

WMQ V7 Publish/Subscribe Admin

Jane Li, lihui@cn.ibm.com

IBM CDL MQ L2 support , May 2011



Agenda

- ◆ Pub/Sub concept
- ◆ Topic tree/Topic string
- ◆ Pub/Sub related object configuration/monitor



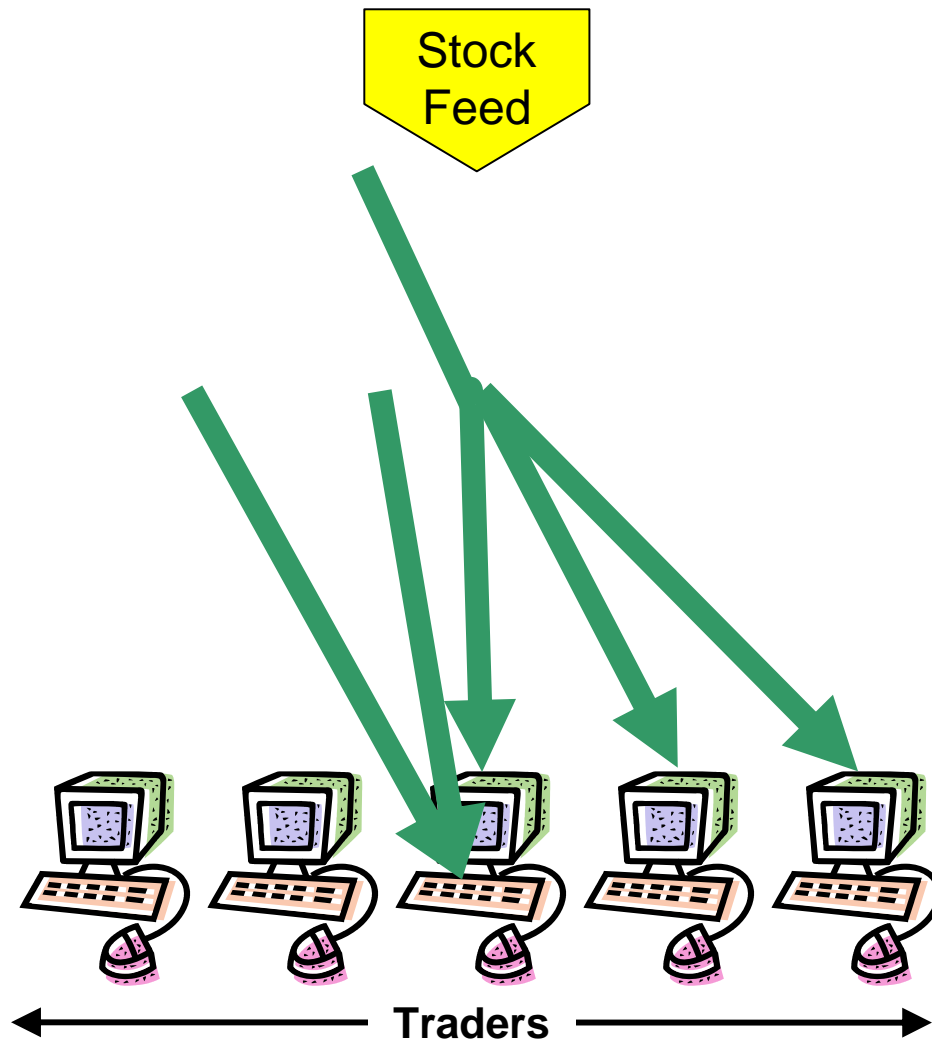
What is Publish/Subscribe ?

Publish/Subscribe is a term used to define an application model in which the provider of some information is decoupled from the consumers of that information.

- providers of information need have no knowledge of consumers
- consumers of information need have no knowledge of providers
- new providers/consumers can be added without disruption
- Providers of information are called **publishers**
- Consumers of information are called **subscribers**

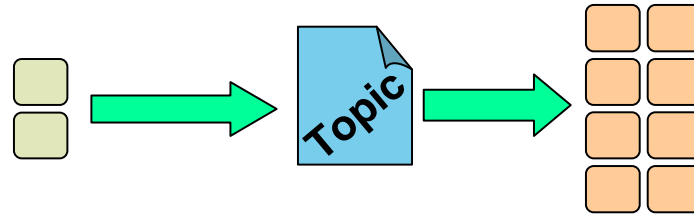


The classic example

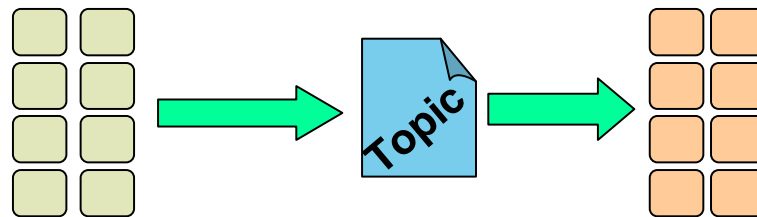


- A "feed" provides a continuous flow of information which is pushed to interested parties
- Traders consume this information and use it as a basis for the buying and selling stock

