

# MMQ MariaDB

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MARIADB MESSAGE-QUEUE BLACKHOLE REPLICATION

## MMQ — MARIADB AS A MESSAGE QUEUE Blackhole engine + binlog replication + InnoDB consumers



Sometimes the best architecture uses what you already have

## Introduction

MMQ is a message queue implemented using MariaDB binlog replication. It is designed to be a lightweight alternative to other message queues like Kafka, RabbitMQ, or Redis Streams. It leverages the existing binlog replication infrastructure of MariaDB / MySQL.

## MMQ Architecture

MMQ is a MariaDB Message Queue implemented using MariaDB binlog replication.

- Blackhole** engine: The producer uses the Blackhole engine to insert messages into a table. The binlog captures these inserts.
- Binlog** replication: The binlog is replicated to slave brokers.
- InnoDB** triggers: Consumers use InnoDB triggers to process the replicated messages.

## Producer

The producer uses the Blackhole engine to insert messages into a table.

```
CREATE TABLE message_queue (  
  msg_id BIGINT NOT NULL,  
  topic VARCHAR(255) NOT NULL,  
  payload JSON NOT NULL,  
  PRIMARY KEY (msg_id)
```



```
payload JSON,  
created_at DATETIME(6),  
consumed_at DATETIME(6) DEFAULT NULL,  
consumer_id VARCHAR(100) DEFAULT NULL  
) ENGINE=InnoDB;
```

INSERT

```
CREATE TRIGGER trg_message_arrived  
BEFORE INSERT ON message_queue  
FOR EACH ROW  
BEGIN  
    INSERT INTO consumed_messages (msg_id, topic, payload, created_at)  
    VALUES (NEW.msg_id, NEW.topic, NEW.payload, NEW.created_at);  
END;
```

UPDATE

```
UPDATE consumed_messages  
SET consumed_at = NOW(6),  
    consumer_id = 'worker-01'  
WHERE consumed_at IS NULL  
    AND topic = 'order.created'  
ORDER BY msg_id ASC  
LIMIT 1;
```

LIMIT 1 UPDATE

## JSON

MariaDB JSON 10.2

```
INSERT INTO message_queue (msg_id, topic, payload) VALUES (  
    NEXT VALUE FOR msg_sequence,  
    'user.profile.updated',  
    JSON_OBJECT(  
        'user_id', 42,  
        'changes', JSON_ARRAY(  
            JSON_OBJECT('field', 'email', 'old', 'old@mail.com', 'new', 'new@mail.com'),  
            JSON_OBJECT('field', 'name', 'old', 'John', 'new', 'Jonathan')        )  
    )  
);
```

