

# 17037: What's new in IBM Messaging

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*IBM Hursley*



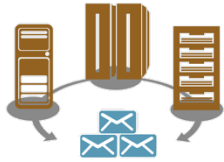
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SHARE is an independent volunteer-run information technology association that provides **education, professional networking and industry influence.**



# IBM Messaging – Market segments



## Enterprise Messaging

### Deliver Messaging Backbone for Enterprise

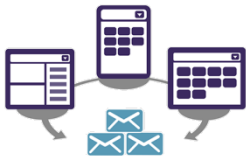
Focus on traditional MQ values, rock-solid enterprise-class service, ease-of-operation, breadth of platform coverage, availability, z/OS exploitation



## Mobile Messaging & M2M

### Capture Big Data from Mobile and Internet of Things

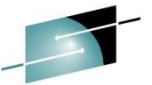
Focus on Internet-scale events, m2m device enablement, zero-admin, security and privacy, feed into real-time analytics, location-based notifications



## Application Messaging

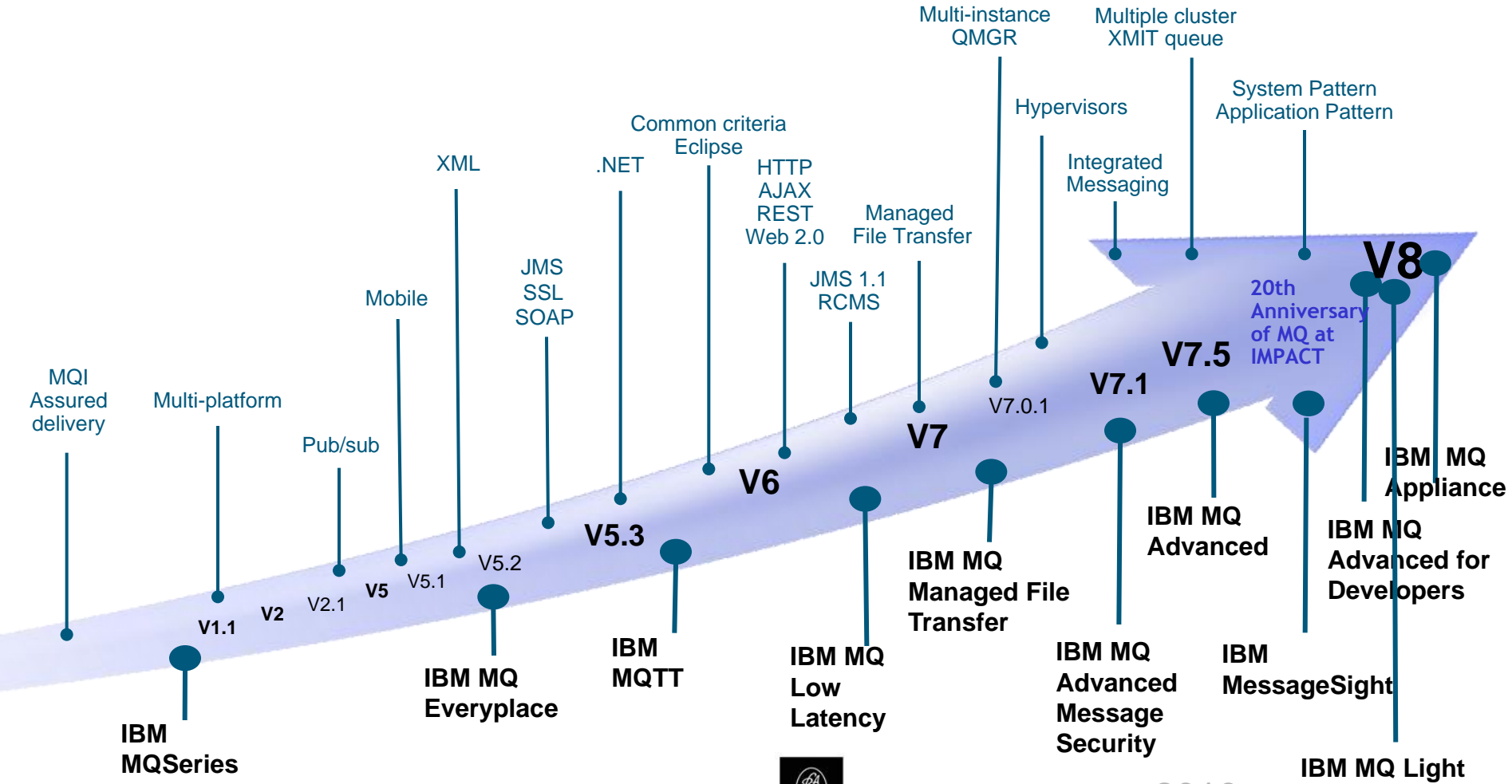
### Enable Developers to build more scalable, responsive applications

Focus on new app dev use cases, breadth of languages, ease-of-deployment, lightweight services, integration with developer frameworks



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# Timeline

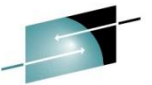


1990s

2000s

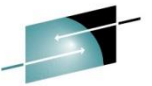
2010s





# End of Service for old platforms and versions

- MQ V7.0.0 and V7.0.1 for multiplatforms – EOM, EOS effective **September 2015**
  - V7.0 will have had more than 7 years of support
  
- MQ V7.0.1 for z/OS – EOM, EOS effective **September 2015**
  - V7.0 .0 already out of service
  
- MQ V3 for VSE – EOM, EOS effective **September 2015**
  - Extended support contracts available
  
- MQ V6 for OpenVMS: EOS effective **April 2016**



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# MQ Appliance



# Introducing IBM MQ Appliance



**Session  
17060**

- The scalability and security of IBM MQ V8
  - Integrates seamlessly into MQ networks and clusters
  - Familiar administration model for administrators with MQ skills
- The convenience, fast time-to-value and low total cost of ownership of an appliance
- Ideal for use as a messaging hub running queue managers accessed by clients, or to extend MQ connectivity to a remote location
- General availability 13 March 2015

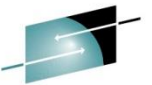
# Why an appliance?

- Fixed hardware specification allows IBM to tune the firmware
  - Having fewer POVs makes it easier to deploy and manage
  - Less performance tuning should be needed
- Standardisation accelerates deployment
  - Repeatable and fast, less configuration/tuning required
  - Post-deployment resource definition or lock down before deployment
- “Hub” pattern separates messaging from applications/middleware
  - Organisational independence from application teams
  - Improved availability, due to reduction of downtime
  - Predictable performance, simpler capacity planning
- Simplified ownership
  - Self-contained: avoids dependencies on other resources/teams
  - Licensing: Simpler than calculating licensing costs (e.g. by PVU)
  - Security: Easier to assess for security compliance audit

# Key characteristics of the IBM MQ Appliance

- “MQ V8” (+/-) delivered as a state-of-the-art appliance
- Built using the latest DataPower appliance hardware and OS
- Firmware includes the MQ V8 product and capabilities
  - Participates in MQ networks or clusters
  - Existing MQ applications connect as clients, with no code changes
- Two models, to suit different uses and performance requirements
  - Either model of appliance can run multiple queue managers, subject to overall throughput
- Familiar administration concepts and syntax, with a choice of interfaces
- Familiar security model for authentication and authorisation of messaging users, with greater flexibility for scalable administration
- Built-in High Availability
  - Per queue manager monitoring and automatic restart/failover
  - Without external dependencies like shared file systems or disks



