Note

Before using this information and the product that it supports, read the information in "Notices" on page 67.
## Contents

### Chapter 1. Migrating to replication and event publishing Version 9.7

- Coexistence support in Version 9.7 Q replication and event publishing .................................................. 1
- Migrating different Q replication and event publishing environments to Version 9.7 ................................. 2
- Migrating a unidirectional Q replication environment to Version 9.7 ......................................................... 4
- Migrating a bidirectional or peer-to-peer Q replication environment to Version 9.7 ................................. 4
- Migrating an event publishing environment to Version 9.7 ........................................................................ 5
- Migrating the Q replication and event publishing programs to Version 9.7 (z/OS) ...................................... 7
  - Migrating a Q Capture program to Version 9.7 (z/OS) ............................................................................. 7
  - Migrating a Q Apply program to Version 9.7 (z/OS) ................................................................................. 8
- Falling back to Version 9.5 (z/OS) .................................................................................................................. 9
- Migrating Q replication and event publishing programs to Version 9.7 (Linux, UNIX, and Windows) .......... 11
  - Migrating a Q Capture program to Version 9.7 (Linux, UNIX, Windows) ................................................. 11
  - Migrating a Q Apply program to Version 9.7 (Linux, UNIX, Windows) ..................................................... 12

### Chapter 2. Migrating to SQL replication Version 9

- Coexistence support in Version 9 and Version 8 SQL replication .................................................................. 17
- Migrating CCD tables to the type 9 CCD ......................................................................................................... 18
- Migrating the SQL Capture program to Version 9.1 (z/OS) ...................................................................... 19

### Chapter 3. Migrating the Replication Alert Monitor

- Migrating the Replication Alert Monitor to Version 9.5 (z/OS) ................................................................. 23
- Migrating the Replication Alert Monitor to Version 9.5 (Linux, UNIX, Windows) .................................. 24
- Migrating the Replication Alert Monitor to Version 9.1 (z/OS) ................................................................. 25
- Migrating the Replication Alert Monitor to Version 9.1 (Linux, UNIX, Windows) .................................. 26

### Chapter 4. Migrating to replication and event publishing Version 9.5

- Coexistence support in Version 9.5 Q replication and event publishing ....................................................... 29
- Migrating different Q replication and event publishing environments to Version 9.5 ............................... 30
- Migrating a unidirectional Q replication environment to Version 9.5 ....................................................... 32
- Migrating the Q replication and event publishing programs to Version 9.5 (z/OS) ................................... 33
  - Migrating a Q Capture program to Version 9.5 (z/OS) ......................................................................... 33
  - Migrating a Q Apply program to Version 9.5 (z/OS) ............................................................................. 34
- Falling back to Version 9.1 (z/OS) ................................................................................................................. 39
- Migrating Q replication and event publishing programs to Version 9.5 (Linux, UNIX, and Windows) .......... 40
  - Migrating a Q Capture program to Version 9.5 (Linux, UNIX, Windows) .............................................. 40
  - Migrating a Q Apply program to Version 9.5 (Linux, UNIX, Windows) .................................................. 41

### Chapter 5. Migrating to replication and event publishing Version 9.1

- Coexistence support in Version 9.1 Q replication and event publishing ...................................................... 45
- Migrating different Q replication and event publishing environments to Version 9.1 ............................... 47
- Migrating a unidirectional Q replication environment to Version 9.1 ....................................................... 49
- Migrating the Q replication and event publishing programs to Version 9.1 (z/OS) .................................... 50
  - Migrating the Q Capture program to Version 9.1 (z/OS) .................................................................. 50
  - Migrating the Q Apply program to Version 9.1 (z/OS) ......................................................................... 51
- Migrating Q replication and event publishing programs to Version 9.1 (Linux, UNIX, and Windows) .... 54
  - Migrating the Q Capture program to Version 9.1 (Linux, UNIX, Windows) ....................................... 54
  - Migrating the Q Apply program to Version 9.1 (Linux, UNIX, Windows) ............................................. 55
- Replication Center supported on Linux and Windows platforms ............................................................... 59

### Product documentation

- Contacting IBM .................................................................................................................................................. 61

### How to read syntax diagrams

- Product accessibility ............................................................................................................................................ 65
Chapter 1. Migrating to replication and event publishing
Version 9.7

Migrating to replication and event publishing Version 9.7 from Version 9.5, Version 9.1, or Version 8.2 involves running SQL scripts that add new columns to existing control tables, change other control tables, and update the architecture level and compatibility information in the control tables.

Migrating your control tables to Version 9.7 differs depending on your operating system:

**z/OS**
To migrate to the Version 9.7 level on z/OS®, you first apply the PTF for APAR PK85947 to WebSphere® Replication Server for z/OS Version 9.1. This PTF adds the functionality of Version 9.7 even though there is no Version 9.7 replication or event publishing product on z/OS. After applying the PTF, you run SQL scripts in the ASNQMZ97 sample data set to migrate the control tables to the V9.7 level.

**Linux UNIX Windows**
On Linux®, UNIX®, and Windows®, first you upgrade your DB2® instance to Version 9.7, and then you install InfoSphere™ Replication Server Version 9.7 or InfoSphere Data Event Publisher Version 9.7. Finally, you run SQL scripts to migrate the control tables to Version 9.7.

Migrating from Version 9.1 or Version 8.2 is a multi-step process: You run a series of scripts, each of which migrate the control tables to the next version. When the control tables are at Version 9.5, you run a script to migrate them to Version 9.7.

You can migrate the Version 9.5 Q Capture and Q Apply servers independently.

"Coexistence support in Version 9.7 Q replication and event publishing" on page 2 describes the ability of the Version 9.7, Version 9.5, Version 9.1, and Version 8.2 replication and event publishing programs to work together so that you can upgrade your environment in stages.

**Changes to initialization protocol for peer-to-peer replication**

The initialization protocol for peer-to-peer replication changed with Version 9.7. Because of this change, if any of the Q Capture or Q Apply programs in the peer-to-peer configuration are migrated to Version 9.7, all of the Q Capture and Q Apply programs in the configuration must be at Version 9.7. If a Q Capture program participates in both unidirectional and bidirectional or peer-to-peer configurations and any of the servers are migrated to V9.7, all components that are involved in both unidirectional and multidirectional configurations must be migrated to V9.7.

**Using the replication administration tools with different versions**

You can use the Version 9.7 replication tools with any combination of V9.7, V9.5, V9.1, and V8.2 Q Capture and Q Apply servers. The product function that is available with the tools is based on the lowest level of Q Capture or Q Apply program that exists in a scenario. For example, if you use a V9.7 ASNCLP
command-line program to create a Q subscription between a Version 9.7 Q Capture and Version 9.5 Q Apply, the Q subscription is at the V9.5 level and does not have the full function of V9.7.

Starting with V9.7, you can specify a different release level for the Q Capture or Q Apply control tables when you use the Replication Center or ASNCLP command-line program to create the control tables.

If your tools are at a higher version than your Q Capture or Q Apply control tables, the tools can work with the lower-level control tables but you cannot use new function that is introduced in the higher version.

**Migrating the Replication Alert Monitor to Version 9.7**

Version 9.7 does not introduce any changes for the Replication Alert Monitor or its control tables. If you are using a Monitor program from Version 8, you must migrate to a Version 9.5 Monitor to work with Version 9.5 and higher replication and event publishing programs. A Monitor program at Version 9.7, Version 9.5, or Version 9.1 can work with Version 9.7, Version 9.5, Version 9.1, or Version 8.2 replication and event publishing programs. You do not need to migrate the Monitor control tables when you migrate the replication and event publishing programs.

### Coexistence support in Version 9.7 Q replication and event publishing

For unidirectional Q subscriptions, the Q Capture and Q Apply programs support full interoperability between Version 9.7, Version 9.5, Version 9.1, and Version 8.2. If you have bidirectional or peer-to-peer Q subscriptions, you should migrate all Q Capture and Q Apply programs to Version 9.7 at the same time.

The initialization protocol for peer-to-peer replication changed with Version 9.7, so that replication does not pause while all Q subscriptions are being activated. Because of this change, if any of the Q Capture or Q Apply programs in the peer-to-peer configuration are migrated to Version 9.7 and you need to add a new Q subscription or activate a disabled Q subscription, all of the Q Capture and Q Apply programs in the configuration must be at Version 9.7. Active Q subscriptions are not affected.

If a Q Capture program participates in both unidirectional and bidirectional or peer-to-peer configurations and any of the servers are migrated to V9.7, all components that are involved in both unidirectional and multidirectional configurations must be migrated to V9.7.

After you install a Version 9.7 Q replication or event publishing program on the system where Q Capture runs, you migrate the Q Capture control tables to Version 9.7. You might need to change the value of the `compatibility` parameter depending on the version of your Q Apply program or programs.

**Important:** The compatibility level of the Q Capture server must be lower than or at the same level as the architecture level of the consuming Q Apply program's control tables.

New functions that are introduced in Version 9.7 are not enabled until both the Q Capture and Q Apply control tables are migrated to Version 9.7.
Figure 1 shows relationships between Version 8 and Version 9 replication programs and the effect of the compatibility parameter.

**Other coexistence features for Version 9.7**

The following list details other coexistence features of Version 9.7 Q replication and event publishing:

**ASNCLP and Replication Center**

and publishing environments. If your tools are at Version 8, you can use them only to manage Version 8 environments.

**Replication Alert Monitor**
If you are using a Monitor program from Version 8, you must migrate to a Version 9.5 Monitor to work with Version 9.5 or newer replication and event publishing programs. A Monitor program at Version 9.7, Version 9.5, or Version 9.1 can work with Version 9.7, Version 9.5, Version 9.1, or Version 8.2 replication and event publishing programs.

**Queue formatting program**

**Q Analyzer program**

**Table differencing and repair programs**

**Note:** None of the utilities supports forward compatibility. For example, a V8.2 Monitor program or V8.2 asnqanalyze program cannot handle V9.7 replication servers.

