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What's New in the WebSphere MQ Family

Session #12603

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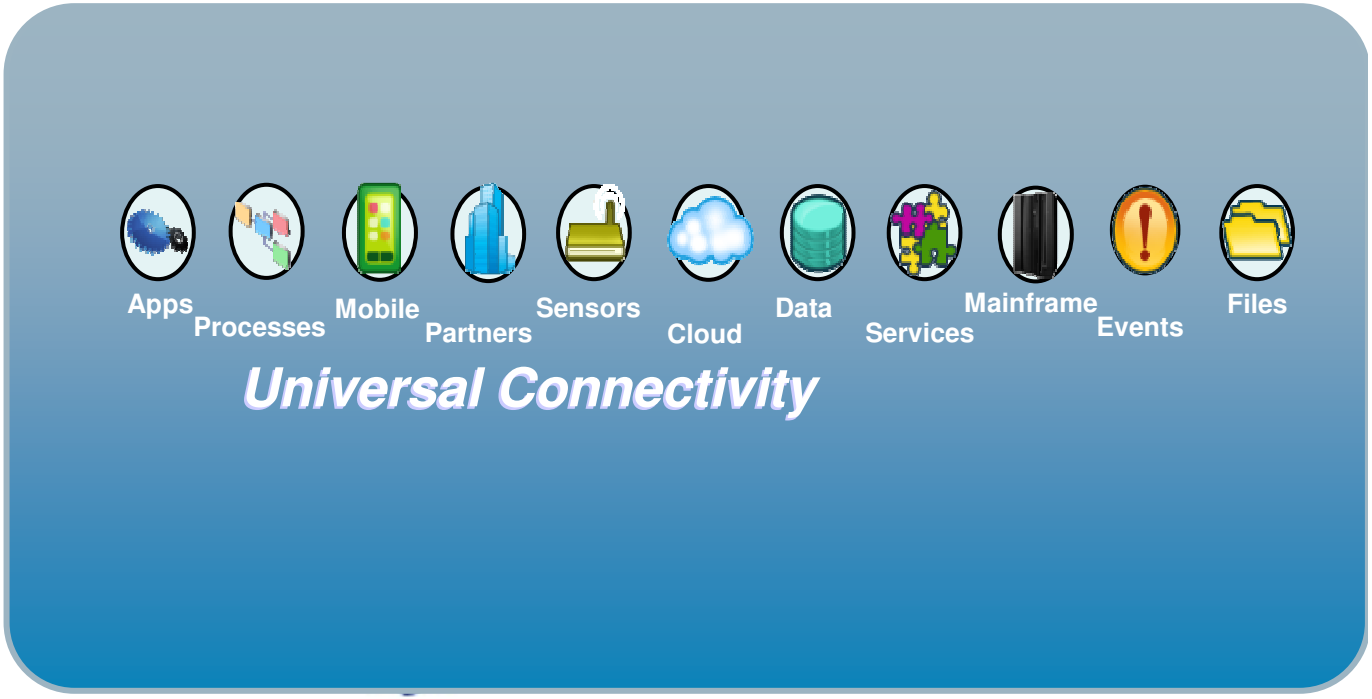
IBM MQ Connectivity for a Smarter and Secure Planet

A Universal Message Bus providing connectivity to, from and within your Enterprise to access data *wherever it exists* to support your business

Provides a comprehensive range of Messaging capabilities
to support your Business requirements for data integration:-

-- Messaging integration patterns
-- Reliability and availability QoS
-- Managed File Transfer
-- SOA foundation
-- EDA foundation



Provides appropriate data access and data privacy controls to help meet audit and regulatory requirements

Provides a range of messaging on-ramps appropriate to your business needs and developer skills

Provides a range of messaging topologies and deployments to meet your business and IT needs

How WebSphere MQ meets your Connectivity needs

*Dynamic network that delivers the **data** you require from wherever it resides to wherever you want it in whatever way you want it at whatever time you want it*

Universal Messaging

1. Anything Anywhere

- Any skills
- Any traffic
- Any language
- Any environment
- Any platform

2. Best Delivery

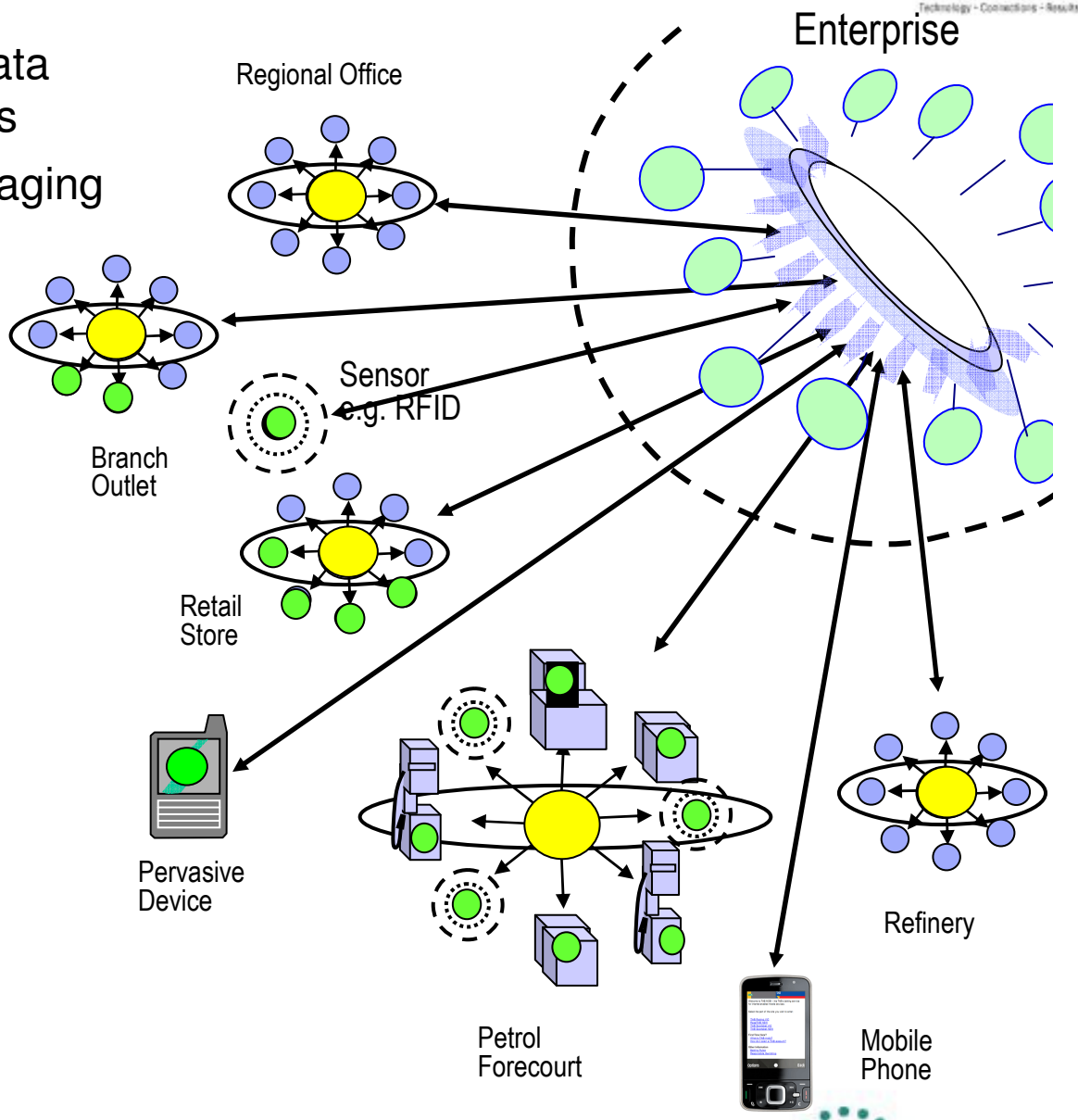
- Choice of service
- Resilience, Integrity, Security
- Throughput, Latency
- High availability

3. Scale Dynamically

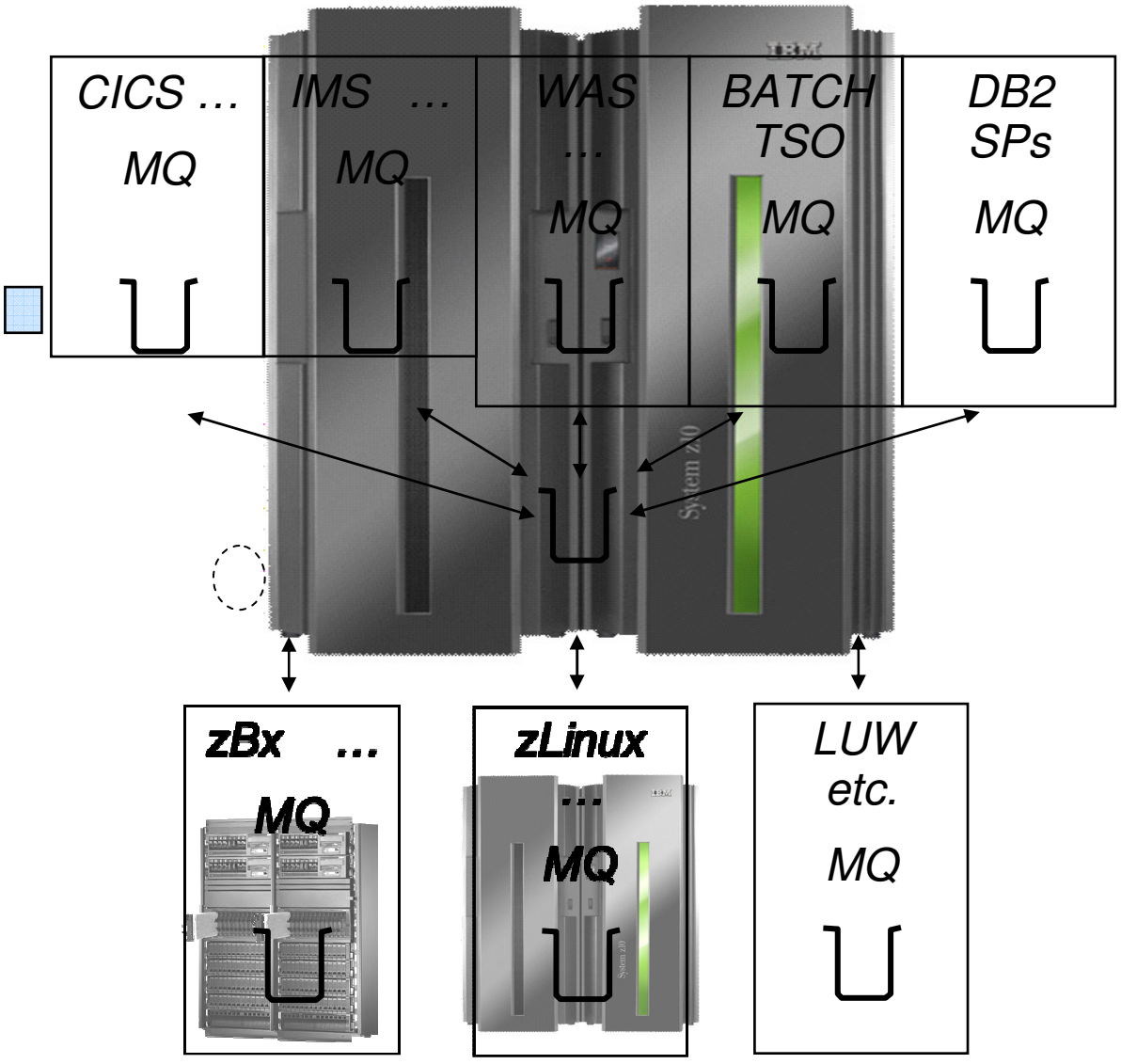
- Start small
- Grow incrementally
- Stretch elastically
- Scale admin

