Session 17057: Not Just Migrating, but Picking up New Enhancements as You Go

We've Given You the Shotgun, You Know Where Your Feet Are…

Neil Johnston & David Coles

IBM Hursley

neilj@uk.ibm.com / *dcoles@uk.ibm.com*

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Agenda

- IBM Software Support Lifecycle
- IBM MQ
    - Distributed Maintenance & Migration
    - z/OS Maintenance & Migration
- IBM Integration Bus
    - Introduction and strategy
    - Fix packs and test fixes
    - Migrating to a new version

IBM Software Support Lifecycle

- View relevant support dates for specific versions
  - http://www.ibm.com/software/support/lifecycle/index.html

- For example,

WebSphere MQ for z/OS

Version: 7.0.1
PID: 5655-R36

License type[1]: ICA

Lifecycle dates[2], announcement letters[3] and other information

GA: 25-Sep-2009, 209-248
EOM: 08-Sep-2014, 914-104
EOS: 30-Sep-2015, 914-150

Lifecycle policy[4]: Other

Last updated: 09-Sep-2014.

IBM Software Support Lifecycle

- States the minimum length of time support will be available

- Begins when the product is available for purchase

- Ends when the product is no longer supported (End of Service)

- Also states the minimum length of time that service extensions will be available for a fee after the effective End of Service date.

IBM Software Support Lifecycle

- As of IBM MQ 7.1:

- Minimum Support period of **5 years**
  - Increased from the previous **3 years**

- Support extensions will now be for:
  - A minimum of **3 years** from EOS
  - Increased from the previous **2 years**

IBM V.R.M.F Terminology

- WebSphere MQ on distributed platforms uses a four digit value called V.R.M.F to indicate the software level
  - Version: **7**.0.0.0
    - Licensed IBM program usually with significant changes
    - Each new version starts a 5 year maintenance clock

  - Release: 7.**1**.0.0
    - Indicates smaller changes, and restarts the 5 year clock

  - Modification: 7.1.**2**.0
    - Full install with fixes and potentially with new functionality

  - Fix: 7.1.2.**3**
    - An update containing cumulative maintenance fixes

Distributed Iterim Fixes

- Available from Fix Central
  - http://http://www.ibm.com/support/fixcentral/
- AKA "Emergency" or "Test" fixes.
- Extend the fix pack naming scheme:
  - The interim fix for APAR IC12345 on 7.1.0.1 is called 7.1.0.1-WS-MQ-Windows-IC12345
- When you apply new fix packs, all interim fixes are removed.
- For the latest available maintenance, see the "Recommended Fixes for WebSphere MQ" Page
  - http://www.ibm.com/support/docview.wss?uid=swg27006037

Maintenance, Upgrade, and Migration

- Maintenance is a **reversible** change to the code level of WebSphere MQ
  - Requires no migration
  - Application of a fix pack, interim fix, or PTF on z/OS
- Upgrading is the process of changing the code level of WebSphere MQ
  - Upgrades can be backed out, as long as no migration has taken place
  - Upgrades that change the command level of WebSphere MQ require queue manager migration before applications can reconnect.
  - An Upgrade is a change in any of the V.R.M.F digits

Maintenance, Upgrade, and Migration

- Migration is the conversion of programs and data to work with a new code level of WebSphere MQ.
    - Some types of migration are required, and some are optional
    - Required after a change to the command level
- New function in maintenance level upgrades
    - e.g. fix pack 7.1.0.15, introduced the command level 712
    - To use new function at command level 712, need to enable it via the **strmqm** command
    - Enabling 712 resets the minimum code level to start the queue manager at 7.1.0.15
        - No going back!

Distributed Migration Suggested Testing

Upgrade Type	Examples	Suggested Testing	WebSphere MQ Migration
Version	6.0, 7.0, 8.0	Full testing of all applications	Yes
Release	7.1, 7.5	Regression test critical applications	
Modification	7.0.1	Regression test critical applications	No
Fix Pack	7.0.1.6, 7.1.0.2	Brief test of critical applications	
Interim fix	7.0.0.1-WS-MQ-Windows-LAIZ50784	Test affected applications	

Distributed Migration Paths

Table 1. Migration paths:WebSphere MQ on platforms other than z/OS

From / To	6.0	7.0.0	7.0.1	7.1	7.5
5.3	WebSphere MQ v6.0 migration guide	Migrating from WebSphere MQ Version 5.3 to WebSphere MQ Version 7.0	— ⚠️	— ⚠️	— ⚠️
6.0	—	Migrating from WebSphere MQ Version 6.0 to WebSphere MQ Version 7.0	Planning for migration from WebSphere(r) MQ version 6.0 to WebSphere(r) MQ version 7.0.1 by platform	Planning for migration from WebSphere(r) MQ version 6.0 to WebSphere(r) MQ version 7.1 by platform	Planning WebSphere MQ version 6.0 to WebSphere MQ version 7.5 migration by platform
7.0.0	Not possible ❌	—	Planning for migration from WebSphere(r) MQ version 7.0 to WebSphere(r) MQ version 7.0.1 by platform	Direct migration from 7.0.0 to 7.1 is supported. Follow the instructions in Planning for migration from WebSphere(r) MQ version 7.0 to WebSphere(r) MQ version 7.1 by platform	Direct migration from 7.0.0 to 7.5 is supported. Follow the instructions in Planning WebSphere MQ version 7.0.1 to WebSphere MQ version 7.5 migration by platform
7.0.1	Not possible ❌	Planning for migration from WebSphere(r) MQ version 7.0 to WebSphere(r) MQ version 7.0.1 by platform[1]	—	Planning for migration from WebSphere(r) MQ version 7.0 to WebSphere(r) MQ version 7.1 by platform	Planning WebSphere MQ version 7.0.1 to WebSphere MQ version 7.5 migration by platform
7.1	Not possible ❌	Not possible ❌	Not possible ❌	—	Planning WebSphere MQ version 7.1 to WebSphere MQ version 7.5 migration by platform
	ℹ️ **Tip:** You can revert a queue manager from version 7.0.1 to version 7.0. You must undo any application or administrative changes you made that took advantage of new functions in version 7.0.1.				

