IBM Software WebSphere

Discovering the value of WebSphere MQ v7.5

Lab Exercises



IBM

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Overview

This guide and associated VMware image helps you get started with WebSphere MQ V7.5 on distributed platforms.

You can use WebSphere® MQ to enable applications to communicate at different times and in many diverse computing environments.

What is WebSphere MQ?

- WebSphere MQ is messaging for applications. It sends messages across networks of diverse components. Your application connects to WebSphere MQ to send or receive a message. WebSphere MQ handles the different processors, operating systems, subsystems, and communication protocols it encounters in transferring the message. If a connection or a processor is temporarily unavailable, WebSphere MQ queues the message and forwards it when the connection is back online.
- An application has a choice of programming interfaces, and programming languages to connect to WebSphere MQ.
- WebSphere MQ is *messaging* and *queuing* middleware, with *point-topoint,publish/subscribe*, and *file transfer* modes of operation. Applications can publish messages to many subscribers over *multicast*.

Messaging

Programs communicate by sending each other data in messages rather than by calling each other directly.

Queuing

Messages are placed on queues, so that programs can run independently of each other, at different speeds and times, in different locations, and without having a direct connection between them.

Point-to-point

Applications send messages to a queue, or to a list of queues. The sender must know the name of the destination, but not where it is.

Publish/subscribe

Applications publish a message on a topic, such as the result of a game played by a team.WebSphere MQ sends copies of the message to applications that subscribe to the results topic. They receive the message with the results of games played by the team. The publisher does not know the names of subscribers, or where they are.

Multicast

Multicast is an efficient form of publish/subscribe messaging that scales to many subscribers. It transfers the effort of sending a copy of a publication to each subscriber from WebSphere MQ to the network. Once a path for the publication is established between the publisher and subscriber, WebSphere MQ is not involved in forwarding the publication.

File transfer

Files are transferred in messages. WebSphere MQ File Transfer Edition manages the transfer of files and the administration to set up automated transfers and log the results. You can integrate the file transfer with other file transfer systems, with WebSphere MQ messaging, and the web.

Telemetry

WebSphere MQ Telemetry is messaging for devices. WebSphere MQ connects device and application messaging together. It connects the internet, applications, services, and decision makers with networks of instrumented devices. WebSphere MQ Telemetry has an efficient messaging protocol that connects a large numbers of devices over a network. The messaging protocol is published, so that it can be incorporated into devices. You can also develop device programs with one of the published programming interfaces for the protocol.

What can it do for me?

WebSphere MQ sends and receives data between your applications, and over networks.

Message delivery is *assured* and *decoupled* from the application. Assured, becauseWebSphere MQ exchanges messages transactionally, and decoupled, because applications do not have to check that messages they sent are delivered safely.

You can secure message delivery between queue managers with SSL/TLS.

With Advanced Message Security (AMS), you can encrypt and sign messages between being put by one application and retrieved by another.

Application programmers do not need to have communications programming knowledge.

How do I use it?

- Create and manage WebSphere MQ with the WebSphere MQ Explorer GUI or by running commands from a command window or application.
- Program applications to send and receive messages by calling one of the programming interfaces. Programming interfaces are provided for different languages, and include the standard JMS programming interface, and classes for the Windows communication foundation.
- Send and receive WebSphere MQ messages from browsers with the HTTP protocol.

How does it work?

- An administrator creates and starts a queue manager with commands. Subsequently, the queue manager is usually started automatically when the operating system boots. Applications, and other queue managers can then connect to it to send and receive messages.
- An application or administrator creates a queue or a topic. Queues and topics are objects that are owned and stored by a *queue manager*.
- When your application wants to transfer data to another application, it puts the data into a message. It puts the message onto a queue, or publishes the message to a topic. There are three main ways that the message can be retrieved:
 - A point-to-point application connected to the same queue manager retrieves the message from the same queue.
 - For example, an application puts messages on a queue as way of storing temporary or persistent data. A second example: An application that shares data with another application that is running in a different process.
 - A point-to-point application connected to another queue manager retrieves the same message from a different queue.
 - Applications communicate with each other by exchanging messages on queues. The main use of WebSphere MQ is to send or exchange messages. One application puts a message on a queue on one computer, and another application gets the same message from another queue on a different computer. The queue managers on the two computers work together to transfer the message from the first queue to the second queue. The applications do not communicate with each other, the queue managers do.
 - A subscriber application connected to any queue manager retrieves messages on common topics.
 - A publisher application creates a message and publishes it to a topic on one computer. Any number of subscriber applications subscribe to the same topic on different computers. WebSphere MQ delivers the publication to queues that belong to the queue managers the subscribers are connected to. The subscribers retrieve the message from the queues.
- *MQ channels* connect one queue manager to another over a network. You can create MQ channels yourself, or a queue manager in a cluster of queue managers creates MQ channels when they are needed.
- You can have many queues and topics on one queue manager.
- You can have more than one queue manager on one computer.

• An application can run on the same computer as the queue manager, or on a different one. If it runs on the same computer, it is a WebSphere MQ server application. If it runs on a different computer, it is a WebSphere MQ client application. Whether it is WebSphere MQclient or server makes almost no difference to the application. You can build a client/server application with WebSphere MQ clients or servers.

What tools and resources come with WebSphere MQ?

- Control commands, which are run from the command line. You create, start, and stop queue managers with the control commands. You also run WebSphere MQ administrative and problem determination programs with the control commands.
- WebSphere MQ script commands (MQSC), which are run by an interpreter. Create queues and topics, configure, and administer WebSphere MQ with the commands. Edit the commands in a file, and pass the file to the **runmqsc** program to interpret them. You can also run the interpreter on one queue manager, which sends the commands to a different computer to administer a different queue manager.
- The Programmable Command Format (PCF) commands, which you call in your own applications to administer WebSphere MQ. The PCF commands have the same capability as the script commands, but they are easier to program.
- Sample programs.
- On Windows and Linux x86 and x86-64 platforms, where you can run the following utilities:
 - The WebSphere MQ Explorer. The explorer does the same administrative tasks as the script commands, but is much easier to use interactively.
 - The *Postcard* application to demonstrate messaging and verify your installation.
 - Tutorials.

