Deploying MQ V7. 1 / MQ V7.5 User Experience

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Business and Technical Requirement

- Messaging middleware a key component for new IT architecture

- Release of MQ V7 allowed for single-vendor standardized messaging architecture: Pub / Sub, JMS / XMS, MQ API (no need for Tibco)

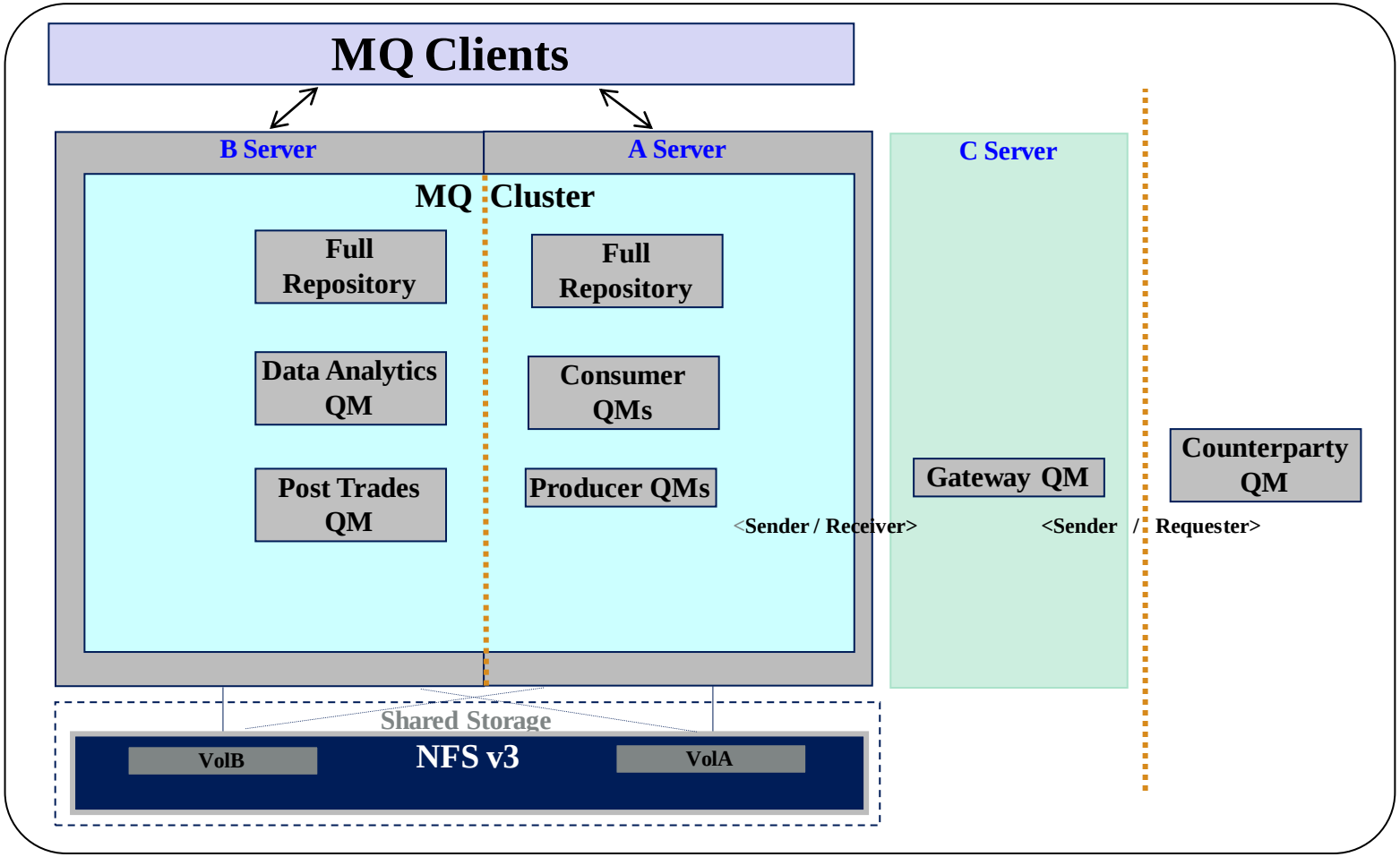
Why Choose MQ V7?

- Full Support for JMS Messaging and Pub/Sub in base product
- Standby Queue Managers replace VCS
- Counterparties using MQ for B2B
- Provides for high level of security
- Uniform, scalable platform for ESB backbone
- Usual MQ benefits: reliability, data integrity, performance etc.

Design: Build to IBM's Target Architecture

- vmware servers running RED HAT ENTERPRISE LINUX 5.3 x64 - shared NAS
- MQ Cluster across servers
- Full repository QM on each server instance
  - No applications on repository QMs
- "Processing" QMs are all partial repositories with paths to full repositories
- MQClient Only
- Four QM "types"
  - Producers, Consumers, Gateways, Full Repositories
    - "warm" standby DR instances

MQ Server Prod Architecture



Examples of Critical Applications Using MQ

- Equity Trading Platform
  - Windows DotNet, MQClient
- Fixed Income Trading Platform
  - Windows DotNet, MQClient
- Post Trade Processing Platform ( with )
  - MQClient, JMS and Pub/Sub
- Back Office Applications ()
  - MQClient, JMS
- Middle Office Applications
  - MQClient, DotNet / XMS
- EDS ("Big Data") Application ( with )
  - MQClient, JMS
- Connections to counterparty systems (use TLS with CA Certs)
  - use JNDI Dest Target Client = MQ
  - Requester / Sender Channels, Security Exits

Design: Stage (UAT) and Development

- Stage:  running  X64
  - replicates Production environment
- Development:  running  X64
  - replicates Stage environment
  - several additional "sandbox" QMs
- Cloud:
  - accessed via Cloud Orchestrator
  - On Demand MQ Client access
  - definitions created On Demand

Design: Queue Manager Types

Full Repository QM: one per primary server:

no clients, no application processing

Consumers:

supports front-end systems, sends requests / accepts replies
DotNet IIS XMS apps connect with MQClient
put to cluster queues, get from local queues

Producers:

supports back-end systems, receive request / send reply
Java and JBOSS JMS apps connect with MQClient
get from local queues, put to cluster queues

Producers (Mule ESB):