---

**Migrating different Q replication and event publishing environments to Version 9.7**

The steps that are required to migrate to Version 9.7 differ for unidirectional Q replication, bidirectional or peer-to-peer replication, and event publishing.

**Migrating a unidirectional Q replication environment to Version 9.7**

For unidirectional Q replication, you migrate the Q Apply program at the target server first and then 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 9.5 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 0905 to 0907 so that Q Capture begins to send Version 9.7 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 9.7:

1. Optional: Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration.
If the Monitor is at Version 8.2, you must migrate the Monitor to at least Version 9.5. You can wait to migrate the monitor until after your Q Capture and Q Apply programs are migrated.

2. Migrate the Q Apply program. See one of the following topics for details:
   - “Migrating a Q Apply program to Version 9.7 (z/OS)” on page 9
   - “Migrating a Q Apply program to Version 9.7 (Linux, UNIX, Windows)” on page 13

   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 9.7 Q Capture program must be migrated before you update the Q Capture compatibility parameter to 0907.

3. Migrate the Q Capture program. See one of the following topics for details:
   - “Migrating a Q Capture program to Version 9.7 (z/OS)” on page 8
   - “Migrating a Q Capture program to Version 9.7 (Linux, UNIX, Windows)” on page 12

   You do not need to migrate all of your Q Capture programs at once.

4. If necessary, migrate the Replication Alert Monitor program, and then start it.

Migrating a bidirectional or peer-to-peer Q replication environment to Version 9.7

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 9.7 messages.

About this task

All Q Capture and Q Apply programs that are involved in bidirectional or peer-to-peer replication should be migrated to Version 9.7 at the same time. The initialization protocol for peer-to-peer replication changed with Version 9.7 so that replication does not pause while all Q subscriptions are being activated. Because of this change, if any of the Q Capture or Q Apply programs in the peer-to-peer configuration are migrated to Version 9.7 and you need to add a new Q subscription or activate a disabled Q subscription, all of the Q Capture and Q Apply programs in the configuration must be at Version 9.7. Active Q subscriptions are not affected. If a Q Capture program participates in both unidirectional and bidirectional or peer-to-peer configurations and any of the servers are migrated to V9.7, all components that are involved in both unidirectional and multidirectional configurations must be migrated to V9.7.

Procedure

To migrate a bidirectional or peer-to-peer Q replication environment to Version 9.7:

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

2. At one of the peer servers, migrate the Q Capture and Q Apply programs.
   Follow these steps:
   a. Apply the PTF for APAR PK85947 to WebSphere Replication Server for z/OS Version 9.1 or install IBM® InfoSphere Replication Server V9.7 on Linux, UNIX, and Windows.
   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 you migrate the Q Capture and Q Apply control tables.

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

**z/OS**

1) Optional: If you are migrating directly from Version 9.1 or Version 8.2 to Version 9.7, run the following migration scripts for previous versions:

   **V8.2 to V9.1**
   - ASNQMV9 sample job

   **V9.1 to V9.5**
   - ASNQMV9 sample job

   The samples contain SQL statements for migrating Q Capture, Q Apply, and Monitor control tables. Follow instructions in the scripts to replace the schema name and table space names as required.

2) Migrate the control tables to the Version 9.7 level by running the ASNQMZ97 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.

3) Start the Q Capture program and Q Apply program at the migrated server. Ensure that you start the Q Capture and Q Apply programs with the PTF for APAR PK85947 instead of the 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 run under to Version 9.7. See Upgrade essentials for DB2 servers in the DB2 Information Center for details.

2) Optional: If you are migrating directly from Version 9.1 or Version 8.2 to Version 9.7, you need to run the migration scripts for previous versions (either V9.5, or V9.1 and V9.5). Follow instructions in the script to replace the schema name and table space names as required.

3) Migrate the control tables to the Version 9.7 level by running the migration script for your DB2 platform. Follow instructions in the script to replace the schema name and table space names as required.

4) Start the Q Capture program in warm mode (WARMSI) and start the Q Apply program at the migrated server.

3. Repeat Step 2 for each remaining peer server (you can migrate the servers at different times).
4. After you migrate all of the peer servers to Version 9.7, 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 COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0907. You can run the asnqupdcmpv97.sql script in the sql1lib/samples/repl/mig97/q/ directory, or use one of the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL</td>
<td>Run the following statement: UPDATE schema.IBMQREP_CAPPARMS SET COMPATIBILITY = '0907';</td>
</tr>
<tr>
<td>Replication Center</td>
<td>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.</td>
</tr>
</tbody>
</table>
   c. Start the Q Capture program with the migrate=y parameter and startmode=warmns.

5. If necessary, migrate the Replication Alert Monitor program, and then start it.

**Migrating an event publishing environment to Version 9.7**

When you migrate an event publishing environment, you migrate the Q Capture program and then set the compatibility parameter to 0907 to prompt Q Capture to begin sending Version 9.7 messages to subscribing applications.

**Procedure**

To migrate an event publishing environment to Version 9.7:

1. Optional: Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration.
2. Migrate the Q Capture program. See one of the following topics for details:
   - "Migrating a Q Capture program to Version 9.7 (z/OS)" on page 8
   - "Migrating a Q Capture program to Version 9.7 (Linux, UNIX, Windows)" on page 12
3. If necessary, migrate the Replication Alert Monitor program, and then start it.

**Migrating the Q replication and event publishing programs to Version 9.7 (z/OS)**

After you apply the PTF for APAR PK85947 to WebSphere Replication Server for z/OS Version 9.1, the migration process involves running SQL scripts to update the Q Capture, Q Apply, or Replication Alert Monitor control tables.

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 the same PTF level.
Migrating a Q Capture program to Version 9.7 (z/OS)

To migrate a Q Capture program to Version 9.7, you apply the PTF for APAR PK85947 to WebSphere Replication Server for z/OS Version 9.1 and then run an SQL script that updates the Q Capture control tables at the source server. You might also need to change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table.

Before you begin

Before you migrate a Q Capture program to V9.7, migrate all of the Q Apply programs that it works with.

About this task

If you have more than one Q Capture program, migrate all of the Q Capture programs with this procedure.

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 9.7” on page 4.

Recommendation: Before you migrate a Q Capture program to V9.7, migrate all of the Q Apply programs that it works with.

Procedure

To migrate a Q Capture program to Version 9.7:

1. Optional: Stop your applications and let the Q Capture program process any remaining transaction in the DB2 recovery log.
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. Apply the PTF for APAR PK85947 to WebSphere Replication Server for z/OS Version 9.1 on the system where the Q Capture program runs.
   
   From this point, do not use the replication administration tools to change your configuration (for example, do not add a Q subscription) until you migrate the Q Capture control tables.
4. Optional: If you are migrating directly from Version 9.1 or Version 8.2 to Version 9.7, you need to run the following migration scripts for previous versions:

   V8.2 to V9.1
   
   ASNQMZV9 sample job

   V9.1 to V9.5
   
   ASNQMZ95 sample job

   Follow these steps:
   
   a. Locate the samples in the SASNSAMP partitioned data set. The samples contain SQL statements for migrating Q Capture, Q Apply, and Monitor control tables.
b. Edit the samples to replace the schema name and table space names as required. Complete instructions are in the samples.
c. Run the Q Capture statements.

5. Migrate the Q Capture control tables to the Version 9.7 level. Follow these steps:
   a. Locate the ASNQMZ97 sample job in the SASNSAMP partitioned data set. 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.

6. If all of the Q Apply programs that this Q Capture program replicates to are migrated to Version 9.7, change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0907. You can find the UPDATE statement in the ASNQMZ97 sample job, or use one of the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL</td>
<td>Run the following statement:</td>
</tr>
<tr>
<td></td>
<td><code>UPDATE schema.IBMQREP_CAPPARMS</code></td>
</tr>
<tr>
<td></td>
<td><code>SET COMPATIBILITY = '0907';</code></td>
</tr>
<tr>
<td>Replication Center</td>
<td>Use the Change Parameters - Saved window for Q Capture. To open the window,</td>
</tr>
<tr>
<td></td>
<td>right-click the Q Capture server that contains the newly migrated control</td>
</tr>
<tr>
<td></td>
<td>tables and select <strong>Change Parameters</strong> → <strong>Saved</strong>.</td>
</tr>
</tbody>
</table>

7. Optional: Run the ASNQM2V8 sample job to enable long-name functionality in DB2 for z/OS Version 8 new-function mode.

8. Start the Q Capture program in warmns mode.

   Ensure that you start the Q Capture program with the PTF for APAR PK85947 instead of the Q Capture program that you stopped before you migrated the Q Capture control tables.

**Migrating a Q Apply program to Version 9.7 (z/OS)**

To migrate the Q Apply program to Version 9.7, you apply the PTF for APAR PK85947 to WebSphere Replication Server for z/OS Version 9.1 and then run 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.

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 9.7” on page 4.

**Procedure**

To migrate a Q Apply program to Version 9.7:
1. Stop the Q Apply program.

2. Optional: Stop the Q Capture program and let Q Apply process any remaining transactions in its receive queues.

   **Note:** If your Q Capture program is processing a high volume of data, a send queue might fill while the Q Apply program is stopped, which might prompt Q Capture to stop. If this happens, you can restart Q Capture after you migrate Q Apply and after Q Apply starts processing messages that originate from the send queue.

3. Apply the PTF for APAR PK85947 to WebSphere Replication Server for z/OS Version 9.1 on the system where the Q Apply program runs.

   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. Optional: If you are migrating directly from Version 9.1 or Version 8.2 to Version 9.7, run the following migration scripts for previous versions:

   **V8.2 to V9.1**
   ASNQMZV9 sample job

   **V9.1 to V9.5**
   ASNQMZ95 sample job

   Follow these steps:
   a. Locate the samples in the SASNSAMP partitioned data set. The samples contain SQL statements for migrating Q Capture, Q Apply, and Monitor control tables.
   b. Edit the samples to replace the schema name and table space names as required. Complete instructions are in the samples.
   c. Run the Q Apply statements.