WebSphere MQ Value: Connectivity to, from and within an Enterprise

- A Universal Message Bus for access to data wherever it exists to support your business
- Provides a comprehensive range of Messaging capabilities to support your Business requirements for data integration
  - Managed File Transfer
  - Messaging integration patterns
  - Reliability and availability QoS
  - SOA foundation
- Provides appropriate data access and data privacy controls to help meet audit and regulatory requirements
- WMQ Telemetry is one step in extending the reach of WMQ to a wider world of data relevant to your business



Connectivity to, from and within zEnterprise



Sysplex Shared Queue Message Availability:
Goal is to provide as near as possible continuous message data access under ALL failure scenarios (These scenarios include Application/Transaction failures, Application Execution Env. failures, Qmgr failures, CF failures, DASD failures, Network failures, CEC failures)

Sysplex Shared Queue Message Capacity:
Goal is to provide Terabytes of affordable message capacity such that MQ is capable of meeting all business requirements for reliable message storage when processing applications are unable to run for whatever reason

WMQ Family Roadmap – continual delivery of customer value

(4Q/09)
MQ LLM V2.3
msg store

(2Q/10)
MQ LLM V2.4
late join

(4Q/10)
MQ LLM V2.5
self-managing

(2Q/11)
MQ LLM V2.6
improved perf.

(4Q/09)
MQ FTE V7.0.2
FTP Bridging

(4Q/10)
MQ FTE V7.0.3
end-to-end security

(2Q/11)
MQ FTE V7.0.4
C:D Integration

(2Q12)
MQ V7.5
Split Cluster
XmitQ

Incorporating File Transfer

Incorporating Advanced Msg Security

(3Q/09)
MQ V7.0.1 with
Multi-Instance QMgrs,
Automatic Client Reconnect,
z/OS Availability, Capacity and
Performance improvements

(1Q/11)
MQ V7.0.1.4
Pre-Connect Exit

(4Q/11)
MQ V7.1 with
Multi-version Install,
Out-of-the-box security,
Multicast capability,
Improved Performance,
z/OS QSG enhancements

(3Q/10)
MQ Telemetry V7.0.1

(1Q/10)
Security SupportPacs and Wizards

(2Q/11)
MQ HVE for RHEL ESX and IBM Workload Deployer

(4Q/10)
MQ Advanced Message Security V7.0.1

(SoD) **Messaging Extension for Web Application Patterns**

2009 2010 2011 2012

Early Access Programs

WebSphere MQ V7.1 and V7.5

WebSphere MQ V7.1: Feature Summary

WebSphere MQ V7.1
Announced: 4 October 2011
Availability: 11 November 2011

Simplification

New Feature	*Benefits*	
Multi-Version Install capability on Distributed platforms	Makes it easier to deploy and upgrade systems and stage version to version migration	Unix and Windows support for multiple versions of MQ V7.x (AND one copy of MQ V7.0.1) down to fixpack levels. Relocatable installation support. Applications can connect to any Qmgr
Enhanced Security	Simplified Configuration Enhanced Authorization and Auditing	IP address Authorisation capability Additional crypto algorithms More granular authorisation for non-local queues Application Activity Reports
Cloud Support	Simplifies and support Cloud deployments	Additional HVE images
Enhanced Clustering	Improves ease-of-use	Authorisation on Cluster Q rather than XMIT Q on Dist. Platforms Bind-on-Group Support
Multicast capability	New messaging QoS provides low latency with high fan-out capability	MQ Pub/Sub Topic space can now map to multicast Group Addresses Provides direct interoperability with MQ LLM
Improved scalability and availability on z/OS	Further exploitation of z196 Customer control over CF storage use CF Connectivity Loss improvements	Code contention reduced to improve multi-processor linear scaling Use of MQ Datasets rather than DB2 significantly improves “large” message capability Structure rebuild capability for CF Connectivity Loss scenarios
Improved Performance on Dist platforms	Improved multiprocessor exploitation	Various code improvements

WebSphere MQ V7.1: Feature Summary

NOTES

- This page shows the highlights of the new release in one chart. The rest of this presentation goes into the details.
- A one-word summary of this summary is “simplification”: making it easier to own, run and work with MQ.

- One part of the MQ V7.0.1 rationale was to deliver new function via the service stream, without requiring a full new release and migration cycle. Lessons learned from that have fed into V7.1, which has been designed to be more capable and more flexible when adding function through this channel.
- These new functions can be optionally enabled. The default is that new function requires adminstrative action to enable it, so that there is no unasked-for change in behaviour when you install a fixpack

WebSphere MQ V7.5: Content Summary

- For Windows, Unix and Linux

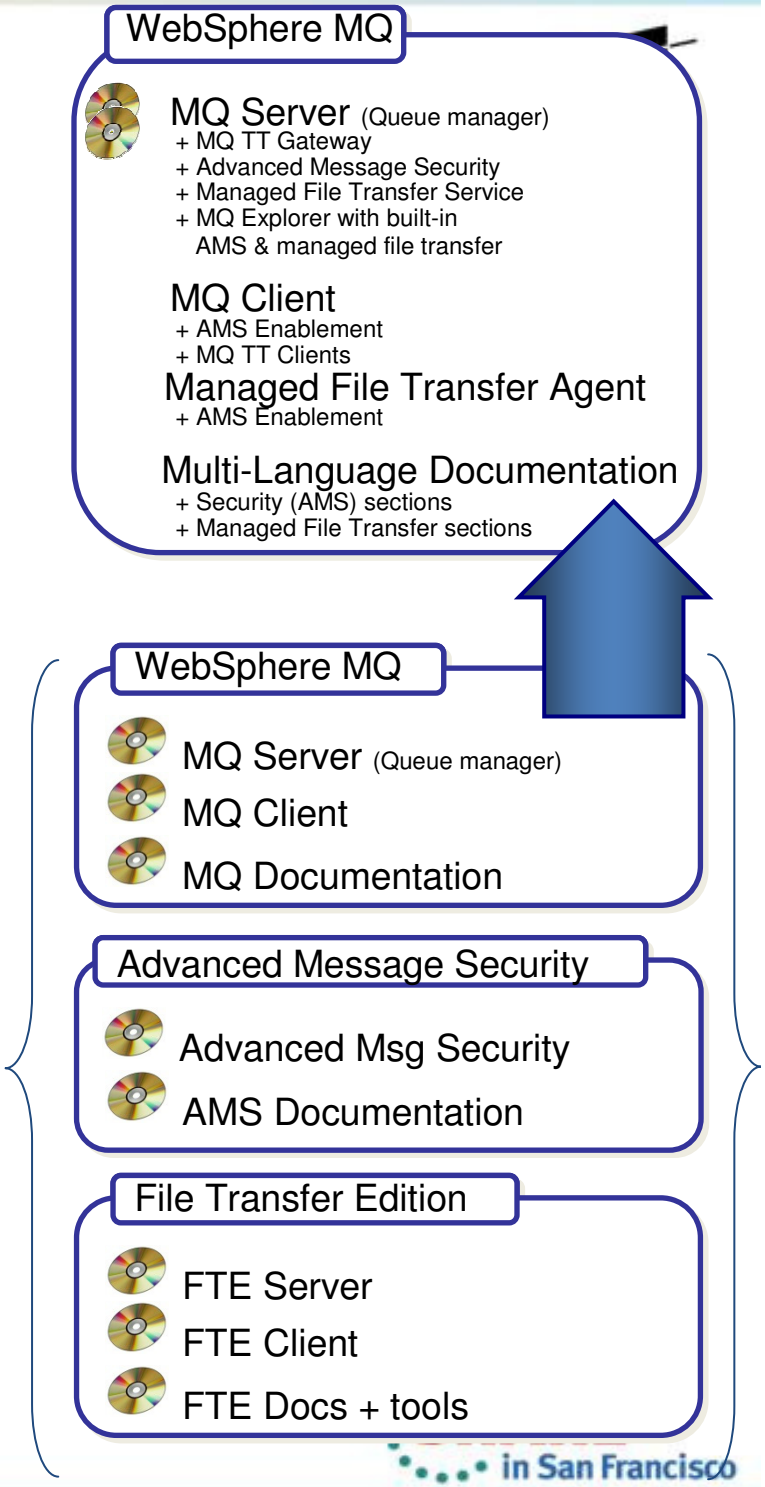
WebSphere MQ V7.5
Announced: 24 April 2012
Availability: 20 June 2012

Simplification

New Feature	*Benefits*	*Details*
Integrated Installation	Makes it easier to deploy systems Simpler licensing	Combines several products into a single package Common experience
Enhanced Clustering	Improves ease-of-use Improves application isolation	Split Cluster Transmission Queue
Java Application Identification	Makes it easier to distinguish applications	Applications no longer to all have the same name
AMS channel interception	Provides a level of message protection even when application environment cannot run AMS	Interception in the SVRCONN still protects messages before hitting queues
FTE Logger Options	Can write FTE audit records to flat file	No longer a requirement for an enterprise database Easier to read data immediately

WebSphere MQ V7.5

- Integrated Messaging Offering
  - Single install, packaging & tooling for all Messaging options
  - Reduce time to value, simplify usage
- What's being delivered?
  - Integration of MQ with MQ FTE, MQ AMS and MQ Telemetry
  - Single install, common integrated tooling and management, simplified licensing and entitlements
  - Updated MQ Explorer tooling for all platforms
  - More complete, easy to use messaging infrastructure, enabling you to gain full range of messaging, swiftly & easily
- All messaging functions & capabilities available to all customers, new and existing with rich choice of qualities of service
  - Removal of charge for MQ XA client
  - Reduced pricing metric for standard MQ Telemetry client
    - Lower cost for larger numbers of clients



