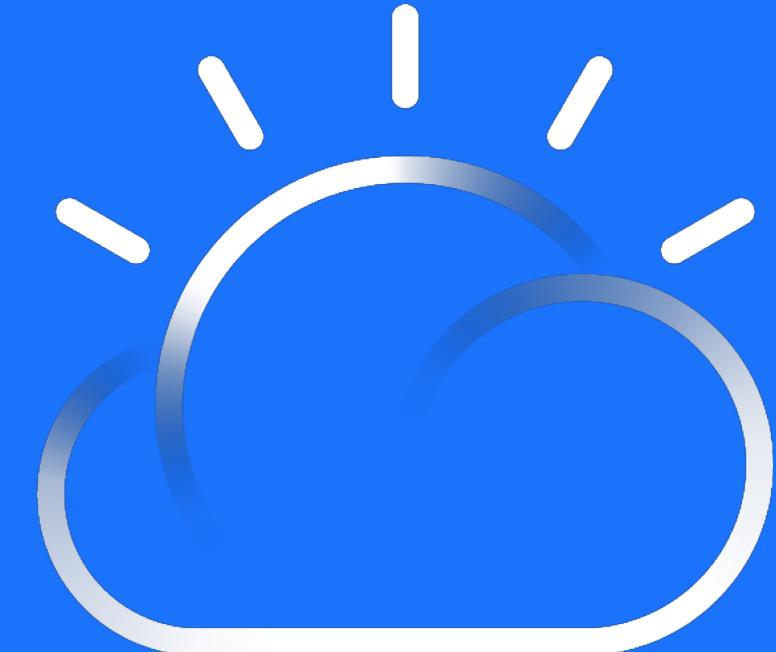


M09 MQ for the Cloud

James McGuire

Front-end Developer, Cloud Developer, IBM MQ on Cloud

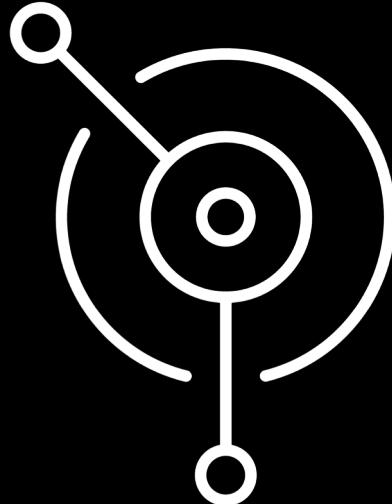
mcguire7@uk.ibm.com



IBM Cloud

IBM

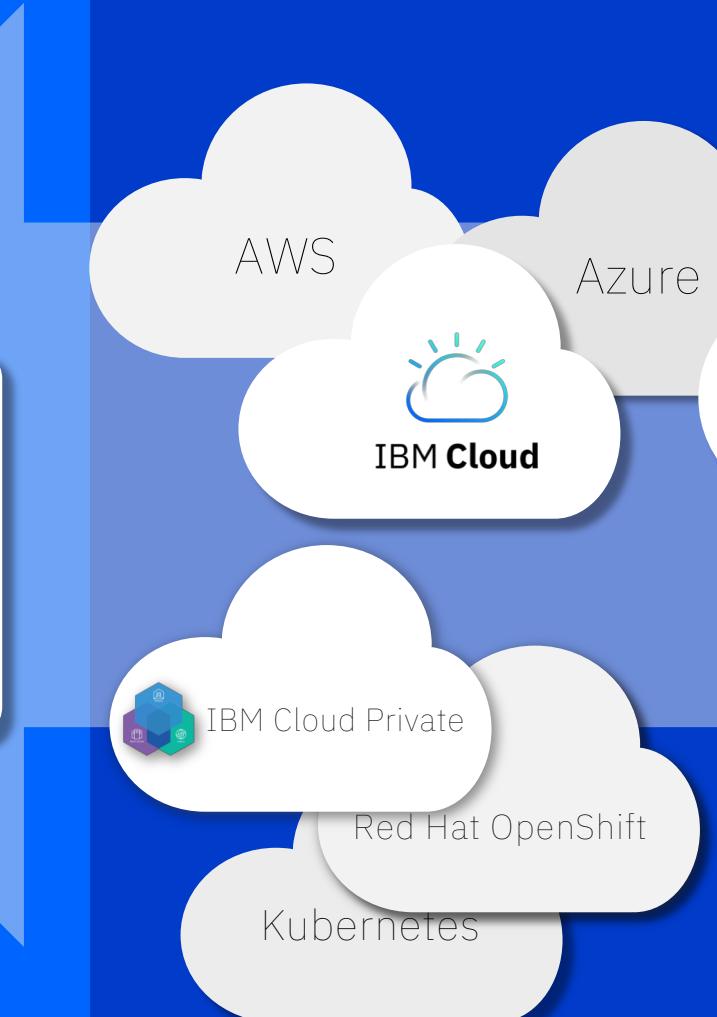
Run IBM MQ in any location or cloud, exactly as you need it



On-premise, software and the MQ Appliance



Run MQ yourself in public or private clouds



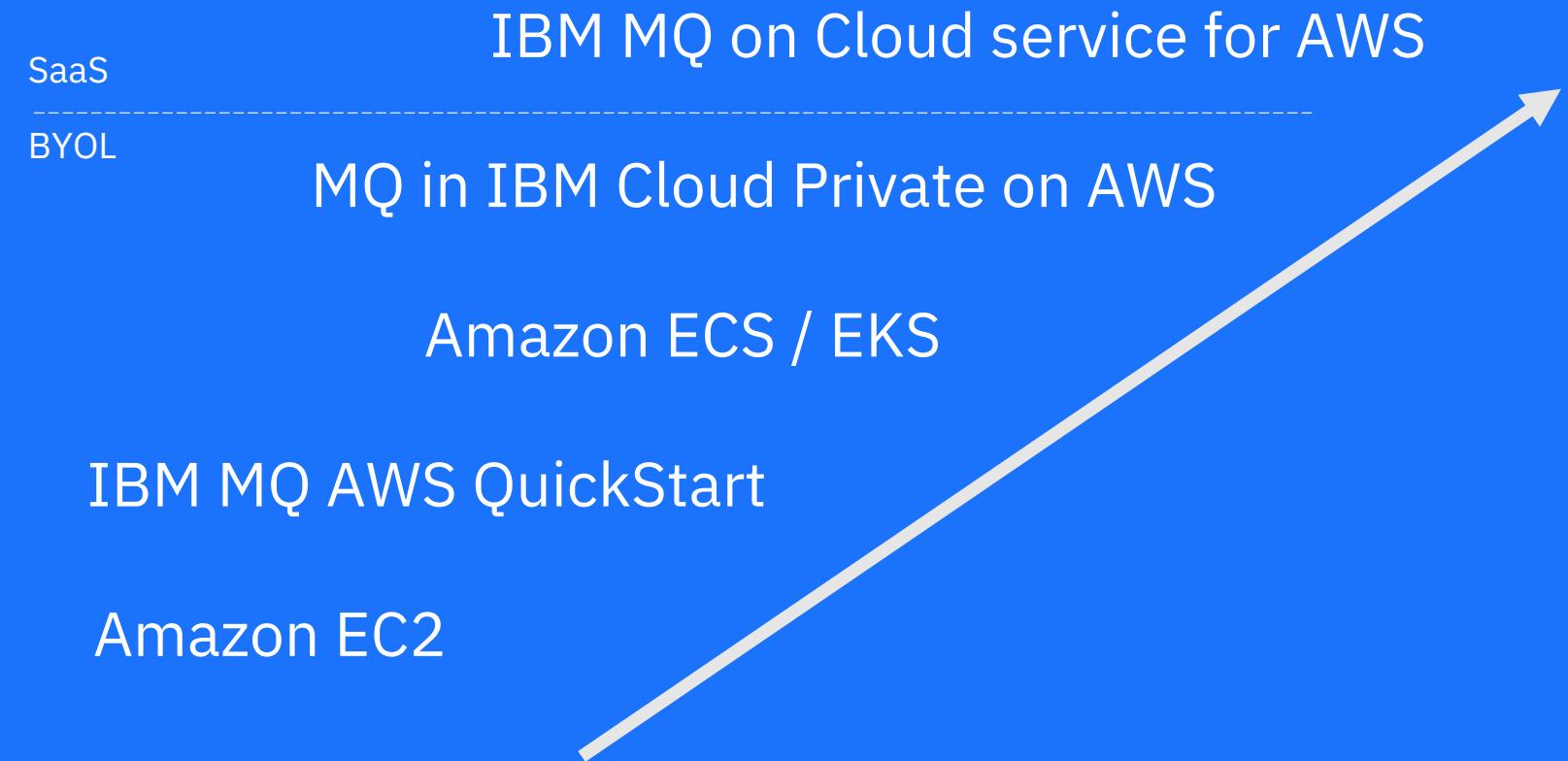
Let IBM host MQ for you with its managed SaaS MQ service in public clouds, IBM Cloud and AWS



For example:

**Deploy and run
IBM MQ in AWS to
suit your needs**

(Usual requirements for
supported operating system
and file system)



IBM MQ on AWS QuickStart



Getting up and running with MQ quickly is important, but running it in the best possible way is critical

The MQ AWS Quick Start demonstrates AWS architectural best practice

Deployed from scratch in around 30 minutes

<https://aws.amazon.com/quickstart/architecture/ibm-mq/>

The screenshot shows two views of the AWS Quick Start interface for IBM MQ on AWS.

Left View: A detailed description of the deployment. It states that the Quick Start automatically deploys IBM MQ into your VPC in about 30 minutes. It highlights that IBM MQ is messaging middleware that enables secure, reliable, and efficient message exchange between distributed systems. It also notes that the Quick Start deploys IBM MQ into your VPC using CloudFormation templates that you can customize.

