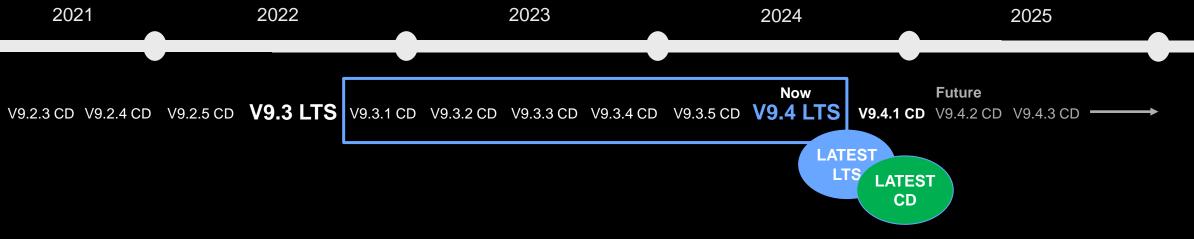
IBM MQ 9.4 What's new

9.4 Announce: 14 May 2024 GA: 18 June 2024, 5 July 2024 (z/OS)

9.4.1 Announce: 08 Oct 2024 GA: 24 Oct 2024 (most), 8 Nov 2024 (z/OS)



IBM MQ 9.4 LTS



In 2016 MQ introduced a dual Long-Term Support and a Continuous Delivery model.

Continuous Delivery

New CD versions of MQ are released approximately every four months, incrementally introducing new product capabilities.

Intended for those who can continually integrate.

Long-Term Support

Approximately every two years a new LTS version is released, rolling up many of the CD capabilities into a release with longer-term support.

Required by those looking for fixed function.

Mix and Match

Both are available under the same license.

Both can interoperate, just like any previous version of MQ.

All the function delivered in the 9.3.x CD releases is available in the long-term support release V9.4 LTS

IBM MQ 9.4 LTS

Enhanced Observability

Identify potential issues with simple, real-time analysis of queue managers, applications, and MQ networks.

Updated MQ Console aids in identifying and resolving issues.

Improved Admin & Developer Experience

MQ 9.4 has many updates or enhancements to provide a simplified Administration experience and a better developer experience.

Cloud-Native Security

Authenticate with tokens, improving security and centralizing identity management for queue managers.

Cloud-Native Resiliency

Fast and efficient data compression for Native HA data replication reduces network load – increase traffic without increased infrastructure costs!

Insight into Business Events

Tap into MQ data and deliver it seamlessly into Kafka through IBM-supported sink and source connectors to become an eventdriven business.

Performance & Scalability

Reduce the risk of applications becoming slow, unresponsive, or crashing through LZ4 compression and Uniform Clusters.

Managed File Transfer Enhancements

Use the updated Managed File Transfer (MFT) in MQ Advanced for gaining diagnostics related to file transfer and to understand & troubleshoot performance of MFT agents.

Amazon Web Services Deployments

Purchase via AWS Cloud Marketplace, Tooling and Cloud native learning path, and a partner solution for rapid deployment of a reference architecture.

New in IBM MQ 9.4 LTS

.NET 6 libraries	CAPEXPRY	RDQM on RHEL 9	MQIPT MQCSP password protection	64-bit Channel Initiator	SMF queue statistic enhancement	Streaming queues for shared queues	Console observability	Instana transaction tracing with CP4I in OCP	ANY* generic CipherSpecs for AMQP
Enhanced DIS QMSTATUS	TLS 1.3 for managed .NET clients	MQ Console application view	Java modular application support	Simplified REST Messaging API security	Native HA entitlement with MQ Advanced	SMF116 STREAMEDN for streaming queues	Appliance DR between two HA pairs	Developer Essentials badge for AWS	Restricted MQ Operator permissions
MQ Console, object and application association linkage	AMQP performance enhancement	Remote REST messaging	JSON web tokens, initial support	Native HA auto recovery of damaged objects	Comprehensive per-queue SMF stats	Appliance CLI SSH certificate authentication	Appliance disk space monitoring	Arm Developer container for MacOS	Configurable LogFilePages with MQ Operator
Smarter recovery log media image scheduling	MQ Console overview landing page	Tuning options for log I/O warnings	Supported Kafka Connectors with MQ Advanced	Enhanced Appliance support for SSH signatures	Smarter JMS Uniform Cluster auto balancing	Exactly-once Kafka Connectors	Simplified Java and JMS topologies for z/OS	Automated installs with Ansible Galaxy	Message property support for CSQ1LOGP
Stand-alone IBM MQ Web Server install	Open Telemetry tracing	Expanded JWT support for JMS applications	MQ Console application and network observability tabs	Updated compiler support for AIX C applications	Simpler zHyperWrite enablement on z/OS	Appliance secure backup and restore	AMQP samples	Developer tutorials for Uniform Clusters	MacOS client toolkit in Homebrew
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New in IBM MQ 9.4 LTS

Ар	plica	ation	Simplified REST Messaging API Security		Sec	curity	Developer Essentials badge for AWS	
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	IMS network	Simpler zHyperWrite and restore AMQP samples		

IBM MQ 9.4.1 CD Release Highlights

MQ 9.4.1 is the follow-on Continuous Delivery (CD) release to MQ 9.4.0 LTS, and it includes enhancements that enable clients to accelerate cloud-native container-based deployments to increase operational agility at scale. It also brings several security enhancements across a range of MQ components to align to industry best practices and reduce risk.

Distributed Software IBM MO Advanced Rapidly deploy production-ready **IBM MQ Advanced in containers** Clients can now utilize the pre-built MQ Advanced container image, for rapid deployment into container runtimes managed by Containerd, cri-o, Podman, or Docker. Enhanced security for SFTP MFT clients may leverage OpenSSH private

keys for SFTP servers, bolstering security.

Distributed Software IBM MQ Advanced & IBM MQ



Azure

IBM MQ on Azure Marketplace

Azure businesses can buy IBM MQ licenses using their cloud credits or credit cards from the Azure marketplace.



Improved certificate management for seamless connectivity

Administrators can configure alerts when TLS certificates are near expiry thereby reducing the risk of unplanned downtime.



Set non-production licenses in Container

Administrators can select the appropriate licenses for non-production workloads in the MQ Container.

And these additional features that are available to all form factors including MQ for z/OS:

(IBM MQ & MQ Advanced)



Securely retrieve connection configuration Applications can access CCDTs (client channel definition table) via HTTPS URLs secured by TLS.



Easier message handling

Administrators can view message headers in the MQ Console, speeding message handling decision-making.