Multi-Version Installation

- MQ on Unix and Windows can install multiple levels on a system
  - Relocatable to user-chosen directories
  - Can have multiple copies even at the same fixpack level
- Simplifies migration
  - Can move applications as needed, not all at once
  - No need for parallel hardware
- Easier for ISVs to imbed MQ in solutions
  - Can install in “private” locations without worrying about other copies
  - Reduces support concerns
- Permits a single copy of V7.0.1 to remain on system
  - So existing systems can be migrated
  - Must be 7.0.1.6 or later

Multi-Version Installation

NOTES

- With this release, you can install more than one copy of MQ on Unix and Windows platforms.
  - It is not available on System i
  - z/OS already has this capability, in a different form
- This will simplify migration strategies, as you can continue to use one version of MQ and only gradually migrate applications to a new version, without needing parallel hardware.
- When installing MQ you can choose the directory into which it will be installed. There is no longer a requirement to use /opt/mqm (Linux, most Unix) or /usr/mqm (AIX).
- Third party applications can imbed MQ under their own private directory if they wish, and can choose which versions of MQ they support, without worrying about the "visible" version of MQ that a user might be exploiting.
- You can leave an existing copy of MQ V7.0.1.6 (or later) on your systems, and this new feature will work alongside it. So you do not need to move to V7.1 before starting to exploit the multiple installation capabilities.

Security: Channel Access Control

- Simplifying configuration for channel access
  - Clients and queue managers
- SET CHLAUTH definitions control who can use channels
  - Name mapping
  - Access blocking

- Easy to test rules that you define
  - DISPLAY CHLAUTH can “execute” rules
- Rules can be applied in WARNING mode
  - Not actually blocked, but errors generated

- **MIGRATION NOTE**: Standard rules block clients on new queue managers
  - “Secure by default”
  - Migrated queue managers behave as before until you enable the rules
  - Queue manager attribute CHLAUTH(ENABLED|DISABLED) provides overall control

Security: Channel Access Control

NOTES

- Over the years there have been many requirements raised to make it simpler to block unwanted access to a queue manager. For example, only defined IP addresses should be allowed through.
- With V7.1 many of these rules can now be defined directly to the queue manager and channels.
- A standard set of rules are created when you create a new queue manager or migrate an existing one to run under V7.1. However, the rules only start to be used when you ENABLE them – a migrated queue manager has them DISABLED by default, so as to not disrupt any existing configuration and applications. The default rules block most client access; don't be surprised to get authorisation failures until you have reviewed the rules. The default rules were chosen to make new queue managers automatically more secure, simplifying the process of securing a system.
- Channel Auth records define the rules that are applied when a queue manager or client attempts to connect through a channel. A number of elements about the partner can be checked, and choices made about whether or not to allow the connection to proceed.
- A pseudo-userid (*MQADMIN) can be used in these rules, which covers the use of any id that would otherwise gain automatic administrative rights over a queue manager. For example, is the asserted identity in the mqm group or blank (so would inherit the channel's userid). Having a pseudo-userid makes it easier to have the same rules on all platforms, where the actual definition of who is an administrator might vary.
- The DISPLAY CHLAUTH command can be used with the MATCH(RUNCHECK) option to verify a simulated connection (pretending to have an address or id). This means you can test rules from the console without making a real connection.
- Rules can also be defined as "WARN", causing authorisation events to be generated, but not actually blocking the connection. This may assist in migrating to a secure environment, by not turning off connections immediately.
- To further simplify setting up these rules, the MQ Explorer has a Wizard to take you through the steps; this is shown later.

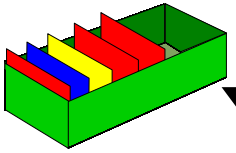
Security: Channel Access Control – example uses

- Block connections from specific IP addresses
- Block connections from specific Userids

- Set MCAUSER value used for any channel coming from a specific IP address
- Set MCAUSER value used for any channel having a specific SSL or TLS DN
- Set MCAUSER value used for any channel connecting from a specific Qmgr

- Block connections claiming to be from a particular Qmgr unless the connection is from a specific IP address
- Block connections claiming to be from a particular Client Userid unless the connection is from a specific IP address
- Block connections presenting a particular SSL or TLS certificate unless the connection is from a specific IP address