Right View: An architectural diagram titled "What you'll build". It shows a VPC with two Availability Zones (Zone 1 and Zone 2). Each zone has a Public subnet containing a NAT gateway and bastion hosts, and a Private subnet containing an Auto Scaling group with IBM MQ instances. An Elastic Load Balancer (ELB) is used to distribute traffic between the zones. The diagram includes labels for AMI, S3 bucket for license file, and Amazon EFS. A legend defines icons for VPC, Public subnet, Private subnet, NAT gateway, Bastion hosts, Auto Scaling group, Elastic Load Balancing (ELB), and IBM MQ.

Bottom Buttons:

- View deployment guide for details
- See the source code for this Quick Start

Blogs and collateral about all the clouds



Demonstrate approach

Give samples/examples

Get the message out!

Google Cloud

Blog Latest Stories Product News Topics

PARTNERS

Get fast, reliable messaging with IBM MQ on Compute Engine

Ron Pantofaro
Solutions Architect, Google Cloud Platform

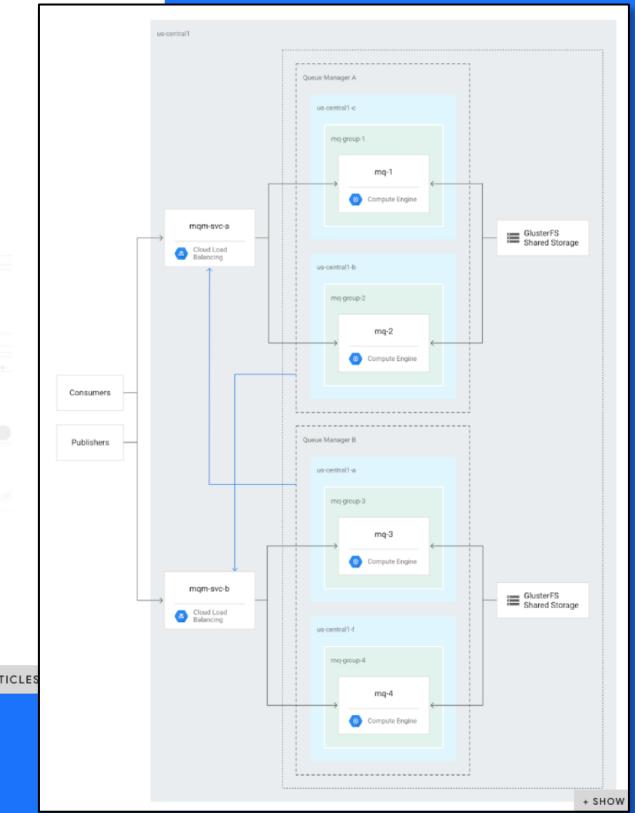
Robert Parker
IBM MQ development, IBM

March 1, 2019

Moving data is one essential task for enterprises today, especially if you're using lots of different systems across many locations. One product for this is IBM MQ, which helps you move data dependably with secure messaging. Deploying a highly available IBM MQ cluster in the cloud is not a straightforward task, and IBM provides many clustering configurations you can use and combine in various ways to achieve your high availability goals. It's challenging to deploy a cluster like this in a way that takes advantage of cloud's benefits, like multiple zone availability, load balancers and vertical scaling. But once you've

+ SHOW RELATED ARTICLES

<https://cloud.google.com/blog/topics/partners/get-fast-reliable-messaging-with-ibm-mq-on-compute-engine>



MQ in Containers

MQ has been supporting Docker containers since 2015 with images on Docker Hub and Docker Store and sample setups on Github

[github.com/
ibm-messaging/
mq-container](https://github.com/ibm-messaging/mq-container)

IBM Cloud Transformation Advisor

Analyses your queue managers and JEE applications for suitability for moving to IBM containers



MQ Advanced is available as fully supported IBM Cloud Paks with **IBM Cloud Private** and the **IBM Kubernetes Service** on **IBM Cloud**



Deploy fully supported IBM certified software containers into an IBM provided **Kubernetes** platform or an existing **Red Hat OpenShift** environment

IBM has introduced the ability to purchase an entitlement based on the container size in Virtual Processor Cores and the number of hours that MQ was deployed in each container



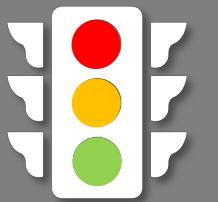
MQ Modernization

Containerization facilitates the modernization of MQ deployments.

(These pattern also apply outside of containers)

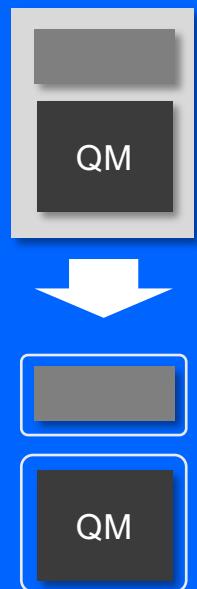
IBM Cloud Transformation Advisor

Analyses your queue managers and JEE applications for suitability for moving to IBM containers



Replatform

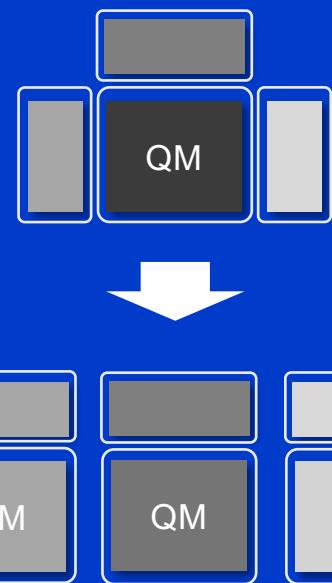
establishing the container orchestration platform, services and capabilities to succeed, and move to a runtime topology that is native to the platform



Containerize MQ queue managers, with applications connected as clients

Repackage

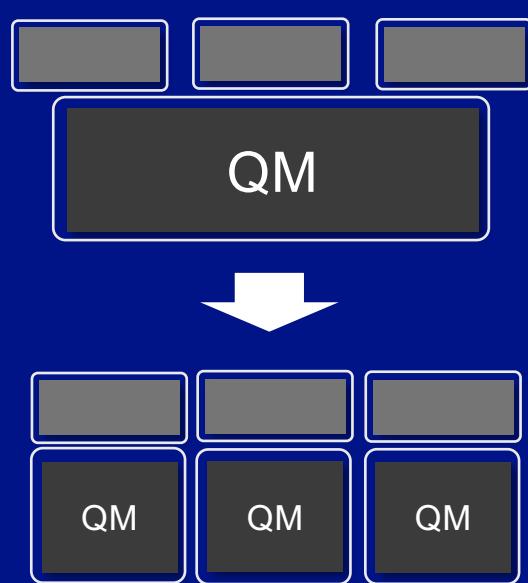
break down the existing artefacts so that they are bounded along line of business and development teams to improve the agility of the organization



Queue managers are dedicated to an application

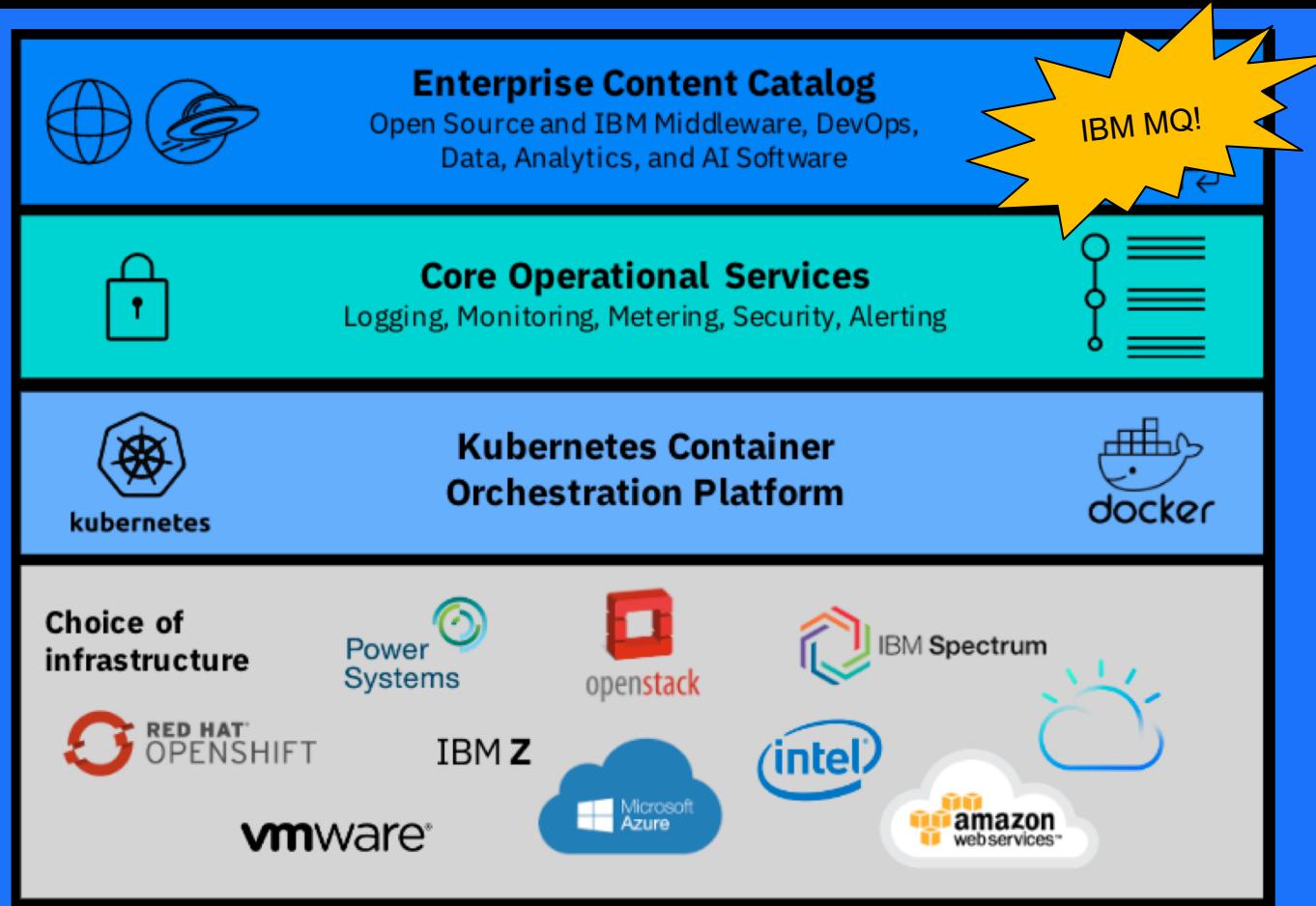
Refactor

re-work the artefacts that are hard to maintain or prevent the organization from realising the full benefits of their modernization journey