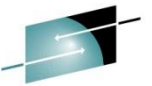


# Administration

- Command-line Interface
  - Supports appliance-specific commands such as configuring network interfaces, importing certificates, ...
  - Also offers a familiar subset of MQ control commands
  - You can also use MQSC interactively, or run scripts remotely
- MQ Console
  - Browser-based UI for administering the appliance
  - Avoids maintenance of rich client installations
  - Very convenient for proofs-of-concept and developer use
- MQ Explorer
  - Essential for existing administrators
- PCF
  - Supports remote administration using all of the existing MQ tools

# Key differences compared with installable MQ

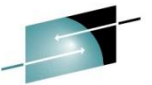
- “Hub” pattern; no applications deployed to the appliance
  - Applications must connect as remote clients
- No user exits can be run on the appliance
  - CHLAUTH and application activity trace
- Appliance-specific HA technology
  - With no shared file system or shared disk
- Authentication and authorisation via on-board or central repository
- Command-line interface on the appliance is not a general-purpose shell
  - Has familiar commands for things you need
  - e.g. no runmqsr, because MQ listeners run under QM control



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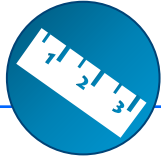
# MQ News





# IBM MQ V8

## delivering best in class enterprise messaging



### *Platforms & Standards*

### *Security*

### *Scalability*

### *System z exploitation*

64-bit for all platforms

Userid authentication via OS & LDAP

Multiplexed client performance

64-bit buffer pools in MQ for z/OS means less paging, more performance

Multiple Cluster Transmit Queue on all platforms

User-based authorisation for Unix

Queue manager vertical scaling

Performance and capacity

Support for JMS 2.0

AMS for IBM i & z/OS

Publish/Subscribe improvements

Performance enhancements for IBM Information Replicator (QRep)

Improved support for .Net and WCF

DNS Hostnames in CHLAUTH records

Routed publish/subscribe

Exploit zEDC compression accelerator

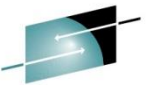
SHA-2 for z, i & NSS

Multiple certificates per queue manager

SMF and shared queue enhancements

## MQ V8 Dates

- Announce: 22 April 2014
- Availability:
  - 23 May 2014 (eGA Distributed)
  - 13 June 2014 (z/OS and pGA Distributed)
- **FP2** for Distributed platforms available
- On z/OS, PI19721 for migration PTF
  - Also recommended PI19991 QTYPE APAR

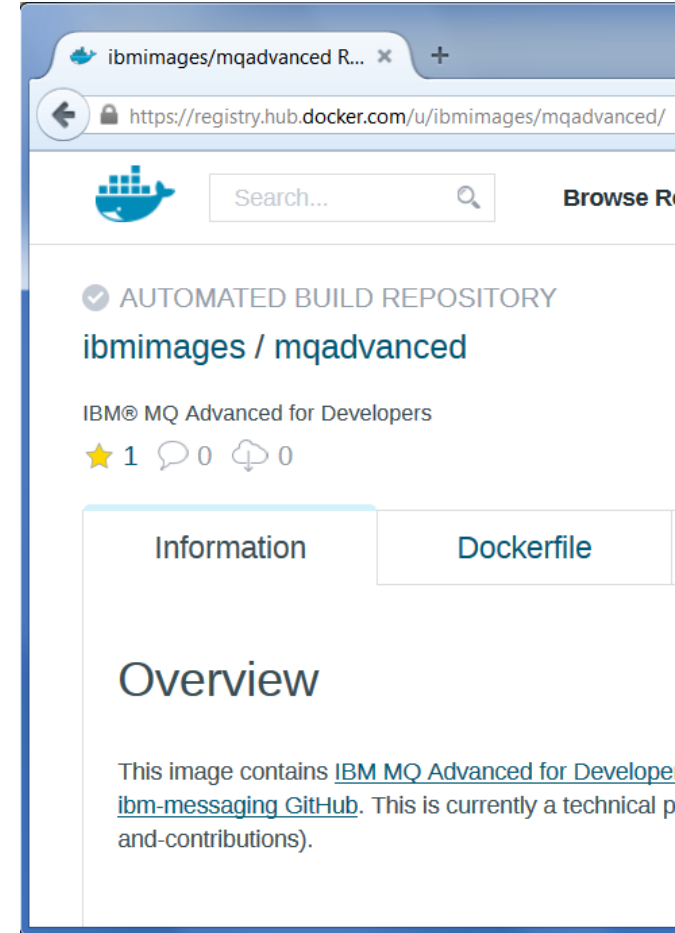


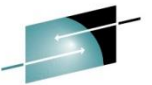
# Platforms

- 64-bit server support for all queue manager platforms
  - Completion of platform coverage by adding Windows 64-bit engine
  - Requires Windows 7 or later
- New MQ platform: Power Linux little-endian
  - Part of a broader portfolio of IBM software for this platform
- Statement of Direction for MQ V8 on HP NonStop
  - "IBM® intends to introduce a new release of IBM MQ for the HP NonStop platform that is based on IBM MQ V8. It is intended for this offering to be available for both the HP Integrity NonStop servers on Intel™ Itanium™, and compatible also for the new HP NonStop platform on x86 architecture. It is planned for this offering to be designed to deliver the capabilities of the current IBM MQ V8 product, but with optimizations for the HP NonStop platform, and will work with other IBM MQ and WebSphere® MQ offerings."
  - <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=AN&subtype=CA&htmlfid=897/ENUS214-535&appname=USN>

# Platforms - MQ in Docker

- A technical preview Docker image for MQ Advanced for Developers is now available on Docker Hub.
  - <https://registry.hub.docker.com/u/ibmimages/mq/>
- Runs an MQ queue manager inside a container, isolated from the rest of your system
- You can create your own customized image, using this image as a parent, for example, to:
  - Run MQSC commands to configure the queue manager
  - Add users and groups
- This is a technical preview and we would like to receive feedback





# MQ product consistency

- Multiple Cluster Transmit Queue availability on z/OS and IBM i platforms
  - Permits separate monitoring of cluster traffic and prevents one message stream from affecting throughput of others
- Integration of AMS and MFT capabilities into z/OS and IBM i platforms
  - Previously separately installable products
- Client Attach Feature no longer needed on z/OS
  - Single price includes support for clients



# MQ Security - Authentication

- Verify userid and password
  - Typically supplied in MQI CSP structure or from channel security exit
  - Or JMS connect(user,pass) method
  - New client exit and tool provided to help unchanged applications insert passwords
- Can verify against operating system
  - Including PassPhrase for z/OS
- Can verify against LDAP repository on Distributed platforms
  - Enabling centralised identity control
- Still constrained to 12 character userids
  - With LDAP, supplied username may be "long" (eg an email address or full DN)
  - But must have an associated 12 character shortname
- Independent configuration for local bindings and clients
  - Ignored, Optional, Required, Required for admin id

# MQ Security - Authorisation using LDAP

- Fixpack 2 for Unix/Linux/i builds on LDAP authentication feature
- User and group information can now be centrally located in LDAP
  - No need to define OS users/groups other than mqm
  - And "mqm" group loses a lot of its automatic power

```
setmqaut -t qmgr -p "cn=User 1,ou=users,o=ibm,c=uk" +connect  
setmqaut -t qmgr -g "cn=Group 1,ou=groups,o=ibm,c=uk" +connect
```