Icons

The following symbols appear in this document at places where additional guidance is available.

Icon	Purpose	Explanation
$\mathbf{\mathbf{\hat{k}}}$	Important!	This symbol calls attention to a particular step or command. For example, it might alert you to type a command carefully because it is case sensitive.
i	Information	This symbol indicates information that might not be necessary to complete a step, but is helpful or good to know.
B	Trouble- shooting	This symbol indicates that you can fix a specific problem by completing the associated troubleshooting information.

Lab 1 Introduction to WebSphere MQ

In this lab you will be introduced to the WebSphere® MQ Explorer, the primary interface for administering a WebSphere MQ environment. You will have an opportunity to see how easy it is to create various MQ objects, view their status and manipulate them.

You will also exercise some basic command line facilities that will allow you to place messages onto queues and remove messages from queues.

1.1 Create a Queue Manager

Before you can do any useful work in a WebSphere MQ environment you must have a queue manager present.

___1. Once the Windows VMware image starts up, you should have a desktop that looks similar to the screen capture below.



- ___2. Sign in as **Administrator** by double-clicking on the icon.
- __3. Enter passw0rd for the password and click the right arrow.



___4. Click the up arrows to open the hidden taskbar..



__5. The indicated icon represents WebSphere MQ on this system.



___6. Start the WebSphere MQ Explorer by **right-clicking** on the icon and selecting **WebSphere MQ Explorer**.



__7. The welcome screen provides a nice selection of resources for the product. Note the various options on the Welcome screen and explore them if you would like. The first time you launch WebSphere MQ Explorer after an install of WebSphere MQ this Welcome screen will be displayed automatically.



__8. The left-hand pane in WebSphere MQ Explorer is called the **Navigation pane**. In the navigation pane, locate the **Queue Managers** folder.



___9. Right-click on Queue Managers and select New then Queue Manager.

😤 MQ Explorer - Navigator 🔅	MQ Explorer - C	Cont	ent 🛛				
E BM WebSphere MO	🚸 🖃 🎽 Queue Ma	na	igers				
Queue Managers	Show All Hidden Queue Managers Show/Hide Queue Managers Add Remote Queue Manager		· Queue Managers				
Queue Manager C JMS Administered Managed File Tran			er name	Command level	Version	Queue r	
Service Definition	New		Queue M	anager			
The second second	Transfer Queue Managers						
	Tests			-			
	Sets			-			

___10. Create a new queue manager and name it **WMQ75**. Check the box to make this the **default queue manager**. Note that the use of a default queue manager is not recommended in a production environment as it allows requests from a program or command to complete successfully without the inclusion of a queue manager name. We are using this option here in the labs as a convenience to reduce typing for you.

Important! Default Queue Manager



Important!!!!! Be sure to check the box that indicates this is the default queue manager!!!

If you do not do this you will have issues in future labs!!!!!

Specify **SYSTEM.DEAD.LETTER.QUEUE** as the dead letter queue, and then click the **Finish** button.

Create Queue Manager			_ [] ×
Queue Manager			
Enter basic values			
Queue manager name:	WMQ75		
(ake this the default qu	eue manager		
Default transmission queue:			
Dead-letter queue:	SYSTEM.DEAD.LETTER		
Max handle limit:	256		
Trigger interval:	999999999		
Max uncommitted messages	10000		
		1	2

___11. The create queue manager process takes a few seconds during which time the following panel is displayed...

Executing WebSphere MQ Commands Please wait	
Creating Queue Manager	<u>*</u>
	* *

- ___12. The newly created queue manager is displayed in the WebSphere MQ Explorer.
- ___13. Click on queue manager WMQ75. In the Content pane on the right-hand side you can see details about the queue manager, such as its status, properties, etc.

e Edit Window Help			
🖬 MQ Explorer - Navigator 🕄 👘	D MQ Explorer - Content		# 🚸 ▽ 🗖 ট
IBM WebSphere MQ □ • • •	Connection QuickView:	5	
E VMQ75	Connection status	Connected	
Queue Manager Clusters	Connection type	Local	1
JMS Administered Objects	Connection name		
Managed File Transfer	Channel name		
Service Definition Repositories	Channel definition table		-
	Last updated: 12:28:03		
	Status QuickView:		
	Queue manager status	Running	
	Command server status	Running	
	Channel initiator status	Running	
	Connection count	21	
	Standby	Not permitted	
	Start date	Jan 8, 2013	-
	Start time	12:25:44 PM	
	Last updated: 12:28:03		
	Properties QuickView:		
	Queue manager name	WMQ75	
	Description	and them	
	Platform	Windows	
	Command level	750	
	Version	07050000	×
	Last updated: 12:28:03		
1 titame calentard			a 9

This concludes this portion of Lab 1.

1.2 Testing Basic Functionality

In this section of the lab you will create a local queue, place a test message in the queue, browse the message, clear it from the queue and finally delete the queue.

___14. Expand the new **WMQ75** queue manager by clicking on the "+" symbol in front of it in the navigation tree.

____15. Observe the tree structure that is displayed in the Navigator pane. There are separate folders for *Queues, Topics* and *Subscriptions, Channels*, just to name a few.

IBM WebSphere MQ Explorer (Installation1)			_ [] ×		
File Edit Window Help					
📽 MQ Explorer - Navigator 🕄 💭 🗐 MQ	Explorer - Content		# 0 ▼ □		
🤣 🖻 🎽 🛛 Que	□ Ž Queue Manager WMQ75				
E IBM WebSphere MQ	ction Ouich/lieur				
E Queue Managers	coon quicknews				
E-Q WMQ75	nection status	Connected			
Queues	nection type	Local			
Topics	nection name				
Subscriptions Cha	nnel name				
Channels Cha	nnel definition table		-		
Listeners	t updated: 12:29:48				
- Process Definitions - Process Definitions - Process Definitions - Process Definitions - Process Definitions	QuickView:				
Que	ue manager status	Running	. 🔺		
Communication Information	mand server status	Running			
Security Policies Cha	nnel initiator status	Running			
Con	nection count	21			
Star	ndby	Not permitted			
Star	t date	Jan 8, 2013	-		
Star	t time	12:25:44 PM			
Las	t updated: 12:29:48				
Proper	ties QuickView:				
Oue	ue manager name	WM075			
Des	cription				
Plat	form	Windows			
Con	mand level	750			
Vers	sion	07050000	*		
	t updated: 12:29:48				
1 items selected			e 🗣		

___16. Now you will create a new queue. Within the WMQ75 queue manager **right-click** on **Queues** then select **New** then **Local Queue**.



