

# The top issues in IBM MQ and IIB

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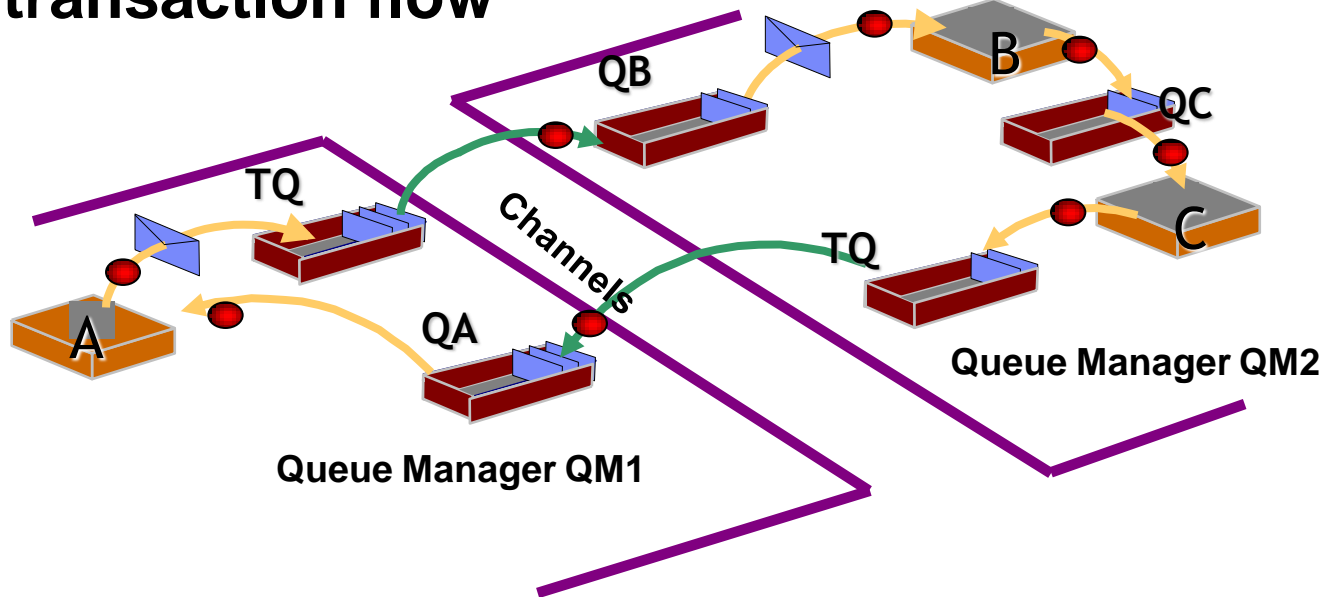
# Who Am I?

- **Barry Lamkin**
- **Army Helicopter Pilot 1967 – 1971**
- **Air Traffic Controller 1973 - 1981**
- **MVS (aka z/OS) Systems Programmer 1981 – 1994**
- **Candle Systems Engineer 1994 – 2004**
- **IBM Executive IT Specialist 2004 – whenever**

# IBM MQ - Features

- ✓ Assured, exactly once delivery
- ✓ Single API across 45+ platforms
- ✓ Network integration across various network protocols
- ✓ Transactional control
- ✓ Triggering of jobs/programs
- ✓ Content independence
- ✓ Single message > 100MB
- ✓ Asynchronous design (application & platform independent)
- ✓ Parallel processing
- ✓ Robust, commercial middleware
- ✓ Shields developers from network complexities

# Monitoring Points used to track transaction flow



- Application A, B and C are components of a business transaction
- There are many objects that make up the underlying transactions
- There are as many as 8 monitoring points for objects associated to this transaction
- You should Monitor all the objects as it relates to the transaction (queues, channels)
- You should Monitor the flow of messages belonging to specific message queues (get/put rate)
- You need the ability to detect slowdown or stoppage in flow in specific queues (put rate exceeds get rate, channel down)
- You will need to identify problems and automatically react to them.

# Top Issues in MQ & IIB/WMB

What to I need to look at to make sure my work is not delayed?