❌ = Not Possible

⚠️ = Possible Indirectly via Intermediate Versions

Distributed "Big-bang" Migration

1. Stop local MQ applications

2. Stop ALL queue managers and listeners

3. Uninstall previous MQ release's fixpacks

4. Uninstall previous MQ release

5. Install new MQ release

6. Restart all queue managers (strmqm)
   1) Queue manager data is migrated at this point
   2) No going back now

7. Restart local MQ applications

Down-time

Multiple MQ Installations (Distributed)

- Up to 128 installations of MQ on a system
    - One can be V7.0.1.6 or later

- Multiple installations can be the same release

- Single data installation shared amongst all installs

- All queue managers share the same name space

How to make migration more flexible

- Install additional MQ code level alongside existing installation while queue managers are still running
    - No need to stop messaging during the installation

- Move queue managers one at a time to the new installation

- Migrate and test applications one at a time

Streamlined Migration (Distributed)

1. Install new MQ release alongside

2. Stop local MQ applications using QM1
3. Stop queue manager QM1
4. Associate QM1 with the new installation
5. Restart QM1 (strmqm)
   1. Queue manager data is migrated at this point
   2. No going back now
6. Restart local MQ applications using QM1

QM1 down-time

7. Stop local MQ applications using QM2
8. Stop queue manager QM2
9. Associate QM2 with the new installation
10. Restart QM2 (strmqm)
    1. Queue manager data is migrated at this point
    2. No going back now
11. Restart local MQ applications using QM2

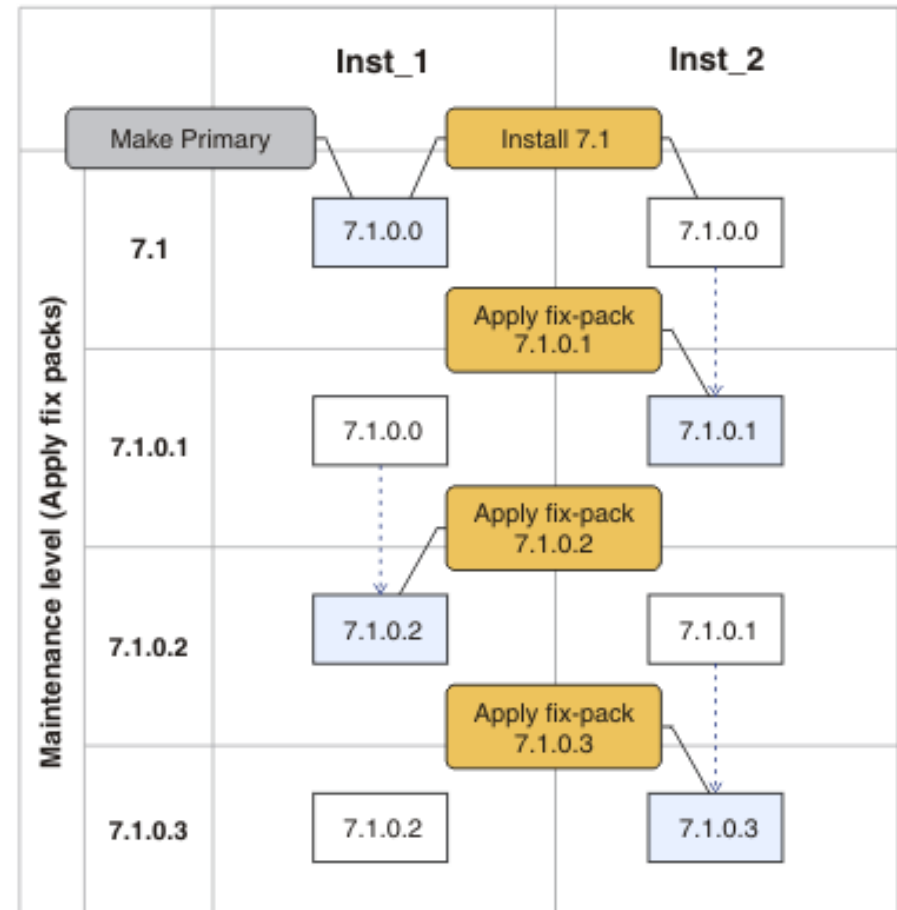**QM2 down-time**

12. Uninstall previous MQ release

Applying Maintenance Rolling Fix Pack Levels

- Can use multiple installations to provide rolling fix pack levels

- Swap between installations

- Makes rollback immediate
  - Setmqm back again

Enabling New Function Delivered Between Releases (Distributed)