Deploy MQ patterns that provide horizontal scaling and continuous availability

MQ in IBM Cloud Private



- Industry's richest catalog of IBM and open source software containers
- Built-in management and security for simplified operations
- Runtimes and Orchestration capabilities for automated deployment with enterprise grade configurations
- Tools and expertise to help clients modernize with confidence
- Your choice of infrastructure

RedHat info – see <https://www.ibm.com/cloud/partners/ibm-redhat>

Taking IBM's market leading integration capabilities and adding value to become one simple, fast, and secure integration experience

- Most powerful integration platform on the market**

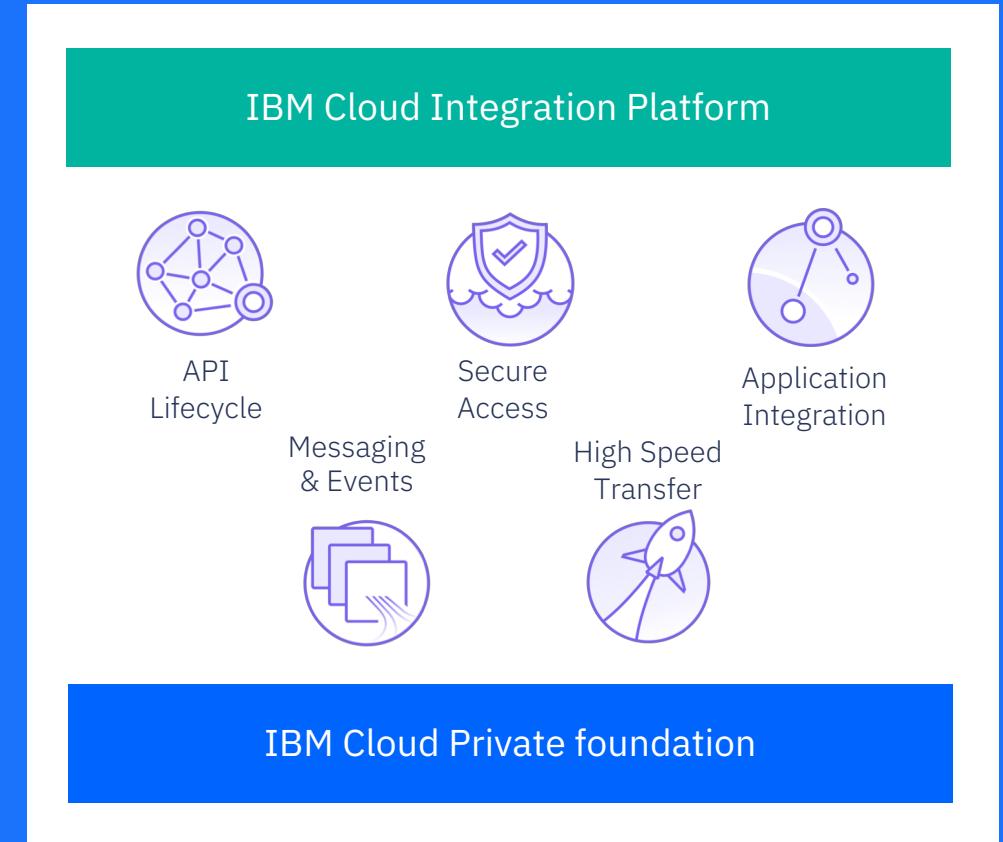
NEW offering incorporating traditional and modern integration including APIs, App Integration, Message queuing, Event streams and Fast file transfer

- Deploy wherever needed**

Supports deployment on-premises or in any cloud

- Enterprise grade**

Secure, scalable modern architecture





IBM MQ on Cloud service

MQ on Cloud service



A managed service for IBM MQ operated by IBM, so that you can focus on your application differentiators



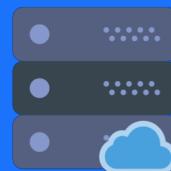
Managed for You



Up and Running in Minutes



Hourly billing



Enabled for Hybrid Cloud
Connectivity

Available in multiple clouds!



cloud.ibm.com/catalog/services/mq

Lite plan - no
credit card
required!

Provision queue managers directly into IBM Cloud or AWS

IBM owns the infrastructure and the responsibility to keep the systems running

The customer owns the application-level configuration and the monitoring

Configured & monitored by the **customer**

Queues, topics, channels, clustering, applications

Managed & operated by **IBM**

MQ installation, basic configuration, security, maintenance

Hardware, virtualization, servers, network, storage

Division of responsibility based on form factor



On-premises software MQ	MQ in IBM Cloud Private	MQ Appliance	BYOL Cloud IaaS install	MQ on Cloud service
Application	Application	Application	Application	Application
Clustering	Clustering	Clustering	Clustering	Clustering
Q / Msg monitoring				
Queues, Topics				
QM failover				
QM availability/restart				
MQ patching				
OS patching				
System monitoring				
Virtual machine				
Hypervisor	Hypervisor	Hypervisor	Hypervisor	Hypervisor
Storage	Storage	Storage	Storage	Storage
Servers	Servers	Servers	Servers	Servers
Networking	Networking	Networking	Networking	Networking
Data centre				

Customer

IBM / Vendor

Deploying a queue manager in the MQ on Cloud Service



The screenshot shows the 'Create queue manager' page in the IBM Cloud interface. The 'Location' dropdown is open, displaying two options: 'IBM Cloud US South' and 'AWS US East 1'. A callout box highlights 'AWS US East 1' with the text 'Location' above it. The 'Small' plan is selected, costing £0.86 per hour. The 'Create' button is visible at the bottom right.

Resource list /
MQ-demo
Resource Group: default Location: Dallas Add Tags

← Create queue manager

Details

Queue manager name * QM1

Display name My first queue manager

Version 9.1.1

Location

IBM Cloud US South ✓ AWS US East 1

Trial

Free Valid for 30 days

Messages per second 200 Concurrent connections 20

Perfect for trying out the service. Valid for 30 days.

Unavailable

Small £0.86 per hour 1 x VPC-hour price

Messages per second 200 Concurrent connections 50

Appropriate for light workloads such as supporting an individual department or application.

Large £10.32 per hour 12 x VPC-hour price

Messages per second 2500 Concurrent connections 1000

Appropriate for heavy throughput scenarios where transaction performance is critical.

Size Small Price £0.86 per hour

Create

Consistent management of queue managers



Queue managers on
IBM Cloud and AWS
can be managed from
one place in the
MQ on Cloud service

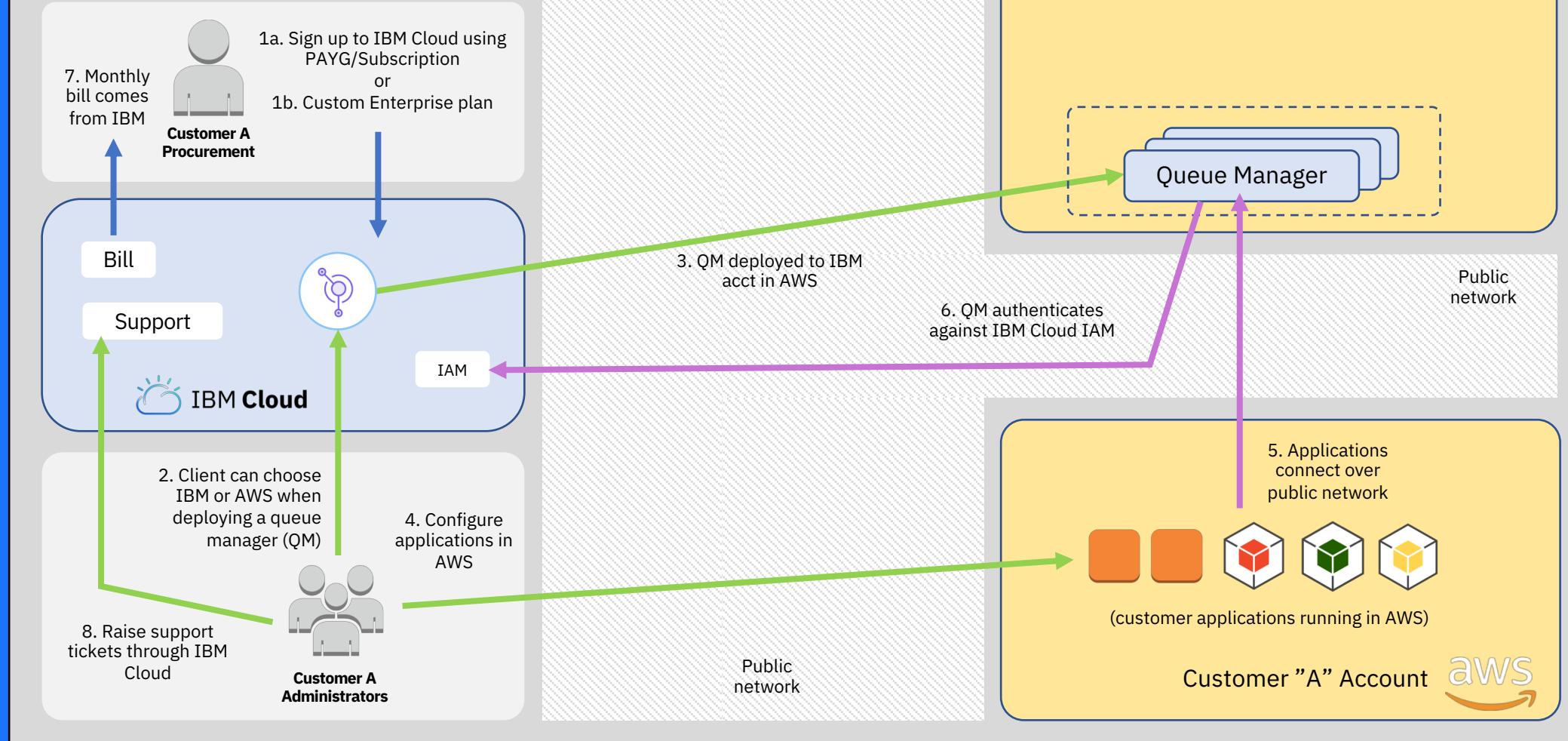
Name	Display name	Size	Version	Location	Status	Actions
QM2	My first AWS queue manager	Small	9.1.0 r2	AWS US East 1	Running	...
QM1	IBM-hosted QM	Trial	9.1.0 r2	IBM Cloud US South	Running	...

