

IBM MQ as a hosted Service

Hursley US Summit

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IBM Messaging

Tuesday, 10 October 2017

Agenda

- What is “MQ in Bluemix”
 - Overview
 - Connectivity scenarios
 - Customer experience
- Technical overview
 - Division of responsibilities
 - Security
 - Versions & upgrade
 - Availability & failover
- Timeline
- Open discussion

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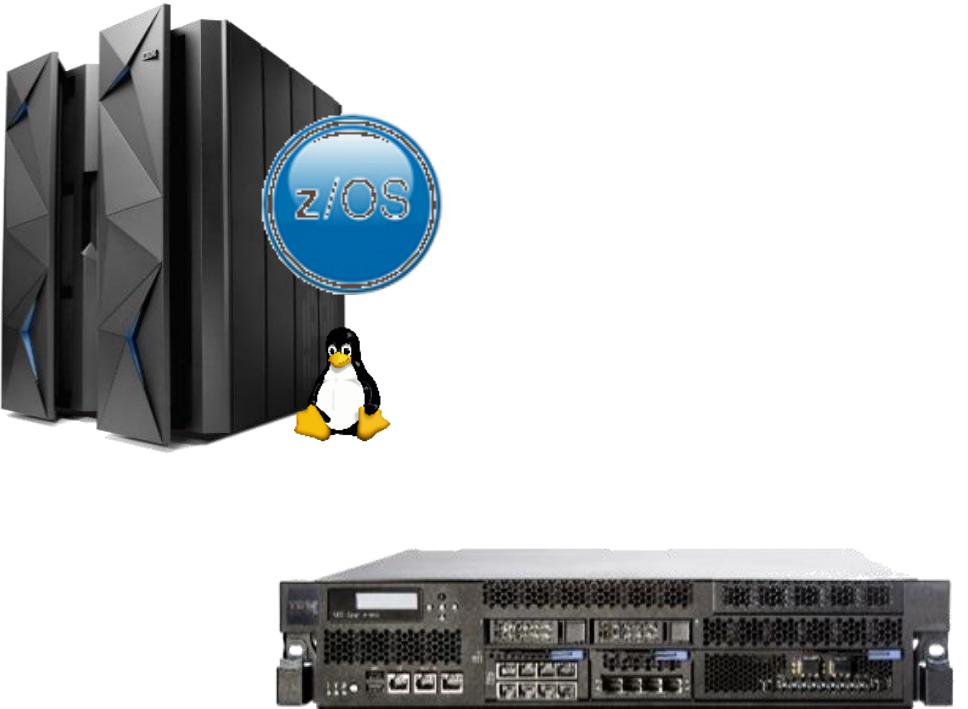
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What is “MQ in Bluemix”?

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Run MQ exactly how and where you need it

Options Available today



Distributed Platforms

Linux, Windows, AIX,
HP-UX, Solaris, ...

Azure

SoftLayer

Docker

OpenStack

AWS

Bluemix

Kubernetes

Packer

Traditional on-premises,
customer managed

Public or Private clouds
(bring-your-own license)

Option in the Future



Hosted SaaS offering
managed by IBM

Customer feedback examples

“Can’t there be a service in the sky that just does this for me?

Techno geeks want to manage the queue manager in the sky”

“Conceptually MQ as a service makes good sense”

“I want MQ to make use of the benefits that the cloud brings”

MQ in Bluemix high level solution

Configured &
monitored
by the customer



Queues, topics, channels,
clustering, applications

Managed &
operated
by IBM



MQ installation, basic configuration,
security, maintenance

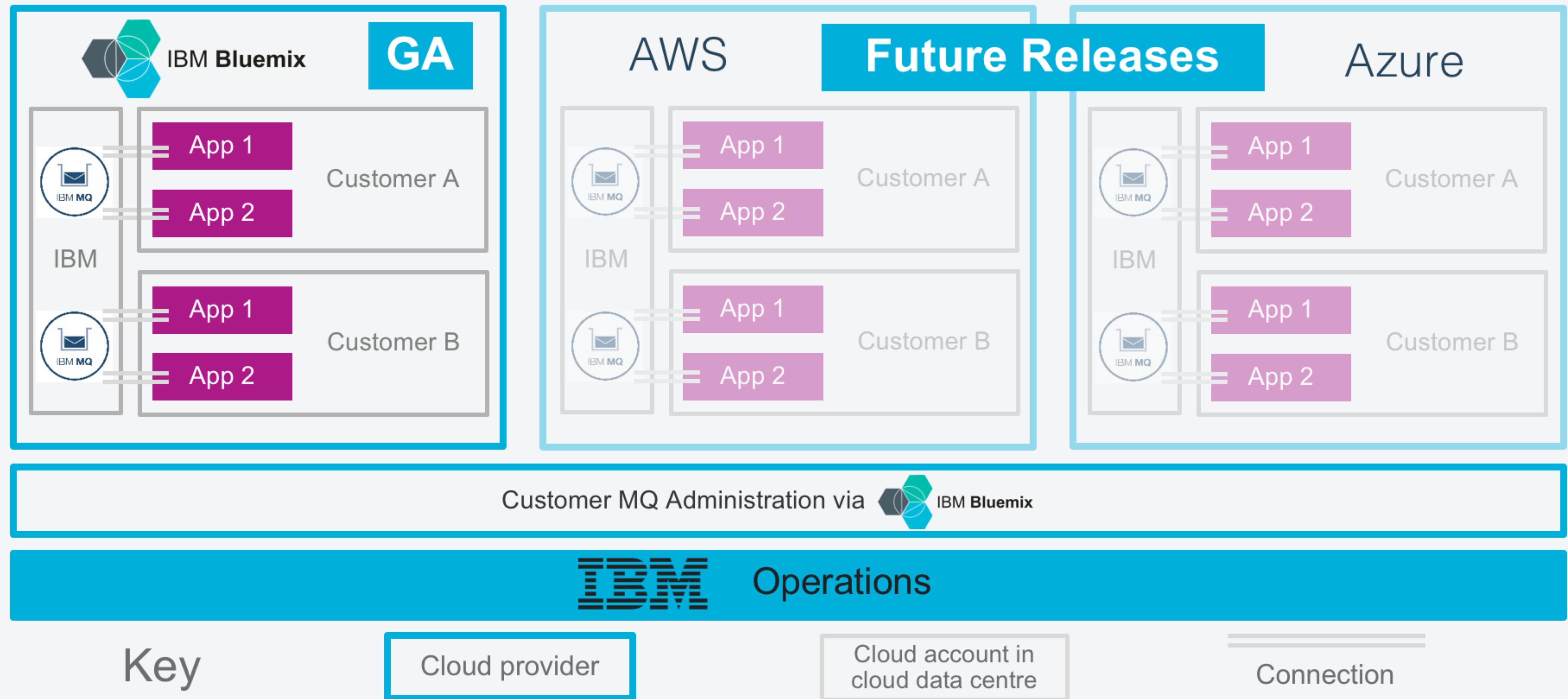
Hardware, virtualization, servers,
network, storage

Hosted
initially on
IBM Bluemix
Public



Multi-Cloud Architecture

Bluemix will be the only cloud supported at GA. Other clouds are on the roadmap for future releases

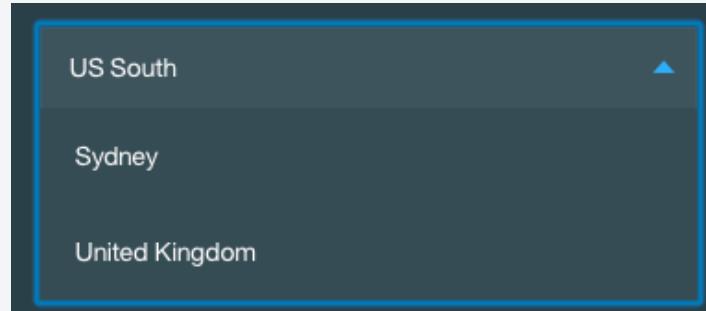
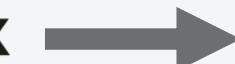


MQ in Bluemix - Customer Journey

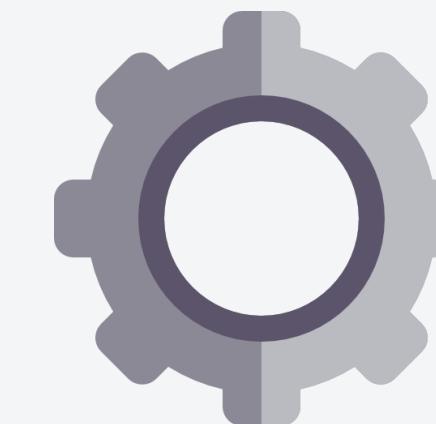
Customer Actions



IBM Bluemix



Logs onto their Bluemix account & selects the MQ service



Configures & maintains the queue manager

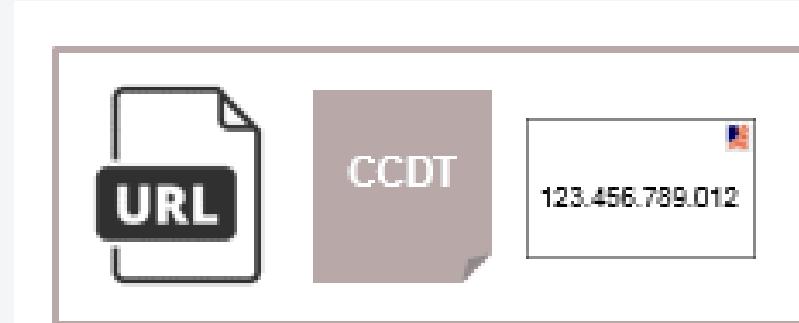


Connects their applications on premise, on Bluemix or on any other cloud to the queue manager