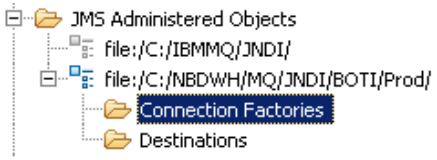
dedicated QMs for Post Trades and EDS systems
Mule ESB with JBOSS connects with MQClient
many multi-threaded sessions per connection
processing uses pub / sub and internal queues
connects to Producers, Consumers, Gateways

Gateway:

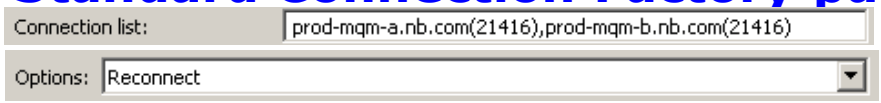
Gateway is outside Cluster, on dedicated server instance
Remote queues, XMIT queues
Receiver / requester channels
Dedicated Circuit

Design: JMS, XMS and JNDI Managed Objects

- **JNDI is currently File Based (originally LDAP):**



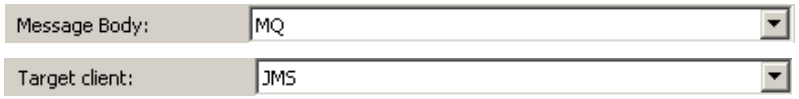
- **Standard Connection Factory parameters:**



- **Standard Destination parameters:**
  - JMS to JMS

  - JMS to MQ

  - MQ to JMS



Design: Publish / Subscribe

Simple Topic Tree Structure – copied from previous Tibco system:

Topics

Filter: Standard for Topics

Topic name	Topic type	Topic string	Description	Publish	Subscribe	Durable subscriptions
AS.MTS.PROD.REPLY.TRADE.TIBTREE.OTG.TRP	Local	AS.MTS.PROD.REPLY.TRADE.TIBTREE.OTG.TRP		As parent	As parent	As parent
AS.status	Local	AS.status		As parent	As parent	As parent
AS.TradePath.Actum.TOPIC	Local	AS.TradePath.Actum.TOPIC		As parent	As parent	As parent
AS.TradePath.topic.TrdPublisher	Local	AS.TradePath.topic.TrdPublisher		As parent	As parent	As parent
AS.TRP.PROD.TRADE.OUT.TIBTREE.OTG.MTS	Local	AS.TRP.PROD.TRADE.OUT.TIBTREE.OTG.MTS		As parent	As parent	As parent

Subscriptions

Filter: Standard for Subscriptions

Subscription name	Topic name	Topic string	Wildcard usage	Scope
JMS:NBHP02BD:TRPTopic:[USER2].jmsXATopicConnector.TradePathTopic.TrdPublisher		FA.TradePath.topic.TrdPublisher	Topic level wildcard	All
JMS:NBHP02BD:TRPTopic:AV..jmsXATopicConnector.TradePathTopic.TrdPublisher		AV.TradePath.topic.TrdPublisher	Topic level wildcard	All

Design: MQTT Messaging Client for JavaScript

https://www.ibm.com/developerworks/community/blogs/c565c720-fe84-4f63-873f-607d87787327/entry/tc_javascript_client_is_out?lang=en

- JavaScript Portal Window
- node.js
- Real-time display of published messages on specified topics
- Display on desktops and mobile devices
- POC in Dev

Telemetry Channels

Filter: Standard for Telemetry Channels

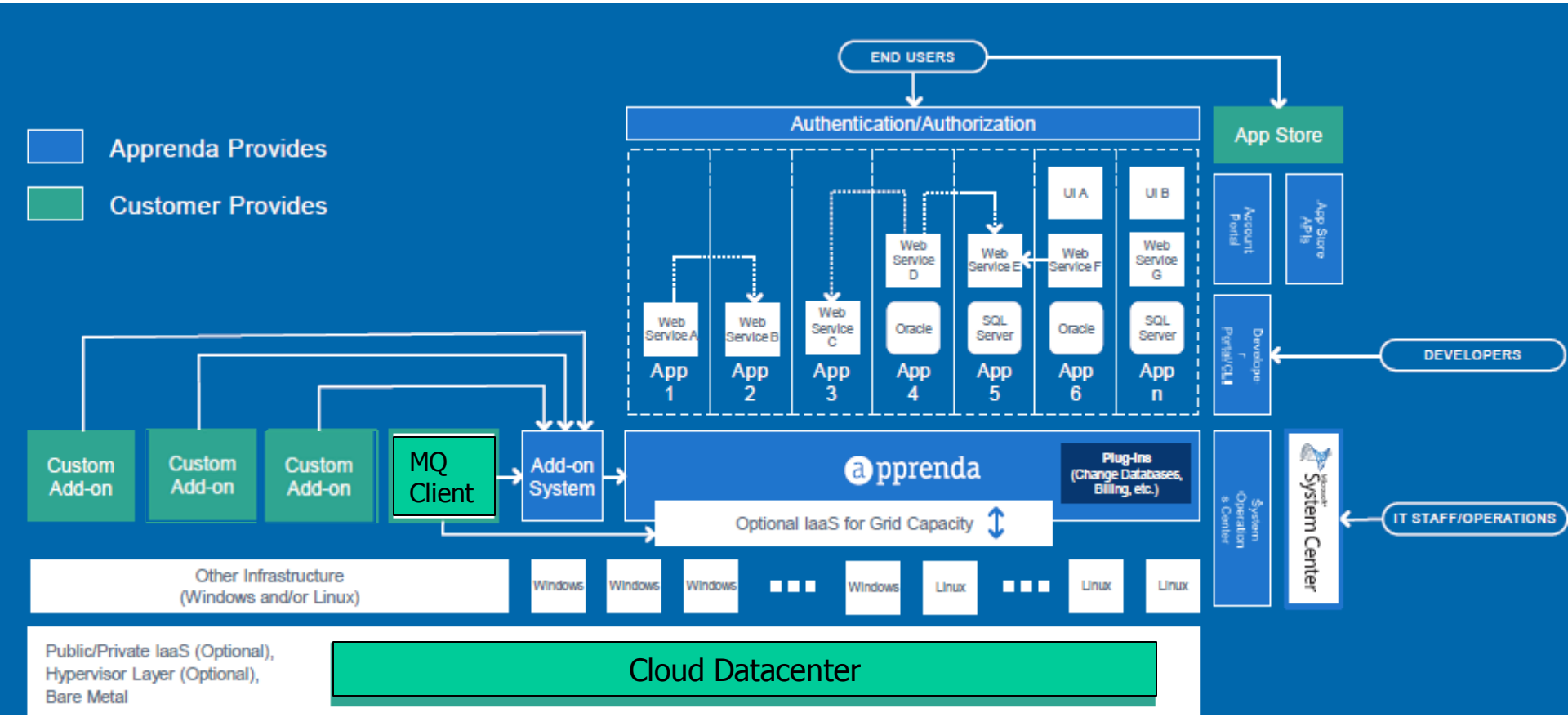
Channel name	Channel type	Xmit protocol	Channel status	Port	Lo
PlainText	MQTT	TCP	Running	1883	

