z/OS Introduction and Workshop

WebSphere MQSeries

Unit Objectives

After completing this unit, you should be able to:

- Define Message, Queue, Queue Manager
- Explain Asynchronous Communication
- Understand WMQ Channels

WebSphere MQSeries

- The WebSphere® MQ products enable programs to communicate with one another across a network of unlike components (processors, operating systems, subsystems, and communication protocols) using a consistent application programming interface. Applications designed and written using this interface are known as **message queuing** applications because they use the **messaging** and **queuing** style:
  - Messaging: Programs communicate by sending each other data in messages rather than calling each other directly
  - Queuing: Messages are placed on queues in storage, allowing programs to run independently of each other, at different speeds and times, in different locations, and without having a logical connection between them.

Asynchronous Communication

- Caller and Server are decoupled
  - Server does not need presence of caller
  - Caller does not need availability of server
  - Loose binding between caller and server

- Analogy: Voicemail

- Asynchronous communications has advantages for certain roles

Messages

- A message is considered to be the unit of data to be moved from one application to another
- A message is built by an application and is consumed by a different application
- Messages can contain any kind of data:
  - Binary data
  - Text data (raw text, XML)
  - Structured data (C structures, COBOL CopyBook, etc.)
  - Anything

Types of Messages

WebSphere MQ defines four types of messages:

- **Datagram**: A simple message for which no reply is expected
- **Request**: A message for which a reply is expected
- **Reply**: A reply to a request message
- **Report**: A message that describes an event such as the occurrence of an error

Queues

- Messages are delivered asynchronously to a Queue
- Queues are a named entity which hosts a collection of messages
- Messages on queue are usually in “first in-first out” (FIFO) order
  - Options exist to process by priority or directly

Types of Queues

- **Local Queue**: A physical queue on the local queue manager, used to store messages
- **Alias Queue**: An alias of a physical queue; used as a level of ‘indirection’
- **Remote Queue Definition**: Not a physical queue, but a definition of a queue on a remote queue manager; used to send messages to remote queue managers
- **Model Queue**: A queue that is used as a template for dynamically-created queues
- **Transmission Queue**: A special kind of local queue used for the delivery of messages to remote queue managers

Queue Manager

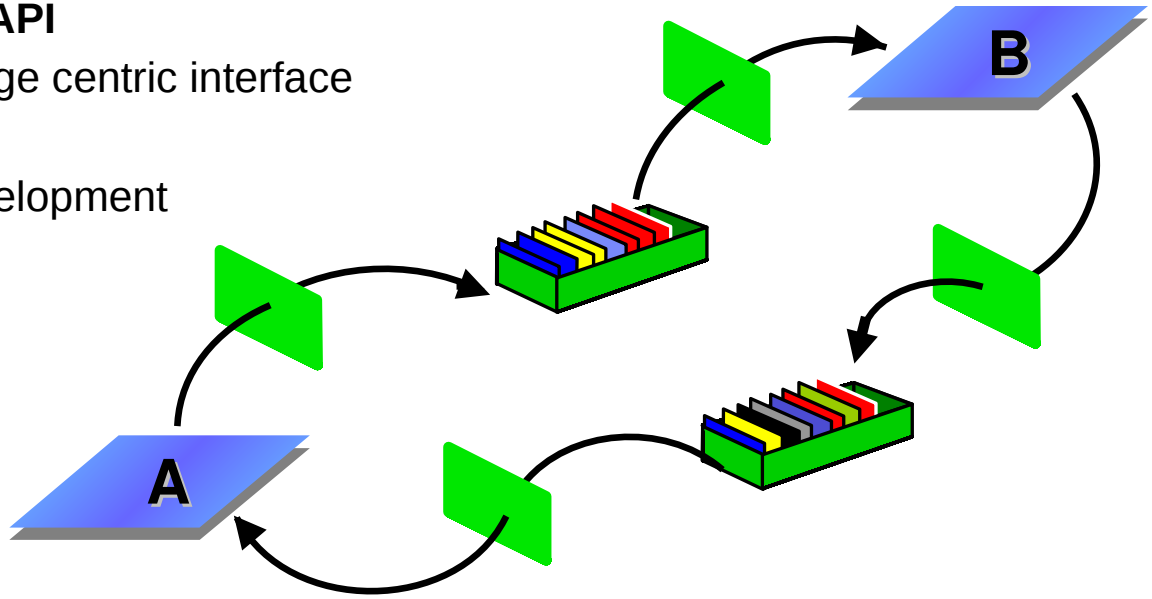
- A queue manager is a collection of queues and their messages

- Queue managers can communicate with other queue managers using “channels”
  - Channel: Reliable transport mechanism for queue managers to exchange messages with each other
  - More on channels later….