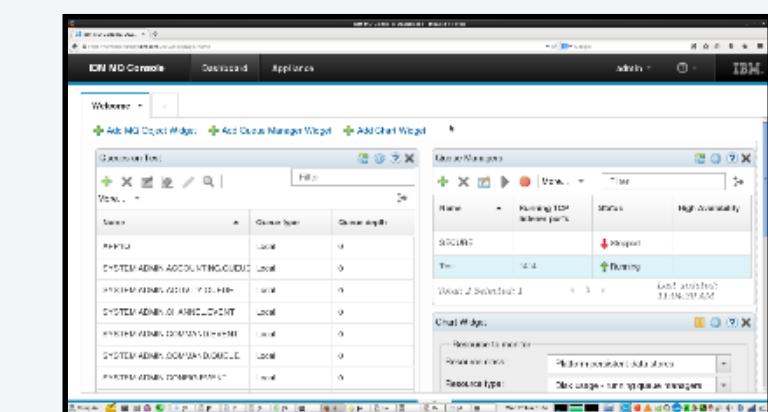


Monitor MQ queues, applications

Visible to customer



Connection details to the queue manager

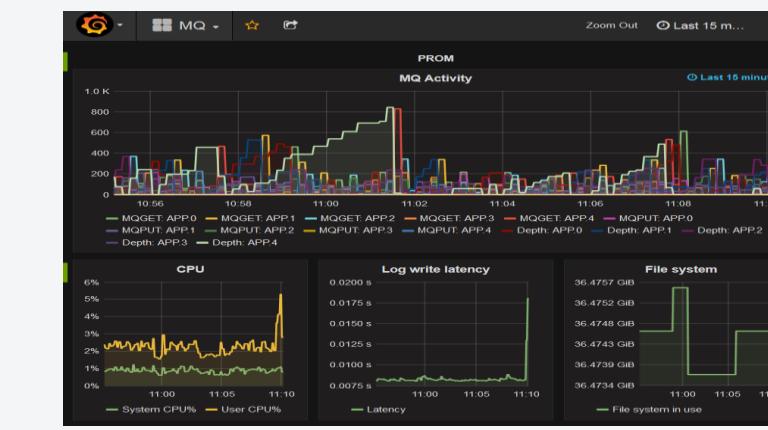


Observe queue manager run time information

IBM Actions



Provision a queue manager for the customer within IBMs cloud account



Maintain and monitor the infrastructure

Benefits for everyone

- For public cloud customers: Reduced administrative overheads by using **software as a service**
- For private cloud customers: IBM will have a proven **reference architecture** and experience to share with you on running MQ in container deployments
- For everyone: Everyone will benefit from the MQ team running 24x7 production systems. Nothing like **eating your own dog food** to drive all those little improvements back into the product!



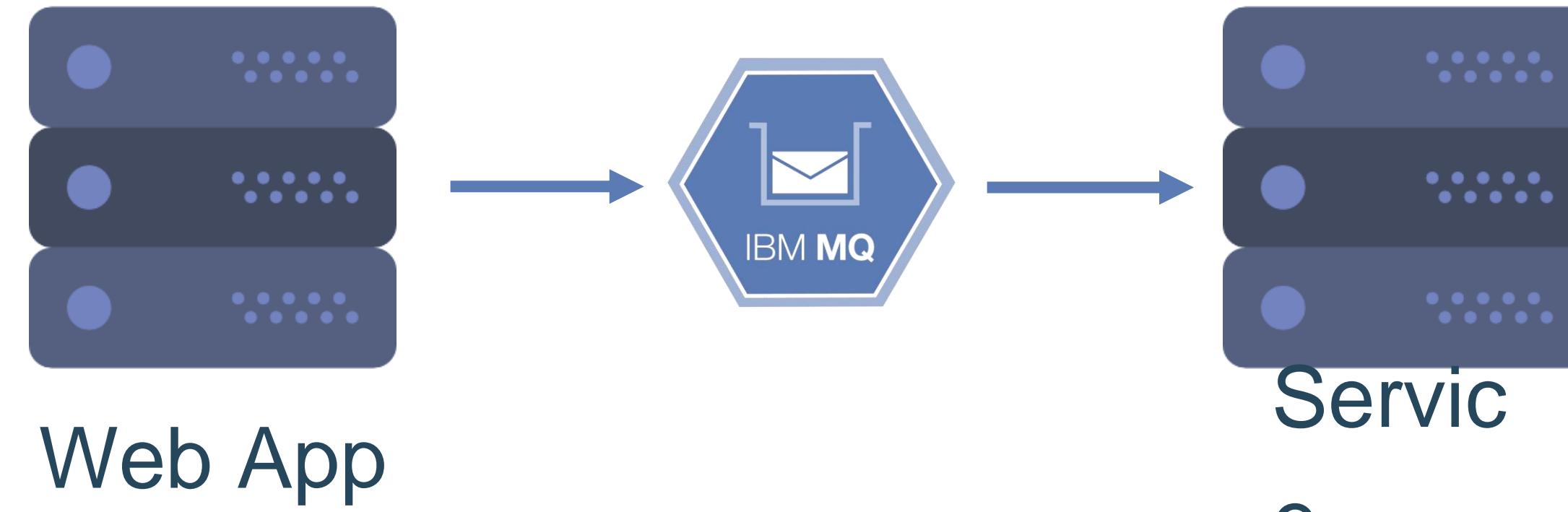
Connectivity scenarios

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0. Single Location

Applications within the same cloud and same geo need to communicate

Georgia, USA

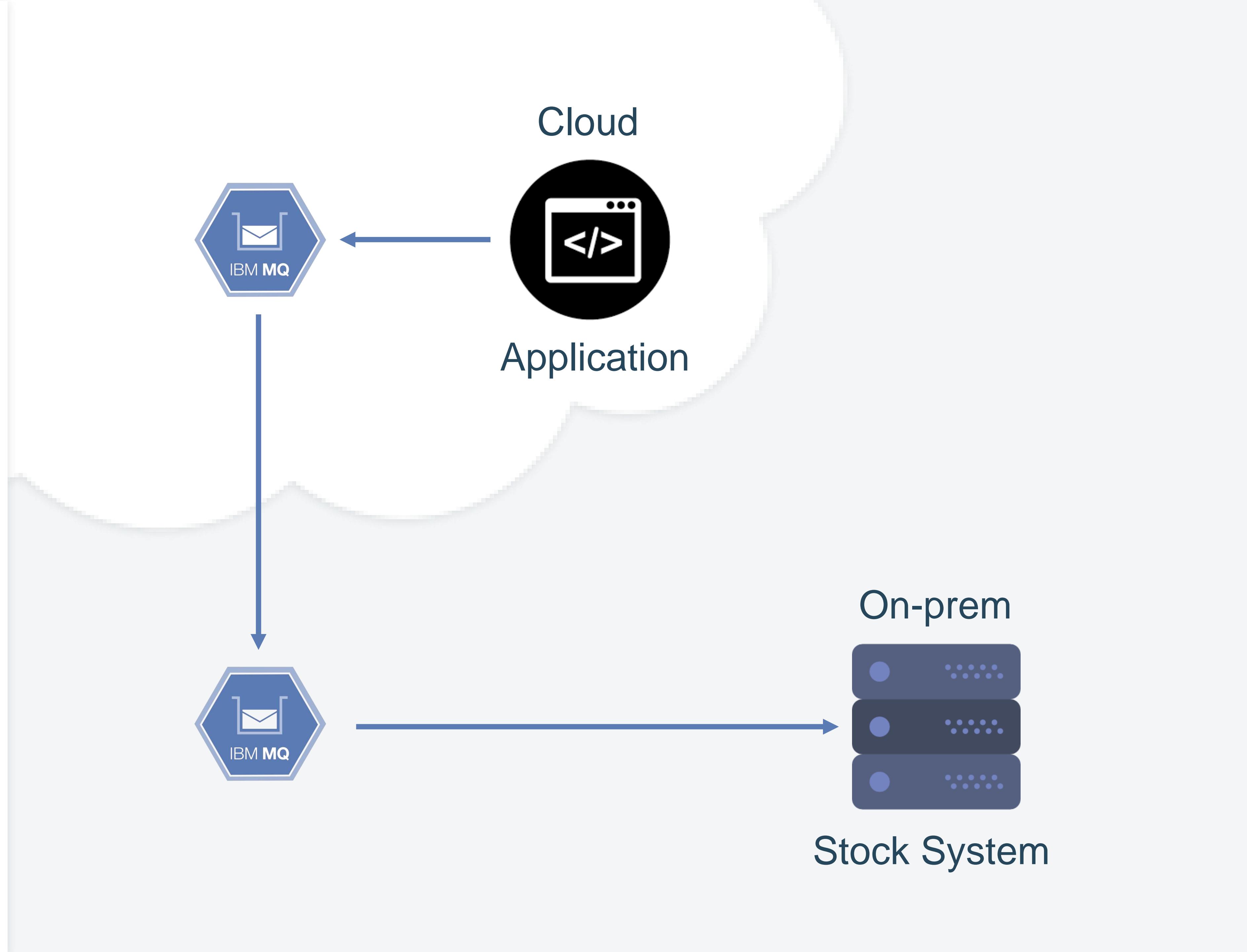


1. On-Prem Bridge

A retailer is writing a new mobile app to enable users to check stock in their local store.