___17. Name the new queue **QL01** then click on the **Next** button.



___18. Note the variety of tabs on the left. There are many characteristics or properties for a queue. Explore some of them if so desired. In most cases you can utilize the defaults. For purposes of this lab you can accept all of the defaults – click **Finish** to create the queue.

ne new Local Queue		
General Queue name: Queue type: Description: Put messages: Get messages: Default priority: Default persistence: Scope: Usage:	QL01 Local Allowed Allowed 0 Not persistent Queue manager Normal	· · · · · · · · · · · · · · · · · · ·
		K
	he new Local Queue General Queue name: Queue type: Description: Put messages: Get messages: Default priority: Default persistence: Scope: Usage:	he new Local Queue General Queue name: QL01 Queue type: Local Description:

____19. Dismiss the completion panel by clicking on the **OK** button.



____20. If the **SYSTEM.*** queues are displayed, you may click the toggle button in the top right corner to hide the **SYSTEM.*** queues.

In the Content pane on the right-hand side the newly created queue is displayed along with its various properties. The **Current queue depth** property is a measure of how many messages are currently in the queue. Note that the current queue depth is 0 as you would expect since you just created the queue.

MQ Explorer - Content 🛛							ᆀ		∲	' 🗆
G	Queues									
ſ	Filter: Standard for Queues								▽	
	△ Queue name	Queue type	Open input count	Open output court	Current queue depth	Put messages	Get mess	ages i	Remote qui	
	🖸 QL01	Local	0	0	0	Allowed	Allowed			
	•								Þ	
	Scheme: Standard for Qu	ieues - Distribu	ited							
Γ	Last updated: 12:59:29 (1 item)								

____21. Next you will place a message in the queue. **Right-click** on the **QL01** queue and select **Put Test Message**.

Iter: Standard for (Queues						Þ
Queue name	Queue type	Open input count	Open output count	Current queue depth	Put messages	Get messages	Re
QL01	Local Compare with	0	0	0	Allowed	Allowed	
	Delete Status						
	Watch Activity Trace Route Clear Messages						
<	Put Test Message						
	Browse Messages Create JMS Queu Object Authorities	e s. ▶					
	Properties						
<u>.</u>							

___22. Enter a test message by typing something of your choosing in the **Message data** field and click on the **Put message** button.

Put test message	
Put message to: Queue manager: WMQ75	
Queue: QL01 Message data:	
The queue which will receive the test message is on this computer. The message will be put directly on the queue.	
Put message C	lose

___23. Close the Put test message panel by clicking on the **Close** button.

Put test message	
Put message to: Queue manager: WMQ75 Queue: QL01 Message data:	
The queue which will receive the test message is on this computer. The message will be put directly on the queue.	Put message Close

When you return to the display of queues, note that the **Current queue depth count is now 1**. This represents the test message you just placed into the queue.

🗐 м	Q Explorer - Content 8	3					4 1 🕅	🧼 🗸 🗖 🗋
Q	leues							
Fil	ter: Standard for Oueu							~
					\frown			
	Queue name	Queue type	Open input count	Open output coun	Current queue depth	Put messages	Get messages	Remote que
	QL01	Local	0	0	1	Allowed	Allowed	
•								▶
6	homou Standard for O	ouos Distribu	ted					~
	neme: standard for Qu	ieues - Distribu	neu					
La	ast updated: 12:51:56 (1 item)						

___24. You can view details about the messages on a queue – **right-click** on queue **QL01** and select **Browse Messages**.

ter: Standard for	Queues						A
Queue name	Queue type	Open input count	Open output count	Current queue depth	Put messages	Get messages	Re
QL01	Local Compare with	0	0	0	Allowed	Allowed	
	Delete Status						
	Watch Activity Trace Route Clear Messages Put Test Message						
<	Browse Messages Create JMS Queu Object Authorities	e s •					
_	Properties						
		-					

__25. Here is the resulting display. Note that there is a **scroll bar** at the bottom that allows you to view additional data that is not currently in view. There will be one such line displayed for each message in the queue. Click on the **Close** button.

Position	Put date/time	User identifier	Put application name	Format	Data lengt	Message data	Accounting tok
d]1	Jan 8, 2013 12:49:15 PM	Administrato	BM\WMQv75\bin\MQExplorer.exe	MQSTR	16	My first message	160105150000
							•
cheme: Standard	for Messages						~
ast updated: 12:5	i3:43 (1 item)					1	
	and the second second					4	

___26. You will now delete your test message from the queue. **Right-click** on queue **QL01** and select **Clear Messages**.....note that this action will remove all messages from the queue.

er: Standard for (Queues						Þ
Queue name	Queue type	Open input count	Open output count	Current queue depth	Put messages	Get messages	Re
QL01	Local Compare with	0	0	0	Allowed	Allowed	
	Delete Status						
	Watch Activity Trace Route						
<	Clear Messages Put Test Message	2					
	Browse Messages Create JMS Queu Object Authorities	e					
	Properties						

___27. Accept the default selection of using the **CLEAR command**. This option cannot be used if any application has the queue open. In that case the second option would be required. Click on the **Clear** button.

Clear queue		
Queue manager name: Queue name:	WMQ75 QL01	
Select dear type OQueue will be dear OQueue will be dear	red using CLEAR command red using MQGET API calls	
	Clear	Close

____28. Click on the **OK** button to dismiss the confirmation panel.



You can now see that the queue is indeed empty.