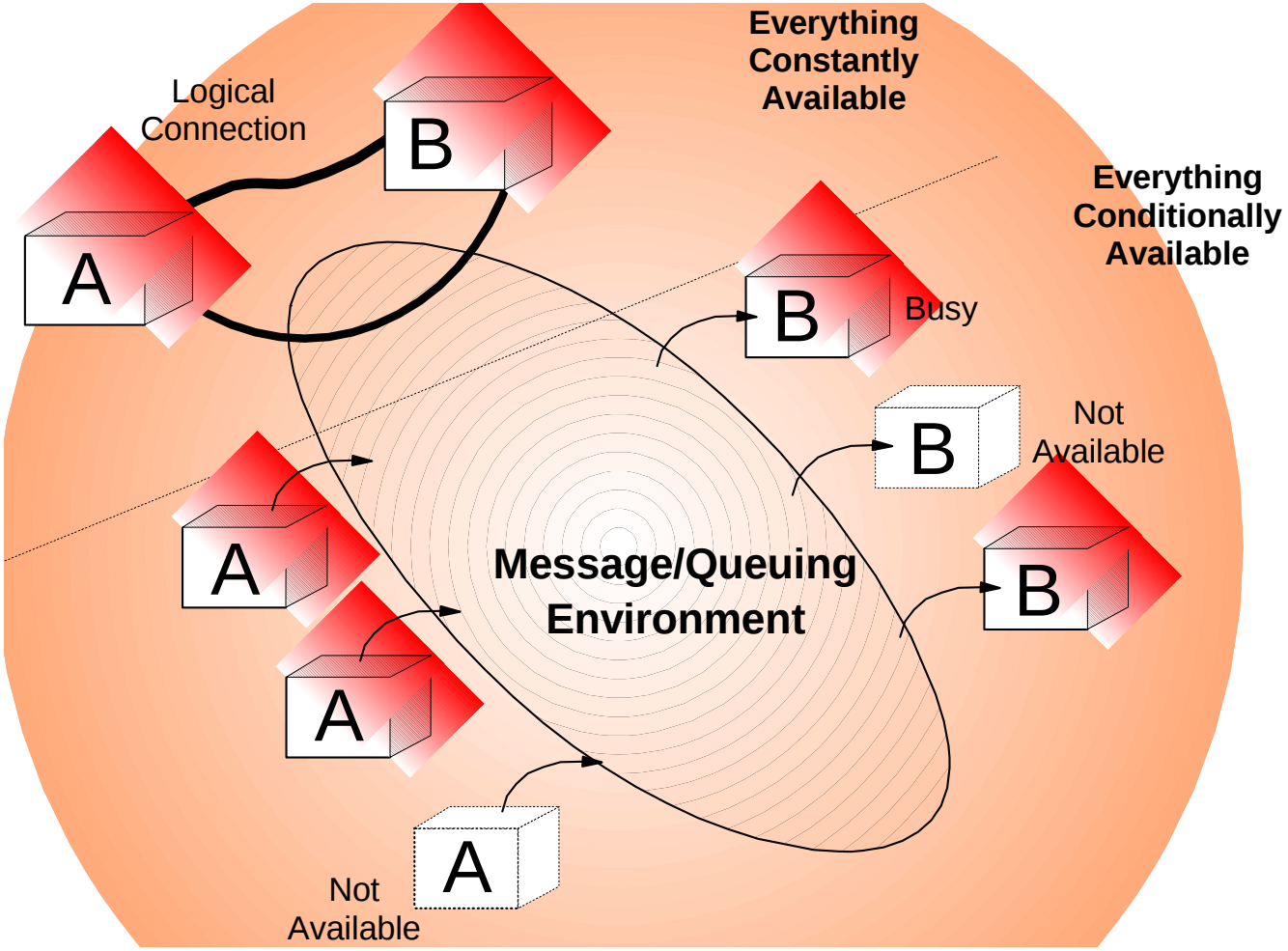
What does WMQ provide?

- **Exactly once message delivery**
- **Loosely-coupled applications**
  - Asynchronous messaging
- **A single, multi-platform API**
  - Easy to use ... message centric interface
  - Network independent
  - Faster application development
- **Universal …**