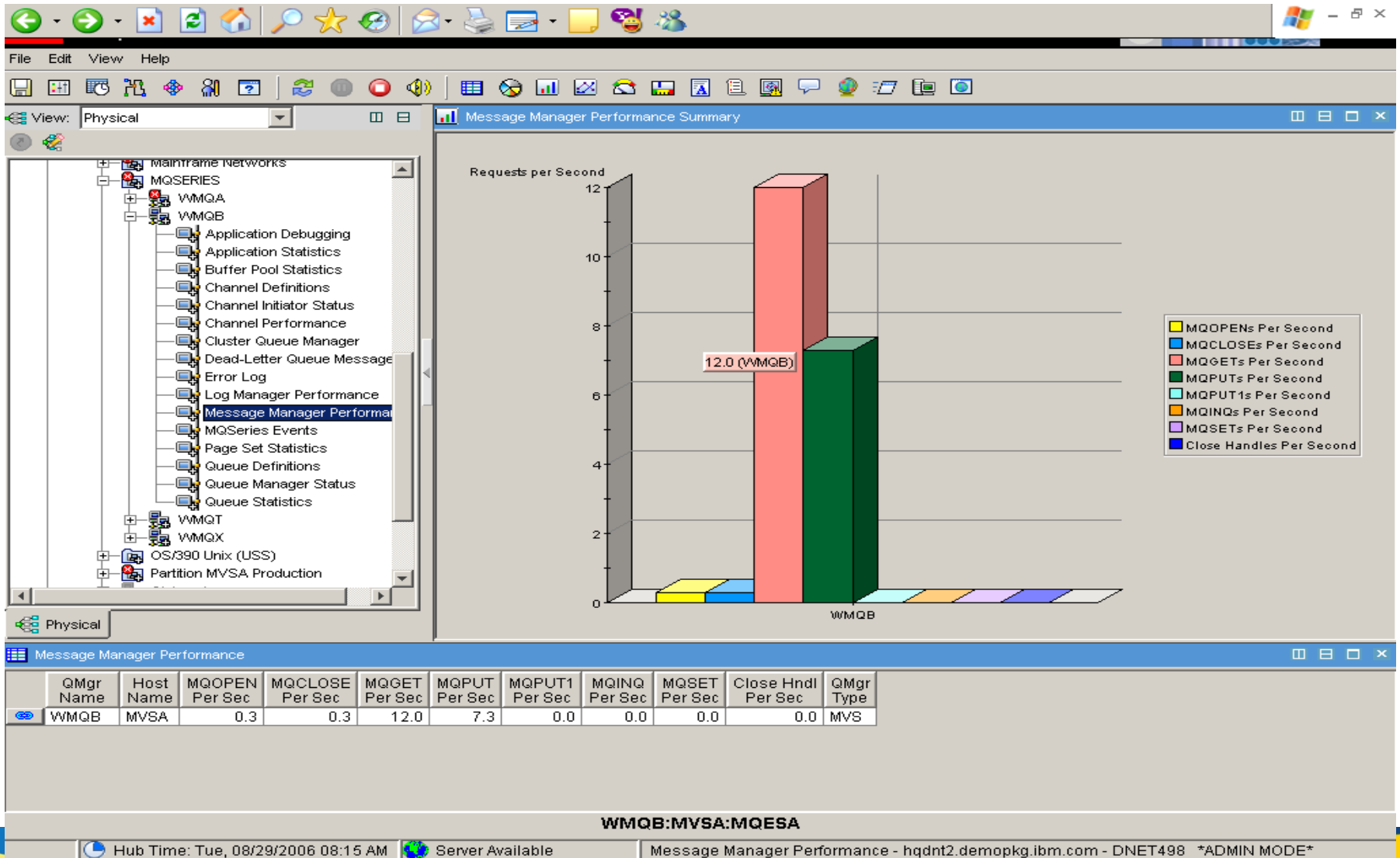
- ▶ MQ Channel Down
- ▶ Queue Full
- ▶ Messages in the Dead Letter Queue
- ▶ Messages in a queue and no open processes
- ▶ Isolating MQ problems between IBM z/OS® and distributed systems
- ▶ Changes in the MQ configuration
- ▶ Restoring last valid MQ configuration
- ▶ Determining if slow performance is due to network, MQ or Message Broker
- ▶ Problems connecting to broker's queue manager
- ▶ No messages flowing in the broker
- ▶ Execution Groups or Message Flows not started

# How much work is my queue manager doing?

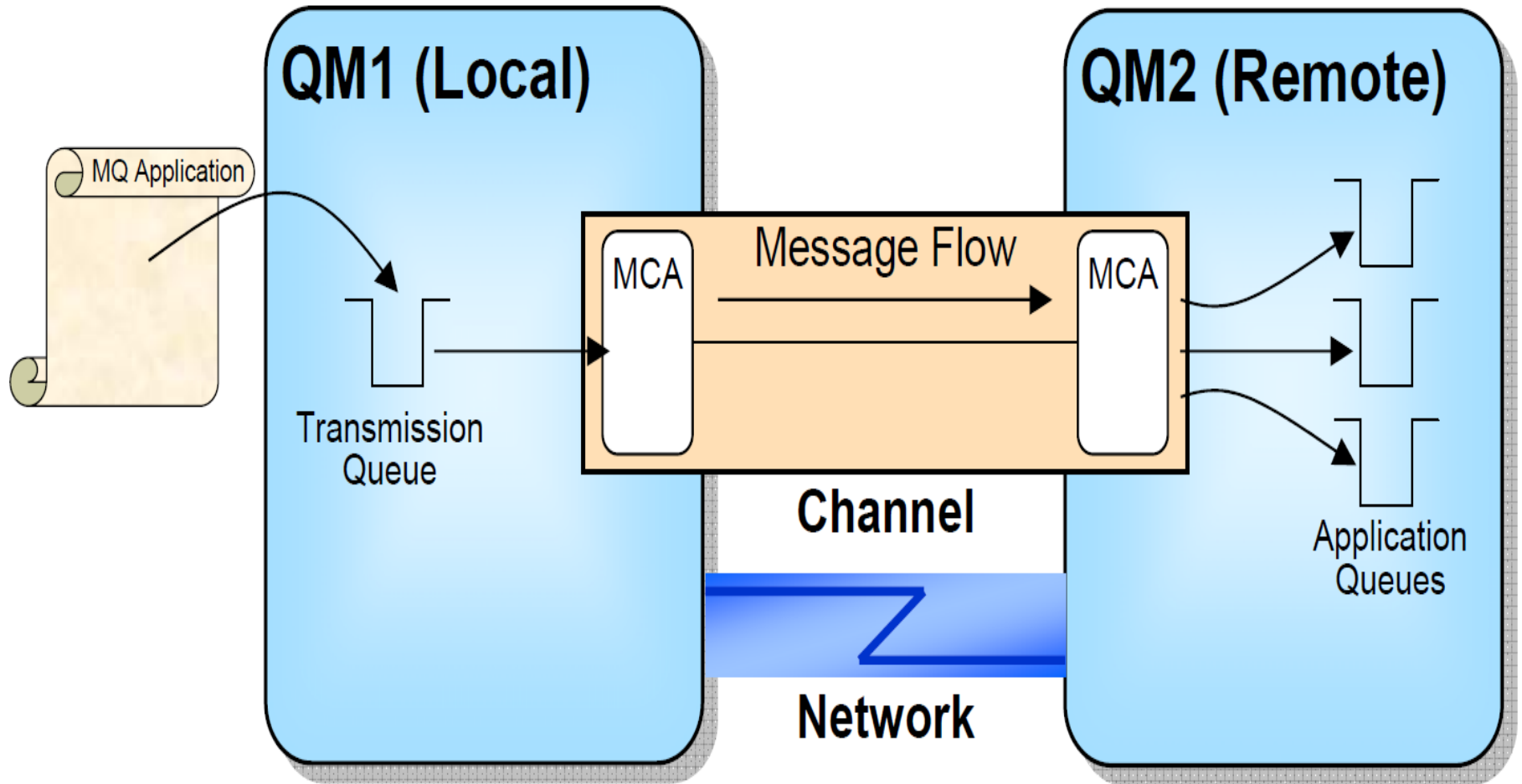
You should monitor your queue manager to see if there are trends in the work being done in the queue manager.

