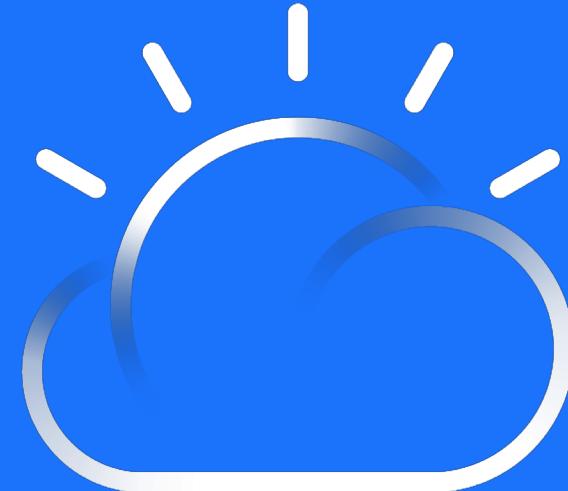


Session M06

Benefiting from the IBM MQ Appliance

Anthony Beardsmore
IBM MQ Development



IBM Cloud

IBM

Please note

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice and at IBM's sole discretion.

Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract.

The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Introducing the MQ Appliance

The scalability and security of IBM MQ

Familiar administration model for administrators with MQ skills

The convenience, fast time-to-value and low total cost of ownership of an appliance

Ideal for use as a messaging hub running queue managers accessed by clients, or to extend MQ connectivity to a remote location

Familiar feel for existing MQ users – application interfaces, administration, networking and security

Easy integration

Integrates seamlessly into MQ networks and clusters

High availability

Built-in support for high availability and disaster recovery



M2002

Why an appliance?

Fixed hardware specification allows IBM to simplify and tune the firmware

Fewer variables makes it easier to deploy and manage

Standardisation accelerates deployment

Repeatable and fast, less configuration or tuning required

Optionally lock down before deployment

Hub pattern separates messaging from applications

Improved availability, due to reduced downtime

Predictable performance, simpler capacity planning

Simplified ownership
Avoids dependencies on other resources and teams

Simpler licensing

Easier to assess for security compliance and audit

What do you want to do?

- Optimized solutions to meet the needs of these use cases
- Differentiation compared to MQ software deployment approaches
- 2 price points to meet different deployment-based business needs

Consolidate MQ infrastructure into an MQ hub for lower total cost of ownership (TCO)

Deploy to remote premises:

- Branch
- Factory
- Warehouse

Deploy to a business partner:

- Dealer
- Broker

Key differences with an appliance

IBM MQ Appliance

- Prebuilt for hub pattern – no apps on device
- No additional software installation
- No user exits in MQ
- Monitoring agents must be remote
- High availability out-of-the-box
- Pre-tuned
- Single firmware update for whole appliance
(rollback as single unit)