Channel Access Blocking Points



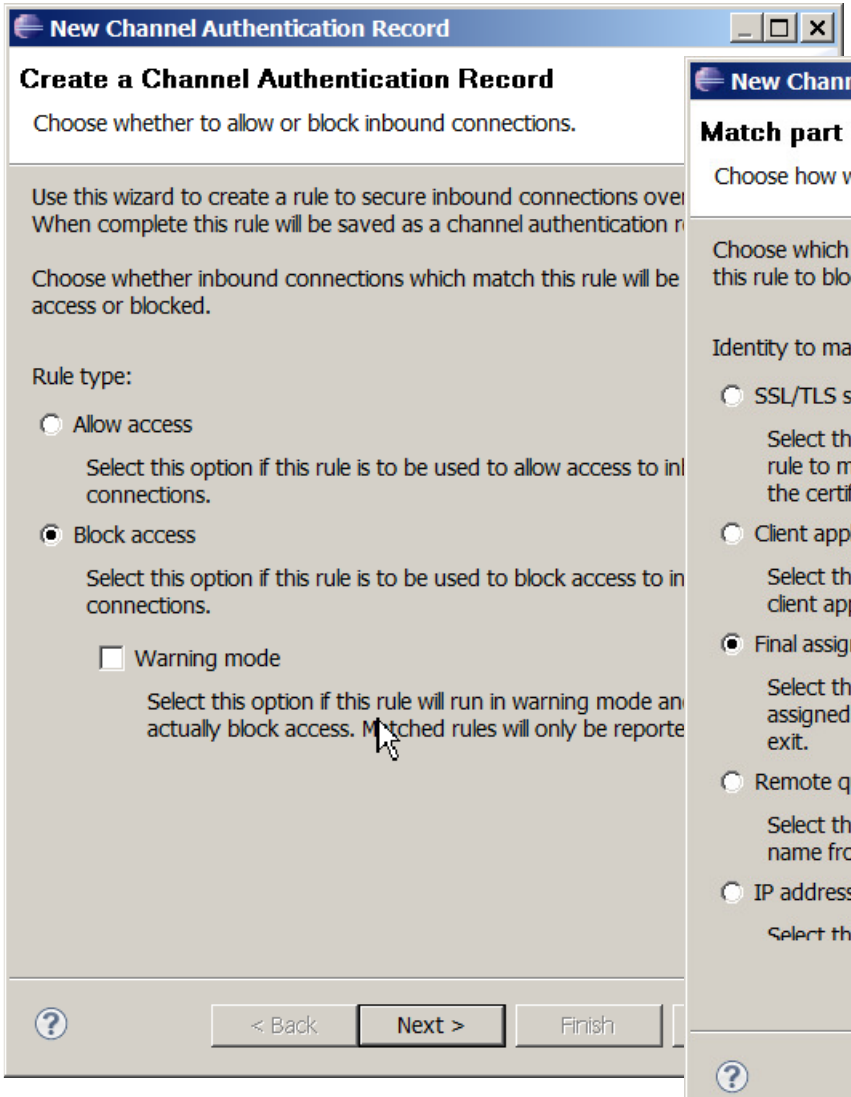
Access Control Lists

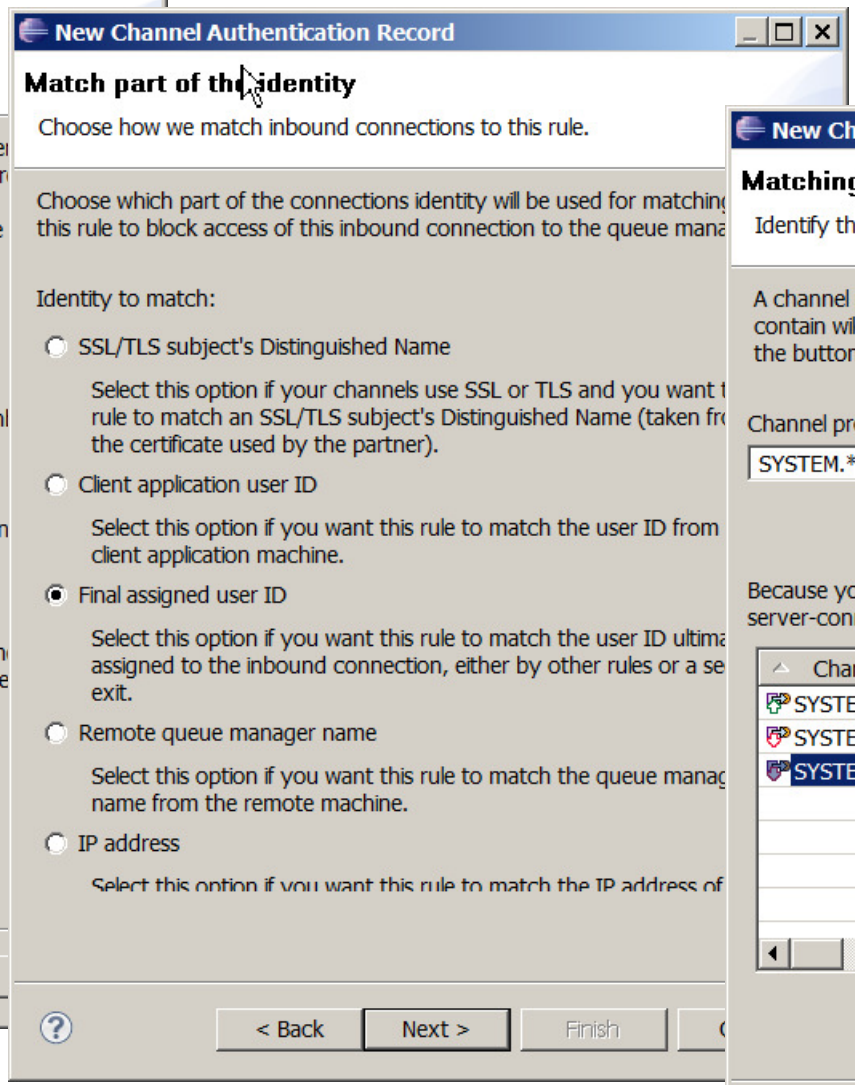
Channel blocking and mapping

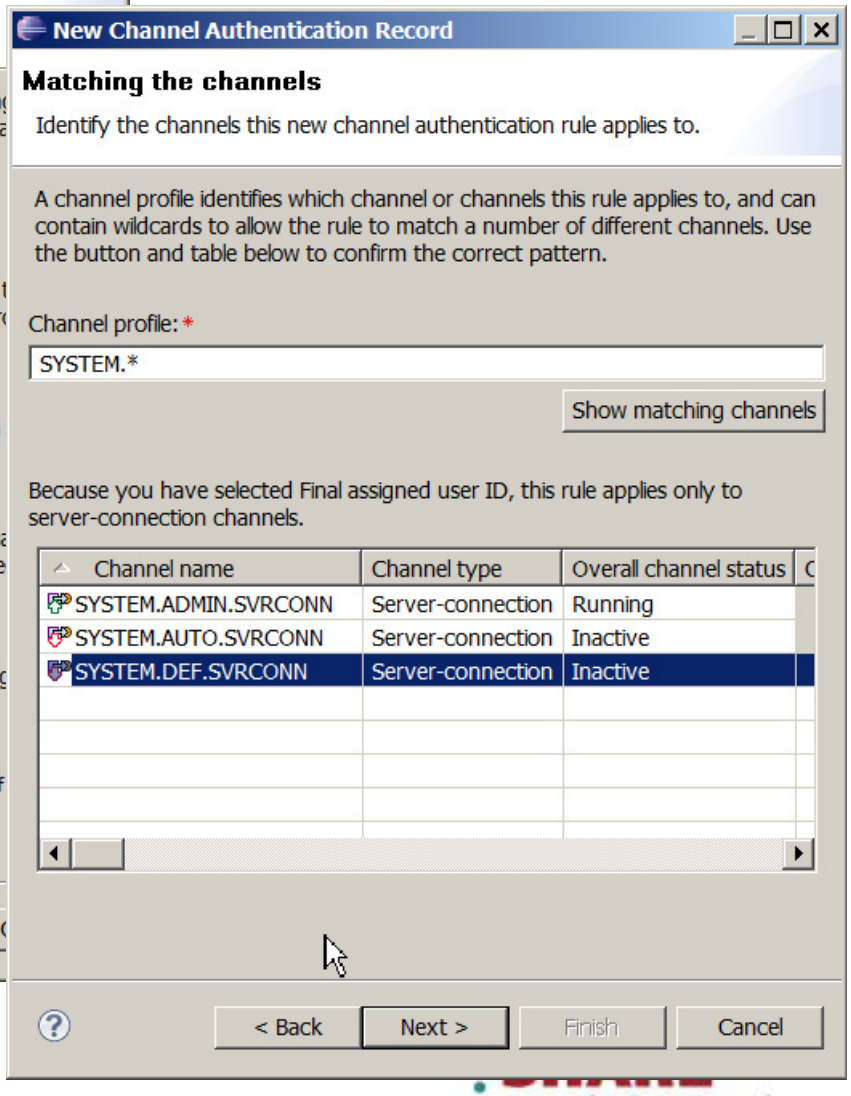
Listener blocking

IP Firewall

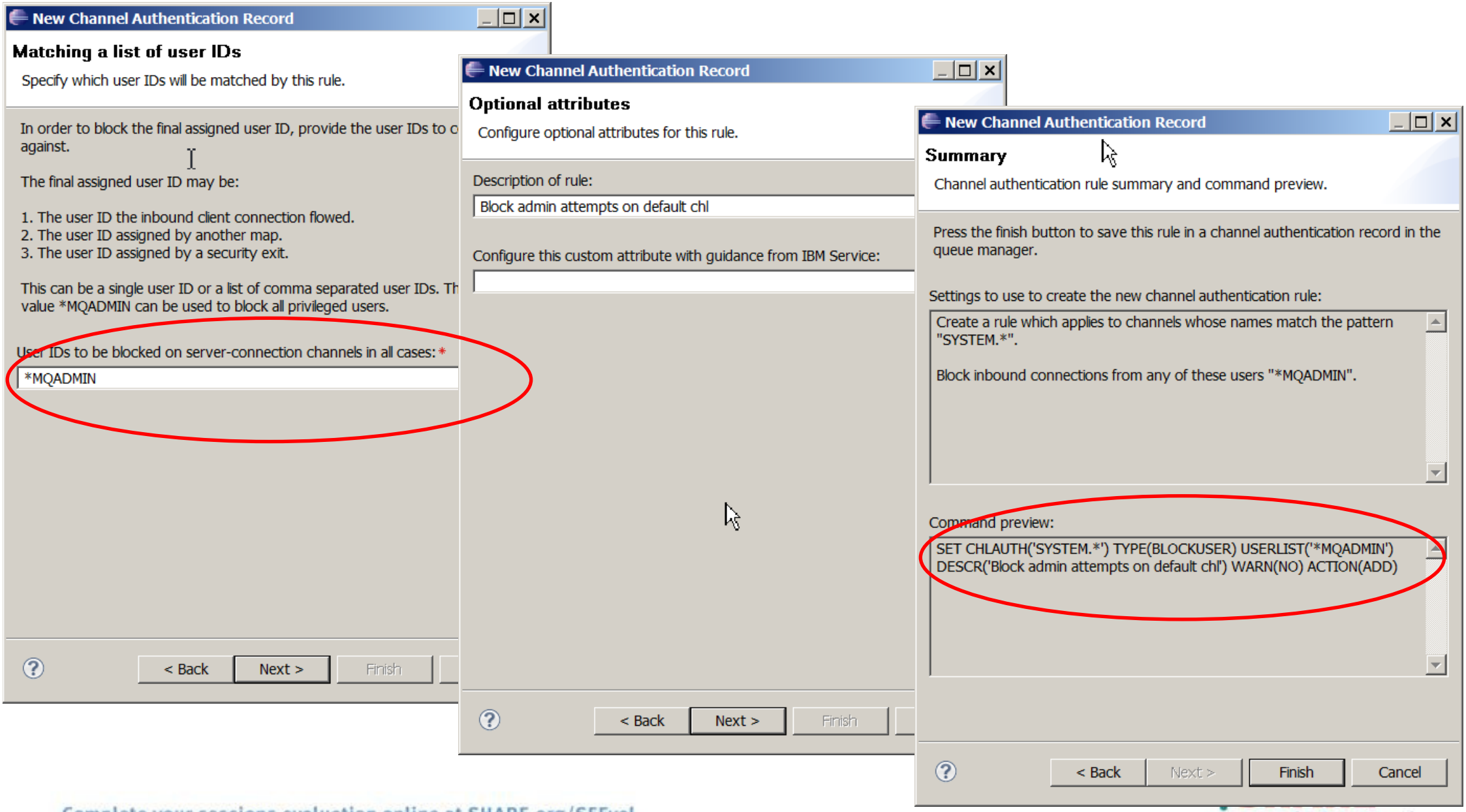
Channel Blocking and Mapping from the Explorer







Channel Blocking and Mapping from the Explorer



Security: SSL

- More crypto algorithms supported for SSL
  - Stronger algorithms are now available and recommended
  - MQ V7.0.1 added some SHA-2
  - MQ V7.1 adds more, with support for the NSA “Suite B” standard which includes Elliptic Curve cryptography
- Some older algorithms (eg SHA-1) should be considered deprecated
  - No plans to withdraw older algorithms immediately
  - But expect them to be removed in a future version of MQ
- Newer algorithms supported by gskit8 on Distributed platforms
  - Waiting for z/OS and iSeries SSL implementations before MQ can support them there
- The gskit toolkit is now provided inside the MQ installation
  - Will not clash with alternative levels from other MQ installations or other products

Security: SSL

NOTES

- MQ V7.1 extends the support for newer cryptographic algorithms, including from the SHA-2 family, and the NSA Suite B set.
- NIST has stated that SHA-1 should be considered deprecated. While MQ has not removed these algorithms, it may be done in future versions.
- Like the earlier FIPS-140 option within MQ, you can choose to enforce Suite B compliance on your channels.
- Note that these algorithms are currently only available where gskit is used as the SSL provider. For Java (which uses JSSE), z/OS and System i, MQ makes use of external toolkits and is dependent on those products to support the algorithms first.

Security: Authorisations for Non-Local (Clustered) Queues

- Distributed platforms now have authorisations for non-local queues
  - Including clustered queues
  - Making it consistent with z/OS
  - Also consistent with Topic authorisations

- So there is no longer a need to authorise access to the cluster transmit queue

- Grant authorisation to the remote queue manager instead
  - A new pseudo-object known to the OAM

```
setmqaut -m QM1 -t queue -n SYSTEM.CLUSTER.TRANSMIT.QUEUE -p mquser +put
                                    BECOMES
setmqaut -m QM1 -t rqmname -n QM2 -p mquser +put
```