Location

AWS US East 1

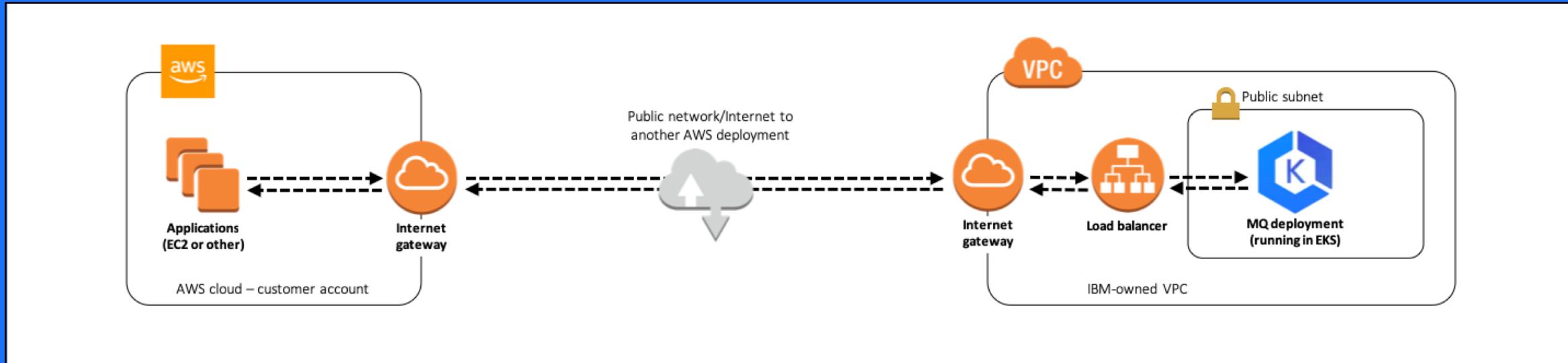
IBM Cloud US South

IBM MQ on Cloud for AWS Solution overview



Access from your AWS Application

IBM

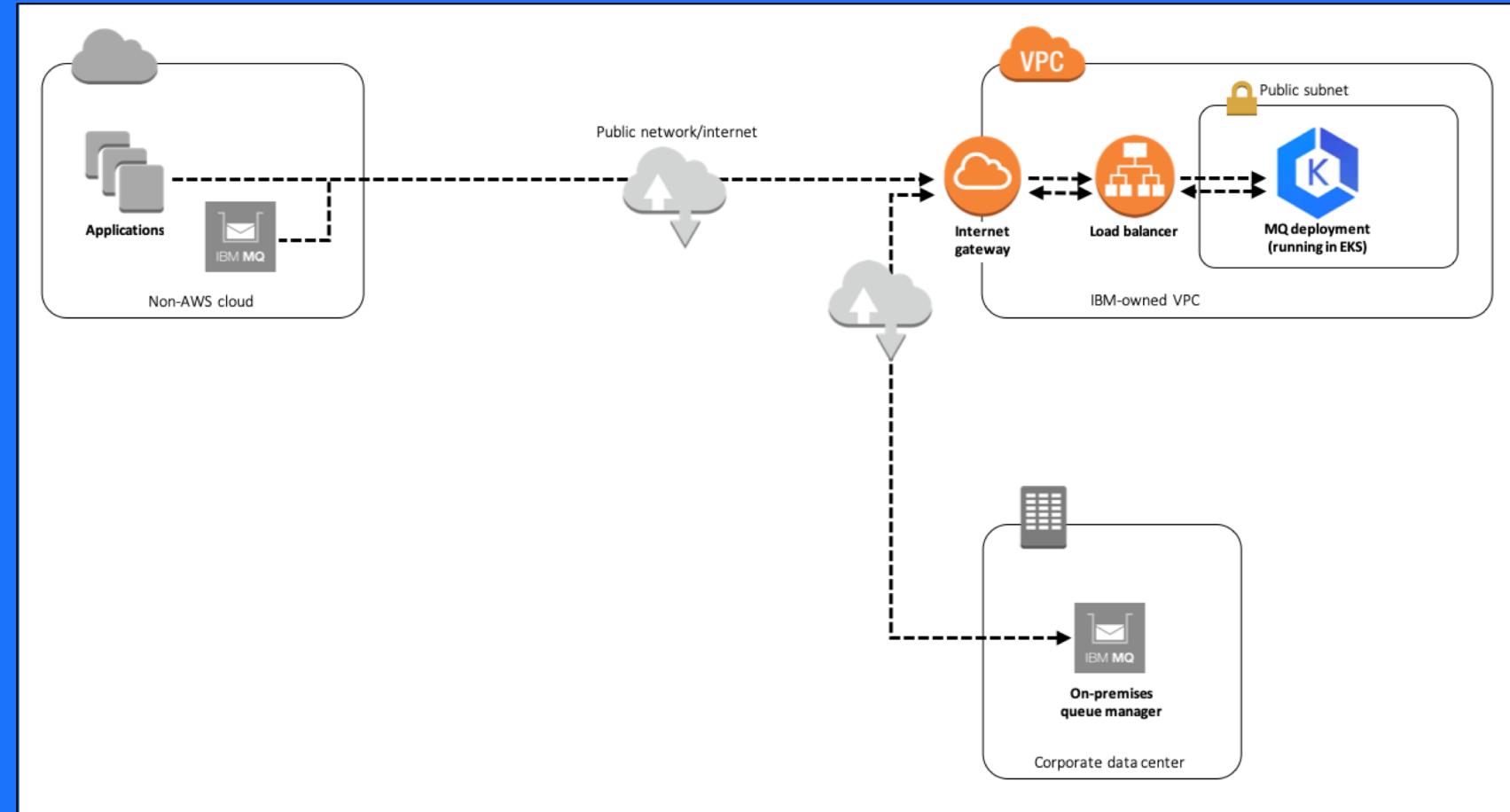


- Queue managers are allocated a public hostname and port
- Public network connectivity is easy to configure
- Allows two-way initiation of connections (i.e. queue manager can initiate out to another QM)

Access from your on-prem or other cloud endpoints

IBM

- Easily allows connectivity to existing on-premises infrastructure, or other clouds
- Various options for on-prem connectivity
- (see [IBM Cloud Docs](#) for details)
 - Direct connection
 - MQ IPT
 - Secure Gateway (IBM Cloud)
- Alternative is to configure your own private routing through your AWS account VPN / DirectConnect



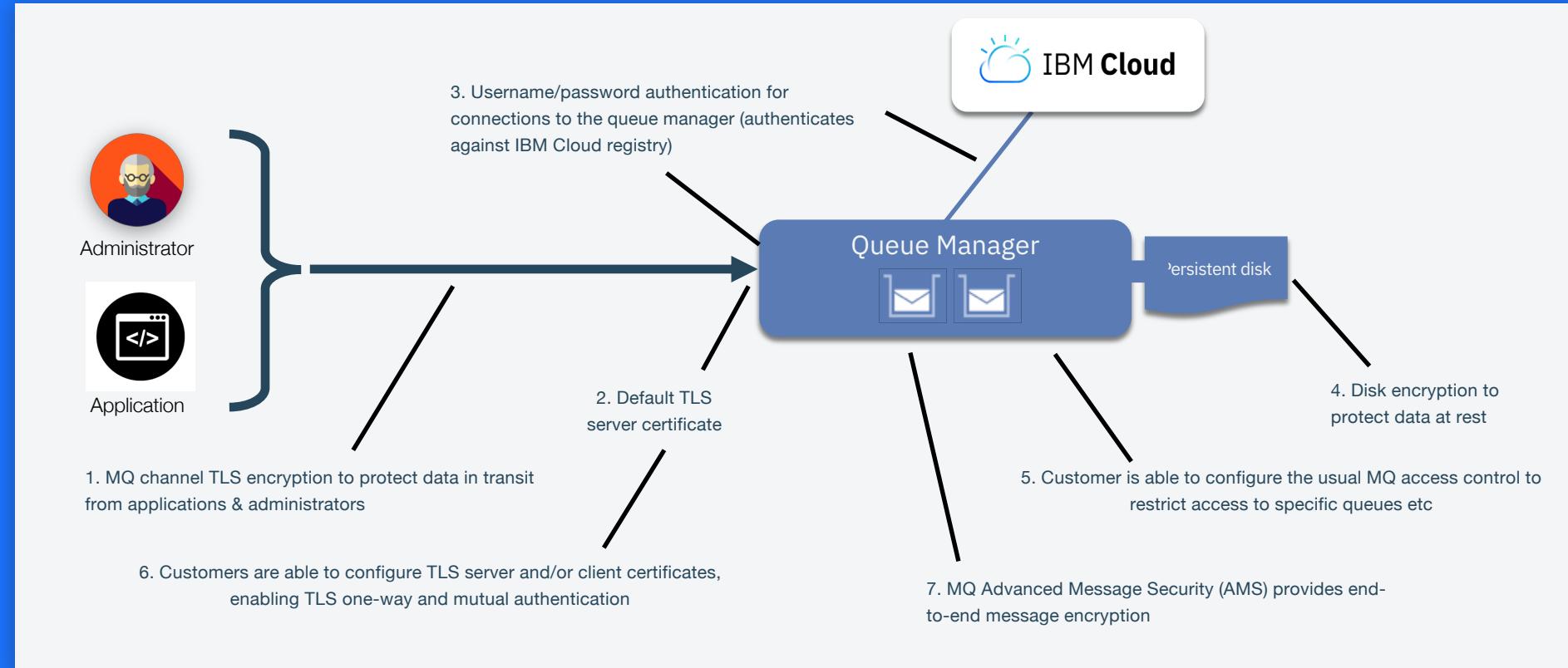
What have we delivered so far

- Available in Multiple Regions
 - IBM Cloud
 - Dallas
 - London
 - Sydney
 - **Frankfurt**
 - AWS
 - US East 1
 - EU West 2
- TLS Management & AMS (End-to-end encryption)
- ISO 27000
- MQ MFT
- **Lite Plan**



