

MQ on z/OS - Vivisection

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IBM Advanced Technical Skills

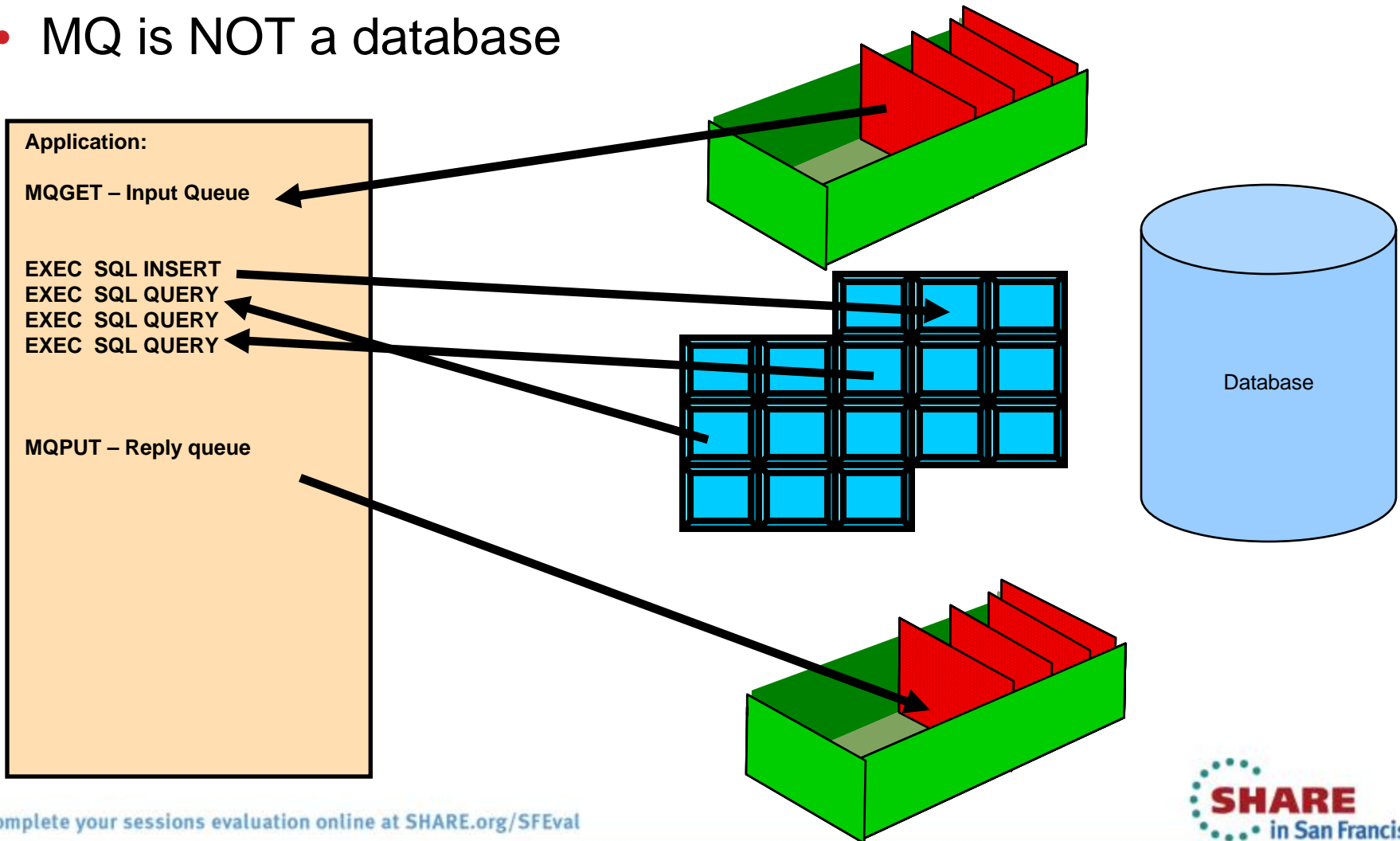


Agenda

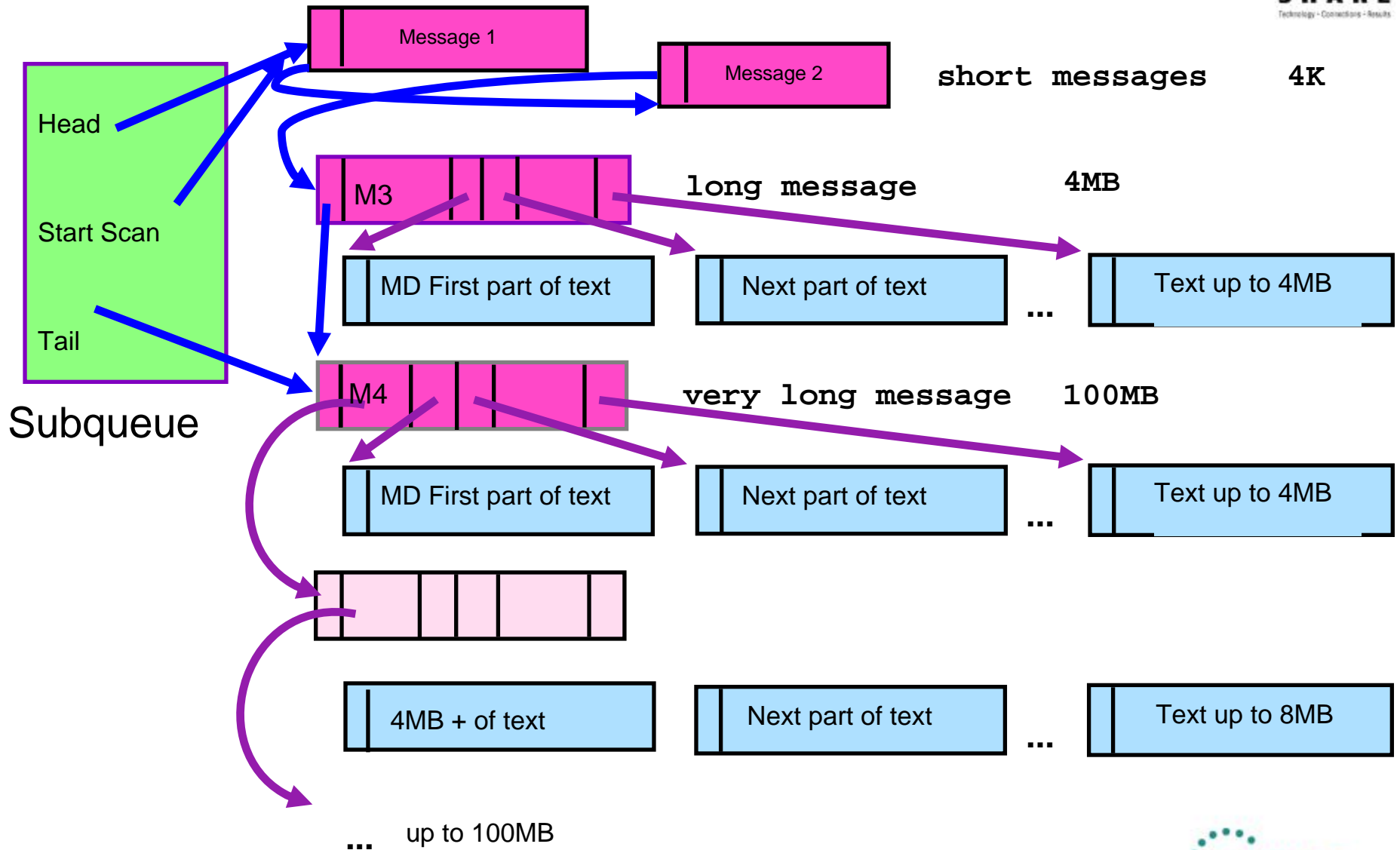
- One of these things is not like the other
- How are messages stored?
 - Private Queues
 - Shared Queues
- First line managers - the components of a z/OS queue manager
