

z/OS Introduction and Workshop

Message Queue (MQSeries)



Unit objectives

After completing this unit, you should be able to:

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

MQSeries

- The 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

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

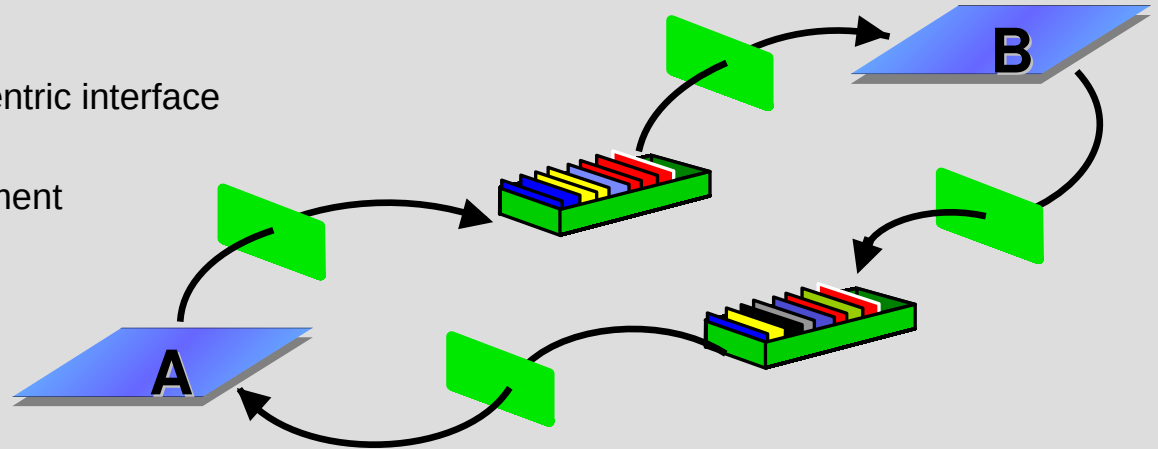
- **Local Queue:** A physical queue on the local queue manager, used to store messages
- **Alias Queue:** An alias of a physical queue; used as a level of 'indirection'
- **Remote Queue Definition:** Not a physical queue, but a definition of a queue on a remote queue manager; used to send messages to 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

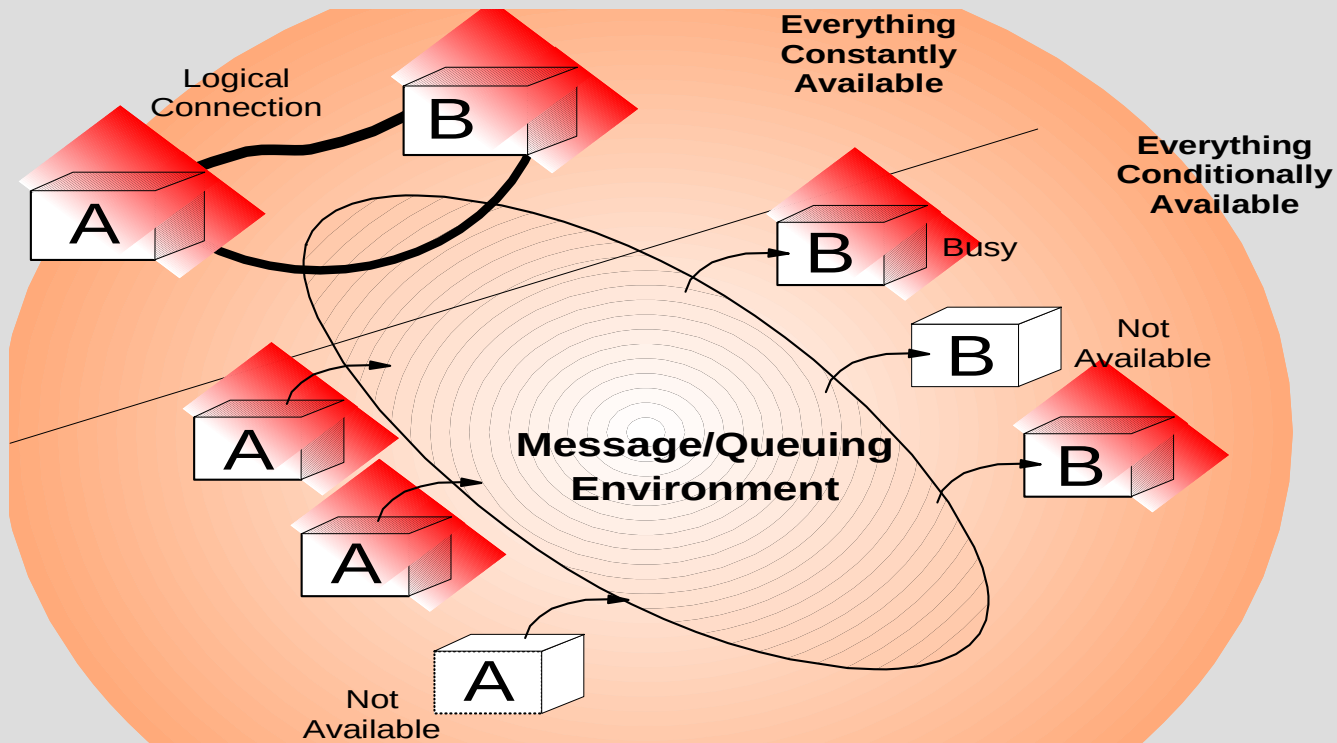
- A queue manager is a collection of queues and their messages
- Queue managers can communicate with other queue managers using “channels”
 - Channel: Reliable transport mechanism for queue managers to exchange messages with each other
 - More on channels later....