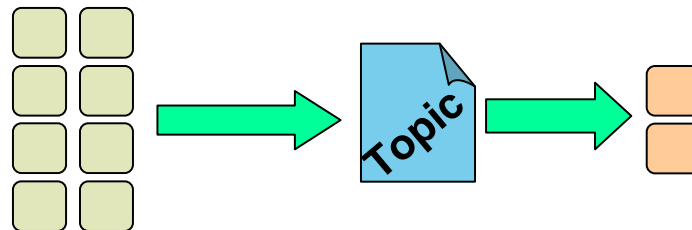
Loose-coupling with Publish/Subscribe



Few-to-many: Research, news



Many-to-many: Prices and Quotes



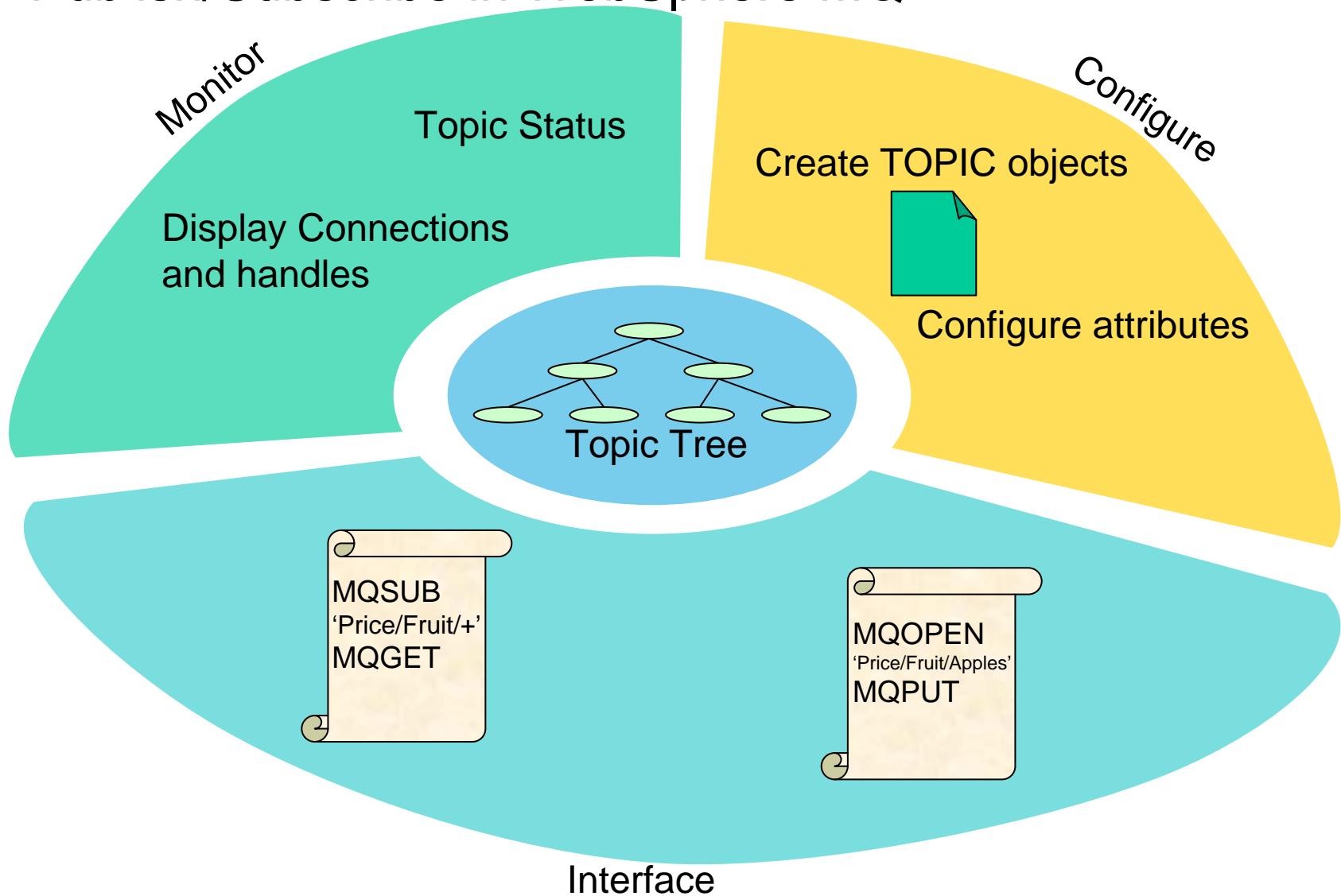
Many-to-few: Orders

Publications and subscriptions

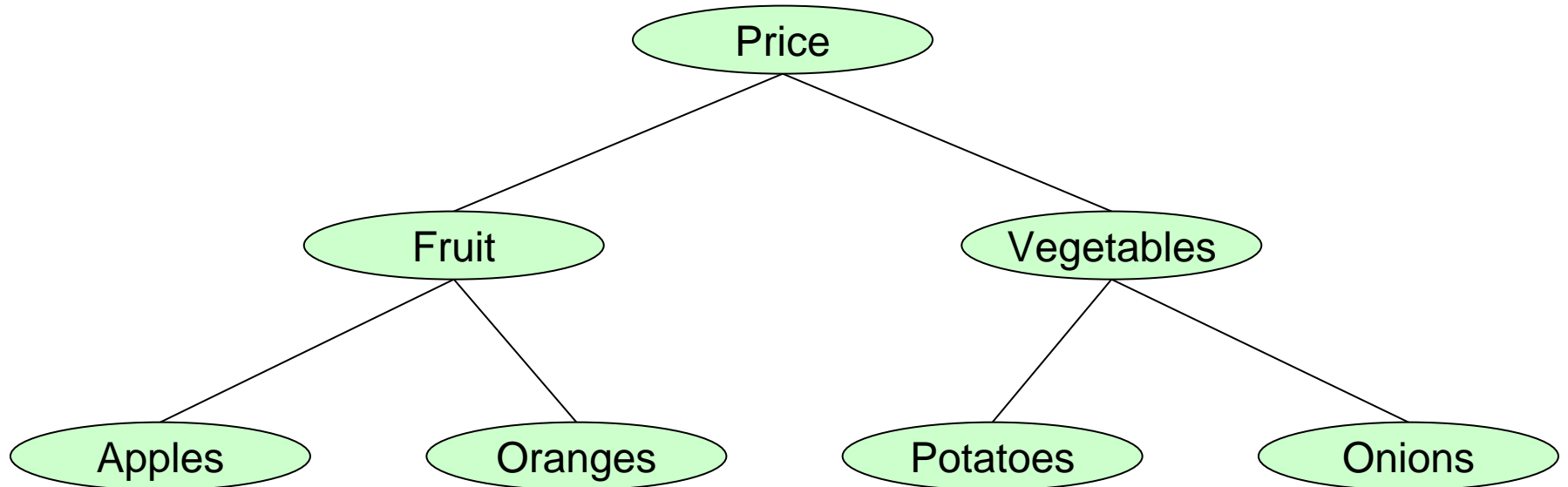
- Subscribers make **subscriptions** with the queue manager to register their interest in information relating to specific topics.
 - ▶ They use the MQSUB verb
- Publishers provide information about specific topics by sending **publications** to the queue manager
 - ▶ They use the MQPUT verb
- The queue manager forwards each publication it receives to all subscribers with a subscription which matches the associated topic