- What happens on a API call?
- Summary

One of these things is not like the other

- MQ is NOT a database



Private Queue Message Storage



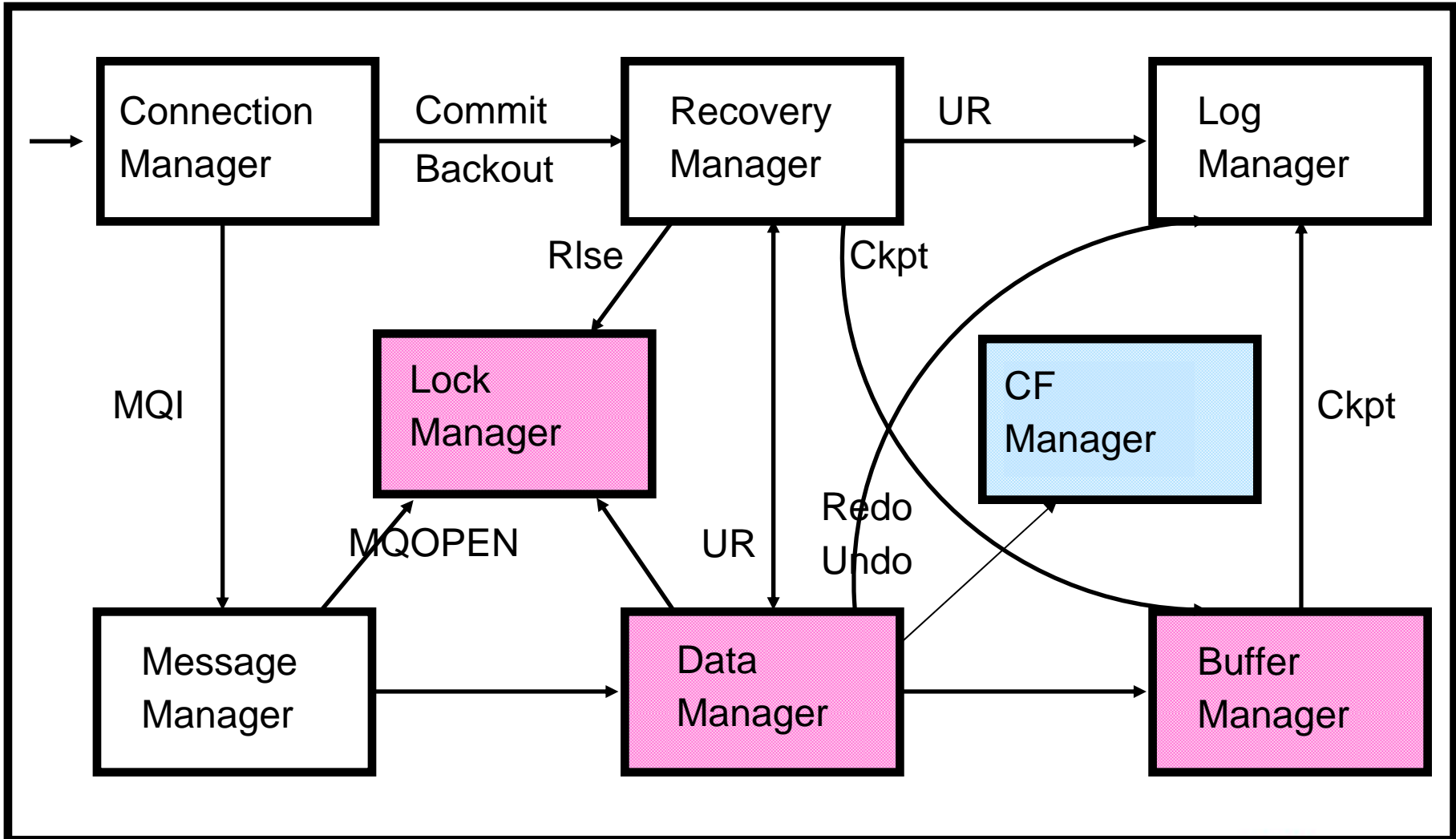
Shared Queue Message Storage

- To be covered in detail in session *Getting the best availability from MQ on z/OS by using Shared Queues*, Friday at 11:00 am

