IBM MQ review

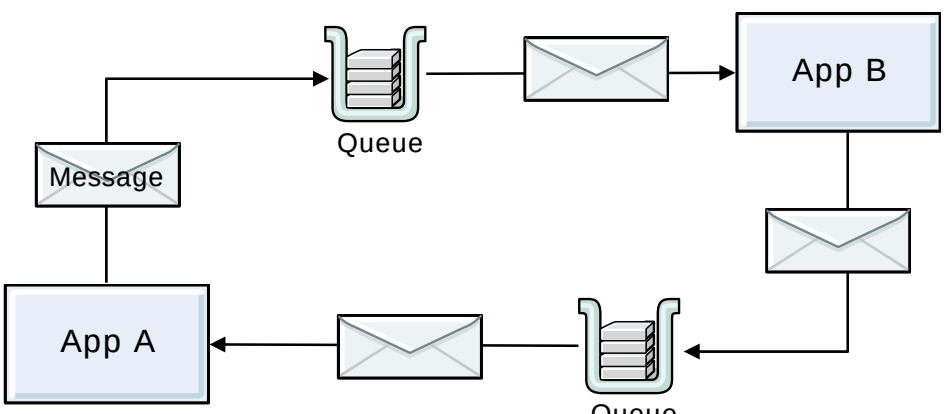
Unit objectives

After completing this unit, you should be able to:

- Describe the features and benefits of IBM MQ
- Identify IBM MQ components and their functions

IBM MQ functional overview

- Common application programming interface
- Assured message delivery
- Time-independent processing
- Application parallelism
- Faster application development



Messages

- Contain the application data or payload
- Are placed on queues, which allow programs to run independently of each other, at different speeds and times, in different locations, and without a logical connection between them
- Contain MQ message descriptor (MQMD) with control information
- Can contain optional message properties that are created by the application

Message descriptor (MQMD)	Message properties (Optional)	Application data

Queues

- A defined end-point destination for messages
  - *Local queue* is owned by the queue manager to which the program is connected
  - *Remote queue* is owned by a different queue manager to the one to which the program is connected
  - *Alias queue* is a pointer to a local queue or a locally owned remote queue
  - *Model queue* is a template to create a dynamic local queue

Local queue
QLOCAL

Remote queue
QREMOTE

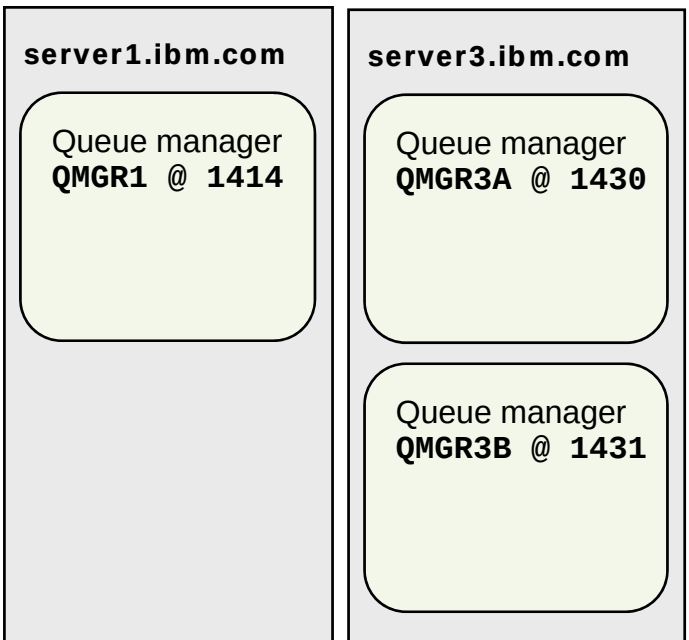
Alias queue
QALIAS

Model queue
QMODEL

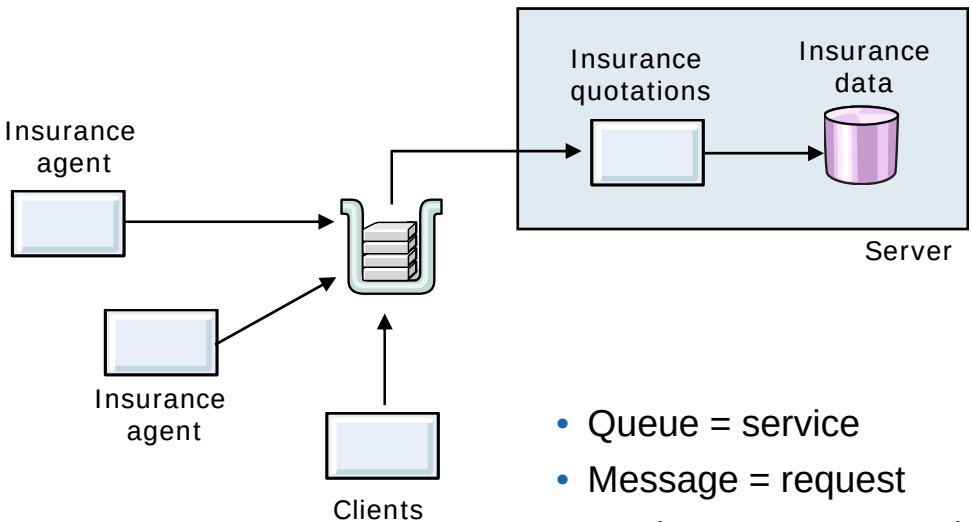
Only queues that are defined as local queues (QLOCAL) hold messages