1. Peak number of puts and gets per hour. This tells you if there is an increase in workload, or a change in the application workload
2. How many log CIs are created per hour. This tells you how much persistent data you are processing
3. Queue manager and Chinit virtual storage usage. This tells you how much storage you are using - and how much free storage is available
4. Peak number of channels in use.
5. Highest buffer pool usage for each buffer pool.
6. Peak number of pages in use in a page set.
7. For a structure, the % usage of the entries and elements from the `D XCf,STR,strname=....` command
8. Display the SMDS usage ( or use SMF) to display your SMDS activity. An increase in SMDS activity can be caused by more shared queue activity, or by larger messages.

# Message Manager Performance - zOS



# MQ Channels





# Issues with Channels

- Which channels are running or stopped?
- If my channel is up, is it transmitting messages?
- Are my channels optimally configured?
- If channel performance is poor, how does that impact my clients?

# Channels

The WMQ command `DIS CHSTATUS` gives lots of information about the channels. You can use monitoring tools (or the `MQCMD` in `MP1B`) to periodically display this information.

In WMQ V8 this information is available in SMF records.

The time to send messages over a channel is in two areas

- The time a messages is waiting to be sent
- The time to send the message over the network, and the end of batch processing.

# How long did messages have to wait before being sent?

To display the time the message is waiting using the XQTIME. This value may change over a day, as more MQ work is processed, or as the network gets busier.

If the BATCHINT value is zero, the achieved batch size should be less than the negotiated batch size for short messages. Values  $XBATCHSZ < BATCHSZ$  in DIS CHSTATUS. If XBATCHSZ is close to BATCHSZ then most of the time there were always messages waiting to be sent.

If the BATCHINT is a large value then XBATCHSZ can be the same as BATCHSZ, as there is a get with wait.

# Network time (DISPLAY CHSTATUS)

The NETTIME is the time between sending an end of batch request, and getting the response back, excluding the time in the remote queue manager. This value has two components

- The time the request is on the network
- The delay before the remote queue manager processes the request. For example if the channel has put to a queue, and the queue is full, the channel can wait and retry the put. Once the message has been put successfully the next request can be processed, and end of batch processing can be done. In this case the nettime includes the wait and retry of the put.

Your nettime values should be within a range specific to you over the day. if you get values longer than normal, this can indicate a network problem, or processing problem at the remote queue manager.

# MQ Channel Down

- Is this a problem?
- MQ Event “Channel Stopped” may not be good enough
- Check Channel Status
- Are there messages in the XmitQ?
- Is the Remote Queue Manager down?
- Is the Remote Queue correct or full?
- Is there a Network problem?
- Is the Listener running on the Remote Queue Manager?

# Channel Stopped

Channel Performance for Current Channels - IBM-CE438E0661F - SYSADMIN

File Edit View Help

Navigator View: Physical

- Enterprise
  - Windows Systems
    - IBM-CE438E0661F
      - Warehouse Proxy
      - MQSERIES
        - K1QMGR
          - Channel Definitions
          - Channel Performance
          - Cluster Queue Manager
          - Dead-Letter Queue Messages
          - Error Log
          - MQSeries Events
          - Queue Definitions
          - Queue Manager Status
          - Queue Statistics
            - Queue Depth High
          - Application Accounting
          - MQI Statistics
          - Publish Subscribe
        - K2QMGR

Physical

Channel Performance Summary

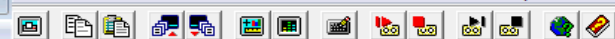
Transmission Rates

Channel Performance for Current Channels

Channel Status	Channel Name	Channel Type	Connection Name	In-Doubt Status	XmitQ Depth	XmitQ Name	Message Count	Transmit KB/Sec	Batches Complete	Cur Defn	CurBatch LUW ID	CurBatch Messages	CurMsg SeqNo	Last Send Date & Time	LUW Last Committed	SeqNo Last Committed
Stopped	TO_K1QMGR	RCVR		No	0		0	0.00	0	Yes	6ED92...	0	12407	03/06/13 06:46:18	A19E924D100...	651
Stopped	TO_K2QMGR	SDR	localhost(1418)	No	5000	K2QMGR	0	0.00	0	Yes	E77E6...	0	11451	05/08/13 10:03:45	919E924D100...	651

K1QMGR::MQ

Hub Time: Thu, 08/01/2013 06:45 PM Server Available Channel Performance for Current Channels - IBM-CE438E0661F - SYSADMIN



Auto Update : Off  
 HostName : SYS  
 QmgrName : Q7G1

Command ==>  
 KMQCHNRS

Channel Not Running Summary

Current Channels Not Running

Columns 2 to 8 of 16

Rows 1 to 1 of 1

ΔChannel ▽Name	ΔConnection ▽Name	ΔChannel ▽Type	ΔChannel ▽Status	In-Doubt Status	User Stop Request	Current Action State	Batches Complete
_ Q7G1.TO.Q7G4	9.42.46.25(4040)	Sender	Retrying	Not In-Doubt	Stop Not Requested	n/a	0

Inactive Channels at Last Sample

Columns 2 to 10 of 12

Rows 1 to 15 of 15

ΔChannel ▽Name	ΔConnection ▽Name	ΔChannel ▽Type	Channel Status	In-Doubt Status	LUW Last Committed	SeqNo Last Committed	CurBatch Messages	CurBatch LUW ID	+CurMsg SeqNo
- ABC.SDR.CHANNEL	ABC	SDR	Binding	n/a		0	0		0
- CHANNEL1		SVRCONN	Binding	n/a		0	0		0
- Q7G1.TO.Q721	SP22(21426)	SDR	Binding	n/a		0	0		0
- Q721.TO.Q7G1		RCVR	Binding	n/a		0	0		0
- SYSTEM.DEF.CLUSRCVR		CLUSRCVR	Binding	n/a		0	0		0
- SYSTEM.DEF.CLUSSDR		CLUSSDR	Binding	n/a		0	0		0
- SYSTEM.DEF.RECEIVER		RCVR	Binding	n/a		0	0		0
- SYSTEM.DEF.REQUESTER		RQSTR	Binding	n/a		0	0		0
- SYSTEM.DEF.SENDER		SDR	Binding	n/a		0	0		0
- SYSTEM.DEF.SERVER		SVR	Binding	n/a		0	0		0
- SYSTEM.DEF.SVRCONN		SVRCONN	Binding	n/a		0	0		0
- TO.Q7G1.RCVR		RCVR	Binding	n/a		0	0		0
- TO.Q7G1		RCVR	Binding	n/a		0	0		0
- TUNGW.SDR.CHANNEL	ABC	SDR	Binding	n/a		0	0		0
- WAS.JMS.SVRCONN		SVRCONN	Binding	n/a		0	0		0