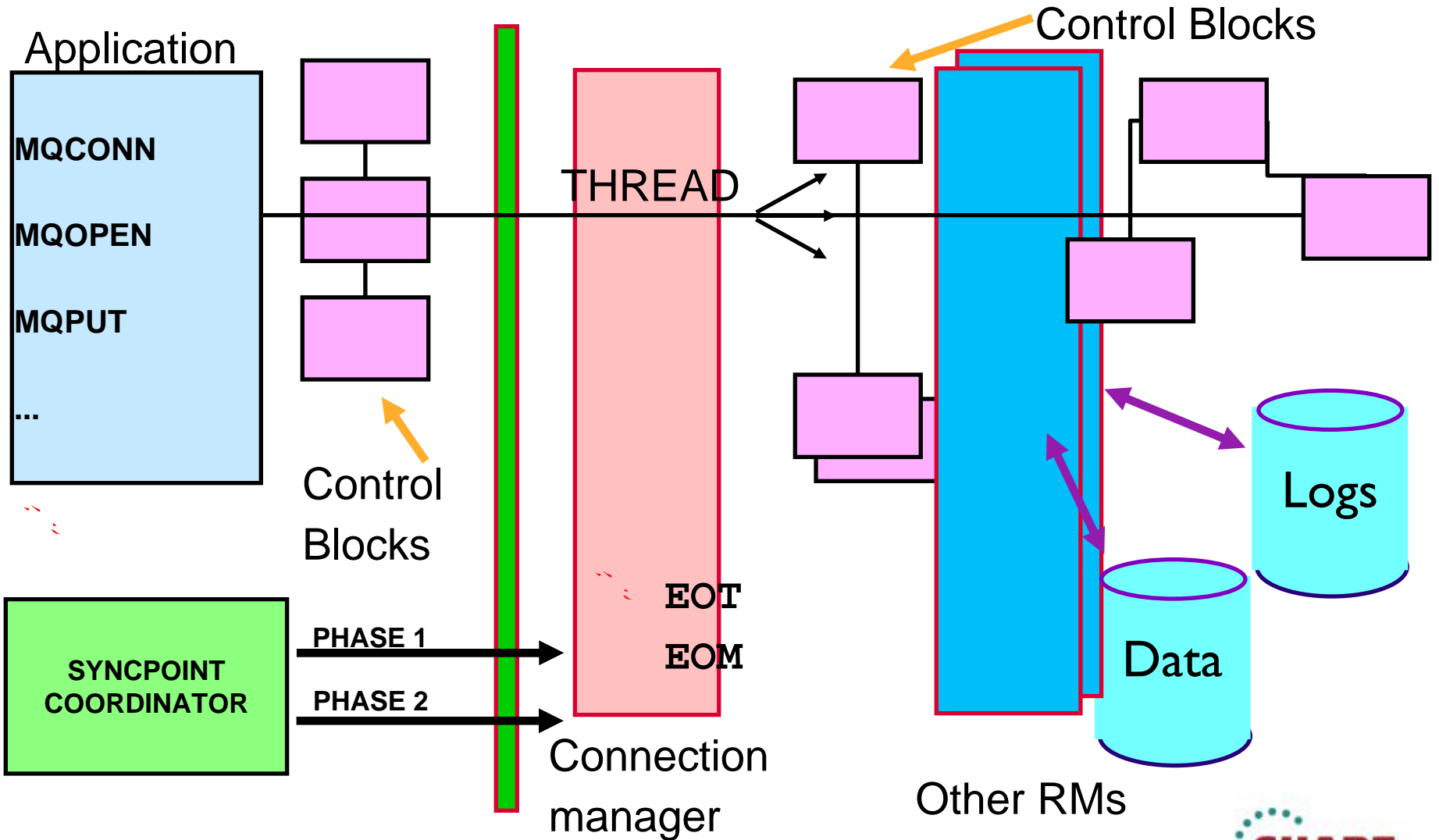
First Line Managers – who does the real work

- To provide the qualities of service that are the basis for WMQ, the real work within the queue manager is divided into logical ‘workers’ or manager that interact with the underlying z/OS resource managers.
- They are:
 - Connection Manager
 - Recovery Manager
 - Log Manager
 - Message Manager
 - Topic manager
 - Data Manager
 - Buffer Manager
 - Lock Manager
 - Storage Manager
 - CF Manager
 - Security Manager.....