- Occasionally, IBM releases new function in modification releases and fix packs
  - e.g. Multi-instance QM in 7.0.1.6, preconnect exit in 7.0.1.4

- We do this to satisfy important requirements between releases

- Any new function introduced between releases must be <u>explicitly</u> enabled if required
  - If new function is not enabled, the fix pack just behaves like a collection of fixes
  - Protects customers against unintentional use of new function and changes in behavior

New Function Switch (Distributed)

- Delivery of significant function between releases accompanied by a new command level
  - For example, v7.1 is CMDLEVEL(710)
  - Any new function, would require a new CMDLEVEL > 710

- New function is enabled by increasing the command level of the queue manager
  - strmqm -e CMDLEVEL=711 QmgrName
    - The queue manager starts up, enables the function, migrates the QM's data, and stops
  - The queue manager can now only be started by an installation that supports this command level (minimum code level)

- If you are going to enable new function, try it out on a test system first, regression test your applications and then move into production
  - Treat it like taking a new version
  - But if you don't want the new function, you can safely just ignore it

Distributed Fix Packs

- Fix Packs have planned dates
    - http://www.ibm.com/support/docview.wss?uid=swg27006309

- Use them to help you plan your future maintenance

Recommendation:
Stay current with your fix pack levels

z/OS Versioning

- z/OS Versioning
  - Version Release Modification
  - e.g. V7R1M0 or V710 or V7.1.0

- No Fix Packs (except Java)
- RSUs from CST
  - Recommended Service Upgrade
  - Consolidated Service Test (CST)

- See the "Consolidated Service Test and the RSU" Page
  - www.ibm.com/systems/z/os/zos/support/servicetest/

Preventative Service Planning Buckets

- Gathers lots of related information in one place:
    - Installation information
    - General information
    - Service recommendations (HIPER fixes)
    - Cross-product dependencies (Related fixes)

- Quick link:
    - http://ibm.biz/mq-pspb

z/OS Maintenance

- Only option in the past.....
  - Pick and choose your PTFs
  - Try to keep up to date with HIPERs, PE fixes...
  - Every installation can be a little different....

- Today you might choose....
  - The CST team tests all the current PTFs for these products together, so that we can recommend PTF service for z/OS and key subsystems together in one RSU sourceid, free of charge to all z/OS customers

CST – What is tested together?

- CICS Transaction Gateway for z/OS
- CICS Transaction Server for z/OS
- DB2 for z/OS
- DB2 Connect
- Geographically Dispersed Parallel Sysplex (GDPS/PPRC)
- IMS
- IRLM
- JAVA

- WebSphere Application Server for z/OS
- **IBM MQ for z/OS**
- z/OS
- z/OS Problem Determination Tools
- IBM DB2 and IMS Tools
- IBM Tivoli (products listed in quarterly report)
- IBM Tivoli Composite Application Manager for Transactions

z/OS RSUs

- Recommended Service Upgrade
- Tested on a quarterly cycle.
    - RSU1503, RSU1412, RSU1409, RSU1406...
- Plus monthly updates
- Current quarterly RSU: **RSU1412**
    - All service through the end of **September 2014** not already marked RSU.
    - PE resolution and HIPER/Security/Integrity/Pervasive PTFs and their associated requisites and supersedes through **November 2014**.

z/OS RSUs

- Current **monthly** RSU: **RSU1501**
  - Based upon the previous quarter, this addendum contains PE resolution or HIPER/Security/Integrity/Pervasive PTFs and their associated requisites and supersedes through **December 2014.**

z/OS Getting an RSU

- Order a current preventive service deliverable
  - ShopzSeries - http://www.ibm.com/software/shopzseries
  - Effective with SMP/E V3.4, you can also use **SMP/E Internet Service Retrieval** to order preventive service, with options to specify:
    - Critical service
    - Recommended service, which includes Recommended Service Update SOURCEID (RSUyynn) and all PTFs that resolve HIPER problems or PTFs in error (critical service)
    - All service includes all currently available PTFs.
- SMP/E APPLY CHECK, then APPLY specifying the RSU in the SOURCEID

z/OS RSUs - Disclaimer

- Please note that the service recommendations we make are based on testing in our own environment. Your environment and applications will differ, and therefore, your results may also. All of the information, download files, and recommendations are provided on an "AS IS" basis without warranties of any kind, express or implied, including without limitation any implied warranties of merchantability, fitness for a particular purpose or title. Reliance on this document is at the customer's sole risk and IBM will not be liable for any damages, direct or indirect, in connection with this or actions taken based on the recommendations made......