Enhanced MQ Console user interface

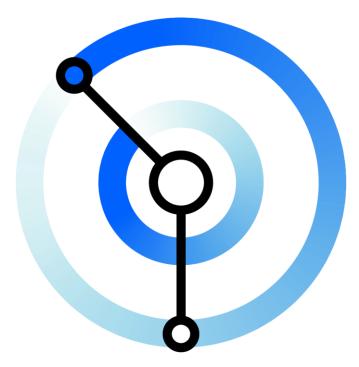
Experience an enhanced Carbon 11 based MQ Console for better observability & efficiency.

IBM MQ support lifecycle

New 5+1+3 support lifecycle for MQ 9.4 LTS, based on IBM's Support Cycle-5 policy for MQ on Multiplatforms

- 5 years of standard support
- plus 1 year of extended code fix support
- plus 3 years of extended usage support

IBM Software Support Lifecycle Policies https://www.ibm.com/support/pages/node/718165



IBM MQ maintenance

Effective January 2023 for all in-support releases.

Two types of maintenance for distributed platforms:

• Fix packs

Cumulative updates for Long Term Support (LTS) releases, as per previous practice.

• **Cumulative security updates (CSUs)** Smaller updates that provide security fixes and which are released monthly (when required).

This model also applies to the JMS, MFT and web UI features on z/OS, but the model for other z/OS maintenance remains unchanged.

See https://ibm.biz/GetMQFix to help with automation

How do I obtain and install CSUs?

CSUs are provided as per fix packs and they are installed in the same way.

How do I identify fix packs and CSUs?

The V.R.M.F is updated for both. Fix packs are identified by an F-digit that is a multiple of 5 (5, 10, 15, ...), and CSUs use the other F-digit values (1, 2, 3, 4, 6, 7, ...).

Are updates cumulative?

Yes. Each CSU is built on the latest fix pack that precedes it.

What releases are CSUs produced for?

All LTS releases (including those in extended support), plus the latest CD release.

https://www.ibm.com/support/pages/ changes-ibm-mqs-maintenance-delivery-model

IBM MQ 9.4 deprecations & removals

- The MQ REST API v1 is deprecated the replacement is the MQ REST API v2.
- The Salesforce bridge has been removed.
- The IBM MQ classes for .NET Standard library was deprecated in 9.3.1 it has been removed in 9.4.
 - > The IBM MQ classes for .NET and the IBM MQ classes for .NET Framework libraries are still provided.
- For the IBM MQ .NET and IBM MQ XMS for .NET classes, the methods WriteObject(), ReadObject(), CreateObjectMessage() and classes ObjectMessage and XmsObjectMessageImpl used for serialization and deserialization of data are deprecated.
- MQ 9.4 LTS is the last MQ release to support Secure Sockets Layer v3 (SSLv3) and Transport Layer Security (TLS) 1.0
- MQ 9.4 LTS is the last MQ release to support Advanced Message Security (AMS) encryption with RC2, Data Encryption Standard (DES), or Triple Data Encryption (3DES) ciphers and AMS Signing with 3DES, Message-digest algorithm (MD5), or Secure Hash Algorithm 1 (SHA1) ciphers, across all MQ form factors.

IBM MQ 9.4.1 deprecations

- TLS RSA Key Exchange CipherSpecs are deprecated in MQ 9.4.1. Any CipherSpec beginning TLS_RSA_WITH_ will be <u>disabled by default, but can be re-enabled</u> if required. Clients are recommended to migrate to CipherSpecs that use Elliptic-Curve Diffie-Hellman for key exchange. These CipherSpecs begin with ECDHE_RSA_.
- The service used to start MQIPT automatically at system startup on Linux is deprecated in MQ 9.4.1. The service on Linux uses System V init, which is not supported on some recent versions of Linux. An alternative, such as systemd, can be used to start MQIPT automatically.

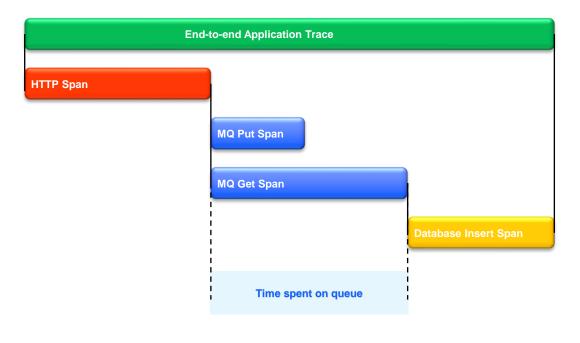
Observability

OpenTelemetry Tracing

Available for Unix-based (AIX and Linux p/x/z) and Windows

What is OpenTelemetry ?

- An observability framework and toolkit designed to create and manage <u>trace</u>, metrics, and log data.
- It is **vendor and tool agnostic** it can be used with a broad variety of observability solutions:
 - Commercial offerings such as **IBM Instana**
 - Open-source tools like Jaeger and Prometheus





Diagnose problems across multiple systems fast, using data to pinpoint where issues are



Gain insights to optimise performance end-to-end, ultimately improving customer experience



Futureproof – open and likely to become a cross-industry de facto standard for observability

What you need to know:

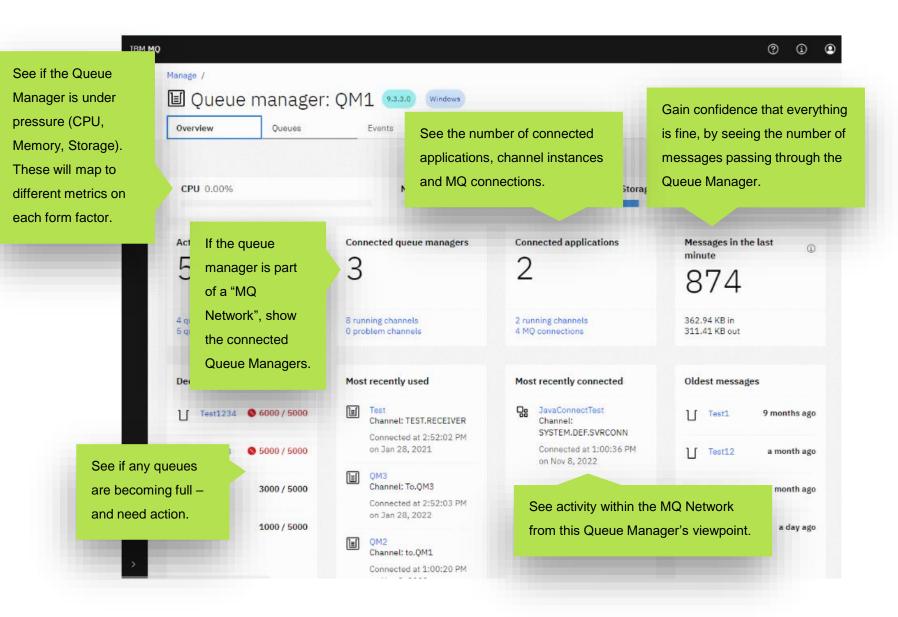
- Available for Windows and Unix-based platforms (AIX, Linux p/x/z) in VMs and containers. Not available on IBM MQ Appliance.
- Instana Exit shipped with IBM MQ as a <u>supporting program</u>

MQ Console dashboards (1/2)

The IBM MQ Console enables administrators to perform common tasks via a graphical user interface.