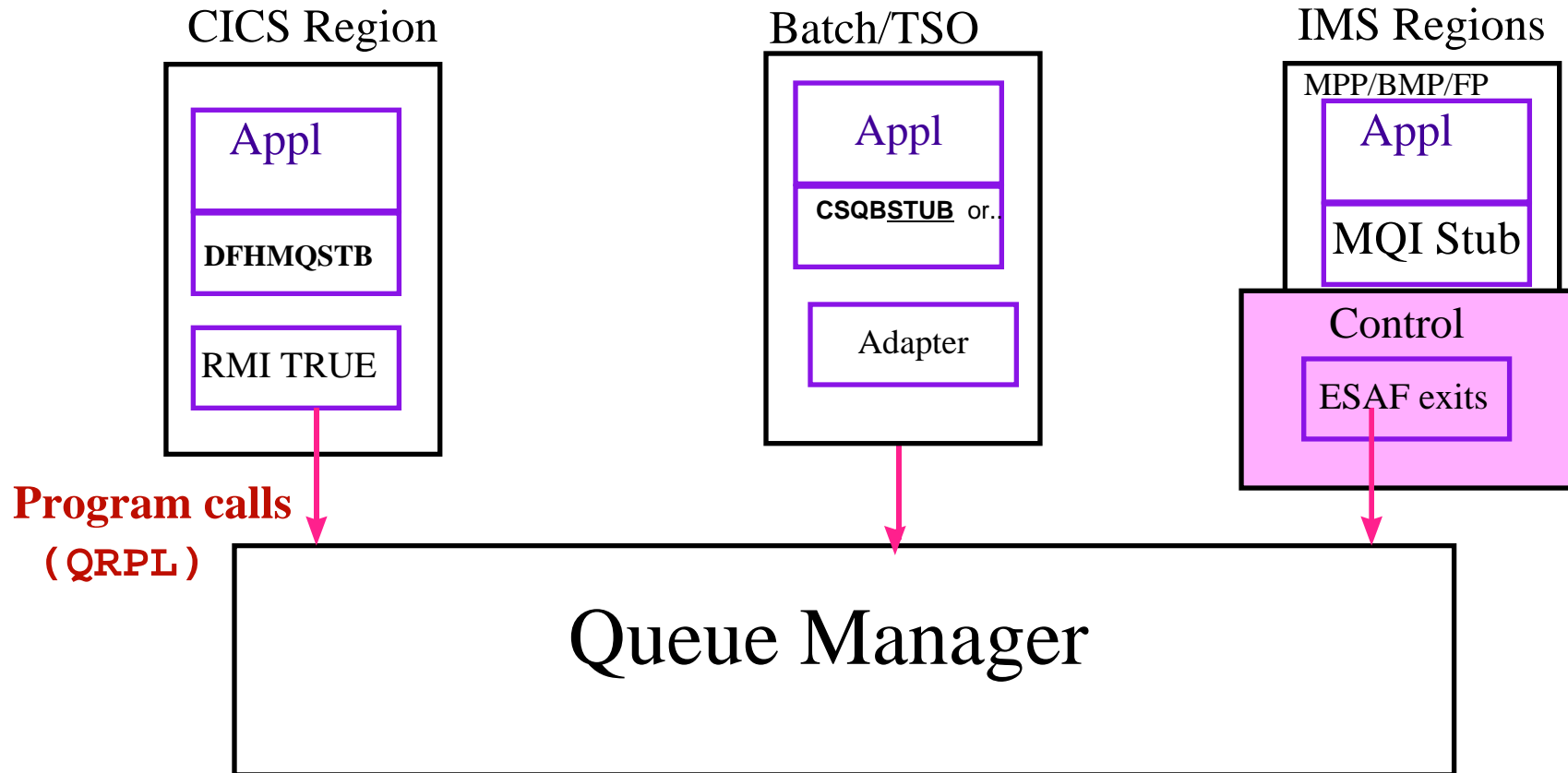
Building Blocks - Resource Managers



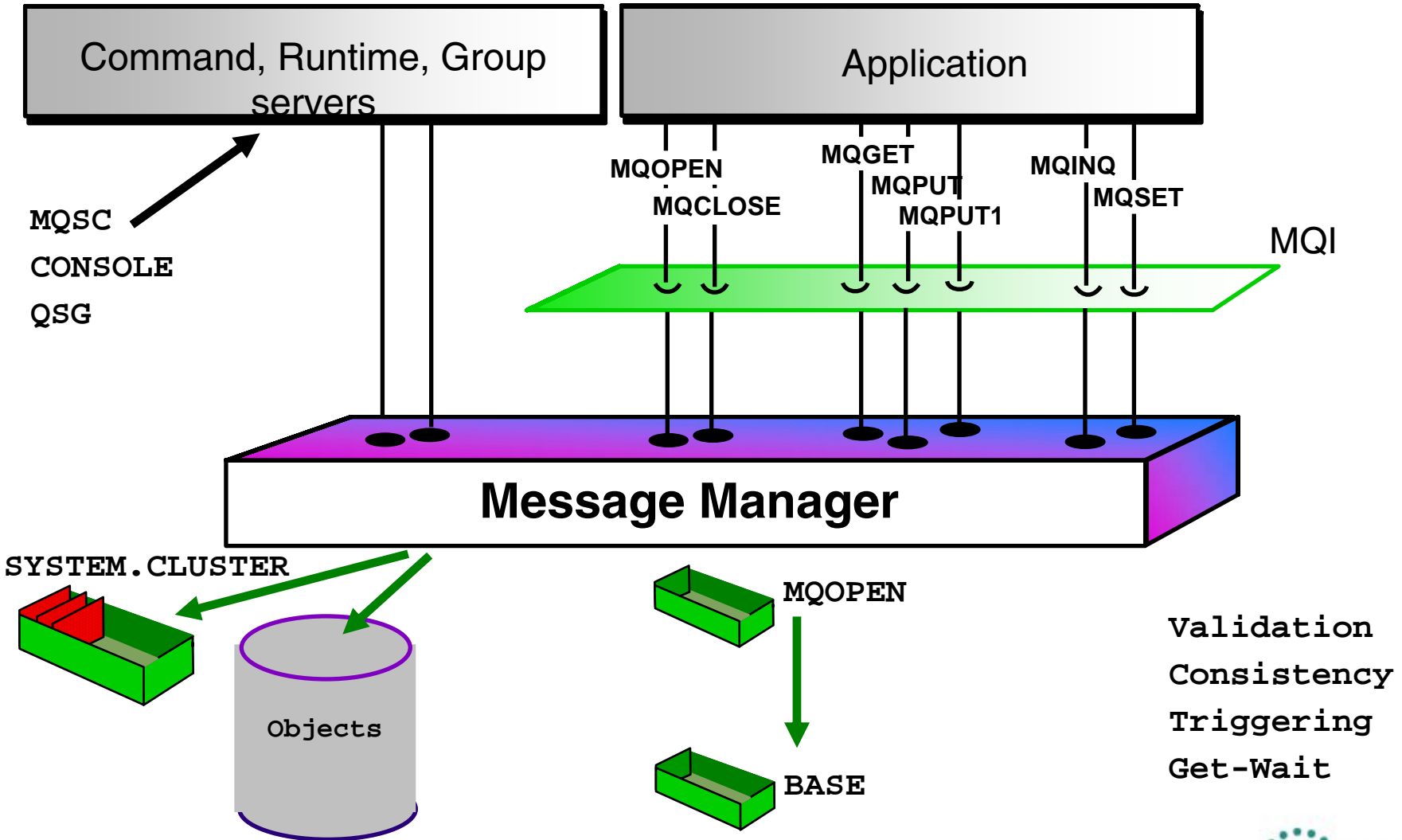
Handling Applications - Connection Manager