- You still need to perform your own testing with your own applications!

z/OS Migration

- Forwards and backwards between versions
- Going forwards...
  - Install new version and restart your queue manager at new level of code
- Going backwards...
  - Restart queue manager at previous level of code
    - If, and only if, you remembered to apply the backwards migration PTFs
    - And... you didn't set OPMODE to NEWFUNC

z/OS Migration PTF Webpage

- http://www.ibm.com/support/docview.wss?rs=171&uid=swg27006519

	Migration APARs for Websphere MQ for z/OS V7.1.0				
APAR	CLOSE DATE yy/mm/dd	PTF #	HIPER or SPEC/ATTN	RSU level	Description/comments
PI28769	14/11/19	UI22852	HIPER		CSQY291E CSQWDSDM SDUMPX FAILED, RC=B08 5C6-00C94300 DMC-CSQIRRSI,M=CSQGFRCV, LOC=CSQ This APAR fixes PE'd APAR PI14223 Note: UI22852 does not supersede UI21877 so both are required
PI14223	14/09/30	UI21877			CSQM095I +MQOX CSQMAQLC QLOCAL QSGDISP(SHARED) ALREADY EXISTS This APAR fixes PE'd APAR PI19721
PI19721	14/10/02	UI21967			BACKWARDS MIGRATION FROM V8 AND COEXISTENCE WITH V8
PM58871	12/04/30	UK78436		1209	V710 CSQ5PQSG MIGRATE DSG/QSG incorrectly reporting that the DSG is ready to be migrated

z/OS Fix Categories

- IBM Fix Categories (FIXCATs):
- Used to group and associate PTFs to a particular category
- **IBM.Coexistence.MQ.V8R0M0**
    - Fixes that allow WebSphere MQ for z/OS **V7.0.1** and WebSphere MQ for z/OS **V7.1** to coexist with, and fallback from WebSphere MQ for z/OS **V8.0**.
- **IBM.Coexistence.MQ.V7R1M0**
    - Fixes that allow WebSphere MQ for z/OS **V6** and WebSphere MQ for z/OS **V7.0.1** to coexist with, and fallback from WebSphere MQ for z/OS **V7.1**.
- SMP/E can advise as to missing PTFs:
    - `REPORT MISSINGFIX ZONES(mqtgtzone) FIXCAT(IBM.Coexistence.MQ.V7R1M0).`

z/OS Migration Paths

Table 2. Migration paths: WebSphere MQ for z/OS

From / To	< 5.3.1	6.0	7.0.0	7.0.1	7.1
< 5.3.1	—	Migrating from an unsupported release of	Upgrading from an unsupported release of		
5.3.0 / 5.3.1	Chapter 3. Migrating from a previous version	Migrating to Version 6			
6.0	Reverting to previous versions	—	Upgrading to MQ for Version 7.0	: Planning for migration from MQ version 6.0 to MQ version 7.0.1	z/OS: Planning for migration from WebSphere MQ version 6.0 to WebSphere MQ version 7.1
7.0.0		Reverting to previous versions	—	: Planning for migration from MQ version 7.0 to MQ version 7.0.1	—
7.0.1		: Restoring a version 7.0.1 queue manager to version 6.0	: Restoring a version 7.0.1 queue manager to version 7.0	—	z/OS: Planning for migration from WebSphere MQ version 7.0.1 to WebSphere MQ version 7.1
7.1		z/OS: Reverting a version 7.1 queue manager to version 6.0	—	z/OS: Reverting a version 7.1 queue manager to version 7.0.1	—

Quick link to this table: https://ibm.biz/mqmigpaths

z/OS Migration – From Old Versions

- z/OS queue manager remains capable of migrating from older versions.

- Very old versions will be unsupported so test it first with cloned queue manager.

- Backward migration will only work to a supported level as per table in the Information Center.
  - Don't forget to apply the backwards migration PTFs to the old version first.

z/OS Migration – Technotes

- Search for relevant migration and installation technotes:

- WebSphere MQ for z/OS V7.1.0 migration and installation
    - http://www.ibm.com/support/docview.wss?uid=swg21596103

- WebSphere MQ for z/OS V7.0.1 migration and installation
    - http://www.ibm.com/support/docview.wss?uid=swg21406779

z/OS Migration – Queue Sharing Groups

- Need to apply coexistence PTF to older queue managers (and restart) before you start upgrading.
    - Queue managers must be at least V6.0 with coexistence PTF applied
- All queue managers should be at the same 'new' level before updating the CFLEVEL
    - Policed from V710 onwards
- Only run a 'mixed' level of queue managers in a QSG for as long as it takes to upgrade them all. Not advised long term.
- CFLEVEL change will be behind OPMODE(NEWFUNC) parameter so backwards migration will be unavailable.
    - Restart is required after setting OPMODE(NEWFUNC)

Migration – Clustering

- All at once or one at a time (staged migration)
- Migrate full repositories before partials
- Queue managers can interoperate with other cluster queue managers running at different versions
- Recommend you complete migration of whole cluster before starting to use new functions
- If you do have to start using new functions before completing migration of the entire cluster, you might need to refresh the partial repositories
  - See the "Queue manager cluster migration" for more details

Infocenter Migration Documentation

- Knowledge Center documentation on migration improved

  ▼ **Migrating and upgrading**
  - ▸ Introduction to IBM MQ migration
    - Introduction to changes on Windows
    - Migration planning on UNIX systems, Windows and IBM i
  - ▸ z/OS: Migration planning to the latest release
    - UNIX, Linux, and Windows: Single-stage migration from version 7.0.1 to the latest version
    - UNIX, Linux, and Windows: Side-by-side migration from version 7.0.1 to the latest version
    - UNIX, Linux, and Windows: Multi-stage migration from version 7.0.1 to the latest version
  - ▸ Migrating MQ Telemetry from V7.0.1 to V8.0
    - Upgrading an entire IBM MQ system
  - ▸ Migrating a queue manager
    - Migrating IBM MQ loading library
  - ▸ Migrating clients from V7.1 to V8.0
  - ▸ Migrating applications to the latest version of the product
  - ▸ Migrating IBM MQ for z/OS - order of tasks
    - Adding a new queue-sharing group
    - Migrating queue-sharing groups
  - ▸ Migrating a cluster of queue managers

