

Session: 17889

Introduction to the New MQ Appliance

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PLM for Messaging on z

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What and Why

Overview



- IBM has released an IBM MQ Appliance!
 - GA'd March 13th.
 - Firmware update 3 (manufacturing refresh including MQ 8.0.0.3) available now
- The scalability and security of IBM MQ V8
 - Integrates seamlessly into MQ networks and clusters
 - 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

Why an Appliance?

- Fixed hardware specification allows IBM to simplify and tune the firmware
 - Having fewer POVs makes it easier to deploy and manage
 - Less performance tuning should be needed
- Standardisation accelerates deployment
 - Repeatable and fast, less configuration/tuning required
 - Post-deployment resource definition or lock down before deployment
- “Hub” pattern separates messaging from applications/middleware
 - Organisational independence from application teams
 - Improved availability, due to reduction of downtime
 - Predictable performance, simpler capacity planning
- Simplified ownership
 - Self-contained: avoids dependencies on other resources/teams
 - Licensing: Simpler than calculating licensing costs (e.g. by PVU)
 - Security: Easier to assess for security compliance audit

Key characteristics of the IBM MQ Appliance

- “MQ V8” (+/-) delivered as a state-of-the-art appliance
- Built using the latest DataPower appliance hardware and OS
- Firmware includes the MQ V8 product and capabilities
 - Participates in MQ networks or clusters
 - Existing MQ applications connect as clients
- Two models, to suit different uses and performance requirements
 - Either model of appliance can run multiple queue managers, subject to overall throughput
- Familiar administration concepts and syntax, with a choice of interfaces
- Familiar security model for authentication and authorisation of messaging users, with greater flexibility for scalable administration
- Built-in High Availability
 - Per queue manager monitoring and automatic restart/failover
 - Without external dependencies (shared file systems or shared disks)

Expected Usage Patterns

Expected uses of the IBM MQ Appliance

How an appliance may help to achieve the following messaging requirements

| | |
|-------------------|--|
| Messaging Hub | One or more dedicated messaging servers to which applications connect |
| Messaging Outpost | A messaging server located in a remote location with limited skills and facilities |
| Messaging Gateway | A dedicated server that handles all traffic from a remote messaging system |
| Messaging Partner | A messaging server located in a business partner that needs to resilient and safe connectivity to your MQ infrastructure |

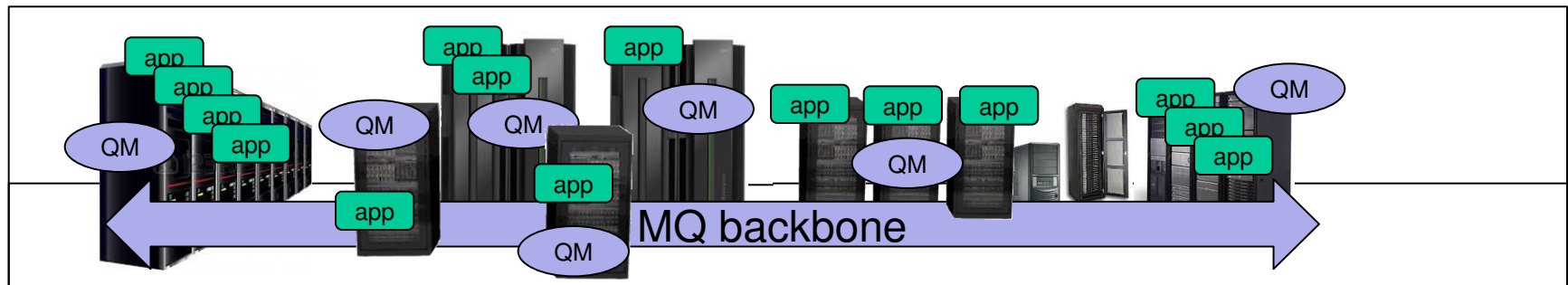
Messaging Hub using the IBM MQ Appliance

Objective

- You need to reduce overall costs and want to reduce the number and diversity of servers that are running MQ, standardising for efficiency and ease of future migration
- You want to move the queue managers into a hub to which applications can client connect, continuing to support enterprise SLAs for availability