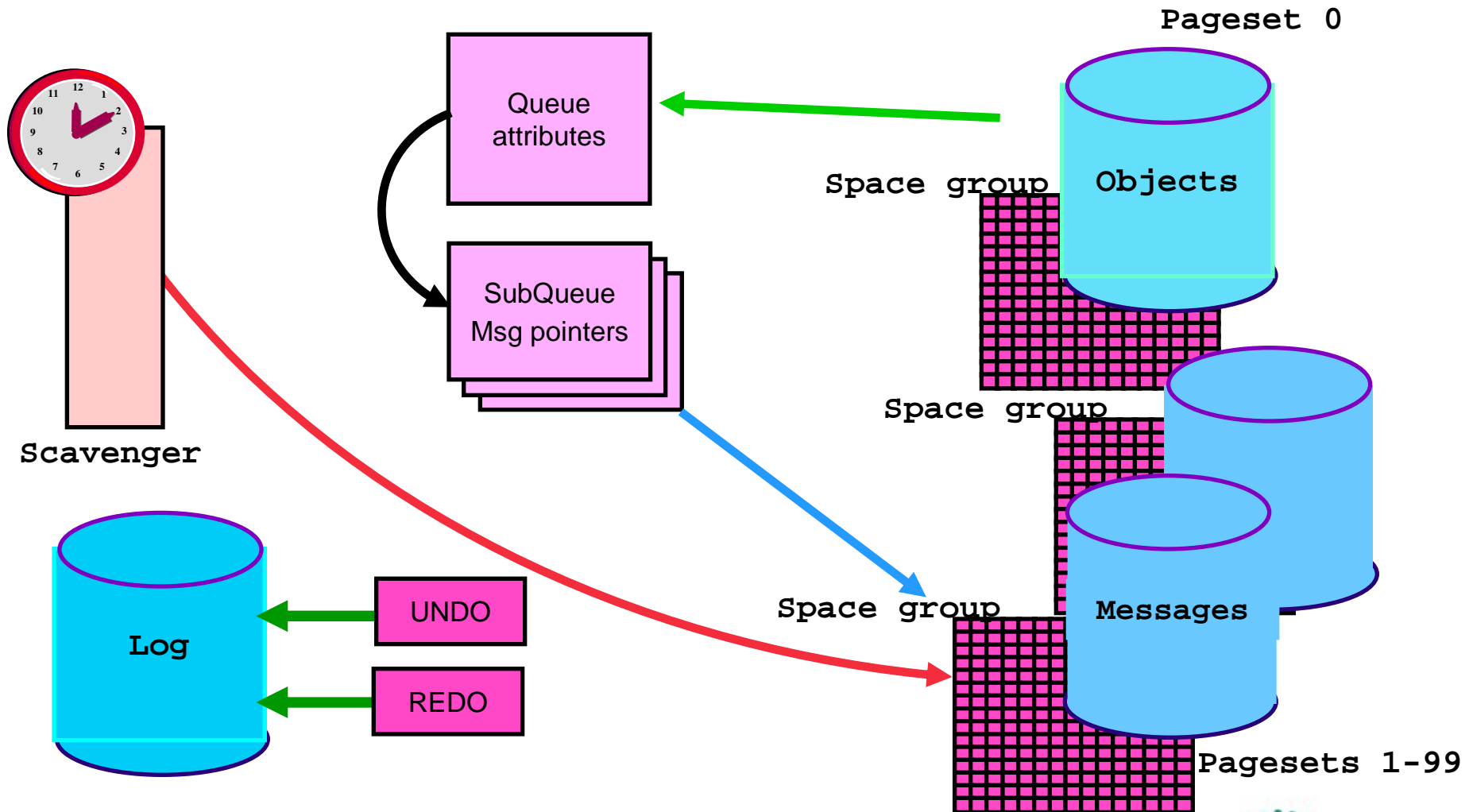
Getting requests into WMQ - Stubs and Adapters