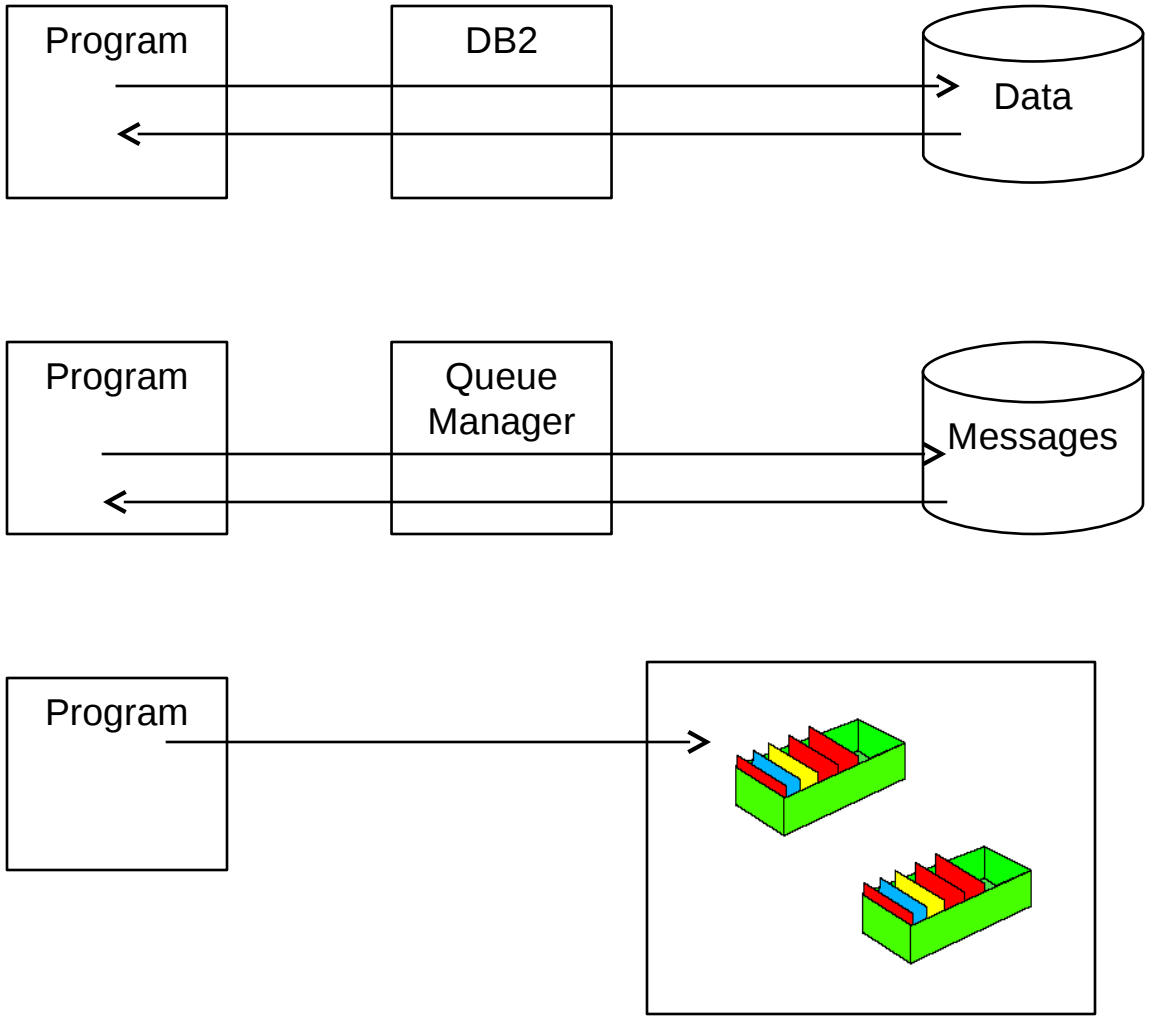
  runs everywhere



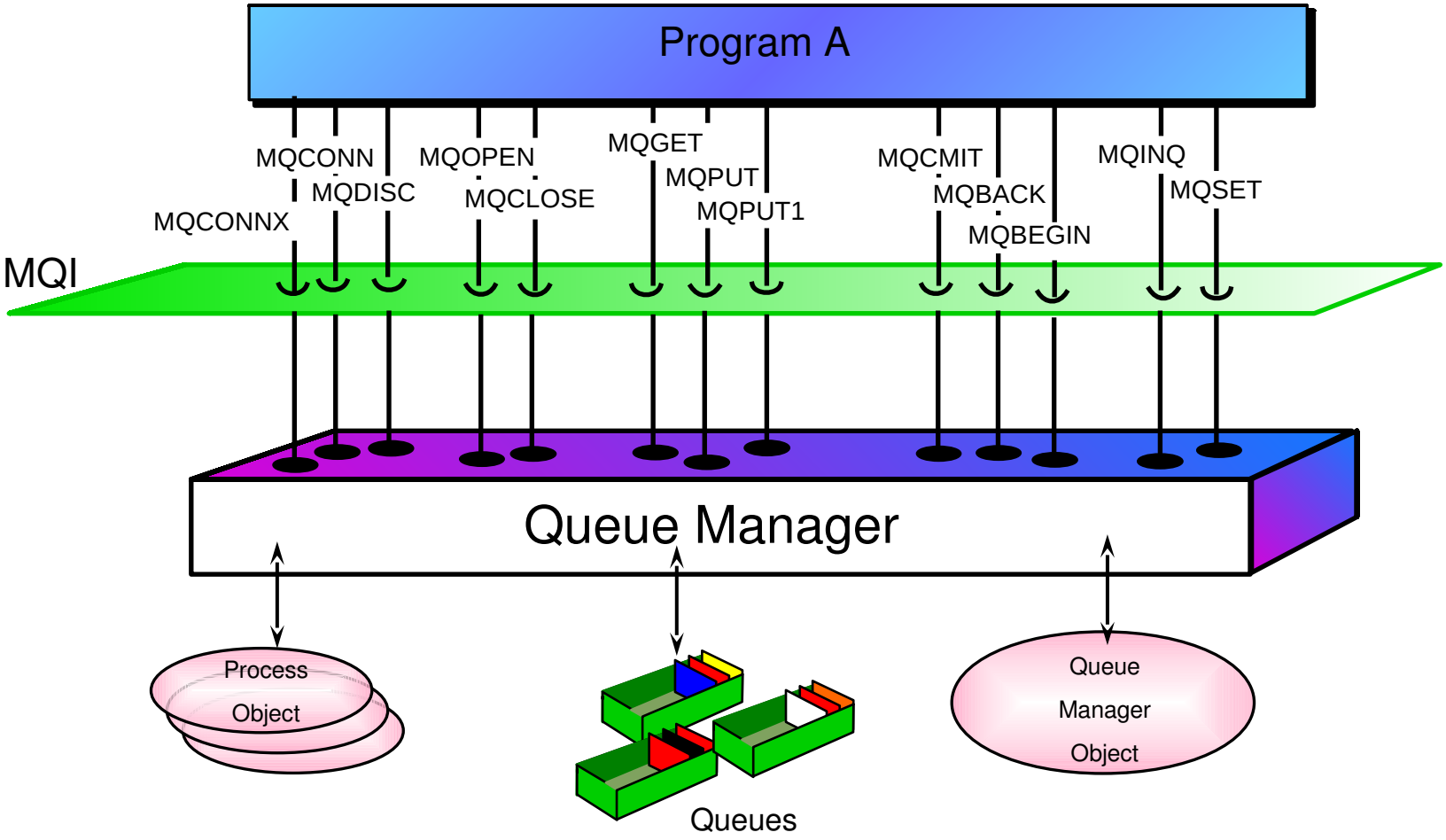
WMQ Asynchronous Messaging



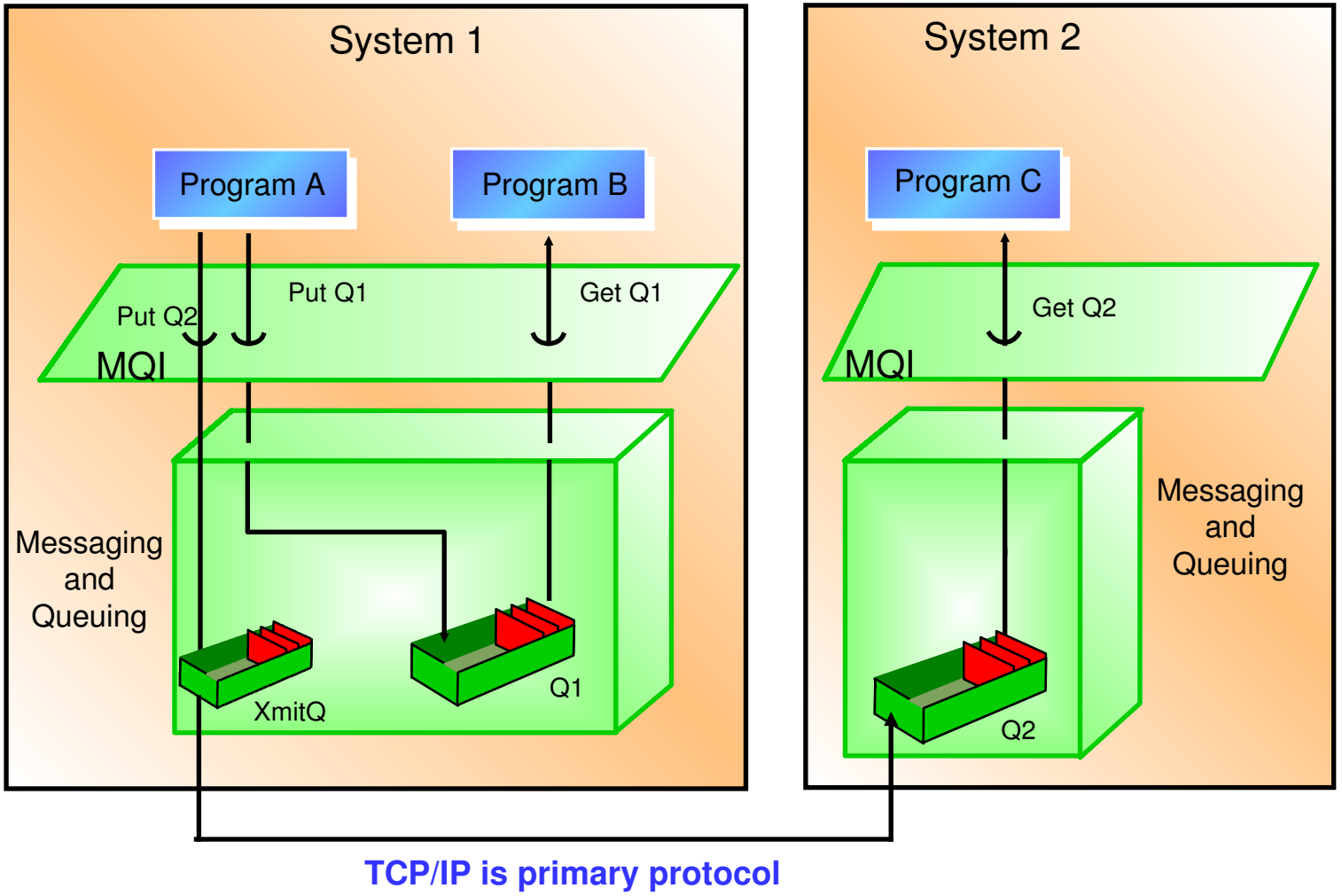
Queue Manager



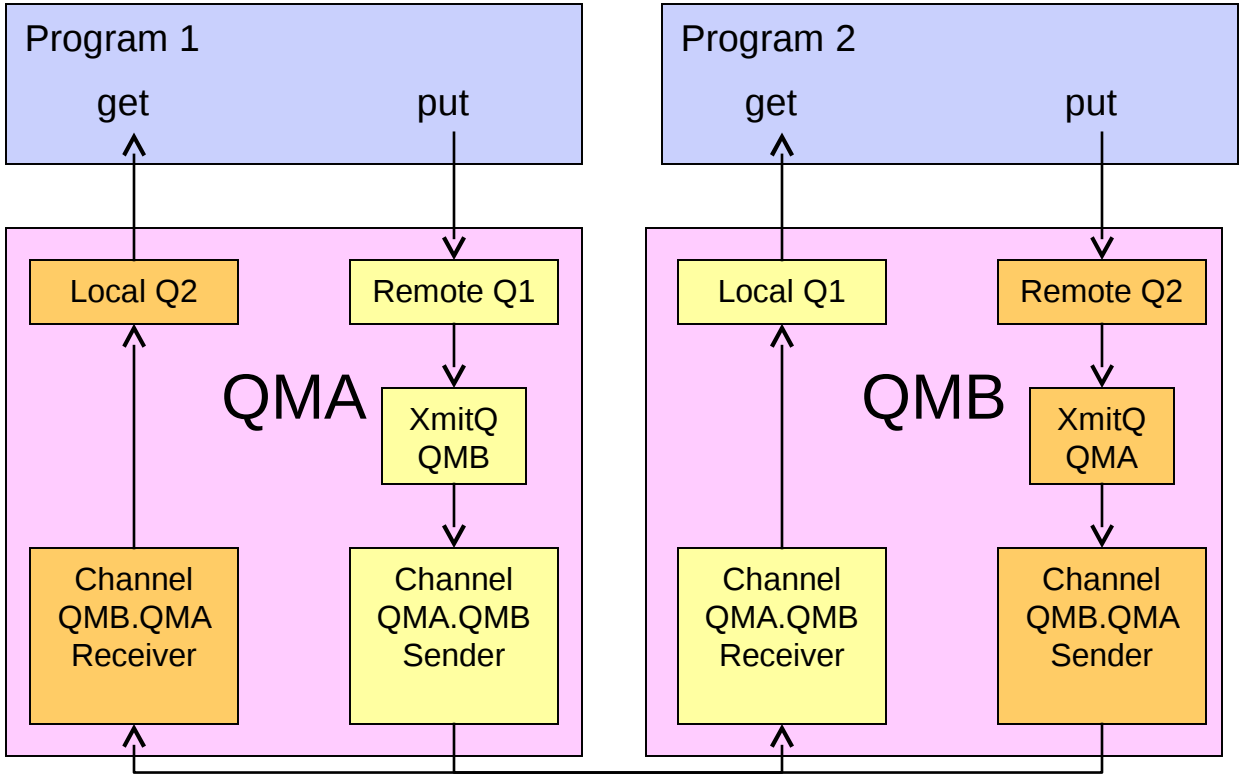
WebSphere MQ API



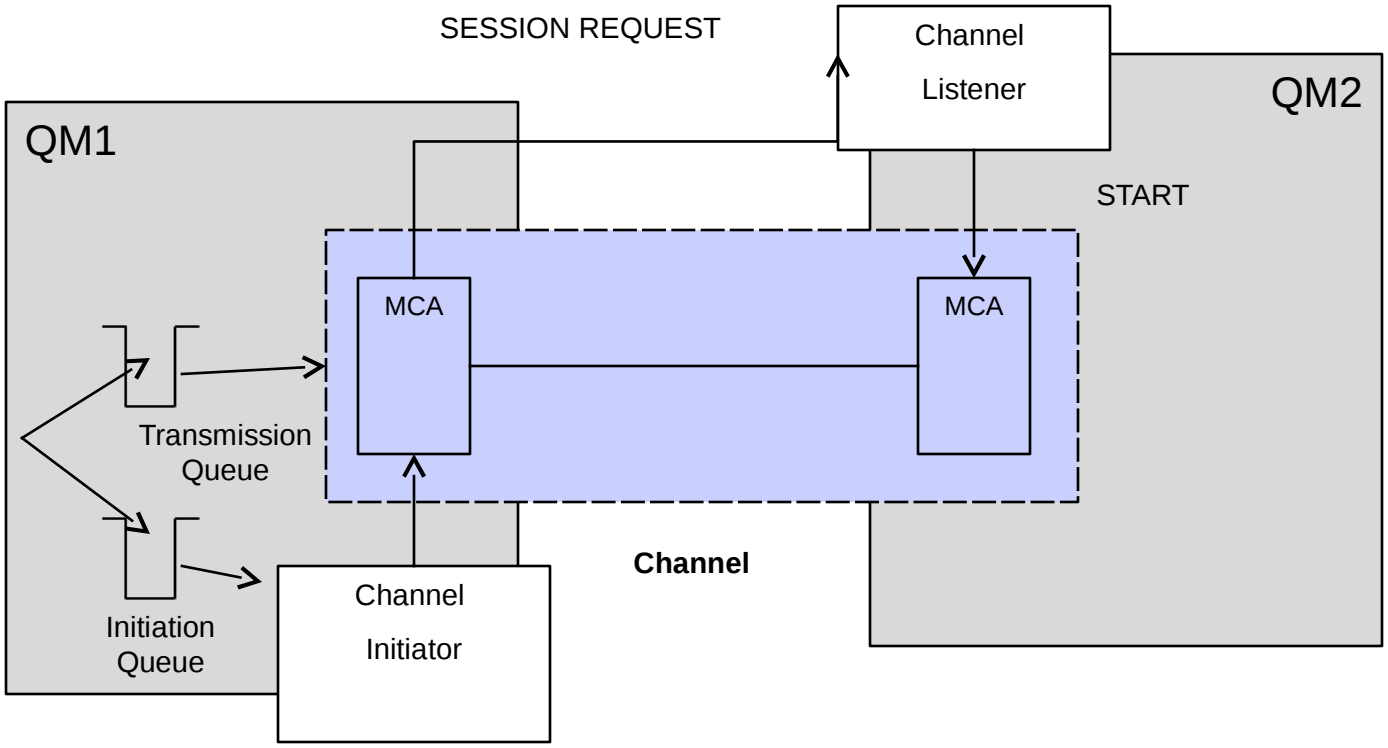
Communication with WMQ



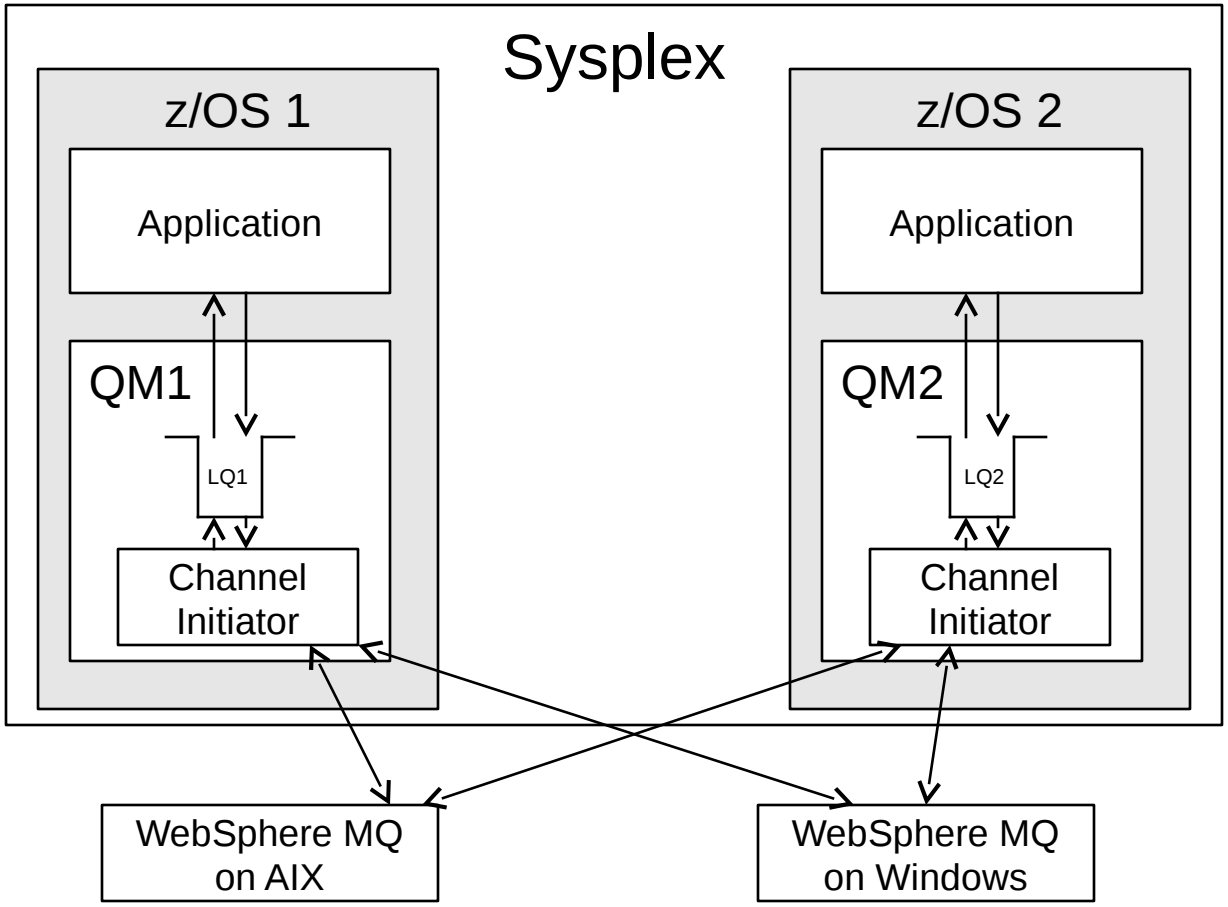
Channels