Message Broker & IBM Integration Bus

Migration and Maintenance with WMB and IIB

- Update the product by:
  - Applying test/iFixes
  - Applying fixpacks
  - Moving to a new version
- Each has its own unique concerns, challenges and best practice
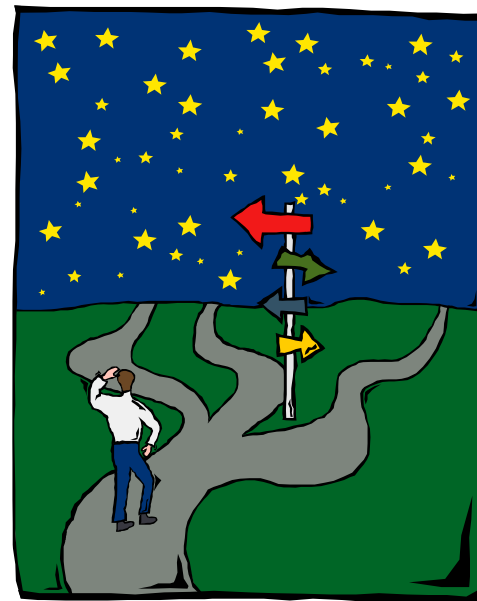
Notes

- When we think about Migration and Maintenance in the context of WebSphere Message Broker and IBM Integration Bus we begin to think about 3 distinct use cases.
  - Applying a test / interim fix
  - Applying a fix pack
  - Moving (migrating) to a new version.
- Each of these brings their own unique concerns and challenges and also their own pitfalls that need to be avoided and best practice that should be followed. This section of the presentation will run you through the concerns and challenges that are relevant in each of the 3 areas.

Maintenance strategy

- Aim to release at least two fix packs each year for each release
  - Currently in service v7 (EOS Sep 2015) / v8 / v9 (and soon v10 – March 27th 2015)
- Each fix pack is a roll-up of all of the APARs on a current release at that point
- This roll-up is fully tested
- Fix packs are cumulative
  - You don't need to apply all of them in sequence
- Keep abreast of the planned maintenance
  http://www-01.ibm.com/support/docview.wss?rs=849&uid=swg27006308
- Fix packs available from Fix Central or Shopz
- Each closed APAR contains a fix pack target

- Individual fixes can be requested/supplied outside of a fix pack
 - Some available on Fix Central

Notes

- This slides aims to give an overview of the WebSphere Message Broker and IBM Integration Bus maintenance strategy. We aim to release two fix packs a year for each release which is in service (currently v7/v8/v9) and these fix packs will be a roll-up of all of the APARs on a given release at the point at which we start testing.

- Each fix pack is fully tested and each fix pack is cumulative, so it will include all fixes that were in previous fix packs and thus you don't need to apply all of the fix packs to move up to the latest.

- When an APAR is closed it will contain some trailer information in the problem conclusion which lists the fix packs which it is targeted to be included in and this is published on the web. We also publish a list of planned maintenance dates for the next fix packs. Once released the fix packs are available for download from Fix Central or Shopz.

- If you have a particular APAR which you require a fix for then you can request a build of this outside of a fix pack via the PMR process. Occasionally as part of a security update we may also make some Interim Fixes available on Fix Central and these will be available to all entitled customers.

Before applying service

- Review the online readme for the fix pack
  - This will list anything late breaking which you need to be aware of

- Review the Fix List and included component versions
  - Do you have existing fixes applied to your current installation?
  - Do you require additional fixes?

- Check the "New function added in Version xx fix packs" section of the Infocenter
  - Will you need to enable fix pack capability for new function

- Work out your test plan
  - Sometimes customer's rely on broken behaviour
  - Sometimes we break things

- Do you need to update the Toolkit and Explorer as well?
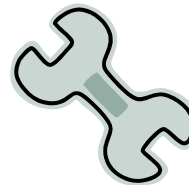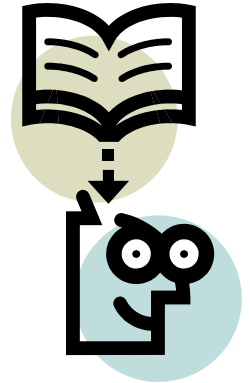
Notes

- Before applying a new fix pack or a test fix you should always go through a process of due diligence.

- Review the online readme for the fix pack. Anything late breaking that we don't have time to resolve, make an Infocenter update for, or recommended fixes for other products will go in there.

- Review the fix list for the fix pack and the list of included component versions. Message Broker and Integration Bus ships several other IBM components, such as the WebSphere Adapters, and we list these versions on our fix pack page. Review of this information is essential if you have any APARs or test fixes applied to your current fix pack installation which you require and need to ensure that they are included in the new fix pack, or so that you can request new fix builds through the PMR process as generally test fixes are applicable to one specific version and platform only.

- If you want to take advantage of new functions which has been introduced in a fix pack then review the relevant Infocenter topic to see if you need to enable this new function.