The new **Overview** tab of the queue manager page **eliminates manual look-up**

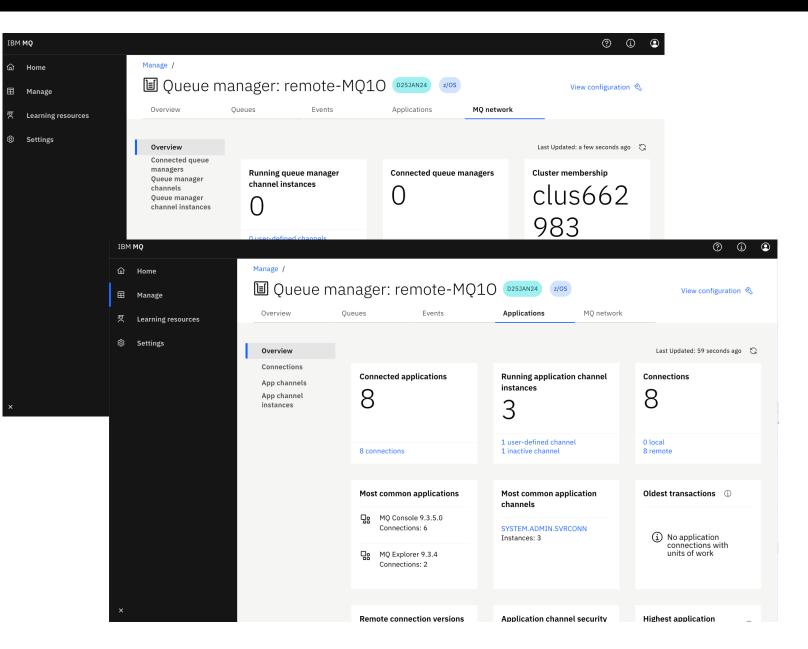
so administrators can immediately understand the overall state of the queue manager and act on any emerging issues before they become problems.



MQ Console dashboards (2/2)

The new Applications and MQ network tabs in the queue manager pages give a quick view of connected applications and connections within the MQ network.

- ✓ Easier for admins and developers to perform real-time analysis of:
 - Application connectivity
 - Queue manager-to-queue manager networking
- Reduce the time to resolution of issues
- ✓ Allow less skilled users to carry out analysis



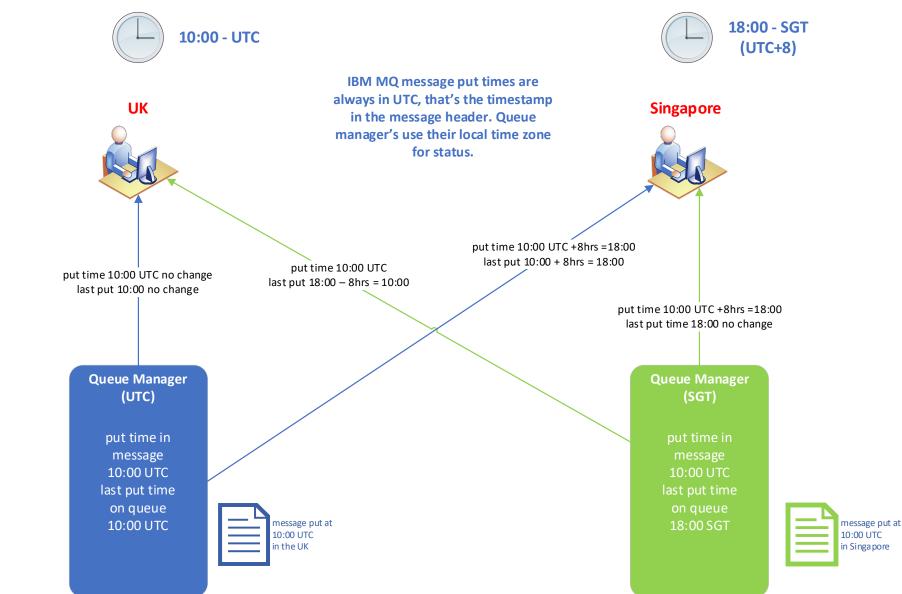
MQ Console observability

MQ Console adds support for improving observability of applications, either local or remote

Manage / I Queu	e managei	r: QM	1						View config	suration 🖏	
Queues	Events	_	Applications	MQ network							
Connected app Connections	lications									Q G	
App channels			Name		Instances	Message flow	Objects in use	Channels	Connections		
App channel in	stances	^	jms.PutGetLoopWithI	Delay	3	\rightleftharpoons Sending and receiving	1	IN	6	:	
				jms.PutGetLoopWi	thDelay	-	\rightleftharpoons Sending and receiving	AQ	IN	2	:
N	↓			jms.PutGetLoopWi	thDelay	-	\rightleftharpoons Sending and receiving	AQ	IN	2	:
3			jms.PutGetLoopWi	thDelay	-	\rightleftharpoons Sending and receiving	AQ	IN	2	:	
			ns per page: 10 ∨	1-1 of 1 items					1 ∨ of 1 pages	۰ Þ	

MQ Console time zones

Timestamps that are associated with queue managers are displayed in the time zone where the queue manager is running, rather than the time zone of the IBM MQ Console.



Insight into Business Events

IBM MQ and Apache Kafka

Messaging is essential for building fully connected, efficient and scalable solutions - more now than ever before.

Messaging patterns

Critical exchange of information from one system to another

Messages must get through, no questions asked. The system must be secure and distributed. Real-time event notification for microservice scalability

Must be frictionless, scalable and lightweight. The system must be simple to exploit, invisible to the application. Event streaming for data caching and processing

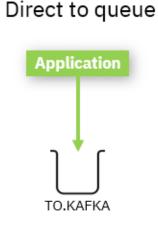
Must maintain a projection of the data for efficient repeatable processing. The system must scale for large data volumes.

IBM MQ

Apache Kafka

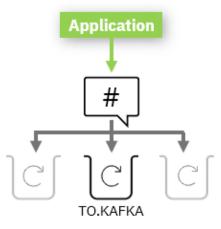
Connecting to Apache Kafka

Data from core systems can flow uninterrupted without loss or duplication to Apache Kafka with new assured-delivery sink and source connectors, enabling businesses to drive seamless customer experiences and support strategic business processes.

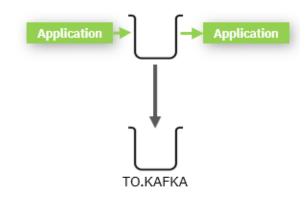


New applications, or applications that are being changed, can put messages **directly to a queue** used by the source connector.