IBM MQ on custom server

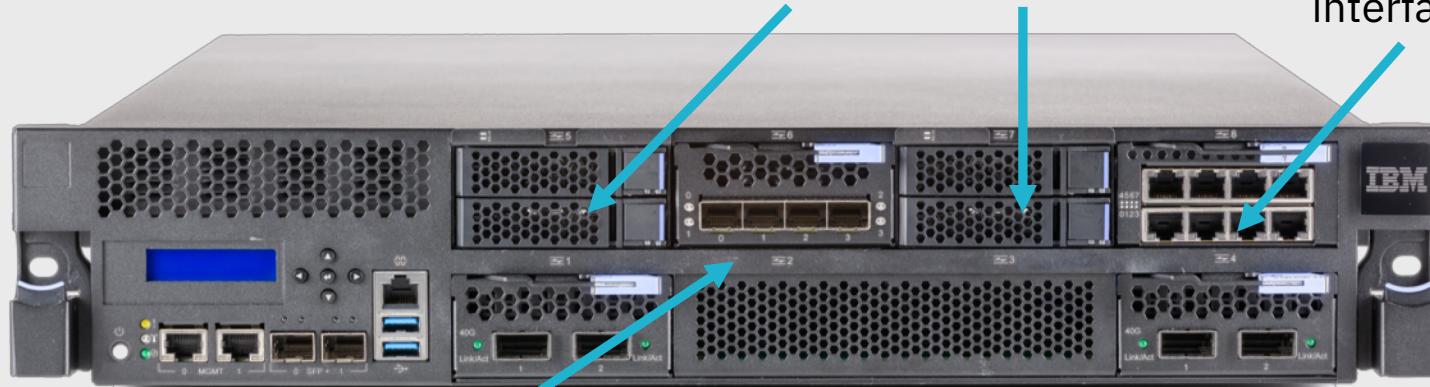
- DIY hub or generic server – apps + middleware
- Install any software
- Build & maintain custom extensions
- Can add local monitoring agents
- HA cluster SW or network storage for HA
- Custom tuning for OS and middleware
- Discrete maintenance (OS, MQ, etc.)

Hardware features (M2002)

- ✓ 2 x 12 core Skylake processors
- ✓ 192 GB RAM
- ✓ 2 GB RAID cache

High speed SSDs with hardware RAID10 (6TB)

8 x 1 Gb Ethernet interfaces



2 x 1 Gb management Ethernet interfaces

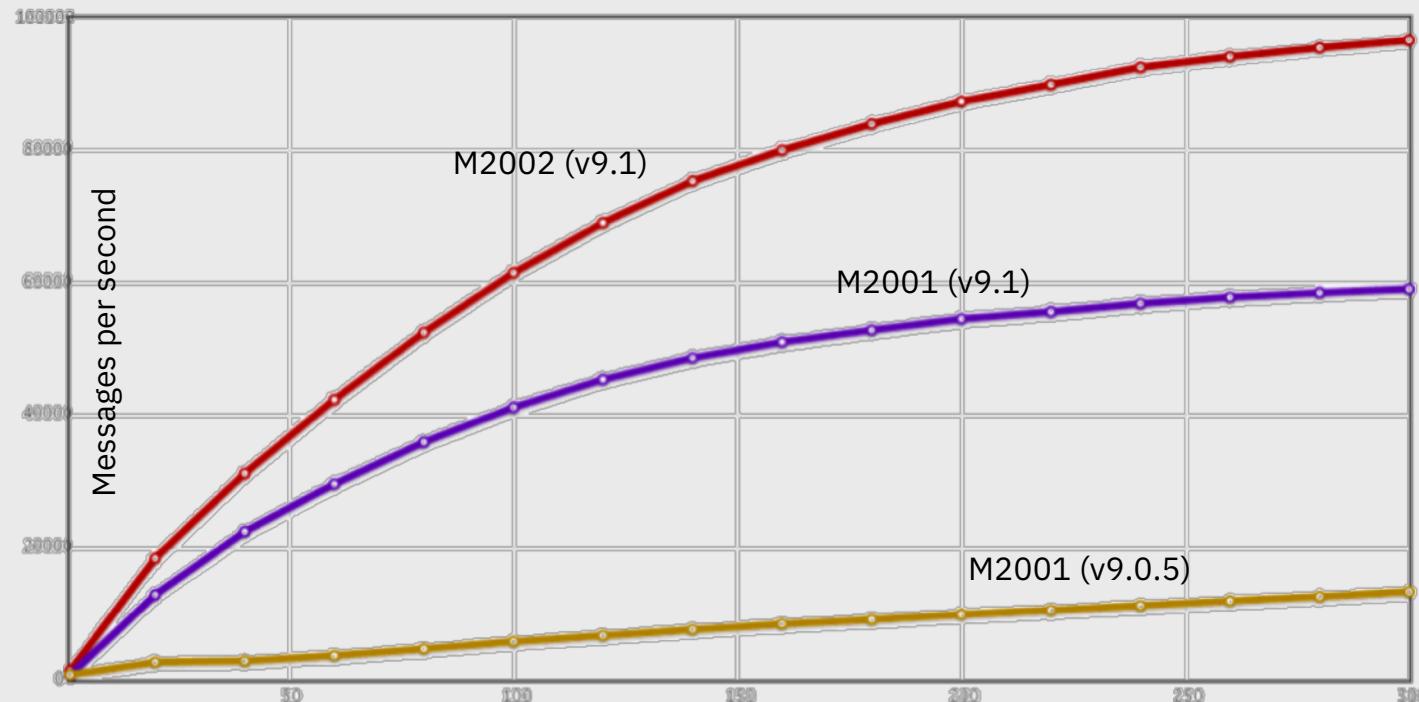
6 x 10 Gb Ethernet interfaces (SFP+)