Services

Filter: Standard for Services

Service name	Service status	Service control	Service type	Start command
SYSTEM.DEFAULT.SERVICE		Manual	Command	
SYSTEM.MQXR.SERVICE	Running	Queue Manager	Server	+MQ_INSTALL_PATH+/mqxr/bin/runMQXRService.sh

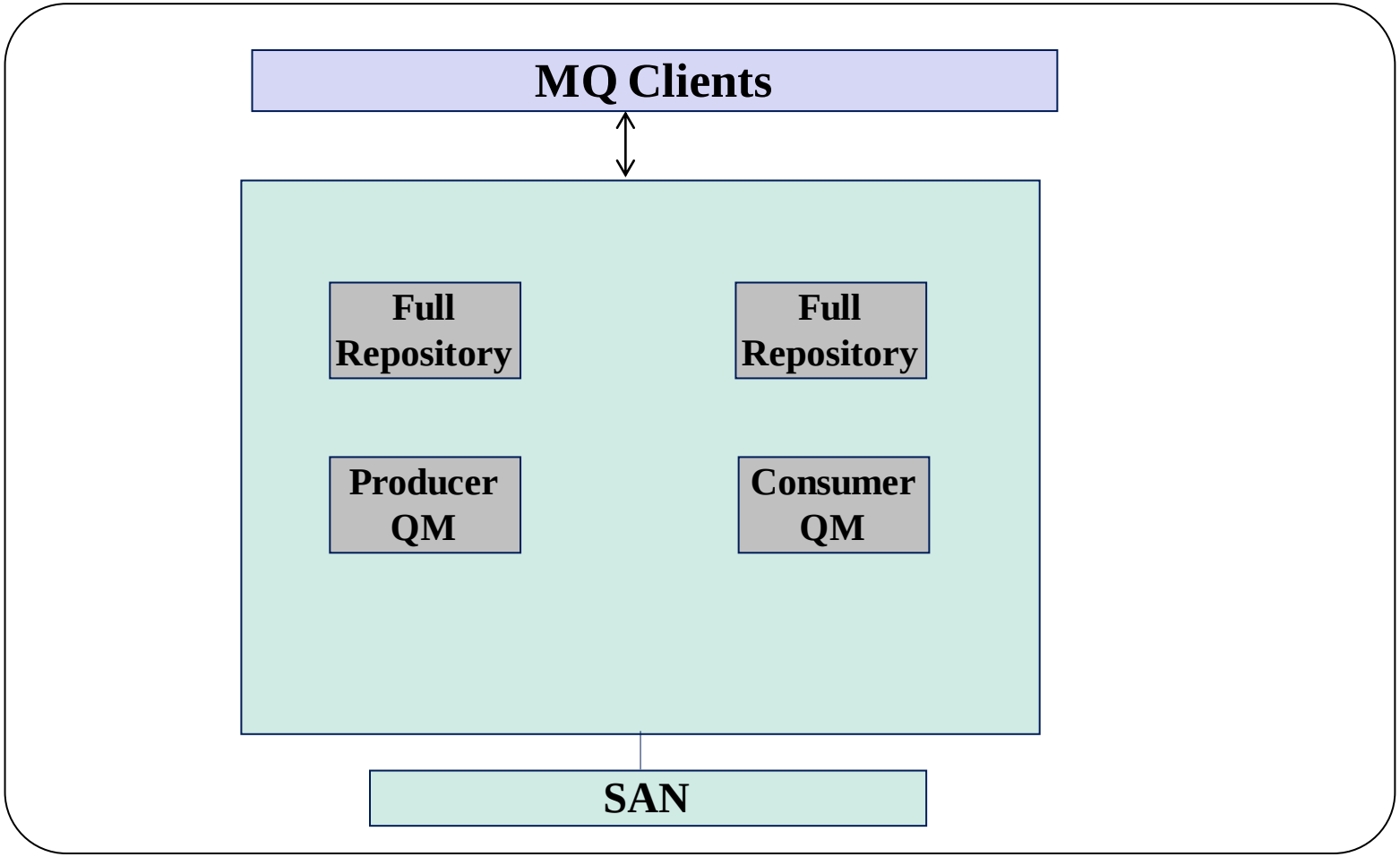
Design: Add MQ Client to Cloud Orchestrator



Design: MQ Client Dev Self Service Form

Add App to MQ:	FIB
Web / IIS App?	Yes
From App:	TRADEPATH
New Topic:	
New Queue:	
To App:	FIB
Data Type1:	TRADE
Data Type2:	BOOKING

Design: MQ Cloud Cluster



Migrate Definitions to Production

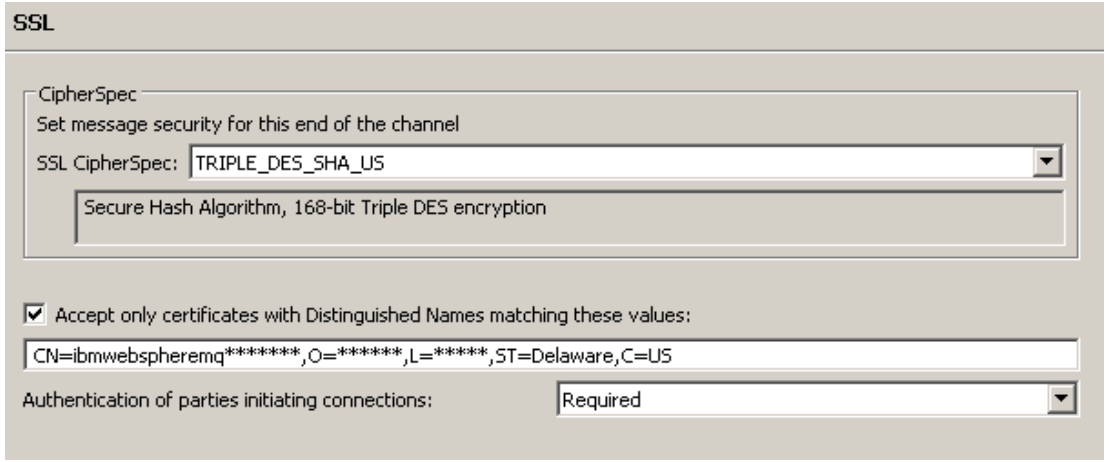
Prod Migration Package (Repliweb):