The app will be deployed on the cloud so that it can be easily accessed by mobile devices

To find stock levels, the app needs to connect to the on-premise stock system which is accessed through MQ queues.



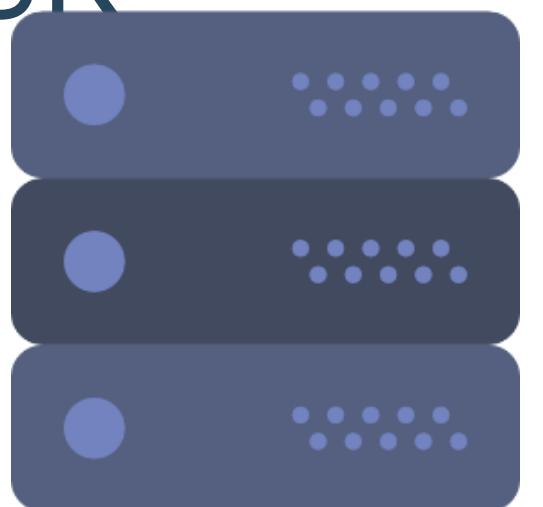
2. Geo Bridge

A US delivery company has a depot in London, UK that processes packages but their core IT systems are based in Georgia, USA.

The London depot notifies the central systems in Georgia of every package to be tracked.

MQ allows the application to offload the messages about each package locally in London, and have them reliably transmitted to the core IT processing location in the US.

London,
UK



Processing

Georgia, USA



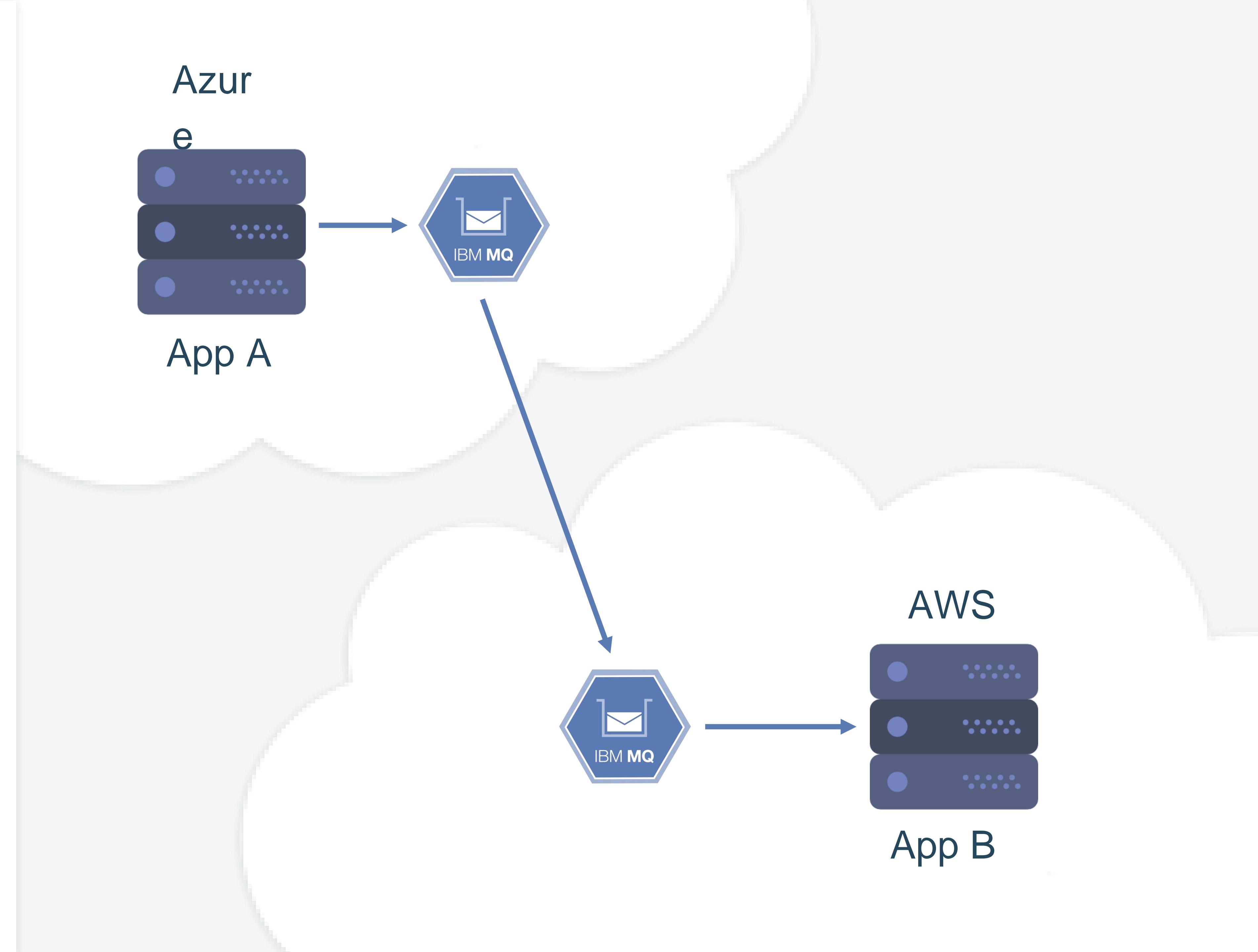
Core
IT

3. Cross Provider

To insulate themselves from the risk of failure of any given Cloud Provider this online TV services company has distributed their core cloud systems across AWS and Azure.

MQ provides the reliable transport of data between the two clouds in order to replicate state so there is a consistent view of enterprise data, and they can continue to successfully process business requests even if one provider has a total outage.

MQ also provides the ability to queue updates while the second cloud is unavailable, ensuring that it recovers to a consistent state when the failed provider later comes back online.