MQ Explorer - Content	×					圳一覧	🤣 🏹 🗖 [
Queues							
Filter: Standard for Qu	eues						~
🛆 Queue name	Queue type	Open input count	Open output court	Current queue depth	Put messages	Get messages	Remote qu
🖸 QL01	Local	0	0	0	Allowed	Allowed	
•		, 					▶
Scheme: Standard for	Queues - Distribu	ited					$\overline{\nabla}$
	. (
Last updated: 12:59:29	9 (1 item)						

____29. You will now delete the queue. Right-click on the QL01 queue and select Delete...

ter: Standard for	Queues						A
Queue name	Queue type	Open input count	Open output count	Current queue depth	Put messages	Get messages	Re
QL01	Local Compare with	0	0	0	Allowed	Allowed	
<	Delete Status	>					
	Watch Activity Trace Route Clear Messages						
	Put Test Message, Browse Messages, Create JMS Queue						
	Object Authorities Properties						

___30. Confirm the request by clicking on the **Delete** button.



___31. Dismiss the confirmation panel by clicking on the **OK** button.



This concludes this portion of Lab 1.

Lab 3 Publish / Subscribe Administration

3.1 Lab Overview

This lab will demonstrate the administration of Publish / Subscribe-related objects using the WebSphere MQ Explorer. Also, you will use the MQ Explorer Test Publication and Test Subscription features to demonstrate publishing and subscribing to TOPIC strings.

You will be working with the hierarchical structure of TOPIC STRINGS represented in the picture below.



3.2 Using WebSphere MQ Explorer to create and display information

___1. If the WebSphere MQ Explorer is not already running, you can launch it from the shortcut on the desktop.



____2. Start the WebSphere MQ Explorer by double-clicking on the **WebSphere MQ Explorer** shortcut.

___3. Click on the **Topics** folder in the Navigator pane (left side). Notice that you have no topic objects defined yet! We have provided a script for this purpose.



__4. To run the provided script, find the shortcut called PubSub Lab Setup on the Windows[®] desktop. Double-click the shortcut to run the script.



If you receive an Open File – Security Warning popup, click on **Run** to allow the script to execute.



__5. The script should run very quickly, leaving the following command window open. Verify that the command was successful. Then press Enter to close the command window.



___6. You should now see the following WebSphere MQ Topic objects displayed in the Content pane in the MQ Explorer. Observe the Topic <u>objects</u> (under the Topic name column) and their corresponding Topic <u>string</u> values. Also observe the Publish and Subscribe enablement status on the right.

😪 MQ Explorer - Navigator 🕴 🗖 🗖	MQ Explorer - Content 🕄					
🧇 🖯 🎽	Topics					
🗄 💮 IBM WebSphere MQ	12.15					
E 🗁 Queue Managers	Filter: Standard for Topics					
	7 Topic name	Topic type	Topic string	Description	Publish	Subscribe
Charles Charles	FINANCE	Local	finance		Inhibited	Inhibited
Topics	SPORT	Local	sport		Inhibited	As parent
Supscriptions	SPORT.BASKETBALL	Local	sport/basketball	1	As parent	As parent
E Channels	SPORT.FOOTBALL	Local	sport/football		Inhibited	As parent
- Contraction Telemetry	SPORT.FOOTBALL.NEWS	Local	sport/football/news		Allowed	Allowed
- 🔁 Listeners	SPORT.FOOTBALL.PLAYERS	Local	sport/football/players		Allowed	Allowed
- Services	SPORT.FOOTBALL.PLAYERS.HURSLEY	Local	sport/football/players/hursley		As parent	As parent
Process Definitions	SPORT.FOOTBALL.PLAYERS.ROMSEY	Local	sport/football/players/romsey		As parent	As parent
- Contraction Namelists	SPORT.FOOTBALL.PLAYERS.WINCHESTER	Local	sport/football/players/winchester		As parent	As parent
- Authentication Information	SPORT.FOOTBALL.RESULTS	Local	sport/football/results		Inhibited	As parent
Communication Information	SPORT, FOOTBALL, RESULTS, HURSLEY	Local	sport/football/results/hursley		Allowed	Allowed
Security Policies	SPORT.FOOTBALL.RESULTS.ROMSEY	Local	sport/football/results/romsey		Allowed	Allowed
	SPORT, FOOTBALL, RESULTS, WINCHESTER	Local	sport/football/results/winchester		Allowed	Allowed
E - C JMS Administered Objects						

___7. Double-click on the **SPORT** Topic object.

😪 MQ Explorer - Navigator 🛛 🗖 🗖	MQ Explorer - Content			
🏟 🗏 🎽	Topics			
E- 💮 IBM WebSphere MQ				
De Course Managers	Filter: Standard for Topics			
E 💹 WM075	- Topic name	Topic type	Topic string	Description
- Oueues	FINANCE	Local	finance	
Topics	B SPORT	Local	sport	
	SPORT.BASKETBALL	Local	sport/basketball	(in)
T Channels	SPORT.FOOTBALL	Local	sport/football	<u>ч</u>
- Telemetry	SPORT.FOOTBALL.NEWS	Local	sport/football/news	
listeners	SPORT.FOOTBALL.PLAYERS	Local	sport/football/players	
- Services	SPORT.FOOTBALL.PLAYERS.HURSLEY	Local	sport/football/players/hursley	
Process Definitions	SPORT.FOOTBALL.PLAYERS.ROMSEY	Local	sport/football/players/romsey	
> Namelists	SPORT.FOOTBALL.PLAYERS,WINCHESTER	Local	sport/football/players/winchester	
Authentication Information	SPORT.FOOTBALL.RESULTS	Local	sport/football/results	
Communication Information	SPORT.FOOTBALL.RESULTS.HURSLEY	Local	sport/football/results/hursley	
Security Policies	SPORT.FOOTBALL.RESULTS.ROMSEY	Local	sport/football/results/romsey	
- Queue Manager Clusters	SPORT.FOOTBALL.RESULTS.WINCHESTER	Local	sport/football/results/winchester	
🗄 🗁 JMS Administered Objects				

___8. Observe the various properties of the Topic object. Explore the various values available on the pull-downs if you wish. Close the window by clicking **Cancel**.

General Distributed Publish/Subscribe	General	
Cluster Statistics	Topic name:	SPORT
	Topic type:	Local
	Topic string:	sport
	Description:	
	Publish:	Inhibited
	Subscribe:	As parent
	Durable subscriptions:	As parent
	Default priority:	As parent
	Default persistence:	As parent
	Model durable queue:	Select.
	Model non-durable queue:	Select.
	Default put response type:	As parent
	Non-persistent message delivery:	As parent
	Persistent message delivery:	As parent
	Wildcard operation:	Passthrough
	Use dead-letter queue:	As parent
	Custom:	1
		Apply

_9. From the Navigation pane select **Topics** under queue manager WMQ75. Right-click on **Topics** and then select **New → Topic** from the context menu.