Command ==> \_\_\_\_\_ Auto Update : Off  
 KMQCHLSD \_\_\_\_\_ HostName : SYS  
 \_\_\_\_\_ QmgrName : Q7G1

Channel Status Details

Channel Q7G1.TO.Q7G4 Conn 9.42.46.25(4040)

Channel Type.....	Sender	Message Count.....	0
Channel Status.....	Retrying	Bytes Received.....	0
In-Doubt Status.....	Not In-D	Bytes Sent.....	0
CurBatch Messages.....	0	Short Term Compression Time.....	0
CurMsg SeqNo.....	0	Short Term Exit Time.....	0
CurBatch LUW ID.....	CCD489CD	Short Term Net Time.....	0
SeqNo Last Committed.....	0	Short Term XmitQ Time.....	0
LUW Last Committed.....	00000000	Short Term Batch Size.....	0
Last Message Date.....	n/a	Start Date.....	14/03/10
Last Message Time.....	n/a	Start Time.....	03:07:32
Heartbeat Interval.....	300	Long Retries Left.....	976562K
Keep Alive Interval.....	0	Short Retries Left.....	0
User Stop Request.....	Stop Not	Current Action State.....	n/a

Remote Queue Manager Status for Q7G4

QMGr Status.....	Running	Channel Initiator Status.....	Running
TCP/IP Listener Active.....	Yes	# TCPIP QMGr Listeners.....	1
TCP/IP Group Listener Active.....	No	# TCPIP QMGr Retrying.....	0
LU62 Listener Active.....	No	# TCPIP Group Listeners.....	0
LU62 Group Listener Active.....	No	# TCPIP Group Retrying.....	0

Channel Status on Remote Queue Manager Q7G4

Columns 2 to 9 of 16      Rows 1 to 1 of 1

Channel Name	Connection Name	Channel Status	Channel Type	In-Doubt Status	CurBatch Messages	CurMsg SeqNo	CurBatch LUW ID	+Last Message Date & Time
_ Q7G1.TO.Q7G4		Stopped	Receiver	Not In-Doubt	0	0	0000000000000000	n/a



# Start the Channel

The screenshot displays the IBM MQ Channel Performance console. A 'Take Action' dialog box is open, allowing the user to start a channel. The dialog contains the following information:

- Action:**
  - Name: MQ Start Channel
  - Command: MQ:START CHANNEL(TO\_K2QMGR')
- Destination Systems:**
  - K1QMGR::MQ
  - K2QMGR::MQ

The background window shows a 'Channel Performance Summary' with a bar chart titled 'Number of Channels' and a legend for channel states. Below the chart is a table with the following data:

Channel Status	Channel Name	Type	Name	Status	Depth	Name	Count	KB/Sec	Complete	Dem	LOW ID	Messages	SeqNo	Date & Time	LUW Last Committed	SeqNo Last Committed
Stopped	TO_K1QMGR	RCVR		No	0		0	0.00	0	Yes	6ED92...	0	12407	03/06/13 06:46:18	A19E924D100...	651
Stopped	TO_K2QMGR	SDR	localhost(1418)	No	5000	K2QMGR	0	0.00	0	Yes	E77E6...	0	11451	05/08/13 10:03:45	919E924D100...	651

# Channel Initiator Status - zOS

Welcome DNET498  
**Tivoli Enterprise Portal** Log out IBM

File Edit View Help

View: Physical

mainframe Networks

- MQSERIES
  - WMQA
  - WMQB
    - Application Debugging
    - Application Statistics
    - Buffer Pool Statistics
    - Channel Definitions
    - Channel Initiator Status**
    - Channel Performance
    - Cluster Queue Manager
    - Dead-Letter Queue Message
    - Error Log
    - Log Manager Performance
    - Message Manager Performance
    - MQSeries Events
    - Page Set Statistics
    - Queue Definitions

### Channel Initiator Status Summary

Category	Total Count
Adapters Requested	8
Adapters Started	8
Chan Conn Active	2
Chan Conn Current	2
Chan Conn Maximum	200
Chan Conn Retrying	0
Chan Conn Stopping	0
Chan Conn Starting	0
Chan Init Active	Yes
Dispatchers Requested	5
Dispatchers Started	5
LU62 LU Name	No
LU62 Listener Active	No
TC N:	TC

### Channel Initiator Status

QMgr Name	Adapters Requested	Adapters Started	Chan Conn Active	Chan Conn Current	Chan Conn Maximum	Chan Conn Retrying	Chan Conn Stopping	Chan Conn Starting	Chan Init Active	Dispatchers Requested	Dispatchers Started	LU62 LU Name	LU62 Listener Active	TC N:
WMQB	8	8	2	2	200	0	0	0	Yes	5	5	No	No	TC

**WMQB:MVSA:MQESA**

### Channel Initiator Status.1

TCP AS Name	TCP IP Listener Active	Port Number	TCP IP Group Listener Active	TCP IP Group Port	LU62 Group Listener Active	LU62 Group LU Name	SSL Server Subtasks Started	SSL Server Subtasks Requested
TCPIP	Yes	14140	No	0	No		0	

**WMQB:MVSA:MQESA**

Number of Secure Socket Layer (SSL) subtasks requested.