Subscribe to topic



If messages are already being published to a **topic**, it's simple to generate another copy for a queue used by the source connector. Streaming queue copy



Tap into your mission-critical data as it flows around the enterprise with **Streaming Queues**, without impacting the existing flow of data. Create a copy of every message onto a second queue that is used by the source connector.

Supported Kafka Connectors

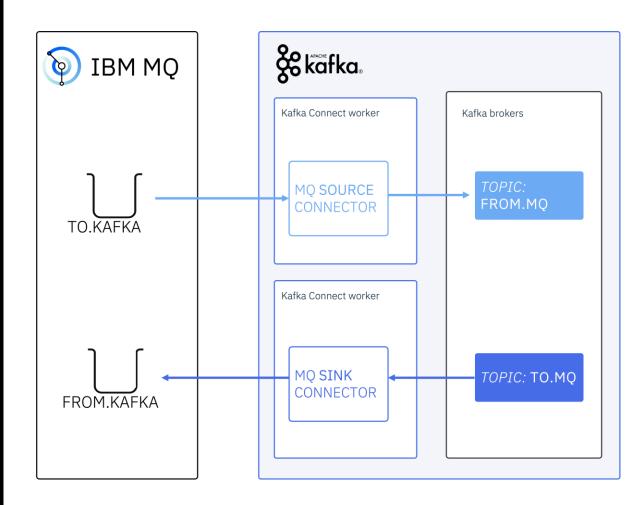
Several sink and source connectors exist for connecting MQ queues to Apache Kafka topics.

The source connector is the most used, enabling MQ to be used as a source for events into Apache Kafka.

Functionally identical connectors are available from IBM:

- Version 1: Unsupported open source
 - IBM MQ (base) and the free Developer Edition
- Version 2: Assured-delivery and fully-supported
 - IBM MQ Advanced
 - Cloud Pak for Integration

Confluent also provides a supported connector.



Version 2 of the Kafka connectors support "exactly-once" delivery of messages.

Security

Token-based authentication

IBM MQ can use a password-less approach to authentication with JSON Web Tokens (JWT) enabling applications to operate in a secure, Multi-Factor Authentication (MFA) environment.



Token-based authentication eliminates the need for storing and transmitting passwords, which can be a security vulnerability.

Scalable

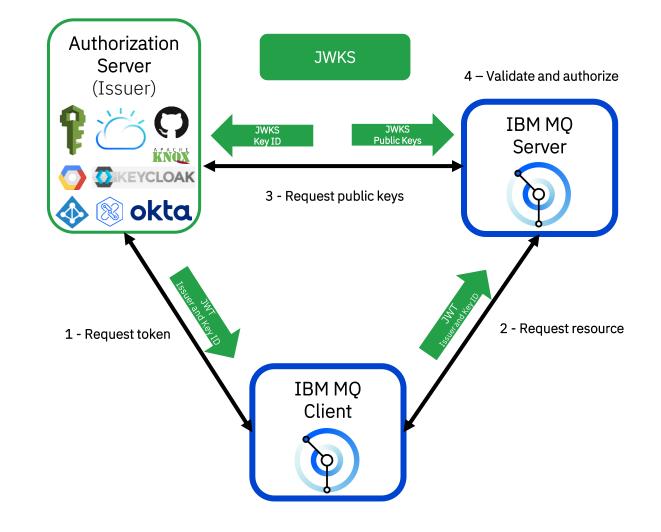
You can use one trusted JSON Web Key Sets (JWKS) issuer so your applications can authenticate with many services without separately registering with all of them.

Flexible

Tokens can be used across multiple, diverse applications or other endpoints, enabling easier secure collaboration between enterprises and platforms.

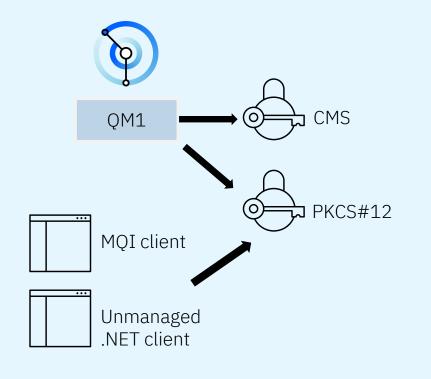
Easier

Using a JWKS issuer makes it easier to manage certificate rotation, expiry, and revocation. Keys are cached to tolerate outages and improve performance.



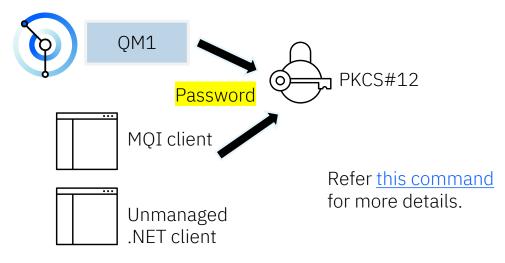
PKCS#12 keystores

- Use a PKCS#12 keystore in place of a CMS keystore
- Use existing mechanism to point MQ at the keystore
- Change applicable for MQI, Unmanaged .NET clients
 - Java/JMS can use JRE for PKCS#12 support
 - Managed .NET uses windows certificate store



Password support:

- Provide the keystore password directly to IBM MQ
 - ✓ Allows alternative to the stash file.
- Queue Manager command: MQSC QMGR **KEYRPWD**
- Clients:
 - ✓ MQSCO.KeyRepoPassword fields
 - ✓ MQKEYRPWD environment variable
 - ✓ SSL Stanza SSLKeyRepositoryPassword
- Password must be protected
 - ✓ Queue Manager does this for you
 - $\checkmark\,$ Encryption tools provided for client apps



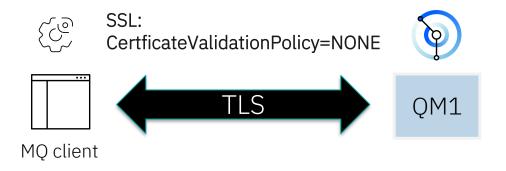
Other important security updates

Read-only root filesystem

- Read-only root filesystem can be enabled for MQ running in Containers.
- This improves security by preventing writes to files inside the container at runtime.
- Not enabled by default
 - Needs to be explicitly enabled by setting, spec.securityContext.readOnlyRootFilesystem QueueManager API to true.
- The readOnlyRootFilesystem option is accompanied by additional options to configure the size of the "scratch" and "tmp" volumes that are mounted to allow writing of temporary files.

Skip TLS certificate validation

- When SSL/TLS is enabled on MQ channels there is a significant risk of impact if TLS certificates are not renewed in time. It can also be complicated to ensure all partners have the necessary CA certificates when they change.
- MQ now provides an easy way to skip TLS certificate validation.
- Does not validate a peer TLS certificate, but still secures communications.
- Not recommended for production use, but useful as a quick start/test.