5. Migrate the Q Apply control tables to the Version 9.7 level. Follow these steps:
   a. Locate the ASNQMZ97 sample job in the SASNSAMP partitioned data set. 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. Optional: Run the ASNQM2V8 sample job to enable long-name functionality in DB2 for z/OS Version 8 new-function mode.

7. Start the Q Apply program.

   Ensure that you start the Q Apply program with the PTF for APAR PK85947 instead of the Q Apply program that you stopped before you migrated the Q Apply control tables.

8. Start the Q Capture program if you stopped it.

If you migrated the Q Apply program first, the program can continue to work with a Q Capture program that does not have the PTF for APAR PK85947, or a Version 8.2 Q Capture program. When you migrate the Q Capture program to Version 9.7, you can change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0907. This change prompts the Q Capture program to begin sending Version 9.7 messages to the Q Apply program and enables the full functionality of Version 9.7.
Falling back to Version 9.5 (z/OS)

If you need to fall back to the Version 9.5 level, you apply an earlier PTF and run several update statements for the control tables.

About this task

The replication and event publishing programs tolerate new Version 9.7 control table columns. So after you apply the earlier PTF, you only need to run statements to change the architecture level of the control tables and the compatibility information for the Q Capture program.

Procedure

To fall back to Version 9.5:

1. Stop the Q Capture program that includes the PTF for APAR PK85947.
2. Stop the Q Apply program that includes the PTF for APAR PK85947.
3. On each server, go back to V9.5 level by applying the PTF for APAR PK49430.
4. Run the fallback migration script to update the ARCH_LEVEL and COMPATIBILITY column values to 0905. This step configures the Q Capture and Q Apply programs to operate as V9.5 replication servers.
   a. Locate the ASNQMZ97 sample job in the SASNSAMP partitioned data set. The sample contains the SQL update statements for falling back.
   b. Edit the sample to replace the schema names.
   c. Run the SQL statements to change the ARCH_LEVEL value at both the Q Capture and Q Apply servers:
      ```sql
      UPDATE capture_schema.IBMQREP_CAPPARMS SET ARCH_LEVEL = '0905'
      UPDATE apply_schema.IBMQREP_APPLYPARMS SET ARCH_LEVEL = '0905'
      ```
   d. Run the SQL statement to change the COMPATIBILITY value at the Q Capture server:
      ```sql
      UPDATE capture_schema.IBMQREP_CAPPARMS SET COMPATIBILITY='0905'
      ```
5. Start the V9.5 Q Capture program in warm mode (WARMSI).
6. Start the V9.5 Q Apply program.

Migrating Q replication and event publishing programs to Version 9.7 (Linux, UNIX, and Windows)

After you install a Version 9.7 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 9.7 level.

On Linux, UNIX, and Windows, you must migrate your DB2 instance to Version 9.7 before you run the scripts to migrate the control tables. After you migrate your DB2 instance to Version 9.7, all Q Capture and Q Apply programs within the instance must be migrated to Version 9.7 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 9.7.

**Migrating a Q Capture program to Version 9.7 (Linux, UNIX, Windows)**

To migrate a Q Capture program to Version 9.7, you install IBM InfoSphere Replication Server Version 9.7 and then run an SQL script that updates the Q Capture control tables at the source server. You might also need to change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table.

**Before you begin**

Before you migrate a Q Capture program to V9.7, migrate all of the Q Apply programs that it works with.

**About this task**

After you migrate your DB2 instance to Version 9.7, you must migrate all of the Q Capture control tables that are defined in the instance to Version 9.7. 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 might differ depending upon your Q replication or event publishing configuration. For details, see "Migrating different Q replication and event publishing environments to Version 9.7" on page 4.

**Procedure**

To migrate a Q Capture program to Version 9.7:

1. Stop your applications and let the Q Capture program process any remaining transaction in the DB2 recovery log.
2. Stop the Q Capture program. Any Q Apply programs or subscribing applications can be running or stopped.
3. Install one of the following products on the system where the Q Capture program runs:
   - InfoSphere Replication Server V9.7
   - InfoSphere Data Event Publisher V9.7
   From this point, do not use the replication administration tools to change your configuration (for example, do not add a Q subscription) until you migrate the Q Capture control tables.
4. **Migrate the DB2 instance that your Q Capture program runs under.** See [Upgrade essentials for DB2 servers](#) in the DB2 Information Center for details.
5. Optional: If you are migrating directly from Version 9.1 or Version 8.2 to Version 9.7, run the migration scripts for previous versions (either V9.5, or V9.1 and V9.5). Follow these steps:
   a. Locate the script in the installation directory.
      - V9.5 sqllib/samples/repl/mig95/q/asnqcaplувv95.sql
      - V9.1 sqllib/samples/repl/mig9/q/asnqcaplув.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.

6. Migrate the Q Capture control tables to the Version 9.7 level by running the migration script. Follow these steps:
   a. Locate the sqllib/samples/repl/mig97/q/asncapluwv97.sql script in the installation directory.
   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. If all of the Q Apply programs that this Q Capture program replicates to are migrated to Version 9.7, change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0907. You can run the asnqupdcompv97.sql script in the sqllib/samples/repl/mig97/q/ directory, or use one of the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL</td>
<td>Run the following statement:</td>
</tr>
<tr>
<td></td>
<td>UPDATE schema.IBMQREP_CAPPARMS</td>
</tr>
<tr>
<td></td>
<td>SET COMPATIBILITY = '0907';</td>
</tr>
<tr>
<td>Replication Center</td>
<td>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.</td>
</tr>
</tbody>
</table>

8. Start the Q Capture program with the migrate=y parameter and startmode=warmns.

**Migrating a Q Apply program to Version 9.7 (Linux, UNIX, Windows)**

To migrate a Q Apply program to Version 9.7, you install IBM InfoSphere Replication Server V9.7 and then run 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 9.7, you must migrate all of the Q Apply control tables that are defined in the instance to Version 9.7. 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 9.7” on page 4.

**Procedure**

To migrate a Q Apply program to Version 9.7:
1. Stop the Version 9.5 Q Apply program.
2. Optional: Stop the Q Capture program and let Q Apply process any remaining transaction in its receive queues.

   **Note:** If your Q Capture program is processing a high volume of data, a send queue might fill while the Q Apply program is stopped, which might prompt Q Capture to stop. If this happens, you can restart Q Capture after you migrate Q Apply and Q Apply starts processing messages that originate from the send queue.

3. Install InfoSphere Replication Server V9.7 on the system where the Q Apply program runs.

   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. Upgrade the DB2 instance that your Q Apply program runs under. See [Upgrade essentials for DB2 servers](#) in the DB2 Information Center for details.

5. Optional: If you are migrating directly from Version 9.1 or Version 8.2 to Version 9.7, run the migration scripts for previous versions (either V9.5, or V9.1 and V9.5). Follow these steps:

   a. Locate the scripts in the installation directory.

      The script file path for V9.5 is `sqllib/samples/repl/mig95/q/` and for V9.1 `sqllib/samples/repl/mig9/q/`. Table 1 and Table 2 show the scripts for various database systems for each version:

      **Table 1. SQL scripts for migrating Q Apply control tables to V9.5 on different database systems**
      
      | Platform            | SQL script file     |
      |---------------------|---------------------|
      | Linux, UNIX, Windows| asnqappluwv95.sql   |
      | Oracle target       | asnqapporav95.sql   |
      | Sybase target       | asnqappsyb95.sql    |
      | Informix® target    | asnqappinfxv95.sql  |
      | Microsoft® SQL Server target | asnqpmmssqlv95.sql |

      **Table 2. SQL scripts for migrating Q Apply control tables to V9.1 on different database systems**
      
      | Platform            | SQL script file     |
      |---------------------|---------------------|
      | Linux, UNIX, Windows| asnqappluw.sql      |
      | Oracle target       | asnqappora.sql      |
      | Sybase target       | asnqappsyb.sql      |
      | Informix target     | asnqappinfx.sql     |
      | Microsoft SQL Server target | asnqpmmssql1.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.

   d. Use the DB2 REORG utility to reorganize the IBMQREP_EXCEPTIONS control table.

6. Migrate the Q Apply control tables to the Version 9.7 level by running the migration script for your database system. Follow these steps:

   a. Locate the script in the installation directory.
Table 3 shows the scripts for various database systems. The file path is sqllib/samples/repl/mig97/q/.

Table 3. SQL scripts for migrating Q Apply control tables on different database systems

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, UNIX, Windows</td>
<td>asnpappiuwv97.sql</td>
</tr>
<tr>
<td>Oracle target</td>
<td>asnpapporav97.sql</td>
</tr>
<tr>
<td>Sybase target</td>
<td>asnpappsybv97.sql</td>
</tr>
<tr>
<td>Informix target</td>
<td>asnpappinfvx97.sql</td>
</tr>
<tr>
<td>Microsoft SQL Server target</td>
<td>asnpappmsq1v97.sql</td>
</tr>
</tbody>
</table>

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. **Required for Sybase targets**: If you are replicating to a Sybase target, bind the Q Apply program packages to the Version 9.7 federated database with the cursor stability (CS) isolation level by entering the following command:
   
   ```
   db2 bind @qapply.lst isolation CS blocking all grant public
   ```

8. Start the Q Apply program.

9. Start the Q Capture program if you stopped it.

If you migrated the Q Apply program first, the program can continue to work with a Version 9.5, Version 9.1, or Version 8.2 Q Capture program. When you migrate the Q Capture control tables to Version 9.7, you can change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0907. This change prompts the Q Capture program to begin sending Version 9.7 messages to the Q Apply program and enables the full functionality of Version 9.7.
Chapter 2. Migrating to SQL replication Version 9

The SQL replication control tables contain a small number of optional changes between Versions 9.7, 9.5, 9.1, and 8.2, so no control table migration is required.

The following sections describe function that changed between these versions, but that does not require a migration.

• "Migrating to SQL replication Version 9.7"
• "Migrating to SQL replication Version 9.5"
• "Migrating to SQL replication Version 9.1" on page 18

Note: If you are running SQL replication Version 7 (DataPropagator) on z/OS, you can migrate directly to SQL replication Version 9 by using the same procedure as migrating to Version 8. For details about migrating to Version 8, see IBM WebSphere Information Integration Migrating to SQL Replication Version 8 (SC19-1026-00).