__10. Enter **MONEY** in the Name field; allow the other fields to default. Then click "Next".



___11. Enter **"finance/cash/gettingit/frombanks**" (without the quote marks) in the **Topic string** field. Enter a description in the description field and then click **"Finish**"

General Distributed Publish/Subscribe	General		
Cluster	Topic name:	MONEY	
	Topic string:	finance/cash/gettingit/frombanks	_
	Description:	test to show implicit nodes created in Topic String	_
	Publish:	As parent	
	Subscribe:	As parent	•
	Durable subscriptions:	As parent	•

___12. Close the confirmation box by clicking **OK**.



__13. Back in the WebSphere MQ Explorer, right click on **Topics** (under WMQ75) and then select **Status**.



___14. Now click on the "+" symbol to the left of **finance** – a level of the hierarchy opens; repeat on the "+" in front of **cash**, then **gettingit**, then **frombanks** which is the bottom of the "*tree*".

In the Topic Status notice that all the intermediate nodes have been created and that they have inherited properties from the parent **finance**. These intermediate nodes have no related Topic Objects and so cannot have their properties altered by MQSC or WebSphere MQ Explorer.

___15. Close the Topic Status view by clicking on **Close**.

pic status:						
Topic string	Publish	Subscribe	Durable subscriptions	Default priority	Default persistence	Model dur
E [Empty]	Allowed	Allowed	Allowed	0	Not persistent	SYSTEM.D
🖃 finance	Inhibited	Inhibited	Allowed	0	Not persistent	SYSTEM.D
🖃 cash	Inhibited	Inhibited	Allowed	0	Not persistent	SYSTEM.D
🖃 gettingit	Inhibited	Inhibited	Allowed	0	Not persistent	SYSTEM.D
frombanks	Inhibited	Inhibited	Allowed	0	Not persistent	SYSTEM.D
sport	Inhibited	Allowed	Allowed	0	Not persistent	SYSTEM.D
<u> </u>	•					•
Scheme: Standard for Topic Sta	atus - Distri	buted				~

This concludes this portion of Lab 3.

3.3 A First look at the MQ Explorer Pub/Sub Test tools

In this section you will be using the tools that come with WebSphere MQ Explorer that allow you to test publishing to and subscribing to topics.

___16. You will now be working with some pre-defined topics. From the WebSphere MQ Explorer, display topic status by right-clicking on the **Topics** folder and selecting **Status...**



____17. You are going to focus on the **sport** topic tree. Expand the "+" symbols on the **sport** topic tree and you should see something similar to the screen capture below. Notice that Publish is <u>allowed</u> for the topic string **sport/football/results/hursley**. Also, following the tree "up", you should notice that the topic string **sport/football** has the publish attribute **Inhibited**. <u>Remember this</u> as you complete the next steps of this lab. Click **Close** to dismiss the status window.

Topic stri	ing		Publish	Subscribe	Durable subscriptions	Default priority	Default persistence	Model dura
Empty]		Allowed	Allowed	Allowed	0	Not persistent	SYSTEM.DU	
① finance		Inhibited	Inhibited	Allowed	0	Not persistent	SYSTEM.DU	
E sport		Inhibited	Allowed	Allowed	0	Not persistent	SYSTEM.D	
🛨 basketball		Inhibited	Allowed	Allowed	0	Not persistent	SYSTEM.DU	
🖃 football		Inhibited	Allowed	Allowed	0	Not persistent	SYSTEM.D	
1 news		Allowed	Allowed	Allowed	0	Not persistent	SYSTEM.D	
players		Allowed	Allowed	Allowed	0	Not persistent	SYSTEM.D	
😑 results		Inhibited	Allowed	Allowed	0	Not persistent	SYSTEM.DU	
		hursley	Allowed	Allowed	Allowed	0	Not persistent	SYSTEM.DU
	Ŧ	romsey	Allowed	Allowed	Allowed	0	Not persistent	SYSTEM.D
	Ŧ	winchester	Allowed	Allowed	Allowed	0	Not persistent	SYSTEM.D
•			1		1			
			Internal of					

____18. Start a test subscription window by right-clicking on **Topics** and selecting **Test Subscription**.



____19. Type in the topic string **sport/football/#** and press the **Subscribe** button.

The "#" symbol is called the *multi-level wildcard*. The string **sport/football/#** indicates a subscription to all publications sent to the sport/football topic or any of its children. The Test Tool window remains open and the **Unsubscribe** button becomes active. Publications received will be displayed in the **Messages received** box.

🖹 Subscribe	<u> </u>
Subscribe to:	
Queue Manager:	
WMQ75	
Topic String:	
sport/football/#	
Wildcard Usage:	
Topic Level Wildcard	•
Subscribe Unsubscribe	
Messages received:	
	A

____20. **Minimize** the Subscribe window by clicking on the minimize button.

🖹 Subscribe	

___21. The Subscribe window will "park" itself at the bottom left part of the Windows desktop. You will restore this window in a later step of this lab.



___22. Right click on the Topics folder then select Status...



___23. Expand the **sport** tree. Observe the Subscription counts; sport/football and its children have a positive subscription count. You will need to scroll to the right to find the **Sub count** column. Close the topic status window.