Hub Time: Tue, 08/29/2006 08:23 AM    Server Available    Channel Initiator Status - hqdt2.demopkg.ibm.com - DNET498 \*ADMIN MODE\*

# Queues

- A queue is a container for messages
  - ▶ Local Queues
  - ▶ Transmission Queues
  - ▶ Remote Queues
  - ▶ Alias Queues
  - ▶ Model Queues
- **Managed by the Queue Manager**
- **Queue Defined**
  - ▶ Predefined
  - ▶ Dynamically defined
- **Messages are placed in queues to allow programs to interact with each other asynchronously**

# Queue Statistics / Definitions

- **Active, Input and Output Processes**
- **Local Aliased Queue Name and Type**
- **Queue Configuration**
  - ▶ **Trigger Active**
  - ▶ **Trigger Depth**
  - ▶ **Max Message Length**
- **Oldest Message on the Queue (MONQ)**

# Queue Full

- **Local Application or MCA can no longer put messages to Queue**
- **Local Application should check for Queue Full condition**
  - ▶ MQRC\_Q\_FULL (2053, X'805')
- **MCA will put messages to Queue for a Remote Application**
  - ▶ If Queue Full messages go to Dead Letter Queue
  - ▶ If no Dead Letter Queue channel will be stopped
- **MQ Event “Queue Full” or “Queue High” may not be adequate**
  - ▶ These events do not get reset until the Queue Depth hits “Queue Low”
- **Check Queue Depth**
- **Check if messages are on a Queue and no processes have it opened**

# Queue Depth High

Queue Statistics for Monitored Queues with Messages - IBM-CE438E0661F - SYSADMIN

File Edit View Help

Navigator View: Physical

- Enterprise
  - Windows Systems
    - IBM-CE438E0661F
      - Warehouse Proxy
        - MQSERIES
          - K1QMGR
            - Channel Definitions
            - Channel Performance
            - Cluster Queue Manager
            - Dead-Letter Queue Messages
            - Error Log
            - MQSeries Events
            - Queue Definitions
            - Queue Manager Status
            - Queue Statistics
          - K2...
          - MQSE...
          - QI Age...

Queue Statistics Summary

Queue Utilization for Monitored Queues with Messages

Critical  
Queue Depth High K1QMGR::MQ 08/01/13 17:40:19

KFWITM101 Select workspace link button to view situation event results.

Queue Statistics for Monitored Queues with Messages

Queue Name	Queue Usage	Definition Type	Total Opens	Input Opens	Output Opens	Cur Opened Exclusive	Current Depth	Highest Depth	High Depth Threshold	% Full	Ret Intl Exceeded	Get Status	Put Status	Cur Defn	Trigger Control	Msgs Put per Sec	Msgs Read per Sec
K2QMGR	XmitQ	Predefined	2	0	2	n/a	5000	5000	80	100.0	No	Enabled	Enabled	Yes	Yes	0.0	0.0
KQI.AGENT.REPLY.Q...	Normal	Predefined	0	0	0	n/a	5000	5000	80	100.0	No	Enabled	Enabled	Yes	No	0.0	0.0
SYSTEM.AUTH.DATA...	Normal	Predefined	2	1	1	n/a	134	134	80	0.0	No	Enabled	Enabled	Yes	No	0.0	0.0
SYSTEM.CHANNEL.S...	Normal	Predefined	0	0	0	n/a	3	3	80	0.0	No	Enabled	Enabled	Yes	No	0.0	0.0
SYSTEM.CLUSTER.R...	Normal	Predefined	2	1	1	n/a	1	1	80	0.0	No	Enabled	Enabled	Yes	No	0.0	0.0
SYSTEM.DEAD.LETTE...	Normal	Predefined	0	0	0	n/a	28090	28090	80	0.0	No	Enabled	Enabled	Yes	No	0.1	0.0
SYSTEM.DEFAULT.XM...	XmitQ	Predefined	0	0	0	n/a	38	38	80	0.7	No	Enabled	Enabled	Yes	No	0.0	0.0
SYSTEM.DURABLE.S...	Normal	Predefined	0	0	0	n/a	1	1	80	0.0	No	Enabled	Enabled	Yes	No	0.0	0.0
SYSTEM.HIERARCHY...	Normal	Predefined	0	0	0	n/a	2	2	80	0.0	No	Enabled	Enabled	Yes	No	0.0	0.0

K1QMGR::MQ

Hub Time: Thu, 08/01/2013 05:59 PM Server Available Queue Statistics for Monitored Queues with Messages - IBM-CE438E0661F - SYSADMIN

# Check Queue Status

Queue Status - IBM-CE438E0661F - SYSADMIN

File Edit View Help

Navigator View: Physical

- Enterprise
  - Windows Systems
    - IBM-CE438E0661F
      - Warehouse Proxy
      - MQSERIES
        - K1QMGR
          - Channel Definitions
          - Channel Performance
          - Cluster Queue Manager
          - Dead-Letter Queue Messages
          - Error Log
          - MQSeries Events
          - Queue Definitions
          - Queue Manager Status
          - Queue Statistics**
          - Queue Depth High
          - Application Accounting
          - MQI Statistics
          - Publish Subscribe
        - K2QMGR

Physical

Number of Messages

Queue Status

Queue Name	Current Depth	Input Opens	Output Opens	Oldest Msg Age	Last Put Date & Time
K2QMGR	5000	0	2	1143641	07/22/13 06:54:09

Oldest Message Age

Number of Opens

Open Handles for Queue

Application Tag	Appl Type	Open for Input	Open for Output	Open for Browse	Open for Inquire	Open for Set	Asynch State	User ID	ASID	Process ID	Thread ID	Channel Name	Connection Name	Handle Status	External Un Recovery T
\\7.0\bin\DataFlowEngine.exe	USER	No	Yes	No	No	No	None	SYSTEM@NT AUTHORITY		6748	2			Inactive	QMGR
\\7.0\bin\DataFlowEngine.exe	USER	No	Yes	No	No	No	None	SYSTEM@NT AUTHORITY		6744	2			Inactive	QMGR

Queue:K2QMGR QMgr:K1QMGR Host:IBM-CE438E0661F

Hub Time: Thu, 08/01/2013 06:10 PM Server Available Queue Status - IBM-CE438E0661F - SYSADMIN

# Issues with DLQ

- Are there any messages in the DLQ?
- How long has a message been in the DLQ?
- What messages are in the DLQ?
- Why is a message in the DLQ?
- Can I view the message?
- Can I delete one or more messages?
- Can I requeue a message?



