions, make sure that the Q Capture program reads all of the transactions in the DB2 recovery log before you migrate the DB2 instance.
2. Stop the Q Capture program. Any Q Apply programs or subscribing applications can be running or stopped.
3. **Optional:** Back up the database that contains your Q Capture control tables to allow for fallback and recovery.

From this point, do not use the replication administration tools to change your configuration (for example, do not add a Q subscription) until the Q Capture control tables are migrated.

4. Install one of the following products on the system where the Q Capture program runs:
 - IBM WebSphere Replication Server V9.1
 - IBM WebSphere Data Event Publisher V9.1
5. Migrate the DB2 instance that your Q Capture program runs under. See Migration overview for DB2 servers in the DB2 Information Center for details.
6. Migrate the Q Capture control tables by running the migration script for your DB2 platform. Follow these steps:
 - a. Locate the script in the installation directory.

Table 3 shows the scripts for various platforms.

Table 3. SQL scripts for migrating Q Capture control tables on different platforms

Platform	SQL script file
Linux, UNIX	sqllib/samples/repl/mig9/q/asnqcapluw.sql
Windows	sqllib\samples\repl\mig9\q\asnqcapluw.sql

- b. Edit the script to replace the schema name and table space names as required. Complete instructions are in the scripts.
 - c. Run the script.
7. **Optional:** If all of the Q Apply programs that this Q Capture program replicates to are migrated to Version 9, change the value of the Q Capture **compatibility** parameter to 0901. Use one of the following methods:

Method	Description
SQL	Run the following statement: UPDATE <i>schema</i> .IBMQREP_CAPPARMS SET COMPATIBILITY = '0901';
Replication Center	Use the Change Parameters - Saved window for Q Capture. To open the window, right-click the Q Capture server that contains the newly migrated control tables and select Change Parameters → Saved .

8. Start the Q Capture program in warm mode.

You must start Q Capture with the **migrate** parameter and specify **startmode=warmns** after migrating the control tables. This parameter tells the Q Capture program to read from the beginning of the DB2 recovery log after a migration.

The **migrate** parameter is not supported by the Replication Center. You must use the `asnqcap` command to start Q Capture. For example, the following command starts a Q Capture program on the SAMPLE database after you migrated control tables in the ASN1 Q Capture schema:

```
asnqcap capture_server=SAMPLE capture_schema="ASN1" migrate=y
startmode=warmns
```

Attention: Use the **migrate** parameter only once, when you start the Q Capture program after a migration. If you stop and restart the Q Capture program again, do not use this parameter.

Migrating the Q Apply program to Version 9 (Linux, UNIX, Windows)

You migrate the Q Apply program to Version 9 by running an SQL script that updates the Q Apply control tables at the target server.

About this task

After you migrate your DB2 instance to Version 9, you must migrate all of the Q Apply control tables that are defined in the instance to Version 9. If you have more than one Q Apply program, migrate each Q Apply program with this procedure.

The order in which you migrate the Q Apply and Q Capture programs might differ depending upon your Q replication or event publishing configuration. For details, see “Migrating different Q replication and event publishing environments to Version 9” on page 6.

Procedure

To migrate the Q Apply program to Version 9:

1. Stop the Q Apply program.
2. **Optional:** Stop the Q Capture program and let Q Apply process any remaining transaction in its receive queues.
3. **Optional:** Back up the database that contains your Q Apply control tables to allow for fallback and recovery.

From this point, do not use the replication administration tools to change your configuration (for example, do not add a Q subscription) until the Q Apply control tables are migrated.

4. Install IBM WebSphere Replication Server V9.1 on the system where the Q Apply program runs.
5. Migrate the DB2 instance that your Q Apply program runs under. See Migration overview for DB2 servers in the DB2 Information Center for details.
6. Migrate the Q Apply control tables by running the migration script for your DB2 platform. Follow these steps:

- a. Locate the script in the installation directory.

Table 4 shows the scripts for various platforms. The file path is `sqllib/samples/repl/mig9/q/` on Linux and UNIX and `sqllib\samples\repl\mig9\q\` on Windows.