Migrating to SQL replication Version 9.7

For Version 9.7 (or the corresponding PTF on z/OS), four new columns are added to the IBMSNAP_CAPMON control table to provide more monitoring information. These columns are optional. Also, the data length of the CAP_SCHEMA_NAME column in the IBMSNAP_CAPSCHEMAS table is increased to VARCHAR(128) to accommodate longer Capture schemas. The Capture program runs as usual whether or not you make these changes. If you applied the PTF that corresponds to V9.7 on z/OS, the changes are already made. The Apply control tables have no changes between V9.5 and V9.7.

To make the Capture control table changes, you can run one of the following scripts:

Table 4. Sample scripts for migrating SQL replication control tables to Version 9.7

<table>
<thead>
<tr>
<th>Platform</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>z/OS</td>
<td>ASNSMZ97 sample job in the SASNSAMP partitioned data set</td>
</tr>
<tr>
<td>Linux, UNIX, Windows</td>
<td>SQLLIB/samples/repl/mig97/sql/asncapluwv97.sql</td>
</tr>
<tr>
<td>Oracle sources</td>
<td>SQLLIB/samples/repl/mig97/sql/asncaporav97.sql</td>
</tr>
<tr>
<td>Sybase sources</td>
<td>SQLLIB/samples/repl/mig97/sql/asncapsybv97.sql</td>
</tr>
<tr>
<td>Informix sources</td>
<td>SQLLIB/samples/repl/mig97/sql/asncapinfxv97.sql</td>
</tr>
<tr>
<td>Microsoft SQL Server sources</td>
<td>SQLLIB/samples/repl/mig97/sql/asncapmssqlv97.sql</td>
</tr>
</tbody>
</table>

Migrating to SQL replication Version 9.5

For Version 9.5, a new column was added to the IBMQREP_IGNTRAN control table that facilitates tracing of ignored transactions. This control table is shared by
SQL replication and Q replication. To add the column, you can run the
asnmz95.sql script in the sqllib\samples\repl\mig95\sql\ directory, or use the
following SQL statement:

```
ALTER TABLE capture_schema.IMQREPupaten
ADD COLUMN IGNTRANTRC CHAR(1) NOT NULL DEFAULT 'Y';
```

Also, V9.5 SQL replication supports a new type of consistent-change data (CCD)
table that allows the Apply program to provide transaction commit information
without joining the CD table and the IBMSNAP_UOW table. You do not need to
migrate the control tables to use this new type of CCD table, but to migrate your
existing CCD tables to the new type, you should follow the procedure in
“Migrating CCD tables to the type 9 CCD” on page 19.

**Migrating to SQL replication 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 9.1 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 9.1 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.

---

**Coexistence support in Version 9 and Version 8 SQL replication**

SQL replication supports full coexistence between Version 9.7, Version 9.5, Version
9.1, and Version 8.2.

The V9.7, V9.5, V9.1, and V8.2 Capture programs are compatible with any of the
V9.7, V9.5, V9.1, and V8.2 Apply programs, and vice-versa. The SQL replication
control tables do not contain any changes between these three versions that
prevent coexistence.

**Using the replication administration tools with different versions**

You can use the Version 9.7 replication tools with any combination of V9.7, V9.5,
V9.1, and V8.2 Capture and Apply servers. The product function that is available
with the tools is based on the lowest level of Capture or Apply program that exists
in a scenario.

When you use the ASNCLP command-line program or Replication Center to create
SQL replication control tables, the architecture level of the control tables might
differ depending on your operating system:

**z/OS**

On z/OS, the administration tools create control tables based on the level
of the tools rather than the DB2 version. So a Version 9.7 tool always
creates V9.7 control tables, a V9.5 tool creates V9.5 control tables, and so
on.

**Linux UNIX Windows**

On Linux, UNIX, and Windows, the tools create different levels of control
tables depending upon the level of the tools and the DB2 level:
Version 9.7 tools
Create V9.7 control tables on a V9.7 DB2, V9.5 control tables on a V9.5 DB2, V9.1 control tables on a V9.1 DB2, and V8.2 control tables on a V8.2 DB2.

Version 9.5 tools
Create V9.5 control tables on a V9.5 DB2, V9.1 control tables on a V9.1 DB2, and V8.2 control tables on a V8.2 DB2.

Version 9.1 tools
Create V9.1 control tables on a V9.1 DB2, and V8.2 control tables on a V8.2 DB2.

Version 8.2 tools
Create V8.2 control tables. V8.2 tools will not create control tables on a V9.1 or V9.5 DB2.

Other coexistence features for Version 9

The following list details other coexistence features of Version 9 SQL replication.

Replication Alert Monitor
If you are using a Monitor program from Version 8, you must migrate to a Version 9.5 Monitor to work with Version 9.5 replication programs. A Monitor program at Version 9.5 or Version 9.1 can work with Version 9.5, Version 9.1, or Version 8.2 replication programs.

Table differencing and repair programs

Note: None of the utilities supports forward compatibility. For example, a V8.2 monitor program cannot handle V9.5 replication servers.

Migrating CCD tables to the type 9 CCD

Version 9.5 SQL replication supports a new type of consistent-change data (CCD) table that allows the Apply program to provide transaction commit information without joining the CD table and the IBMSNAP_UOW table. You do not need to migrate the control tables to use this new type of CCD table, but to migrate your existing CCD tables to the new type, you should follow this procedure.

Procedure

To migrate CCD tables to the type 9 CCD:
1. Connect to the Apply control server.
2. Run the following statement:
   ```sql
   UPDATE ASN.IBMSNAP_SUBS_MEMBER SET TARGET_STRUCTURE=9
   WHERE APPLY_QUAL='applyqual' AND SET_NAME='setname'
   AND WHOS_ON_FIRST='whos_on_first' AND SOURCE_OWNER='source_owner'
   AND SOURCE_TABLE='source_table' AND SOURCE_VIEW_QUAL='srcviewqual'
   AND TARGET_OWNER='target_owner' AND TARGET_TABLE='target_table';
   ```
3. Connect to the first-tier Capture control server.
4. Run the following statement:
UPDATE captureschema.IBMSNAP_PRUNCNTL SET TARGET_STRUCTURE=9
WHERE SOURCE_OWNER='source_owner' AND SOURCE_TABLE='source_table'
AND SOURCE_VIEW_QUAL='srcviewqual' AND APPLY_QUAL='applyqual'
AND SET_NAME='setname' AND TARGET_SERVER='target_server'
AND TARGET_OWNER='target_owner' AND TARGET_TABLE='target_table';

5. If the external CCD table is already participating in a three-tier architecture, go to step 6. Otherwise, process the next CCD target table.

6. Connect to the Capture control server at the second tier.

7. Run the following statement:
   
   UPDATE captureschema.IBMSNAP_REGISTER
   SET SOURCE_STRUCTURE=9 WHERE SOURCE_TABLE='ccd_table'
   AND SOURCE_OWNER='ccd_owner';

8. Connect to the Apply control server at the second tier.

9. If the value of MAX_SYNCH_MINUTES for the SET NAME and APPLY QUAL are not null, then update the IBMSNAP_SUBS_SET table and change the MAX_SYNCH_MINUTES to null by running the following statement:
   
   UPDATE ASN.IBMSNAP_SUBS_SET SET MAX_SYNCH_MINUTES=null
   WHERE SET_NAME='set_name' AND APPLY_QUAL='applyqual'
   AND WHOS_ON_FIRST='whos_on_first';

---

**Migrating the SQL Capture program to Version 9.1 (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 9.1 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:

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 9.1 Capture program instead of the Version 8 Capture program that you stopped before you migrated the Capture control tables.
Chapter 3. Migrating the Replication Alert Monitor

The Version 9.7 Replication Alert Monitor program does not contain any changes that require migration. The steps for migrating the monitor to Version 9.5 or Version 9.1 differ depending on the operating system of the Monitor control server.

Migrating the Replication Alert Monitor to Version 9.5 (z/OS)

You migrate the Replication Alert Monitor to Version 9.5 by applying the PTF for APAR PK49430 and then running an SQL script that updates the Monitor control tables.

About this task

If you are using a Monitor program from Version 8, you must migrate to a Version 9.5 Monitor to work with Version 9.5 replication and event publishing programs. A Monitor program at Version 9.5 or Version 9.1 can work with Version 9.5, Version 9.1, or Version 8.2 replication and event publishing programs.

You do not need to migrate the Monitor control tables when you migrate the replication and event publishing programs, but you must migrate the Monitor to use any new function that was introduced in a newer release.

Procedure

To migrate the Replication Alert Monitor to Version 9.5:

1. Apply the PTF for APAR PK49430 on the system that contains the Monitor control server.
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. Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts before you run the Version 9.5 migration scripts. 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. Migrate the Monitor control tables to the Version 9.5 level by running the migration script. Follow these steps:
   a. Locate the ASNQMZ95 sample job in the SASNSAMP partitioned data set. You can also use the asnqmz95.sql sample on the server that contains your Version 9.5 replication administration tools. The path is sqllib/samples/repl/mig95/q/ on Linux and UNIX and sqllib\samples\repl\mig95\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, database, and table space names as required. Complete instructions are in the sample.
   c. Run the Monitor statements.
6. Start any Monitors that you stopped.

**Migrating the Replication Alert Monitor to Version 9.5 (Linux, UNIX, Windows)**

You migrate the Replication Alert Monitor to update the Monitor control tables to the Version 9.5 level.

**About this task**

If you are using a Monitor program from Version 8, you must migrate to a Version 9.5 Monitor to work with Version 9.5 replication and event publishing programs. A Monitor program at Version 9.5 or Version 9.1 can work with Version 9.5, Version 9.1, or Version 8.2 replication and event publishing programs.

You do not need to migrate the Monitor control tables when you migrate the replication and event publishing programs, but you must migrate the Monitor to use any new function that was introduced in a newer release.