Publish/Subscribe in WebSphere MQ



Topic strings and topic tree



Price/Fruit/Apples

Price/Fruit/Oranges

Price/Vegetables/Potatoes

Price/Vegetables/Onions

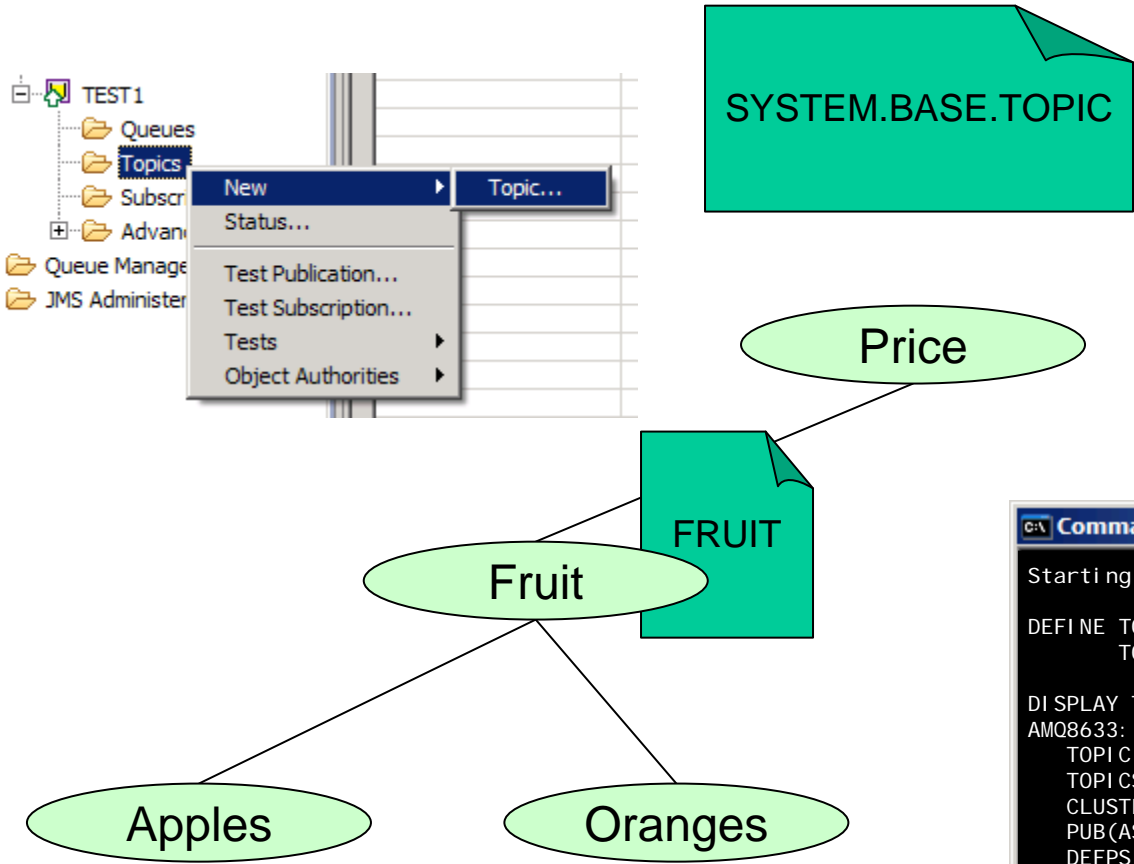
Topic Objects

- Not necessary for Publish/Subscribe
- Provide an administrative control point for your topic tree
 - ▶ Configuration attributes
 - ▶ Security profiles
 - ▶ Topic tree isolation



MY.TOPIC.OBJECT

Defining a topic object



DEFINE TOPIC
ALTER TOPIC
DELETE TOPIC
DISPLAY TOPIC

```
Command Prompt - runmqsc TEST1
Starting MQSC for queue manager TEST1.

DEFINE TOPIC(FRUIT)
  TOPICSTR('Price/Fruit') DURSUB(NO)

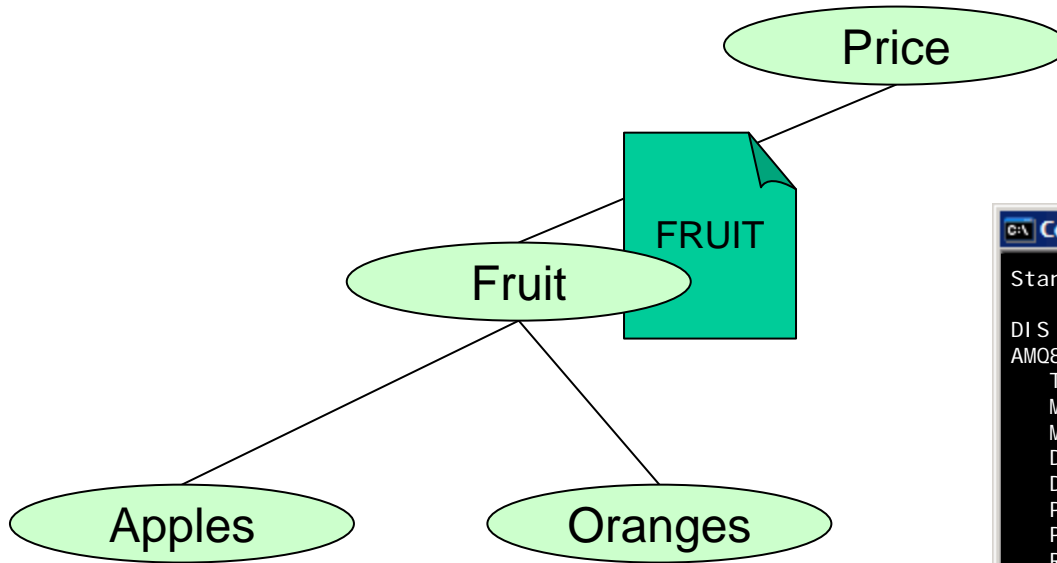
DISPLAY TOPIC(FRUIT)
AMQ8633: Display topic details.
      TOPIC(FRUIT)                TYPE(LOCAL)
      TOPICSTR(Price/Fruit)       DESCR( )
      CLUSTER( )                  DURSUB(NO)
      PUB(ASPARENT)               SUB(ASPARENT)
      DEFPSIST(ASPARENT)          DEFPRTY(ASPARENT)
      DEFPRESP(ASPARENT)          ALTDATE(2008-02-26)
      ALTTIME(15.05.22)           PMSGDLV(ASPARENT)
      NPMSGDLV(ASPARENT)         PUBSCOPE(ASPARENT)
      SUBSCOPE(ASPARENT)         PROXYSUB(FIRSTUSE)
      WILDCARD(PASSTHRU)         MDURMDL( )
      MNDURMDL( )
```

