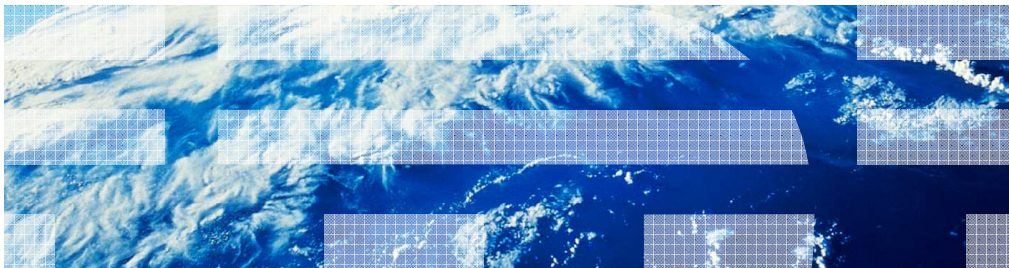

WebSphere Message Broker Version 7

Migration of Message Broker applications



This session will describe the detailed steps required to migrate your existing applications to WebSphere® Message Broker version 7.

Agenda

- How To Migrate
 - WebSphere Event Broker version 6.0
 - WebSphere Event Broker version 6.1
 - WebSphere Message Broker version 6.0
 - WebSphere Message Broker version 6.1

- To
 - WebSphere Message Broker version 7.0

This session will describe the migration steps required to migrate your applications from both Message Broker version 6.0 and 6.1 to Message Broker version 7. It will cover both the Message Broker and Event Broker flavors of migration, although you should not that there is no Event Broker flavor in version 7.

Almost all migration tasks apply equally to Event Broker and Message Broker, so this session will focus primarily on Message Broker. However, most Event Broker usage is related to publish / subscribe scenarios, so the anticipated migration path is most likely to be to WebSphere MQ version 7, rather than to Message Broker version 7.

Migration philosophy

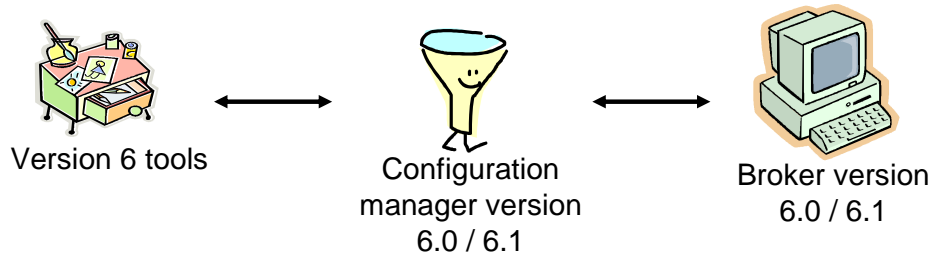
- WebSphere Message Broker version 7 has a radically simpler architecture than earlier versions
 - No Configuration Manager
 - No broker database
 - Converged publish / subscribe with WebSphere MQ

- Migration to version 7 might involve infrastructure and operational changes in Message Broker environments
 - How to minimize this migration effort
 - How to minimize the inter-version coexistence considerations

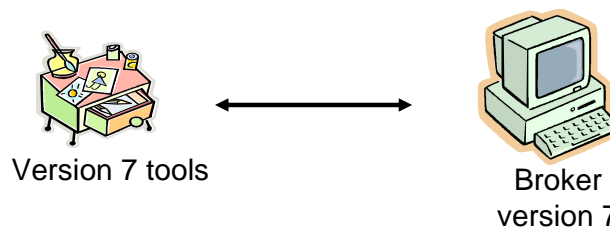
As described in other IBM Education Assistant sessions, WebSphere Message Broker version 7 has significantly changed the internal product architecture. The removal of the Configuration Manager and broker database, combined with the move of the publish / subscribe components to MQ, has simplified the deployment architecture.

These changes are reflected in the migration steps to move your existing applications to version 7. In previous migrations, it was often possible to combine components from different versions. For example, you can use a version 6.1 Toolkit to connect to a version 6.0 broker. In the case of migration to version 7, this component mixing is not possible, and all components must be at the same product level.