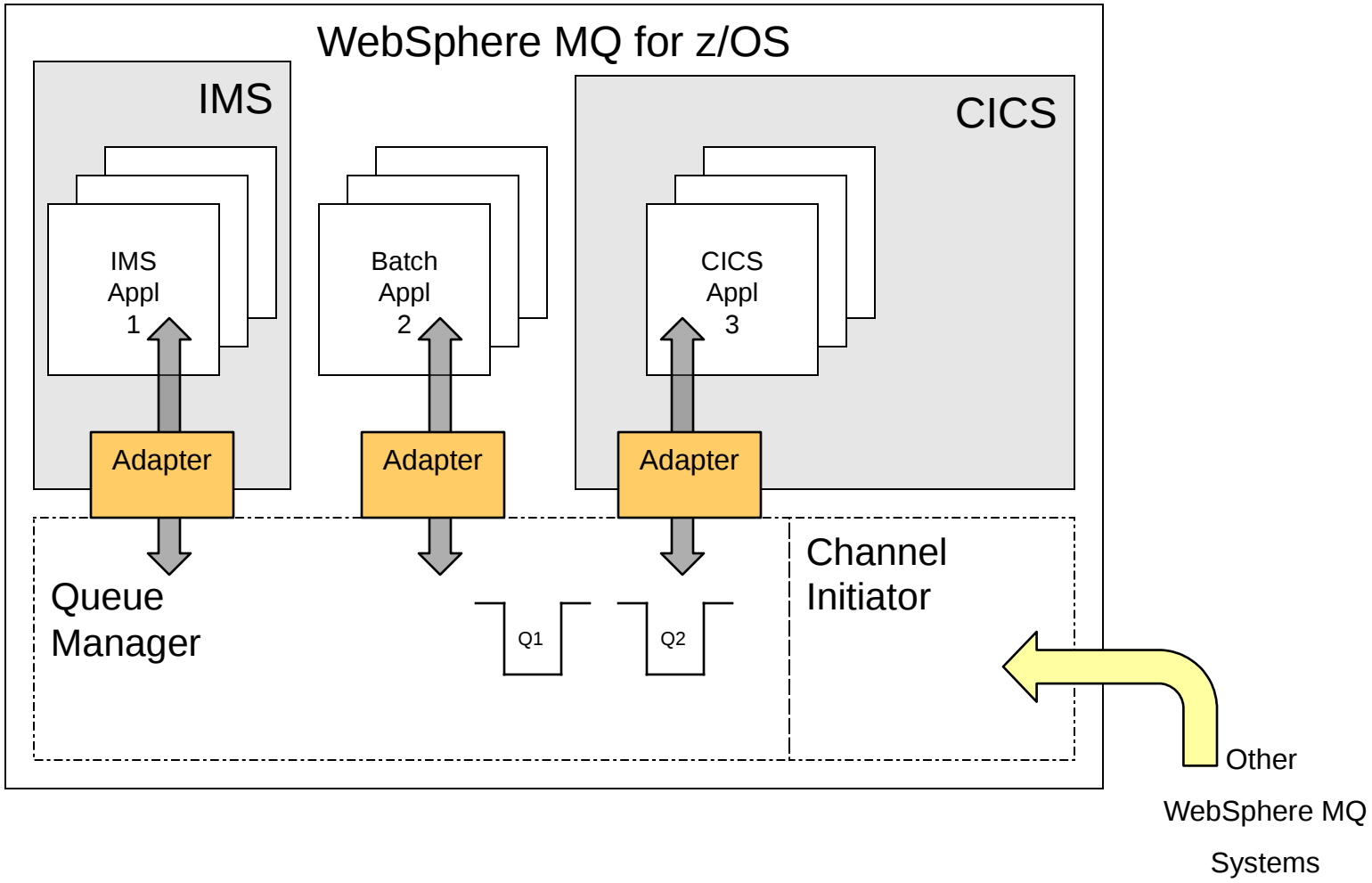
Channel Communication



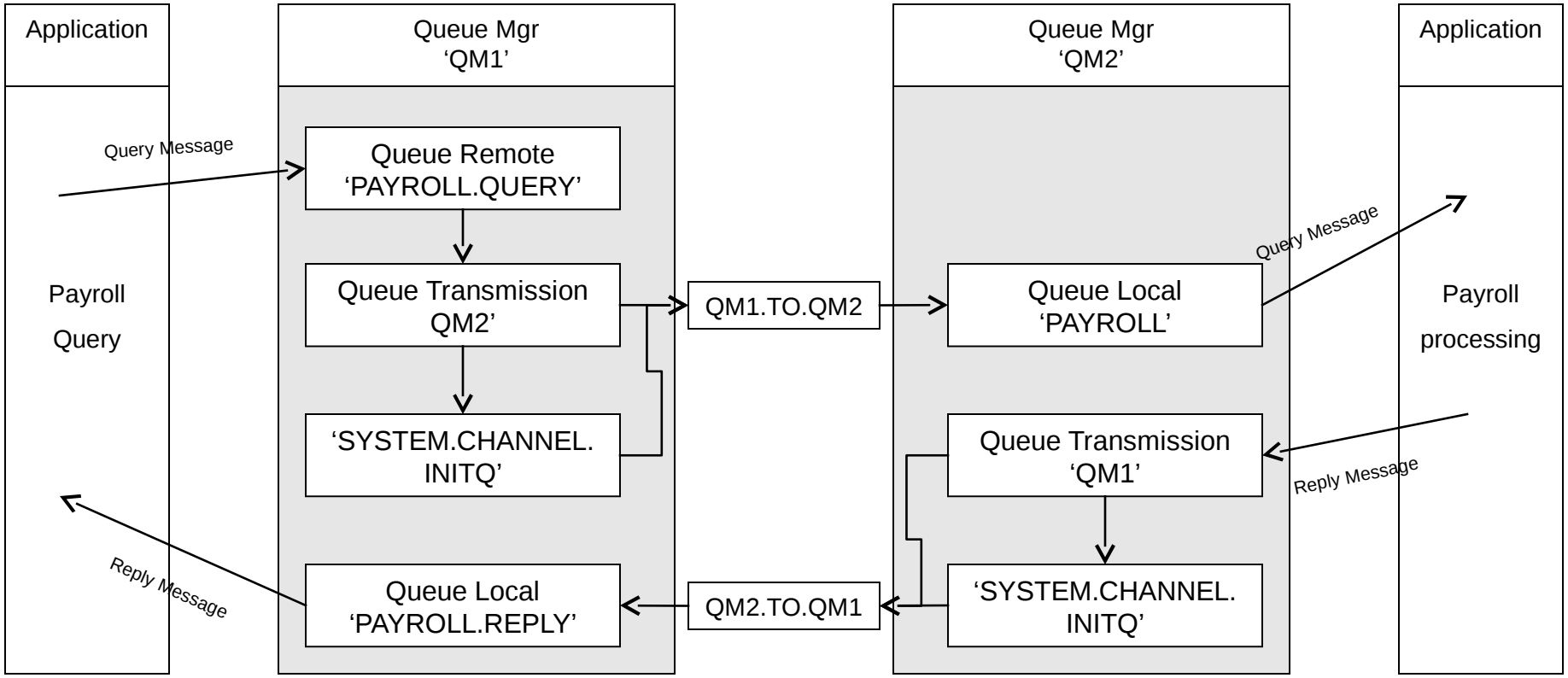
Interconnectivity



Connectivity/Adapter Diagram



Application Scenario



Start MQSeries Queue Manager

%CSQ7 START QMGR

S CSQ7MSTR

$HASP373 CSQ7MSTR STARTED

CSQY000I %CSQ7 IBM WebSphere MQ for z/OS V7

CSQY001I %CSQ7 QUEUE MANAGER STARTING, USING PARAMETER MODULE CSQZPARM