Resolving ASPARENT

Topic status:

Topic string	Publish	Subscribe	Admin topic name	Durable subscriptions
/				
Price	Allowed	Allowed		Allowed
Fruit	Allowed	Allowed	FRUIT	Inhibited
Apples	Allowed	Allowed		Inhibited
Oranges	Allowed	Allowed		Inhibited

DISPLAY TPSTATUS



```

C:\> Command Prompt - runmqsc TEST1

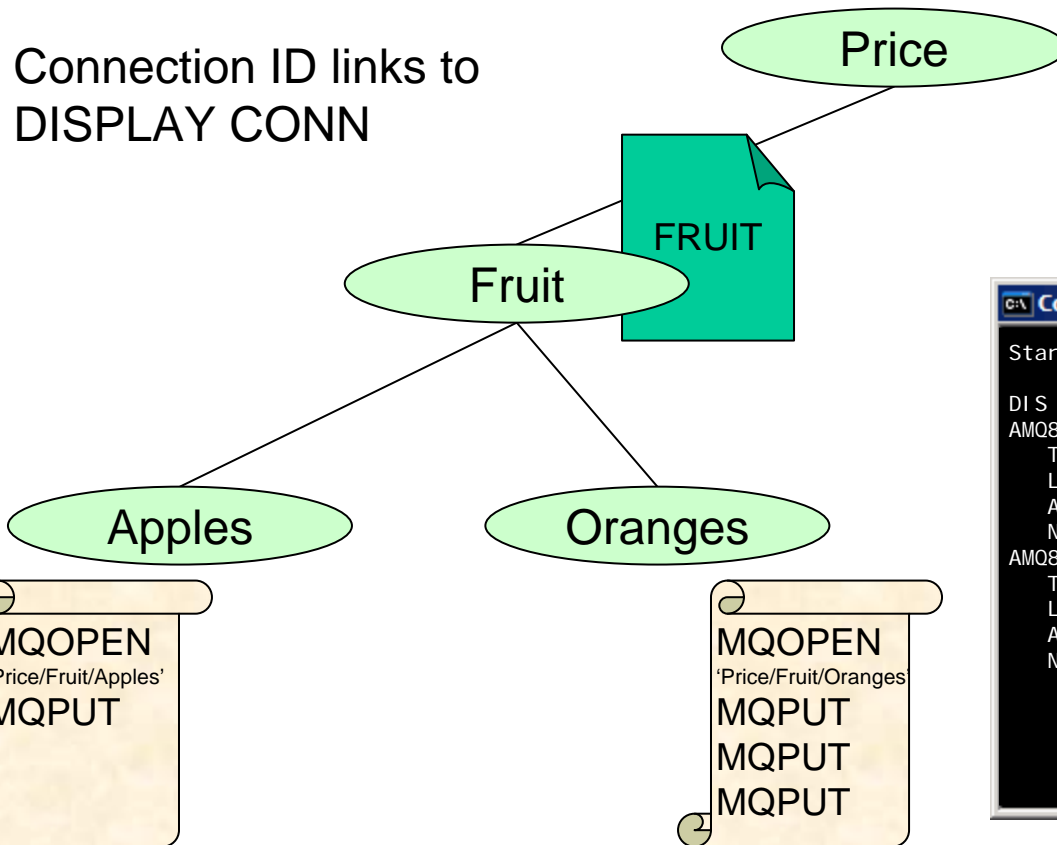
Starting MQSC for queue manager TEST1.

DIS TPSTATUS('Price/Fruit')
AMQ8754: Display topic status details.
  TOPICSTR(Price/Fruit)                ADMIN(FRUIT)
  MDURMDL(SYSTEM.DURABLE.MODEL.QUEUE)
  MNDURMDL(SYSTEM.NDURABLE.MODEL.QUEUE)
  DEFPSIST(NO)                          DEFPRTY(0)
  DEFPRESP(SYNC)                         DURSUB(NO)
  PUB(ENABLED)                           SUB(ENABLED)
  PMSGDLV(ALLDUR)                         NPMSGDLV(ALLAVAIL)
  RETAINED(NO)                            PUBCOUNT(0)
  SUBCOUNT(0)                            PUBSCOPE(ALL)
  SUBSCOPE(ALL)
  
```

Administration for Publishers

Topic string	Date of last publication	Time of last publication	Publish count	Connection ID
Price/Fruit/Oranges	26-Feb-2008	16:50:44	3	414D51435...

Connection ID links to
DISPLAY CONN



TOPIC attributes

DEFPRTY
DEFPSIST
DEFPRESP
PUB
PUBSCOPE
PMSGDLV
NPMSGDLV

```

C:\> Command Prompt - runmqsc TEST1

Starting MQSC for queue manager TEST1.

DIS TPSTATUS('Price/Fruit/+' ) TYPE(PUB) all
AMQ8754: Display topic status details.
  TOPICSTR(Price/Fruit/Oranges)          LPUBDATE(2008-02-26)
  LPUBTIME(16:50:44)
  ACTCONN(414D514354455354312020202020202020832AC44720005E02)
  NUMPUBS(3)
AMQ8754: Display topic status details.
  TOPICSTR(Price/Fruit/Apples)           LPUBDATE(2008-02-26)
  LPUBTIME(16:50:37)
  ACTCONN(414D514354455354312020202020202020832AC44720007601)
  NUMPUBS(1)
    
```

IBM WebSphere MQ Explorer

File Window Help

WebSphere MQ Explo WebSphere MQ Explorer - Content

Topics

Filter: Default for Topics

TEST1 - Status

Queue Manager: TEST1

Topic status:

Topic string	Publish	Subsc
/		
Price	Allowed	Allowe
Fruit	Allowed	Allowe
Apples	Allowed	Allowe
Orang	Allowed	Allowe

Compare with...
Clear Local Retained
Clear Global Retained
Topic Status - Subscr
Topic Status - Publish
Test Publication...
Test Subscription...
Properties...