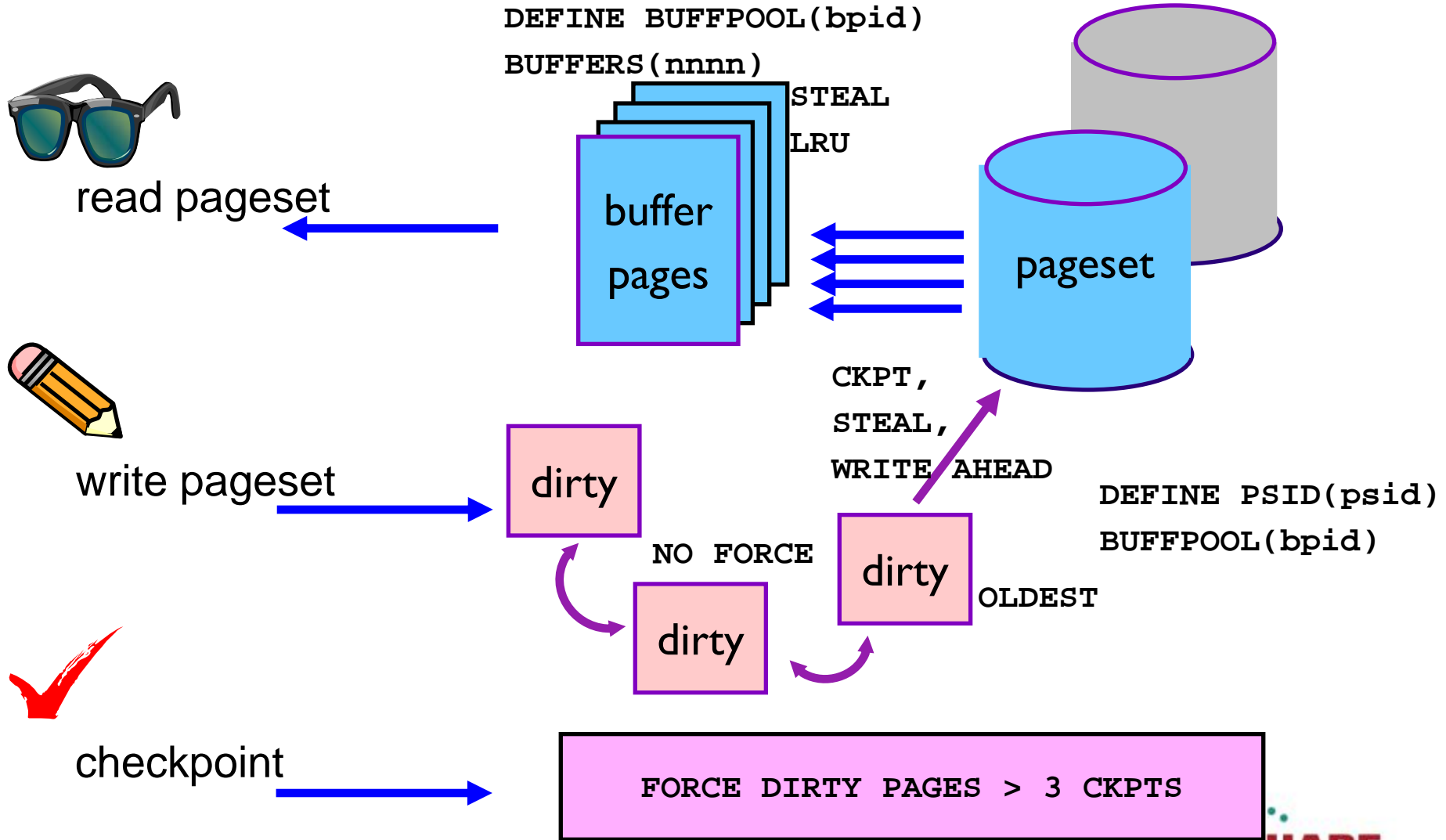
Controlling the MQI and MQSC - Message Manager



Controlling Messages and Objects - Data Manager



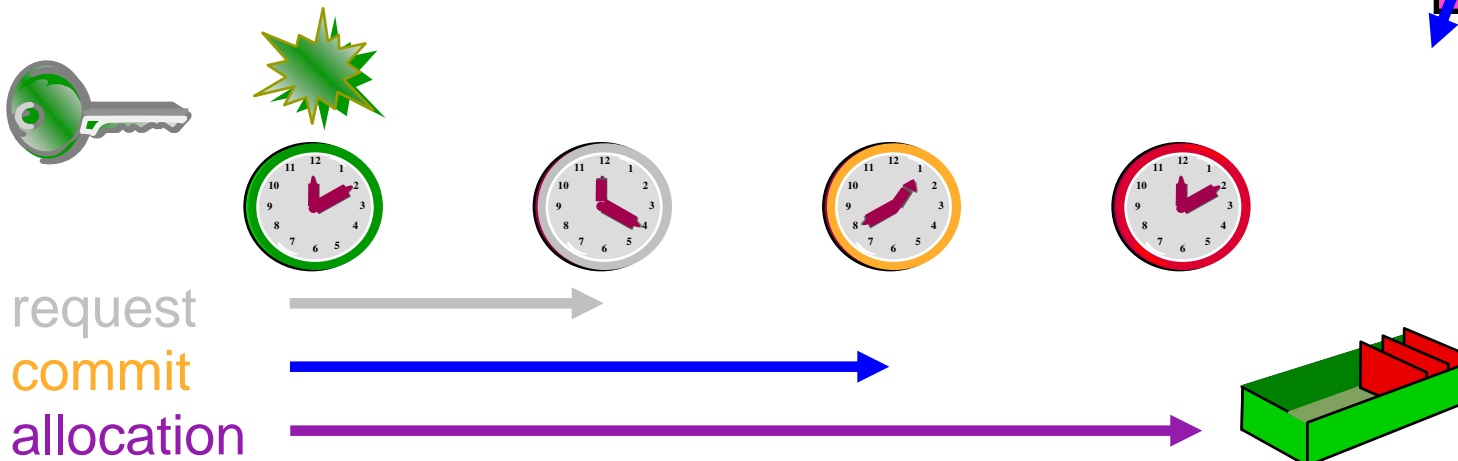
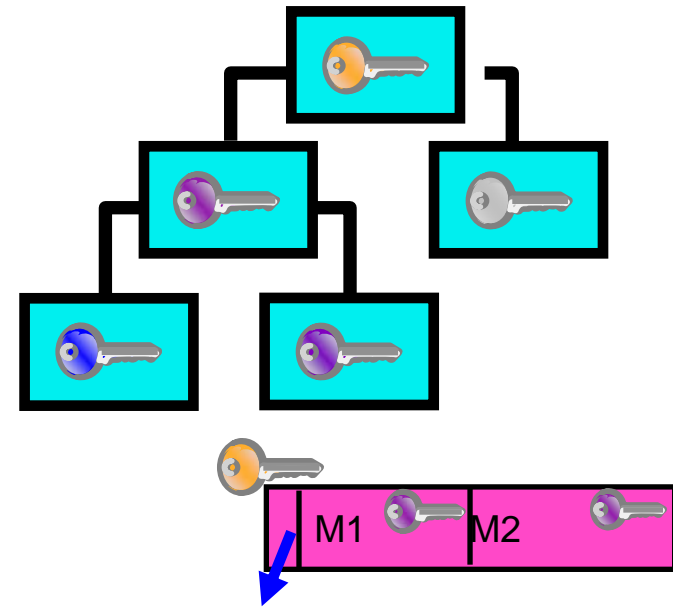
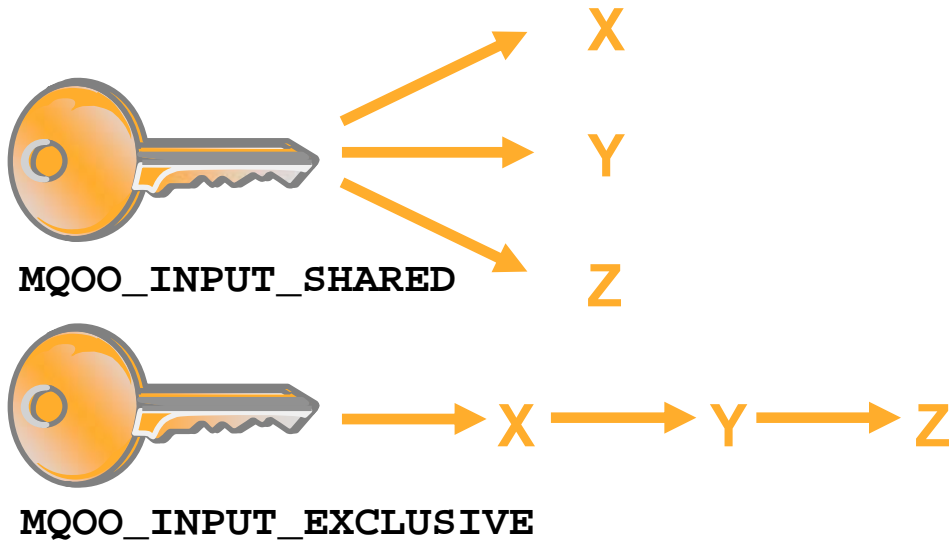
Buffer Manager – High Performance storage and retrieval