Security

A deployed queue manager is automatically configured with an appropriate level of out-of-the-box security that protects customer application data while enabling users to get started quickly



Configuring key store TLS certificates, including AMS

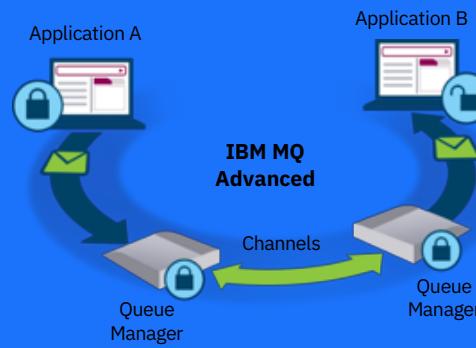


Manage TLS certificates

Configure certificates in the key store and manage the trust store all from within the IBM MQ on Cloud service.

End-to-end message level security

MQ Advanced Message Security (AMS) provides the capability to encrypt messages **in transit** and **at rest** between sender and receiver.



The screenshot shows the IBM Cloud MQ service interface under the 'Integrate / MQ' section. It displays two certificates:

- Default: IBM-S1**
In use: Queue Manager
Days to expiry: 1095
Expires: 15-Aug-21
Buttons: Copy details, Delete, Manage, Download public certificate
- CA-1**
Not in use
Days to expiry: 29
Expires: 27-Aug-20
Buttons: Copy details, Show more

A modal window titled "Manage CA-2" is open, showing configuration options:

- Use this certificate for TLS:**
 Queue manager
 Select channel(s)
2 channels selected
- Use this certificate for Queue Manager AMS:**
Select channel(s)
2 channels selected
 - A channel with a very long name
 - Another channel
 - One more channel

Buttons in the modal: Cancel, Next

Versions and Upgrade



The IBM MQ on Cloud service provides the MQ Continuous Delivery (CD) release for customers to deploy

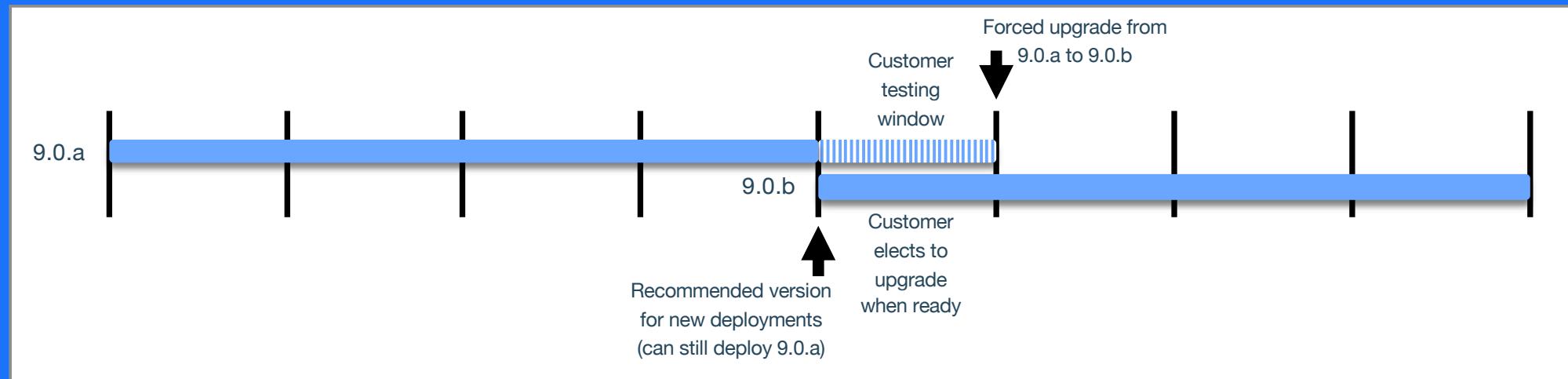
- This is the same approach taken by the MQ Appliance, and enables new features and capabilities to be made available faster than the LTS release cycle

The service provides an automated mechanism to upgrade from one build/release to the next, for example;

- Customer initiates the upgrade to take place immediately

Each update comes with a required update window, e.g. 30 days for the next CD release

- Updates will be automatically applied by the system when the update window expires if the customer has not already elected to trigger the upgrade

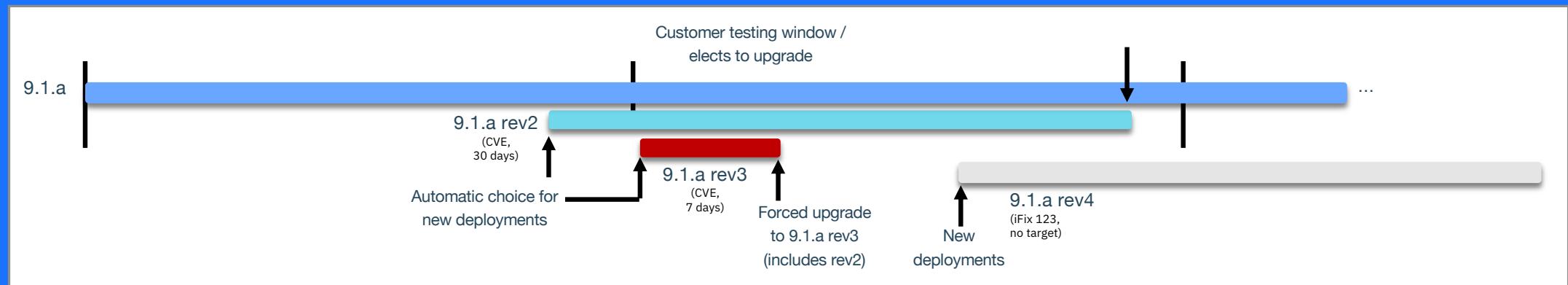


Security fixes



Within a CD release (such as 9.1.0.0) IBM will periodically make available new revisions of the server image in order to apply **high priority** security updates in the operating system or MQ components

- High severity security updates are generally much less common than low severity, but do occur
- Each revision comes with an update window based on the severity of the fix, e.g. 7, 30, 90 days
- Revisions are cumulative, and the latest revision is automatically selected for any new queue manager deployments
- The user may initiate the upgrade to any pending revision, including applying multiple at once
- To minimize the number of updates, a forced upgrade will apply the latest available revision with an expiry of less than 14 days.
- Low priority security updates (e.g. 180+ days window) are rolled in to the next CD release



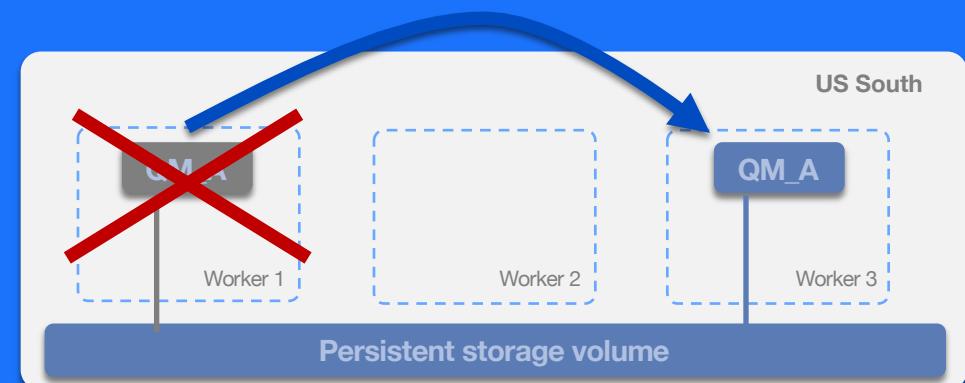
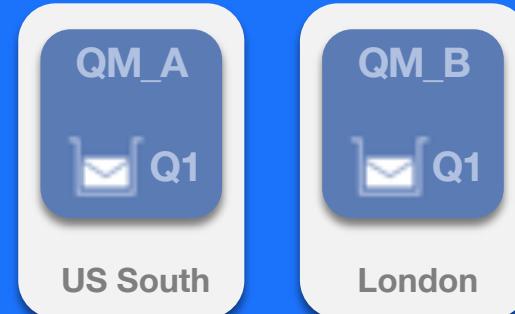
Availability and Failover