What does MQ provide?

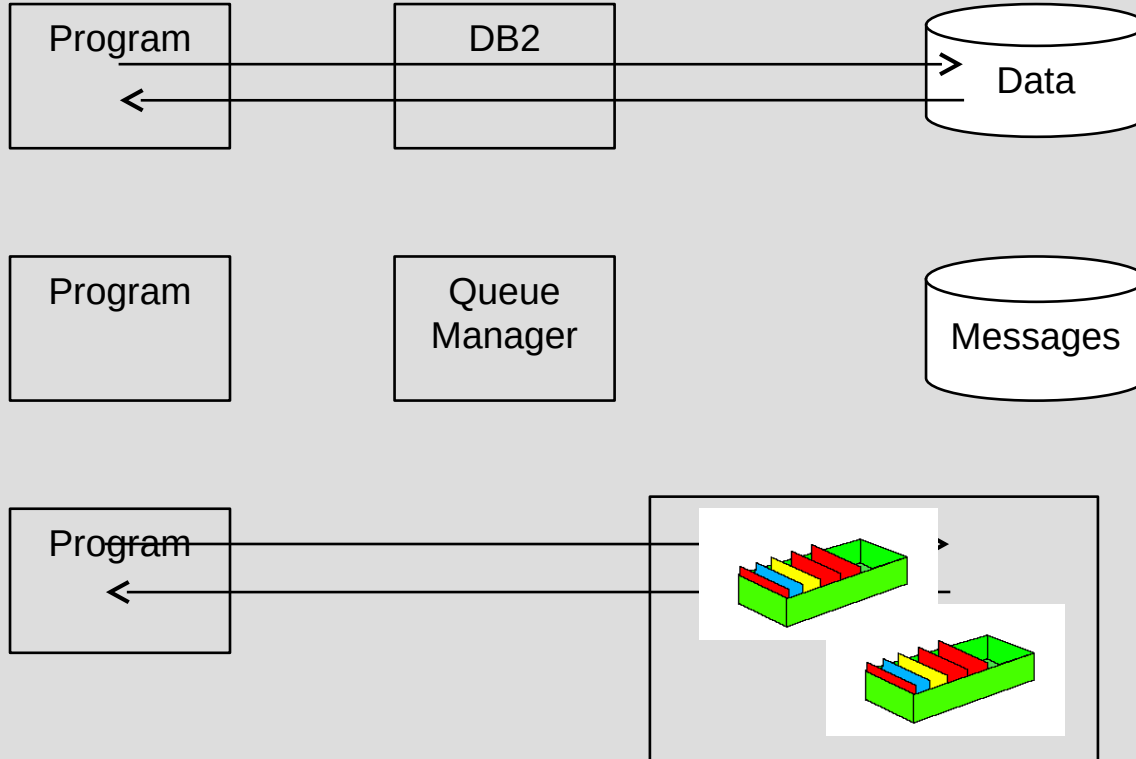
- **Exactly once message delivery**
- **Loosely-coupled applications**
 - ☐ Asynchronous messaging
- **A single, multi-platform API**
 - ☐ Easy to use ... message centric interface
 - ☐ Network independent
 - ☐ Faster application development
- **Universal ...**
 runs everywhere