IBM MQ | TLS Certificate Management (9.4.1)

- New command "dspmqcert" available
- Quickly see information about certificates within IBM MQ keystores
- Filter on certificates expiring within a certain timeframe
- Output in different machine-readable formats
- When run as an automated process, enables you to build alerts when certificates are near expiry.

```
-h this help
```

-o output: <json|csv|text> default text

```
-d days: print certs due to expire within the
```

- -m pattern: match queue manager names, ie. QM1, ERR*, default *
- -a include CA intermediate certificates
- -e exit error (127) if -d specified and there are certs expiring
- -f path: location of INI file mapping QM names and keystore location

```
dspmqcert -m QM1 -o json
```

```
"QM1": [ {
 "label": "MET1",
 "type": "Self-signed",
 "version": 3,
  "serial": "45124bf4ea9c44c7",
  "subjectDn": "CN=MET1,OU=IBM",
 "issuerDn": "CN=MET1,OU=IBM",
 "keystorePath":
    "/var/mqm/qmgrs/QM1/ssl/key.kdb",
 "keySize": 4096,
 "notBefore": "2023-07-03 13:31:37",
 "notAfter": "2025-07-03 13:31:37",
 "daysExpiry": 263
} ]
```

Resiliency & Scalability

LZ4 compression

LZ4 is a lossless data compression algorithm that is focused on compression and decompression speed. It belongs to the LZ77 family of byteoriented compression schemes.

From MQ 9.4, users can use LZ4 compression for network communication to:

- Reduce cost
- Improve performance

Available for communication between:

- Queue manager channels
- Native HA replicated queue managers

Choose whether to prioritize speed or compression using these values for COMPMSG when working with channels:

LZ4FAST

Message data compression is performed using LZ4 encoding with speed prioritized.

LZ4HIGH

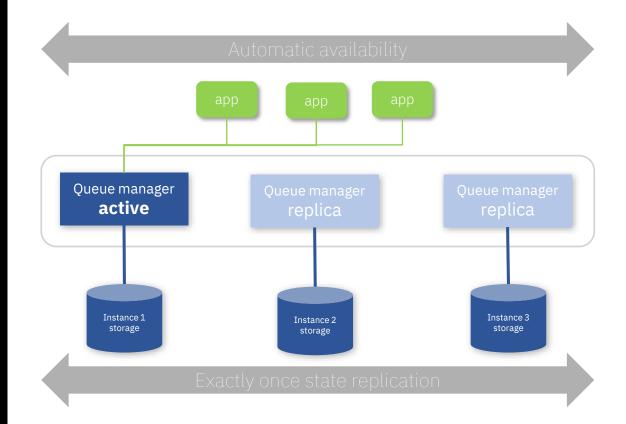
Message data compression is performed using LZ4 encoding with compression prioritized.

Native High Availability (HA)

Updates in 9.4

- Reduced network load and the associated costs through smarter media imaging.
- Automated recovery of damaged objects without the need for manual intervention.
 - Recovery is periodically retried if required, such as when object is in use
 - Damaged objects can still be recovered manually by using **rcrmqobj**
- Option to increase performance of replication with LZ4 compression.

Entitlement: IBM MQ Advanced & CP4I **Deployment:** OpenShift and Kubernetes



Persistent volume resizing for containers

- Persistent volumes provide long-lived storage for containers – used to store MQ messages and logs
- From 9.4, MQ supports expanding persistent volumes as workloads change

Steps to enable

- The storage class must have **.allowVolumeExpansion** field set to **true**.
- To allow expansion of a queue manager volume, .spec.queueManager.storage.allowVolumeExpa nsion field needs to be set to true.
- Alter .size fields for each of the desired queue manager volume type, for example: .spec.queueManager.storage.queueManager.siz
 e: 2Gi → 5Gi

Administration & Application Development

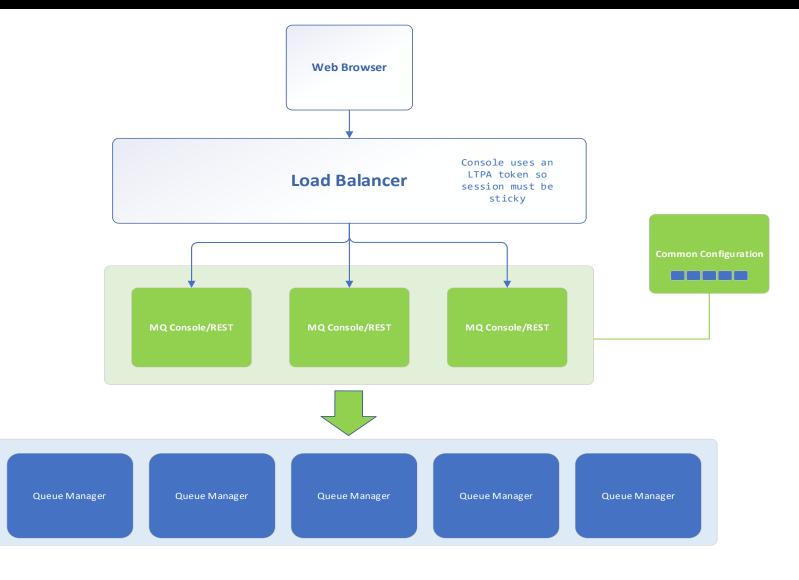
Standalone Web Server

Decoupled, backwards compatible, scalable and highly available

Rapidly configure remote queue managers without the need for a full MQ installation.

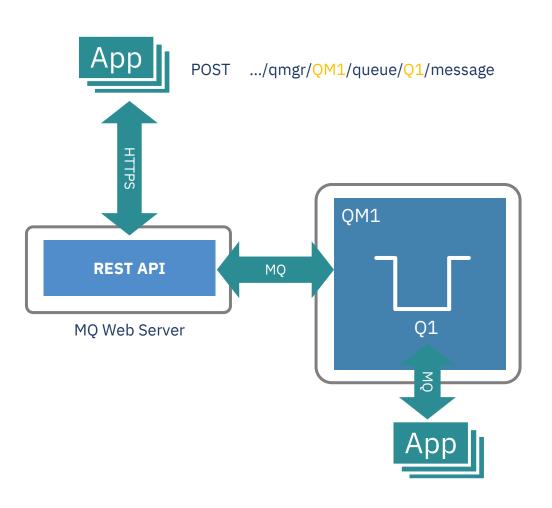
Update the MQ Console independently to queue managers.

Centralise administration for your MQ estate.