4 x 40 Gb Ethernet interfaces (QSFP+)

MQ Appliance performance

Comparison scenario:

- ✓ Multiple queue managers
- ✓ High availability
- ✓ Many client applications

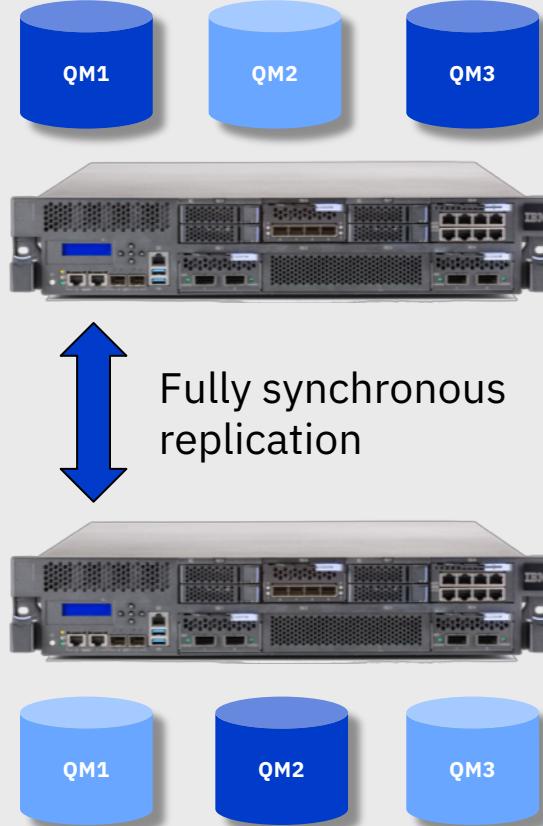


Performance reports available at
<https://ibm-messaging.github.io/mqperf/>

Number of client applications

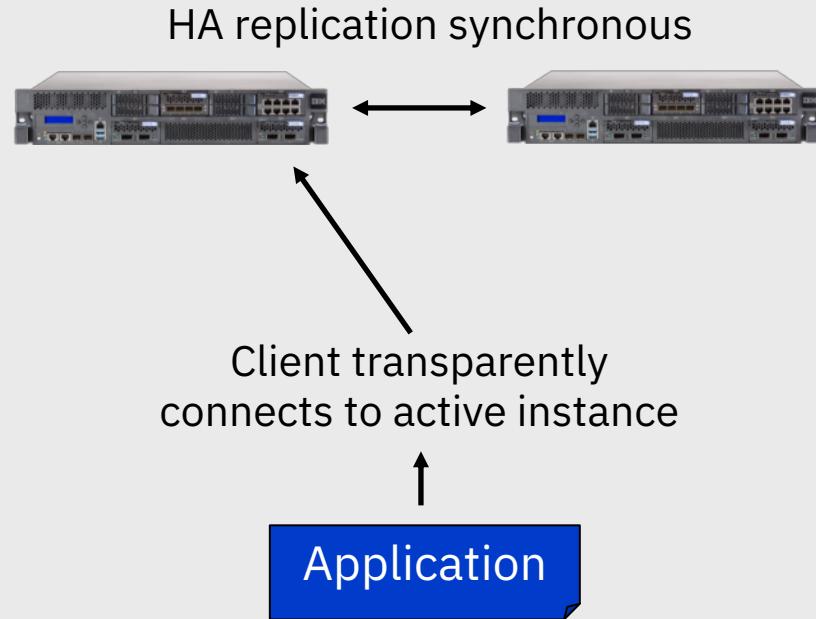
High availability

- ✓ Automatic failover, plus manual failover for migration or maintenance
- ✓ Independent failover for queue managers so both appliances can run workload
- ✗ No persistent data loss on failure
- ✗ No external storage
- ✗ No additional skills required



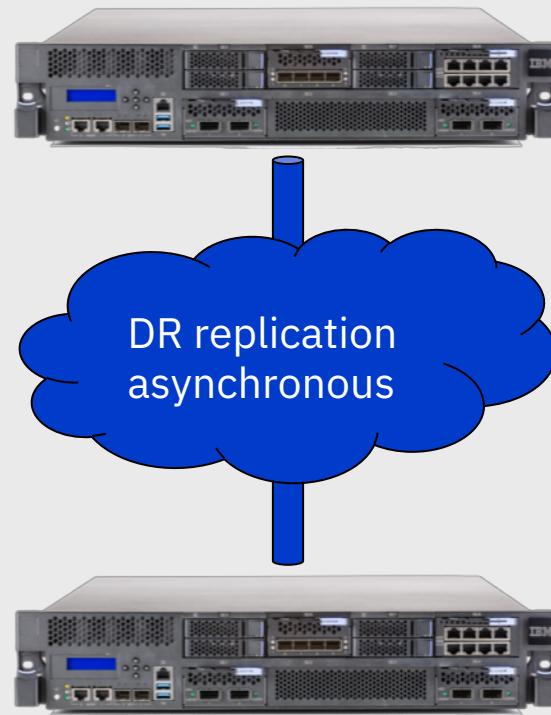
High availability floating IPs

- Optional IP address associated with an HA queue manager
- IP address automatically adopted by the active HA appliance
- Single logical end-point per queue manager for client applications
- No need for comma-separated list of IP addresses, CCDTs, or other routing
- Exploit aggregate interfaces for enhanced network availability