**Procedure**

To migrate the Replication Alert Monitor to Version 9.5:

1. Install one of the following products on the system that contains the Monitor control server:
   - DB2 Version 9.5 for Linux, UNIX, and Windows
   - IBM WebSphere Replication Server V9.5
   - IBM WebSphere Data Event Publisher V9.5
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 essentials for DB2 servers](link) in the DB2 Information Center for details.
5. Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts before you run the Version 9.5 migration scripts. Follow these steps:
a. Locate the `asnmonluw.sql` script in the installation directory.
   The path is `sqllib/samples/repl/mig9/q/` on Linux and UNIX and `sqllib\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. Migrate the Monitor control tables to the Version 9.5 level by running the V9.5 migration script. Follow these steps:
   a. Locate the `asnmonv95.sql` script in the installation directory.
      The path is `sqllib/samples/repl/mig95/mon/` on Linux and UNIX and `sqllib\samples\repl\mig95\mon\` on Windows.
   b. Edit the script to replace the schema name as required. Complete instructions are in the script.
   c. Run the script.

7. Start any Monitors that you stopped.

---

**Migrating the Replication Alert Monitor to Version 9.1 (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 the Replication Alert Monitor to Version 9.1 (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 essentials 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 asmonluw.sql script in the installation directory.
      The path is sqllib/samples/repl/mig9/q/ on Linux and UNIX and sqllib\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.
Chapter 4. Migrating to replication and event publishing
Version 9.5

Migrating to replication and event publishing Version 9.5 from Version 9.1 or Version 8.2 involves adding new control tables, adding new columns to existing control tables, and updating the architecture level and compatibility information in the control tables.

Migrating your control tables to Version 9.5 differs depending on your operating system:

**z/OS**

To migrate to the Version 9.5 level on z/OS, you first apply the PTF for APAR PK49430. This PTF adds the functionality of Version 9.5 even though there is no Version 9.5 replication or event publishing product on z/OS. After applying the PTF, you run SQL scripts in the ASNQMZ95 sample data set to migrate the control tables to the V9.5 level.

**Linux UNIX Windows**

On Linux, UNIX, and Windows, first you upgrade your DB2 instance to Version 9.5, and then you install WebSphere Replication Server Version 9.5 or WebSphere Data Event Publisher Version 9.5. Finally, you run SQL scripts to migrate the control tables to Version 9.5.

Migrating from Version 8.2 is a two-step process: First you run a script to migrate the control tables to Version 9.1, and then you run a second script to migrate the control tables Version 9.5.

The V9.1 Q Capture and Q Apply servers can be migrated independently. “Coexistence support in Version 9.5 Q replication and event publishing” on page 30 describes the ability of the Version 9.5, Version 9.1, and Version 8.2 replication and event publishing programs to work together so that you can upgrade your environment in stages.

Using the replication administration tools with different versions

You can use the Version 9.5 replication tools with any combination of V9.5, V9.1 and V8.2 Q Capture and Q Apply servers. The product function that is available with the tools is based on the lowest level of Q Capture or Q Apply program that exists in a scenario. For example, if you use a V9.5 ASNCLP command-line program to create a Q subscription between a Version 9.5 Q Capture and Version 9.1 Q Apply, the Q subscription will be at the V9.1 level and will not have the full function of V9.5.

When you use the ASNCLP command-line program or Replication Center to create control tables, the architecture level of the control tables might differ depending on your operating system:

**z/OS**

On z/OS, the administration tools create control tables based on the level of the tools rather than the DB2 version. So a Version 9.5 tool always creates V9.5 control tables, a V9.1 tool creates V9.1 control tables, and so on.
On Linux, UNIX, and Windows, the tools create different levels of control tables depending upon the level of the tools and the DB2 level:

**Version 9.5 tools**
Create V9.5 control tables on a V9.5 DB2, V9.1 control tables on a V9.1 DB2, and V8.2 control tables on a V8.2 DB2.

**Version 9.1 tools**
Create V9.1 control tables on a V9.1 DB2, and V8.2 control tables on a V8.2 DB2.

**Version 8.2 tools**
Create V8.2 control tables. V8.2 tools will not create control tables on a V9.1 or V9.5 DB2.

If your tools are at a higher version than your Q Capture or Q Apply control tables, the tools can work with the lower-level control tables but you will not be able to use new function that is introduced in the higher version.

When you create publications, the tools create definitions that are based on the Q Capture server level.

### Migrating the Replication Alert Monitor to Version 9.5

If you are using a Monitor program from Version 8, you must migrate to a Version 9.5 Monitor to work with Version 9.5 replication and event publishing programs. A Monitor program at Version 9.5 or Version 9.1 can work with Version 9.5, Version 9.1, or Version 8.2 replication and event publishing programs. You do not need to migrate the Monitor control tables when you migrate the replication and event publishing programs.

### Coexistence support in Version 9.5 Q replication and event publishing

The Q Capture and Q Apply programs support full interoperability between Version 9.5, Version 9.1, and Version 8.2.

After you install a Version 9.5 Q replication or event publishing program on the system where Q Capture runs, you migrate the Q Capture control tables to Version 9.5. You might need to change the value of the compatibility parameter depending on the version of your Q Apply program or programs.

**Important:** The compatibility level of the Q Capture server must be lower than, or at the same level as, the architecture level of the consuming Q Apply program’s control tables.

New functions that are introduced in Version 9.5 are not enabled until both the Q Capture and Q Apply control tables are migrated to Version 9.5.

[Figure 2 on page 31](#) shows relationships between Version 8 and Version 9 replication programs and the effect of the compatibility parameter.
Other coexistence features for Version 9.5

The following list details other coexistence features of Version 9.5 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 9.5 and some at Version 9.1. However, the paired Q Capture and Q Apply programs at each server must be at the same level. For example, when you migrate a server to Version 9.5, 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 9.5 level to manage Version 9.5, Version 9.1, and Version 8.2 Q replication and publishing environments. If your tools are at Version 8, you can use them only to manage Version 8 environments.

Replication Alert Monitor
If you are using a Monitor program from Version 8, you must migrate to a Version 9.5 Monitor to work with Version 9.5 replication and event publishing programs. A Monitor program at Version 9.5 or Version 9.1 can work with Version 9.5, Version 9.1, or Version 8.2 replication and event publishing programs.

Queue formatting program
The Version 9.5 asnqmfmt program can format and display Version 9.5, Version 9.1, and Version 8.2 messages.

Q Analyzer program
The Version 9.5 asqnalyze program works with Version 9.5, Version 9.1, and Version 8.2 replication and event publishing control tables.

Table differencing and repair programs

Note: None of the utilities supports forward compatibility. For example, a V8.2 Monitor program or V8.2 asqnalyze program cannot handle V9.5 replication servers.

Migrating different Q replication and event publishing environments to Version 9.5

The steps that are required to migrate to Version 9.5 differ for unidirectional Q replication, bidirectional or peer-to-peer replication, and event publishing.

Migrating a unidirectional Q replication environment to Version 9.5

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 9.1 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 0901 to 0905 so that Q Capture begins to send Version 9.5 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 9.5:

1. Optional: Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration.
   If the Monitor is at Version 8.2, you must migrate the Monitor to Version 9.5. You can wait to migrate the monitor until after your Q Capture and Q Apply programs are migrated.

2. Migrate the Q Apply program. See one of the following topics for details:
   - “Migrating a Q Apply program to Version 9.5 (z/OS)” on page 38
   - “Migrating a Q Apply program to Version 9.5 (Linux, UNIX, Windows)” on page 42
   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 9.5 Q Capture program must be migrated before you update the Q Capture compatibility parameter to 9005.

3. Migrate the Q Capture program. See one of the following topics for details:
   - “Migrating a Q Capture program to Version 9.5 (z/OS)” on page 36
   - “Migrating a Q Capture program to Version 9.5 (Linux, UNIX, Windows)” on page 41
   You do not need to migrate all of your Q Capture programs at once.

4. If necessary, migrate the Replication Alert Monitor program, and then start it. See one of the following topics for details:
   - Migrating the Replication Alert Monitor to Version 9.5 (z/OS)
   - Migrating the Replication Alert Monitor to Version 9.5 (Linux, UNIX, Windows)

**Migrating a bidirectional or peer-to-peer Q replication environment to Version 9.5**

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 9.5 messages.

**About this task**

You can migrate each peer server at a different time based on your business needs. The coexistence rules for Version 9.5 replication allow Version 9.5, Version 9.1, and Version 8.2 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 9.5:

1. Optional: Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration.
   If the Monitor is at Version 8.2, you must migrate the Monitor to Version 9.5. You can wait to migrate the monitor until after your Q Capture and Q Apply programs are migrated.

2. At one of the peer servers, migrate the Q Capture and Q Apply programs. Follow these steps:
   a. Apply the PTF for APAR PK49430 on z/OS or install IBM WebSphere Replication Server V9.5 on Linux, UNIX, and Windows.
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 control tables at the server. Take the following steps depending on the operating system of the server:

   **z/OS**
   
   1) Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts before you run the Version 9.5 migration scripts. The scripts are part of 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 to V9.1. Follow instructions in the script to replace the schema name and table space names as required.

   2) Migrate the control tables to the Version 9.5 level by running the ASNQMZ95 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.

   3) Start the Q Capture program and Q Apply program at the migrated server. Ensure that you start the Q Capture and Q Apply programs with the PTF for APAR PK49430 instead of the 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 to Version 9.5. See Migration essentials for DB2 servers in the DB2 Information Center for details.

   2) Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts for your DB2 platform before you run the Version 9.5 migration scripts. Follow instructions in the script to replace the schema name and table space names as required.

   Table 5 and Table 6 on page 35 show the scripts for various platforms.

