MM2 on ACTIVE vs MM2 on PASSIVE (Differences)

How MM2 Works

MirrorMaker 2 always has:

- **Source cluster** (DC) (where it reads from)
- **Target cluster** (DR) (where it writes to)

Where MM2 *runs* (DC or DR) is **less important** than:

- Which cluster is configured as **source**
- Which cluster is **target**
- Whether clients are running or not

Running MM2 on ACTIVE Side (NOT Recommended)

- MM2 competes with live producers and consumers
- High risk of **offset loops**
- Can cause **negative consumer lag**
- Increases chance of **duplicate messages (OTP issue)**
- Hard to control replication direction
- Dangerous during DR drills
- **NOT recommended by Red Hat** for Active–Passive setups

Running MM2 on PASSIVE Side (Recommended)

- No applications connected → **clean replication.**
- Offsets move in only **one direction.**
- No duplication risk.
- No negative lag.
- Safe for DR and failback.
- Easy to stop/start without impacting traffic.
- **Red Hat–recommended pattern.**

When It Is VALID to Run MM2 from the Passive (DR) Side

Scenario : Failback (DR → DC) SUPPORTED

After DR has been active and you want to move back to DC:

Correct flow

1. Applications running **only on DR**
2. DC has **no clients**
3. Start MM2 on **DR**
4. Configure:
    - Source = DR
    - Target = DC
5. Replicate data + offsets
6. Wait until lag = 0
7. Stop MM2
8. Switch clients back to DC

This is the only common and safe reason to run MM2 from DR

Kafka DC–DR Drill – Final Steps

Steady State (Before Drill)

- **DC** → ACTIVE
- **DR** → PASSIVE
- **Applications** → running on **DC only**
- **MM2** → running on **DR** (DC → DR)

DR Drill – Switchover (DC → DR)

Step 1: Stop DC Activity

1. Stop **all applications** connected to DC
2. Verify:
    - No producers running
    - No consumers running

Step 2: Stop Replication

3. Stop **MM2 on DR**
    - Ensure no MM2 pods running anywhere

Step 3: Infra Switch

4. Perform **DB switch**, **network routing**, **DNS**, etc.

Step 4: Bring DR Live

5. Start **applications on DR**
6. Verify:
    - Producers & consumers stable
    - No errors

Step 5: Start MM2 on Passive Side

7. Start **MM2 on DC (PASSIVE)**
    - Direction: **DR → DC**

DR is LIVE
DC is PASSIVE and syncing

DR Running State (Post-Switchover)

- **DR applications** → UP
- **DC applications** → DOWN
- **MM2** → running on **DC only (DR → DC)**

Failback Drill – Return to DC (DR → DC)

Step 6: Stop DR Activity

8. Stop **applications on DR**

Step 7: Stop Replication

9. Stop **MM2 on DC**

Step 8: Infra Switch Back

10. Revert **DB**, **network routing**, etc.

Step 9: Bring DC Live

11. Start **applications on DC**

Step 10: Restart MM2 on Passive Side

12. Start **MM2 on DR**

- Direction: **DC → DR**

Final State (After Drill)

- **DC** → ACTIVE
- **DR** → PASSIVE
- **Applications** → running on **DC only**
- **MM2** → running on **DR (DC → DR)**

Rules

- Applications must never run on DC & DR together
- MM2 must never run bidirectionally
- MM2 must never run on ACTIVE cluster
- MM2 runs only on PASSIVE cluster
- MM2 starts **after** applications on ACTIVE side

Stop Apps → Stop MM2 → Switch Infra → Start Apps → Start MM2 (on passive)