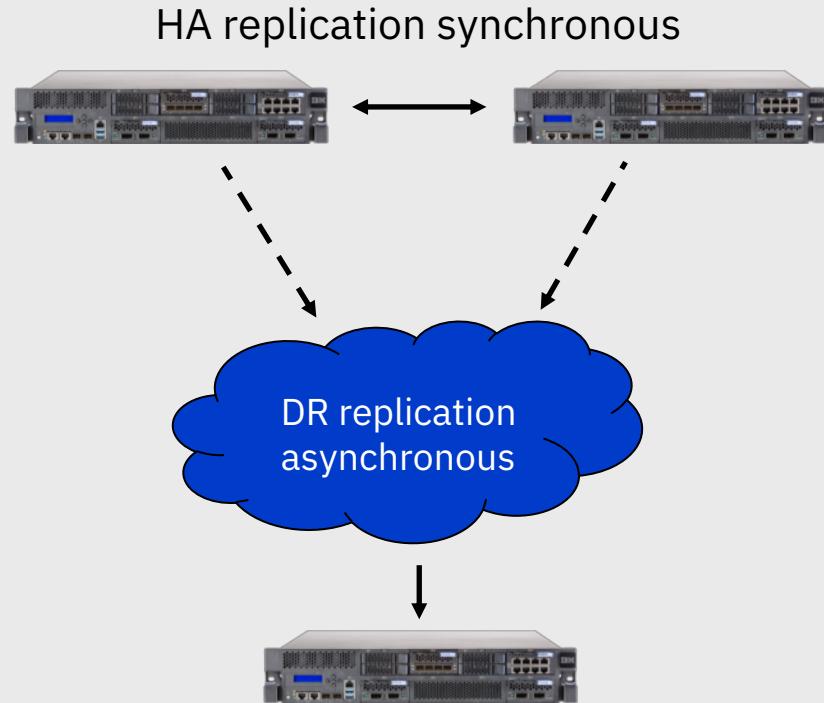
Disaster recovery

- Provides for longer distance recovery than HA – e.g. out-of-region standby site
- High bandwidth connectivity required to mirror all persistent data
- Asynchronous replication, so better than HA for higher latency, ‘bursty’ or ‘lossy’ networks
 - Most recent messages potentially lost on failover so application logic must consider this
- Manual failover