# Messages in the Dead Letter Queue

- **Dead Letter Queue prevents the Queue Manager from stopping the channel**
- **Need to monitor if messages arrive in the Dead Letter Queue**
- **Need to quickly isolate the cause of the message(s) arriving in the DLQ**
- **Need to be able to resolve the issue with the DLQ messages**
  - ▶ Fix the issue
  - ▶ Delete the message(s)
  - ▶ Retry the messages

# Rate at which data can be logged

- **For persistent messages the most important resource is the rate at which you can write to the active log datasets. The maximum rate at which you can log data depends on your DASD and your workload profile.**
  1. DASD dependent. The rate at which you can log to disk depends on your DASD. If our DASD is mirrored synchronously then this will be slower than if it is not mirrored. If your I/O subsystem is slow this will impact performance.
  2. If the workload profile has large persistent messages, then a lot of data can be written in each I/O. If the workload profile has only lots of short messages (a few KB) then there may only be a small amount of data per I/O.
  3. Log Switches - if these are exceeding every two minutes, you need to start thinking about a second queue manager for the workload.

# Log Manager Performance - zOS

The screenshot displays the Log Manager Performance interface. On the left is a tree view showing the hierarchy: Mainframe Networks > MQSERIES > WMQA > WMQB > Log Manager Performance. The right side contains three graphs: 'Reads/Writes' (Per Minute), 'Archive' (Read Percent), and 'Delayed' (Read Percent). Below these are two data tables for the specific log dataset WMQB:MVSA:MQESA.

QMgr Name	Host Name	Zero Buff Waits	Arch Log Read %	% Rd Log Delayed	Read Log Per Min	Write Log Per Min	QMgr Type	Logging Suspended	Archiving Quiesced	% Current Active Log Full	Active Log Dataset Name	Offload Task Status	Full Logs To Offload
WMQB	MVSA	0	0.0	0.0	0.0	121.0	MVS	No	No	76.0	WMQ.WMQB.LOGCOPY1.DS03	Available	

Full Logs To Offload	Active Logs Available	Checkpoints	Archive Delay Due to Max Tape	Archive Delay Unavail Resource	Log Write Threshold	Log Write Buffer Pagein	Write Requests Suspended	Lookahead Tape Mounts	% Failed Lookahead Tape Mounts	Busy Archive Tapes	% i Tap
0	8	0	0	0	0	0	18	0	0.0	0	

Hub Time: Tue, 08/29/2006 08:21 AM    Server Available    Log Manager Performance - hqdn2.demopkg.ibm.com - DNET498 \*ADMIN MODE\*

# Issues with Buffers

- **Do my buffer pools contain enough storage for message management?**
- **Am I experiencing a problem now?**
- **Are my buffer pools filling up?**
- **How are my buffer pools performing?**

# Buffer pool usage

**Keeping your buffers pools under 85% is key to good performance for short lived messages. This eliminates application I/O to the page set.**

**If all your messages are in the buffer pool ( the optimum for performance) then there should be no reads from the page sets. There may be writes to pages sets during checkpoint activity.**

# Buffer Pool Statistics - zOS

Welcome DNET498 **Tivoli Enterprise Portal** Log out IBM

File Edit View Help

View: Physical

- Mainframe Networks
- MQSERIES
  - WMQA
  - WMQB
    - Application Debugging
    - Application Statistics
    - Buffer Pool Statistics**
    - Channel Definitions
    - Channel Initiator Status
    - Channel Performance
    - Cluster Queue Manager
    - Dead-Letter Queue Message
    - Error Log
    - Log Manager Performance
    - Message Manager Performance
    - MQSeries Events
    - Page Set Statistics
    - Queue Definitions
    - Queue Manager Status
    - Queue Statistics
  - WMQT
  - WMQX
- OS/390 Unix (USS)
- Partition MVSA Production

**Buffer Pool Statistics Summary**

**Buffer Availability**

**Get Page I/O**

**Buffer Pool Statistics**

Pool ID	Number Buffers	Available Buffers	% of Bufrs Available	Zero Bufrs Count	Synch Writes	GetPg IO %	% GetPg Outside Pool	Updated Pgs/Wrt	% Updated Pgs Written	DASD Page Reads/Sec	DASD Page Writes/Sec	Asynch Writes	Page Sets Assigned	Queues Assigned	QMgr Name	F N
00	50000	49989	100.0	0	0	0.0	0.0	100,130.0	0.0	2.3	0.6	0	5	221	WMQB	M
01	20000	19999	100.0	0	0	0.1	0.1	1.5	83.3	0.1	0.1	0	0	0	WMQB	M
02	50000	49994	100.0	0	0	0.0	0.0	32,846.0	0.0	0.2	0.1	0	0	0	WMQB	M
03	20000	19846	99.2	0	0	0.0	0.0	470,690.1	0.0	11.7	0.2	0	0	0	WMQB	M

**WMQB: MVSA: MQESA**

Hub Time: Tue, 08/29/2006 08:24 AM Server Available Buffer Pool Statistics - hqdn2.demopkg.ibm.com - DNET498 \*ADMIN MODE\*

# Page Set Statistics - zOS

The screenshot displays the zOS Page Set Statistics interface. On the left is a tree view showing the hierarchy: mainframe Networks > MQSERIES > WMQA > WMQB > Page Set Statistics. The main area contains two charts: 'Page Set Statistics Summary' and 'Page Set Utilization'. The summary chart shows 'Page Set Average Percent In Use' (yellow bar) and 'Page Set Highest Percent In Use' (blue bar) for WMQB. The utilization chart shows the percentage of pages in use for Page Set IDs 00 through 04. Below the charts is a table with the following data:

Page Set ID	Status	Allocated Data Pages	% Pages In Use	Persistent Pages	Non-Persistent Pages	Total Extents	Extents Since Restart	Buffer Pool ID	Buffers In Use	% Buffer Pool In Use	Queues Assigned	Queue Messages	Dataset Name
00	Available	1078	9.5	103	0	0	0	00	6	0.0	0	0	WMQ.WMQB.PSID00
01	Available	1078	1.8	20	0	0	0	00	5	0.0	3	24	WMQ.WMQB.PSID01
02	Available	1078	0.0	0	0	0	0	00	1	0.0	0	0	WMQ.WMQB.PSID02
03	Available	1078	0.8	6	3	0	0	00	6	0.0	6	23	WMQ.WMQB.PSID03
04	Available	1078	72.7	649	135	0	0	00	154	0.7	212	3986	WMQ.WMQB.PSID04

WMQB:MVSA:MQESA

Hub Time: Tue, 08/29/2006 08:16 AM    Server Available    Page Set Statistics - hqndt2.demopkg.ibm.com - DNET498 \*ADMIN MODE\*

# Shared Queue

**For performance you should monitor the response time of the structures. The response time will depend on the configuration of the hardware. For example you can get contention on the channels to the CF. If the CF is on the same physical processor as an LPAR the response time will be much better than from a remote processor. Use z/OS facilities, such as RMF to monitor these response times.**



# QSG CF Structure Statistics

The screenshot displays the 'QSG CF Structure Statistics - IBM-C45849E5BBE - SYSADMIN' application window. The interface includes a menu bar (File, Edit, View, Help), a toolbar, and a 'Navigator' pane on the left showing a tree view of system components. The main area contains two data tables.