Security: Authorisations for Remote Queues

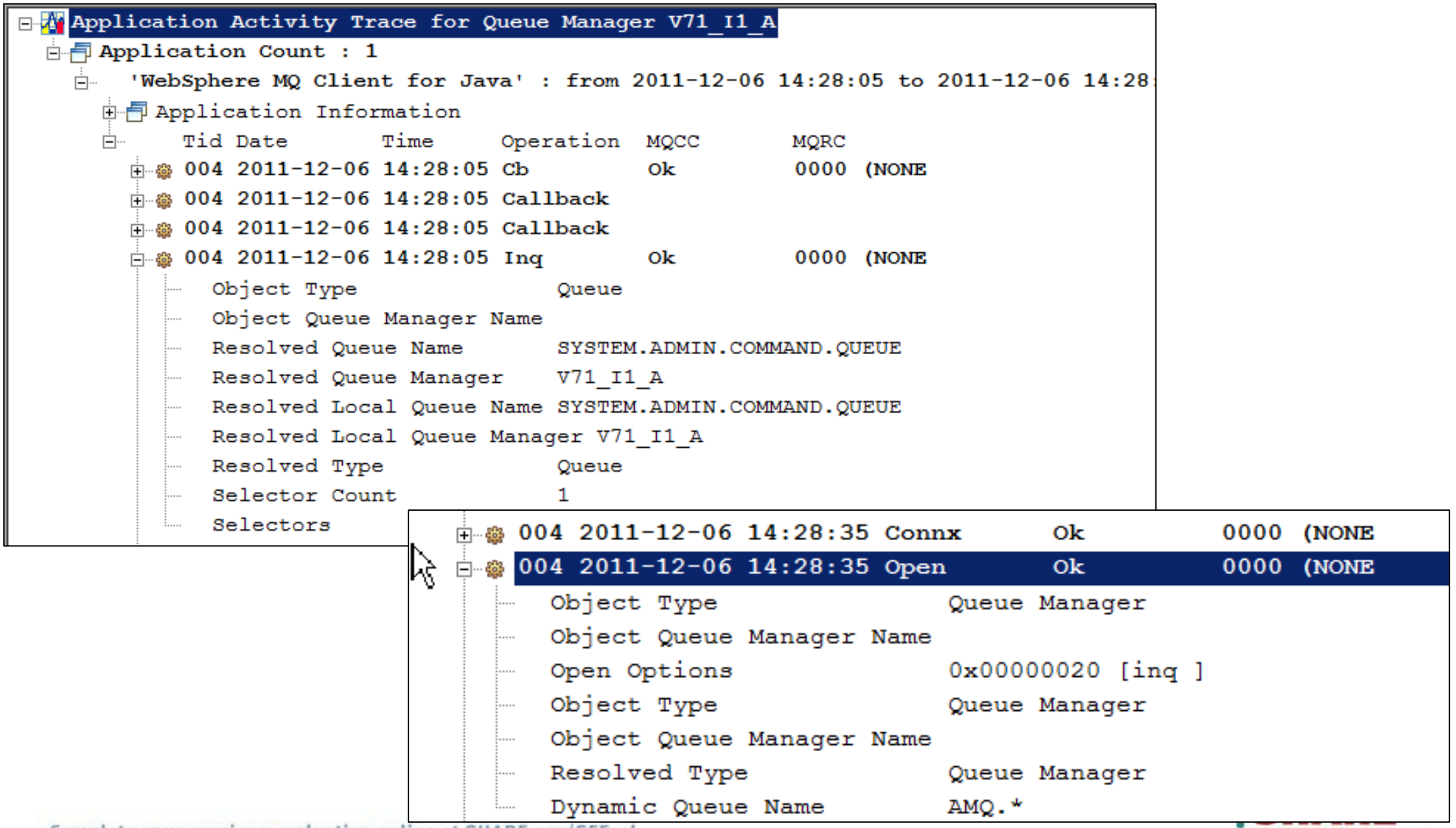
NOTES

- Access to non-local (ie clustered) queues can be authorised at a more granular level than previously. This new function matches something that was already available on z/OS and for Topics on all platforms.
- An object does not need to exist in order to associate ACLs with it
- A new pseudo-object, the “remote queue manager” is known by the OAM, and authorities are applied to it instead of the transmission queue that will be used to send the message to the remote queue. This means that the cluster transmission queue no longer has to be accesible to anyone wanting to use clustered queues.
- This does not remove the need for controlling access at the receiving queue manager as well (for example by using PUTAUT(CTX)) but it makes it easier to manage the sending side.
- This function can be disabled by a switch in the ini file. It is not a queue manager attribute as we expect customers to migrate to the new model once and then not revert, so it does not need to be as dynamic as real attributes can be.

Application Activity Reports

- New set of events to report on MQI operations by applications
  - One PCF event may contain multiple MQI operations
- Configurable in granularity
  - Amount of data
  - Which applications
- Enables scenarios such as
  - Application audit trail
  - Message duplication
  - Resource usage: which queues or topics are actually being used
  - Problem Determination: most recent MQI calls by applications
  - Application Coding Standards: does everyone use the MQI in the recommended way
  - And more …
- On all Distributed platforms

SupportPac MS0P V7.1



Application Activity Reports

NOTES

- New for the Distributed platforms is the ability to report on all the MQI operations from an application. This is similar to an MQI trace, but differs in several respects.
  - It is running “inside” the queue manager so has access to more than just the MQI parameters passed by the application. There is some additional information reported, such as the real queues used by the application, not just the name passed to MQOPEN.
  - The output follows the same style as many other reports, in that it is a set of PCF events, where each event holds details about multiple MQI calls
- Applications and their relationships and resources can be analysed without inspecting the application source code.
- Like other events, it is possible to redefine the event queue to be a topic alias so multiple consumers can work with these messages.
- An ini file defines the required granularity – you can have reports of all message data for all applications, but that might be excessive. Changes to the ini file can be made dynamically without restarting the queue manager; just cycle the queue manager attribute that determines whether or not these reports are to be collected.
  - You can also permit applications to disable their own data collection
- Now these reports are generated, many interesting requirements can be met by analysing or using the data. A sample program (source included) formats these events and you can use this as the basis of more sophisticated tools.

Clustering

- "Bind on group"
  - All messages within a logical group are routed to the same queue manager
  - Workload balancing is done for each group
  - Simpler for applications that use message groups
  - Previously would have had to close and reopen the queue

- New option in the MQI and DEFBIND attribute for queues

- Once a group has started its path to a selected queue manager, messages in that group will not be reallocated in the event of a failure

- New sample **amqsclm** to monitor queues and redistribute delivered messages
  - If a queue has no getters, block further deliveries and redistribute existing messages
  - Includes source code, so easy to modify

Clustering – Split Transmit Queue Requirements

- Separation of Message Traffic
  - With a single transmission queue there is potential for pending messages for cluster channel 'A' to interfere with messages pending for cluster channel 'B'
- Management of messages
  - Use of queue concepts such as MAXDEPTH not useful when using a single transmission queue for more than one channel
- Monitoring
  - Tracking the number of messages processed by a cluster channel currently difficult
  - Some information available via Channel Status

Clustering – Split Transmit Queue

- With V7.5 a queue manager can automatically define a PERMANENT-DYNAMIC queue for each CLUSSDR channel.
  - Dynamic queues based upon new model queue “SYSTEM.CLUSTER.TRANSMIT.MODEL”
  - Well known queue names: “SYSTEM.CLUSTER.TRANSMIT.<CHANNEL-NAME>”
- Controlled via attribute affecting all cluster-sdr channels on the queue manager

```
ALTER QMGR DEFCLXQ( SCTQ | CHANNEL )
```

- Also have manual definitions
  - Multiple queues can be defined to cover all, or a subset of the cluster channels.

```
DEFINE QLOCAL(APPQMGR.CLUSTER1.XMITQ)
       CHLNAME(CLUSTER1.TO.APPQMGR) USAGE(XMITQ)
```

- Automatic and Manual are not mutually exclusive
  - They could be used together

MQ Clients

- A client is now available on System i enabling connectivity from C and RPG programs without needing a local queue manager
  - Platform already had a Java client
- MQI libraries like libmqm connect to local and remote queue managers
  - Smart switching for clients, as well as handling multi-version systems
- API Exits available in C clients
  - Same interface as available for local binding applications

MQ Clients

NOTES

- The System i platform gets a C-based client, like other Distributed platforms. This complements the Java client that is already available

- Part of the “smart” API switching libraries that are needed to support multi-version installations can now also handle the differences between local and client connections. This makes it simpler to develop new applications as you do not need to compile/link them differently for the different environments.

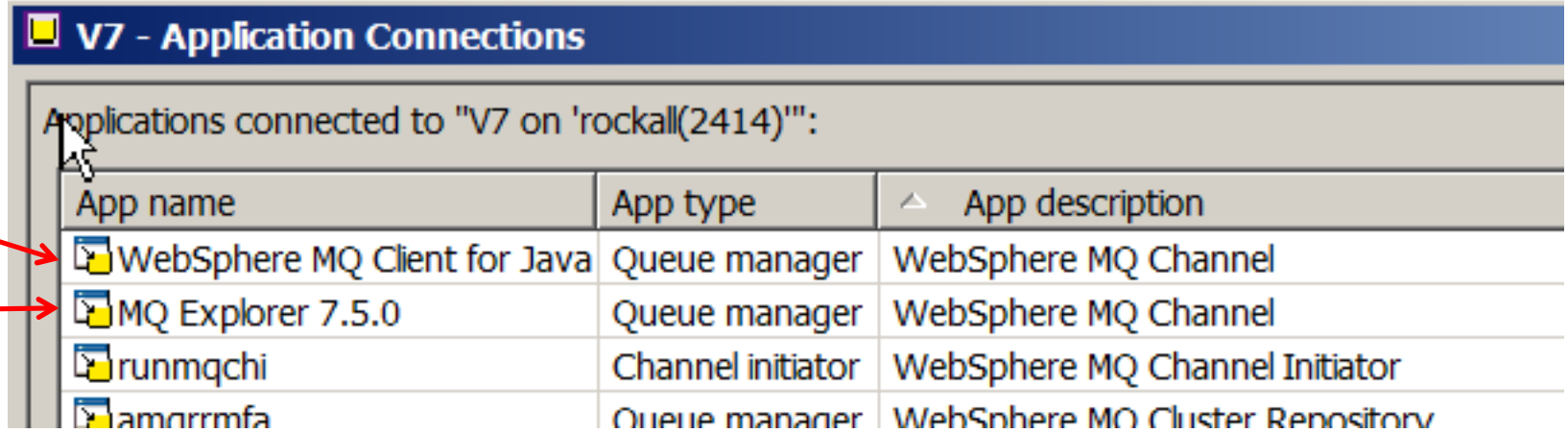
- API Exits are also now available for the C client libraries, matching the interfaces on the server side. There are some minor differences, such as how XA verbs are handled, but these should not affect existing exits.