REST Messaging: Remote queue manager support

- The REST Messaging API can now be used with remote queue managers, enabling you to interact with any queue manager in your estate, running at any version
- Previously, it could only be used with queue managers local to the MQ web server:
 - Same installation on distributed platforms
 - Same LPAR and at the same version as the MQ web server on z/OS



IBM MQ | Pre-built MQ Advanced Containers

Wider platform support

For OpenShift users, IBM offers a pre-built MQ container image and an MQ Operator, while customers deploying MQ in other container environments need to build the image from a sample, which requires more effort and skills



From 9.4.1, IBM provides a pre-built MQ Advanced container image that can be deployed into container runtime environments provided by containerd, cri-o, Podman or Docker

What does it mean?

Use the pre-built container image to deploy MQ instead of building an image from a sample

What's supported?

IBM provides defect and usage support for the IBM MQ, IBM-supplied MQ container enablement code, but is not able to help users configure and debug problems with their container environment or deployment pipeline

Where to download it from and what entitlement is required?

Download from <u>IBM Container Registry</u>, for which the client needs to have either MQ Advanced or Cloud Pak for Integration entitlement

Note:

- Whilst containers can run on any Linux OS, Red Hat provides <u>support</u> for Red Hat packages for containers running only on Red Hat Enterprise Linux or Red Hat Enterprise Linux CoreOS hosts
- IBM Container licensing policy is supported in Kubernetes based platforms only
- Interim fixes will be available for the pre-built container image and can be downloaded from IBM Container Registry

Run MQ anywhere you want!

Container Infrastructure Deploy and run in the cloud or on premises





Orchestration Automate deployment and management of containers



MQ as a Service Reserved Instance

Single Tenant: Client SaaS queue managers will run in a dedicated IBM managed cluster, increasing security and reducing the chances of performance being impacted by other client workloads.

Multi-Zone high availability: Data replication across 3 availability zones protects against data loss in the event of a failure. Upgrades can also be performed on a rolling basis across availability zones, maintaining service during upgrades. Private network endpoints: Provides a higher level of network control and an additional layer of network security so message traffic or endpoints are not exposed to the public internet.

Automated deployment: Automating the deployment of SaaS queue managers in a repeatable and programmatic way allows MQ as a Service to be used at scale, helping save on administration costs, reducing errors and deployment time.

Other updates

Message expiration First class CAPEXPRY attribute to configure how long messages are kept on queues

Non-production entitlement

Reduce the cost of licenses in non-production environments and gain better visibility into the size and deployment of license distribution across your estate.

MacOS support

MacOS developers can now build and run an IBM MQ container image natively on Apple Silicon without the need for Rosetta emulation.

• Managed File Transfer

Additional resource monitor logging events and updates to diagnostic capture.

• Libraries and AIX support MQ supports .NET 8 & .NET 6 libraries.

Support for the XL C/C++ 17 compiler on AIX alongside the existing XL C/C++ 16 compiler.

- **MQ Classes support for JMS and Jakarta** Support for using modular applications with IBM MQ classes for JMS and IBM MQ classes for Jakarta Messaging.
- Automated workload balancing for JMS Uniform Clusters automatically balance JMS workloads, enabling users to build resilient, horizontally scalable messaging systems.
- MacOS client installable via Homebrew
- MacOS client TLS provider (9.4.1)

ARM64 now the same as other platforms (kdb/p12 stores)

Amazon Web Services (AWS)

AWS Marketplace

Businesses with an AWS strategy can purchase either IBM MQ or IBM MQ Advanced SW licenses via the AWS Marketplace.

Explore now:

https://aws.amazon.com/ marketplace/pp/prodview-00205363yebmo

ketplace	Q Search			
Categories 🔻 Delivery Methods 🔻 Solutions 🔻	AWS IQ 👻 Resources 👻 Your	ır Saved List	Become a Channel F	Partner Sell in AWS Marketplace
	IBM MQ and IBM	MQ Advanced	View purc	hase options
(p)	loosely coupled, message and even	namically, securely, and reliably enabl nt driven applications at scale. It brin ams to innovate and deliver outstanc	ing you to build gs insights into	e to list
Overview	v Pricing	Usage	Support	Reviews

Product Overview

Thousands of enterprises around the world and across all industries trust IBM MQ with their applications and data. Its proven reliability, security, and support for diverse applications, from traditional on premise systems to cloud native apps, make it the future proof choice for connecting within your business and with your partners.

Key features:

Connect anywhere: Deploy IBM MQ where your applications and data reside, and rely on IBM MQ to connect systems together. Run it in containers, on OpenShift or Kubernetes, Virtual Machines, or on baremetal across a broad range of platforms in public cloud and on premises.

Connect anything: IBM MQ supports a range of modern and legacy languages, protocols and APIs so you can connect any application to any other, from COBOL to Spring Boot, node.js, Go and more!

Multiple messaging patterns: IBM MQ supports point to point messaging with Store & Forward and Request & Response patterns, as well as Publish and Subscribe with dynamic topics and subscriptions. This provides a simple, flexible, and structured way to build communication into software applications with exactly once message delivery, freeing up developers to focus on the business value of their code.

Highlights

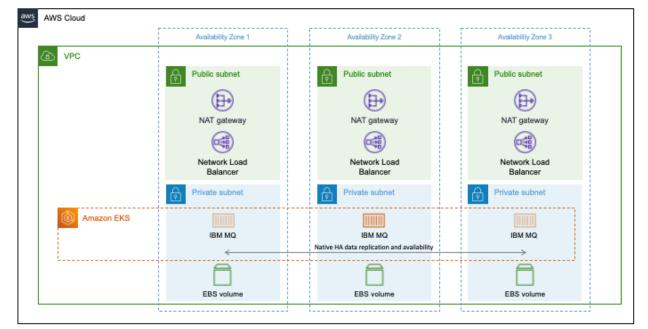
- IBM MQ is available in 2 editions to suit the needs of your business.
- IBM MQ is the standard offering providing the essential capabilities you need to securely and reliably connect applications, enable insights into events, and empower teams to innovate and deliver outstanding customer experiences.
- IBM MQ Advanced provides everything that is available in the standard offering plus additional capabilities providing state of the art data resiliency, broader connectivity options, and advanced security for end to end encryption and audit compliance. To upgrade from IBM MQ to IBM MQ Advanced, please contact us at IBMMQonAWS@ibm.com

AWS Partner Solution

The IBM MQ AWS Partner Solution is a best-practice deployment of an IBM MQ Native HA queue manager running on the AWS Elastic Kubernetes Service (EKS) platform.

Reduce hundreds of manual procedures to just a few steps to build and start a best-practice deployment of IBM MQ on AWS Elastic Kubernetes Service (EKS) within minutes.