- As with any changes to your system you should work out what testing you need to carry out before you roll the update in to production. Whilst we do fully test each fix pack we do find that occasionally we fix something that customer's previously relied on to be broken, or something escapes our testing.

- As well as updating the broker runtime you should also consider updating the Message Broker Toolkit and Message Broker Explorer which will be updated in-line with the runtime to a new fix pack level.
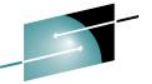
Test / Interim Fix - Distributed

- Supplied as a compressed archive
  - Readme which includes fix details and instructions
  - Replacement files

- Install using mqsifixinst script
  - Script supplied with all fixes
  - Automates the backup, install and validation of test fix install
  - The script
    - Verifies that the fix is being applied to the correct version and platform
    - Verifies that there are no clashing fixes
    - Verifies that the installation is not in use
    - Backs up the existing files
    - Installs the replacement files
    - Installs the readme and control files
    - Copies the script to the install root ready for uninstall
  - Can also use uninstall applied fixes
  - "*mqsiservice –v*" lists fixes installed in this way

- When requesting fixes we need to know:
  - Platform & bitness
  - Version & fix pack level
  - If you have any other fixes applied

Notes

- Every now and then it becomes necessary for IBM to deliver a test fix. Either as a result of an APAR, for new function or for a security update. Depending on the type these can either be requested through a PMR or downloaded from Fix Central.

- Test fixes need to be installed by the user using the mqsifixinst script. They are supplied as a compressed archive (tar.Z/tar.gz/zip) which contains the files that make up the fix as well as a readme and the install script. The readme contains details about the fix, what it includes and instructions on how to apply it. The user needs to follow these instructions to install the fix and should also ensure that the readme contains the fixes which are expected especially when requesting multiple APARs.

- The mqsifixinst.sh and mqsifixinst.cmd scripts automate the install and uninstall process for IBM Integration Bus and WebSphere Message Broker fixes.
  - For the install process, it backs up the files that are to be replaced to a fixed location under the product installation directory before copying over the new files.
  - The uninstall process will re-instate the files that were saved during the fix install process.
  - The script will also check for conflicts with other test fixes that have been previously been applied using the mqsifixinst script, but it cannot detect conflicts with fixes that have been applied manually.

- Follow any additional special instructions listed in the readme where applicable.

mqsifixinst example

Fix Pack - Distributed

- Fix pack install looks like the full product install
  - No manual copying of files

- User gets to choose install location
  - Can overwrite current installation (not recommended)
  - Install alongside current installation (recommended)
    - This gives the opportunity to try out the new install, giving the option to easily rollback
    - Just apply the appropriate mqsiprofile and start

- Remember
  - Don't update the installation with configuration changes
    - Add jars to shared-classes or deploy
    - Update /var/mqsi/profiles with custom environment variables
    - Don't use shipped cacerts - configure truststore at broker or eg level
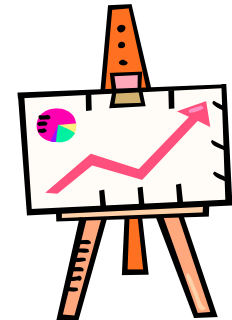
Notes

- Fix pack installs look very similar to the original product install. You run a setup executable which can be run in gui, console or silent mode and gives you the option to choose where to install the fix pack too. We would always recommend that you install a fix pack to a different location to the original install. This brings a number of benefits: 1 – You can quickly roll back to the previous fix pack in the event of an error being encountered; 2 – you don't have to update every broker on a system at the same time; 3 – you can test out the install with a test broker before committing to the new fix pack. To do this you need to ensure that you don't modify the install with configuration changes that can be made elsewhere, eg updating cacerts, mqsiprofile or and of the classes directories. This is best practice anyway as it gives you the option to have different configurations for different brokers running on the same system and a lot of these directories get deleted and recreated during an install anyway and thus any updates would be lost.

z/OS

- Shipped as SMPE installables, PTFs/USERMODs

- Fix Packs available which match distributed
  - Spread across 4/5 PTFs which are co-req'd
  - Receive, Apply & Accept
  - Normally supersedes the previous fix packs PTFs
  - Ensure you take note of the HOLDDATA in the PTFs
    - Watch out for updates to the JCL which require re-customization

- Test fixes sent as USERMODs
  - Receive & Apply but **do not accept**
  - Need to remove before applying the next fix pack
  - Only fix packs are released as PTFs, not individual test fixes

- Same best practice as on distributed, do not make configuration changes to the install
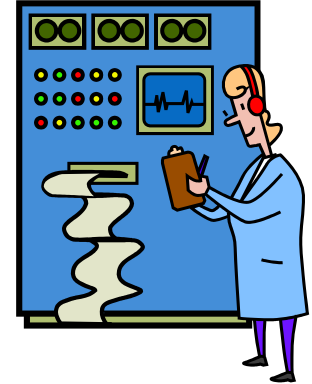
Notes

- All z/OS maintenance is shipped as SMPE installables, either USERMODs or PTFs.
- Fix packs which map to the same content as the distributed fix packs is shipped as PTFs, usually 4 or 5 depending on the product version which are co-req'd together. These should be apply'ed and accept'ed into your Message Broker or Integration Bus SMPE zones and then you can distribute the installation in the normal manner. As with distributed each fix pack is cumulative and so we don't normally pre-req previous fix pack PTFs meaning you can just apply the latest ones. One key thing to note is the HOLDDATA contained within the PTFs and you should pay particular attention to any updates to the JCL members which require some amount of re-customization. We have found numerous times in the past where we have updated the JCL to fix issues and customer's still hit these issues at later fix packs because they did not re-customize their Broker JCL.
- z/OS test fixes are sent as USERMODs. These need to be applied, but not accepted. They should not be accepted because they will not be superseded by future fix pack PTFs. If they are accepted then a user will need to 'reinstall' the product to upgrade to the next fix pack. When you have a test fix USERMOD applied then you will need to remove this before you apply the next set of fix pack PTFs.
- The same best practice advice applies as on distributed, do not make configuration changes to the install as these may be overwritten by a fix pack install.

