IBM MQ ADMINISTRATION

Message Flow & Queue Troubleshooting Workbook

Practical scenario-based learning resource for middleware and mainframe support learners

Estimated time	40–55 minutes
Level	Beginner to intermediate operations / application support
Skills practised	Symptom triage, queue-depth analysis, channel checks, safe recovery, incident communication

Learning outcome: Investigate why messages are not reaching their destination without immediately clearing queues or restarting services.

Free learning resource for Ez-Learn Global participants. All incident details are fictional.

© Copyright protected

1. Incident Scenario

A business application sends payment-status messages to IBM MQ. The producer reports successful puts, but the downstream consumer says new messages are not being processed. The target queue depth is rising.

Observation	Current information
Business impact	Payment-status updates are delayed; source application is still running.
Initial signal	Target queue depth has increased steadily for 20 minutes.
Unknowns	Consumer status, channel state, transmission queue depth, recent changes, and logs have not yet been checked.
Safety rule	Do not purge messages, reset channels, or restart queue managers without evidence, authorization, and a recovery plan.

Objective: Identify where the message path is blocked, collect evidence, and choose the least risky next action.

2. Trace the Message Path

Producer application → Source queue → Sender channel / transmission queue → Receiver side / target queue → Consumer

Map the actual topology first; this path is conceptual and may differ by deployment. Investigate where the evidence changes: messages may be accumulating at the source, waiting on a transmission queue/channel, arriving without a consumer, or being rolled back by application processing.

3. First-Line Triage Checklist

Confirm scope

■ Identify queue managers, queue names, channel names, applications, start time, and environment.

Inspect queue depth

■ Compare current and recent depth, maximum depth, message age, and normal baseline.

Check consumers

■ Confirm consumer is running, connected, authorized, and processing; review application logs.

Check channels

■ Inspect relevant sender/receiver channel state, last error, connection state, and channel logs.

Check transmission path

■ For remote delivery, inspect transmission queue and associated channel backlog.

Review recent changes

■ Check deployments, certificates, credentials, network rules, queue definitions, permissions, and maintenance.

Preserve evidence

■ Record timestamps, depth snapshots, channel status, exact errors, and changes before altering state.

© Copyright protected

4. Diagnostic Decision Guide

Evidence	Possible interpretation	Next investigation
Target depth rises; consumer inactive	Consumer stopped, disconnected, unauthorized, or failing	Check consumer logs, connection, permissions, deployment health
Source queue stable; transmission queue grows; channel inactive	Remote route or channel may not be delivering	Inspect channel status, transmission queue, network and logs
Channel stops with connection/authentication errors	Network, TLS/certificate, credentials, or configuration issue possible	Capture exact error; correlate with network/security changes
Queue depth low but business updates delayed	Problem may be downstream of MQ or in transaction handling	Trace permitted message/correlation IDs through logs
Messages reappear after consumption attempts	Consumer may roll back or repeatedly fail processing	Check exception logs, backout handling, poison-message procedure

These are hypotheses, not diagnoses. Confirm the actual topology, product version, exact errors, and local runbook before acting.

5. MQSC Examples for a Controlled Lab

Illustrative commands only. Use approved lab objects, syntax, and permissions for your MQ version; do not run unreviewed commands in production.

```
DISPLAY QSTATUS(APP.STATUS.IN) TYPE(QUEUE) CURDEPTH IPPROCS OPPROCS
DISPLAY QLOCAL(APP.STATUS.IN) MAXDEPTH
DISPLAY CHSTATUS(APP.SDR.CHANNEL) ALL
DISPLAY QSTATUS(SYSTEM.DEAD.LETTER.QUEUE) TYPE(QUEUE) CURDEPTH
```

Interpret carefully: CURDEPTH is a snapshot; trend it over time. IPPROCS/OPPROCS help indicate open input/output handles but do not prove business processing. Channel output depends on channel type and state. A dead-letter queue is one clue, not a complete diagnosis. Never move, delete, or replay messages without understanding ownership and recovery requirements.

6. Approaches — Pros and Cons

Approach	Potential benefit	Trade-off / risk
Observe and correlate logs	Low risk; preserves evidence	Takes time; logs may be incomplete
Restart an approved consumer	May restore a failed application process	May hide root cause or affect retries/duplicates
Restart a channel	May recover a known transient issue	Can interrupt delivery and will not fix underlying configuration errors
Purge a queue	Removes queued messages	Potential irreversible business data loss; not routine troubleshooting
Replay or move messages	May recover valid messages after cause is fixed	Duplicate processing, ordering, and integrity risks; approved recovery needed

Learning has never been so easy

© Copyright protected

7. Practical Exercise

Finding	Evidence
Source queue	Depth stable near normal baseline.
Transmission queue	Depth has increased continuously for 18 minutes.
Sender channel	Inactive; latest log contains a connection failure.
Target queue	Depth low; consumer active.
Recent change	Network rule changed during the same time window.

A. Which part of the path is the strongest initial suspect, and why?

B. Name three pieces of evidence to preserve before requesting a change.

C. Which teams might need to be engaged, and what exact evidence would you send?

D. Why is purging the transmission queue not an acceptable first response?

E. Write a concise incident update for a business stakeholder.

8. Knowledge Check

1. A growing target queue means you should first check:

A. Consumer health and processing

B. Desktop wallpaper

C. Only the producer

D. Nothing if MQ is running

2. Why trend queue depth?

A. One snapshot proves cause

B. Trend shows whether backlog is growing, stable, or draining

C. It replaces logs

D. It validates message content

3. Before replaying messages:

A. Replay all immediately

B. Confirm ownership, duplicate risk, ordering, and approved recovery

C. Delete dead-letter queue

D. Disable monitoring

4. Safe first-line principle:

A. Purge first

B. Preserve evidence and confirm path before changing state

C. Restart all queue managers

D. Assume every issue is a firewall

© Copyright protected

9. Suggested Answers

Exercise A: The sender-channel/remote route is the strongest initial suspect because the transmission queue is growing and the sender channel is inactive with a connection failure. The network-rule change is a correlation to investigate, not proof.

Exercise B: Preserve timestamped queue-depth snapshots; exact channel status and error/log text; affected message identifiers where permitted; and relevant configuration/change records.

Exercise C: Engage MQ operations and network/security support as appropriate. Share channel name, endpoints, failure time, exact error, status, depth trend, and change reference. Do not share credentials or sensitive payloads.

Exercise D: Purging can permanently discard business messages and will not repair the connection failure; it can create data-loss and reconciliation issues.

Exercise E: “Payment-status updates are delayed. Initial evidence shows a growing transmission-queue backlog and an inactive sender channel with a connection error, coinciding with a recent network-rule change. MQ and network teams are reviewing logs and connectivity. No messages have been purged. We will provide an update after the cause and recovery plan are confirmed.”

Knowledge check: 1-A, 2-B, 3-B, 4-B.

10. Incident Handover Template

Field	Record
Incident / business impact	_____
Queue manager / source / target	_____
Depth trend / affected window	_____
Channel status / exact error	_____
Recent changes / ticket	_____
Message IDs / correlation IDs (if permitted)	_____
Hypothesis and evidence	_____
Next action / owner / approval	_____
Recovery / backout / validation plan	_____

11. Further Learning

IBM MQ documentation: https://www.ibm.com/docs/en/ibm-mq

Ez-Learn course catalogue: https://ez-learn.global/courses

Use documentation for the MQ version and topology approved in your environment. This workbook is educational, not a production runbook; validate all procedures with your trainer and local standards.

© Copyright protected