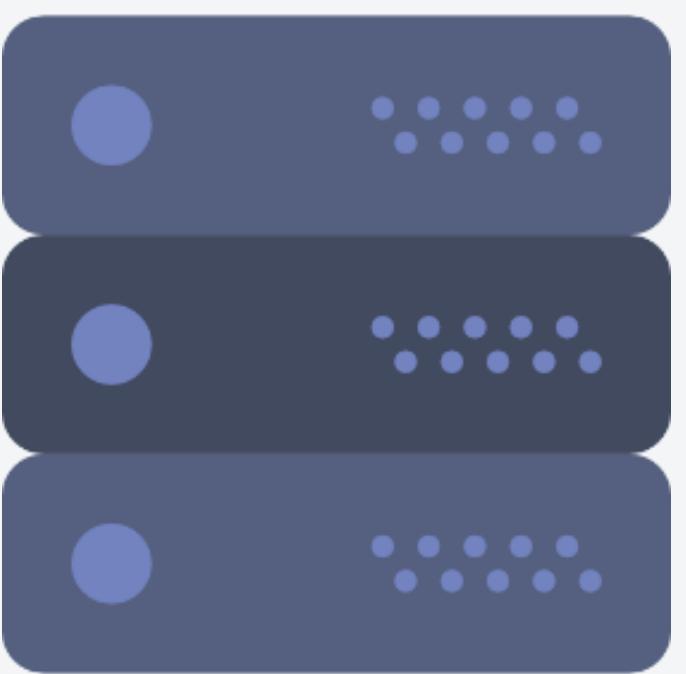
User experience

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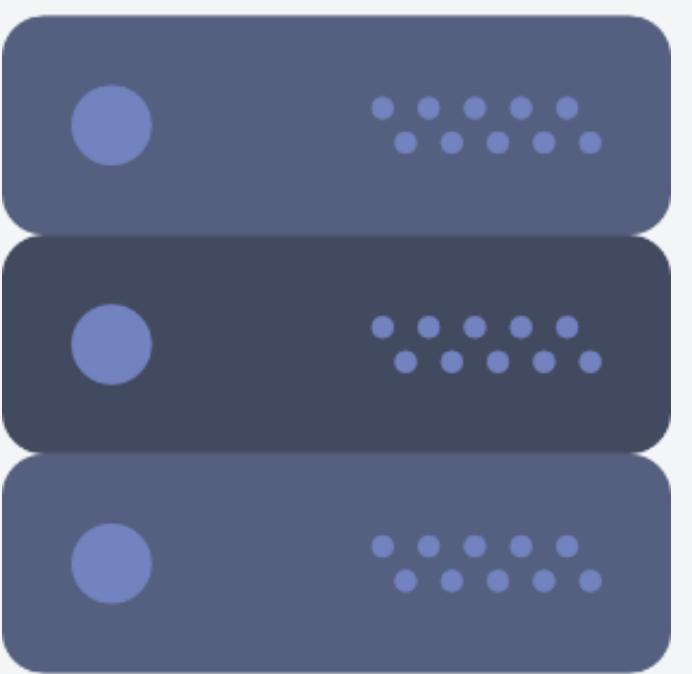
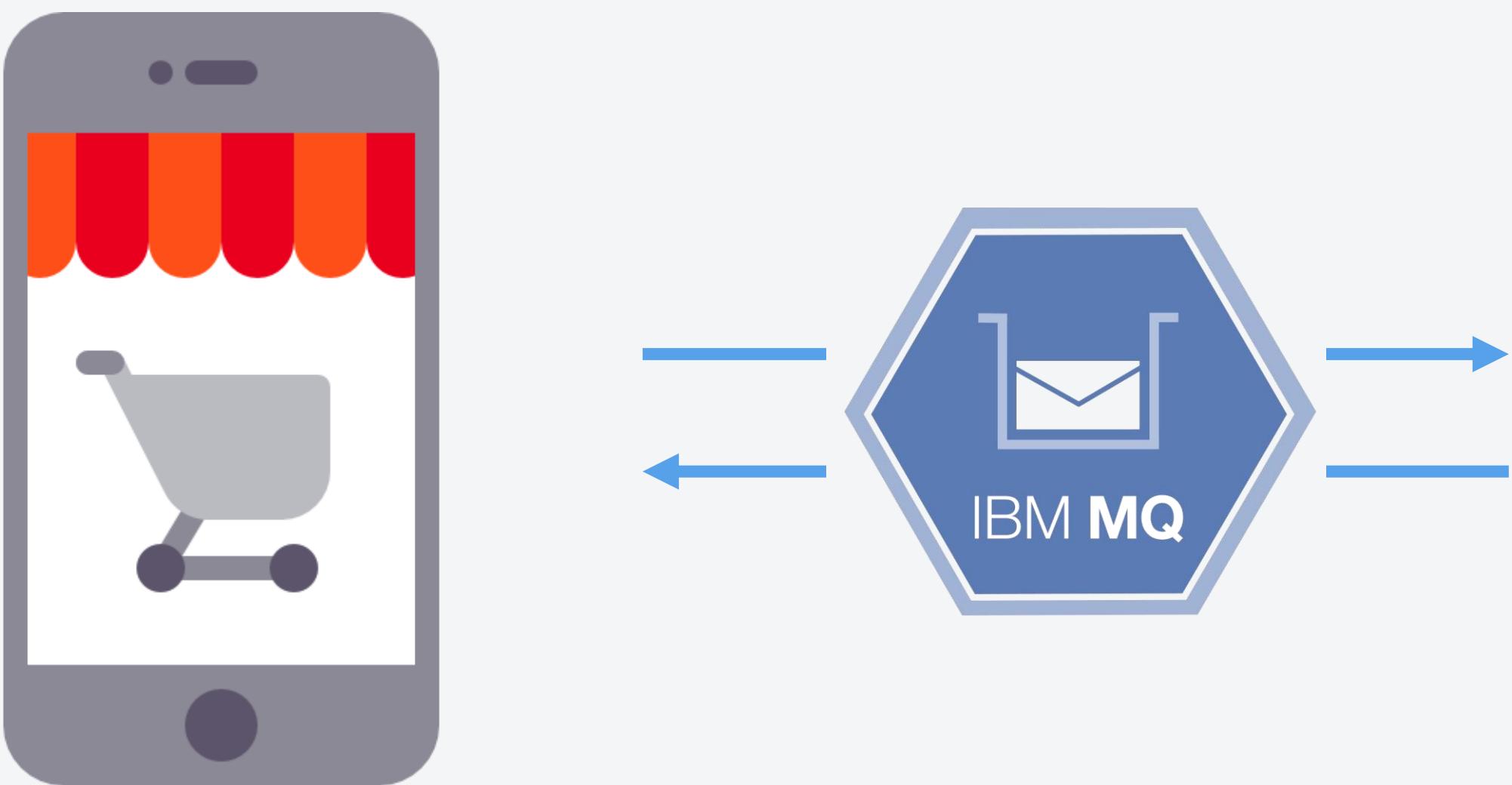
Sarah is prototyping a new mobile shopping application on the cloud that needs to check stock data and place orders with an on premise system.

Sarah doesn't know how she needs to connect to the stock data.





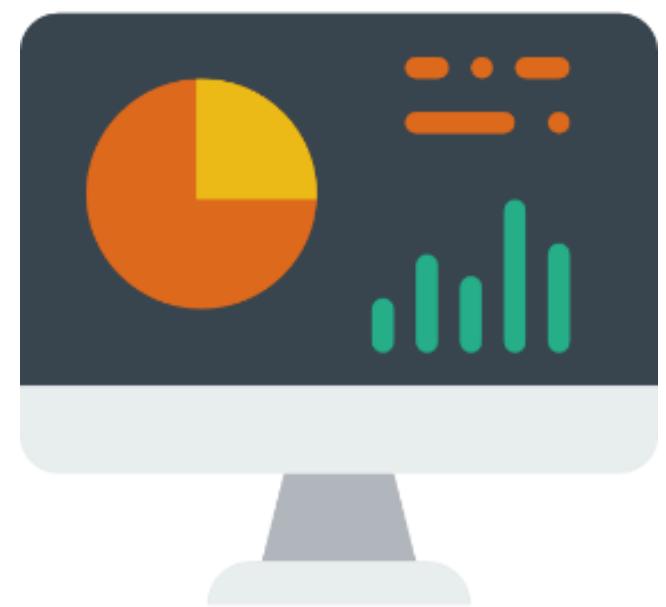
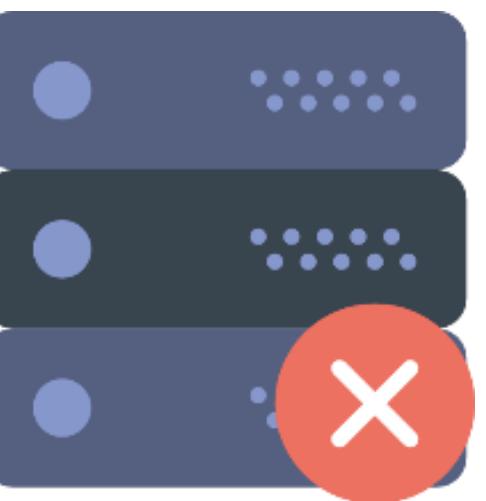
Sarah learns from the technical owner of the stock system that access to this data requires her to use MQ. Sarah makes a request to James (the MQ admin) to enable her application to access the data.





When Sarah's request comes in James thinks back with dread to the last time he fulfilled a request like this using a VM.

He had to worry about the security of the VM, installing and creating an image, maintaining the image, monitoring and managing the availability, coping with outages etc.





Fortunately, James searches the internet for a better way to run MQ in the Cloud and finds MQ on Cloud in Bluemix.

Google mq cloud

All Images Shopping News Maps More Settings Tools SafeSearch on

About 18,500,000 results (0.70 seconds)

MQ on Cloud - IBM Bluemix
<https://console.ng.bluemix.net/catalog/services/mq-on-cloud/> ▾
MQ started life in the data center but you can now take the many benefits of IBM **MQ** to the **cloud**, it's security, robustness and integration capabilities. And by ...

Connecting MQ with the Cloud (Docker, Chef, OpenStack, or Bluemix ...
https://www.ibm.com/.../community/.../mq_with_docker_chef_message_hub_bluemix ▾
22 Mar 2016 - How can you connect **MQ** with the **Cloud**? Arthur Barr has recently recorded some great information on how to use **MQ** v8 with Docker, and with ...

How can MQ be used in the Cloud? Try MQ Light with Bluemix!! - IBM
https://www.ibm.com/.../how_can_mq_be_used_in_the_cloud_try_mq_light_with_b ... ▾
22 Sep 2014 - IBM **Cloud** Technical Support blog includes content for WebSphere, BPM, **MQ**, Broker, IIB, ODM, Portal, DataPower, Mobile, Appliances, UrbanCode, and more! ... Bluemix is a new Platform as a Service (PaaS) **cloud** offering from IBM. ... IBM provides an **MQ** Light service as part of its Bluemix ...

Configuring IBM MQ for use with IBM Cloud Product Insights service in ...
https://www.ibm.com/support/knowledgecenter/en/SSFKSJ_9...mq.../q129270_.htm ▾
20 Mar 2017 - At IBM **MQ** Version 9.0.2 you can configure and connect your on-premises IBM products with the IBM **Cloud** Product Insights service in Bluemix ...

IBM MQ
www.ibm.com/software/products/en/ibm-mq ▾
IBM **MQ** is available as standalone distributed software, as a physical appliance and on IBM z/OS®. IBM **MQ** workloads can also be pushed to the **cloud**.



James reviews the MQ on Cloud information and creates an account in Bluemix to use the offering.

IBM Bluemix Catalog

[View all](#)

MQ

IBM MQ is a messaging offering that simplifies and accelerates the integration of diverse applications and business data across multiple platforms. It provides message queuing and publish/subscribe capability to facilitate the exchange of information and offers a single messaging solution for cloud and on-premises environments. By connecting virtually everything from a simple pair of applications to the most complex business environments, IBM MQ helps you improve business responsiveness, control costs, reduce risk and gain real-time insight from data. This MQ on Cloud service enables you to consume IBM MQ as a hosted offering that handles many of the operational management activities on your behalf, so you can focus on integrating MQ with your applications.

Service name: MQ-dev1-is

Features

- Extend enterprise messaging to the cloud**
Integrate your existing on-premises MQ deployment with your cloud infrastructure to enable new cloud applications to connect to your core business systems.
- Automated management of upgrades and patching**
Simple and easy to use capability to automatically apply security patches and product upgrades so that you can stay focused on integrating MQ with your applications.
- Quickly provision messaging capability in the cloud**
Deploy and use IBM MQ queue managers in the Bluemix cloud, enabling you to quickly integrate new cloud applications with enterprise class messaging.
- Manage MQ the way you want to**
Administer your cloud-hosted queue managers with existing tools that you know and love including MQ Explorer, runmqsc scripting and Web Console.

Images

Click an image to enlarge and view screen captures, slides, or videos. Screen caps show the user interface for the service after it has been provisioned.