Topic string	Publish	Subscribe	Durable subscriptions	Sub count	Pub count	Retained
+ [Empty]	Allowed	Allowed	Allowed	0	0	No
	Inhibited	Inhibited	Allowed	0	0	No
🖃 sport	Inhibited	Allowed	Allowed	0	0	No
🛨 basketball	Inhibited	Allowed	Allowed	0	0	No
🖃 football	Inhibited	Allowed	Allowed	1	0	No
🛨 news	Allowed	Allowed	Allowed	1	0	No
players	Allowed	Allowed	Allowed	1	0	No
	Inhibited	Allowed	Allowed	1	0	No
d j						
heme: Standard for To	pic Status - D	Distributed				- -

___24. From the Topic display, select the **SPORT.FOOTBALL** row, right-click and select **Topic Status – Subscribers**. This gives detailed information about subscribers to this Topic object.

opics				
Filter: Standard for Topics				
 Topic name 	Topic type	Topic string		Description
FINANCE	Local	finance		
MONEY .	Local	finance/cash/get	nance/cash/gettingit/frombanks	
SPORT .	Local	sport		
SPORT.BASKETBALL	Local	sport/basketball		
SPORT.FOOTBALL	Local	sport/football		
SPORT.FOOTBALL.NEWS	Local	sport/football/r	Compare with	
SPORT.FOOTBALL.PLAYERS	Local	sport/football/;	Delete	
SPORT.FOOTBALL.PLAYERS.HURSLEY	Local	sport/football/;	Statuc	
SPORT.FOOTBALL.PLAYERS.ROMSEY	Local	sport/football/; -	50005	
SPORT.FOOTBALL.PLAYERS.WINCHESTER	Local	sport/football/	Clear Local Ret	ained Publication
SPORT.FOOTBALL.RESULTS	Local	sport/football/	Topic Status - S	ubscribers
SPORT.FOOTBALL.RESULTS.HURSLEY	Local	sport/football/i	Topic Status - F	ublishers
SPORT.FOOTBALL.RESULTS.ROMSEY	Local	sport/football/r	Test Publication	here
SPORT.FOOTBALL.RESULTS.WINCHESTER	Local	sport/football/r	Test Subscriptio	m
		and the second damage of the	Create JMS Top	xc

___25. Observe the detailed display and then close the status screen by clicking on the **Close** button.

Resume date Resume t
D513735202020202020206818895020003801 Dec 3, 2012 1:37:56 P
1

____26. Close the **Topic Status** window by clicking **Close**.

ic status:							
Topic string	Publish	Subscribe	Durable subscriptions	Sub count	Pub count	Retained publication	NPM delivery
[Empty]	Allowed	Allowed	Allowed	0	0	No	To all availabl
finance finance	Inhibited	Inhibited	Allowed	0	0	No	To all availabl
🖃 sport	Inhibited	Allowed	Allowed	0	0	No	To all available
🕑 basketball	Inhibited	Allowed	Allowed	0	0	No	To all availabl
🖃 football	Inhibited	Allowed	Allowed	1	0	No	To all availabl
news	Allowed	Allowed	Allowed	1	0	No	To all availabl
players	Allowed	Allowed	Allowed	1	0	No	To all availabl
	Inhibited	Allowed	Allowed	1	0	No	To all availabl
<u> </u>	•						2
Scheme: Standard for Topic Status	- Distribute	d					~

___27. Now you will <u>publish</u> a message. Returning to the Topic list, select the **SPORT.FOOTBALL** row, right-click and then select **Test Publication**.

MQ Explorer - Content 🛛							
Topics	Topics						
Filter: Standard for Topics							
 Topic name 		Topic type	Topic				
FINANCE		Local	finan				
MONEY	Local	finan					
SPORT 3	SPORT						
SPORT.BASKETBALL	SPORT.BASKETBALL						
SPORT.FOOTBALL		Local	sport				
SPORT.FOOTBALLINEWS	Compare with						
SPORT.FOOTBALL.PLAYER	Delete						
SPORT.FOOTBALL.PLAYER	Status						
SPORT.FOOTBALL.PLAYER							
SPORT.FOOTBALL.PLAYER	Clear Local Reta	ined Publicati	ion				
SPORT.FOOTBALL.RESUL1	Topic Status - Su	ubscribers					
SPORT.FOOTBALL.RESUL1	Topic Status - Pu	ublishers					
SPORT.FOOTBALL.RESULT	Test Publication.	••					
SPORT.FOOTBALL.RESUL1	Test Subscription	n					
	Create JMS Topi	c					

____28. This dialog will publish a message to the topic string **sport/football**.

🖹 Publish Test Message	
Publish message to:	
Queue Manager:	
WMQ75	
Topic String:	
sport/football	
Message data:	
Retained message	
Publishing a retained message could overwrite an exist	ing retained publication
Publish m	essage Close

- ___29. Before entering a message and sending it, you will arrange the windows on the screen.
- ____30. Locate the **Subscribe** Test Tool window where you previously subscribed to **sport/football/#**. Click on the Restore window button to restore the window. Now position the **Publish Test Message** and the restored **Subscribe** test tool windows so they both are visible. Then return focus to the **Publish** window.



___31. Type a message such as **Hello World** and then press **Publish Message**.

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__32. An error occurs because the topic object for **sport/football** is **publish-inhibited**; you'll recall that we saw that this was set earlier in the lab. But this will not inhibit our subscribers; we used the multi-level wildcard to subscribe to topics at and below "sport/football" in the topic tree, so we will be subscribing to items published lower in the hierarchy.

🖹 Publish Test Message	Subscribe	
Publish message to:	Subscribe to:	
Queue Manager:	Queue Manager;	
WMQ75	WMQ75	
Topic String:	Topic String:	
sport/football	sport/football/#	
	Wildcard Usage:	
Message data:	Topic Level Wildcard	
Retained message	Subscribe	
① Publishing a retained message could overwrite an exit	isting retained publication Messages received:	2
	Message Close	2 2
Scheme: Standard f	Last subscribed at 13:37:56	Close

33. Click on Close to dismiss the error popup.



__34. In the Publish Test Message window, overtype the topic string to **sport/football/news/hursley** and click on **Publish message**. You have published and subscribed your first message!



Dynamically Created Topic Objects

These dynamically created Topic objects are temporary and only exist for a limited amount of time before the Queue Manager removes them; for example if you restart the Queue Manager, they will no longer exist.

😫 Publish Test Message	_ 🗆 ×	B Subscribe	_ 🗆 🗙
Publish message to:		Subscribe to:	
Queue Manager:		Queue Manager:	
WMQ75		WMQ75	
Topic String:		Topic String:	
sport/football/news/hursley		sport/football/#	
Number of States		Wildcard Usage:	
Message data:		Topic Level Wildcard	· •
Retained message Publishing a retained message could overwrite an existing retained p	ublication	Subscribe Unsubscribe Messages received: Time: 17:17:25 Topic String: sport/football/news/hursley Message: Hello World	
Publish message	Close	<u>g</u> ear	*
•		Last subscribed at 13:37:56	
Scheme: Standard for Topics - Distr	ibuted		Qose

___35. Now try publishing to **sport/football/news/hursley/fundraising/raffle**. The message is sent to the subscriber. New levels of the hierarchy have been created automatically.