- Extended attributes on AUTHINFO/IDPWLDAP object show how to discover groups
  - Very similar to the authentication attributes for discovery of identities
- Requires queue manager command level to be updated
  - Similar to NEWFUNC on z/OS

```
strmqm -e CMDLEVEL=801 QMgr
```

- Authorities can be set for individual users
  - Does not use "primary groups"



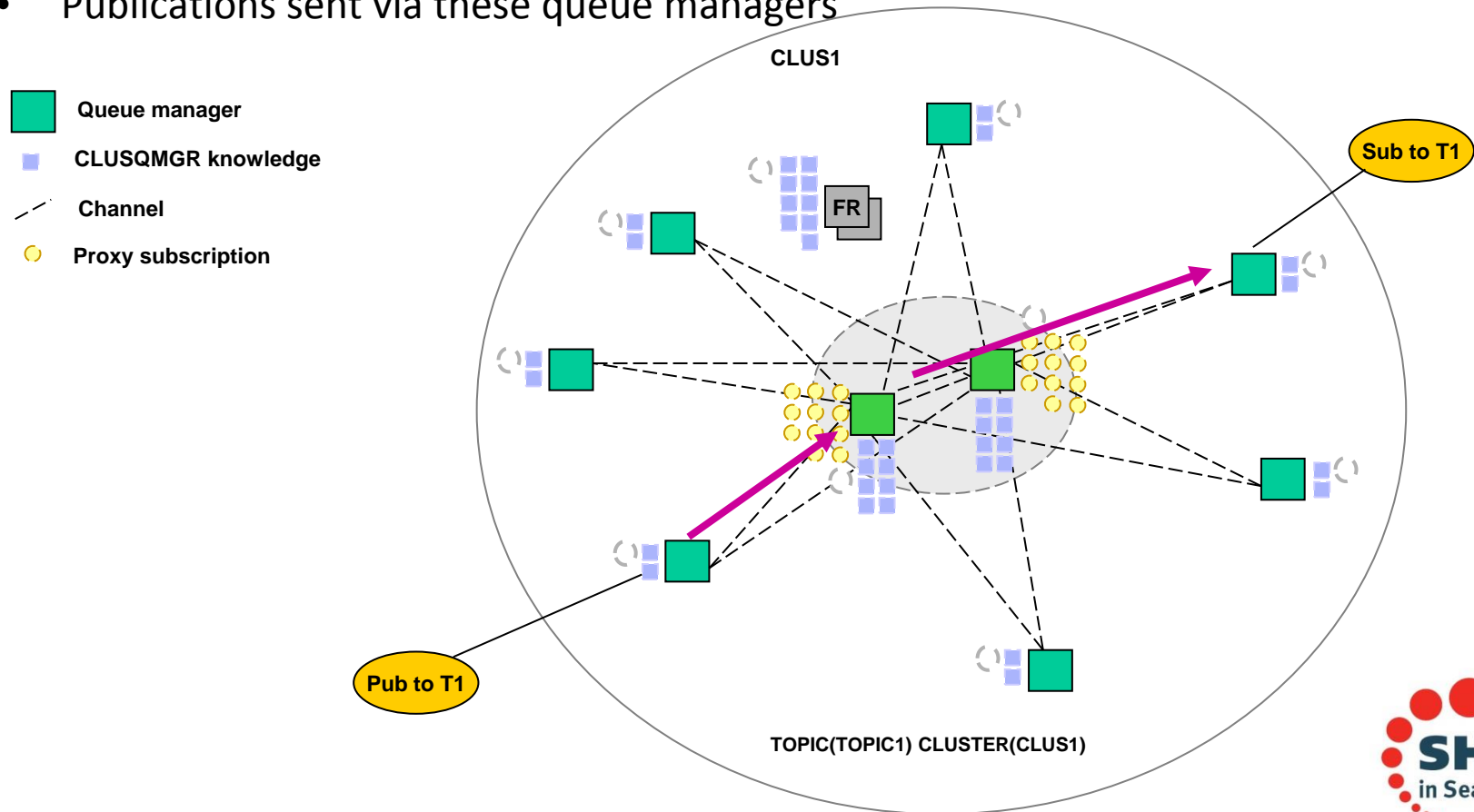
New  
in FP2

## MQ Security - Other

- Use DNS hostnames in CHLAUTH records
  - Also provide a way to disable reverse lookup
- Configurable default certificate label for qmgrs and clients
  - Instead of "ibmwebspheremq<qmgr>" or "ibmwebspheremq<userid>"
- Channel-level certificates
  - To support different business partners using different CAs.
  - For queue managers and C clients
    - Not Java yet, because Java 7 JSSE does not fully support SNI
  - Both ends must be V8
- Delete Authority record by SID
  - Solve problem of orphaned authorities when Windows id is deleted

# Pub/sub scalability - cluster behaviour with V8

- New concept of "**routed**" topics
- Configure subset of queue managers to know everything and connect to everyone
- Publications sent via these queue managers



## Changes to runmqsc

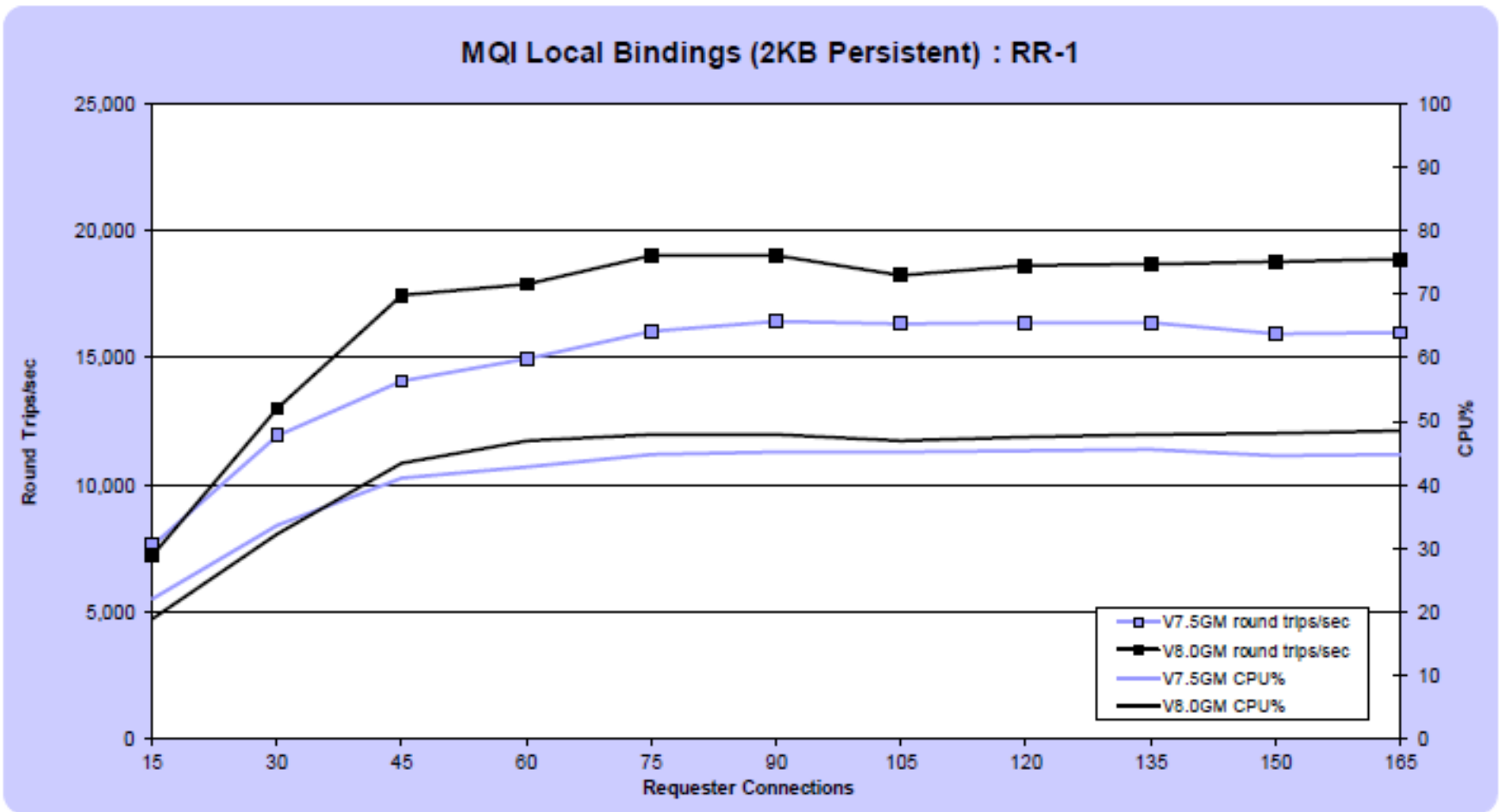
- Can now be run by any user (not just mqm group)
  - Can take a userid/password for authentication: new "-u" flag
- Can now connect as a client to remote systems: new "-c" flag
  - Client channel definitions located by MQSERVER -> MQCHLLIB -> MQCHLTAB
- Can act as standalone program to create local CCDT: new "-n" flag
  - Does not connect to queue manager; commands subset to update local channel definition file