PUBLISHED 07/26/2017

TYPE Service

LOCATION US South

Need Help?
[Contact Bluemix Sales](#)

Estimate Monthly Cost
[Cost Calculator](#)

Create



James provisions a service where all of his queue manager instances will reside.

IBM Bluemix Dashboard

319 Trial Days Remaining | Ashley Brimsted's Account | United Kingdom : Ashley Brimsted : dev

Catalog Support Manage

Search Items

Dashboard

Services (1) 1/10 Used

20 ▾ Items per page | 1-1 of 1 items

1 of 1 pages < | >

MQ MQ

Plan: Lite

The screenshot shows the IBM Bluemix Dashboard. At the top, there are navigation links for 'Docs', 'Catalog', 'Support', and 'Manage'. The main area is titled 'Dashboard' and features a section for 'Services'. A single service instance is listed: 'MQ' (Message Queue), which is currently active ('MQ'). Below the service card, it indicates the plan is 'Lite'. The interface includes a search bar at the top, a toolbar with sorting and filtering options, and pagination controls at the bottom.



After clicking on the MQ instance, James sees the service console view where he clicks to deploy a Queue Manager.

Docs Contact 24 Notifications

James's Account | US South : Organization 123 : dev 1

IBM Bluemix MQ Catalog Support Account

Getting started

Manage

Service Credentials

Connections

Plan

Integrate / MQ

MQ

All queue managers (0)

Queue Manager +

Search items

DISPLAY NAME ▲

QUEUE MANAGER NAME

LOCATION STATE

Get started by deploying a queue manager.

DISPLAY NAME ▲	QUEUE MANAGER NAME	LOCATION	STATE
----------------	--------------------	----------	-------



James then selects options for his Queue Manager name, location (only one US location in the first release), size and admin details.

Docs Contact 24 Notifications

James's Account | US South : Organization 123 : dev 1

Catalog Support Account

IBM Bluemix MQ

Getting started

Manage

Service Credentials

Connections

Plan

Integrate / MQ

MQ

Configure queue manager

Size

Medium

CPU: 4 VCPU

Memory: 8 GB

Disk: 25 GB

Queue Manager Name

Enter a QM name or leave blank to assign

Display Name

Enter a display name for your QM

Location

Bluemix Public US

Cancel Deploy

<



He views the newly created Queue Manager

Docs Contact 24 Notifications

James's Account | US South : Organization 123 : dev 1

Catalog Support Account

IBM Bluemix MQ

Getting started

Manage

Service Credentials

Connections

Plan

Integrate / MQ

MQ

All queue managers (1)

Queue Manager +

Search items

DISPLAY NAME	QUEUE MANAGER NAME	LOCATION	STATE
Sarah's_queue_manager	qm1	USA	Running



Once James' Queue Manager has been built he investigates the options to configure it in more detail and sees the option to export the pattern's connection details.

Docs Contact 24 Notifications

James's Account | US South : Organization 123 : dev 1

IBM Bluemix MQ

Catalog Support Account

Getting started

Manage

Service Credentials

Connections

Plan

Integrate / IBM MQ on Cloud

IBM MQ on Cloud

← Configure queue manager

Administrator

Administer in MQ console

Download connection info

Delete

Queue Manager Name	Display Name	Location
qm1	Test Queue Manager	Bluemix Public US

Trial

Appropriate for proving out a new concept or functionally trying out this service.

Supports

Up to 200 messages per second throughput
20 concurrent connections

Space

1 CPU
1 GB RAM
10 GB disk at 40 IOPS

Small

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

Supports

Up to 1000 messages per second throughput
200 concurrent connections

Space

1 CPU
1 GB RAM
10 GB disk at 40 IOPS

Medium

Appropriate for shared use by a number of light - moderate workload applications.

Supports

Up to 2500 messages per second throughput
2000 concurrent connections

Space

4 CPU
4 GB RAM
40 GB disk at 160 IOPS

Large

Appropriate for heavy throughput scenarios where transaction performance is critical.

Supports

Up to 2500 messages per second throughput
2000 concurrent connections

Space

12 CPU
8 GB RAM
100 GB disk at 400 IOPS

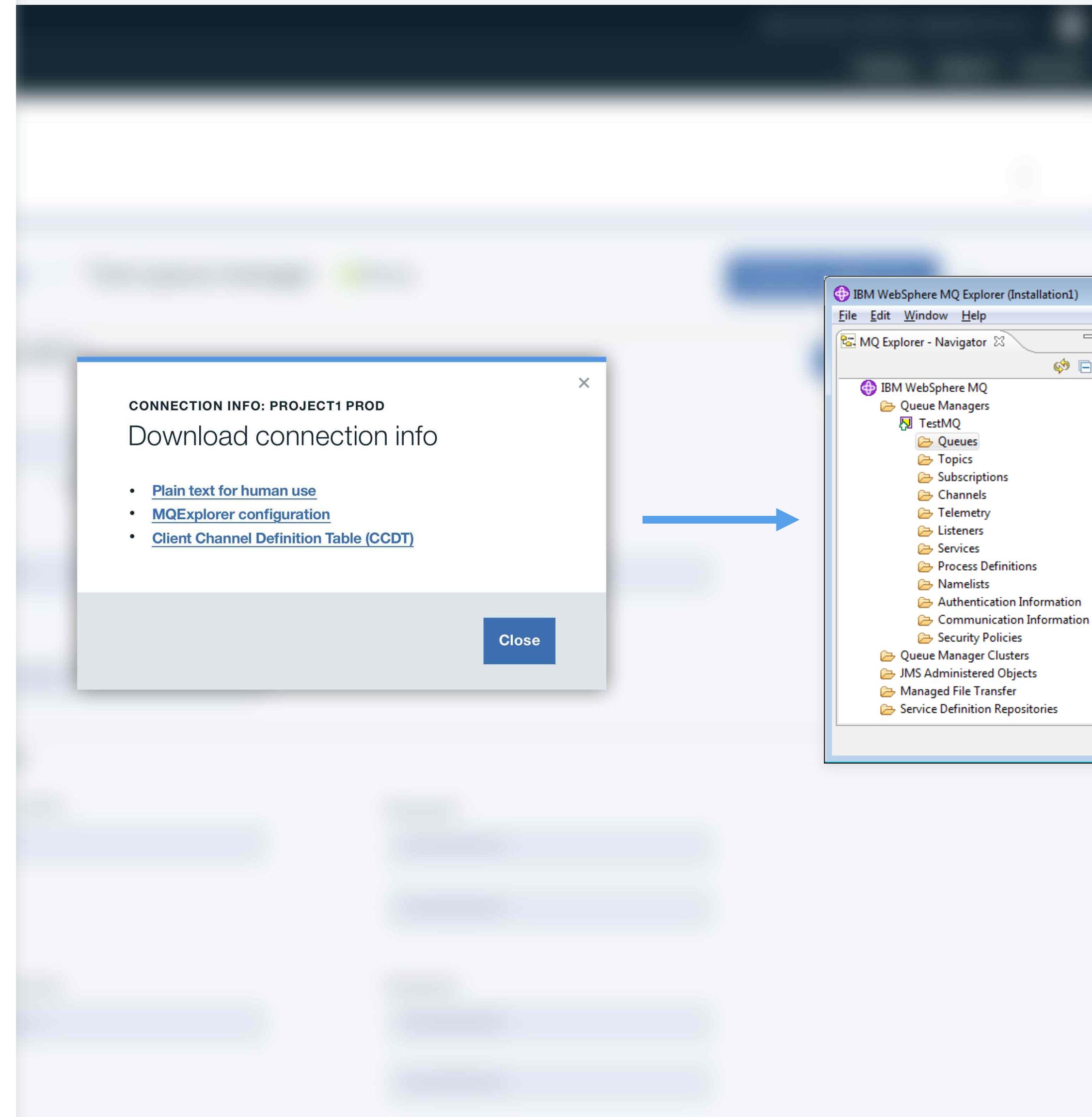
Security

HIGH-FI

Cancel Save



He's pleased with this option because, in the long term, it enables him to use his existing tools and knowledge to set up MQ exactly as he needs, in the same way and alongside all of the other queue managers that he maintains.





However, Sarah's request to access the stock system on premise is simple enough that he choose to configure it with the MQ web console.

The screenshot shows the IBM Cloud catalog interface for James's Account. A service instance is selected, and a context menu is open with the following options:

- Administer
- ⋮
- Administer in MQ console
- Download connection info
- Delete

A blue arrow points from the "Administer in MQ console" option to the IBM MQ Console interface on the right. The MQ Console displays three tabs: "Queues on QM1DAL", "Channels on QM1DAL", and "Client-connection Channels on QM1DAL".