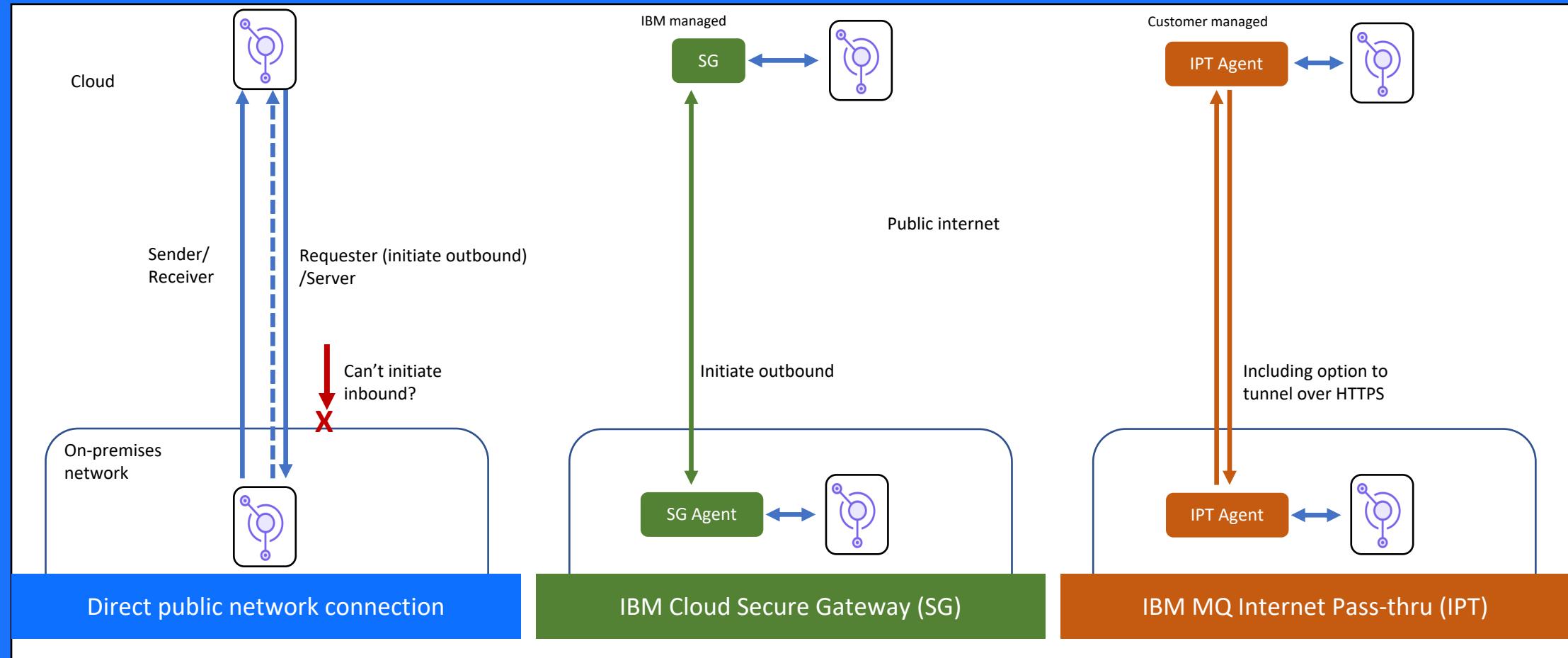
Recommended solution architecture for high availability:

- Two or more queue managers with identical configuration deployed across multiple regions, so traffic can be served independently of any single failure
- Use MQ client capabilities such as CCDT, ConnectionNameList, Auto Re-connect to provide automatic failover

Within a data center, high availability is provided by automatic failover of the queue manager across multiple available instances, backed by network storage.