Java Application Identification

- Java client applications now fill in APPLTAG field
- No longer appear as “WebSphere MQ Client for Java”
- Application-provided property
- Or the Main class

V7 Explorer

V7.5 Explorer



MQ Clients – Multicast

- Publish/Subscribe is enhanced to support multicast communication
  - Uses technology from the MQ Low Latency Messaging product
  - So it is interoperable with LLM
- Provides new Quality of Service
  - Low latency with high fan-out
  - Provides higher speeds for non-persistent messages
  - Provides higher availability as queue manager can be removed without affecting flow
  - Provides “fairness” as all recipients of a message get it at the same time
  - Higher scalability as additional subscribers cause no additional traffic
- Mapping MQ topic space to multicast group addresses
  - Can have mix of multicast and queue-based subscribers
  - Topic objects have associated COMMINFO objects to define addresses and other attributes
- Supports direct communication from publisher to subscriber, bypassing qmgr
- Queue manager maintains status and statistics for monitoring

Channels

- See the MQ version of connecting partner
  - Level of clients and queue managers available in channel status
  - For example a V7.0.0.1 client shows as RVERSION(07000001)
  - Can distinguish Java, C, .Net client programs
  - Helps administrator determine whether partner needs upgrading
- Distributed platforms now use DISCINT to disconnect idle clients
  - ClientIdle qm.ini parameter ignored
  - Consistent with z/OS
- Alternative channel batch control based on byte counts
  - BATCHLIM attribute
  - Useful when a transmission queue holds mix of large and small messages
  - Can make batch time (latency) more consistent
  - Batch is ended when first of either bytes or messages transferred reach configured limit
- Per-channel control of Dead Letter Queue
  - New channel attribute USEDLQ(YES|NO)

Channels

NOTES

- Some small but useful enhancements to channel controls. These are not all of them!
- The RVERSION and RPRODUCT values on channel status can tell an administrator what is connecting to a queue manager. The information has been sent between systems since V7.0, and is now exposed to users. Any client or queue manager that is at V6.0 or older will not send this data, so the lack of detail will indicate old systems.
- Both z/OS and Distributed platforms have ways of forcing a client to be disconnected when it has done no work for a while; with V7.1 those mechanisms are made consistent with use of the DISCINT channel attribute
- Traditionally, channels commit a batch after having sent 50 messages or when they reached an empty transmission queue . The amount of data that might be sent with 50 messages could vary wildly from, for example, 50 * 1K to 50 * 100MB depending on the pattern of messages. This means that there is no way to tell the channel to commit the batch sooner when some of these large messages appear and the problem will appear as a slow channel due to the need to re-transmit a very large quantity of data if there is a network outage. Adding a control based on bytes makes the transmission time more consistent. There is no precedence between BATCHLIM and BATCHSZ; whichever value is reached the first will cause the batch to be ended
- A per-channel control can be set on whether DLQ processing should be followed. A channel with USEDLQ(NO) will stop on error, even if there is a qmgr-defined DLQ

z/OS Performance and Availability

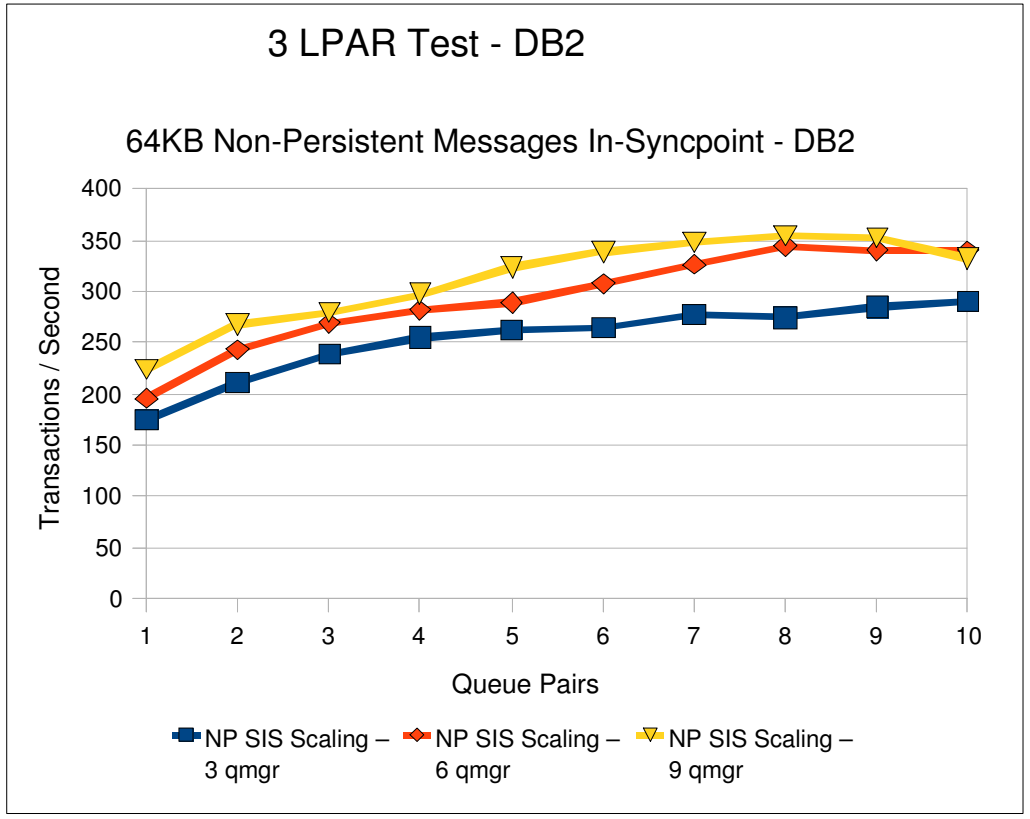
- Performance
  - z196 Scaling improvements for both non-shared and shared queues
    - Have successfully processed more than ONE MILLION non-shared messages/sec through a single queue manager
    - Have also successfully processed 150K shared msgs/sec with 3 queue managers
  - Improved performance by using SMDS for large messages on shared queues

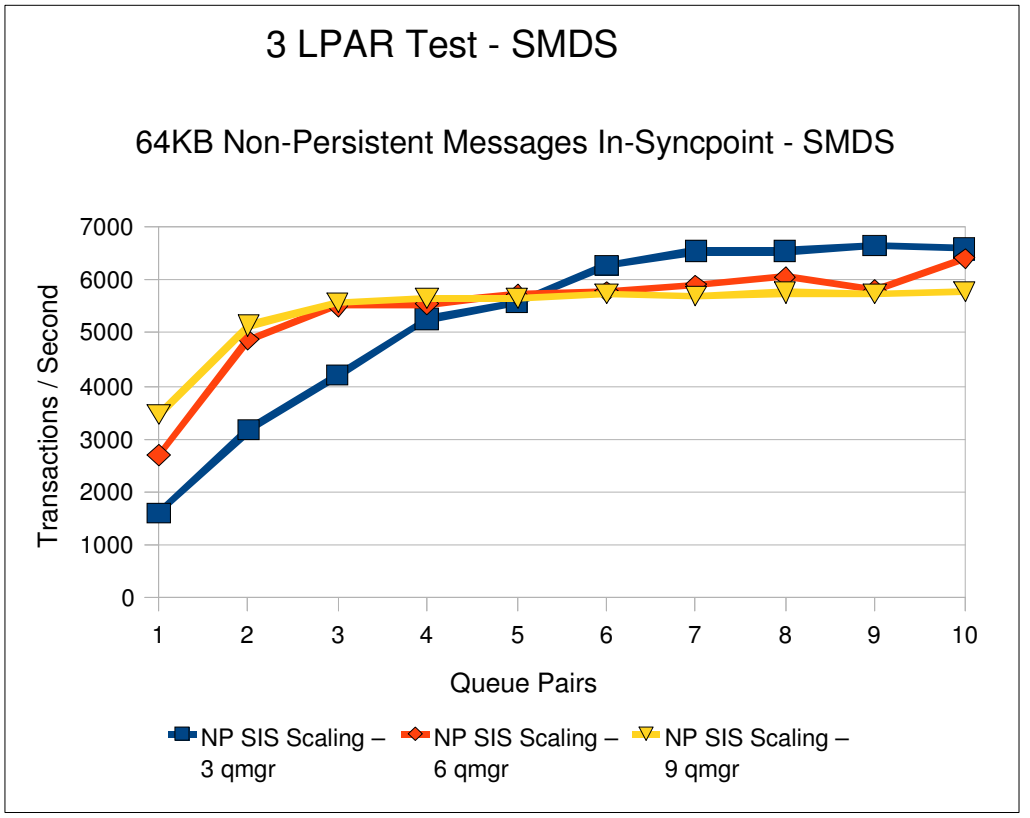
- Availability
  - Structure rebuild when connectivity to CF is lost improves availability of Shared Queues
  - GroupUR function from MQ V7.0.1 for Distributed QSG connections available for CICS usage
    - CICS 4.2 can use this to enhance the MQ Group Attach originally provided in CICS 4.1

Large Shared Queue Messages: SMDS

- Using DB2 BLOBs to store large (>63KB) messages is expensive
  - Both CPU and pathlength
- Shared Message DataSets (SMDS) removes DB2 for large message storage
  - DB2 still needed for storing shared definitions
  - CF still holds small messages and pointers for offloaded messages
- Shared VSAM datasets increase shared queues capacity and performance
  - All queue managers in the QSG can access the datasets
- CF Structure message reference still controls locking, ordering, deletion etc.
  - So every message still has a “pointer” in the CF
- Rules control offload message size and % Structure-full offload trigger
  - Set per CF structure
  - Offloading messages at 63K gives 1.25M messages on a 100GB structure
  - Offloading all messages at 1KB gives 45M messages on same structure
- All QSG members must be at new level to access queues with this capability

SMDS Performance Improvement





- Early Test Results on z196
- Tests show comparable CPU savings making SMDS a more usable feature for managing your CF storage
- SMDS per CF structure provides better scaling than DB2 BLOB storage

Scalability & Performance – Distributed platforms

- Performance measured and improved for a range of scenarios
  - Hardware capabilities have evolved over years to have more CPUs, more memory etc
  - MQ topologies have evolved to have more clients and larger/fewer queue managers
- "Fastest MQ ever": better performance than V6 and V7
- Multicast faster than traditional non-persistent
  - Over 5x for one-many publications
- Performance reports now available from SupportPac site

Scalability & Performance – MQ Explorer

- Design changes to MQ Explorer reduce its footprint and improve performance
- Now does not include full Eclipse development workbench
  - But Explorer can be easily added to other Eclipse installations and products

- Many Explorer installs are supported within the overall multi-version support
  - But each Explorer only fully manages queue managers associated with its own installation
  - Use client connections for other installation queue managers on same machine

	V7.0.1	**V7.1**
Time to install MS0T	203 seconds	92 seconds
Startup Time	6 seconds	4 seconds
Connect to 100 queue managers	At least 53 seconds	7 seconds
Enable and disable Sets for 100 queue managers	35 seconds	1 second

Management of Distributed platforms

- New integrated command (dmpmqcfg) to extract configuration
  - Fulfills the role that MS03 (saveqmgr) has done over many years
    - Backup your configuration, change control, rebuild systems etc
  - MAKEDEF already available on z/OS
  - Different syntax than MS03, but similar function

- MQSC commands equivalent to setmqaut/dspmqaut
  - So you don't need to drop out of the command interface to modify security
  - Can simplify scripting of configuration changes
  - No current plans to remove *mqaut commands

- Multi-instance Queue Managers on Windows
  - The need for domain controllers ("domainlets") has been removed
  - New option when creating queue managers to define ownership

Management of Distributed platforms

NOTES

- Probably the most commonly-used SupportPac has been MS03 (saveqmgr). In MQ V7.1, the concept is now built into the product and formally supported. The new dmpmqcfg command has a slightly different syntax, but fulfills the same role of extracting a queue manager's configuration and displaying it in MQSC syntax.
- Dmpmqcfg can connect to local queue managers or use client connections to remote systems.

