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Guide MQ du 02/12/2014

WebSphere. software

## Retours sur la WTC 2014

**IBM WebSphere  
Technical University 2014**  
28-31 October 2014 | Düsseldorf, Germany



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## Conférence WebSphere : Le retour

- Précédente : 2012 @ Berlin
- Pas de conférence en 2013
- 2014 :
  - Conférence annoncée tardivement en juin
  - Organisée par les « *IBM Global Training Providers* » (Learnquest)
- MQ, WAS, MQLight, IIB, DataPower, Bluemix
- 650 participants
  - Dont 20 français (3 % - idem Slovénie)
  - UK : 45, Nordics : 97
- 3.5 jours - 120 sessions - Nombreux labs - Certifications
- Colocalisée avec WebSphere Portal and IBM Web Content Management

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2

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## Conférence WebSphere : Le retour

- Affluence aux sessions IIB (50 - 70 participants)
- Gros succès des ateliers (complet !)
- Présentations MQ & IIB disponibles sur SlideShare :
  - « WebSphere Technical University 2014 - MQ related content »
  - [https://www.ibm.com/developerworks/community/blogs/messaging/entry/websphere\\_technical\\_university\\_2014\\_mq\\_related\\_content](https://www.ibm.com/developerworks/community/blogs/messaging/entry/websphere_technical_university_2014_mq_related_content)

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## Sondage pour le lieu de la conférence en 2015

**2015 IBM WebSphere Technical University & IBM Digital Experience**

**Where do you want to go next year in October 2015 for the 2015 IBM WebSphere Technical University & IBM Digital Experience?**

	Absolutely!	Yes	Possibly	No thanks!
Amsterdam   Netherlands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Barcelona   Spain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Berlin   Germany	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Budapest   Hungary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dublin   Ireland	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hamburg   Germany	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Istanbul   Turkey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prague   Czech Republic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## Extraits de présentations

- What's new in IBM Messaging - Morag Hughson
- New IBM MQ V8 Security Features - Morag Hughson
  
- A voir également :
  - Using IBM MQ Publish/Subscribe in an MQ network
  - Managing workloads, scaling and availability with IBM MQ clusters

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## Timeline

The timeline illustrates the evolution of IBM MQ from the 1990s to the 2010s. It features a central blue arrow pointing right, with various versions and features marked along its path. Key milestones include the 20th Anniversary of MQ at IMPACT (V7.5) and the introduction of V8. The timeline is supported by several award logos at the bottom, including LEVI, IBM, and JAWA Pro.

Version	Key Features / Milestones
V1.1	MQ Assured delivery
V2	Multi-platform
V2.1	Pub/sub
V5	Mobile
V5.1	JMS SSL SOAP
V5.2	XML
V5.3	IBM MQ Everywhere
V6	IBM MQTT
V7	IBM MQ Low Latency
V7.0.1	IBM MQ Managed File Transfer
V7.1	IBM MQ Advanced Message Security
V7.5	IBM MQ Advanced Message Security, IBM MessageSight, IBM MQ Advanced for Developers
V8	20th Anniversary of MQ at IMPACT

1990s: IBM MQSeries


2000s: JMS 1.1 RCMS, HTTP, AJAX, REST, Web 2.0, Common criteria, Eclipse, .NET, Managed File Transfer, Hypervisors, Multi-instance QMGR, Multiple cluster XMIT queue, System Pattern Application Pattern

2010s: IBM MQ Advanced Message Security, IBM MessageSight, IBM MQ Advanced for Developers


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## WebSphere MQ V7.1: Feature Summary (Nov 2011)

New Feature	Benefits	Details
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 Authorisation 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




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## WebSphere MQ V7.5: Feature Summary (June 2012)

- For Windows, Unix and Linux

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



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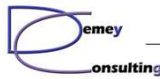
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## 2013 enhancements: Developer


Enhancement	Benefits	Details
MQ Advanced for Developers – free for devt use!!	Development use only edition Free of charge	Full MQ Advanced V7.5 functionality Available free of charge for development use only Download from developerWorks, MQdev community Best effort community assistance
IBM MessageSight for Developers – free for devt use!!	Development use only edition Free of charge	Virtual MessageSight image, updated to V1.1 Available free of charge for development use only Download from developerWorks, IBM Messaging community Best effort community assistance
Mosquito - Open source MQTT server	Simple, open access to get on-board with MQTT and MQTT-SN	Proposed Eclipse Mosquito project for open-source MQTT server for lightweight devt use MQTT-SN (MQTT for sensor networks) specification available
IBM MQ Light – alpha release	Straight forward, easy to use messaging API for writing scalable and responsive applications	Download and feedback via developerWorks community Available free of charge for development use Currently new API available in Java, more languages to come Regular updates planned introducing new features and responding to feedback