# Distributed Performance

- Improvements to distributed queue manager scaling
  - Improve efficiency
  - Better exploitation of wider SMP machines
- Multiplexed client performance
  - Increase the performance of multiplexed client channels (SHRCONV > 0)
  - Especially for SHRCONV=1
- Other areas that helped:
  - Cache alignment for internal structures
  - Extended 64-bit exploitation for locking primitives
  - RFH2 handling, particularly for waiting-getter
    - Fewer copies of data are needed
  - Better compiler optimisations
  - Faster data conversion (especially for 1208)
    - Many messages are in 1208 codepage
    - Optimised handling when the queue manager needs to convert them
- Most performance reports now available

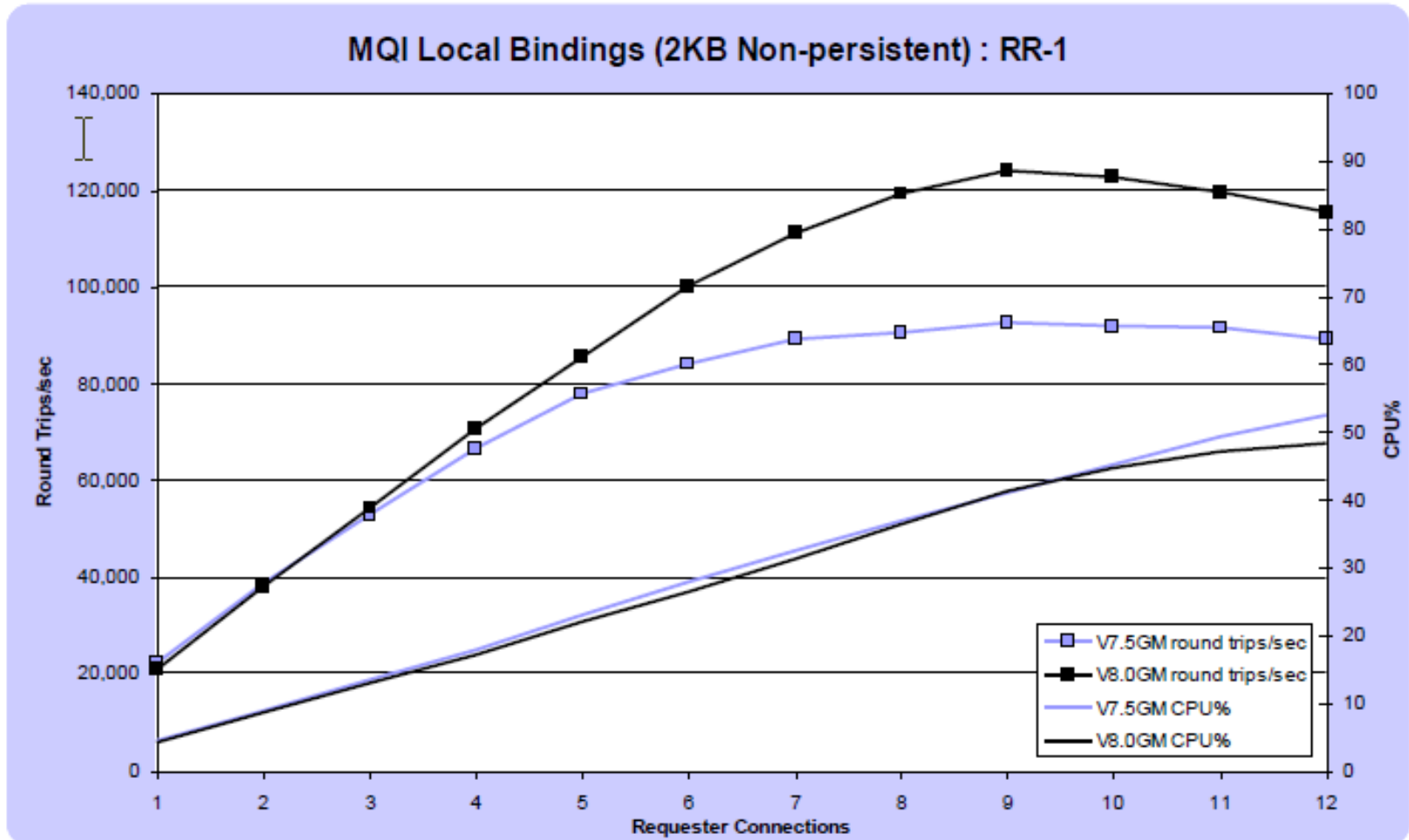
# Distributed Performance: Persistent Messaging

- An AIX system: Max performance increased from 16K to 19K

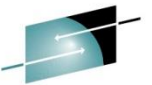


# Distributed Performance: Non-persistent Messaging

- A Windows system: Max performance increased from 90K to 121K

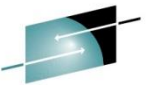






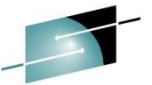
# MQ for z/OS: 64-bit bufferpools

- 64-bit buffer pools in MQ for z/OS
  - Allows large numbers of messages to be cached before writing to pagesets
  - Allows MQ to exploit the vast amount of storage on today's machines
- Improves performance of putting/getting messages by minimizing disk I/O
- Minimizes administrative overhead of managing buffer pools
- Buffer pool LOCATION attribute says where it is located relative to the bar
  - BELOW: The default. Buffer pool is located below the bar in 31 bit storage
  - ABOVE: Buffer pool is located above the bar in 64 bit storage
  - This can be altered dynamically
- Storage can be pinned based on pageclass attribute