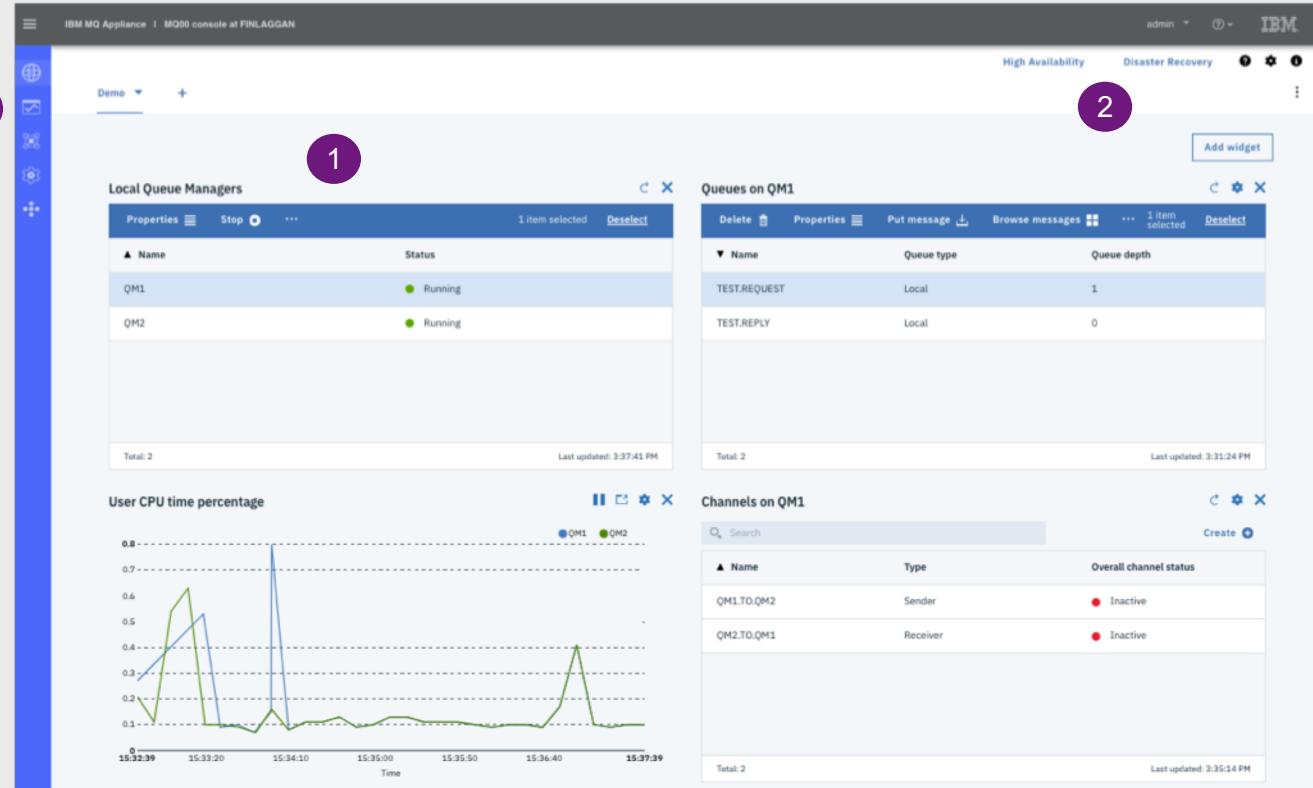
Disaster recovery for HA groups

- Support for both HA and DR
- DR appliance asynchronously updated from whichever HA appliance is active
- DR configured independently for each queue manager
 - One HA partner per appliance
 - One DR recovery appliance per queue manager



Web administration

1. Embedded MQ Console
2. Easy access to configure high availability and disaster recovery
3. Quick navigation to system status and settings, including networking, security, file management



Administrative security

Two distinct types of user on the appliance

- Users who administer the system (appliance users)
- Users who perform messaging operations (messaging users)

Role-Based Management (RBM)

Security model for managing appliance users

Granular and flexible user and authority management

Authenticate using:

- Local users
- LDAP repository
- Users defined in an XML file

Password and account policy

Authorization

Assign authority to users, or local/LDAP groups

Quickly define simple rules or build granular definitions for complex policies

Integration with the MQ OAM for the MQ Console and REST API enables granular MQ admin authority

Restrict access to specific interfaces:

- Require local access for sensitive operations
- Independently grant access to the web UI, REST and SSH

Monitoring

Most traditional MQ monitoring products will work in exactly the same way with an appliance queue manager ('remote agent' configuration)

→ e.g. IBM Cloud Application Performance Management (APM)

SNMP support

Respond to hardware failures, temperature alerts, network errors and other system events

SNMP versions 1, 2c and 3