**Queue Sharing Group CF Structure Backup Statistics**

QSG Name	CF Struct Name	Struct Status	QMgr Name	Backup Date & Time	Backup Size	Backup Start RBA	Backup End RBA	Failure Date & Time
MQ1G	APPLICATION1	Active	M71W	02/14/11 02:59:51	14	003228A43F4C	0032298BC601	n/a
MQ1G	STRUCT1	Active	M71W	06/13/10 00:57:39	0	000000000000	000000000000	n/a

**Queue Sharing Group CF Structure Statistics**

QSG Name	CF Struct Name	Alter Date & Time	Struct Level	Recovery Supported	CF Struct Type	Struct Status	Max Stor	% Stor Used	Max Entries	Used Entries	% Entries Used	Failure Date & Time	Description
MQ1G	APPLICATION1	10/08/11 23:58:23	3	Yes	Appl	Active	32000	1.0	12567	55	0.4	n/a	
MQ1G	CSQ_ADMIN	n/a	0	No	Admin	Active	10240	4.0	4224	26	0.6	n/a	
MQ1G	CSQSYSAPPL	05/11/10 00:19:45	3	No	Appl	Active	16128	1.0	5194	34	0.7	n/a	
MQ1G	STRUCT1	10/08/11 23:57:54	3	Yes	Appl	Active	16128	1.0	5194	39	0.8	n/a	System CF structure

The bottom of the window shows a Windows taskbar with the system clock at 8:14 AM on Wednesday, 11/9/2011, and the application title bar indicating the current window is 'QSG CF Structure Statistics - IBM-C45849E5BBE - SYSADMIN'.

# MQ problems between IBM z/OS® and distributed systems

- MQ provides common API across all platforms
- Different monitoring/management solutions for each platform?
- Best practices dictate looking at MQ environment holistically
- Differing backup & recover strategies for MQ objects

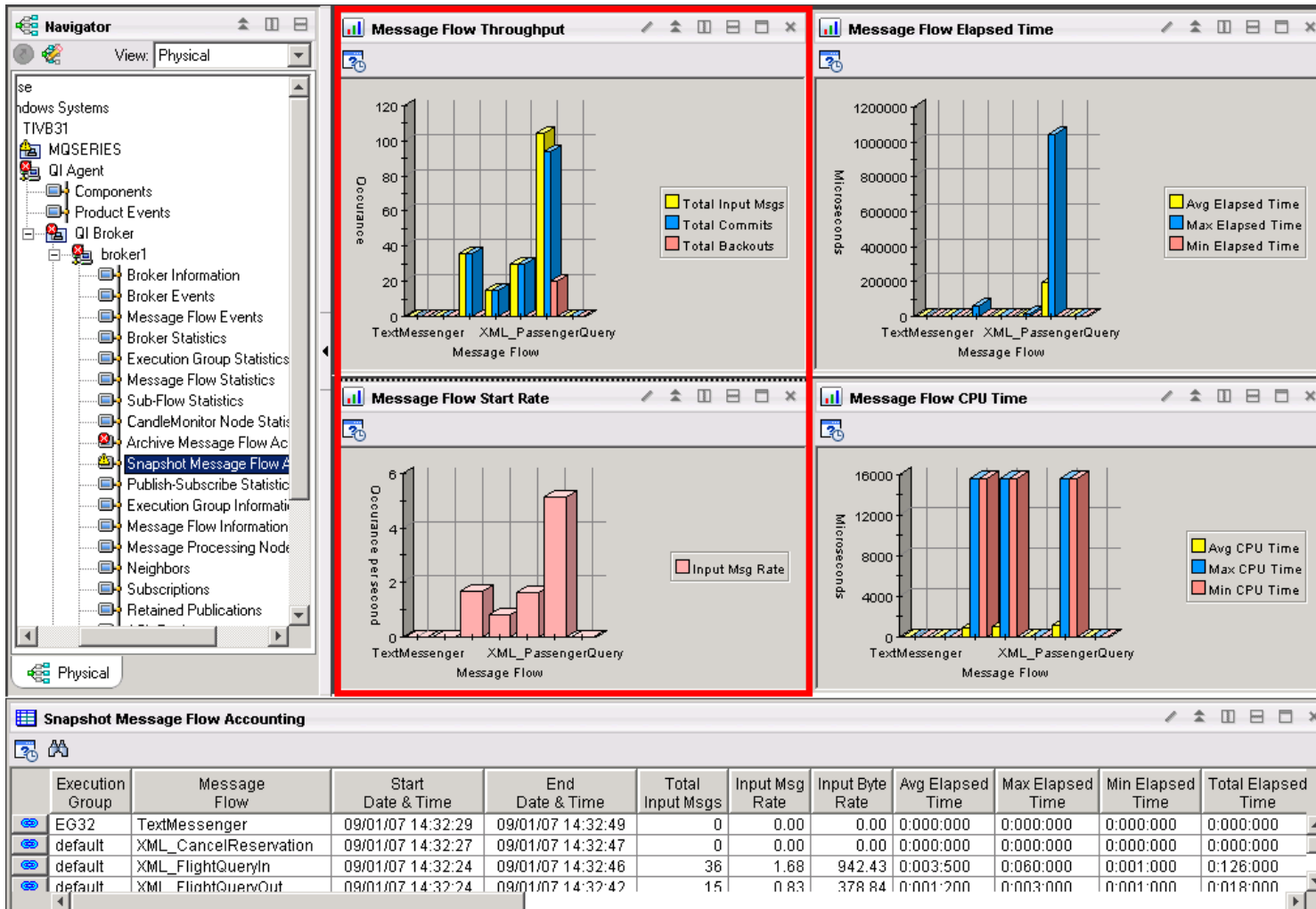
# MQ Configuration - Administration

- **Enterprise-wide configuration/administration strategy?**
- **Different strategies depending on platform?**
- **What about backup/recovery?**
- **If an object is modified you need to be able to detect that.**