Supported component combinations



Use version 6.0/6.1 tools to manage version 6.0/6.1 brokers, version 7 tools to manage version 7 brokers



This slide shows the main migration guideline for moving to Message Broker version 7. The components shown in the top half of this slide allow many components to interact across versions. Note that not all of these combinations are supported, but a common scenario is to use the version 6.1 Toolkit to connect to the version 6.0 Configuration Manager and Broker.

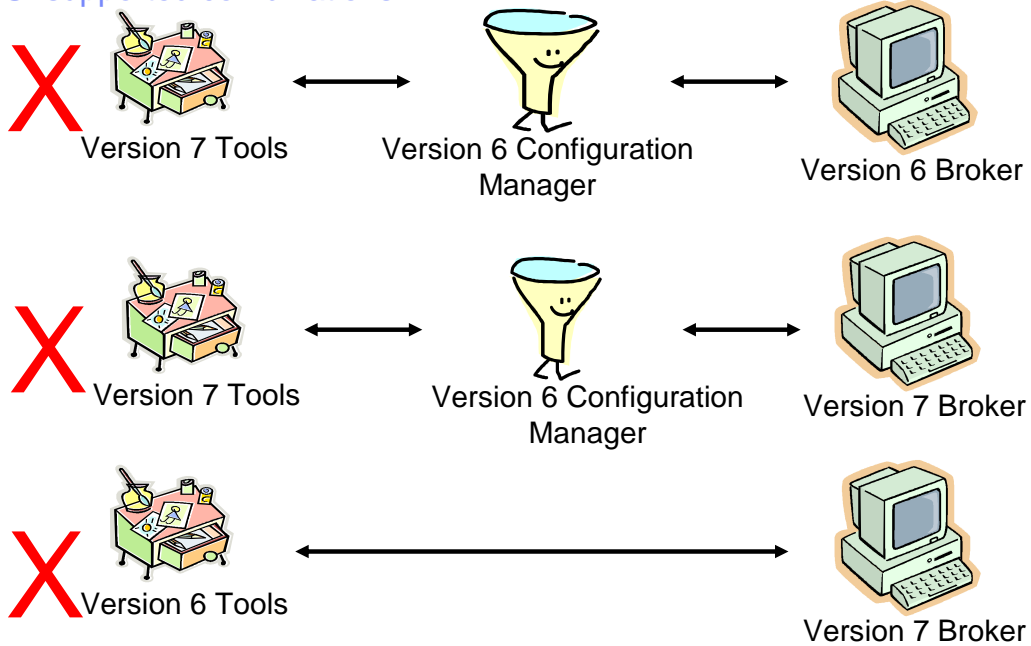
On this slide, version 6 tools refers to the V6.0 and 6.1 Message Broker Toolkit.

Version 7 Tools refer to both the version 7 Message Broker Toolkit and Message Broker Explorer, and the command and API interfaces.

The Message Broker version 6 components only work with other version 6 components, namely the Toolkit, Configuration Manager, User Name Server and Broker.

The Message Broker version 7 components will only work with other version 7 components, namely the Toolkit, Message Broker Explorer and Broker runtime.

Unsupported combinations



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Migration Message Flow Migration

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This clear separation of versions means that there are certain combinations of product components that are not supported. No version 7 component can connect to any version 6 component.

In particular, the Message Broker Explorer can only connect to version 7 brokers. During your migration period, you will probably have some brokers at the version 7 level, and some still at the version 6.0 or 6.1 level. The brokers at the old version cannot be connected or managed using the MB Explorer.