Providing Logging Interfaces - Log Manager

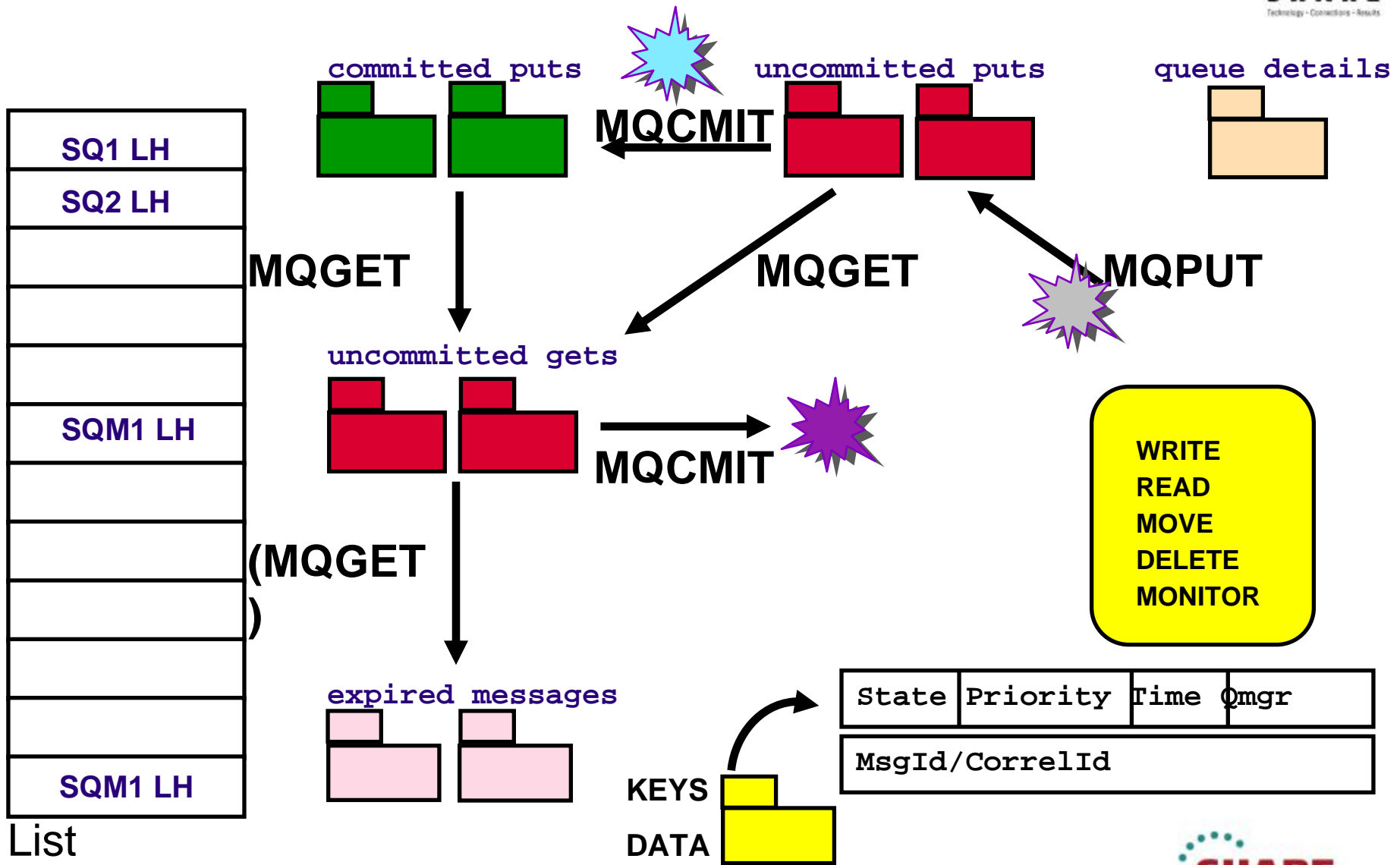
- Log read and write functions
- Log Shunting
- Multiple active log data sets and archive
- Archive inventory management
- Duplexed for reliability
- “Bootstrap” file
 - End of log location
 - Archive inventory
- Various Utilities