- New MQSC commands are available that are equivalent to the set/dsp/dmpmqaut commands. These may be more convienent when you are already inside runmqsc, rather than dropping out to the command line, and certainly more convenient when scripting configuration changes. The new dmpmqcfg for example can put authorisations in a single MQSC script for replay, rather than having to run separate commands.

- On Windows, the requirement for multi-instance queue managers to be domain controllers (even if limited in scope eg "domainlets") has been removed. When a queue manager is created, you can now name a group that both machines share knowledge of, and that group gets appropriate ownership of resources such as the files and directories that make up the queue manager.

Extending the reach of MQ – MQ Telemetry Transport (MQTT)

- IBM developed a protocol for constrained systems like industrial controllers
  - Later renamed MQ Telemetry Transport (MQTT) due to broader telemetry adoption
  - Built for low bandwidth, high latency, unreliable, high cost networks
  - Tailored for resource-constrained client application environments
- Traditional messaging qualities of service provided where environment allows
- Feature available from MQ 7.0.1.4; server platform coverage extended in V7.1
  - Highly scalable
    - A single queue manager can handle up to 100K concurrently connected devices
  - Fully integrated / interoperable with WMQ
    - Publishers and subscribers can exchange messages with MQI and JMS applications
- In addition any 3rd party, open source or roll your own MQTT client can be used

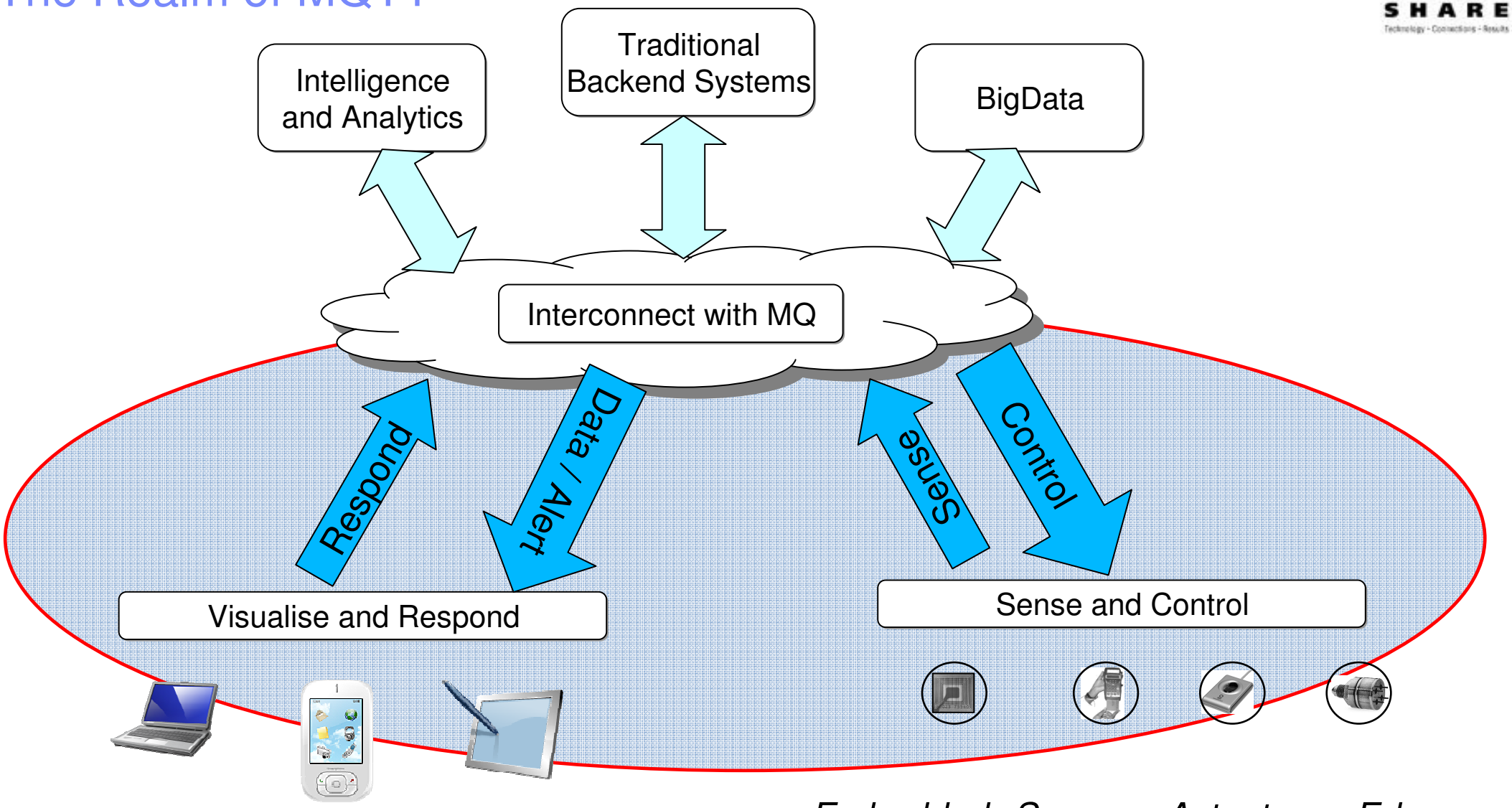
Extending the reach of MQ – MQ Telemetry Transport (MQTT)

NOTES

- MQTT has actually been around for a while already, but it has had a few different names and has hidden away in different corners of the product family
  - Known as SCADA (node in Message Broker), Mqisdp, pervasive
- Stable and widely used, 10 years old
- NOT MQLLM!

- This format was available as a feature on top of MQ V7.0.1.4, the supported server platforms have been extended with MQ V7.1.

The Realm of MQTT



Mobile Web

Embedded Controllers *Sensors* M2M *Actuators* *Edge Gateways*

MQ Mobile client pack

Making it easier for mobile developers to build apps that access enterprise data

Worklight developers
Developer experience augmented with mobile messaging

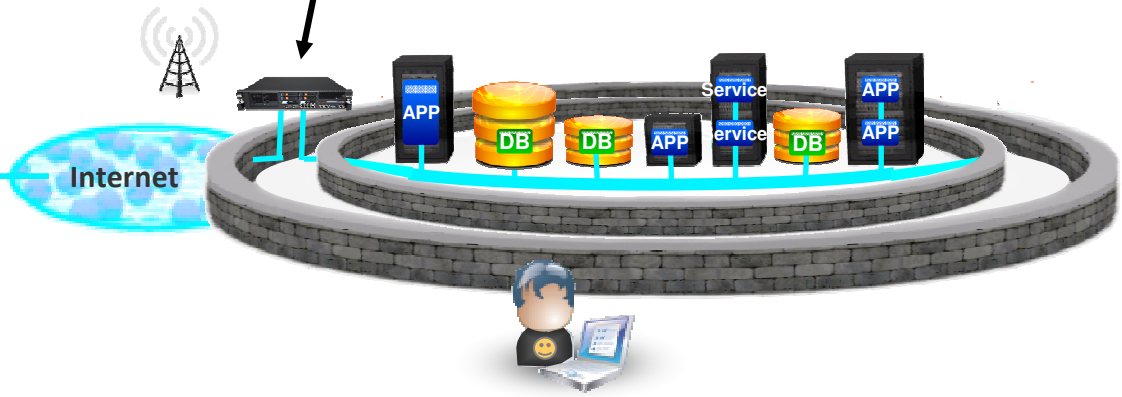
Apple IOS
Messaging for native iOS apps

Android
Messaging for native Android

Cordova
Javascript messaging via Phonegap plugin

MQTT
- Access to enterprise
- Reliable delivery
- Conserve device power
- Reduce network traffic

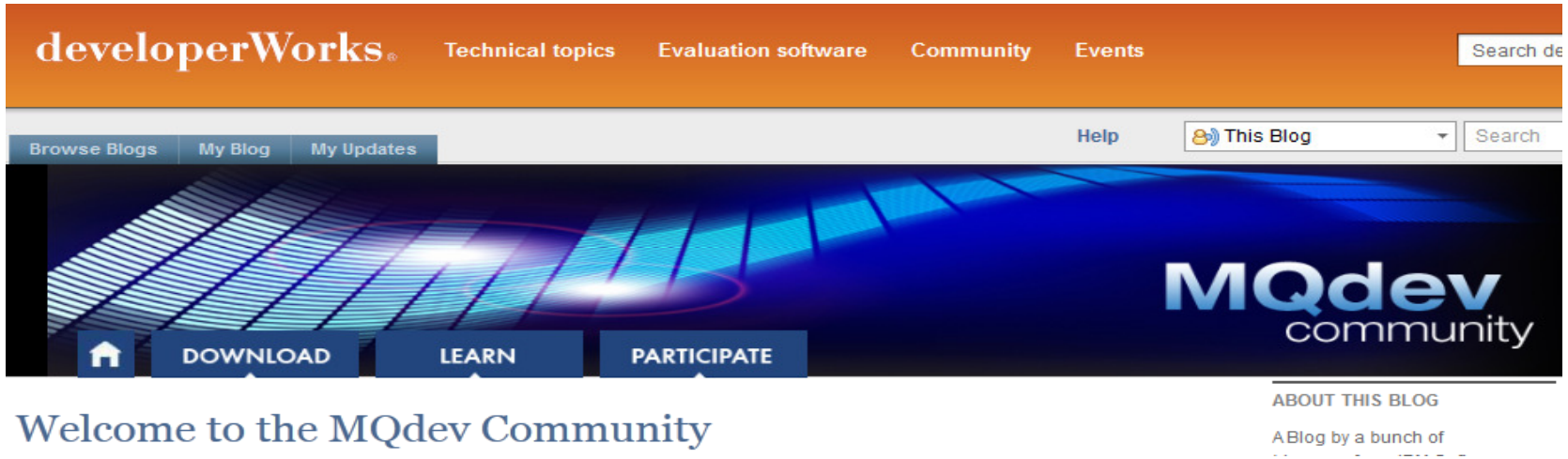
Future: "Internet Scale Messaging"
- Edge of Network Messaging Appliance
- High scale MQTT and Websockets support



MQ teams
- Can show relevance of their MQ infrastructure to mobile projects
- Can provide access to enterprise apps and data already connected by MQ
- Use pub/sub model to enable dynamic distribution of notifications