Summary of the migration process

- Step 1 - Install WebSphere WebSphere MQ Version 7.0.1
 - Message Broker version 7 requires MQ Version 7.0.1
 - Check the latest i-fix requirements on the Broker service Web pages
 - WebSphere MQ Version 7.0.1 is supported for use with Message Broker version 6.0 fixpack 9 or version 6.1 fixpack 3
- Step 2 - Install the WebSphere Message Broker Version 7 components (Runtime, Toolkit, Message Broker Explorer)
 - Use the Default Configuration Wizard to create a test broker environment
- Step 3 - stage migration of your existing brokers
 - Message Broker Version 7 can be installed (and run) alongside Version 6.0/1
 - Use Version 6.0/1 tools to work with Version 6.0/1 brokers, Version 7 tools to work with Version 7 brokers

Migration to Message Broker version 7 has three primary stages.

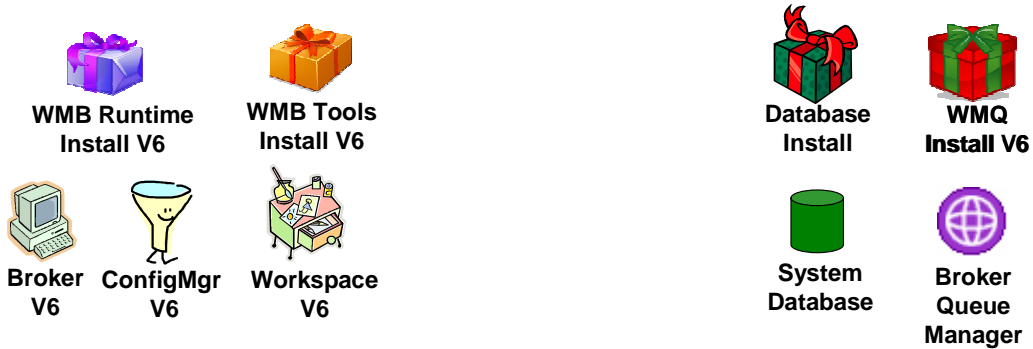
First, you should migrate the underlying WebSphere MQ installation to MQ version 7.0.1. This is required by Message Broker version 7. To enable this, both Message Broker versions 6.0 and 6.1 support MQ version 7.0.1. Version 6.0 requires fixpack 9 and version 6.1 requires fixpack 3 for this support.

Second, install the required Message Broker version 7 product components. Providing the operating system requirements are fulfilled, you can install these components alongside Message Broker version 6.0 and 6.1. On the Windows and Linux platforms, the version 7 Message Broker Toolkit can be installed alongside the version 6.0 and 6.1 Toolkit. The Message Broker Explorer is a plug-in to the MQ Explorer, and requires WebSphere MQ version 7.0.1. The MB Explorer is derived from the "IS02" support pack. If you had this support pack installed previously, you should uninstall this support pack, before installing the Message Broker Explorer.

At this point, you can use the default configuration wizard to create the default broker, or use the supplied tools to create broker instances with you own specifications.

Finally, migrate your existing applications to version 7. This can be done in a staged way, or all at once. The rest of this session will describe these options in more detail.

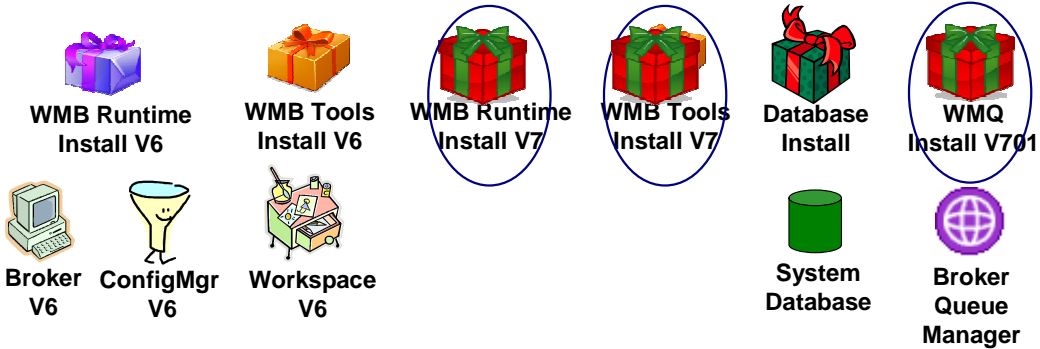
Migration starting point – version 6 components running



This slide shows the typical starting point for a migration. On the left, the Message Broker version 6 components, including both the product installations and the artifacts that you will create, such as the Toolkit workspaces. On the right are the pre-requisite components for the version 6 brokers. These are the product installations for MQ version 6 and database for the broker, and the defined components themselves, which are the queue manager and database instance.