Table 4. SQL scripts for migrating Q Apply control tables on different platforms

Platform	SQL script file
Linux, UNIX	asdaqpluw.sql
Windows	asdaqpluw.sql
Oracle target	asdaqppora.sql
Sybase target	asdaqppsyb.sql
Informix target	asdaqppinfx.sql
Microsoft SQL Server target	asdaqppmssql.sql

- b. Edit the script to replace the schema name and table space names as required. Complete instructions are in the scripts.
 - c. Run the script.
7. Use the DB2 REORG utility to reorganize the IBMQREP_EXCEPTIONS control table.
Because the migration changes the data type of the SRC_COMMIT_LSN column in the IBMQREP_EXCEPTIONS table from CHAR(10) to VARCHAR(48), you must issue the REORG TABLE command for this control table.
 8. Start the Q Apply program.
 9. Start the Q Capture program if you stopped it on Step 2.

If you migrated the Q Apply program first, the program can continue to work with a Version 8 Q Capture program. If you migrate the Q Capture control tables, you can then change the value of the compatibility parameter from 0802 to 0901. This change prompts the Q Capture program to begin sending Version 9 messages to the Q Apply program and allows you to use the full functionality of Version 9.

Migrating the Replication Alert Monitor to Version 9 (Linux, UNIX, Windows)

You migrate the Replication Alert Monitor to enable a new Version 9 function that lets you suspend a monitor for defined periods.

About this task

When you migrate the Monitor control tables to Version 9, two new tables are created to support defined monitor suspensions: the IBMSNAP_TEMPLATES table and IBMSNAP_SUSPENDS table.

Both Version 8 and Version 9 Monitor control tables will work with both Version 8 and Version 9 Q Capture and Q Apply programs. You do not need to migrate the

Monitor when you migrate the Q Capture and Q Apply programs, but you must migrate the Monitor to use its new function.

Procedure

To migrate the Replication Alert Monitor to Version 9:

1. Install one of the following products on the system that contains the Monitor control server:

- DB2 Version 9.1 for Linux, UNIX, and Windows
- IBM WebSphere Replication Server V9.1
- IBM WebSphere Data Event Publisher V9.1

2. Stop all Monitor programs that use the Monitor control server.

3. **Optional:** Back up the database that contains your Monitor control tables to allow for fallback and recovery.

From this point, do not use the replication administration tools to change your configuration (for example, do not add a new alert condition) until the Monitor control tables are migrated.

4. Migrate the DB2 instance that the Monitor program runs under. See Migration overview for DB2 servers in the DB2 Information Center for details.

5. Migrate the Monitor control tables by running the migration script. Follow these steps:

- a. Locate the `asnmonluw.sql` script in the installation directory.

The path is `sqlib/samples/repl/mig9/q/` on Linux and UNIX and `sqlib\samples\repl\mig9\q\` on Windows.

- b. Edit the script to replace the schema name and table space names as required. Complete instructions are in the scripts.

- c. Run the script.

6. Start any Monitors that you stopped.

Migrating the SQL Capture program to Version 9 (z/OS)

If your source server is migrated to DB2 Version 9.1 for z/OS new-function mode, you must migrate the Capture program to Version 9 to handle the new DB2 log record format for Version 9.1 new-function mode.

About this task

The Version 8 SQL Apply program can continue to work with DB2 Version 9.1 for z/OS in new-function mode.

If you have more than one Capture program, migrate your Captures based on this procedure. You do not need to migrate all Capture programs and their associated control tables at the same time.

Procedure

To migrate the SQL Capture program to Version 9:

1. Install IBM WebSphere Replication Server for z/OS V9.1 on the system where the Capture program runs.

2. Stop the Capture program.

Any Apply programs that the Capture program works with can be running or stopped.

3. **Optional:** Back up the database that contains your Capture control tables to allow for fallback and recovery.

From this point, do not change your configuration (for example, to add a subscription) until the Capture control tables are migrated.

4. Migrate the Capture control tables by running the migration script. Follow these steps:
 - a. Locate the ASNSMZV9 sample job in the SASNSAMP partitioned data set.
 - b. Edit the sample to replace the schema name and table space names as required. Complete instructions are in the sample.
 - c. Run the sample job.

5. Start the Capture program in warm mode.

Ensure that you start the Version 9 Capture program instead of the Version 8 Capture program that you stopped before you migrated the Capture control tables.

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