   **Table 5. SQL scripts for migrating Q Capture control tables to V9.1 on Linux, UNIX, and Windows**

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux UNIX</td>
<td>sql1ib\samples\repl\mig9\q\asncapluw.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sql1ib\samples\repl\mig9\q\asncapluw.sql</td>
</tr>
</tbody>
</table>
Table 6. SQL scripts for migrating Q Apply control tables to V9.1 on Linux, UNIX, and Windows

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux UNIX</td>
<td>sqllib/samples/repl/mig9/q/asnqappluw.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sqllib/samples/repl/mig9/q/asnqappluw.sql</td>
</tr>
</tbody>
</table>

3) Migrate the control tables to the Version 9.5 level by running the migration script for your DB2 platform. Follow instructions in the script to replace the schema name and table space names as required.

Table 7 and Table 8 show the scripts for various platforms.

Table 7. SQL scripts for migrating Q Capture control tables to V9.5 on Linux, UNIX, and Windows

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux UNIX</td>
<td>sqllib/samples/repl/mig95/q/asnqcapluwv95.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sqllib/samples/repl/mig95/q/asnqcapluwv95.sql</td>
</tr>
</tbody>
</table>

Table 8. SQL scripts for migrating Q Apply control tables to V9.5 on Linux, UNIX, and Windows

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux UNIX</td>
<td>sqllib/samples/repl/mig95/q/asnqappluwv95.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sqllib/samples/repl/mig95/q/asnqappluwv95.sql</td>
</tr>
</tbody>
</table>

4) Start the Q Capture program in warm mode (WARMSI), and start the Q Apply program at the migrated server.

3. Repeat Step 2 for each remaining peer server (you can migrate the servers at different times).

4. After you migrate all of the peer servers to Version 9.5, 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 COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0905. You can run the asnqupdcompv95.sql script in the sqllib/samples/repl/mig95/q/ directory, or use one of the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL</td>
<td>Run the following statement:</td>
</tr>
<tr>
<td></td>
<td>UPDATE schema.IBMQREP_CAPPARMS</td>
</tr>
<tr>
<td></td>
<td>SET COMPATIBILITY = '0905';</td>
</tr>
<tr>
<td>Replication Center</td>
<td>Use the Change Parameters - Saved window for Q Capture. To open the window,</td>
</tr>
<tr>
<td></td>
<td>right-click the Q Capture server that contains the newly migrated control</td>
</tr>
<tr>
<td></td>
<td>tables and select Change Parameters + Saved.</td>
</tr>
</tbody>
</table>
c. Start the Q Capture program in warm mode (WARMSI).

5. If necessary, migrate the Replication Alert Monitor program, and then start it. See one of the following topics for details:
   - Migrating the Replication Alert Monitor to Version 9.5 (z/OS)
   - Migrating the Replication Alert Monitor to Version 9.5 (Linux, UNIX, Windows)

**Migrating an event publishing environment to Version 9.5**

When you migrate an event publishing environment, you migrate the Q Capture program and then set the `compatibility` parameter to 0905 to prompt Q Capture to begin sending Version 9.5 messages to subscribing applications.

**Procedure**

To migrate an event publishing environment to Version 9.5:

1. Optional: Stop the Replication Alert Monitor program to prevent the monitor from issuing alerts while the replication programs are stopped for migration. If the Monitor is at Version 8.2, you must migrate the Monitor to Version 9.5. You can wait to migrate the monitor until after your Q Capture program is migrated.

2. Migrate the Q Capture program. See one of the following topics for details:
   - “Migrating a Q Capture program to Version 9.5 (z/OS)”
   - “Migrating a Q Capture program to Version 9.5 (Linux, UNIX, Windows)” on page 41

3. If necessary, migrate the Replication Alert Monitor program, and then start it. See one of the following topics for details:
   - Migrating the Replication Alert Monitor to Version 9.5 (z/OS)
   - Migrating the Replication Alert Monitor to Version 9.5 (Linux, UNIX, Windows)

---

**Migrating the Q replication and event publishing programs to Version 9.5 (z/OS)**

After you install APAR PK49430, the migration process involves running SQL scripts to update the Q Capture, Q Apply, or Replication Alert Monitor control tables.

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 the same PTF level.

**Migrating a Q Capture program to Version 9.5 (z/OS)**

You migrate a Q Capture program to Version 9.5 by applying the PTF for APAR PK49430 and then running an SQL script that updates the Q Capture control tables at the source server. You might also need to change the value of the `COMPATIBILITY` column in the IBMQREP_CAPPARMS table.
About this task

If you have more than one Q Capture program, migrate all of the Q Capture programs with this procedure.

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 9.5" on page 32.

Recommendation: Before you migrate a Q Capture program to V9.5, migrate all of the Q Apply programs that it works with.

Procedure

To migrate a Q Capture program to Version 9.5:

1. Optional: Stop your applications and let the Q Capture program process any remaining transaction in the DB2 recovery log.
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. Apply the PTF for APAR PK49430 on the system where the Q Capture program runs.
   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. Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts before you run the Version 9.5 migration scripts. 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 9.1 replication administration tools. The path is sql11ib/samples/repl/mig9/q/ on Linux and UNIX and sql11ib\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. Migrate the Q Capture control tables to the Version 9.5 level. Follow these steps:
   a. Locate the ASNQMZ95 sample job in the SASNSAMP partitioned data set. You can also use the ASNQMZ95.sql sample on the server that contains your Version 9.5 replication administration tools. The path is sql11ib/samples/repl/mig95/q/ on Linux and UNIX and sql11ib\samples\repl\mig95\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.
6. Optional: If all of the Q Apply programs that this Q Capture program replicates to are migrated to Version 9.5, change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0905. You can find the UPDATE statement in the ASNQMZ95 sample job or asnqupdcompv95.sql script, or use one of the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL</td>
<td>Run the following statement:</td>
</tr>
<tr>
<td></td>
<td><code>UPDATE schema.IBMQREP_CAPPARMS SET COMPATIBILITY = '0905';</code></td>
</tr>
<tr>
<td>Replication Center</td>
<td>Use the Change Parameters - Saved window for Q Capture. To open the window,</td>
</tr>
<tr>
<td></td>
<td>right-click the Q Capture server that contains the newly migrated control</td>
</tr>
<tr>
<td></td>
<td>tables and select Change Parameters → Saved.</td>
</tr>
</tbody>
</table>

7. Start the Q Capture program in warm mode (WARMSI).
   Ensure that you start the Q Capture program with the PTF for APAR PK49430 instead of the Q Capture program that you stopped before you migrated the Q Capture control tables.

**Migrating a Q Apply program to Version 9.5 (z/OS)**

You migrate the Q Apply program to Version 9.5 by applying the PTF for APAR PK49430 and then 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.

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 9.5” on page 32.

**Procedure**

To migrate a Q Apply program to Version 9.5:

1. Stop the Q Apply program.
2. Optional: Stop the Q Capture program and let Q Apply process any remaining transactions in its receive queues.

   **Note:** If your Q Capture program is processing a high volume of data, a send queue could fill while the Q Apply program is stopped, which might prompt Q Capture to stop. If this happens, you can restart Q Capture after you migrate Q Apply and Q Apply starts processing messages that originate from the send queue.

3. Apply the PTF for APAR PK49430 on the system where the Q Apply program runs.
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. Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts before you run the Version 9.5 migration scripts. Follow these steps:
   a. Locate the ASNQMZV9 sample job in the SASNSAMP partitioned data set. You can also use the asnmqv9.sql sample on the server that contains your Version 9.1 replication administration tools. The path is sql1ib\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 Apply statements.

5. Migrate the Q Apply control tables to the Version 9.5 level. Follow these steps:
   a. Locate the ASNQMZ95 sample job in the SASNSAMP partitioned data set. You can also use the asnmz95.sql sample on the server that contains your Version 9.5 replication administration tools. The path is sql1ib\samples\repl\mig95\q\ on Linux and UNIX and sql1ib\samples\repl\mig95\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 Q Apply program with the PTF for APAR PK49430 instead of the Q Apply program that you stopped before you migrated the Q Apply control tables.

7. Start the Q Capture program if you stopped it.

If you migrated the Q Apply program first, the program can continue to work with a Version 9.1 Q Capture program without the PTF for APAR PK49430, or a Version 8.2 Q Capture program. When you migrate the Q Capture program to Version 9.5, you can change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0905. This change prompts the Q Capture program to begin sending Version 9.5 messages to the Q Apply program and allows you to use the full functionality of Version 9.5.

---

**Falling back to Version 9.1 (z/OS)**

If you need to fall back to the Version 9.1 level, the procedure involves applying an earlier PTF and running several update statements for the control tables.

**About this task**
The replication and event publishing programs tolerate new Version 9.5 control table columns. So after you apply the earlier PTF, you only need to run statements to change the architecture level of the control tables, and the compatibility information for the Q Capture program.

Procedure

To fall back to Version 9.1:
1. Stop the Q Capture program that includes the PTF for APAR PK49430.
2. Stop the Q Apply program that includes the PTF for APAR PK49430.
3. On each server, go back to V9.1 level by applying the PTF for APAR PK41718.
4. Run the fallback migration script to update the ARCH_LEVEL and COMPATIBILITY column values to 0901. This step tells the Q Capture and Q Apply programs to operate as V9.1 replication servers.
   a. Locate the ASNQMZ95 sample job in the SASNSAMP partitioned data set. You can also use the asnmzm95.sql sample on the server that contains your Version 9.5 replication administration tools. The path is sqllib/samples/repl/mig95/q/ on Linux and UNIX and sqllib\samples\repl\mig95\q\ on Windows. The sample contains the SQL update statements for falling back.
   b. Edit the sample to replace the schema names.
   c. Run the SQL statements to change the ARCH_LEVEL value at both the Q Capture and Q Apply servers:
      ```sql
      UPDATE capture_schema.IBMQREP_CAPPARMS SET ARCH_LEVEL = '0901'
      UPDATE apply_schema.IBMQREP_APPLYPARMS SET ARCH_LEVEL = '0901'
      ```
   d. Run the SQL statement to change the COMPATIBILITY value at the Q Capture server:
      ```sql
      UPDATE capture_schema.IBMQREP_CAPPARMS SET COMPATIBILITY='0901'
      ```
5. Start the V9.1 Q Capture program in warm mode (WARMSI).
6. Start the V9.1 Q Apply program.