CSQ3111I %CSQ7 CSQYSCMD - EARLY PROCESSING PROGRAM IS V7 LEVEL 004-005

CSQY100I %CSQ7 SYSTEM parameters ...

CSQJ127I %CSQ7 SYSTEM TIME STAMP FOR BSDS=2009-11-19 14:57:25.13

CSQJ001I %CSQ7 CURRENT COPY 1 ACTIVE LOG DATA SET IS 778

CSQP007I %CSQ7 Page set 0 uses buffer pool 0

CSQP007I %CSQ7 Page set 1 uses buffer pool 0

CSQP007I %CSQ7 Page set 2 uses buffer pool 1

CSQP007I %CSQ7 Page set 3 uses buffer pool 2

CSQP007I %CSQ7 Page set 4 uses buffer pool 3

CSQY220I %CSQ7 Queue manager is using 26 MB of local 787 storage, 1620 MB are free

CSQY022I %CSQ7 QUEUE MANAGER INITIALIZATION COMPLETE

CSQ9022I %CSQ7 CSQYASCP 'START QMGR' NORMAL COMPLETION

Start MQSeries Channel Initiator

%CSQ7 START CHINIT

S CSQ7CHIN,JOBNAME=CSQ7CHIN

CSQM138I %CSQ7 CSQMSCHI CHANNEL INITIATOR STARTING

$HASP373 CSQ7CHIN STARTED

CSQX000I %CSQ7 CSQXJST IBM WebSphere MQ for z/OS V7

CSQX001I %CSQ7 CSQXJST Channel initiator starting

CSQX011I %CSQ7 CSQXGIP Client Attachment feature available

CSQ9022I %CSQ7 CSQXCRPS ' START CHINIT' NORMAL COMPLETION

CSQX022I %CSQ7 CSQXSUPR Channel initiator initialization complete

CSQX023I %CSQ7 CSQXLSTT Listener started, port 1416 address *,TRPTYPE=TCP
INDISP=QMGR