Scheme: Default for Topic Status - Distribu
Table last refreshed: 18:21:33

Price/Fruit/Oranges - Status

Queue Manager: TEST1 Topic Name: Price/Fruit/Oranges

Topic status - publishers for the topic "Price/Fruit/Oranges":

Filter: Default for Topic Status - Publisher

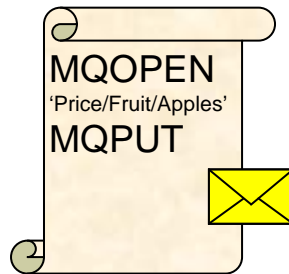
Topic string	Date of last publication	Time of last publication	Publish count	Connection ID
Price/Fruit/Oranges	26-Feb-2008	16:50:44	3	414D514354455...

Scheme: Default for Topic Status - Publisher - Distributed
Last updated: 18:25:28

Refresh Close

Configuring Behaviour on Failure

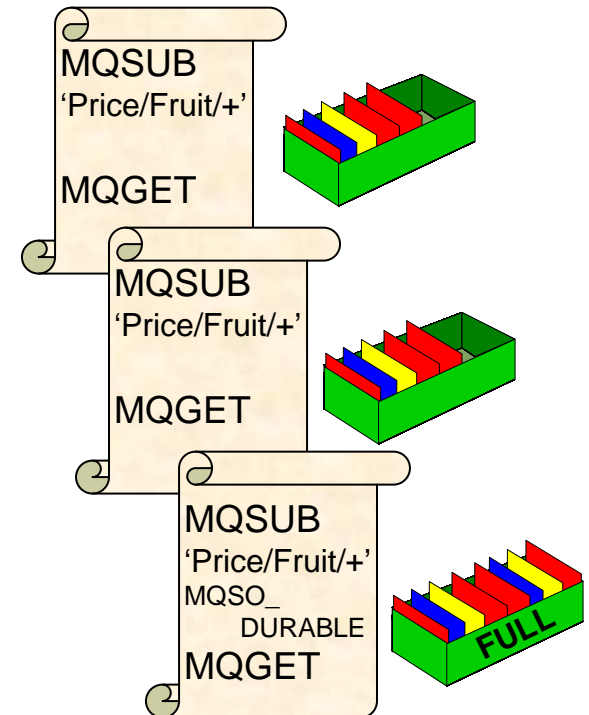
MSGDLV	Behaviour
ALL	If one failure – no-one gets it
ALLDUR	Any failure to a durable subscriber – no-one gets it
ALLAVAIL	Failures don't affect the delivery to subscribers who can accept it



MQRC_PUBLICATION_FAILURE

TOPIC attribute defaults

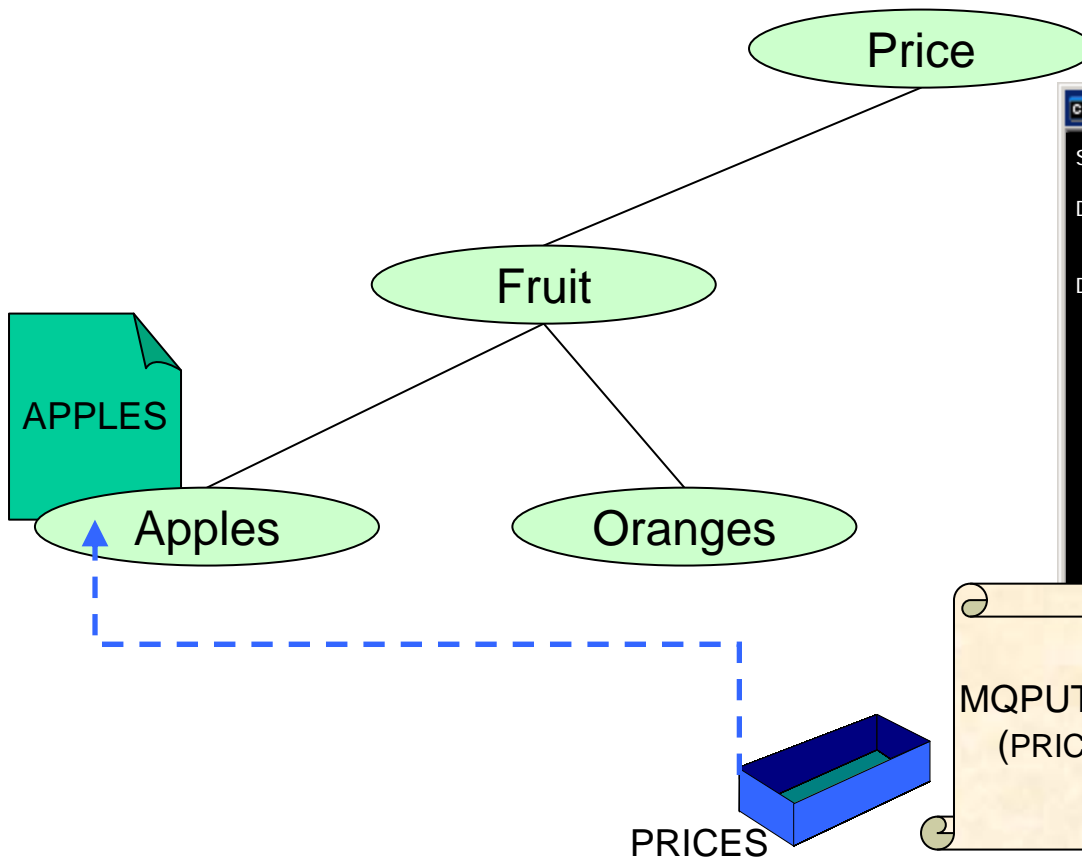
PMSGDLV (ALLDUR)
NPMMSGDLV (ALLAVAIL)