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## IBM MQ Light

- Simplifying Development for developer-led Messaging Applications
- “MQ Light” - a new messaging form factor, easy for developers
  - ▶ Straightforward download and unzip – zero install
  - ▶ Simple Web UI – no need to be an infrastructure specialist
- Focus on your application – using simplified messaging API
- Support for popular languages and tooling with seamless migration from development into production
- MQ Light runtime not for advanced messaging uses cases, enterprise backbone or highly available/scalable apps



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



Builds messaging into applications using preferred IDE or CLI and tests in developer sandbox

C7: Messaging in the Cloud with IBM MQ Light and IBM Bluemix

A35: How to Develop Responsive Applications with IBM MQ Light

(Lab) AL6: Developing a First Application with IBM MQ Light

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**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
Support for JMS 2.0	User-based authorisation for Unix	Queue manager vertical scaling	Performance and capacity
Improved support for Net and WCF	AMS for IBM i & z/OS	Publish/Subscribe improvements	Performance enhancements for IBM Information Replicator (QRep)
Changes to runmqsc	DNS Hostnames in CHLAUTH records	Routed publish/subscribe	Exploit zEDC compression accelerator
SHA-2 for z, i & NSS	Multiple certificates per queue manager	Multiple Cluster Transmit Queue on all platforms	SMF and shared queue enhancements

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**MQ platform and product consistency**

- **64-bit server support for all queue manager platforms**
  - ▶ Completion of platform coverage by adding Windows 64-bit engine
  - ▶ Applications can still be 32-bit
  - ▶ Requires Windows 7 or later
  - ▶ Client only package for 32-bit platforms
  - ▶ Queue Manager requires 64-bit
- **Integration of AMS and MFT capabilities into z/OS and IBM i platforms**
  - ▶ Previously separately installable products
  - ▶ Following the model used by MQ V7.5 on distributed for closer integration
  - ▶ Both features still separately licensed
- **AMS**
  - ▶ Starts automatically with Queue Manager
  - ▶ 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
- **Client Attach Feature no longer needed on z/OS**
  - ▶ Single price includes support for clients


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## 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

<http://www.slideshare.net/calanais/ibm-mq-v8-and-jms-20>


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## 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
- Ease of use
  - ▶ Customisable prompt using environment variable
  - ▶ New "exit" and "quit" synonyms for "end"



```

$ ls -l runmqsc
-r-xr-xr-x 1 mqm mqm 25930 06 Mar 04:46 runmqsc

$ export MQPROMPT="MQ +MQ_INSTALLATION_NAME> "
$ runmqsc -u metaylor QM1
5724-H72 (C) Copyright IBM Corp. 1994, 2014.
Enter password:
*****
Starting MQSC for queue manager QM1.

MQ Installation5> DIS QMGR
...
    
```


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## MQ Security - Authentication

- **Verify userid and password**
  - ▶ Typically supplied in MQI CSP structure or from channel security exit
  - ▶ Or JMS createConnection(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

**A22: New IBM MQ V8 Security Features**





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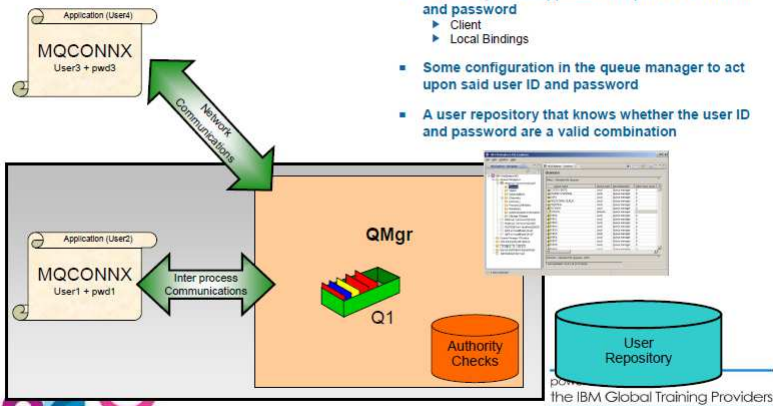
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## Connection Authentication – What is it?