- SVRCONN Channel Definitions
- Security Exit definitions
- Queue Definitions
- Topic Definitions
- OAM Definitions

Security: Authentication and Authorization

- **SSL / TLS For Counterparties:**

  - private certificates signed by
  - mutual authentication
  - Distinguished Name checking
  - No automated CRL checking
  - No FIPS
  - Same SSL parameters on Sender and Receiver channels



Security: Authentication and Authorization

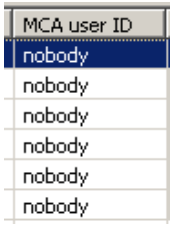
- **Security Exits:**
  - MQAUSX from Capitalware
  - Server side only
  - each app has its own SVRCONN
  - one MQAUSX ini file per app / channel
  - Checks IP address, ID, sets proxy

```
ProxyFile=/var/mqm/******/proxy.txt
Allowmqm=N
AllowBlankUserID=N
UseMCAUser=N
AllowMQCSPAuth=Y
UseAllowUserID=Y
AllowUserID=2dhornby;
UseRejectUserID=N
UseAllowIP=Y
AllowIP=10.*.*.*;
```

  - All used channels have an exit defined

Security: Authentication and Authorization

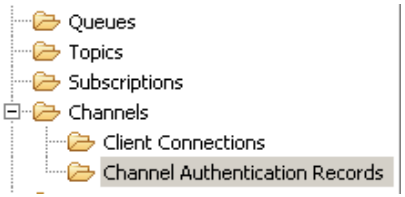
- **MCAUSER:**
  - "nobody" set in all SVRCONN and unused channels



- **CHADEXIT for QM:**
  - Allows for Security Exit on CLUSRCVR channels

Security: Authentication and Authorization

Channel Authentication – chlauth(enabled):



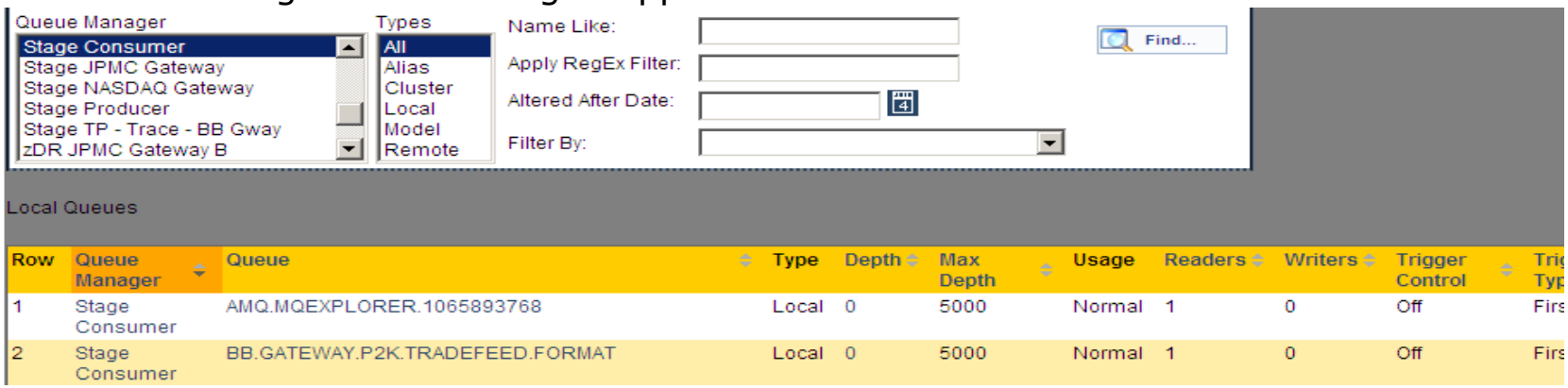
Chann l pr file	Type	Peer name	Client user ID	Remote que...	Address	User source	MCA user ID	User list	Address list	Warning	Desc
*	Block User List							ir360,*MQADMIN		No	Defa
IR3	User Map		ir3		10.1	Map	mqm			No	IR36
IR3	User Map		ir3		10.1	Map	mqm			No	IR36
IR3	Block User List							nobody		No	IR36
MQ	User Map		2c		10.1	Map	mqm			No	MQE
MQ	User Map		dh		10.1	Map	mqm			No	MQE
MQ	User Map		m		10.1	Map	mqm			No	MQE
MQ	Block User List							nobody		No	MQE
SYS	Address Map				*	No Access				No	Defa
TP.	User Map		tr		10.*	Map	mqcc			No	TP.CI
TRA	User Map		tr		10.*	Map	mqcc			No	TRAC

- Block all admin accounts on all channels
- Allow admin acct 1 to access admin chl 1 from admin IP addr 1 and switch MCAUSER to "mqm"
- Allow admin acct 1 to access admin chl 1 from admin IP addr 2 and switch MCAUSER to "mqm"
- Override the "block all admin accounts on all channels" rule to set "block nobody" for admin chl 1
- Allow admin acct 2 to access admin chl 2 from admin IP addr 2 and switch MCAUSER to "mqm"
- Allow admin acct 3 to access admin chl 2 from admin IP addr 3 and switch MCAUSER to "mqm"
- Allow admin acct 4 to access admin chl 2 from admin IP addr 1 and switch MCAUSER to "mqm"
- Override the "block all admin accounts on all channels" rule to set "block nobody" for admin chl 2
- Block access to all SYSTEM* channels from all IP addresses
- Allow appl account 1 to access appl chl 1 from any 10.* server and switch MCAUSER to low-authorized appl Id (this is Dev, must be set more specific for Prod)
- Allow appl account 2 to access appl chl 2 from any 10.* server and switch MCAUSER to low authorized appl Id (this is Dev, must be set more specific for Prod)