Challenges

- Mixture of platforms and versions
- Complex dependencies; impact analysis is difficult
- Migrations are difficult due to lack of standardisation
- Application downtime impacts messaging – and hence other applications



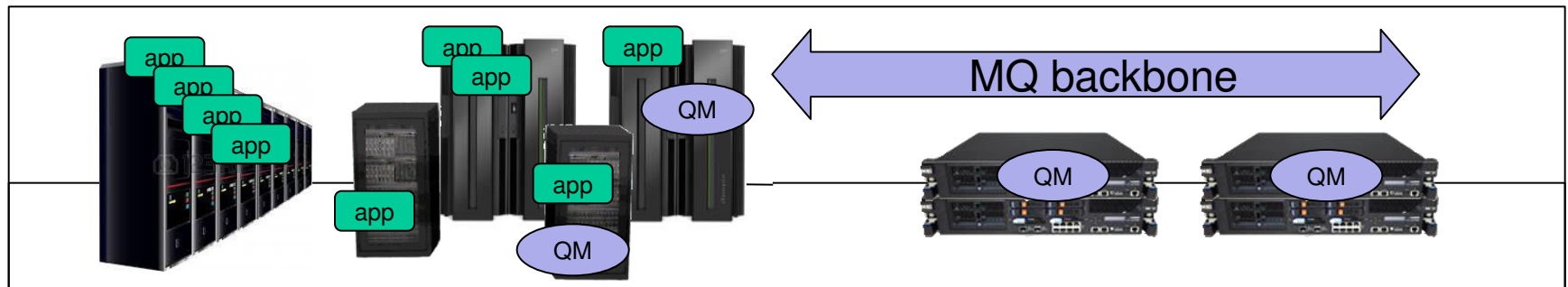
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Benefits

- The appliance is easy to deploy, has familiar MQ admin interfaces, supports existing MQ definitions and security
- The firmware has fewer POVs and supports rapid migrations
- Downtime reduced by separating applications
- Adding appliances for HA avoids external dependencies, e.g. on storage team



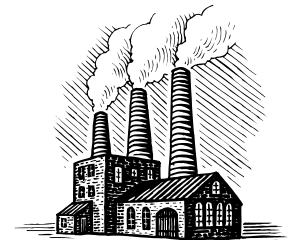
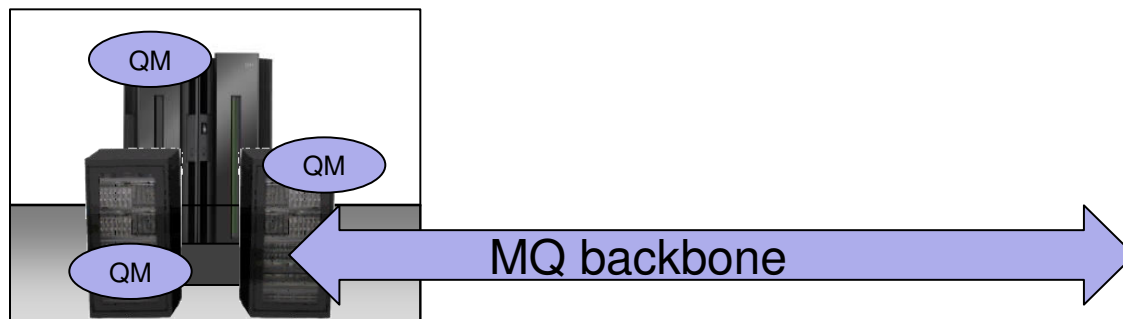
Messaging Outpost using the IBM MQ Appliance

Objective

- You need resilient connectivity to a remote part of your organisation, e.g. a branch, factory, warehouse
- Extend MQ messaging beyond your datacenter to a remote location with limited infrastructure...and scarce local MQ skills
- Support failover in the event of a hardware/power outage

Challenges

- Geographic remoteness suggests that you may have to rely on getting outside assistance
- It would be very difficult or impossible to support failover due to the difficulty of provisioning a shared file system, shared disk or SAN in the remote location