Queues on QM1DAL

Name	Queue type	Queue depth
BILLINGQ	Local	0
QUEUE1	Local	0
STOCKQ	Local	0

Total: 3 Selected: 1 Updated: 3:05:35 PM

Channels on QM1DAL

Name	Type	Overall channel status

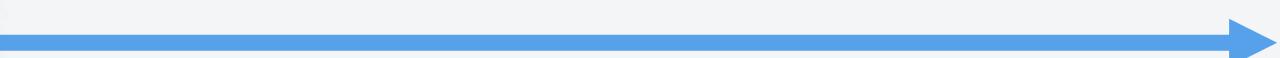
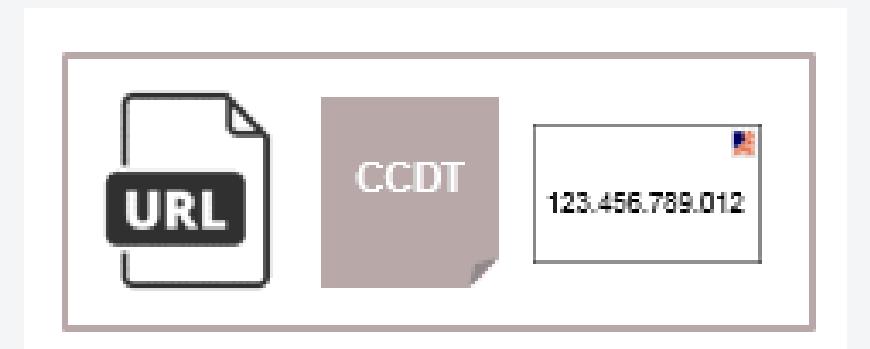
Total: 0 Selected: 0 Updated: 3:07:22 PM

Client-connection Channels on QM1DAL

Name	Connection name



Once the queue manager is configured to Sarah's requirements James sends the details to Sarah who is pleasantly surprised by how quickly she received the connection details.





James gets a great night's sleep after glimpsing a world in which he doesn't need to worry about requesting new hardware, dealing with hardware failures, OS patches, MQ maintenance and upgrades.

Technical details

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Tuesday, 10 October 2017

Adopting cloud services

The benefits we get from using cloud services sometimes has an associated effect on the way we interact with them which may require a change in mindset compared to bespoke on-premises configurations

Benefits of cloud services

Self service provisioning in minutes

“Infinite” compute capacity at the touch of a button

Automatically keep up to date with security patches

Administration overhead handled by the provider

Lower price due to economies of scale

Common implications of cloud services

Multi-tenancy / shared infrastructure

Limited points of variability

Shared responsibility for the overall solution

“One” size fits all

Standardized configurations

Design for failure

Updates applied regularly

Responsibility under different MQ consumption models

Application
Clustering
Msg, Conn, Chl monitoring
Queues, Topics
QM failover
QM availability/restart
MQ patching
OS patching
System-level monitoring
Virtual machine
Hypervisor
Storage
Servers
Networking
Data centre
On-premises software install

Application
Clustering
Msg, Conn, Chl monitoring
Queues, Topics
QM failover
QM availability/restart
MQ patching*
OS patching*
System-level monitoring
Virtual machine
Hypervisor
Storage
Servers
Networking
Data centre
MQ Appliance (on-premises)

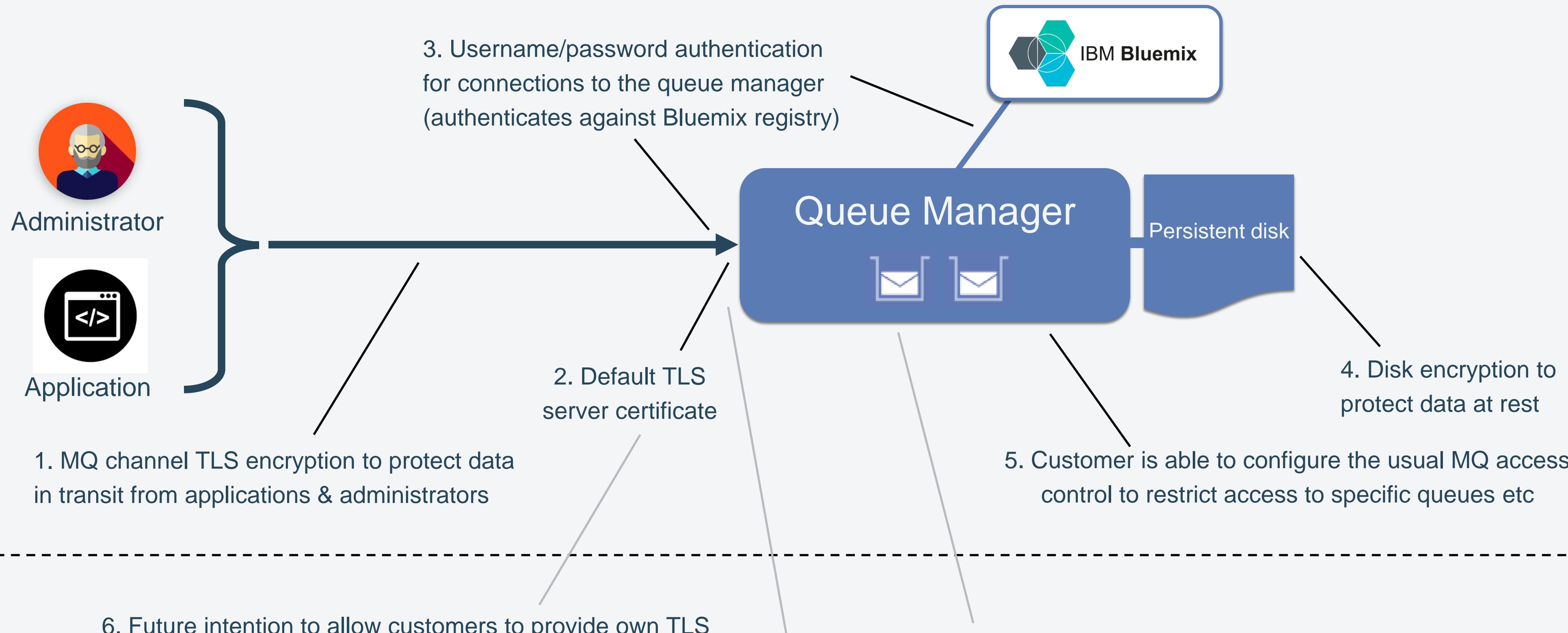
Application
Clustering
Msg, Conn, Chl monitoring
Queues, Topics
QM failover
QM availability/restart
MQ patching
OS patching
System-level monitoring
Virtual machine
Hypervisor
Storage
Servers
Networking
Data centre
BYOL cloud container install

Application
Clustering**
Msg, Conn, Chl monitoring
Queues, Topics
QM failover
QM availability/restart
MQ patching
OS patching
System-level monitoring
Virtual machine
Hypervisor
Storage
Servers
Networking
Data centre
MQ in Bluemix (service)

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

Out of the box configuration

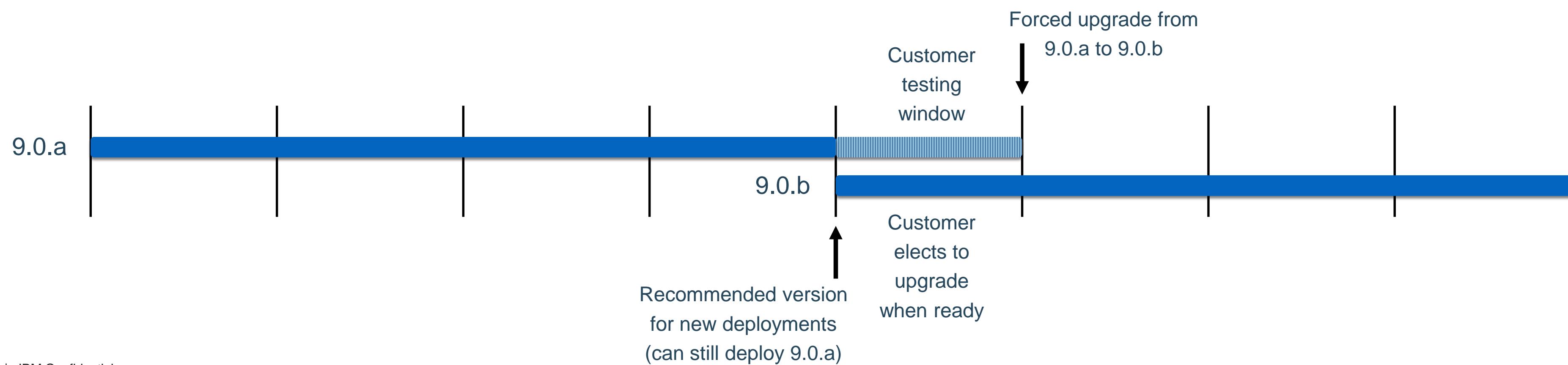


Potential future options

- 6. Future intention to allow customers to provide own TLS server certificate, configure mutual TLS client authentication
- 7. Considering future option to enable AMS, to provide end-to-end message encryption
- 8. Soliciting input on strength of requirement for IP whitelisting of incoming connections

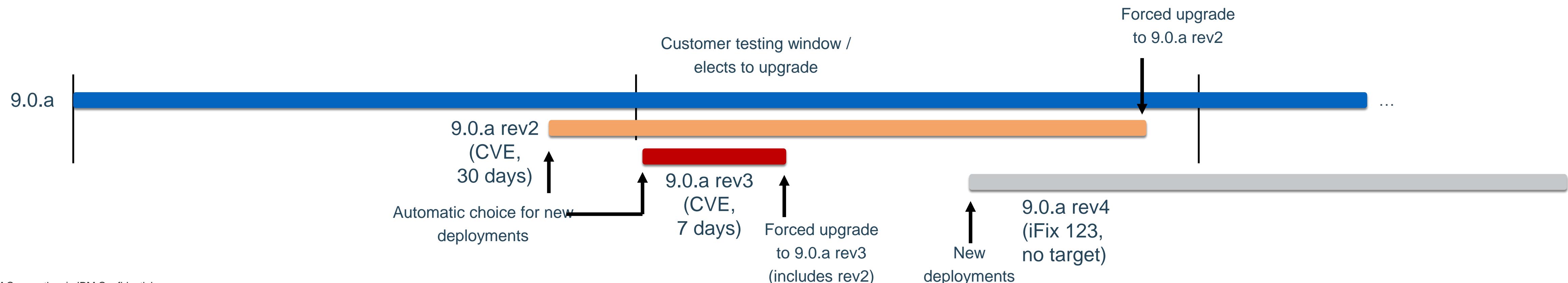
Versions and Upgrade

- The MQ in Bluemix 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
 - Schedule the upgrade to take place within a given window (eg “out of hours”)
- 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