# MQ for z/OS: Performance and Capacity

- Log RBA constraint relief
  - Already improved messages to warn of approaching RBA
  - Now widening RBA field from 6 to 8 bytes
  - At 100MB/sec this will now take about 5578 years to fill
- Support for LP64 batch/RRS C applications
- Performance enhancements for IBM Information Replicator (QRep) and similar application patterns
  - Read-ahead and changes to deferred write processing allows MQ to increase sustainable data rates
- General improvements to channel performance



# AMS and MFT integration with z/OS

- Following the model used by MQ V7.5 on distributed for closer integration
- AMS
  - Starts automatically with qmgr
  - Reduced overhead (now only one started task instead of 2)
  - Policies and their administration remain unchanged
- MFT
  - Now looks more natural for a z/OS person
  - Closer integration with standard system facilities such as ARM
  - Started task templates
  - Supported JCL provided instead of samples
  - Job info logged to JCL task
- Both features still separately licensed

# JMS 2.0

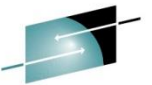
- Long-awaited update from JMS 1.1 standard
- JMS 2.0 – JSR 343 Java Message Service (JMS 2.0)
  - Final release on 21 May 2013.
  - <https://java.net/projects/jms-spec/pages/JMS20FinalRelease>
- New Messaging Features
  - Delivery Delay
  - Asynchronous Send
  - Subscriptions can be shared across a messaging provider
- API Changes
  - Use of `java.lang.AutoCloseable`
  - Simplified API [combined connection/session]
  - Session doesn't need parameters (for Java EE)
- Java 7 prereq
- Java EE 7 prereq for use of the Resource Adapter in Application Servers

## JMS and Java (2)

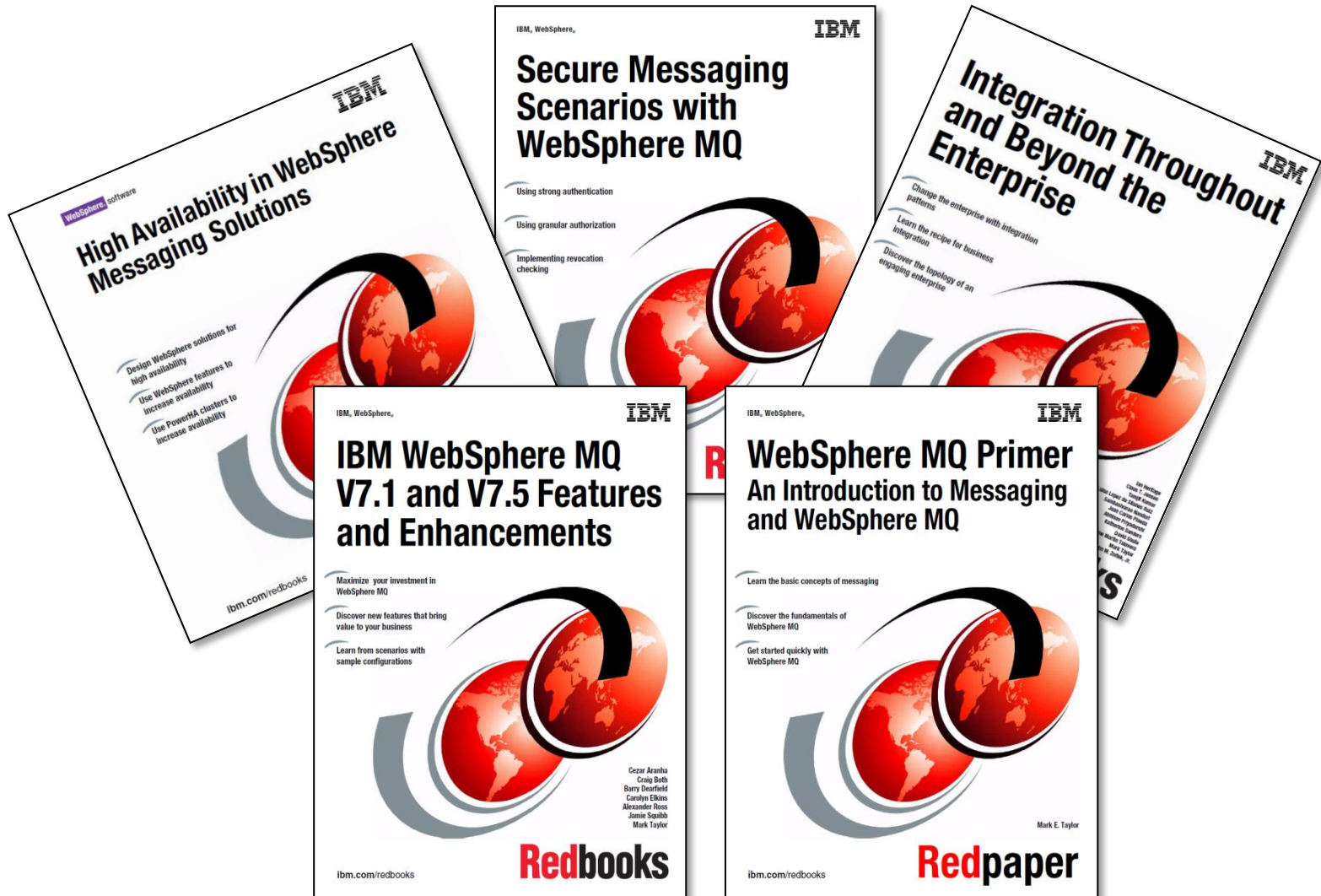
- JMS to be supported inside CICS
  - CICS APAR
    - For V5.2 PI32151
  - MQ APARs
    - For V71: JMS PI29770 (supercedes 7.1.0.6) or later CSD
    - For V8: JMS 8.0.0.2 or later CSD + MQ base PI28482
- CipherSuite names for non-IBM Java runtimes
  - There is no fixed standard across Java providers for CipherSuite names
  - When POODLE SSL vulnerability announced, it was difficult to use TLS algorithms in MQ Java because names in configuration had to match IBM's Java names
  - Have now relaxed some of that checking to make use of other Javas easier
  - IV66840: ADD SUPPORT FOR SELECTED TLS CIPHERSPECS WHEN RUNNING IN NON-IBM JAVA RUNTIME ENVIRONMENT
    - <http://www-01.ibm.com/support/docview.wss?uid=swg1IV66840>
- Java client now available for simpler redistribution
- Updates planned to Java documentation to make is easier for non-MQ people
  - People administering app servers don't necessarily know messaging terms

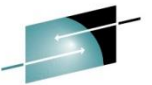
# .Net enhancements

- MQ .Net classes can now use SSL without needing the C client installed
  - A secure fully-managed .Net implementation
  - Uses Windows native certificate stores
- For MQ .NET classes (aka Base .NET Classes) SSL properties can be set at
  - MQEnvironment.cs
  - Hashtable properties (input parameter to MQQueueManager constructor)
- For XMS .NET, SSL properties can be set as ConnectionFactory properties
- WCF interface extended to non-SOAP, non-JMS messages
  - Making it easier for apps using WCF to communicate with any other MQ application
- MQ .Net classes restructured for easier deployment (New in FP2)
  - Applications can be deployed incorporating the MQ assembly
  - Includes Azure environment