Before migrating to a new version…

- Review the online readme for the new version
  - This will list anything late breaking which you need to be aware of

- Read the "Preparing for migration" section of the infocenter
  - In particular the "Behavioral changes in Version xx" section

- Review the hardware and software requirements for the new version

- Work out your test plan
  - Sometimes customer's rely on broken behaviour
  - Sometimes we break things

- Plan on upgrading the Toolkit and Explorer as well as the runtime

- Decide on your upgrade strategy
  - Migrate existing components (not recommended)
  - Create new components at the new version (recommended)
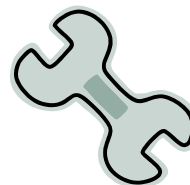
Notes

- Before you start migrating it's always best to review the latest information about the release to ensure you are aware of the latest pitfalls or best practice. The online readme contains the latest and greatest information. Find information that was too late for the Infocenter update and any latest recommended APARs and best practice advice. The Infocenter contains information you must read around any behavioural changes in the new version that you may have to take account of. When we bring out a new version we do update our minimum supported levels of hardware/software so it's always best to ensure that you review these before migrating, Pay particular attention to any fix pack levels and fixes that are required, these generally aren't listed for fun, but to resolve a particular problem.

- As with applying a fix pack, ensure that you run your normal suite of tests that you used to validate your applications before they were first put into production – you do have some don't you? Occasionally we have found customers that rely on previously 'broken' behaviour that was fixed in a new release, or we occasionally break things in a new release and it's always best to find these things in testing.

- Once you're ready to upgrade you need to decide on your upgrade strategy, You can either migrate components in place or create new components and deploy everything there. From a service perspective we would always recommend customers to create new components, configure and deploy your applications, then test the new broker before bringing it online in production. This gives you the opportunity to fully test the new version in your production environment before bringing it online and also allows you to fall back to the old and untouched broker if things don't go well. Creating a new broker also makes sure that you know how to create and configure a new broker which is always good in case of disaster recovery!

- Along with a new version of the runtime the Message Broker Toolkit and Explorer should be upgraded to the new version. You can install the new toolkit and open it up pointing it at your old workspace and it will guide you through any necessary migration of the resources.

- References
  - Product readmes: http://www-01.ibm.com/support/docview.wss?uid=swg27006913

Migrate existing components

- Do you have hardcoded component name requirements?
  - If not why don't you create a new broker?

- mqsimigratecomponents command
  - Migrates broker definition to a new version
    - Updates registry, MQ and configuration data as appropriate
    - Can be run in stages to suit user authorisation requirements
  - Run check mode (-c) before and after running mqsimigratecomponents
  - Can also rollback a migration

- Environment setup required before and after
  - Before
    - Install new version
    - Configure ODBC definitions (if required)
  - After
    - Broker configuration changes
    - Environment settings
    - Update started task definitions (z/OS)

- Read the Infocenter instructions

Notes

- Actual migration of the broker component is performed by the mqsimigratecomponents command. This updates the registry values for the broker, MQ definitions & configuration data as required, You can also use this command to rollback a migration if you want to return your broker component to the previous version.

- Experience tells us that whilst the mqsimigratecomponents command does not need to do much and normally completes successfully, most problems with migration is around the environment configuration. Also customer's normally experience problems with their production environments and not their test environments where the test system migration runs successfully! So if you can we would always encourage you to create a new broker and test the new version in parallel to the existing version and switch across when ready.

- Before performing the actual migration then run the mqsimigratecomponents command with the -c option to run a check on the migration. This should highlight any issues that may be encountered during the real migration. Once migration has completed, run with the -c option again to ensure that the migration completed successfully.

- There is a certain amount of environment configuration for the new version that needs to be completed either before or after a migration. Depending on the broker versions involved in the migration you may also need to update some broker configuration settings too. And on z/OS, don't forget to copy in the new started task definition.