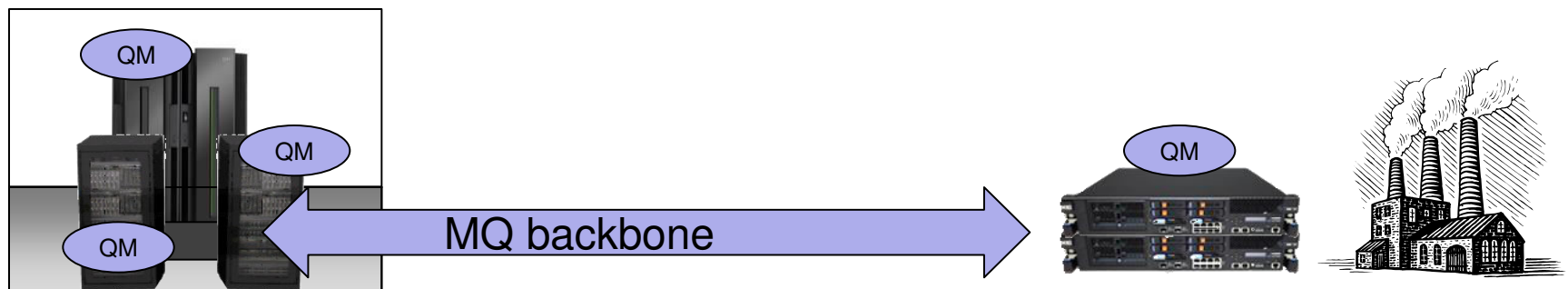
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Benefits

- Order one or a pair of appliances to be delivered on-site, or pre-configure appliances and dispatch them to the remote site
- Following simple physical deployment, remotely configure and manage the appliances
- HA without external dependencies



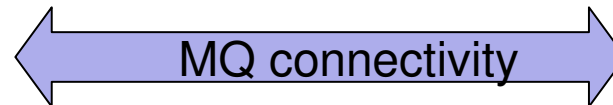
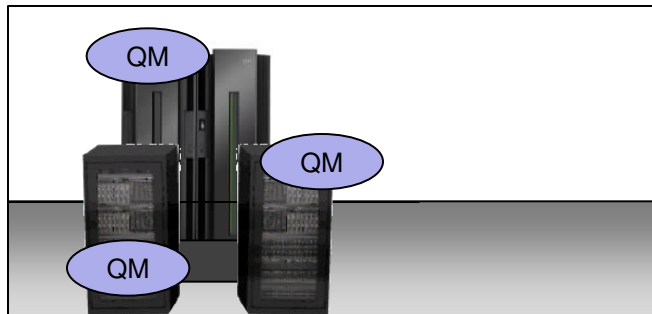
Messaging Gateway using the IBM MQ Appliance

Objective

- You need to extend connectivity to an external business partner and want to tightly control what the partner can connect to and the resources affected by partner traffic
- You decide to deploy an MQ gateway to which the partner channel will connect

Challenges

- You don't want to spend the cost/time it would take to build a server, with operating system, utilities and middleware and provision for HA



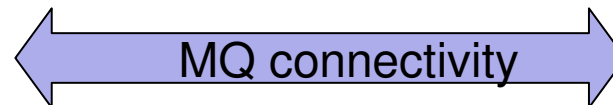
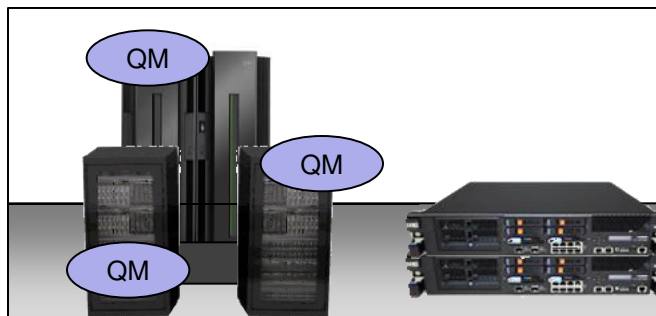
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- You need to extend connectivity to an external business partner and want to tightly control what the partner can connect to and the resources affected by partner traffic
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Benefits

- The MQ appliance is easy to deploy and manage with familiar MQ admin interfaces
- A pair of appliances can provide HA without introducing external dependencies