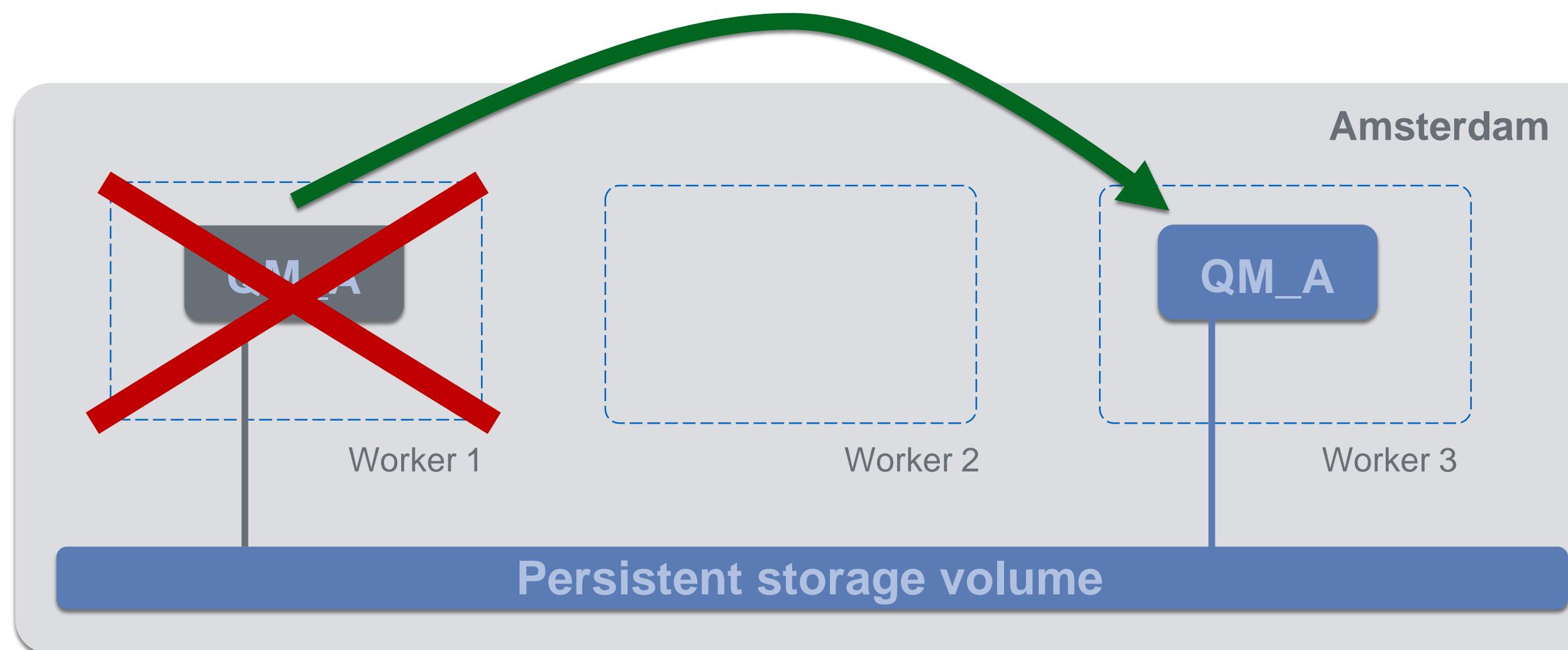
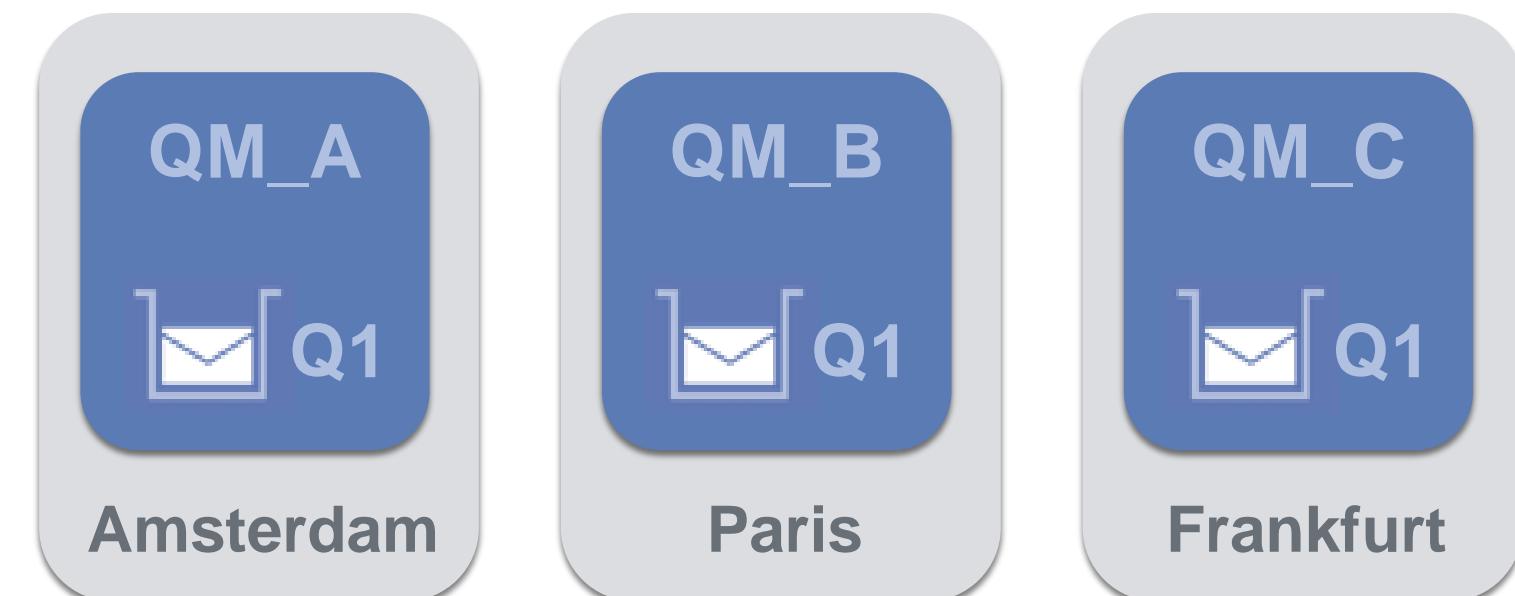
Security fixes

- Within a CD release (such as 9.0.3.0) 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
 - In order to minimize the number of updates, a forced upgrade will apply the latest available revision with an expiry less than 14 days in the future (to avoid doing one upgrade immediate after another)
 - Low priority security updates (e.g. 180+ days window) are rolled in to the next CD release
- From time to time MQ iFixes for urgent customer problems may also be made available within a CD release. These are optional upgrades, but will be picked up as part of cumulative security fixes



Availability and failover

- Bluemix Public provides a standard SLA that all services are required to comply with, currently 99.9% for deployment in a single Public region
 - We are assessing with customers whether that is an appropriate starting point or whether we should offer a specific stronger SLA for MQ in Bluemix, for example Cloudant offer 99.95%
- Stronger SLAs might be linked to patterns of deployed queue managers rather than a single QM
 - e.g. 3 queue managers with identical configuration deployed across multiple data centres in a region, so traffic can be served independently of any single failure



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

Supported capabilities under different MQ consumption models

	On-premises software install	MQ Appliance (on-premises)	BYOL cloud container install	MQ in Bluemix (service)
Customer-defined MQ Exits, Services and Processes	Yes	No	Yes	No
Custom monitoring agents local to the queue manager	Yes	No	Yes	No
Server binding (local) applications	Yes	No	Yes (at customer's discretion)	No
Client binding (remote) applications	Yes	Yes	Yes	Yes
Non-TLS MQ channels	Yes	Yes	Yes (at customer's discretion)	No (all data is encrypted in transit)
Encryption of data at rest	If configured by customer	Requires use of AMS	If configured by customer	Disk encryption by default (does not require AMS)
Advanced Message Security (AMS)	Yes (with MQ Advanced license)	Yes – out of the box	Yes (with MQ Advanced license)	TBD – considering whether AMS is included by default

MQ in Bluemix - Frequently asked questions

Question	Answer
Is “MQ in Bluemix” a fully managed service?	No – the customer is responsible for managing some aspects of the deployment such as creating queues for applications to use, monitoring queue depth and application availability etc.
Does IBM monitor my queue manager?	Yes (and No) – IBM monitors the availability of the queue manager and the networking that routes requests through to the queue manager. The customer is responsible for monitoring “inside” the queue manager, such as queue depths
Can I configure my own TLS server certificate and/or TLS mutual authentication for my queue manager channel?	Yes – IBM configures your MQ channel with a pre-defined one-way TLS certificate out of the box, but you can change the TLS configuration of the channel using the capabilities provided through the Bluemix service console
How do I debug problems in my deployed queue managers?	Customers will be able to self-service download queue manager logs. Potential future option to push logs to logging services like Bluemix Log Analysis service.
How do I raise support tickets for problems encountered through my use of the “MQ in Bluemix” service?	Customers must raise support tickets through the Bluemix support system (not the Service Request tool) for queue managers deployed using the “MQ in Bluemix” service. If the problem is determined to require an APAR fix in the queue manager or other components provided by IBM then that process will be handled transparently via the same Bluemix support ticket.