🖹 Publish Test Message		B Subscribe	_ 🗆 X
Publish message to:		Subscribe to:	
Queue Manager:		Queue Manager:	
WMQ75		WMQ75	
Topic String:		Topic String:	
sport/football/news/hursley/fur	ndraising/raffle	sport/football/#	
Manager datas		Wildcard Usage:	14
Message data:		Topic Level Wildcard	
Retained message		Subscribe	
(i) Publishing a retained message	e could overwrite an existing retained publication	Messages received:	
		Topic String: sport/football/news/hursley Message: Hello World	-
Last published at 17:23:42	Publish message Close	Time: 17:23:42 Topic String: sport/football/news/hursley/fundraising/raffle Message: Hello New Topic String	
	SPORT.FOOTBALL.RESULTS.WINCHESTER		Ŧ
	at	glear	
	Scheme: Standard for Topics - Distributed	Last subscribed at 13:37:56	
	Last updated: 17:23:59 (14 items)		Close

___36. Now try publishing to **sport/football/rules/offside**. The publish attempt failed! That is because the node in the topic tree that is dynamically created automatically inherits the properties of the parent **sport/football** – which has its Publish attribute Inhibited. Click on **Close** to close the error popup.

Publish Test Message	_ 🗆 🗶 🖻 Subscr	ibe	- 🗆 ×
Publish message to: Queue Manager:	Subscrib	e to:	
WMQ75	WMQ	5	
Topic String:	Topic S	ring:	
sport/football/rules/offside	sport/	football/#	
	Wildcan	d Usage:	
Message data:	Topic L	evel Wildcard	•
Retained message Retained message			
IBM WebSphere MQ Last published a An error occurred when publishing a message on the failed with reason code 2051. (AMQ4483)	e topic. The operation	Sport/football/news/hursley Ilo World 42 sport/football/news/hursley/fundraising/raffle Ilo New Topic String	
	Close Details >		1
×			
Scheme: Standard for Topics - Distributed Last updated: 17:26:44 (14 items)	d Last subs	cribed at 13:37:56	glose

___37. Return to the Topic object display. Once again open the Topic status list and expand the **sport** hierarchy. You will see the automatically created elements. Click on **Close** to close the status window.

ic status;							
Topic string		Publish	Subscribe	Durable subscriptions	Default persistence	Model durable queue	Model non-durable
Empty]		Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
		Inhibited	Inhibited	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
🖃 sport		Inhibited	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
🗄 baske	etball	Inhibited	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
🖃 footb	all	Inhibited	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
🖃 n	ews	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
	hursley	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
	🖃 fundraising	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
	raffle	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
Ξp	layers	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
(+ hursley	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
6	+ romsey	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
	winchester	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
🖃 ra	esults	Inhibited	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
(+ hursley	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
0	+ romsey	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
-	+ winchester	Allowed	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
🖃 n	ules	Inhibited	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
	offside	Inhibited	Allowed	Allowed	Not persistent	SYSTEM.DURABLE	SYSTEM.NDURABLE
+ sportoot	ball	Allowed	Allowed	Allowed	Not persistent	SYSTEM, DURABLE	SYSTEM.NDURABLE
•		1		14			
•	nderd for Tonis Status			1			

This concludes this portion of Lab 3.

3.2 Administered Subscriptions

While it is typical for subscribers to register their own subscriptions, it is possible to administratively register a subscription using WebSphere MQ Explorer. This is a subscription to a topic string that delivers messages to a queue. This can be very useful because it is a way for a legacy program which was designed as a point-to-point application to read a queue associated with a topic; in this way it can participate in publish/subscribe without changing the program. You will now explore how such a subscription can be set up and used.

___38. In the WebSphere MQ Explorer, select **Queues**. Right-click and select **New → Local Queue**.



_39. Name the queue **ALL_FOOTBALL_Q** and press **Finish**.

🕀 New Local Queue	
Create a Local Queue	
Enter the details of the object you wish to create	
Name:	<u> </u>
ALL_FOOTBALL_Q	
Select an existing object from which to copy the a	tributes for the new object.
SYSTEM.DEFAULT.LOCAL.QUEUE	<u>Select</u>
When this wizard completes, another wizard can Start wizard to create a matching JMS Queue	se started automatically to create a matching object.
?	< Back Next > Finish Cancel

_40. Click **OK** to close the confirmation dialog.



_41. Select **Subscriptions**, right-click and select **New** \rightarrow **Subscription**.



___42. Type ALL_FOOTBALL_SUB as the subscription name and then click Next.

Wew Subscription	
Create a Subscription	
Enter the details of the object you wish to create	
Name:	
ALL_FOOTBALL_SUB	
Select an existing object from which to copy the attributes for the new object.	
SYSTEM.DEFAULT.SUB	Select
, 	
< Back Next > Finish	Cancel

___43. Leave the Topic Name blank, and enter **sport/football/#** as the Topic string. Leave the Destination Queue Manager blank and enter **ALL_FOOTBALL_Q** in the Destination Name. Then click **Finish**.

Subscription name: ALL_FOOTBALL_SUB	
Topic Topic name:	
Topic name:	
Topic string: sport/football/#	
Wildcard usage: Topic level wildcard	
Scope:	
Destination	
Destination class: Provided	
Destination queue manager:	
Destination name: ALL_FOOTBALL_Q	
	the Property and a Wale will be a Wale of a first of the other first

44. Click **OK** to close the confirmation window.



___45. The new administrative subscription appears.

🚰 MQ Explorer - Navigator 🕴 🗖 🗖	MQ Explorer - Content							
🧼 🖻 🖉	Subscriptions							
E 💮 IBM WebSphere MQ								
ि 😓 Queue Managers	Filter: Standard for Subscrip	otions						
	Subscription name	Topic name	Topic string	Scope	Destination class	Destination name	Durable	Type
- Courses	ALL_FOOTBALL_SUB		sport/football/#	All	Provided	ALL_FOOTBALL_Q	Yes	Admin
- Topics				-				
Subscriptions								
🕀 🇁 Channels								
- Cisteners								
🦢 Services								
Namelists		-						
Communication Information							-	
Security Policies								
Queue Manager Clusters								
Image:								

Double-click on the new subscription to see its attributes.