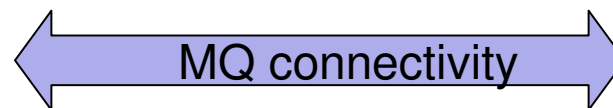
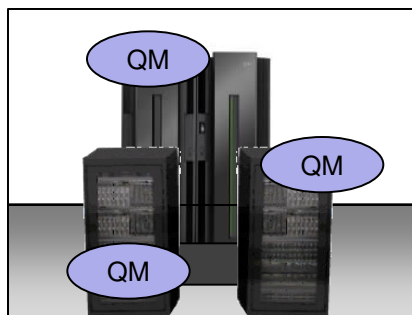
Messaging Partner using the IBM MQ Appliance

Objective

- Your organisation wants to on-board a business partner as quickly as possible
- The business partner needs to connect to your organisation using MQ; but the partner does not have MQ skills
- You want to be confident that the MQ configuration (which is outside your domain) is correct and meets your organisation's standards

Challenges

- The partner could use a 3rd party vendor, but ideally you'd like to verify the solution and have confidence that it meets your standards



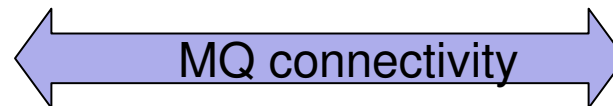
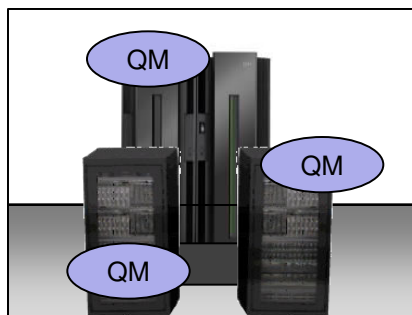
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Benefits

- The MQ appliance is easy to physically deploy and you can pre-configure it so all the partner need do is plug in and go
- A pair of appliances could provide HA at the partner location without requiring external dependencies that the partner might struggle to provide



MQ Appliance capabilities

IBM MQ Appliance capabilities

This section describes the main capabilities and distinguishing characteristics of the appliance

- Administration
- Security
- Connectivity
- High Availability
- External Storage (statement of direction)
- Performance and Capacity
- Key differences between MQ Appliance and installable MQ

Administration

- Command-line Interface
 - Appliance CLI supports appliance-specific commands such as configuring network interfaces, importing certificates, ...
 - Appliance CLI also offers a familiar subset of MQ control commands
 - You can also use MQSC scripts
- MQ Console
 - Browser-based UI for administering the appliance
 - Avoids maintenance of rich client installations
 - Very convenient for proofs-of-concept and application developer use
- MQ Explorer
 - Essential for existing administrators
- PCF
 - Supports remote administration using all of the existing MQ tools

- Required for certain tasks, more convenient for others

- Available over SSH or local serial connections
- After initial setup (network settings etc) likely to spend most time in the 'mqcli'.
- 'Sub-shell' model – make use of the context specific help.

```

abeards@oc47
File Edit View Search Terminal Help
Unauthorized access prohibited.
login: admin
Password: *****

Welcome to IBM MQ Appliance M2000A console c
Copyright IBM Corporation 1999-2015

Version: MQ00.8.0.0 build 257576mq on Feb 26,
Serial number: 7800318

M2000# help
clear intrusion-detected
clock                Sets the date or tim
configure terminal   Enters Global Config
diagnostics         Provides diagnostic
disable             Enters User Mode
disconnect          Terminates a user se
echo                Echoes text to the c
exec                Executes a configura
exit                Terminates the CLI c
help                Displays general or
login               Logs in as a specifi