CSQU012I CSQUTIL Initialization command handling completed

Each MQSeries Environment is Two Address Spaces

```
SDSF STATUS DISPLAY ALL CLASSES


PREFIX=CSQ*  DEST=(ALL)  OWNER=*
NP   JOBNAME   JobID        Owner        Prty  Queue
     CSQ7CHIN  STC01194   STCOPER    15    EXECUTION
     CSQ7MSTR STC01193   STCOPER    15    EXECUTION
```

Stop MQSeries Channel Initiator and Queue Manager

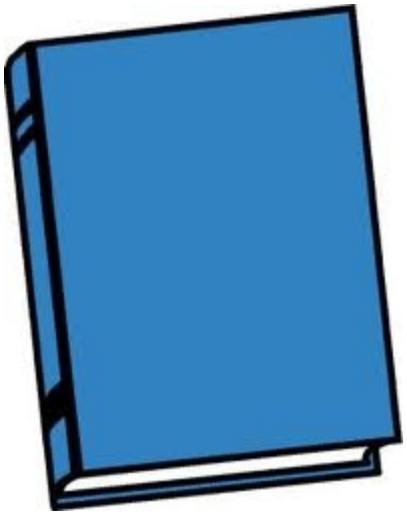
%CSQ7 STOP CHINIT

%CSQ7 STOP QMGR

Additional Information

- **WebSphere MQ v7.5 InfoCenter**
- **WebSphere MQ Redbooks**
  - **WebSphere MQ Primer (Redbook)**

Professional Manuals and Documentation



Unit summary

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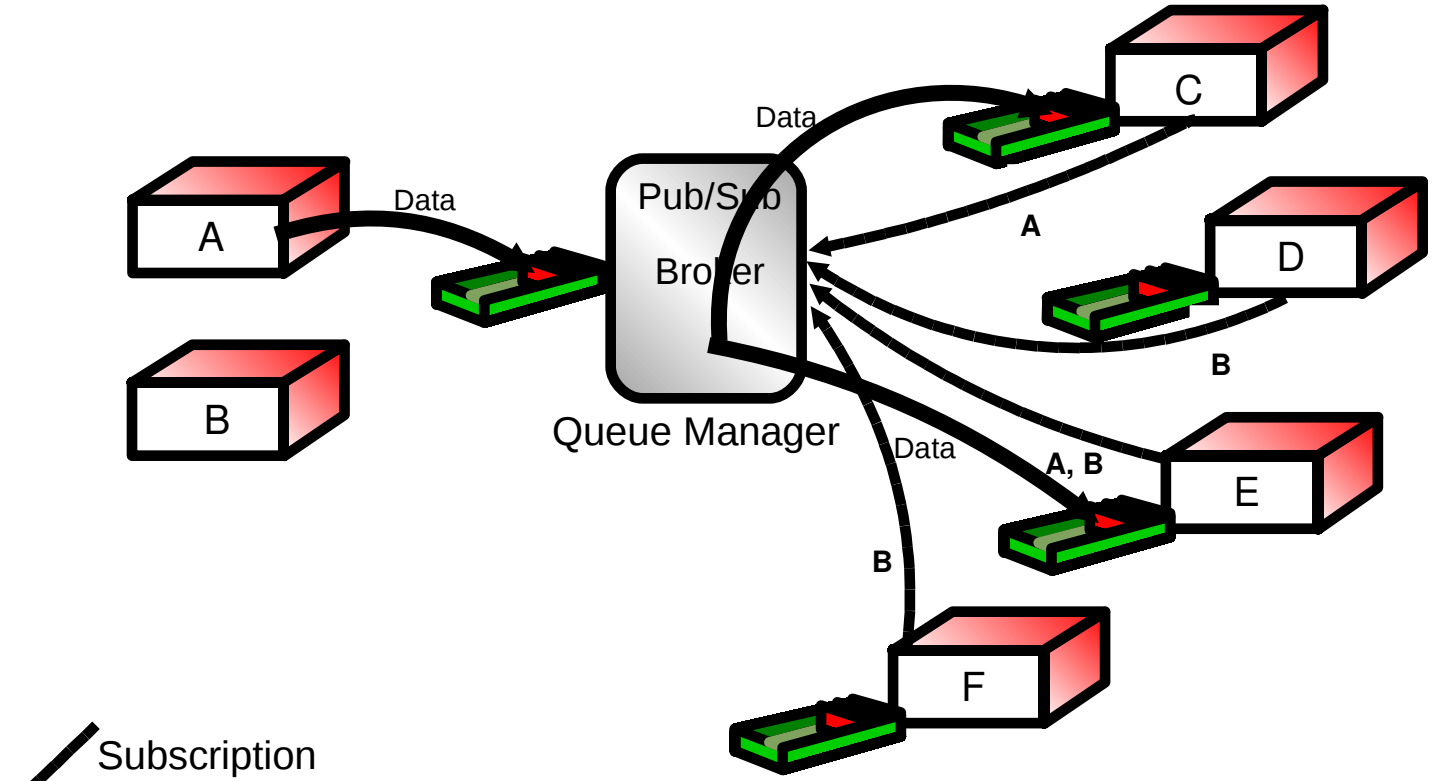
Publish and Subscribe



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