Alias Queues

Base object:

Base type:

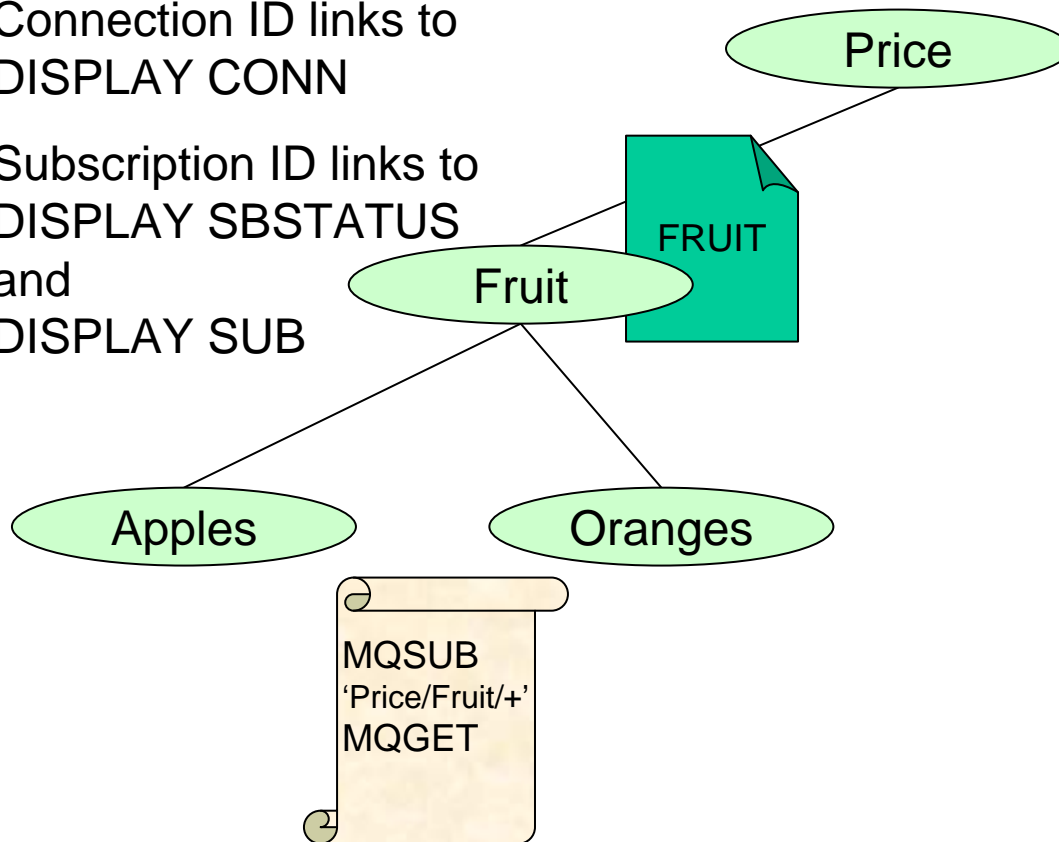


```
C:\ Command Prompt - runmqsc TEST1
Starting MQSC for queue manager TEST1.
DEFINE TOPIC(APPLES)
TOPICSTR(' Price/Fruit/Apples')
DEFINE QALIAS(PRICES)
TARGETTYPE(TOPIC)
TARGET(APPLES)
```

Topic Administration for subscriptions

Connection ID links to
DISPLAY CONN

Subscription ID links to
DISPLAY SBSTATUS
and
DISPLAY SUB



TOPIC attributes

DURSUB

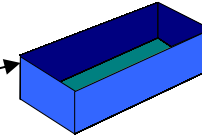
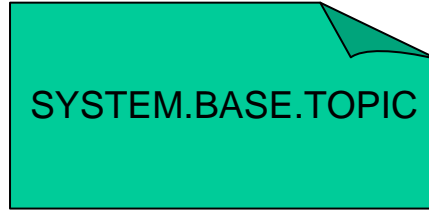
SUB

SUBSCOPE

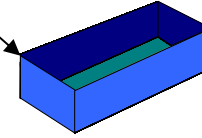
PROXYSUB

WILDCARD

Configuring managed destinations



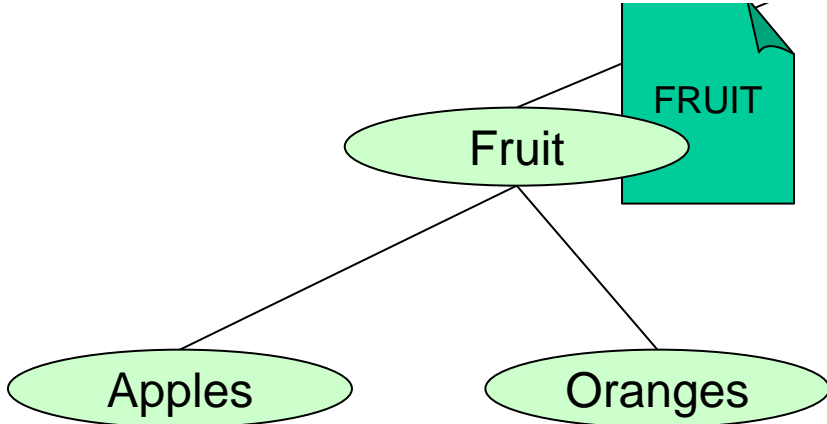
Durable Model
DEFTYPE(PERMDYN)



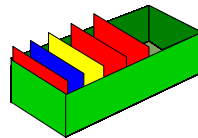
Non-durable Model
DEFTYPE(TEMPODYN)

TOPIC attributes

MDURMDL(SYSTEM.DURABLE.MODEL.QUEUE)
MNDURMDL(SYSTEM.NDURABLE.MODEL.QUEUE)