```

IBM MQ Console: Dashboard - Mozilla Firefox

https://nemesishursley.ibm.com:9090/mq/#page=home

IBM MQ Console | Dashboard | Appliance | admin | ? | IBM

Welcome +

+ Add MQ Object Widget + Add Queue Manager Widget + Add Chart Widget

Queues on Test

Filter

| Name | Queue type | Queue depth |
|-------------------------------|------------|-------------|
| APP1Q | Local | 0 |
| SYSTEM.ADMIN.ACCOUNTING.QUEUE | Local | 0 |
| SYSTEM.ADMIN.ACTIVITY.QUEUE | Local | 0 |
| SYSTEM.ADMIN.CHANNEL.EVENT | Local | 0 |
| SYSTEM.ADMIN.COMMAND.EVENT | Local | 0 |
| SYSTEM.ADMIN.COMMAND.QUEUE | Local | 0 |
| SYSTEM.ADMIN.CONFIG.EVENT | Local | 0 |

Queue Managers

More... Filter

| Name | Running TCP listener ports | Status | High Availability |
|--------|----------------------------|-----------|-------------------|
| SECURE | | ↓ Stopped | |
| Test | 1414 | ↑ Running | |

Total: 2 Selected: 1 | Last updated: 11:04:30 AM

Chart Widget

Resource to monitor

Resource class: Platform persistent data stores

Resource type: Disk usage - running queue managers

Computer | Wed 25 Mar, 11:04

Security

- An appliance administrator can be authorised to perform MQ administration
 - Can separate roles of appliance administrator and messaging administrator
 - Both are separate from messaging users
- The appliance supports secure connectivity over SSL/TLS
 - Certificates can be imported to the appliance
- The appliance supports scalable security administration
 - For a small number of messaging users, you can define them locally
 - For larger communities, you can use an off-board repository
 - Using external LDAP repository
 - Authorization checks can include group memberships from LDAP
 - Messaging user ids don't need to be defined in each server/appliance
- “MQ Internet Pass-Thru” (MS81: MQIPT) may be used in front of appliance queue managers (as for software MQ) to provide DMZ tunnelling or proxy

Connectivity

- The IBM MQ Appliance supports a number of protocols for message transmission
- The first version of the appliance supports
 - MQ client protocol – for connectivity from applications
 - Client libraries available in the usual places, not shipped with the appliance
 - MQ server protocol – for connectivity with other queue managers
 - This will support sender-receiver channels and server-requester channels, including cluster flows
- Subject to customer interest we may add further protocols such as
 - MQTT – for internet of things and mobile/web messaging
 - AMQP – for MQ Light API client connectivity

High Availability

Primary/Secondary

Primary / Secondary

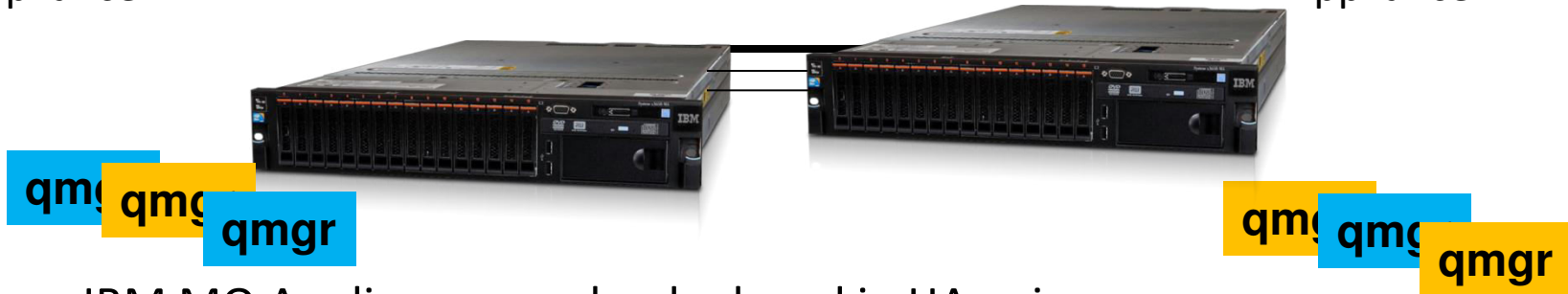


- IBM MQ Appliances can be deployed in HA pairs
 - Primary instance of queue manager runs on one
 - Secondary instance on the other for HA protection
- Primary and secondary work together
 - Operations on primary automatically replicated to secondary
 - Appliances monitor one another and perform local restart/failover
- Easier to set up than other HA solutions (no shared file system/shared disks)
- Supports manual failover, e.g. for rolling upgrades
- Replication is synchronous over Ethernet, for 100% fidelity
 - Max distance based on ping time 10ms

