# MQ Insourcing

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# Introduction

- MQ has been recognized as a core technology by the company
- The vendor manages MQ as a service and charges the customer for the MQ services provided.
- Leading the MQ insourcing effort for the company and bringing in the right resources and the right technical expertise to get the job done.
- 10 months to insource MQ

# Agenda

1. Plan Build Run Model
2. Strategy
3. Wall Walk Sessions
4. MQ License Consolidation
5. Virtualization Strategies
6. MQ Best Practices
7. Pre-Wave Check
8. Multi Year Product Roadmap
9. Accomplishments
10. Monitoring & Security

# PBR Model (Plan, Build, Run)

| PLAN | BUILD | RUN |
|---|---|---|
| External & Internal drivers<br>• Work intake Process<br>• Project Prioritization | Processes<br>• Definition<br>• Automation | Operation & Management<br>• Incident Management<br>• On Call support |
| Strategies & Objectives<br>• Vendor Management<br>• Service Broker | Middleware Systems<br>• Stability<br>• Security | IT Service Management<br>• Currency<br>• Technology |
| Economics & Business Case<br>• Fiscal planning<br>• Strategic alignment | New Technologies<br>• Certifications<br>• POCs | Service Lifecycle<br>• KTLO<br>• Release Management |
| Business Plan & Model<br>• Process requirements<br>• SLA definition | Infrastructure<br>• New Builds<br>• Optimization<br>• SW Engineering | Business support<br>• Runbooks<br>• Audits |
| Architecture<br>• Standards<br>• Best Practices | Servers, storage, network<br>• DR governance<br>• AIR build partners | Change Management<br>• Infrastructure Changes<br>• MW/App Coordination |
| Performance Measurement<br>• Metrics<br>• Analytics | Data Center Facilities<br>• Ownership<br>• Engineering Clusters | Alerting & Monitoring<br>• Customization<br>• EON & Alert Response |

# Overall Strategy

| Insource | Stabilize | Optimize |
| --- | --- | --- |
| Four work streams:<br>1. Insourcing<br>2. Application Discovery<br>▪ Wall Walks<br>▪ KT Sessions<br>3. Infrastructure<br>▪ Monitoring<br>▪ Security<br>4. KTLO (Keeping the lights on)<br>▪ Work Intake<br>▪ Incident Management | Stabilization Needs:<br>• License cost<br>• MTTR reduction<br>• Right sizing<br>• Standardize Processes<br>• Consistent Communication | Areas of research:<br>• Automation of MQ<br>• Virtualization “Software & Server”<br>• MQ Deployment Patterns (Docker)<br>• Add a low-cost messaging technology option (Active MQ) |

# Wall Walk Topics

- QMGR names (including server names)
- Contact list for applications
- Understanding criticality of the applications
- Availability requirements
- A list of more recent or recurring pain points for applications
- Architectural docs for all applications
- Versions? (MQ/OS/SYSTEM/MOM API)
- Connection Methods (Shared Memory Bindings or Channel Bindings)
- Message options
  - Message Ordering Requirements
  - Volume/Persistence
  - Max Message Length
  - Triggering
- Access/Security Features
- Server Location
  - Network location
  - Physical location
- Maintenance Window (including any Application Release Upgrades)
- Monitoring (current monitoring thresholds per applications)
- Any special deviations? (Ex: based on Criticality, DR, HA, etc.)
- Project Timelines

# MQ Licensing Consolidation

- ILMT Implementation – to determine utilization of MQ on the servers
- Partner World Licensing model for non-prod servers
- Business Partner Licensing for discounts
- 3 models of MQ license costs:
  - Licensing cost for the pass-thru licenses
  - Explore options with the licensing cost for the transfer of licenses from the vendor
  - Business as usual (BAU) from the current vendor

# MQ Virtualization Strategy

- Physical to Virtual Server Migration
- DR Strategies to support this migration
- Server Refresh Projects to speed such initiatives
- MQ Hypervisor Edition

The benefits of this approach include:

- Standardization of software images reduces risk and uncertainty
- Automated provisioning reduces errors
- Repeatable configuration across sets of machines is quicker and less error-prone
- Applying software maintenance is simpler and quicker using the GUI or CLI
- Comprehensive history/audit is maintained
- License tracking is integrated

# MQ Best Practices

- **Plan**
  - Use short names for queue managers and MQ objects
  - Always assign a dead letter queue (DLQ) to the queue manager
  - Use standards like JMS whenever possible
  - Build with performance in mind
  - Avoid location assumptions and fixed queue names in programs
  - When feasible, cluster your MQ servers
  - Design infrastructures with fewer queue managers with more queues
- **Build**
  - Capture completion and reason codes in all application MQI calls
  - Code applications to continually process messages
  - Close and disconnect connections properly
  - Be aware of the different features of various MQ clients