The diagram illustrates the authentication process. An application (User4) with MQCONNX User3 + pwd3 connects to the QMGr (Queue Manager) via Network Communications. The QMGr contains a queue (Q1), Authority Checks, and a User Repository. Another application (User2) with MQCONNX User1 + pwd1 is shown with Inter process Communications to the QMGr. The User Repository is connected to the QMGr.

- **The ability for an application to provide a user ID and password**
  - ▶ Client
  - ▶ Local Bindings
- **Some configuration in the queue manager to act upon said user ID and password**
- **A user repository that knows whether the user ID and password are a valid combination**



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## Connection Authentication – Configuration

Application (User4)

**MQCONNX**

**MQRC\_NOT\_AUTHORIZED (2035)**

CHKC...

NONE
OPTIONAL
REQUIRED
REQDADM

```
ALTER QMGR CONNAUTH(USE.PW)
DEFINE AUTHINFO(USE.PW) AUTHTYPE(XXXXXX)
      FAILDLAY(1) CHCKLOCL(OPTIONAL)
      CHCKCLNT(REQUIRED)
REFRESH SECURITY TYPE(CONNAUTH)
```

Application (User2)

**MQCONNX**

**MQRC\_NONE (0)**

Inter process Communications

**QMgr**

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## MQ Security - CHLAUTH 🔒



- Use DNS hostnames in CHLAUTH records
  - ▶ Not allowed in TYPE(BLOCKADDR)
  - ▶ Used in TYPE(ADDRESSMAP) instead of an IP address
  - ▶ Also as an address restrictor on any other mapping type, instead of an IP address, e.g.
  - ▶ SET CHLAUTH('\*') TYPE(SSLPEERMAP)  
SSLPEER('CN="Morag Hughson"') ADDRESS('\* .ibm.com') MCAUSER(HUGHSON)
  - ▶ Must ensure DNS can reverse look-up IP address -> Hostname
  
- Also we provide a way to disable reverse lookup
  - ▶ ALTER QMGR REVDNS(ENABLED|DISABLED)
  
- CHLAUTH also hooks into other security features in V8
  - ▶ Granular connection authentication control with CHCKCLNT on CHLAUTH rules
  - ▶ Better Certificate DN filtering with SSLCERTI on CHLAUTH rules

**A31: IBM MQ CHLAUTH rules – with MQ V8 updates**

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## Channel Authentication Records - Recap

- **Set rules to control how inbound connections are treated**
  - ▶ Inbound Clients
  - ▶ Inbound QMgr to QMgr channels
  - ▶ Other rogue connections causing FDCs
- **Rules can be set to**
  - ▶ Allow a connection
  - ▶ Allow a connection and assign an MCAUSER
  - ▶ Block a connection
  - ▶ Ban privileged access
  - ▶ Provide multiple positive or negative SSL/TLS Distinguished Name matching
  - ▶ Mandate user ID & password checking
- **Rules can use any of the following identifying characteristics of the inbound connection**
  - ▶ IP Address
  - ▶ Hostnames
  - ▶ SSL/TLS Subject's Distinguished Name
  - ▶ SSL/TLS Issuer's Distinguished Name
  - ▶ Client asserted user ID
  - ▶ Remote queue manager name




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## MQ Security - Certificates

- **Configurable default certificate label for qmgrs and clients**
  - ▶ Instead of "ibmwebsphermq<qmgr-" or "ibmwebsphermq<userid->"
  - ▶ ALTER QMGR CERTLABL('My certificate name')
- **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
- **Per Channel Certificate**
  - ▶ ALTER CHANNEL ... CERTLABL('This channel certificate')
- **Certificate Matching**
  - ▶ SET CHLAUTH('\*')
 

```
TYPE(SSLPEERMAP)
SSLPEER('CN=Morag Hughson')
SSLCERTI('CN=IBM CA')
MCAUSER('hughson')
```



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## 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

The diagram illustrates a cluster of queue managers (QMGRs) within a cluster (CLUS1). A central QMGR is connected to several other QMGRs via channels. A legend indicates: a green square for Queue manager, a purple square for CLUSQMGR knowledge, a dashed line for Channel, and a yellow circle for Proxy subscription. A 'Pub to T1' callout points to a QMGR, and a 'Sub to T1' callout points to a QMGR. The diagram is labeled 'TOPIC(TOPIC1) CLUSTER(CLUS1)'.

A16: Using IBM MQ Pub/Sub in an MQ network

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22