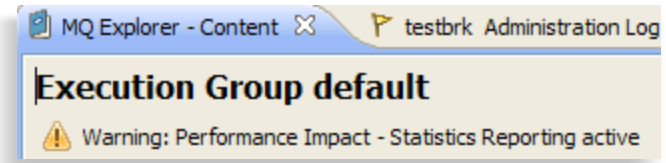
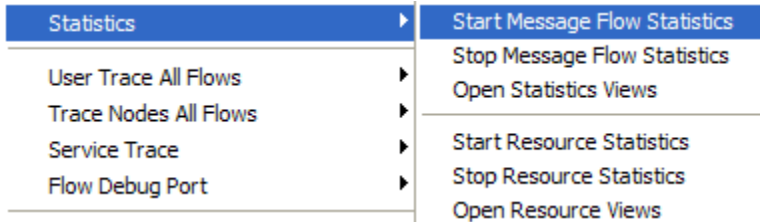
# WebSphere Message Broker (IIB)

- **More of a Black Box than MQ**
  - ▶ Execution Groups
  - ▶ Message Flows
  - ▶ Processing Nodes
  - ▶ Threads
- **Need to understand if MB is being affected by MQ**
- **Is the Queue Manager running?**
- **Is the Broker connected to the Queue Manager?**
- **Are the issues with the Network?**
- **Are there issues with the OS?**
- **Demands a holistic approach to monitoring to improve MTTR**

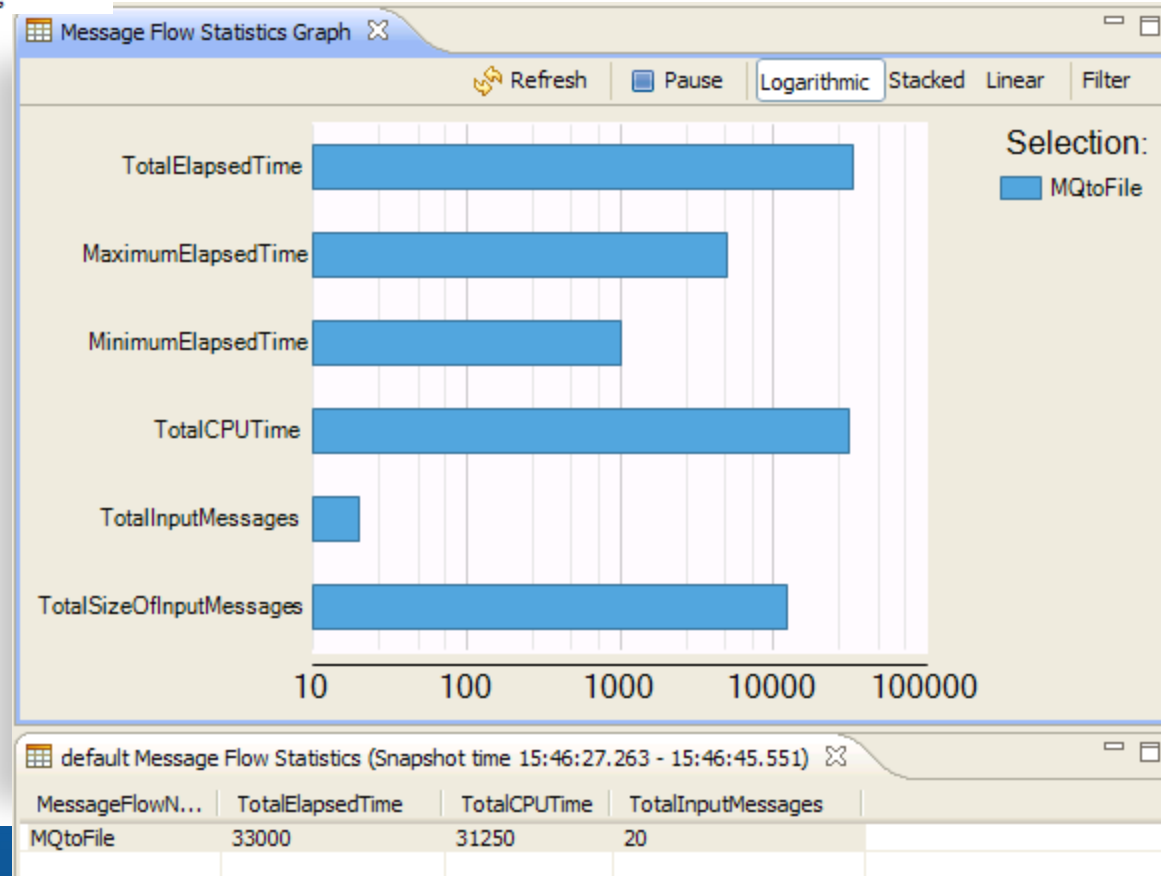
# Message Flow Workspaces



# Broker Explorer & Message Flow Statistics



- The Message Broker Explorer enables you to start/stop message flow statistics on the broker, and view the output.
- New in V7 (although supportpac IS02 available for V6.1)
- Warnings are displayed advising there may be a performance impact (typically ~3%)



# What else?

- **Logs (different for z/OS and Distributed)**
- **Buffer Pools (z/OS)**
- **Page Sets (z/OS)**
- **Shared Queues/Coupling Facility (z/OS)**
- **Clusters**
- **Age of Messages**
- **Queue/Dequeue Rate**
- **Channel Usage**
- **Poison Messages**
- **What's normal activity?**
- **Predictive Analysis**

# Summary

- **Once introduced into an environment WMQ and WMB become ubiquitous.**
- **Monitoring/managing your messaging backbone in a silo is not adequate**
- **Start looking at your Enterprise Monitoring & Management strategy holistically.**
- **It may look like the problem is WMQ or WMB, maybe it is not.**
- **Use automation for corrective action when appropriate**



# Questions & Answers