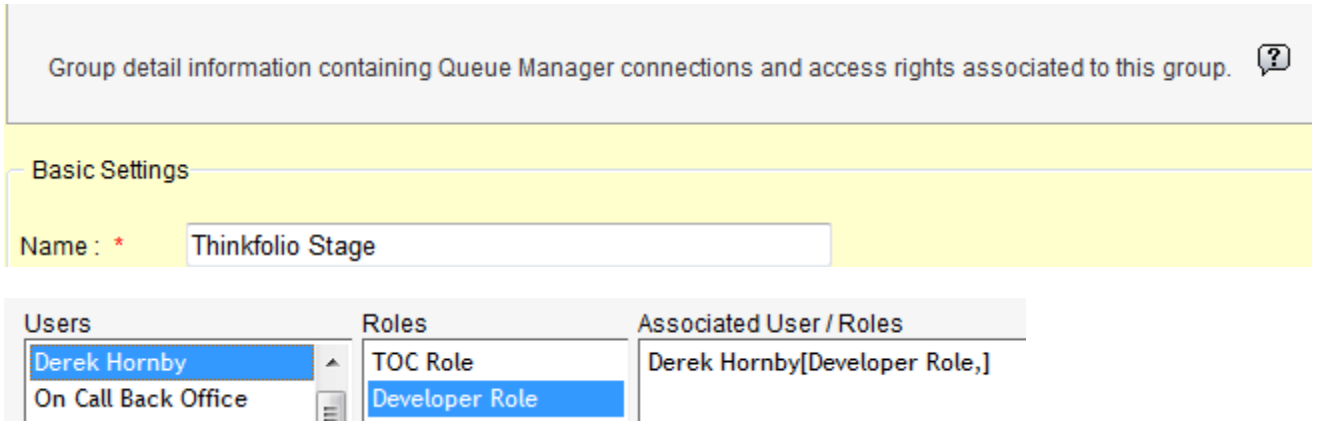
Monitoring and Management

- **Monitoring:**

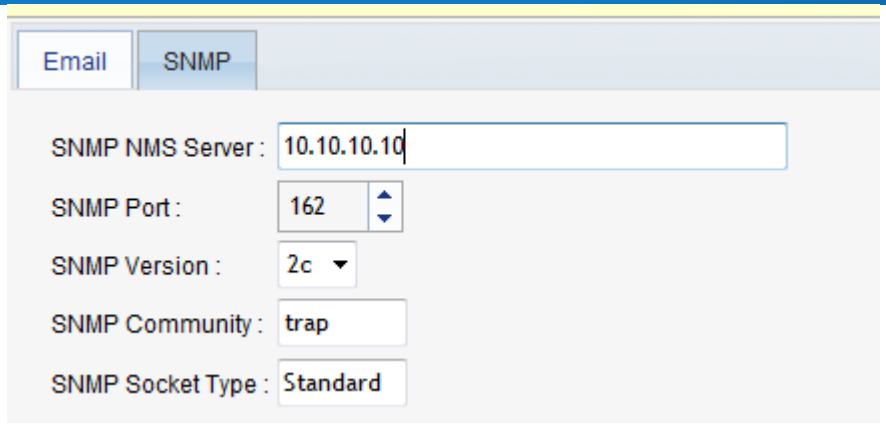
  - "agentless" monitoring
  - runs under Tomcat
  - SQL Server 2008 DB
  - alerts sent to SMTP, SNMP
  - HP OpenView, email, text messages
  - delegate monitoring to app teams