Timeline

- Beta / GA schedule
- Region rollout
- Future cloud platforms

IBM Messaging
Tuesday, 10 October 2017

Questions

IBM Messaging
Tuesday, 10 October 2017

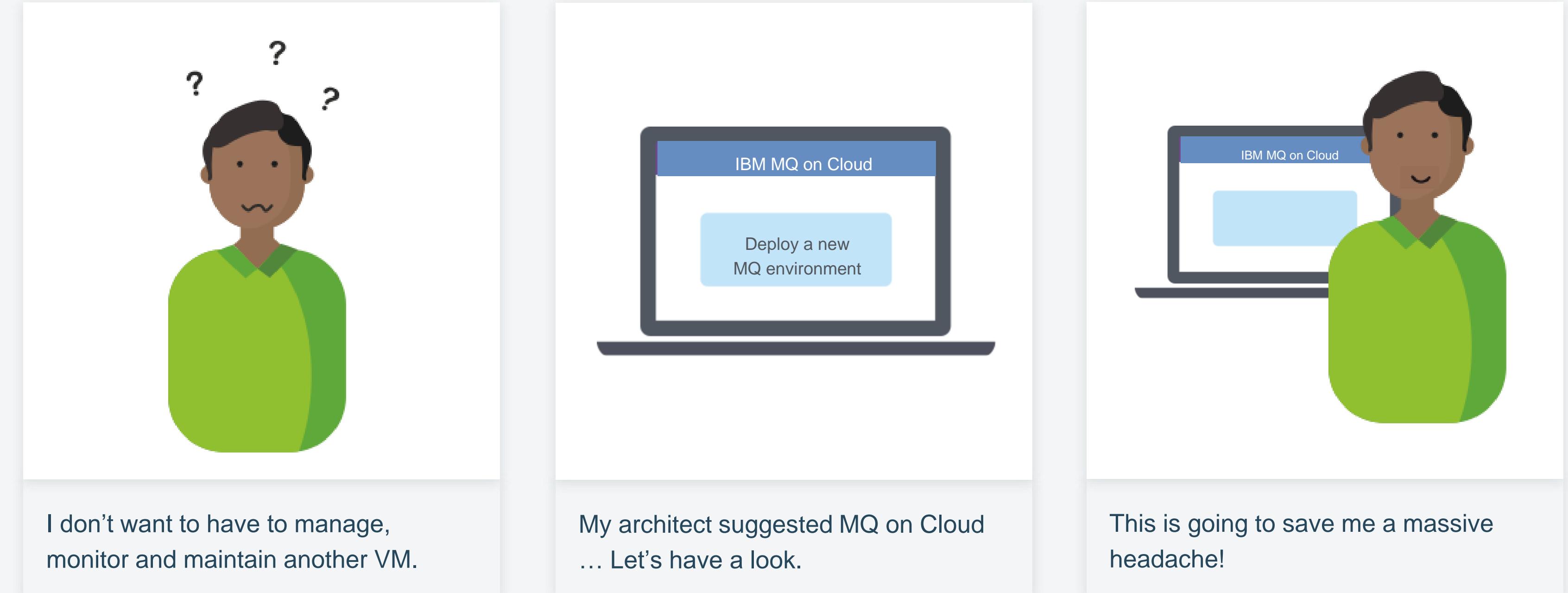
Backup

IBM Messaging
Tuesday, 10 October 2017



Goal 1

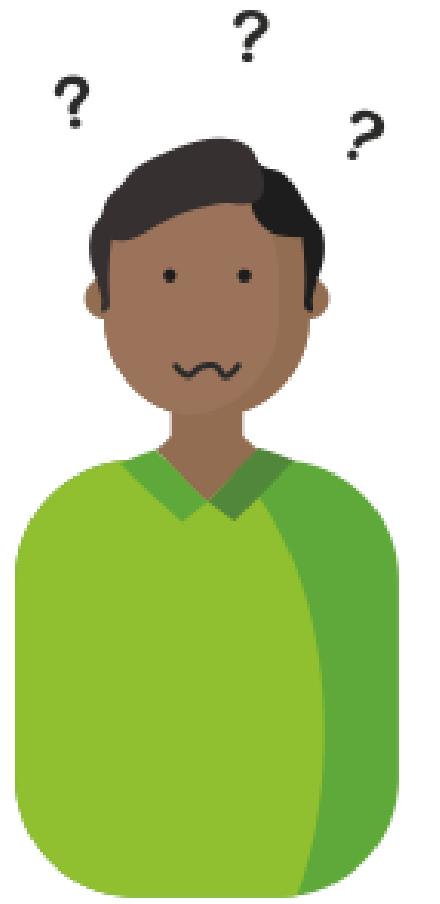
An MQ Admin can deploy an IBM hosted queue manager in IBM Bluemix so that he never has to worry about hardware failures, applying OS patches or applying MQ fix packs and migrating to the newest version.



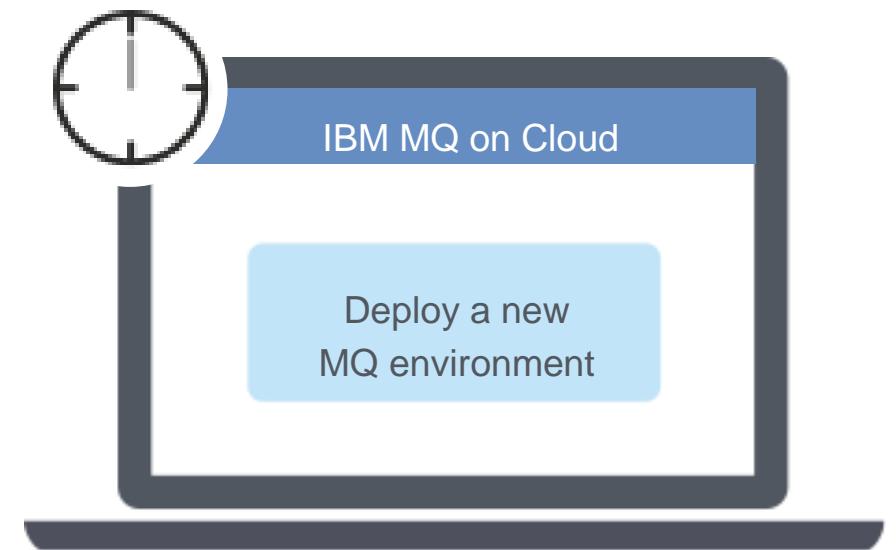


Goal 2

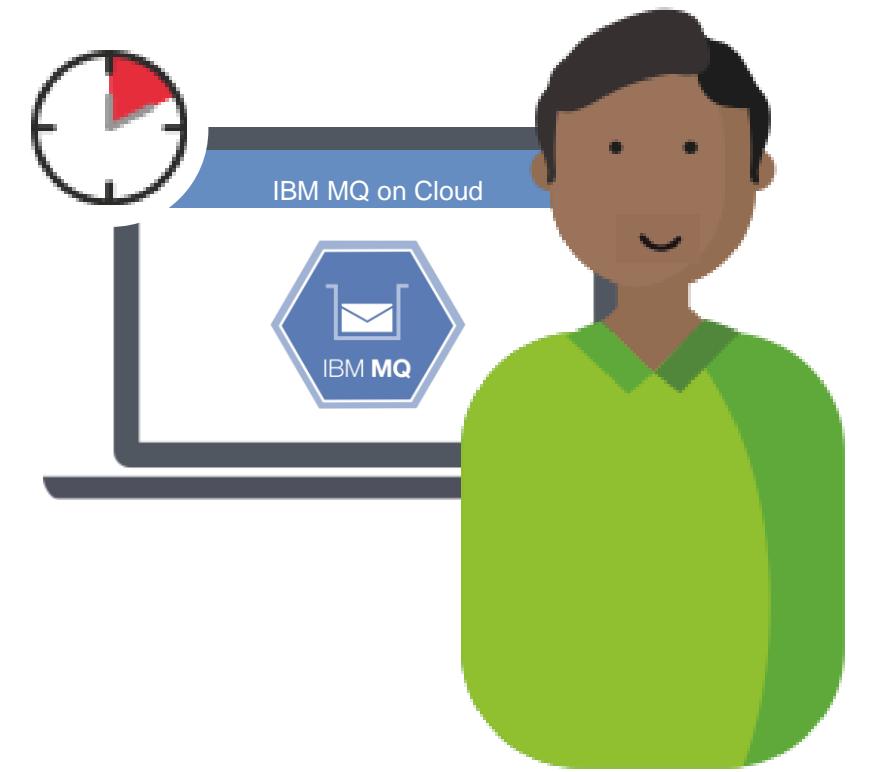
An MQ Admin can define or update a queue manager topology in IBM Bluemix that is automatically deployed within minutes for an application developer to use.



We need a whole new MQ environment for this project, and we're short on time!



I could use MQ on Cloud to create this new Queue Manager...



Wow! It's up and running already!



Goal 3

An MQ Admin can securely connect an MQ SaaS queue manager in IBM Bluemix to his on premise MQ topology to unleash the value of existing on premise data.