Queue manager

- Provides messaging services to applications
- Ensures that messages are sent to the correct queue or are routed to another queue manager
- Hosts the queues and the channels that connect queue managers
- A server can host more than one queue manager
- Queue managers that share a server must use different TCP/IP ports

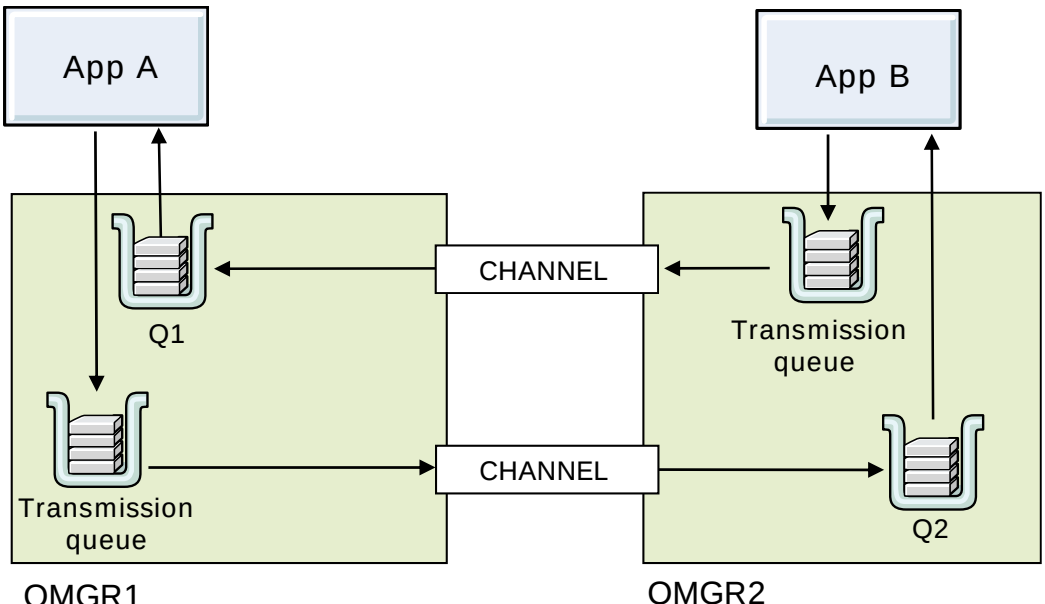


Requesting and responding applications



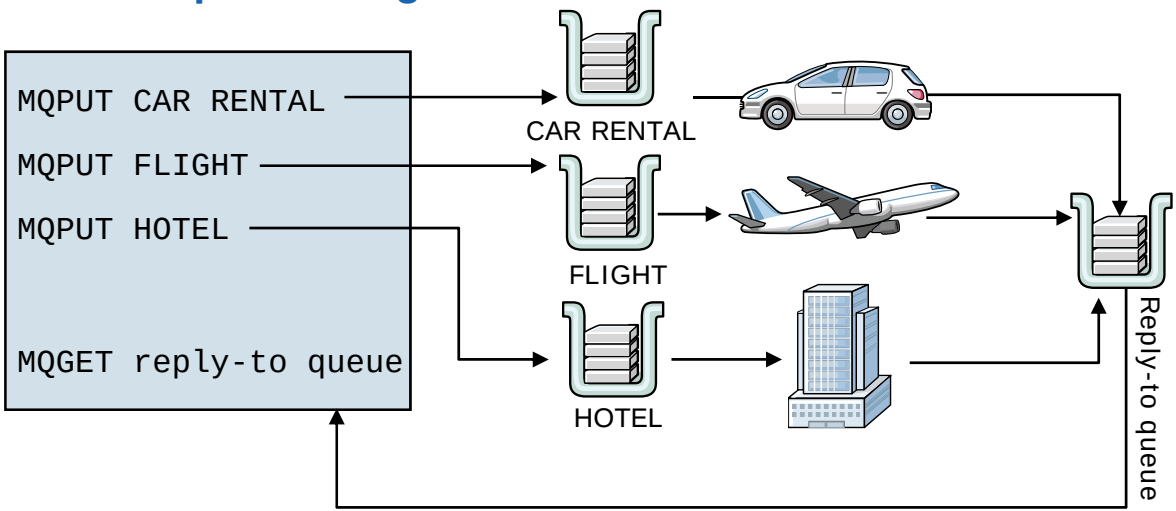
- Queue = service
- Message = request
- Reply-to queue name in message descriptor
- Multiple instances of server possible