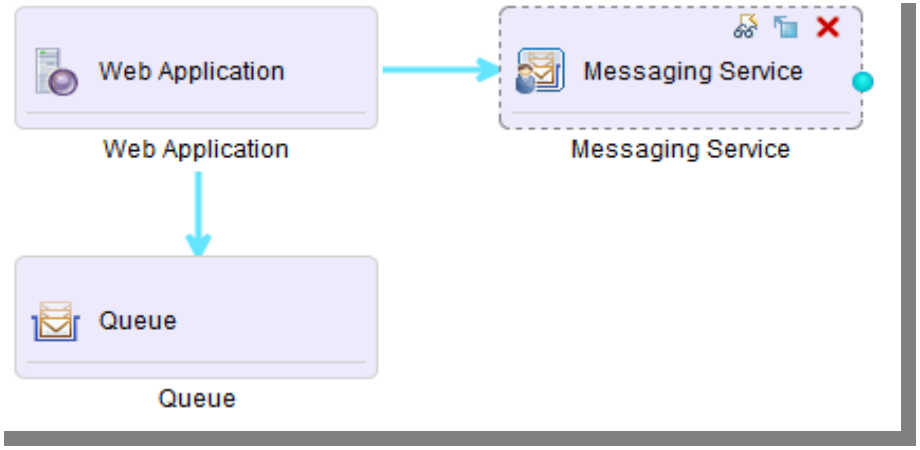
New mobile messaging deliverables

- What is being delivered?
  - MQ “Mobile Messaging Client Pack”
    - Set of new and enhanced MQTT messaging clients for mobile devices and sensors
  - Articles, code samples and sample mobile applications
- How available?
  - Downloadable from the new Messaging community on developerWorks in Clients are fully supported when used with relevant IBM products, for no extra charge



New “Messaging Extension for Web Application Pattern”

- New Messaging pattern type for IBM Workload Deployer and IBM PureApplication System
  - Extends Web Application Pattern



- Simplifies Web application deployment by:
  - Provisioning a new Virtual machine containing a queue manager when required
  - Creating queues and topics in queue manager
  - Linking new resources to JNDI objects used by application

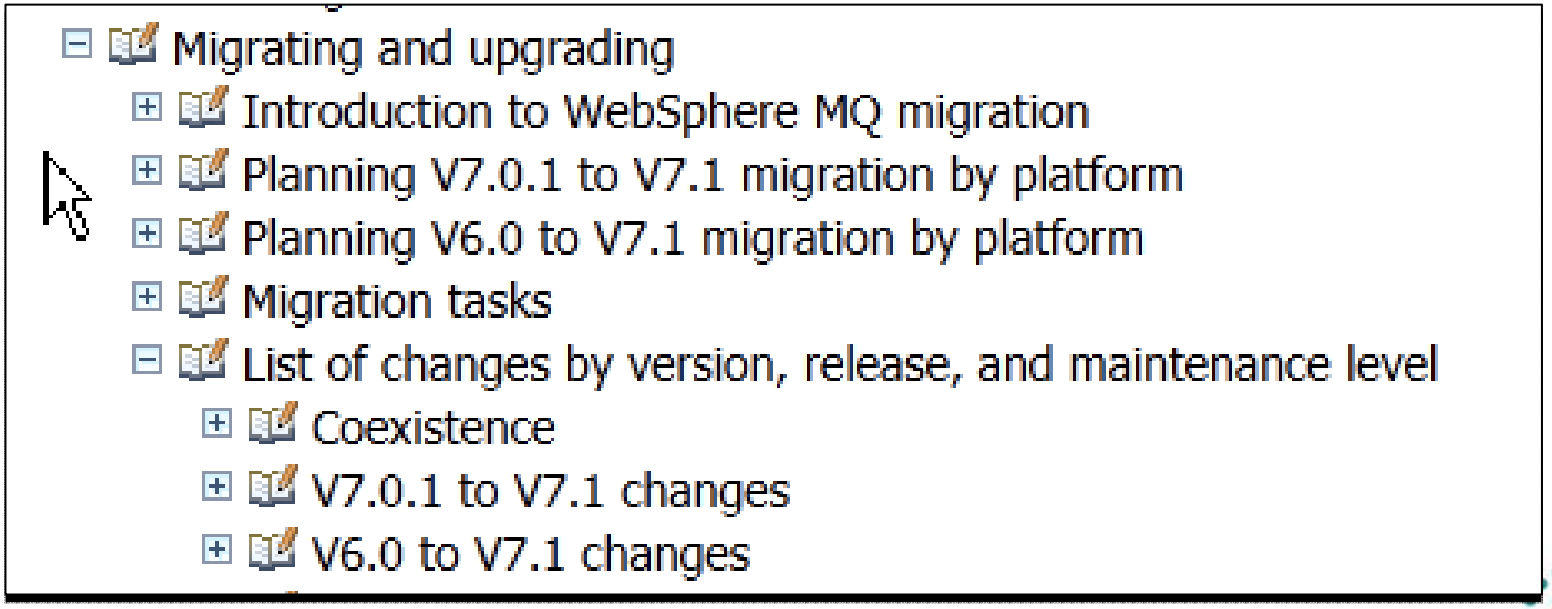
MQ Cloud Support: Pre-Connect Exit

- Supports movement by some to “Utility Compute”, Private Cloud configs, etc.
  - Rapid provision of applications allied with need to further decouple Client/Server connectivity
  - Server applications might move location – new addresses or queue managers
- MQ Client connects to a “service” rather than specific Queue Manager
- Can transparently change location of MQ server-side applications
  - No client code changes needed
  - No configuration files need to be updated at the client machine
  - JMS/XMS applications already do this via JNDI lookup
- Exit run during MQCONN queries a repository to discover real location
  - MQ V7.1 incorporates the LDAP implementation from SupportPac MA98

No Longer Supported

- V7.1 removes a few older features including
  - Support for HP-UX on PA-RISC hardware
  - Windows Performance Monitor
  - Windows Active Directory Service Interface

- See Migration Guide in InfoCenter



MQ 7.5: Enhancements to newly-integrated components

- Managed File Transfer
  - Logger can now write to a file

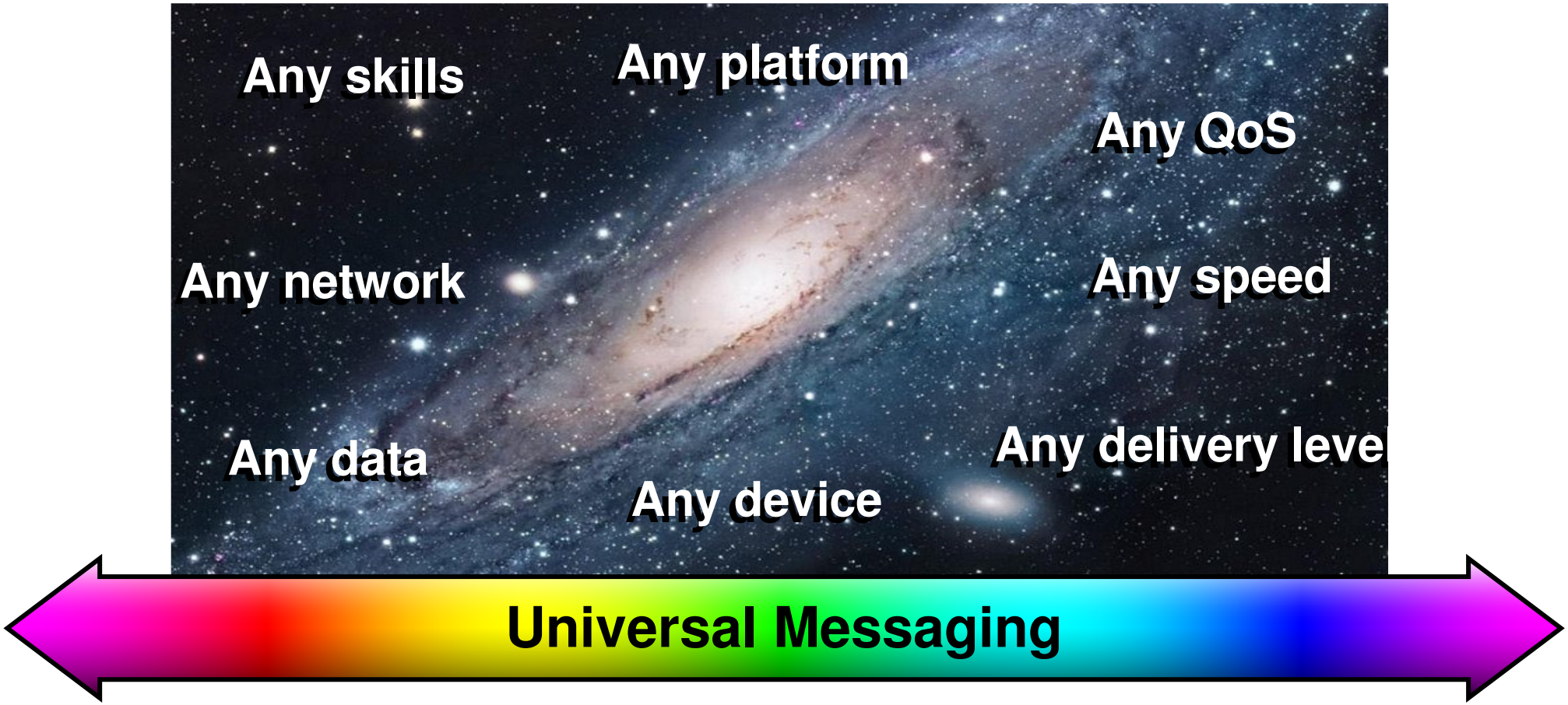
- AMS
  - V7.0.1.2 enhancements
    - Supports SHA-2 Digest algorithms
    - Command and Configuration Events for Policy changes
    - Audit trail of who has changed configuration
  - SVRCONN interception

Why WebSphere MQ ?

Over 17 years of proven experience	Leader in Messaging technology innovation
Connect virtually anything	Broad coverage of platforms, technologies, languages Draw skills from a larger pool – use who you have today Over 9,300 certified developers for IBM Messaging alone
Most widely deployed Messaging Backbone	Over 10,000 customers using IBM Messaging Backbone Over 90% of the Fortune 50 and 9 of the Fortune 10 Over 80% of the Global 25 and 7 of the Global 10
Entrusted with Tens of billions of messages each day	Government client sends 675 million messages per day* Banking client handles over 213 million messages per day on z/OS alone*
Relied upon as the mission-critical Backbone	Financial Markets client handles $1 trillion worth of traffic per day on one MQ network* Banking client sends $7-$35 trillion worth of traffic per day on just one MQ-based SWIFT gateway*
Continuously Investing and Innovating	Over 120 patents and filings within messaging space New WebSphere MQ family products Regular enhancements, updates and new releases

- ***Results reported from actual MQ implementations***

Universal Messaging with WebSphere MQ



This was session 12603 - The rest of the week ……

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

Please fill in evaluations at share.org/SFEval #12603

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