Migrating Q replication and event publishing programs to Version 9.5 (Linux, UNIX, and Windows)

After you install a Version 9.5 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 9.5 level.

On Linux, UNIX, and Windows, you must migrate your DB2 instance to Version 9.5 before you run the scripts to migrate the control tables. After you migrate your DB2 instance to Version 9.5, all Q Capture and Q Apply programs within the instance must be migrated to Version 9.5 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 9.5.
Migrating a Q Capture program to Version 9.5 (Linux, UNIX, Windows)

You migrate a Q Capture program to Version 9.5 by installing WebSphere Replication Server V9.5 and then running an SQL script that updates the Q Capture control tables at the source server. You might also need to change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table.

About this task

After you migrate your DB2 instance to Version 9.5, you must migrate all of the Q Capture control tables that are defined in the instance to Version 9.5. 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 might differ depending upon your Q replication or event publishing configuration. For details, see "Migrating different Q replication and event publishing environments to Version 9.5" on page 32.

Recommendation: Before you migrate a Q Capture program to V9.5, migrate all of the Q Apply programs that it works with.

Procedure

To migrate a Q Capture program to Version 9.5:
1. Optional: Stop your applications and let the Q Capture program process any remaining transaction in the DB2 recovery log.
2. Stop the Q Capture program. Any Q Apply programs or subscribing applications can be running or stopped.
3. Install one of the following products on the system where the Q Capture program runs:
   • IBM WebSphere Replication Server V9.5
   • IBM WebSphere Data Event Publisher V9.5
   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. Migrate the DB2 instance that your Q Capture program runs under. See Migration essentials for DB2 servers in the DB2 Information Center for details.
5. Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts for your DB2 platform before you run the Version 9.5 migration scripts. Follow these steps:
   a. Locate the script in the installation directory.

Table 9 shows the scripts for various platforms.

<p>| Table 9. SQL scripts for migrating Q Capture control tables to V9.1 on different platforms |
|-----------------------------------|-------------------------------------|</p>
<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux UNIX</td>
<td>sql\lib\samples\repl\mig9\q\asncapluw.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sql\lib\samples\repl\mig9\q\asncapluw.sql</td>
</tr>
</tbody>
</table>
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. Migrate the Q Capture control tables to the Version 9.5 level by running the migration script for your DB2 platform. Follow these steps:

   a. Locate the script in the installation directory.

   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 9.5, change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0905. You can run the asnpqdpcompy95.sql script in the sqllib/samples/repl/mig95/q/ directory, or use one of the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL</td>
<td>Run the following statement:</td>
</tr>
<tr>
<td></td>
<td>UPDATE schema.IBMQREP_CAPPARMS SET COMPATIBILITY = '0905';</td>
</tr>
<tr>
<td>Replication Center</td>
<td>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.</td>
</tr>
</tbody>
</table>

8. Start the Q Capture program in warm mode (WARMSI).

**Migrating a Q Apply program to Version 9.5 (Linux, UNIX, Windows)**

You migrate a Q Apply program to Version 9.5 by installing WebSphere Replication Server V9.5 and then 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 9.5, you must migrate all of the Q Apply control tables that are defined in the instance to Version 9.5. 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 9.5" on page 32.

Procedure

To migrate a Q Apply program to Version 9.5:

1. Stop the Version 9.1 Q Apply program.
2. Optional: Stop the Q Capture program and let Q Apply process any remaining transaction in its receive queues.

**Note:** If your Q Capture program is processing a high volume of data, a send queue could fill while the Q Apply program is stopped, which might prompt Q Capture to stop. If this happens, you can restart Q Capture after you migrate Q Apply and Q Apply starts processing messages that originate from the send queue.

3. Install IBM WebSphere Replication Server V9.5 on the system where the Q Apply program runs.

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. Migrate the DB2 instance that your Q Apply program runs under. See Migration essentials for DB2 servers in the DB2 Information Center for details.

5. Optional: If you are migrating directly from Version 8.2 to Version 9.5, you need to run the Version 9.1 migration scripts for your DB2 platform before you run the Version 9.5 migration scripts. Follow these steps:

   a. Locate the script in the installation directory.

      **Table 11** 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.

      | Platform          | SQL script file     |
      |-------------------|---------------------|
      | Linux, UNIX       | asqnqappluw.sql     |
      | Windows           | asqnqappluw.sql     |
      | Oracle target     | asqnqappora.sql     |
      | Sybase target     | asqnqappsysb.sql    |
      | Informix target   | asqnqappinfx.sql    |
      | Microsoft SQL Server target | asqnqappmssql.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.

   d. Use the DB2 REORG utility to reorganize the IBMQREP_EXCEPTIONS control table.

      Because the V9.1 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.
6. Migrate the Q Apply control tables to the Version 9.5 level by running the migration script for your DB2 platform. Follow these steps:
   a. Locate the script in the installation directory.
      Table 12 shows the scripts for various platforms. The file path is sql\lib\samples\repl\mig95\q/ on Linux and UNIX and sql\lib\samples\repl\mig95\q\ on Windows.

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, UNIX</td>
<td>asnqappluwv95.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>asnqappluwv95.sql</td>
</tr>
<tr>
<td>Oracle target</td>
<td>asnqapporav95.sql</td>
</tr>
<tr>
<td>Sybase target</td>
<td>asnqappsysbv95.sql</td>
</tr>
<tr>
<td>Informix target</td>
<td>asnqappinfxv95.sql</td>
</tr>
<tr>
<td>Microsoft SQL Server target</td>
<td>asnqappmssqlv95.sql</td>
</tr>
</tbody>
</table>

   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 you are replicating to a Sybase target, bind the Q Apply program packages to the Version 9.5 federated database using cursor stability (CS) isolation level by entering the following command:
   
   db2 bind @qapply.lst isolation CS blocking all grant public

8. Start the Q Apply program.
9. Start the Q Capture program if you stopped it.

If you migrated the Q Apply program first, the program can continue to work with a Version 9.1 or Version 8.2 Q Capture program. When you migrate the Q Capture control tables to Version 9.5, you can change the value of the COMPATIBILITY column in the IBMQREP_CAPPARMS table to 0905. This change prompts the Q Capture program to begin sending Version 9.5 messages to the Q Apply program and allows you to use the full functionality of Version 9.5.
Chapter 5. Migrating to replication and event publishing
Version 9.1

The process of migrating a replication or event publishing environment to Version 9.1 is designed to provide you with as much flexibility as possible. You can upgrade your environment to Version 9.1 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 9.1 and IBM Data Event Publisher Version 9.1 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 9.1 or IBM Data Event Publisher Version 9.1 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 9.1 replication or event publishing product on the server and migrate your replication or publishing environment to Version 9.1 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 9.1 Q Capture compatibility parameter of 0802 (sends Version 8 messages).

You must also migrate your SQL Capture program to Version 9.1 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 9.1 before you can use a Version 9.1 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 9.1.

On Linux, UNIX, and Windows, after you migrate your DB2 instance to Version 9.1, 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 9.1 replication or event publishing product, the control tables are not migrated automatically the first time that a Version 9.1 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 3 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 9.1 now, and wait to upgrade the other target server later.

![Diagram](image)

**Figure 3. Version 9.1 Q Capture program replicating to Version 9.1 and Version 8.2 Q Apply programs**

In this case, you would install a Version 9.1 Q replication or event publishing product at the source and migrate the Q Capture control tables to Version 9.1, 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 8.2 and Version 9.1 Q Apply programs. When the second target server is migrated to Version 9.1, you change the value of the compatibility parameter to 0901, which prompts Q Capture to send Version 9.1 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.

**Migrating to Q replication and event publishing Version 9.1**

Changes to the Q Capture 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 the Replication Alert Monitor to Version 9.1

You migrate the Replication Alert Monitor to enable a new Version 9.1 function that lets you suspend a monitor for defined periods.

Both Version 8 and Version 9.1 Monitor control tables will work with both Version 8 and Version 9.1 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.

Coexistence support in Version 9.1 Q replication and event publishing

The Q Capture and Q Apply programs support full interoperability between Version 8.2 and Version 9.1.

• Changes to source tables that are captured by a Version 9.1 Q Capture program can be applied to target tables by a Version 8.2 Q Apply program.
• Changes that are captured by a Version 8.2 Q Capture program can be applied to target tables by a Version 9.1 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 9.1 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 was added for Version 9.1. The compatibility parameter specifies whether the WebSphere MQ messages that contain transactions and control information from the source are at Version 9.1 or Version 8.2 level.

Figure 4 on page 48 shows relationships between Version 8.2 and Version 9.1 replication programs and the effect of the compatibility parameter.
After you install a Version 9.1 Q replication or event publishing program on the system where Q Capture runs, you migrate the Q Capture control tables to Version 9.1. 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 8.2 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 8.2.

- `compatibility=0901`
  The Q Capture program sends data and informational messages in Version 9.1 format. Specify this value after all of the Q Apply programs that receive the messages are at Version 9.1.

New functions that are introduced in Version 9.1 are not enabled until both the Q Capture and Q Apply control tables are migrated to Version 9.1. 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 9.1**

The following list details other coexistence features of Version 9.1 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 9.1 and some at Version 8.2. When you migrate a server to Version 9.1, 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 9.1 level to manage both Version 8.2 and Version 9.1 Q replication and publishing environments. If your tools are at Version 8.2, you can use them only to manage Version 8.2 environments.

For z/OS, you can use the Version 9.1 ASNCLP and Replication Center to create Version 9.1 control tables on DB2 for z/OS Version 7 and Version 8, but the tools cannot create Version 8.2 replication control tables on these DB2 for z/OS versions. You must use Version 8.2 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 9.1 asnqmfmt program will format and display both Version 9.1 and Version 8.2 messages. The Version 8.2 asnqmfmt program supports only Version 8.2 messages.

---

**Migrating different Q replication and event publishing environments to Version 9.1**

The steps that are required to migrate to Version 9.1 differ for unidirectional Q replication, bidirectional or peer-to-peer replication, and event publishing.