___46. The attributes of the new subscription are displayed.

Seneral Extended	General	
Statistics	Subscription name: ALL_FOOTBALL_SUB Topic Topic name: Topic string: sport/football/# Wildcard usage: Topic level wildcard Scope: All Destination Destination dass: Destination queue manager: Provided Destination name: ALL_FOOTBALL_Q Correlation identifier: 00000 41 4D 51 20 7 +D 51 373 0010 6B 18 B9 50 20 01 4 E Edition Edition Edition Edition Edition Edition	
	Durable: Ves	
	Type: Admin	
	Properties: Message properties	1
	User data:	_
	Selector:	_
	Selector type: None Apply	

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This subscription will now route all qualifying messages to the local queue ALL_FOOTBALL_Q.

___47. Close the properties window by clicking on **Cancel**.

This concludes this portion of Lab 3.

3.5 Testing Publications and Subscriptions from the command line

You will now use two more sample programs that are supplied with WebSphere MQ to further test WebSphere MQ publish and subscribe capabilities, called amqspub and amqssub.

__48. A folder on the desktop contains four shortcuts that will start two instances of a publishing sample and two subscribers. Open the folder and then double-click each shortcut to launch the programs.





If you receive an Open File - Security Warning, click on Run.



____49. Arrange the windows as shown, so that you can see all of them at them same time. The top two windows are the *topic publishers* (amqspub) Each time you type text into either window, the windows on the bottom, the *topic subscribers* (amqssub) will receive the text as published messages because the topic string that they are subscribing to matched the one being used by the publishers.



Subscriber Timeout

The amqssub program times out after 30 seconds if no messages arrive. If your window times out, just double-click the command again to restart the program..



__50. Now in the top <u>left</u> window (publishing to **sport/football/news/hursley**) enter "**test message 1**" and press Enter. The message should appear in *both* subscribing windows because the published message matched both subscriptions.

Again in the top left window type the text Hursley News and then press Enter.

In the top <u>right</u> window type the text **Football News** and press **Enter**. Notice that the **sport/football/#** subscription gets <u>both</u> publications. This is because when you subscribed you used a *multi-level wildcard* (#) to indicate that you were interested in messages published to the **sport/football** topic or any of its children, so you will get both messages.

Example Publish sport-football-news-hursley		ex Publish sport-football-news	_ 🗆 ×
C:\Student\Scripts>AMQSPUB sport/football/news/hursley Sample AMQSPUBA start target topic is test message 1 Hursley News		C:\Student\Scripts>AMQSPUB sport/football/news Sample AMQSPUBA start Servet Spie is sport/football/news Football News	4
•	<u> </u>	4	2 /
Subscribe # - hursley	_ 🗆 ×	Subscribe sport-football-#	
C:\Student\scripts>AMQSSUB #/hursley Sample AMQSSUBA start Calling MGCET - 30 seconds wait time message (fest message 1) Calling MGCET : 30 seconds wait time message (Hursley News) Calling MGLET : 30 seconds wait time		C:\Student\scripts>AMQSSUB sport/football/# Sample AMQSSUBA start Calling MQCET : 30 seconds wait time message (test message 1) Calling MQCET : 30 seconds wait time message (Football News) Calling MQCET : 30 seconds wait time message (Hursley News) Calling MQCET : 30 seconds wait time	
4	•	X C	•

On the other hand, the **#/hursley** subscription gets only one.

__51. Return to the Subscriptions view in the WebSphere MQ Explorer. Select the ALL_FOOTBALL_SUB subscription, right-click and select Status.



__52. The message count should have a count of the messages that were published on this topic. Click on **Close** to close the status window.

14D5120574D513735202020202020206 IUSR_MQADMIN
IUSR_MQADMIN
es
dmin
000000000000000000000000000000000000000
ec 6, 2012
:20:11 PM
ec 6, 2012
:23:41 PM
Status - Distributed 🗸 🗸

__53. Right-click on the queue **ALL_FOOTBALL_Q** and select **Browse Messages**.

📽 MQ Explorer - Navigator 🛛 📃 🗖	MQ Explorer - Content	×								
🤣 🗐 🗸	Queues									
E bit webshire mg E → Queue Managers E → Queue Managers E → Queues	Filter: Standard for Queues									
	Queue name	Queue type	Open input count	Open output count	t Current queue de		h Put mess			
	ALL_FOOTBALL_Q	Local	0	0	3		Allowed			
- Dopics	IMS1	Local	0	0	1	Compare wit	h			
- Subscriptions						Delete Status				
Cemetry Cemetry Cemetry Cemetry Cemetry Cemetry						Clear Messag Put Test Mes	ges ssage			
Process Definitions						Browse Mess	sages			
Namelists						Create JMS	Queue			

__54. You should see three messages on the queue (or as many as you put in the amqspub test). Select one of the messages, right-click and choose **Properties**.

Position	Put date/time Dec 3, 2012 6:45:30 PM	User identifier MUSR_MQADMIN	Put application name WMQ75	Format MOSTR	Data length 106	Message data test message 1	Accounting 160105150
2 3 3	Dec 3, 2012 6:45:39 PM Dec 3, 2012 6:45:46 PM	MUSR_MQADMIN MUSR_MQADMIN	WMQ75 Co WMQ75 Pr	ompare with		Hursley News Football News	160105150 160105150
•							2
Scheme: Standar	d for Messages						0
Last updated: 19	: 14: 14 (3 items)						

__55. Click on the **Named Properties** tab. From this display you can see the originating topic string.

Nessage 1 - Properties		×
General Report	Named Properties	
Identifiers	Name	Value
Segmentation Named Properties Data	mqps.Top	sport/football/news/hursley
?		Glose

___56. Close the four or five open command windows as you will no longer need them.

This concludes Lab 3.