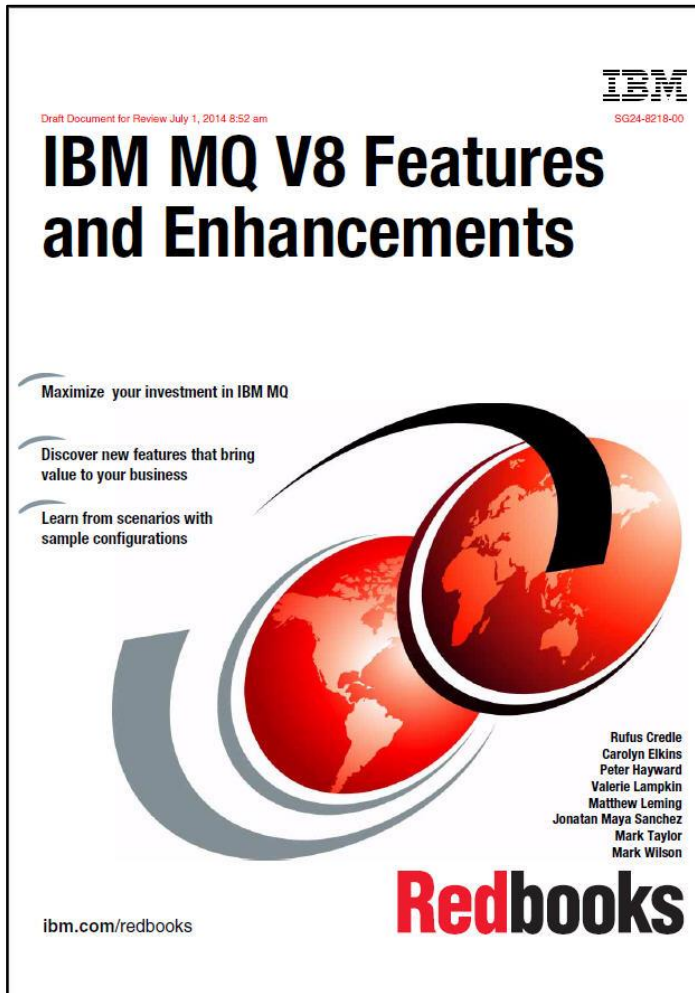


# Further information in real books



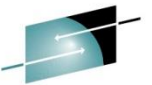


# And ... already available



<https://www.redbooks.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg248218.html>





**MQ Light**


**MQ Light as a Service**

**MQ Light in MQ**


# MQ Light : Software and Cloud



- Messaging that application developers will love to use, helping them make responsive applications that scale easily
- 3 ways to get it:
  - MQ Light software download
  - Bluemix service
  - *Statement of Direction for support in MQ Version 8.*



## IBM Bluemix



**MQLight**  
IBM

PUBLISH DATE  
30/6/2014

TYPE  
Service

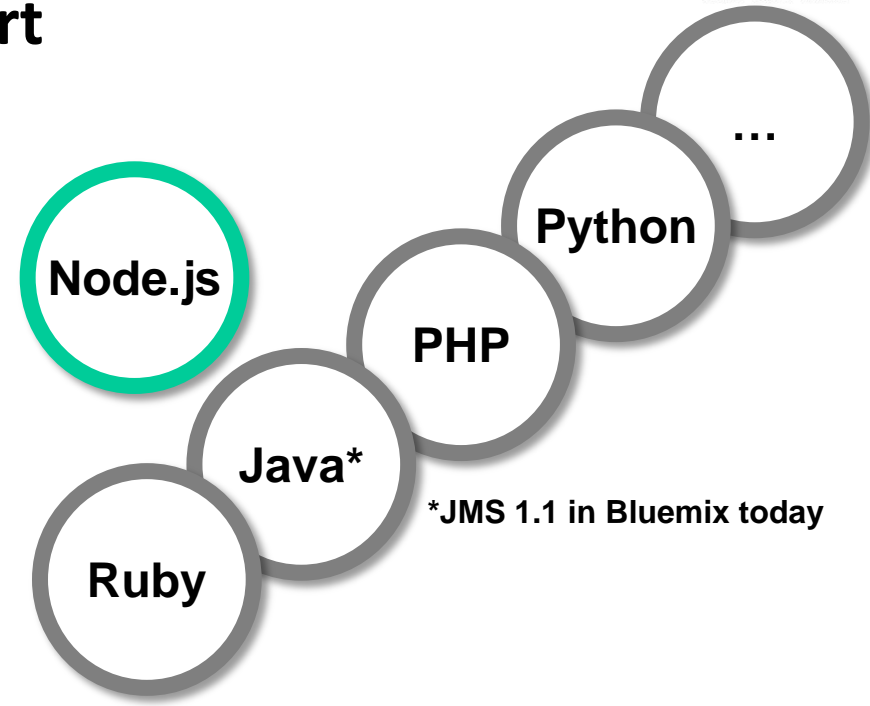
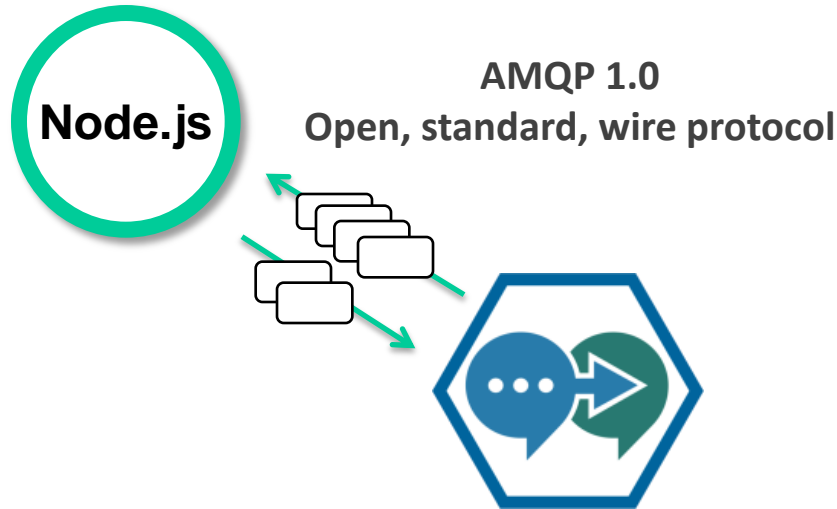
[VIEW DOCS](#)

**BETA** Develop responsive, scalable applications with a fully-managed messaging provider in the cloud. Quickly integrate with application frameworks through easy-to-use APIs.

- **Easy to Use**  
Connect applications simply and efficiently so they can off-load work, share data or push events with simple API for Java and JavaScript and zero administration.
- **Robust and Scalable**  
Rely on MQLight's data integrity and asynchronous delivery to ensure your distributed applications are loosely-coupled, robust and scalable.