To get started, visit: <u>aws.amazon.com/solutions/partners/ibm-mq/</u>





Rapid deployment Deploy fully-functional MQ software on the AWS Cloud with a single click



Proven topology Benefit from container-ready, highly available reference architecture



Resilient connectivity

Use the market leader for reliable, secure, scalable message distribution

z/OS 9.4 Updates

MQ for z/OS offerings: Before

U IBM MQ Advanced for z/OS (5655-AV9)

IBM MQ MFT for z/OS Integrate file data into an MQ network

IBM MQ AMS for z/OS End to end protection for message data

IBM MQ Advanced for z/OS VUE (5655-AV1)

Connector Pack Aspera fasp.io Gateway and Kafka Connector

Extra support for TCP/IP Java/JMS/MFT agents connecting to remote z/OS queue managers

IBM MQ MFT for z/OS Integrate file data into an MQ network

IBM MQ AMS for z/OS End to end protection for message data

IBM MQ for z/OS VUE Core MQ product

U IBM MQ z/OS ビ (5655-MQ9)

Core MQ product

O IBM MQ z/OS VUE (5655-VU9)

Core MQ product

MQ for z/OS offerings: Now

JMS/Java batch connections will be supported to remote z/OS queue managers regardless of product entitlement

*APAR required for 9.3 and 9.2

IBM MQ Advanced for z/OS (5655-AV9)

Connector Pack Aspera fasp.io Gateway and Kafka Connector

Extra support for TCP/IP MFT agents connecting to remote z/OS queue managers

IBM MQ MFT for z/OS Integrate file data into an MQ network

IBM MQ AMS for z/OS End to end protection for message data

∪ IBM MQ z/OS ∑ (5655-MQ9)

Core MQ product

U IBM MQ z/OS VUE (5655-VU9)

Core MQ product

U IBM MQ Advanced for z/OS VUE (5655-AV1)

Connector Pack Aspera fasp.io Gateway and Kafka Connector

Extra support for TCP/IP MFT agents connecting to remote z/OS queue managers

IBM MQ MFT for z/OS Integrate file data into an MQ network

IBM MQ AMS for z/OS End to end protection for message data

IBM MQ for z/OS VUE Core MQ product

64-bit Channel Initiator

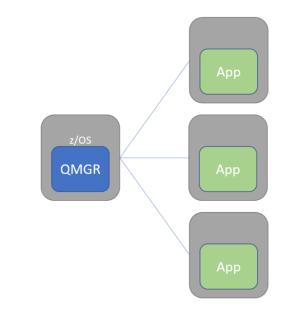
Previously, server-connection channel messages were staged by the channel initiator in a set of buffers in 31-bit storage

Large messages would limit the maximum number of active channels

Now with 64-bit storage in the channel initiator, a larger number of channels can connect at the same time

Samples have been changed to have MEMLIMIT=2G

• 2GB of 64-bit storage by default



For 104 concurrent clients sending 10MB messages...

Memory footprint per client:

	9.3.0	9.3.x
31 bit	10.4MB	112KB
64 bit	0	11.6MB

Assuming 1.3GB free space below the bar, this implies a maximum of 128 clients at 9.3.0

At 9.3.1, we can get to 9999 clients (the maximum), assuming a suitable MEMLIMIT

Flexible monitoring on z/OS

Enhanced SMF statistics for queues that extends initial support added in 9.3.

DISPLAY QSTATUS information is now available in the SMF record

The format of the queue statistics data record is described in assembler macro **thlqual.SCSQMACS(CSQDQQST)**

Note: Data captured regardless of the MONQ attribute on the queue

MV4A, MQ27, 2022/06/24, 11:27:29, VRM:931, Queue Name.....01 Disposition.....Private Pageset ID.....4 Bufferpoll ID.....0 THIS IS A FULL RECORD Current Depth.....10 Open Output Count...2 Open Input Count....1 QTIME Long......5029503 Last Put Time.....DBB3F45BDA390805 Last Get Time.....DBB3E8DCEC8C0114 Oldest Message Age..64

UNCOM(YES|NO) data is also captured

https://www.ibm.com/docs/en/ibm-mq/9.3?topic=statistics-queue-data-records-version-931-release

MQ Console | New for z/OS

Support for z/OS specific concepts: Storage classes

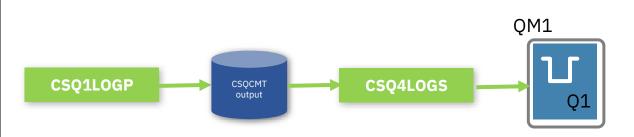
Manage / Dueue manager: Overview Queues	: remote-MQ53	D28FEB24 z/os Applications	MQ network		View config	guration 🍳
Queues Storage classes	A storage class is an MQ for	z/OS concept that allo	ows the queue manager to map queues to page se	ts.	Q & Cr	eate +
	Name 个	Page set ID	QSG disposition	Related queues		
	BIGPAGE	13	Queue manager	-		Ś
	DEFAULT	1	Queue manager	-		Ś
	NODEFINE	1	Queue manager	-		Ś
	REMOTE	1	Queue manager	-		Ś
	SYSLNGLV	2	Queue manager			Ś
	SYSTEM	0	Queue manager	-		Ś
	SYSTEMST	1	Queue manager	-		S.
	SYSVOLAT	3	Queue manager	-		S.
	Items per page: 10 ∨	1-8 of 8 items			1 ∨ of 1 pages	4

CSQ1LOGP EXTRACT supports message properties

CSQ1LOGP EXTRACT enhanced to fully extract messages with message properties, with the message properties going into an RFH2 header

This means that, if needed, those messages can be replayed, including the properties, using CSQ4LOGS, just like any other message

```
/STEP1 EXEC PGM=CSQ1LOGP,REGION=OM
 /STEPLIB DD DISP=SHR,DSN=thlgual.SCSQANLE
          DD DISP=SHR, DSN=thlgual.SCSOAUTH
          DD DISP=SHR, DSN=thlqual.SCSQLOAD
 /ARCHIVE DD DISP=SHR,DSN=xxx.yyy.A0030620
          DD DISP=SHR, DSN=xxx.yyy.A0030621
 /SYSPRINT DD SYS<u>OUT=*</u>
 /SYSSUMRY DD SYSOUT=*
 /CSQCMT DD DSN=xxx.MSGS.COMMIT,
  DISP=(NEW,CATLG),SPACE=(CYL,(1,10),RLSE),UNIT=SYSDA
 /SYSIN DD *
EXTRACT(YES) SUMMARY(NO)
URID(xxxxxxxxxxxx)
 /STEP2 EXEC PGM=CSQ4LOGS,PARM=('QM1 REPLAY'),REGION=0M
 /STEPLIB DD DSN=thlqual.SCSQANLE,DISP=SHR
          DD DSN=thlqual.SCSQAUTH,DISP=SHR
          DD DSN=thlqual.SCSQLOAD,DISP=SHR
 /FILEIN DD DSN=xxx.MSGS.COMMIT,DISP=SHR
 /SYSDBOUT DD SYSOUT=*
 /SYSABOUT DD SYSOUT=*
 /SYSPRINT DD SYSOUT=*
/SYSOUT DD SYSOUT=*
```