Infrared360 Management



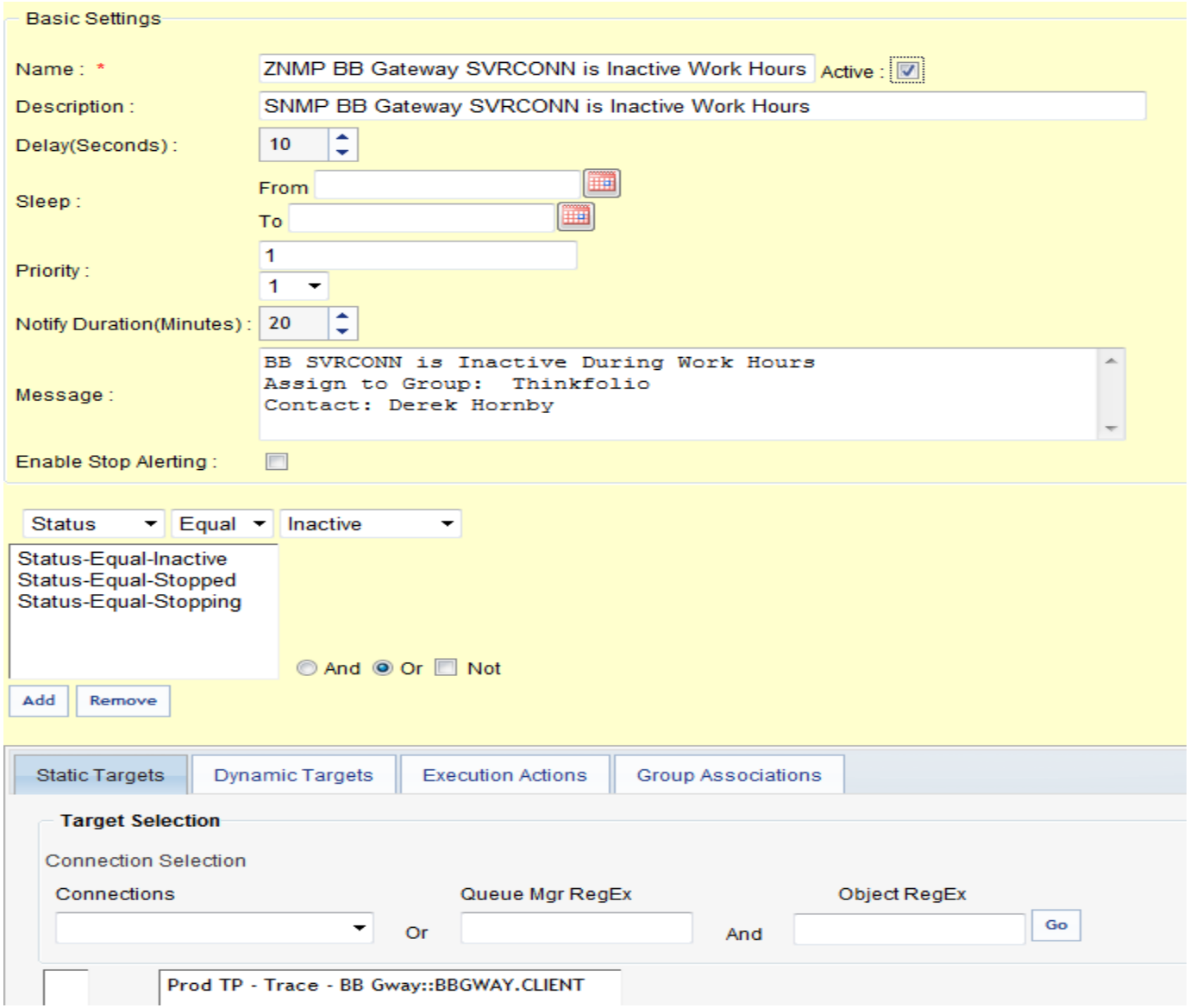
Infrared360 Alerting



Name	Type	Firing	Active	Priority	Notify Duration	Enable Stop Alerting	Description	Message
ARTWS Msgs Not Read Wo	Queue Alert	false	true	2	30	true	ARTWS MQ Msgs Not Read	ARTWS MQ Message Count
ARTWS SNMP Msgs Not Re	Queue Alert	false	true	2	1440	false	SNMP MQ Msgs Not Read 0	ARTWS MQ Message Count
BB Gateway SNMP SVRCOI	Channel Alert	false	true	1	1440	false	SNMP BB Gateway SVRCOI	** Check that BB Gateway o
BB Gateway SVRCONN is Ir	Channel Alert	false	true	1	20	true	BB Gateway SVRCONN is Ir	** Check that BB Gateway o

Creation Date	Modified Date	Group Associations
2013-09-16T12:13:18	2013-09-16T12:13:18	Administration Group, TOC Group, ART WS
2013-09-16T12:13:18	2013-09-16T12:13:18	Administration Group, TOC Group
2013-09-16T12:13:18	2013-09-16T12:13:18	Administration Group, TOC Group
2013-09-16T12:13:18	2013-09-16T12:13:18	Administration Group, TOC Group, Thinkfolio Prod

Infrared360 Alerting



Infrared360 Alerting

```
availableContact[[System]]-availableNotifyOption[Infrared360 System Snmp]-availableNotifyDependency[AlertDuring7-10to8-30NotHolsRule]
```

```
<rule>
<condition type="AND">
<condition type="AND">
<expression type="time">
<days>
                    <day type="day" name="monday">
                    <fire-time-range begin-hour="07" begin-min="10" end-hour="20" end-min="30" />
                    </day>
                    <day type="day" name="tuesday">
                    <fire-time-range begin-hour="07" begin-min="10" end-hour="20" end-min="30" />
                    </day>
                    </days>
                    ..... Etc.
</expression>
</condition>
<condition type="NOT">
<expression type="time">
<days>
                    <day type="holiday" name="newyears-day-obs">
                    <fire-time-range begin-hour="00" begin-min="01" end-hour="23" end-min="59" />
                    </day>
                    <day type="holiday" name="martinlutherking-day-obs">
                    <fire-time-range begin-hour="00" begin-min="01" end-hour="23" end-min="59" />
                    </day>
                    <day type="holiday" name="presidents-day-obs">
                    <fire-time-range begin-hour="00" begin-min="01" end-hour="23" end-min="59" />
                    </day>
                    ..... etc.
                    </days>
</expression>
</condition>
</condition>
</rule>
```

Infrared360 Alerting

HP SM Ticket:

IT Ticket Notification (IM373021)

TECHNOLOGY

CONTACT

Primary Contact	HORNBY, DEREK (DHORNBY)
Email	derek.hornby@nb.com
Phone	1 646 497 4142

SUMMARY

Affected Item	MQ _ Prod
Severity	Low
Assignment Group	NB-MQ
Assignee	dhornby
Closed by	
Open time	September 10, 2013 1:28:40 PM EDT
Close time	
Title	Infrared360 Alert
Category	incident

DESCRIPTION

BB SVRCONN is Inactive During Work Hours
Assign to Group: Thinkfolio
Contact: Derek Hornby

SOLUTION

Backup QM Configuration:

- Replaces SupportPac MS03

- Includes all objects, object authorizations and channel authorization records

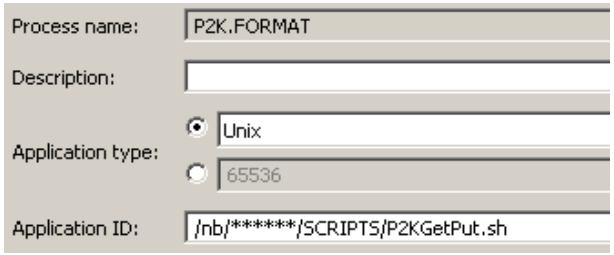
dmpmqcfg -m NBXTST1S -a > /var/mqm/mqsc/NBXTST1S.DMP

Monitoring and Management

Management:

- startup scripts ./mqstart.sh
- triggered scripts (uses trigger monitor)

TriggerMonitor	Running	Queue Manager	Server	/opt/mqm/bin/runmqtrm	-m NBHC



Restart and Recovery

- All queues defaulted to “non-persistent”, NPMCLASS(HIGH)
- Circular logging
- Dead Letter Queue alerts
- Applications recognize if messages are “undelivered”
- Applications have resend capability
- No “long running” transactions
- No “using MQ as DB”

Standby and Failover from Local Failure

- Each primary server has full repository QM
- Full repositories QMs do not have standby instances
- Each processing QM is setup as a Multi-Instance QM, with a standby instance, but no "standby" instance is started
- MQ qmgr and log directories are defined to NAS
- Each server has unique hostname / IP address (no VIP)
- All client apps use "connectionnamelist" and "reconnect" parameters in Connection Factory (different host, same Port)
- Counterparties have primary and alternate IP addresses NATd in firewalls
- If failover, NAT entry changes or counterparties will alter Conname