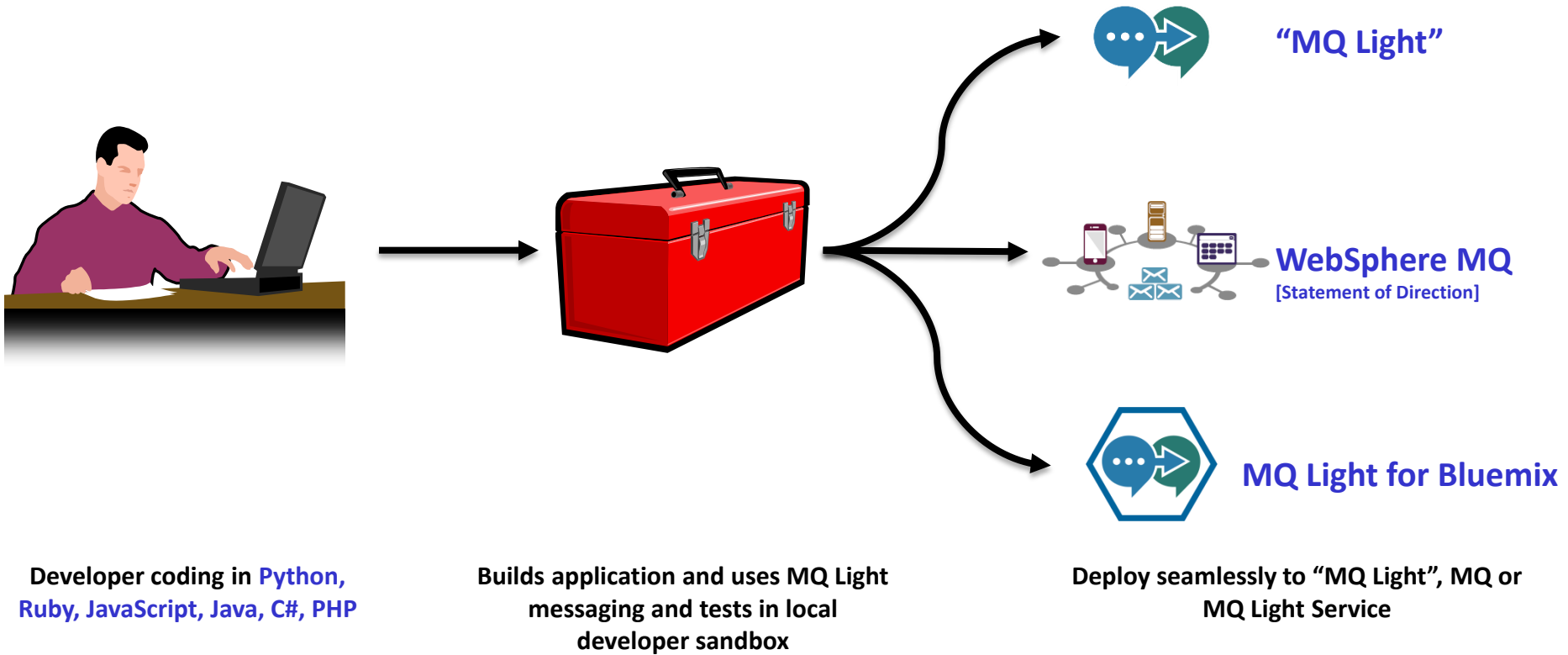
- Open APIs crafted to feel natural in a growing range of popular languages
- Tooling that makes modular app development easy

# MQ Light API - Language support



- Idiomatic APIs for each language.
- New clients can be created by developers
  - Clients based on Open source Apache Qpid Proton
- Using open protocol (AMQP 1.0) to build community around messaging clients

# Deployment options

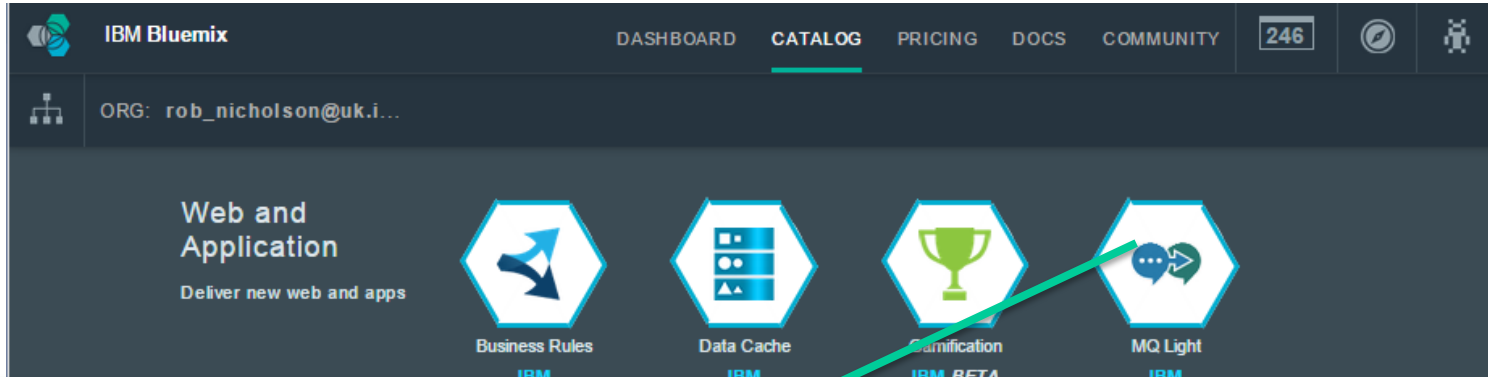


Developer coding in **Python, Ruby, JavaScript, Java, C#, PHP**

Builds application and uses MQ Light messaging and tests in local developer sandbox

Deploy seamlessly to “MQ Light”, MQ or MQ Light Service

# MQ Light Service in Bluemix



**MQ Light**  
IBM

PUBLISH DATE  
9/26/2014

TYPE  
Service

[VIEW DOCS](#)

Develop responsive, scalable applications with a fully-managed messaging provider in the cloud. Quickly integrate with application frameworks through easy-to-use APIs.

- Easy to Use**  
Connect applications simply and efficiently so they can off-load work, share data or push events with simple API for Java and JavaScript and zero administration.
- Robust and Scalable**  
Rely on MQ Light's data integrity and asynchronous delivery to ensure your distributed applications are loosely-coupled, robust and scalable.

Pick a plan Monthly prices shown are for country or region: [United Kingdom](#)

Plan	Features	Price
✓ MQ Light Standard Plan	Free allowance of 10,000 messages per month	£3.02 GBP/Million digital messages

*i* This is the standard service plan for MQ Light charged in units of millions of messages per month.

Add Service

Space:  
dev

App:  
Select an application

Service name:  
MQ Light-50

Selected Plan:  
MQ Light Standard...

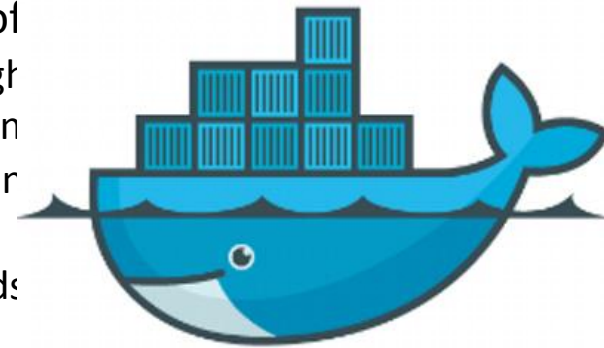
**CREATE**

Plan	Features	Price
✓ MQ Light Standard Plan	Free allowance of 10,000 messages per month	£3.02 GBP/Million digital messages