Concurrency and Isolation - Lock Manager



MQOPEN
vs
DELETE QLOCAL

Shared Message Queue Storage Using CF List Structures



SQ1 LH
SQ2 LH
SQM1 LH
SQM1 LH

List Structure

MQGET

(MQGET)

MQCMIT

MQGET

MQPUT

MQCMIT

KEYS
DATA

State	Priority	Time	Qmgr
MsgId/CorrelId			





WRITE
READ
MOVE
DELETE
MONITOR

Scenario – Persistent MQPut to a Triggered Queue



<u>Application</u>	<u>Message Manager</u>	<u>Data Manager</u>	<u>Buffer Manager</u>	<u>Recovery Manager</u>	<u>Log Manager</u>	<u>Lock Manager</u>
MQOPEN						
						ACQUIRE LOCK
		LOCATE QUEUE IN HASH TABLE				
	SECURITY BASE NAME					
	ACQUIRE HANDLE					
MQPUT						
	USE HANDLE					
		LOCATE PAGE TO HOLD MSG				
			BUFFER PAGE			
				START UR	LOG RECORDS	
					LOG RECORDS	
	CHECK TRIGGER RULES					
MQCMIT						
					FORCE LOG	
						RELEASE LOCKS

Scenario - MQGet from a Queue

<u>Application</u>	<u>Message Manager</u>	<u>Data Manager</u>	<u>Buffer Manager</u>	<u>Recovery Manager</u>	<u>Log Manager</u>	<u>Lock Manager</u>
MQOPEN						
						ACQUIRE LOCK
		LOCATE QUEUE IN HASH TABLE				
	SECURITY BASE NAME					
	ACQUIRE HANDLE					
MQGET						
	USE HANDLE					
		FIND MSG (INDEX / NEXT)				
			BUFFER PAGE			
				START UR	LOG RECORDS	
					LOG RECORDS	
MQCMIT						
						FORCE LOG
						RELEASE LOCKS

Summary



- Delivers transactional messaging
 - Enables robust business applications
- Complex, but well organised
 - Adapters, Address spaces, Resource Managers
- Designed for throughput, availability and scalability
 - Logging, Buffering, Locking, Communications

Shameless Promotion

- New RedBook covering what's new in WMQ V7.1 and 7.5

IBM

Draft Document for Review November 14, 2012 11:02 pm

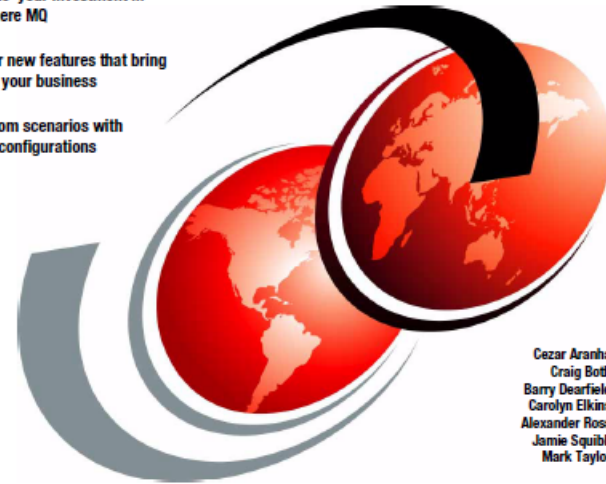
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WebSphere MQ V7.1 and V7.5 Features and Enhancements

Maximize your investment in
WebSphere MQ

Discover new features that bring
value to your business

Learn from scenarios with
sample configurations



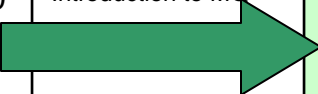
Cezar Aranha
Craig Both
Barry Dearfield
Carolyn Elkins
Alexander Ross
Jamie Squibb
Mark Taylor

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Redbooks

This was session MQ Internals - The rest of the week



	Monday	Tuesday	Wednesday	Thursday	Friday
08:00					Are you running too many queue managers or brokers?
09:30		What's New in WebSphere Message Broker			Diagnosing Problems for MQ CICS and WMQ - The Resurrection of Useful
11:00		Extending IBM WebSphere MQ and WebSphere Message Broker to the Cloud	WMQ - Introduction to Dump Reading and SMF Analysis - Hands-on Lab	BIG Data Sharing with the cloud - WebSphere eXtreme Scale and WebSphere Message Broker integration	Getting the best availability from MQ on z/OS by using Shared Queues
12:15					
01:30	Introduction to MQ 	MQ on z/OS – Vivisection	Migration and maintenance, the necessary evil	The Dark Side of Monitoring MQ - SMF 115 and 116 Record Reading and Interpretation	
03:00	First Steps With WebSphere Message Broker: Application Integration for the Messy	BIG Connectivity with WebSphere MQ and WebSphere Message Broker	WebSphere MQ CHINIT Internals	Using IBM WebSphere Application Server and IBM WebSphere MQ Together	
04:30	WebSphere MQ application design, the good, the bad and the ugly	What's New in the WebSphere MQ Product Family	MQ & DB2 – MQ Verbs in DB2 & Q-Replication	WebSphere MQ Channel Authentication Records	
06:00			Clustering - The Easier Way to Connect Your Queue Managers		



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