Disaster Recovery

- Prod MQ environment replicated at DR data center
- DR QMs running independently as “Hot Standby”
- “DNS push” points MQ Prod virtual hostnames to DR servers
- Client Applications reconnect automatically to DR host (no restart of client apps needed)
- All client apps use “connectionnamelist” and “reconnect” parameters in Connection Factory (different host, same Port)
- Counterparties have DR IP addresses NATd in firewalls
- If DR failover, counterparties will alter Conname
- DR versions of JNDI Bindings are stored on DR server in case of DNS issues

Current State

dspmqver:
Name: WebSphere MQ
Version: 7.0.1.0
CMVC level: p000-L090813
BuildType: IKAP - (Production)

Repos1: QueueManager:
Name=NBXDH1AC
Directory=NBXDH1AC
Prefix=/var/mqm

Repos2: QueueManager:
Name=NBXDH2AC
Directory=NBXDH2AC
Prefix=/var/mqm

Consumer1: QueueManager:
Name=NBHC01AT
Directory=NBHC01AT
Prefix=/var/mqm
DataPath=/nb1/apps/mqmha/qmgrs/NBHC01AT

Producer1: QueueManager:
Name=NBHP01AT
Directory=NBHP01AT
Prefix=/var/mqm
DataPath=/nb1/apps/mqmha/qmgrs/NBHP01AT

Current State

```
-bash-4.1$ ls -al /var/mqm/qmgrs
total 36
drwxrwsr-x  9 mqm mqm 4096 Sep 17 15:15 .
drwxrwsr-x 20 mqm mqm 4096 Sep 17 15:15 ..
drwxrwsr-x  6 mqm mqm 4096 Sep 17 15:28 NBHC01AT
drwxrwsr-x  6 mqm mqm 4096 Sep 17 15:28 NBHP01AT
drwxrwsr-x  6 mqm mqm 4096 Sep 17 15:28 NBXDH1AC
drwxrwsr-x  6 mqm mqm 4096 Sep 17 15:28 NBXDH1BC
drwxrwsr-x  2 mqm mqm 4096 Sep 10 17:47 @SYSTEM


-bash-4.1$ ls -al /nb1/apps/mqmha/qmgrs
total 24
drwxr-xr-x  6 mqm mqm 4096 Sep 17 14:32 .
drwxr-xr-x  3 mqm mqm 4096 Sep 17 14:11 ..
drwxrwsr-x 18 mqm mqm 4096 Sep 17 15:28 NBHC01AT
drwxrwsr-x 18 mqm mqm 4096 Sep 17 15:28 NBHP01AT

-bash-4.1$ ls -al /nb1/apps/mqmhb/log
total 24
drwxr-xr-x 6 mqm mqm 4096 Sep 17 14:32 .
drwxr-xr-x 3 mqm mqm 4096 Sep 17 14:12 ..
drwxrwsr-x 3 mqm mqm 4096 Sep 17 15:28 NBHC01AT
drwxrwsr-x 3 mqm mqm 4096 Sep 17 15:28 NBHP01AT
```

Current State

Consumer:

Queue name	Queue type	O..	O...	C...	Put ...	Get ...	Re...	Rem...	Ba...	Bas...	De...	Default persistence	Usage	Tran...	Shareability	Cluster name
DEREKS.TEST.QLOCAL.C01	Local	0	0	0	Allo...	Allo...						Not persistent	Normal		Shareable	NBHL01AT

Channel name	Channel type	Overall channel status
DEREK.SVRCONN	Server-connection	Running
TO.NBHC01AT.NBHL01AT	Cluster-receiver	Running
TO.NBXDH1AC.NBHL01AT	Cluster-sender	Running
TO.NBXDH1BC.NBHL01AT	Cluster-sender	Running

Producer:

Queue name	Queue type	O..	O...	C...	Put ...	Get ...	Re...	Rem...	Ba...	Bas...	De...	Default persistence	Usage	Tran...	Shareability	Cluster name
DEREKS.TEST.QLOCAL.P01	Local	0	0	0	Allo...	Allo...						Not persistent	Normal		Shareable	NBHL01AT

Channel name	Channel type	Overall channel status
DEREK.SVRCONN	Server-connection	Running
TO.NBHP01AT.NBHL01AT	Cluster-receiver	Running
TO.NBXDH1AC.NBHL01AT	Cluster-sender	Running
TO.NBXDH1BC.NBHL01AT	Cluster-sender	Running

Repos1:

Channel name	Channel type	Overall channel status
DEREK.SVRCONN	Server-connection	Running
TO.NBXDH1AC.NBHL01AT	Cluster-receiver	Running
TO.NBXDH1BC.NBHL01AT	Cluster-sender	Running

Repos2:

Channel name	Channel type	Overall channel status
DEREK.SVRCONN	Server-connection	Running
TO.NBXDH1AC.NBHL01AT	Cluster-sender	Running
TO.NBXDH1BC.NBHL01AT	Cluster-receiver	Running

Single Stage Migration: MQ V7.0.1 to MQ V7.5

End All Running Queue managers:

-bash-4.1$ **endmqm -i NBHC01AT**
WebSphere MQ queue manager 'NBHC01AT' ended.

-bash-4.1$ **endmqm -i NBHP01AT**
WebSphere MQ queue manager 'NBHP01AT' ended.

-bash-4.1$ **endmqm -i NBXDH1AC**
WebSphere MQ queue manager 'NBXDH1AC' ended.

-bash-4.1$ **endmqm -i NBXDH1BC**
WebSphere MQ queue manager 'NBXDH1BC' ended.
-bash-4.1$

Single Stage Migration: MQ V7.0.1 to MQ V7.5

Backup MQ V7.0.1 Directories:

(chmod 777 first....)
-bash-4.1$ cd /opt
-bash-4.1$ **cp -R mqm /nb1/apps**
-bash-4.1$ cd /var
-bash-4.1$ **cp -R mqm /nb1/apps**

Backup V7.0.1 Queue Managers:

var/mqm/util/saveqmgr64.linux -m NBHC01AT -o -f /var/mqm/mqsc/NBHC01AT.MQSC -z /var/mqm/mqsc/NBHC01AT.AUT

Remove MQ V7.0.1 Packages:

[root@pidltst001 ~]# **rpm -qa | grep MQ**
MQSeriesServer-7.0.1-0.x86_64
MQSeriesRuntime-7.0.1-0.x86_64
[root@pidltst001 ~]# **rpm -e MQSeriesServer-7.0.1-0.x86_64**
[root@pidltst001 ~]# **rpm -e MQSeriesRuntime-7.0.1-0.x86_64**