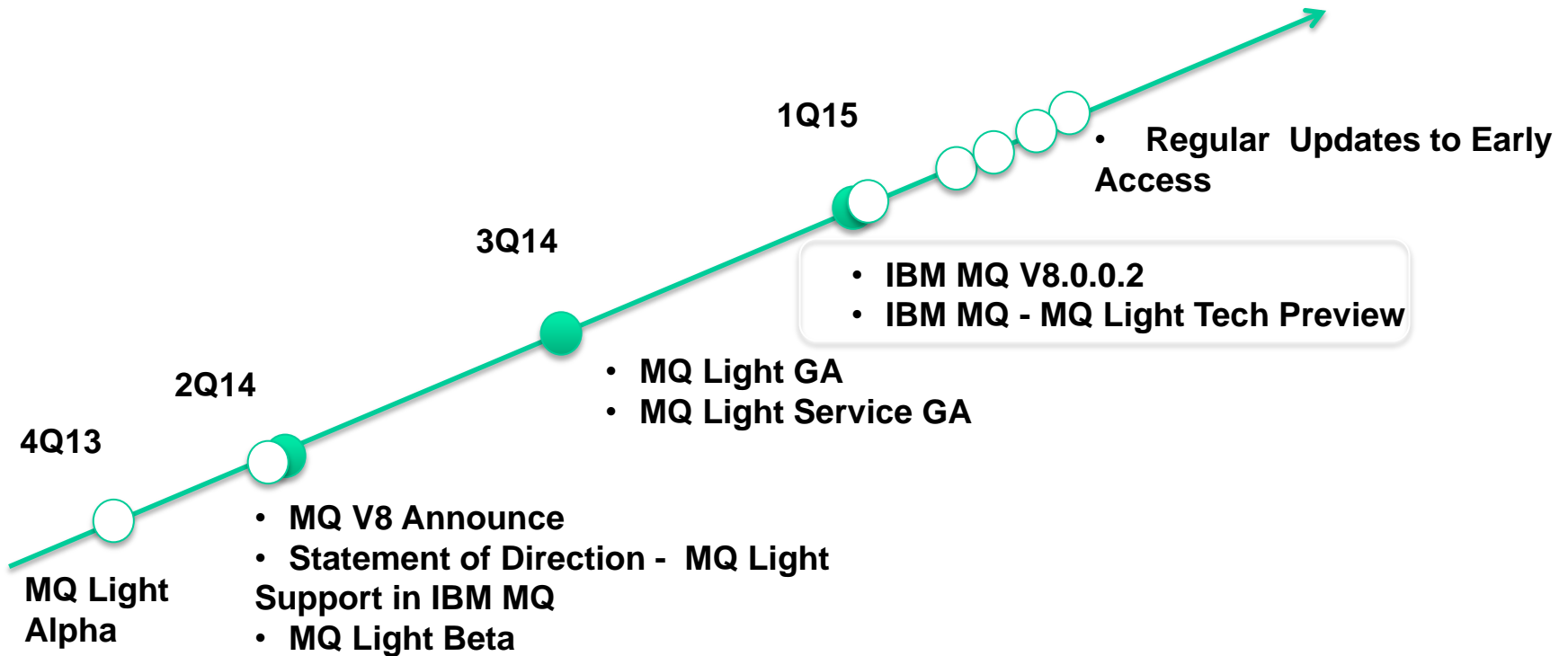
*i* This is the standard service plan for MQ Light charged in units of millions of messages per month.

# MQ Light in Docker

- A Docker image for MQ Light is now available on Docker Hub.
  - <https://registry.hub.docker.com/u/ibmimages/mqlight/>
- MQ Light runs inside a container, isolated from the rest of
  - Process isolation – all the processes associated with MQ Light process space, and can't see any other processes running on
  - Resource isolation – you can limit the amount of memory ar container
  - Dependency isolation - all software which MQ Light depends: Light image, except the Linux kernel itself.
- Docker also helps with fast, reliable deployments in cloud environments
- **One** command to download and run MQ Light:
  - `docker run -e LICENSE=accept -P ibmimages/mqlight`



# MQ Light Support in IBM MQ



# IBM MQ – MQ Light Tech Preview

- Platforms
  - Windows , Linux x86\_64
- Installation
  - Prereq is IBM MQ V8.0.0.2
  - **Add** Tech Preview install media (zip, rpm)
- Adds AMQP 1.0 channels
  - Fully interoperable with MQ FAP and MQTT Channels
- MQSC and PCF support
  - Defining AMQP channels
  - Start, stop and end channel
- Tech Preview will evolve to include more integration features



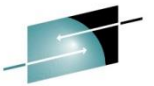


# Summary

- Enterprise Messaging where MQ continues to lead
- Messaging for Mobile and the Internet of Things
- Supporting Cloud deployments with Messaging services
- Helping developers use Application Messaging to create better applications



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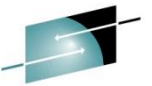
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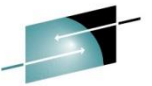
# This was Session 17037. The rest of the week .....



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	Monday	Tuesday	Wednesday	Thursday	Friday
08:30			17060: Understanding MQ Deployment Choices and Use Cases	17051: Application Programming with MQ Verbs [z/OS & Distributed]	16544: Why Shouldn't I Be Able To Open This Queue? MQ and CICS Security Topics <a href="#">Room: Willow B</a>
10:00	17036: Introduction to MQ - Can MQ Really Make My Life Easier? [z/OS & Distributed]		17052: MQ Beyond the Basics - Advanced API and Internals Overview [z/OS & Distributed]	17054: Nobody Uses Files Any More do They? New Technologies for Old Technology, File Processing in MQ MFT and IIB [z/OS & Distributed]	17057: Not Just Migrating, but Picking up New Enhancements as You Go - We've Given You the Shotgun, You Know Where Your Feet Are [z/OS & Distributed]
			17035: MQ for z/OS, Using and Abusing New Hardware and the New V8 Features [z/OS] <a href="#">Room: Willow B</a>		
11:15	17041: First Steps with IBM Integration Bus: Application Integration in the New World [z/OS & Distributed]		16732: MQ V8 Hands- on Labs! MQ V8 with CICS and COBOL! MQ SMF Labs! <a href="#">Room: Redwood</a>	17046: Paging Dr. MQ - Health Check Your Queue Managers to Ensure They Won't Be Calling in Sick! [z/OS]	17053: MQ & DB2 – MQ Verbs in DB2 & InfoSphere Data Replication (Q Replication) Performance [z/OS]
01:45	17037: All About the New MQ V8 [z/OS & Distributed]	17034: MQ Security: New V8 Features Deep Dive [z/OS & Distributed]	17040: Using IBM WebSphere Application Server and IBM MQ Together [z/OS & Distributed]	17062: End to End Security of My Queue Manager on z/OS [z/OS]	All sessions in Seneca unless otherwise noted.
03:15	17042: What's New in IBM Integration Bus [z/OS & Distributed]	17065: Under the hood of IBM Integration Bus on z/OS - WLM, SMF, AT-TLS, and more [z/OS]	17043: The Do's and Don'ts of IBM Integration Bus Performance [z/OS & Distributed]	17039: Clustering Queue Managers - Making Life Easier by Automating Administration and Scaling for Performance [z/OS & Distributed]	
04:30	17059: IBM MQ: Are z/OS & Distributed Platforms like Oil & Water? [z/OS & Distributed]	17055: What's the Cloud Going to Do to My MQ Network?	17044: But Wait, There's More MQ SMF Data Now?!?! - Monitoring your Channels Using V8's New Chinit SMF Data [z/OS]	17068: Monitoring and Auditing MQ [z/OS & Distributed]	





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