MQSUB
'Price/Fruit/+'
MQSO_MANAGED
MQSO_DURABLE
MQGET



SYSTEM.MANAGED.DURABLE.47C42A83095D0220

```

C:\ Command Prompt - runmqsc TEST1
Starting MQSC for queue manager TEST1.

DIS SUB(*)
AMQ8096: WebSphere MQ subscription inquired.
SUBID(414D51205445535431202020202020202020832AC44720028105)
SUB(Fruit/Prices)                                TOPICSTR(Price/Fruit/+)
DEST(SYSTEM.MANAGED.DURABLE.47C42A8304810220)
DESTQMGR(TEST1)
DESTCLAS(MANAGED)                                DURABLE(YES)
SUBTYPE(API)
    
```

Creating administrative subscriptions

The screenshot shows the IBM MQSC interface for a queue manager named TEST1. The 'Subscriptions' folder is selected, and the 'New' menu is open, showing the 'Subscription...' option. A table displays the following subscriptions:

Subscription name	Topic string	Type
APPLES.TO.Q1	Price/Fruit/Apples	Admin
Fruit Prices	Price/Fruit/+	API

The 'Type' column is circled in red. Below the table, a diagram illustrates a topic tree structure:

- Price (oval)
- Fruit (oval) - connected to Price by a solid line
- Apples (oval) - connected to Fruit by a solid line
- Oranges (oval) - connected to Fruit by a solid line
- FRUIT (green document icon) - connected to Fruit by a solid line
- A dashed green line connects Apples to a box containing colored blocks (red, yellow, blue, green).
- A scroll icon labeled 'MQGET (Q1)' is positioned near the box.

A Command Prompt window titled 'Command Prompt - runmqsc TEST1' shows the following commands:

```
Starting MQSC for queue manager TEST1.  
DEFINE SUB(APPLES.TO.Q1)  
TOPICSTR(' Price/Fruit/Apples')  
DEST(Q1)
```

Below the Command Prompt, a list of MQSC commands is displayed:

- DEFINE SUB
- ALTER SUB
- DELETE SUB
- DISPLAY SUB

Displaying a subscription

The screenshot shows the 'Fruit Prices - Properties' dialog box with the following fields and callouts:

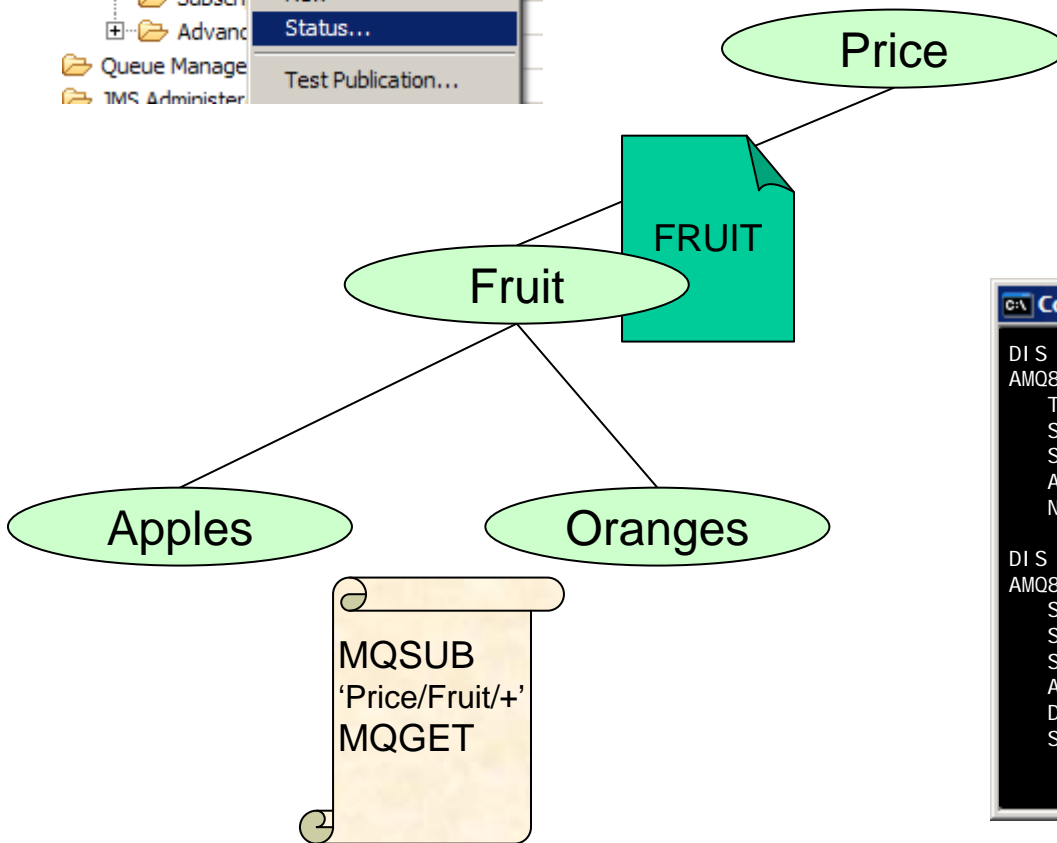
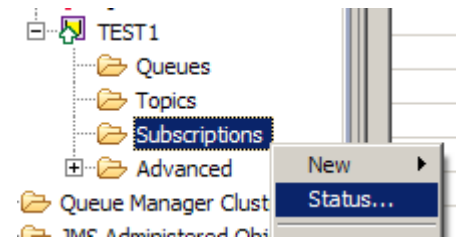
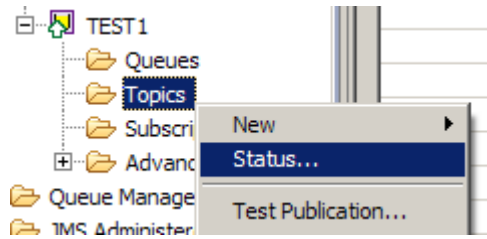
- Subscription name:** Fruit Prices (Callout: MQSD.SubName)
- Topic:**
 - Topic name: (Callout: MQSD.ObjectName)
 - Topic string: Price/Fruit/+ (Callout: MQSD.ObjectString)
- Wildcard usage:** Topic level wildcard (Callout: MQSO_WILDCARD_CHAR, MQSO_WILDCARD_TOPIC)
- Scope:** All (Callout: MQSO_MANAGED or not)
- Destination:**
 - Destination class: Provided (Callout: MQSO_MANAGED or not)
 - Destination queue manager: TEST1 (Callout: MQSUB hObj parameter)
 - Destination name: Q1 (Callout: MQSUB hObj parameter)
 - Correl ID:

00000	41	4D	51	20	54	45	53	54	--	31	20	20	20	20	20	20	20
00010	83	2A	C4	47	20	02	15	03	--								

(Callout: MQSD.SubCorrelld)
- Durable:** Yes (Callout: MQSO_DURABLE or not)
- Type:** API (Callout: MQSO_DURABLE or not)
- Properties:** None (Callout: MQSD.SubUserData)
- User data:** (Callout: MQSD.SubUserData)
- Selector:** (Callout: MQSD.SelectionString)



Subscriptions – two perspectives



```

C:\> Command Prompt - runmqsc TEST1
DIS TPSTATUS('Price/Fruit/+') TYPE(SUB) ALL
AMQ8754: Display topic status details.
TOPICSTR('Price/Fruit/Oranges')
SUBID(414D51205445535431202020202020832AC44720013D07)
SUBUSER(hughson) DURABLE(NO)
ACTCONN(414D51435445535431202020202020832AC44720013D05)
NUMMSGS(2) SUBTYPE(API)

DIS SBSTATUS SUBID(414D51205445535431202020202020832AC44720
AMQ8099: WebSphere MQ subscription status inquired.
SUB('Fruit Prices')
SUBID(414D51205445535431202020202020832AC44720013D07)
SUBUSER(hughson)
ACTCONN(414D51435445535431202020202020832AC44720013D05)
DURABLE(NO) NUMMSGS(5)
SUBTYPE(API)
    
```

DISPLAY CONN additions

```

C:\> Command Prompt - runmqsc TEST1

Starting MQSC for queue manager TEST1.

DIS CONN(832AC44720031B01) TYPE(ALL)
AMQ8276: Display Connection details.
CONN(832AC44720031B01)
EXTCONN(414D5143544553543120202020202020)
APPLTAG(D:\q.exe)          APPLTYPE(USER)
ASTATE(NONE)              CONNOPTS(MQCNO_SHARED_BINDING)
USERID(hughson)

OBJNAME( )                OBJTYPE(TOPIC)
OPENOPTS(MQOO_OUTPUT, MQOO_FAIL_IF_QUIESCING)
HSTATE(INACTIVE)         READA(NO)
TOPICSTR(Pri ce/Fru it /Appl es)
    
```

```

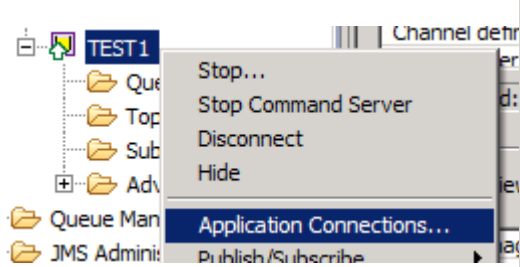
C:\> Command Prompt - runmqsc TEST1

Starting MQSC for queue manager TEST1.

DIS CONN(832AC44720032101) TYPE(HANDLE)
AMQ8276: Display Connection details.
CONN(832AC44720032101)

OBJNAME( )                OBJTYPE(TOPIC)
DEST(SYSTEM.MANAGED.DURABLE.47C42A8305820320)
DESTQMGR(TEST1)          SUBNAME(Fruit Prices)
SUBID(414D51205445535431202020202020202020832AC44720032103)
TOPICSTR(Pri ce/Fru it /+)

OBJNAME(SYSTEM.MANAGED.DURABLE.47C42A8305820320)
OBJTYPE(QUEUE)
OPENOPTS(MQOO_INPUT_EXCLUSIVE, MQOO_BROWSE, MQOO_INQUIRE)
HSTATE(ACTIVE)           READA(NO)
    
```



Queue manager objects accessed by application "D:\q.exe":

Object name	Topic string	Object type	Open options	Handle state	Asynchronous state	Read ahead
	Price/Fruit/Oranges	Topic	Output, Fail if quiescing	Inactive	Inactive	No

Queue manager objects accessed by application "D:\q.exe":

Object name	Topic string	Object type	Subscription name	Subscription ID	Destination name
	Price/Fruit/+	Topic	Fruit Prices	414D51205445535431202020202020202020832AC44720038206	SYSTEM.MANAGED.DURABLE.47C42A8305820320
	SYSTEM.MANAGED.DURABLE.47C42A8305820320	Queue			

More Information about WMQ V7 Pub/Sub

- Info center: **Publish/Subscribe User's Guide**
- **Techcast :Installation and Migration of WebSphere MQ V7 including Publish/Subscribe Configuration**
- **Techcast:Integrating WebSphere MQ V7 Publish/Subscribe Feature with WebSphere DataPower**
- **Techcaset:WebSphere® MQ V7 Publish/Subscribe Troubleshooting Tools & Techniques**

Techcast website:

- http://www-111.ibm.com/search/SupportSearchWeb/SupportSearch?action=search&pageCode=SBSXP&pageNumber=1&brand=websphere&sortBy=3&hide_desc=&searchTerms=wste_webcast&products=&submit.x=0&submit.y=0&submit=submit&addSearchTerms=mq

Summary – Pub/Sub Admin with WebSphere MQ V7

- Concept
 - ▶ What's pub/sub

- ADMIN
 - ▶ Topic string/Topic Tree
 - ▶ Topic, Subscription object
 - ▶ Dis tpstatus, Dis conn



OpenMic session introduction / Survey

✓ Frequency: Bi-Monthly

✓ Products:

- ▶ **WebSphere MQ**
- ▶ **WebSphere Message Broker**
- ▶ **WebSphere Application Server**

■ Candidate topics survey for year 2011

■ **MQ**

- ▶ **WMQ Introduction**
- ▶ **WMQ Cluster**
- ▶ **Deploy & running WMQ client on WAS.**

■ **WAS**

- ▶ **Advanced security configuration Enhanced Admin**
- ▶ **Session management**
- ▶ **Data source and connection pooling**

Q & A