# MQ Best Practices

- **Run**
  - Use security best practices
  - Restrict remote administrative authority on production-level (restricted-access) boxes
  - Do not use the sample get/put utilities for production purposes
  - Use SupportPacs to extend MQ functionality
- **Maintain**
  - When not using third-party configuration tools, automate all configuration and changes via MQSC scripts
  - Use the appropriate logging mechanism
  - Configure automated maintenance of queue managers
  - Schedule and apply fix packs on a regular basis

# Pre-Wave Checklist

- Check access to server (Team Member individual access & ability to su/sudo to mqm)
- Check ability to direct login to mqm
- Identify resources (application points of contact)
- Installation Directory
- File system layout and permission
- File system monitoring
- Error logs
- Scripts and Location
- Toolset available and functions
- Start/stop/status scripts
- Security scheme
- Certificates location
- Blockip data file locations

- Triggered application locations
- Backup locations and approach
- Backup frequency
- Failover/Veritas Cluster configs
- Userid qmgr runs under
- Membership in mqm group
- Storage types and level
- Back up locations and access to these backups
- Environment Owner & Support Contacts
- Unix – Server Admin Contact
- Storage contact
- Network contact

# Middleware MQ Road Map

| | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | | 2020 | | 2021 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 |
| WebSphere MQ V9 | | | | | | | | | | | | | | |
| WebSphere MQ V8 | | | | | | | | | | | | | | |
| WebSphere MQ V7.5 | | | | | | | | | | | | | | |
| WebSphere MQ V7.1 | | | | | | | | | | | | | | |
| WebSphere MQ V7.0 or earlier | | | | | | | | | | | | | | |
| | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 | R1 | R2 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

Emerging Preferred Restricted Obsoleted No Support Available

# Accomplishments

| Accomplishments | In Work |
| --- | --- |
| • Team Hiring (14 FTE's – 1000 qmgrs)<br>• Identify requirements and KT sessions<br>• RACI completed<br>• MQ Roadmap & Product Life Cycle<br>• Problem Management Log<br>• System Owners Wall Walk Sessions<br>• Building Middleware Processes<br>• Finalized Insourcing Waves<br>• Work Intake Process | • Monitoring Solution<br>• ILMT implementation<br>• Virtualization<br>• MQ Clustering Topology |

# MQ Monitoring

- **Requirement**
  - Able to monitor the MQ Admin objects
  - GUI Interface for the application owners to be able to see the objects
  - Control Access to the GUI – ready only
  - Support Costs for the purchase & maintenance
  - Agent-less monitoring
  - Ease of keeping up to date with migrations & upgrades
  - Look at data in the queue
  - Several MQ object threshold monitoring (CURDEPTH, etc.)
  - Alerting via email or using REST API for integration with help desk software
- **Additional (optional)**
  - Backups of MQ objects
  - Automation - automate certain admin level tasks (scheduled backups of configuration, etc.)

# MQ Security

- **MQ Consumers**
  - Consumers normally take the form of the IDs used to execute applications that connect to MQ.
  - Application-account IDs (consumers) should be locked down (use setmqaut)
- **MQ Administrators**
  - Administrators are users who need to interactively query or alter MQ configurations via the included tooling (such as runmqsc)
  - Only members of the MQ administration team should belong to the mqm group.

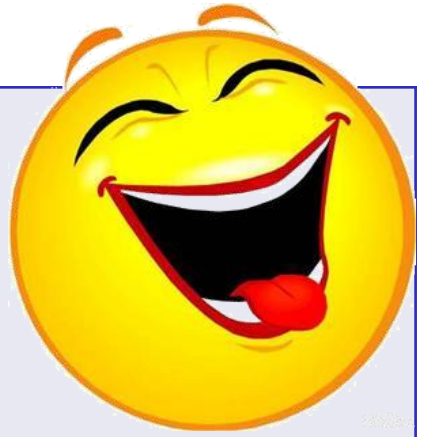
# MQ Support Pacs

- MS0E: runmqadm --- Provides an administrative wrapper that offers runmqsc and administrative-level access to users who are not members of the mqm group, enabling you to grant privileges in a much-more-granular fashion.
- MA01: q utility -- Lets you browse messages and move then between queues.
- MO03: qload utility -- Lets you move messages to and from files, for transport to different systems or for later reuse.
- MS81: MQIPT -- An additional product that works in conjunction with MQ to tunnel connections through firewalls via SSL or HTTP(S). It can be used to aggregate connections from multiple queue managers across a single transport and port.
- MC91: High availability -- Provides scripts and instructions for configuring MQ on highly-available UNIX systems such as HACMP and Sun Cluster.

# Conclusion

- Timelines Wave 3 in progress
- Wave 1, 2 and 3 completed
- Wave 4 in progress
- Operation Process setups complete
- Monitoring product identified
- Sandbox and Test environments setup
- On-call scheduling complete
- Application Contacts identified
- Application Support Model in place – regulating work into our team

# Eh?



- Three queue managers walked into a bar…
  ... so we moved the buffers above it!
- Knock Knock, Who's There?
  .... 2035
- What do Hursley MQ Developers have for lunch?
  … a pub sub!
- Why does Santa like MQ at railway stations?
  … because of its presents on all major platforms!

# Questions & Answers