Migrating broker runtime to IBM Integration Bus

- V9 supported from V6.1 / V7 and V8
- V10 supported from V7 / V8 and V9

- Install new version
- Back-up current resources and components
- Update ODBC definitions (if applicable)
- Perform in-place or parallel migration
- MSCS / multi-instance broker considerations

- If migrating from V6.1 you also need to consider
  - Migrating ACLs
    - No Config Manager from V7
  - No database requirement
    - Do you use ODBC in your message flows?
  - Migrating publish/subscribe applications
  - Migrating z/OS applications compiled at 32bit
    - V7+ is 64bit on z/OS
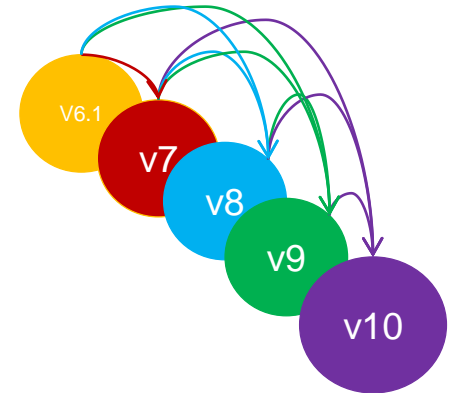
Notes

- Migrating to IB v9 is supported from v6.1, v7 and v8 and migration to IB v10 is supported from v7, v8 and v9. As explained on the previous slides you have two options, an in-place (mqsimigratecomponents) migration, or a parallel migration (create new broker).

- First step on any migration is to install and configure the new version. Version 8 uses a new install technology which offers fundamentally the same install experiences as before with gui, console or silent installs.

- Before performing any migration we would always recommend that a full backup should be performed of your existing environment.

- If migrating from v6.1 then you will need to update your ODBC definitions for v9, so that v9 can access the configuration data stored in the broker database and migrate it to the new file system repository used from v7 onwards. If you use ODBC database connections in your message flows then you will also need to setup the relevant ODBC configuration for v9.

- There are special considerations and extra steps that need to be taken in to account when performing an in-place migration where your broker is configured to use Microsoft Cluster Services (MSCS) or is configured as a multi-instance broker. In both cases you need to ensure that you migrate both instances at the same time before restarting the broker post migration.

- For users migrating from v6.1 there are some extra things you need to consider post migration to v9 due to the removal of the configuration manager and broker database from v7 onwards. The configuration manager used to take care of the administration access control in v6.1 using ACLs and this is now handled by the broker using a new MQ based security model so you will need to enable and configure access control on your v9 broker. After migrating to v9 you may be able to remove your ODBC configuration and database if you don't use a database in your message flows. The publish subscribe engine was removed from message broker in v7 and comparable functionality now exists in the Queue Manger as of MQ v7. If you use this functionality as part of your message broker application then you will have to refer to the publish subscribe migration topics in the Infocenter for what you need to do. MB v7+ is 64bit on z/OS and so you will need to recompile any c plugin nodes, parsers or exits which you use to be 64bit.

- References
  - V9 Infocenter migration:
  - http://pic.dhe.ibm.com/infocenter/wmbhelp/v9r0m0/index.jsp?topic=%2Fcom.ibm.etools.mft.doc%2Fbh23310_.htm

Conclusions

- Test
- Read the documentation, readme and fix lists
  - Take note of the changes in new versions
- Do some more testing!

	Monday	Tuesday	Wednesday	Thursday	Friday
08:30			17060: Understanding MQ Deployment Choices and Use Cases	17051: Application Programming with MQ Verbs [z/OS & Distributed]	16544: Why Shouldn't I Be Able To Open This Queue? MQ and CICS Security Topics Room: Willow B
10:00	17036: Introduction to MQ - Can MQ Really Make My Life Easier? [z/OS & Distributed]		17052: MQ Beyond the Basics - Advanced API and Internals Overview [z/OS & Distributed] 17035: MQ for z/OS, Using and Abusing New Hardware and the New V8 Features [z/OS] Room: Willow B	17054: Nobody Uses Files Any More do They? New Technologies for Old Technology, File Processing in MQ MFT and IIB [z/OS & Distributed]	17057: Not Just Migrating, but Picking up New Enhancements as You Go - We've Given You the Shotgun, You Know Where Your Feet Are [z/OS & Distributed]
11:15	17041: First Steps with IBM Integration Bus: Application Integration in the New World [z/OS & Distributed]		16732: MQ V8 Hands- on Labs! MQ V8 with CICS and COBOL! MQ SMF Labs! Room: Redwood	17046: Paging Dr. MQ - Health Check Your Queue Managers to Ensure They Won't Be Calling in Sick! [z/OS]	17053: MQ & DB2 – MQ Verbs in DB2 & InfoSphere Data Replication (Q Replication) Performance [z/OS]
01:45	17037: All About the New MQ V8 [z/OS & Distributed]	17034: MQ Security: New V8 Features Deep Dive [z/OS & Distributed]	17040: Using IBM WebSphere Application Server and IBM MQ Together [z/OS & Distributed]	17062: End to End Security of My Queue Manager on z/OS [z/OS]	All sessions in Seneca unless otherwise noted.
03:15	17042: What's New in IBM Integration Bus [z/OS & Distributed]	17065: Under the hood of IBM Integration Bus on z/OS - WLM, SMF, AT-TLS, and more [z/OS]	17043: The Do's and Don'ts of IBM Integration Bus Performance [z/OS & Distributed]	17039: Clustering Queue Managers - Making Life Easier by Automating Administration and Scaling for Performance [z/OS & Distributed]	
04:30	17059: IBM MQ: Are z/OS & Distributed Platforms like Oil & Water? [z/OS & Distributed]	17055: What's the Cloud Going to Do to My MQ Network?	17044: But Wait, There's More MQ SMF Data Now?!?! - Monitoring your Channels Using V8's New Chinit SMF Data [z/OS]	17068: Monitoring and Auditing MQ [z/OS & Distributed]	

Please fill in your evaluations, Session 17057.