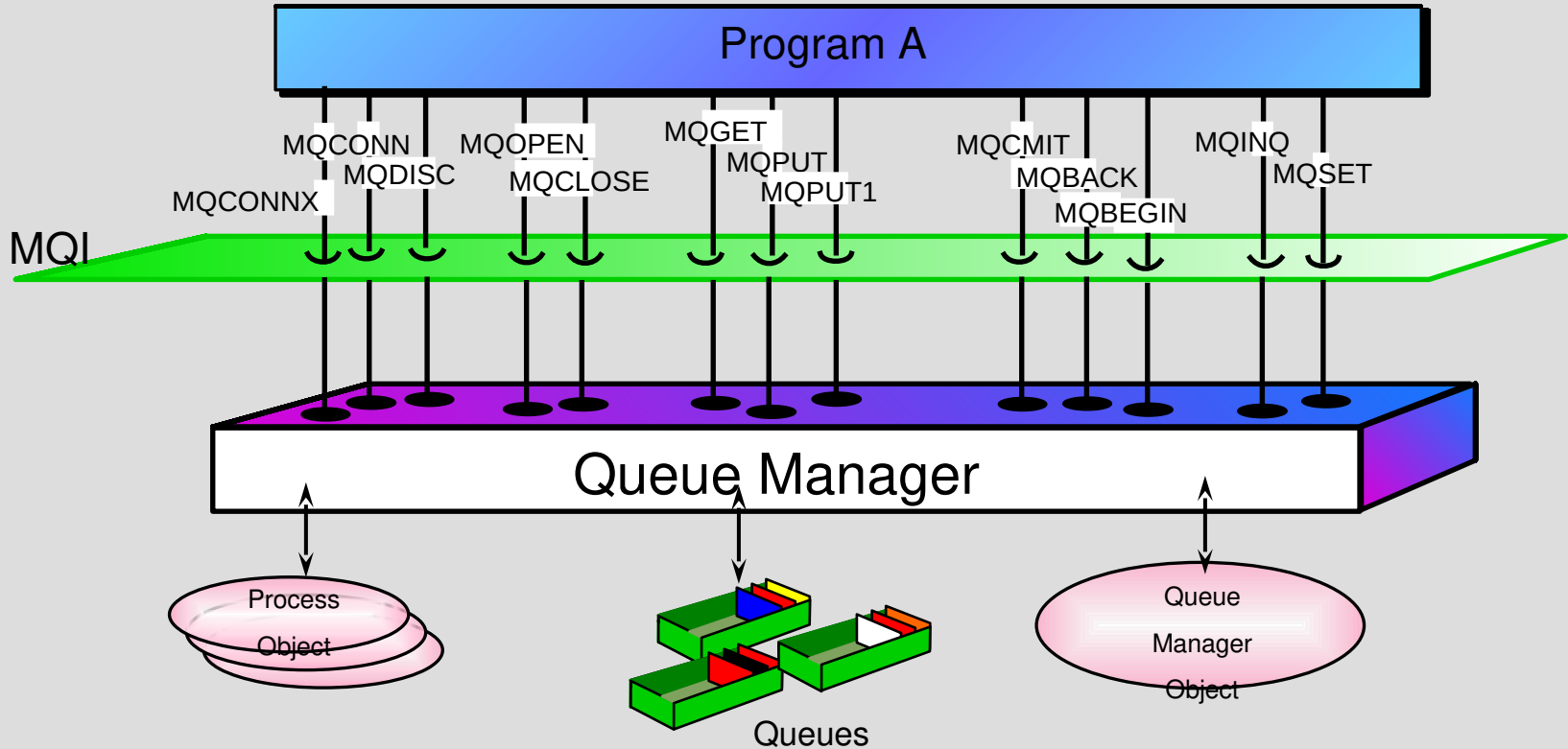
MQ Asynchronous Messaging



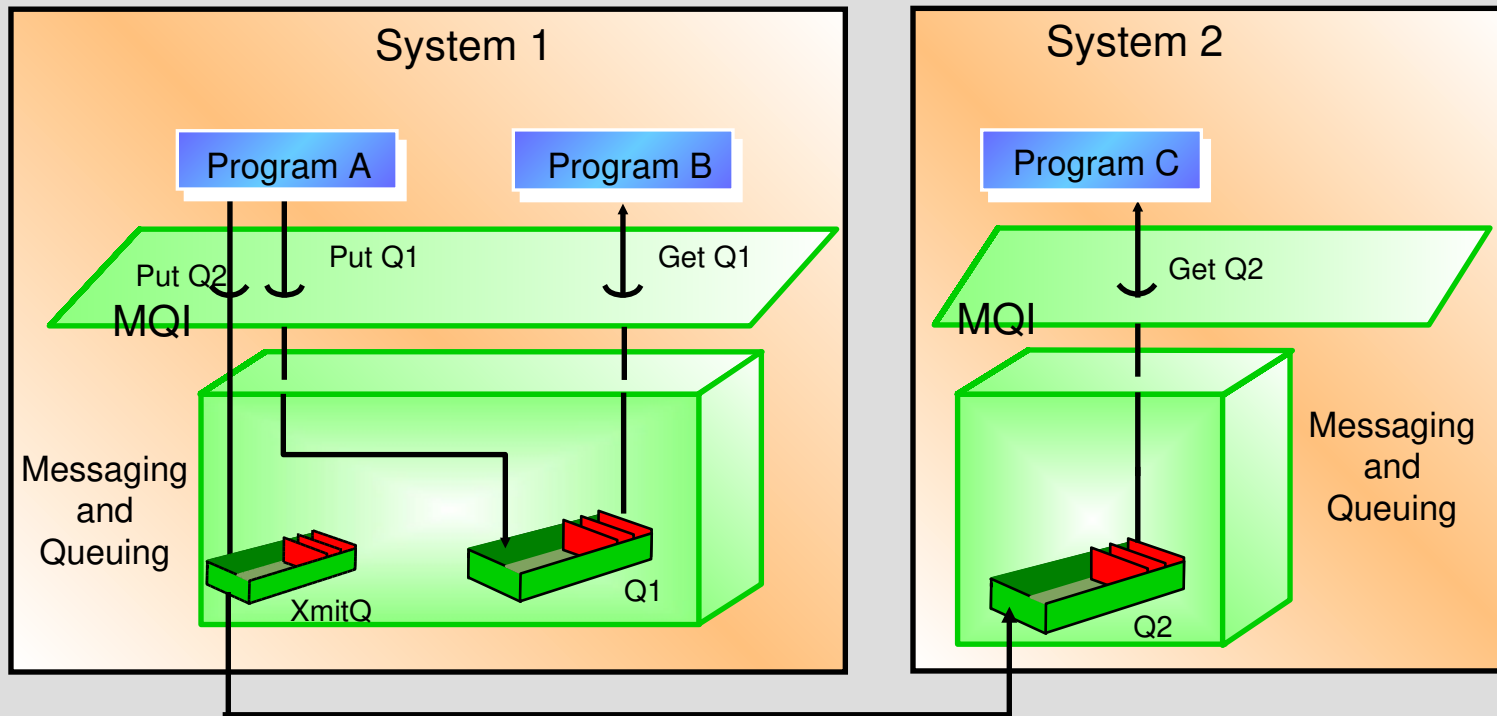
Queue Manager



MQ API

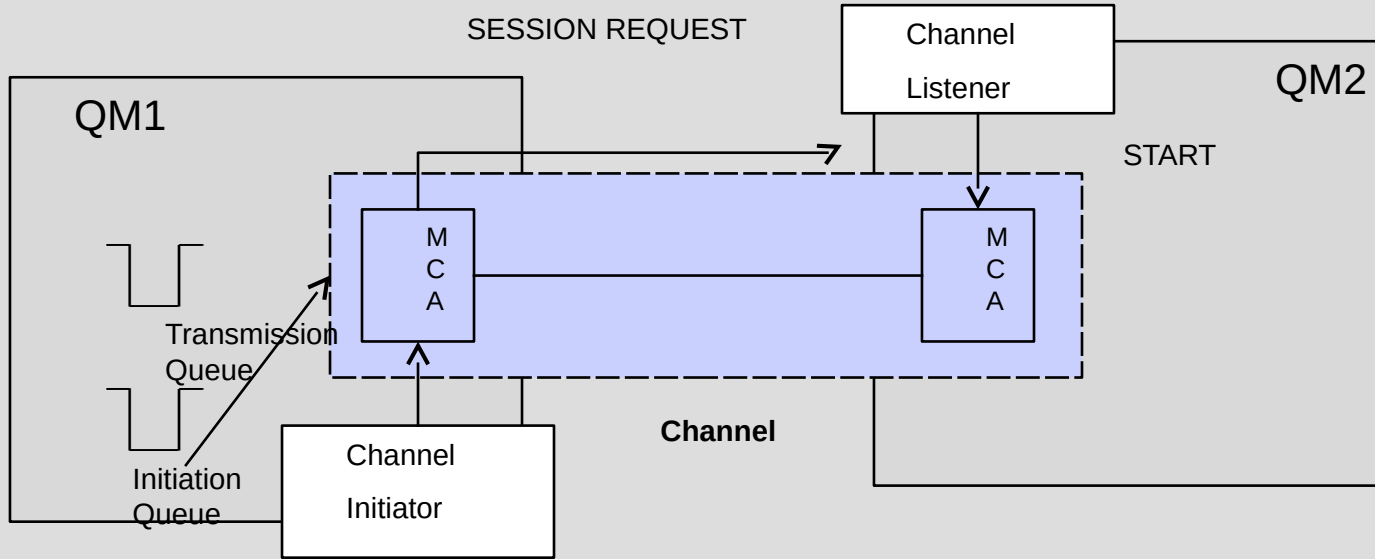


Communication with MQ



TCP/IP is primary protocol

Channel Communication



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
```

Professional Manuals and Documentation



Unit summary

Having completed this unit, you should be able to:

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