REST administration

Powerful REST API for system administration and monitoring

... plus an evolving API for MQ

MQSC / PCF

MQ Explorer

MQ Console

SSH (expect)

Instrumentation events

Accounting and stats

Application activity trace

Logging

- ✓ Flexible logging configuration
- ✓ Traditional MQ error logs
- ✓ Integrated MQ and system logs *
- ✓ Variety of output formats
- ✓ Filter log events
- ✓ Stream logs to a remote syslog server for integration with centralized management tooling



01/31/19 14:35:19 - Process(156393.1) User(mqsystem)
Program(amqzxma0) Host(mqademo1)
Installation(MQAppliance)
VRMF(9.1.2.0)
QMGr(QM1)
Time(2019-01-31T14:35:19.201Z)
CommentInsert3(QM1)

AMQ8004I: IBM MQ Appliance queue manager 'QM1' ended.

EXPLANATION:

IBM MQ Appliance queue manager 'QM1' ended.

ACTION:

None.

time	category	level	tid	direction	client	msgid	message
20 Nov 2018 15:57:48							
20181120							
155744	qmgr	information				0x8d009002	qmgr (QM1): AMQ9002I: Channel 'QM2.TO.QM1' is starting.
155744	qmgr	information				0x8d009002	qmgr (QM2): AMQ9002I: Channel 'QM2.TO.QM1' is starting.
155736	qmgr	information				0x8d009002	qmgr (QM2): AMQ9002I: Channel 'QM1.TO.QM2' is starting.
155736	qmgr	information				0x8d009002	qmgr (QM1): AMQ9002I: Channel 'QM1.TO.QM2' is starting.
155610	qmgr	information				0x8d006602	AMQ6802I: The IBM MQ Appliance subsystem is active. Queue managers running [2].
155200	qmgr	error			9.20.33.218	0x8d009999	qmgr (QM1): AMQ9999E: Channel 'TEST.CHANNEL' to host '9.20.33.218' ended abnormally.
155200	qmgr	error			9.20.33.218	0x8d009209	qmgr (QM1): AMQ9209E: Connection to host 'jsquibb (9.20.33.218)' for channel 'TEST.CHANNEL' closed.