**Migrating a unidirectional Q replication environment to Version 9.1**

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 9.1 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 9.1:

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.
To upgrade the administration tools, install 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 9.1 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 9.1 (z/OS)" on page 54
   - "Migrating the Q Apply program to Version 9.1 (Linux, UNIX, Windows)" on page 57

   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 9.1 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 9.1 (z/OS)" on page 53
   - "Migrating the Q Capture program to Version 9.1 (Linux, UNIX, Windows)" on page 56

   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 9.1

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 9.1 messages.

About this task

You can migrate each peer server at a different time based on your business needs. The coexistence rules for Version 9.1 replication allow Version 8 and Version 9.1 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:

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.

   To upgrade the administration tools, install 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.
Migrating the monitor to Version 9.1 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 essentials 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 13 and Table 14 show the scripts for various platforms.

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, UNIX</td>
<td>sql\lib\samples\repl\mig9\q\asncapluw.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sql\lib\samples\repl\mig9\q\asncapluw.sql</td>
</tr>
</tbody>
</table>

Table 14. SQL scripts for migrating Q Apply control tables on Linux, UNIX, and Windows

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, UNIX</td>
<td>sql\lib\samples\repl\mig9\q\asnqappluw.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sql\lib\samples\repl\mig9\q\asnqappluw.sql</td>
</tr>
</tbody>
</table>

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 9.1, 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:

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

   c. Start the Q Capture program in warm mode.

### Migrating an event publishing environment to Version 9.1

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 9.1 messages to the subscribing application.

**Procedure**

To migrate an event publishing environment to Version 9.1:

1. 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 9.1 is optional, and you can wait to migrate the monitor until after your Q Capture programs are migrated.

2. Migrate the Q Capture program. See one of the following topics for details:
   - ”Migrating the Q Capture program to Version 9.1 (z/OS)” on page 53
   - ”Migrating the Q Capture program to Version 9.1 (Linux, UNIX, Windows)” on page 56
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.

3. Start the Replication Alert Monitor if you stopped it.

Migrating the Q replication and event publishing programs to Version 9.1 (z/OS)

After you install a Version 9.1 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 9.1 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 9.1.

Migrating the Q Capture program to Version 9.1 (z/OS)

You migrate the Q Capture program to Version 9.1 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 9.1 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 9.1.

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 9.1” on page 49.

Procedure

To migrate the Q Capture program to Version 9.1:

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 asnmqzv9.sql sample on the server that contains your Version 9.1 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 9.1, change the value of the Q Capture compatibility parameter to 0901. Use one of the following methods:

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

6. Start the Q Capture program in warm mode.
   Ensure that you start the Version 9.1 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 9.1 (z/OS)

You migrate the Q Apply program to Version 9.1 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 9.1” on page 49.

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 9.1 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 9.1 messages to the Q Apply program and allows you to use the full functionality of Version 9.1.

### Migrating Q replication and event publishing programs to Version 9.1 (Linux, UNIX, and Windows)

**Linux UNIX Windows**

After you install a Version 9.1 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 9.1 level.

On Linux, UNIX, and Windows, you must migrate your DB2 instance to Version 9.1 before you run the scripts to migrate the control tables. After you migrate your DB2 instance to Version 9.1, all Q Capture and Q Apply programs within the instance must be migrated to Version 9.1 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 9.1.
Migrating the Q Capture program to Version 9.1 (Linux, UNIX, Windows)

You migrate the Q Capture program to Version 9.1 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 9.1. 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 might differ depending upon your Q replication or event publishing configuration. For details, see “Migrating different Q replication and event publishing environments to Version 9.1” on page 49.

Procedure

To migrate the Q Capture program to Version 9.1:

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 essentials 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:
   - Locate the script in the installation directory.
Table 15 shows the scripts for various platforms.

**Table 15. SQL scripts for migrating Q Capture control tables on different platforms**

<table>
<thead>
<tr>
<th>Platform</th>
<th>SQL script file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux UNIX</td>
<td>sql/lib/samples/repl/mig9/q/asncapluw.sql</td>
</tr>
<tr>
<td>Windows</td>
<td>sql/lib\samples\repl\mig9\q\asncapluw.sql</td>
</tr>
</tbody>
</table>

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 9.1, change the value of the Q Capture compatibility parameter to 0901. Use one of the following methods:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
</table>
| SQL                  | Run the following statement:  
UPDATE schema.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
```

**Important:** 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 9.1 (Linux, UNIX, Windows)**

You migrate the Q Apply program to Version 9.1 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 9.1. 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 9.1” on page 49.

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 essentials 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 16 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 16. SQL scripts for migrating Q Apply control tables on different platforms
      | Platform            | SQL script file   |
      |---------------------|------------------|
      | Linux, UNIX         | asnqappluw.sql   |
      | Windows             | asnqappluw.sql   |
      | Oracle target       | asnqappora.sql   |
      | Sybase target       | asnqappsysb.sql  |
      | Informix target     | asnqappinfx.sql  |
      | Microsoft SQL Server target | asnqappmssql1.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 9.1 messages to the Q Apply program and allows you to use the full functionality of Version 9.1.

---

**Replication Center supported on Linux and Windows platforms**

Starting with Version 9.1, the Replication Center is supported on only Linux and Windows platforms. In previous releases, the Replication Center and other DB2 Administration Tools were supported on all platforms.

The Replication Center and other DB2 Administration Tools are now supported on the Windows x86, Windows x64 (for AMD64 and Intel® EM64T, 32-bit Linux x86, and Linux for AMD64 and Intel EM64T operating systems.
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- Read the syntax diagrams from left to right, from top to bottom, following the path of the line. The following conventions are used:
  - The >>---- symbol indicates the beginning of a syntax diagram.
  - The ---> symbol indicates that the syntax diagram is continued on the next line.
  - The >---- symbol indicates that a syntax diagram is continued from the previous line.
  - The --->< symbol indicates the end of a syntax diagram.
- Required items appear on the horizontal line (the main path).

```
  >-----required_item-----------------------
```

- Optional items appear below the main path.

```
  >-----required_item                   ├──optional_item
```

If an optional item appears above the main path, that item has no effect on the execution of the syntax element and is used only for readability.

```
  >-----required_item                   └──optional_item
```

- If you can choose from two or more items, they appear vertically, in a stack.
  If you must choose one of the items, one item of the stack appears on the main path.

```
  >-----required_item   ┌──required_choice1
                       └──required_choice2
```

If choosing one of the items is optional, the entire stack appears below the main path.

```
  >-----required_item   ┌──optional_choice1
                       └──optional_choice2
```

If one of the items is the default, it appears above the main path, and the remaining choices are shown below.

```
  >-----required_item   ┌──default_choice
                       └──optional_choice1
                       └──optional_choice2
```

- An arrow returning to the left, above the main line, indicates an item that can be repeated.
If the repeat arrow contains a comma, you must separate repeated items with a comma.

A repeat arrow above a stack indicates that you can repeat the items in the stack.

- Sometimes a diagram must be split into fragments. The syntax fragment is shown separately from the main syntax diagram, but the contents of the fragment should be read as if they are on the main path of the diagram.

Fragment-name:

- Keywords, and their minimum abbreviations if applicable, appear in uppercase. They must be spelled exactly as shown.
- Variables appear in all lowercase italic letters (for example, column-name). They represent user-supplied names or values.
- Separate keywords and parameters by at least one space if no intervening punctuation is shown in the diagram.
- Enter punctuation marks, parentheses, arithmetic operators, and other symbols, exactly as shown in the diagram.
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## Index

### A
- accessibility 61
- Apply program
  - coexistence 18

### B
- bidirectional replication
  - coexistence 2, 30, 47
  - migration steps 5, 33, 50

### C
- Capture program
  - coexistence 18
  - coexistence 2, 18, 30, 47
- customer support 61

### D
- documentation
  - accessible 61

### E
- event publishing
  - migration steps 7, 36, 52

### F
- fallback to Version 9.1 (z/OS) 39
- fallback to Version 9.5 (z/OS) 11

### I
- IBM support 61
- introduction
  - migrating to Version 9 45
  - migrating to Version 9.5 29
  - migrating to Version 9.7 1

### L
- legal notices 67

### M
- migrating CCD tables to type 9 19
- migrating to Version 9.1
  - overview 45
- migrating to Version 9.5
  - overview 29
- migrating to Version 9.7
  - overview 1
- migration, falling back 11, 39
- mixed environments 2, 18, 30, 47

### O
- overview
  - migrating to Version 9.1 45
  - migrating to Version 9.5 29
  - migrating to Version 9.7 1

### P
- peer-to-peer replication
  - coexistence 2, 30, 47
  - migration steps 5, 33, 50
- product accessibility
  - accessibility 65

### Q
- Q Apply program
  - coexistence 2, 30, 47
  - migrating
    - Linux, UNIX, Windows 13, 42, 57
    - z/OS 9, 38, 54
- Q Capture program
  - coexistence 2, 30, 47
  - migrating
    - Linux, UNIX, Windows 12, 41, 56
    - z/OS 8, 37, 53

### R
- Replication Alert Monitor
  - coexistence 2, 18, 30, 47
  - migrating
    - Linux, UNIX, Windows 24, 26
    - z/OS 23, 25
- Replication Center
  - supported platforms 59

### S
- screen readers 61
- software services 61
- source system
  - migrating Q Apply program
    - Linux, UNIX, Windows 13, 42, 57
  - migrating Q Capture program
    - Linux, UNIX, Windows 12, 41, 56
    - z/OS 8, 37, 53
  - migrating SQL Capture program
    - z/OS 20
- SQL Capture program
  - migrating
    - z/OS 20
- SQL replication
  - coexistence 18
  - migrating Capture program 20
  - migrating to Version 9 17
- support, customer 61

### T
- target system
  - migrating Q Apply program
    - z/OS 9, 38, 54
- trademarks 69

### U
- unidirectional Q replication
  - migrating 4, 32, 49
  - Q Apply first 4, 32, 49