Transmission queues and channels



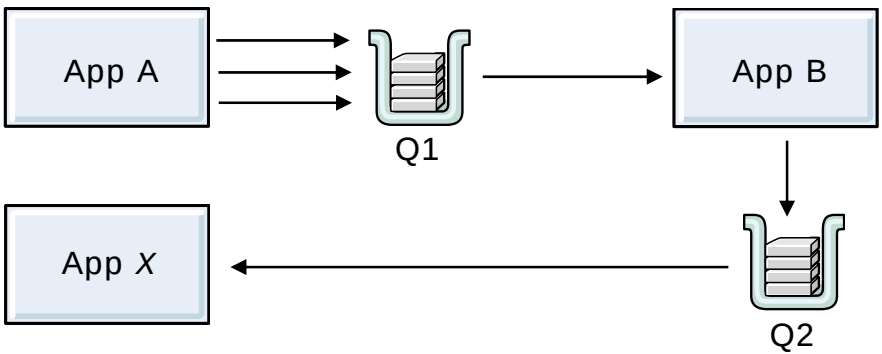
- Transmission queue stores message first
- Application is not stopped if the link is inactive

Parallel processing



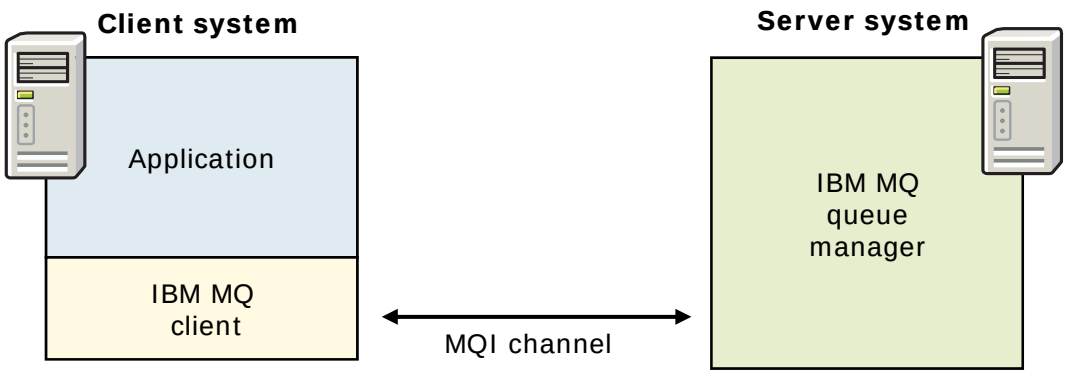
- Requests are not serialized
- Replies are consolidated
- Transactions have shorter elapsed time

Asynchronous processing



- Separate process for replies
- No need for communicating programs to be active at the same time
- Time independence

IBM MQ client



- IBM MQ component on a system without a queue manager
  - Communicates with the queue manager by using an *MQI channel*
  - Allows an application that runs on the client system to connect to a queue manager that is running on another system

Advantages of messaging with IBM MQ

- IBM MQ clients enable an application to connect remotely or locally to an MQ queue manager
- Publish/subscribe support increases messaging capability from point-to-point messaging to a less coupled style of messaging
- IBM MQ clusters allow multiple instances of the same service to be hosted through multiple queue managers to enable load-balancing, and fail-over and simplify administration
- Secure Sockets Layer (SSL) protocol can be used to secure communication between queue managers or IBM MQ client
- IBM MQ supports a wide range of hardware and operating systems

Publish/subscribe integration

- Publish/subscribe engine is fully integrated into the queue manager and is automatically enabled
- Publish directly to topics
- Distributed publish/subscribe allows applications that are connected to separate queue managers to use publish/subscribe messaging
  - *Publish/subscribe cluster* uses IBM MQ cluster technology that connects queue managers by using cluster channels
  - *Hierarchical publish/subscribe* topology is built on queue managers connected by using standard distributed message channels or cluster channels
- Use MQ Explorer to simplify configuration, development, and deployment of a publish/subscribe environment

IBM MQ publications

- IBM MQ product site:
  `http://www.ibm.com/software/products/en/ibm-mq`
  - Latest news
  - References
  - Beta code
  - Software downloads
  - SupportPacs

Unit summary

Having completed this unit, you should be able to:

- Describe the features and benefits of IBM MQ
- Identify IBM MQ components and their functions

Checkpoint questions

1. True or False: IBM MQ supports asynchronous messaging only.

2. IBM MQ assured delivery means that:
   a. A report of delivery can always be sent back.
   b. Unless the entire system goes down, no messages are lost.
   c. Messages can be duplicated but never lost.
   d. Messages are delivered with no loss or duplication.

3. Applications place messages on queues by using the IBM MQ:
   a. program-to-program interface.
   b. message queue interface.
   c. command processor.

Checkpoint answers

1. **False**. IBM MQ supports both synchronous and asynchronous messaging.

2. **d**

3. **b**