High Availability

Appliance A

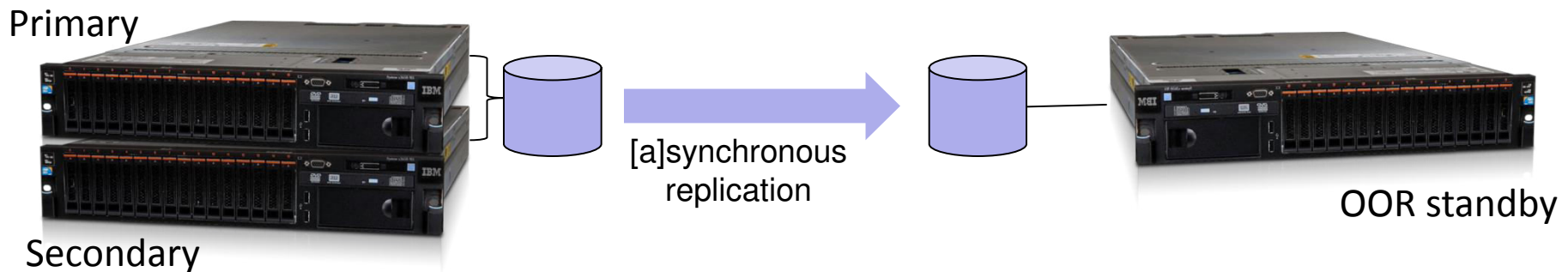
Appliance B



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External Storage (statement of direction)

- *In a future version of the appliance* IBM intends to support fibre channel connection to external storage, enabling additional capabilities:
 1. External volume may be used to expand storage for SLAs with very long outage tolerances
 - e.g. consuming application offline for weekend maintenance
 2. Use of an external volume for queue manager's recovery logs and data files
 - Continues to support HA pair for local availability
 - External volume can also be replicated for out-of-region recovery by a remote appliance configured to use mirror



Performance and Capacity

- The IBM MQ Appliance is available in two models, to suit a range of performance and capacity requirements
 - They're not sold on a PVU basis – but approximately 420 & 1400 PVU
- Appliance is dedicated to running messaging server workload
 - No other workload (applications or middleware)
 - Performance should be predictable
 - Capacity planning should be easier
- Firmware comes pre-configured for “good messaging behaviour”
 - Placement of workload, resource utilisation, etc.
- Performance report MPA1 now available
 - Based on latest firmware level (8.0.03),
 - Includes scenario driven examples and M2000A/B comparisons.

Update model / Lifecycle considerations

Basics:

Appliance is on a traditional 5:3 support cycle

Major hardware refreshes are likely to follow DataPower model
(traditionally approximately 3 year)

Firmware updates (fixpacks) published through FixCentral.

Special factors

Taking a 'continuous delivery' model at least for early fixpacks, expect regular updates including new function (see statements of direction following)

Support only provided at latest fixpack – as part of 'standardization' of appliance. Should be less challenging proposition on appliance than elsewhere as no local application code, exits etc.

Key differences compared to installable MQ

- “Hub” pattern; no applications deployed to the appliance
 - Applications must connect as remote clients
- No user exits can be run on the appliance
 - Our intention is to add configurable capabilities to support the needs of many customers’ exits, reducing the need for exits
 - If you currently customise MQ with exits we’d like to talk...
- A pair of appliances can be used for High Availability
 - With no shared file system or shared disk
- Authentication and authorisation via on-board or central repository
- Command-line interface on the appliance is not a general-purpose shell
 - Has familiar commands for things you need
 - e.g. no runmqtsr, because MQ listeners run under QM control

And to close

Summary

- The MQ appliance is available now
- Two models, to suit different uses and performance requirements
- Existing MQ features with simple deployment and administration
 - Including built-in HA support
 - Without customisation via exits
- Expected uses:
 - Messaging hub – consolidate messaging and separate applications
 - Messaging outpost – easily deploy remote messaging server
 - Messaging gateway – managed endpoint for inbound connectivity
 - Messaging partner – confidently deploy remote connectivity

Thank you !

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