MQ available in IBM z/OS Cloud Broker

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	User Management	`			All Namespaces	Succeeded	🔮 13 Sept 2023, 17:43	-	I

Use Red Hat OpenShift to easily deploy resources to z/OS, in your hybrid cloud. Now including:

- Local and alias queues
- Server connection channels

https://github.com/IBM/zos_mq_operator

z/OS HyperWrite behaviour changes

- Previously, when a user set the value of ZHYWRITE(YES), the queue manager would check if it believes it has the capability of performing zHyperWrite's for log writes.
- However, a drawback was discovered in that the queue manager assessed its zHyperWrite capability at start-up despite the potential for this state to change while it is running.
- If the queue manager checked the zHyperWrite capability while this was temporarily unavailable, then it could result in a scenario in which zHyperWrite is not attempted until the queue manager is restarted.
- Now, irrespective of a log's perceived zHyperWrite capability, the queue manager will always attempt to utilise zHyperWrite if configured to do so (via ZHYWRITE(YES)).

MQ Appliance 9.4 updates

IBM MQ Appliance SSH Password and Certificate Authentication

SSH service enhanced to support standard password and certificate authentication

CA-signed certificates simplify automation and offer improved security over passwords

Revoke individual user certificates, if required

Modi	ify RB№	1 Settings 🕸	7		Apply	Cancel	Undo	:	(1
RBM-Setti	ngs status: [u	[p]							
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\$ ssh -i admin-key admin@m2003a00
m2003a00
Unauthorized access prohibited.

Welcome to IBM MQ Appliance M2003A console configuration. Copyright IBM Corporation 1999, 2023

Version: MQ00.9.3.3.0 build 351779mq on May 11, 2023 12:31:32 PM Delivery type: CD Serial number: 0123456

mqa#

Administration / Access /

IBM MQ Appliance Disaster Recovery between HA Groups

DR between two HA groups

Automatic fail over and synchronous replication within each HA group

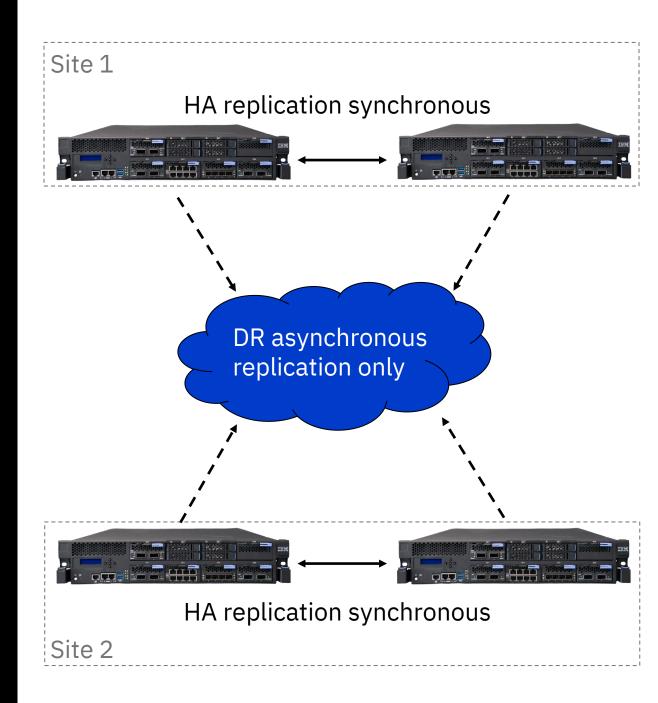
Manual fail over and asynchronous replication for DR between the HA groups

Both HA groups can have active queue managers

Some queue managers can be active at site 1 and others at site 2

If one site fails, then all queue managers can be active at the remaining site

Each HA group can have a floating IP address, but a floating IP cannot span the two sites



IBM MQ Appliance File System Usage Monitor

Reports file system usage for queue manager and system file systems at a configurable interval

Avoids need for manual polling

Generates log events that can be consumed by logging targets, and optionally forwarded to central monitoring tools, such as Splunk or Elastic Stack

Generates informational, warning, or critical alerts based on configurable usage thresholds

- Set default thresholds for all file systems
- Set specific thresholds for individual file systems

	System	Queue managers		
ils				
nitor all queue ma	mager file system	s (Required) 🕄		
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ical threshold for 0		ile systems (Required) 🛈		- - Add
ical threshold for 0	e systems (j)	ile systems (Required) ① Warning threshold	Critical threshold	
0 Dueue manager fil	e systems (j)		Critical threshold 80	Add

Objects / Monitoring

[warn] File system for queue manager 'QM1' is 55% used, 28862 MB free.

[info] File system for queue manager 'QM2' is 0% used, 64139 MB free.

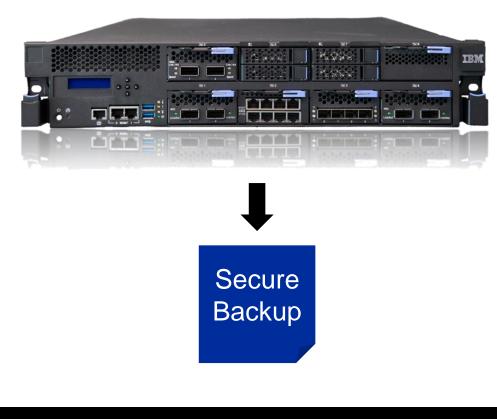
IBM MQ Appliance Secure Backup

Encrypted backup of system settings that can be restored on the same or a different appliance

Avoids need to backup individual resource definitions

Equivalent to the same capability that exists for the DataPower Gateway

- Includes all system settings, local users and system certificates
- Does not include queue manager configuration or data - queue managers are backed up and restored separately



mqa(config)# secure-backup mybackupcert temporary:///myBackup Secure backup to 'temporary:///myBackup' scheduled (may take a few minutes to complete). Secure backup is complete.

mqa(config)# dir temporary:/	//myBackup	
File Name	Last Modified	Size
backupmanifest.xml	Oct 2, 2023 7:13:04 PM	5240
root.tgz	Oct 2, 2023 7:13:04 PM	6808
config.tgz	Oct 2, 2023 7:13:03 PM	4152
cert.tgz	Oct 2, 2023 7:13:03 PM	5688
local.tgz	Oct 2, 2023 7:13:03 PM	2592
password-map.tgz	Oct 2, 2023 7:13:03 PM	304
mq-users.tgz	Oct 2, 2023 7:13:03 PM	432

5115.3 MB available to temporary:///myBackup

Questions?