Remove the "samp" Directory:

[root@pidltst001 /var/mqm/packages/V7500]# cd /opt/mqm
[root@pidltst001 /opt/mqm]# ls -al
total 12
dr-xr-xr-x 3 mqm mqm 4096 Sep 17 17:14 .
drwxr-xr-x. 9 root root 4096 Sep 10 17:47 ..
dr-xr-xr-x 3 mqm mqm 4096 Sep 17 17:14 samp
[root@pidltst001 /opt/mqm]# **rm -R -f samp**

Single Stage Migration: MQ V7.0.1 to MQ V7.5

Unzip / Untar MQ V7.5 package and remove unwanted Language RPMs:

gunzip MQSvrV7500Linux.tar.gz
tar -xvf MQSvrV7500Linux.tar
rm MQSeriesMsg-*

Accept the License:

[root@pidltst001 /var/mqm/packages/V7500]# **./mqlicense.sh -accept**
Licensed Materials - Property of IBM
5724-H72
(C) Copyright IBM Corporation 1994, 2012 All rights reserved.
US Government Users Restricted Rights - Use, duplication or disclosure
restricted by GSA ADP Schedule Contract with IBM Corp.
License accepted: Proceed with install.

RPM List to Install:

```
-rw-r--r--  1 mqm mqm  20136624 Jun  4  2012 MQSeriesRuntime-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm  27797722 Jun  4  2012 MQSeriesServer-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm  70907973 Jun  4  2012 MQSeriesJRE-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm  27956802 Jun  4  2012 MQSeriesJava-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm   1374581 Jun  4  2012 MQSeriesXRService-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm    246227 Jun  4  2012 MQSeriesSDK-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm    837636 Jun  4  2012 MQSeriesSamples-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm  22380584 Jun  4  2012 MQSeriesGSKit-7.5.0-0.x86_64.rpm
-rw-r--r--  1 mqm mqm    294634 Jun  4  2012 MQSeriesMan-7.5.0-0.x86_64.rpm
```

Single Stage Migration: MQ V7.0.1 to MQ V7.5

Run Install Commands:

```
[root@pidltst001 /opt/mqm]# cd /var/mqm/packages/V7500
[root@pidltst001 /var/mqm/packages/V7500]# rpm -ivh MQSeriesRuntime-7.5.0-0.x86_64.rpm
Preparing...                ########################################### [100%]
   1:MQSeriesRuntime        ###########################################
[100%]
[root@pidltst001 /var/mqm/packages/V7500]# rpm -ivh MQSeriesServer-7.5.0-0.x86_64.rpm
Preparing...                ########################################### [100%]
   1:MQSeriesServer         ###########################################
[100%]
```

Set Current Installation as Primary (Installation1 by default):

```
[root@pidltst001 /var/mqm/packages/V7500]# /opt/mqm/bin/setmqinst -i -p /opt/mqm
118 of 118 tasks have been completed successfuly.
'Installation1' (/opt/mqm) set as the Primary Installation.
```

Single Stage Migration: MQ V7.0.1 to MQ V7.5

Verify the Installation:

```
[root@pidltst001 /var/mqm/packages/V7500]# dspmqver
Name:        WebSphere MQ
Version:     7.5.0.0
Level:       p000-L120604
BuildType:   IKAP - (Production)
Platform:    WebSphere MQ for Linux (x86-64 platform)
Mode:        64-bit
O/S:         Linux 2.6.32-358.18.1.el6.x86_64
InstName:    Installation1
InstDesc:
InstPath:    /opt/mqm
DataPath:    /var/mqm
Primary:     Yes
MaxCmdLevel: 750
```

Single Stage Migration: MQ V7.0.1 to MQ V7.5

Start Each Queue Manager to Associate it with Installation1:

-bash-4.1$ **strmqm NBXDH1AC**
WebSphere MQ queue manager 'NBXDH1AC' starting.
The queue manager is associated with installation 'Installation1'.
5 log records accessed on queue manager 'NBXDH1AC' during the log replay phase.
Log replay for queue manager 'NBXDH1AC' complete.
Transaction manager state recovered for queue manager 'NBXDH1AC'.
Migrating objects for queue manager 'NBXDH1AC'.
Default objects statistics : 9 created. 0 replaced. 0 failed.
WebSphere MQ queue manager 'NBXDH1AC' started using V7.5.0.0.

dspmqinf Shows Queue Manager Installations:

-bash-4.1$ **dspmqinf NBXDH1AC**
QueueManager:
  Name=NBXDH1AC
  Directory=NBXDH1AC
  Prefix=/var/mqm
  DataPath=/nb1/apps/mqmha/qmgrs/NBXDH1AC
  InstallationName=Installation1

-bash-4.1$ **dspmqinf DEFQM001**
QueueManager:
  Name=DEFQM001
  Directory=DEFQM001
  Prefix=/var/mqm
  InstallationName=Installation0

Single Stage Migration: MQ V7.0.1 to MQ V7.5

"Unstarted" Queue Managers are Still Associated with "Installation0":

-bash-4.1$ **dltmqm NBXDH2AC**
AMQ5691: Queue manager 'NBXDH2AC' is associated with a different installation ('Installation0').

Start, Stop, Delete Queue Manager no longer Required (or delete qmgrs/dir):

-bash-4.1$ **strmqm NBXDH2AC**
WebSphere MQ queue manager 'NBXDH2AC' starting.
The queue manager is associated with installation 'Installation1'.
5 log records accessed on queue manager 'NBXDH2AC' during the log replay phase.
Log replay for queue manager 'NBXDH2AC' complete.
Transaction manager state recovered for queue manager 'NBXDH2AC'.
Migrating objects for queue manager 'NBXDH2AC'.
Default objects statistics : 9 created. 0 replaced. 0 failed.
WebSphere MQ queue manager 'NBXDH2AC' started using V7.5.0.0.
-bash-4.1$ **endmqm -i NBXDH2AC**
WebSphere MQ queue manager 'NBXDH2AC' ended.
-bash-4.1$ **dltmqm NBXDH2AC**
WebSphere MQ queue manager 'NBXDH2AC' deleted.

Thank You For Attending

Wrap Up and Questions