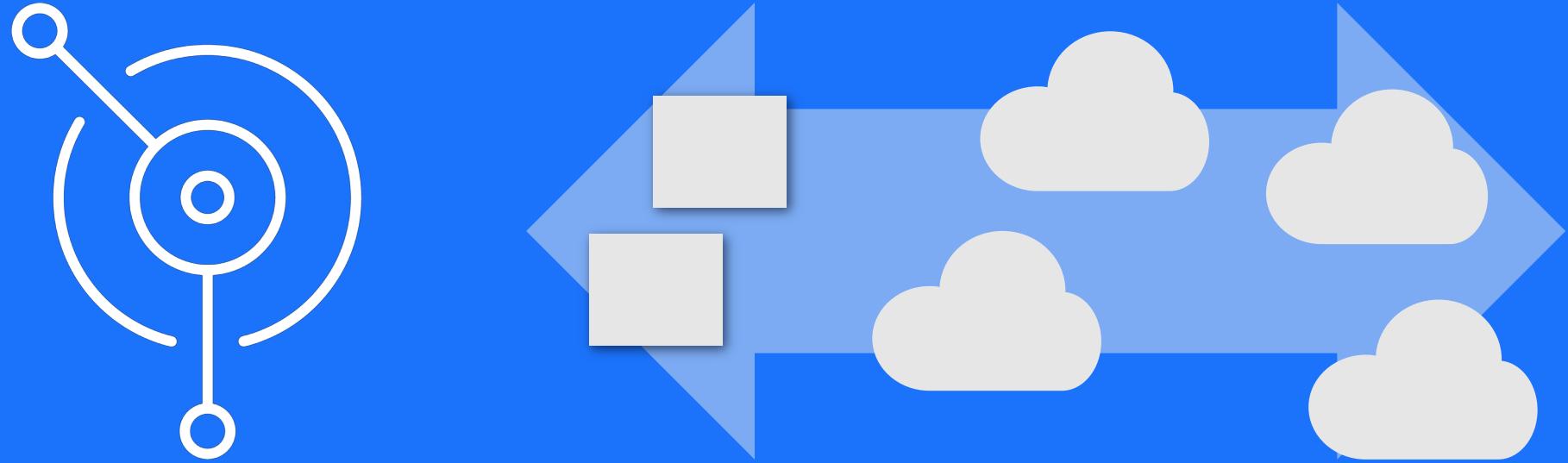


On-premises connectivity

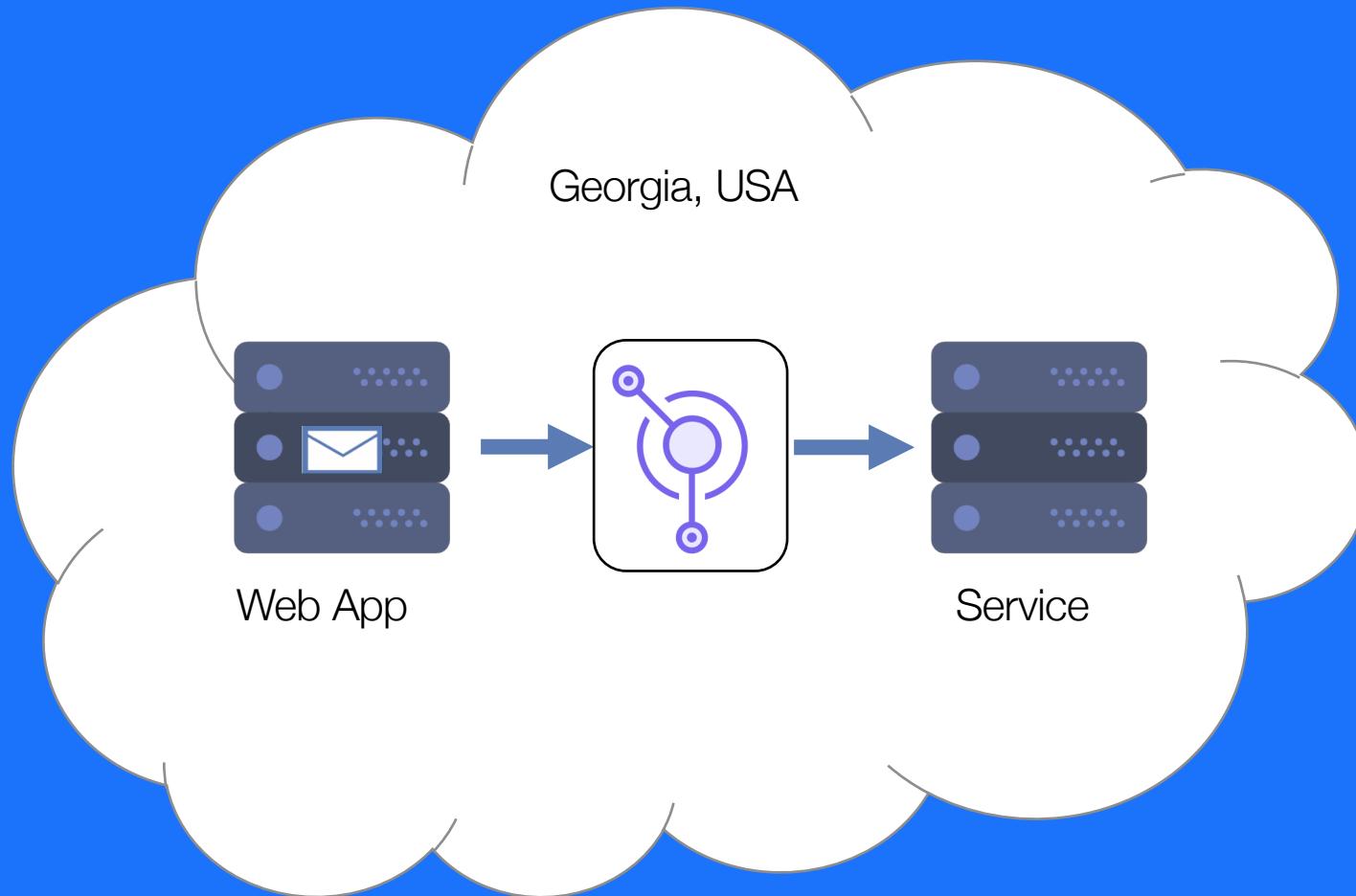


IBM MQ for hybrid cloud connectivity

IBM

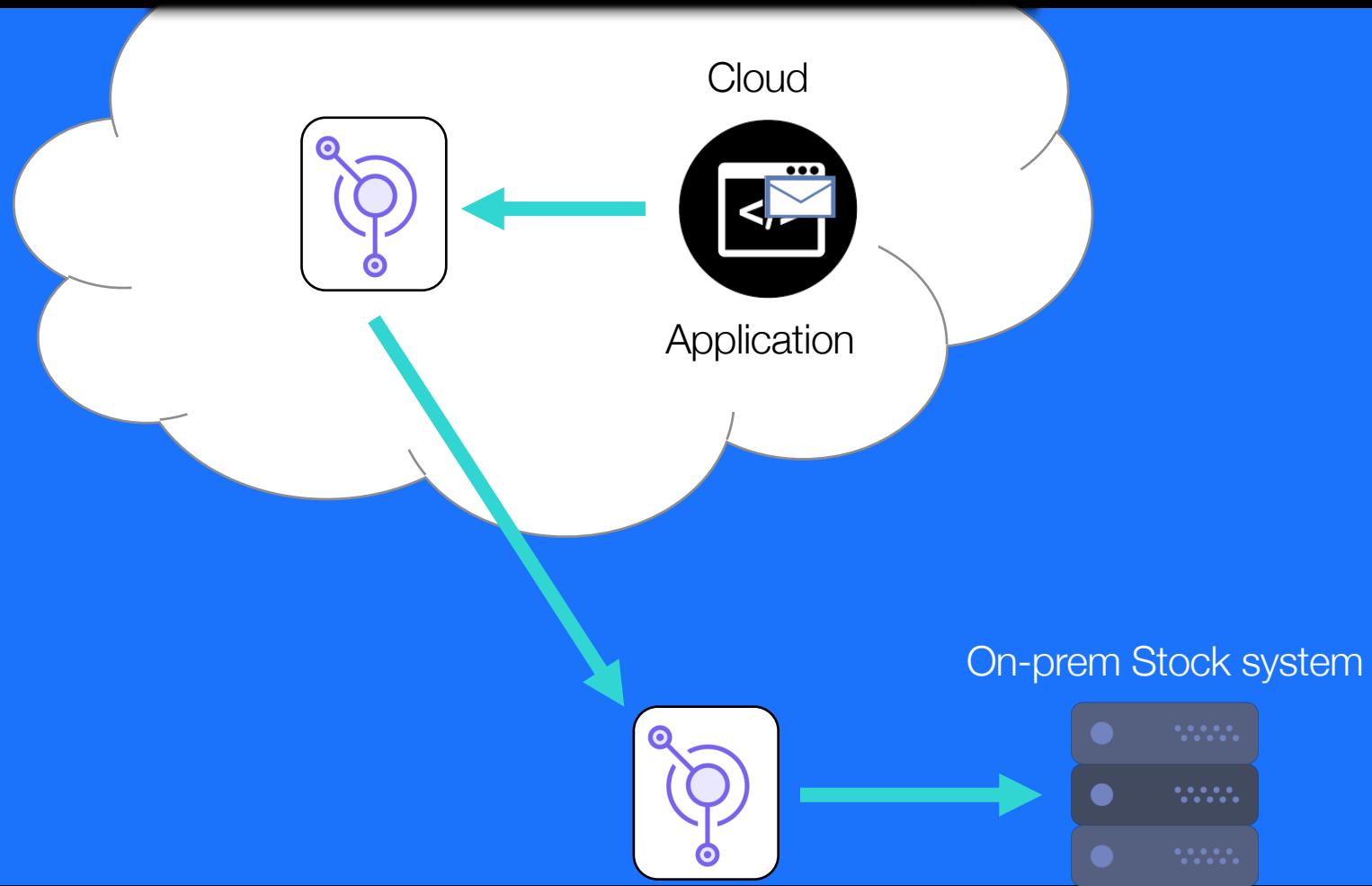


Use IBM MQ to connect enterprise applications within a cloud location

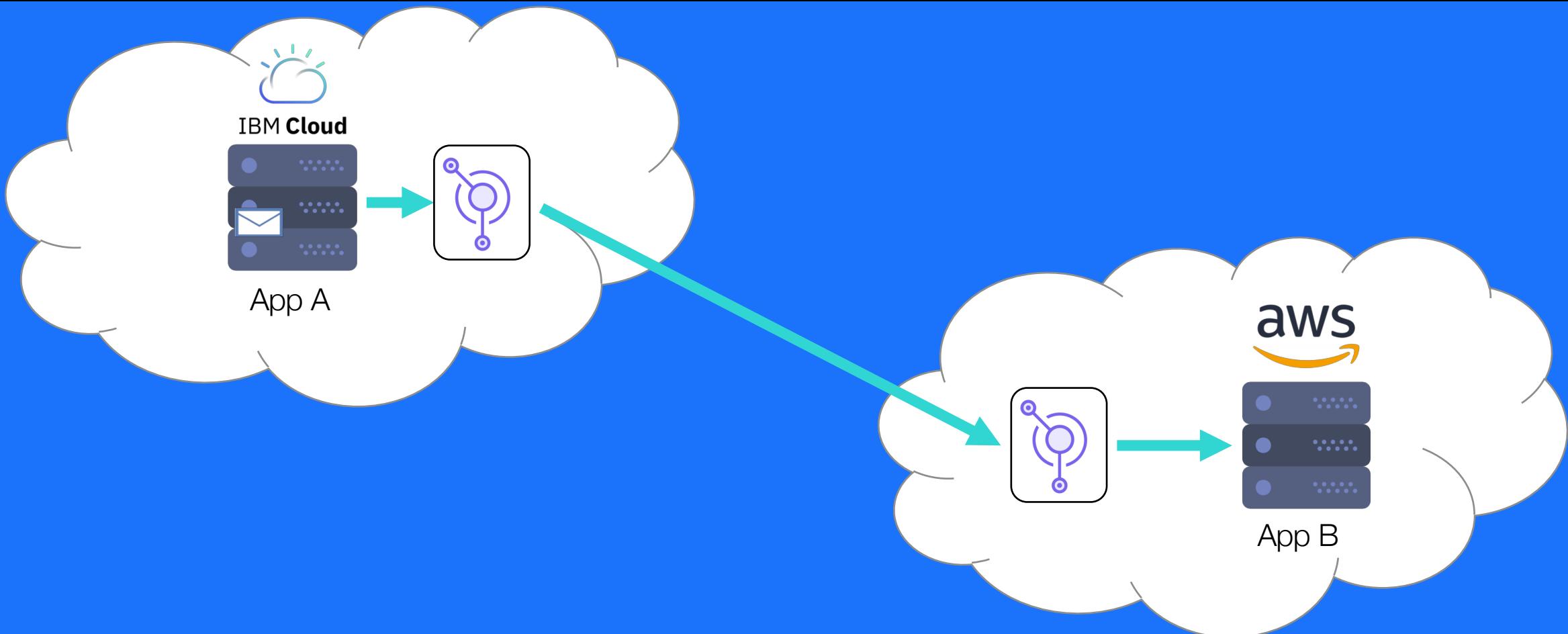


... to reliably connect the Cloud to your on-premises data center

IBM



Use IBM MQ to reliably transfer data between different cloud providers



... or to transfer data between different geographies!