* New in 9.1.2

Managing queue managers

- Integrated support for common queue manager management tasks
- Dynamically add or remove high availability and disaster recovery configuration

Configure queue managers to automatically start when the appliance boots

Expand the filesystem allocated for a queue manager to respond to growing workload patterns

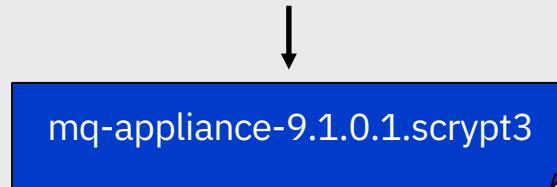
Backup and restore queue managers

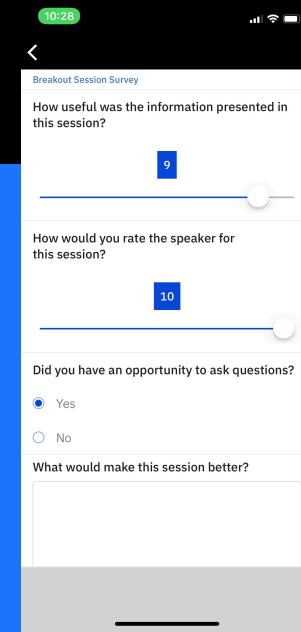
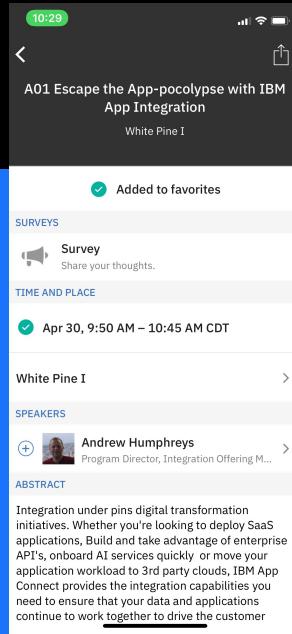
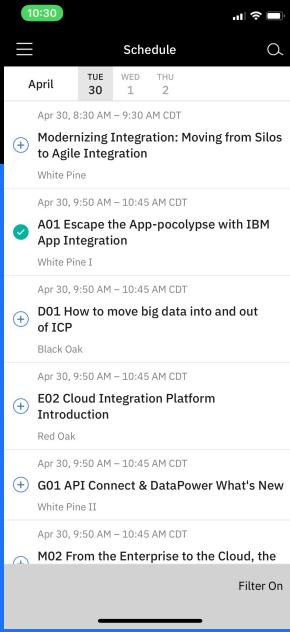
- Provides a fall back option when upgrading MQ versions
- Move a queue manager to an alternative appliance

Updates and maintenance

- Appliance updates supplied as a simple single file; signed and secure.
 - Nothing else can be installed
- All system and MQ updates provided in one consumable package
- Rolling updates for HA and DR
- To install maintenance:
 1. Download updates from Fix Central
 2. Copy firmware image to the appliance
 3. Initiate update and reboot

The screenshot shows the Fix Central interface. At the top, there's a navigation bar with 'IBM Support > Fix Central >'. Below it is a blue header bar with the title 'Fix Central'. The main content area has a heading 'Fix Central provides fixes and updates for your system's software, hardware, and operating system. Not looking for fixes or updates? Please visit Passport Advantage to download most purchased software products, or My Entitled Systems Support to download system software.' It includes a link 'Getting started with Fix Central'. There are two buttons at the top right: 'Find product' and 'Select product'. Below these are sections for 'Product selector*' (with 'IBM MQ Appliance' typed in) and 'Installed Version*' (set to '9.1'). A 'Continue' button is at the bottom.





IBM

Don't forget to fill out the survey!

Select your session, select survey, rate the session and submit!

Thank You