IBM

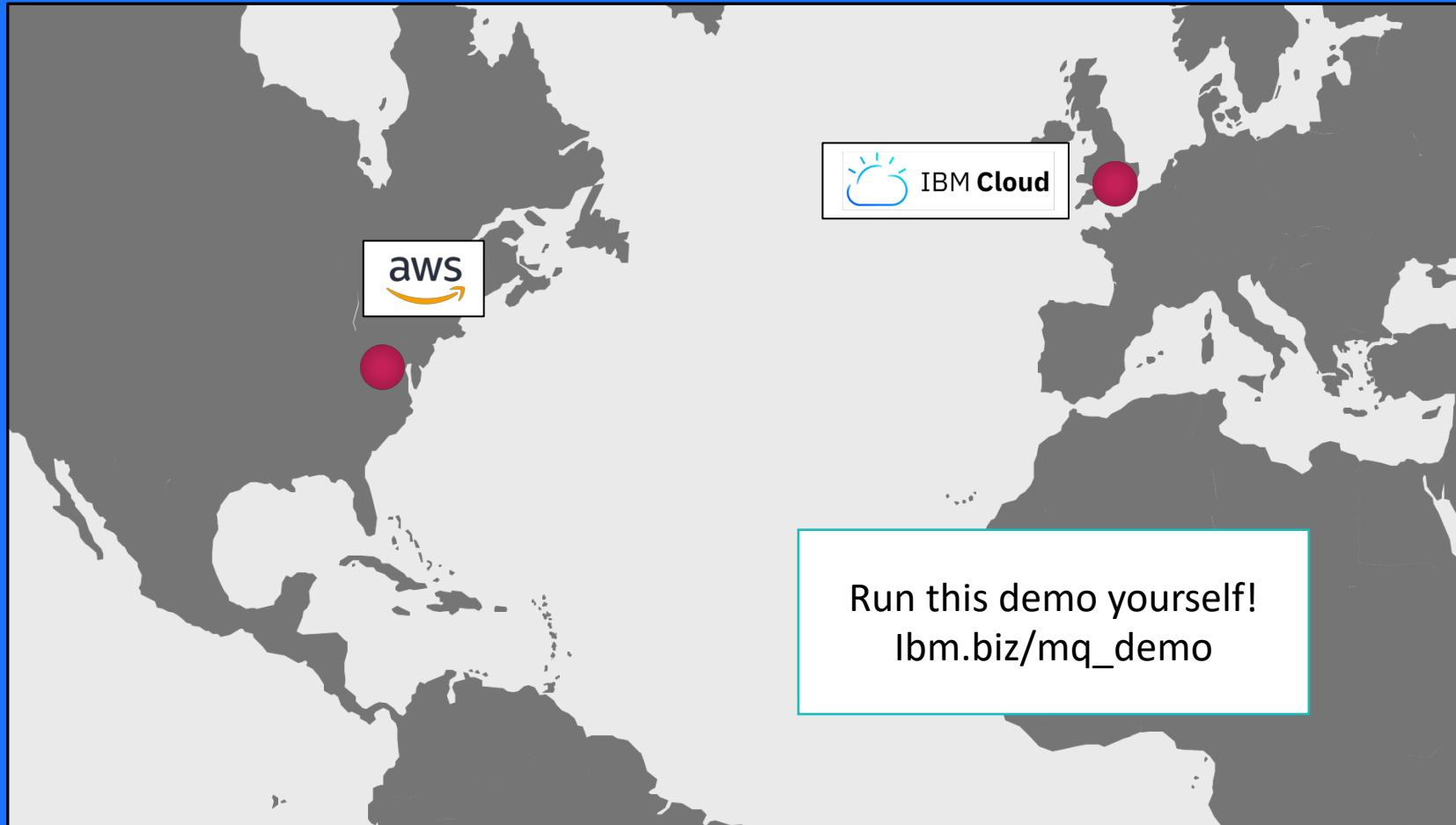


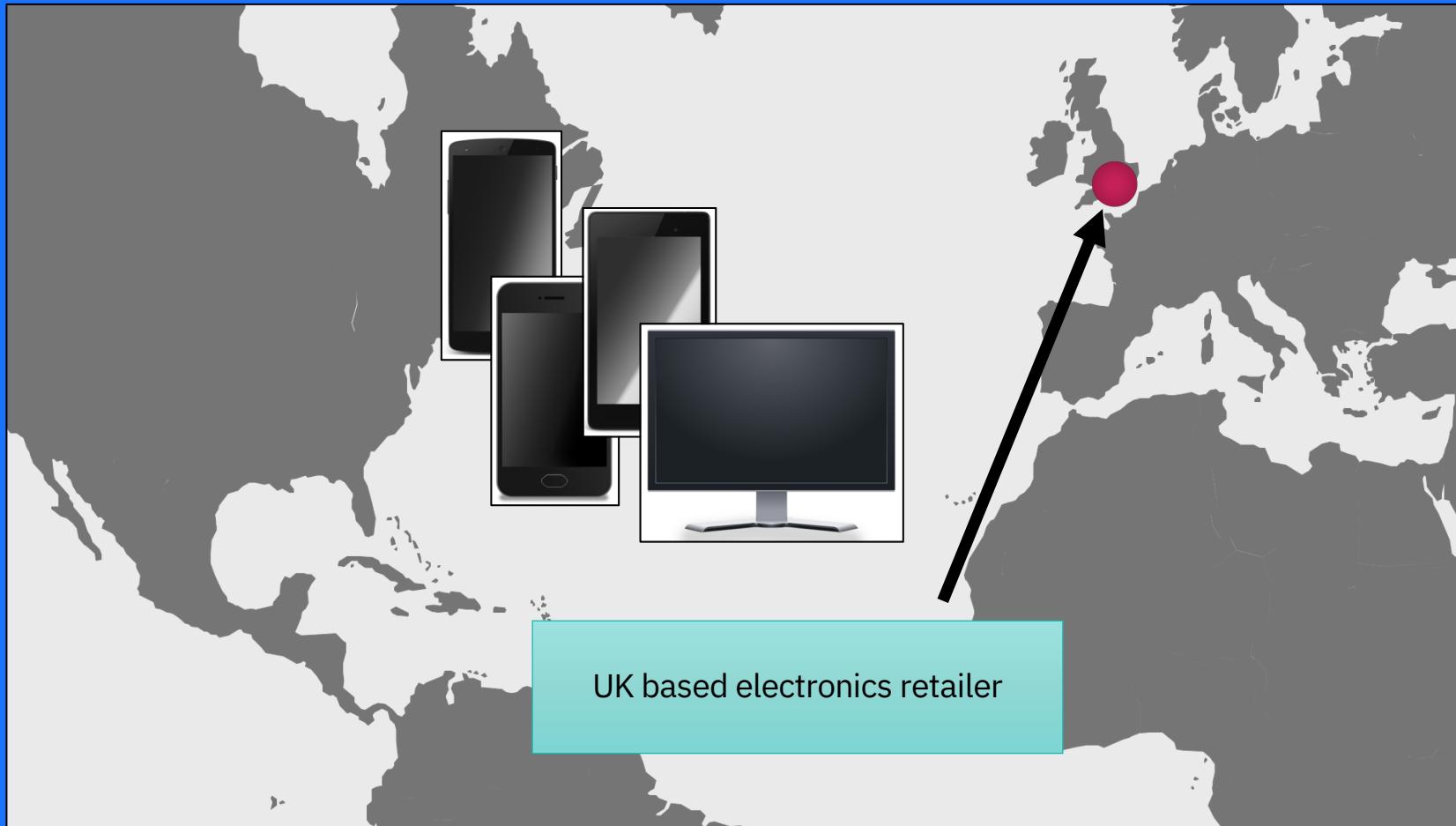


Demo scenario

On-prem to Cloud Connectivity

Demo scenario: Cross geography, cross cloud messaging with IBM MQ



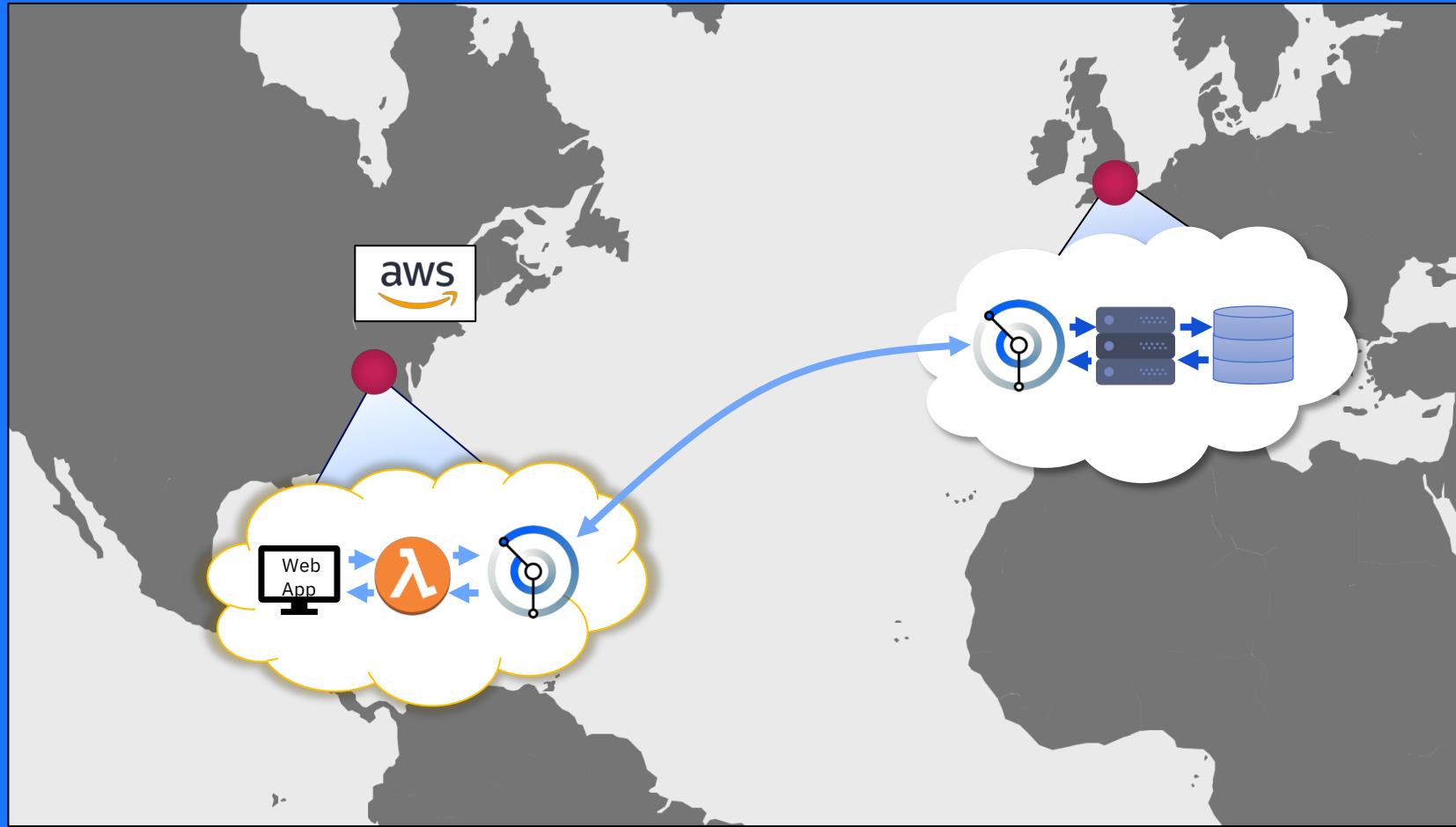


“metatech.co.uk” - On-premise IT with IBM Cloud Private



2019 Business Plan

Expand business market to North America





Demo



IBM MQ on Cloud

cloud.ibm.com/catalog/services/mq

And finally, in case you missed it...



Teach yourself MQ

ibm.biz/learn-mq

...and prove your skills

The screenshot shows a landing page for MQ tutorials. At the top, a large blue line graph with a jagged path is displayed. Below it, the heading "MQ tutorials, taking you further" is followed by a subtext: "Every great achievement starts with a single step. Here's a set of guided tutorials that provides you with the tools to master MQ." A search bar is located at the top right. On the left, there are filters for "Search by:" including "Skill level" (Any Skill Level, Beginner, Intermediate, Advanced), "Language" (Java), and "Operating System" (Linux, Windows). Four tutorial cards are listed in a grid:

- Protected: Point-to-point with JMS**
Write a standalone Java JMS application that uses IBM MQ as a messaging provider. See how to use IBM MQ classes for JMS to put and get messages to and from a queue.
30 Minutes [Start tutorial](#)
- Protected: MQ Essentials**
A quick and easy start guide to the fundamental concepts of IBM MQ, including an overview to message-oriented middleware.
15 Minutes [Start tutorial](#)
- Protected: Ready, Set, Connect! (Windows)**
A quick way to install IBM MQ, set up a queue and run a demo app, all in one Windows environment.
45 Minutes [Start tutorial](#)
- Protected: Ready, set, connect! (Linux)**
A quick way to get going with a queue manager and a demo app on Linux and IBM MQ in Docker.
30 Minutes [Start tutorial](#)



Thank You