Note that on this slide, and those following, version 6 broker refers to both version 6.0 and version 6.1.

Install new MQ and Message Broker versions



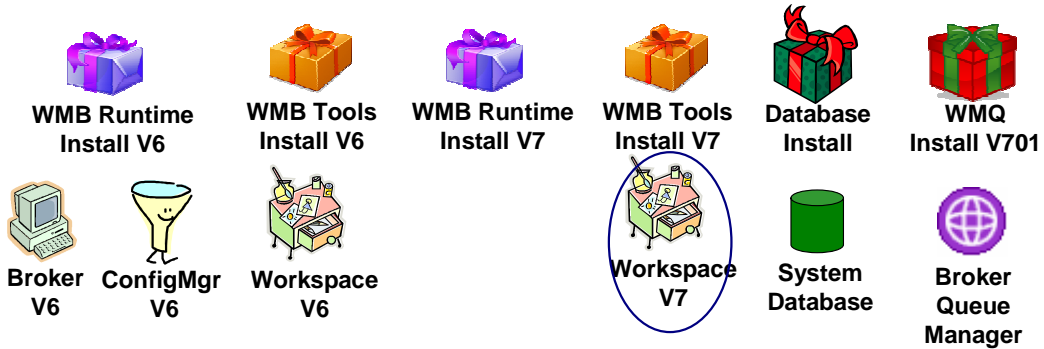
- 1. Migrate to WebSphere MQ version 7.0.1
- 2. Install WebSphere Message Broker version 7 runtime and tools

The first step is to upgrade the version of MQ to version 7.0.1. As mentioned earlier, you must make sure that the Message Broker version 6 installations are at the right service level to support MQ version 7.0.1.

Once MQ has been upgraded, then install the required Message Broker version 7 components. Depending on your broker deployment architecture, this might be any combination of the broker runtime, the Broker Toolkit and the Message Broker Explorer. All of these components can be installed alongside the version 6 equivalents.

Note that the Message Broker Explorer is a plug-in to the MQ Explorer, and is only supported on the Windows and Linux platforms. The MQ Explorer must be installed before the Message Broker Explorer installation.

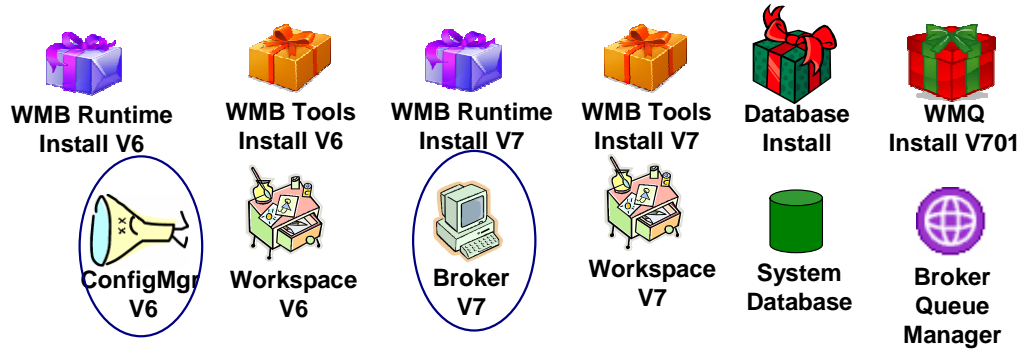
Create Message Broker version 7 Toolkit workspace



- 3. Toolkit: Use a new workspace and import any required artifacts

Once the version 7 components are installed, and assuming that this is a Windows or Linux development system, then you should create a new workspace using the version 7 Toolkit. Development projects should then be exported from the version 6 workspace and imported into the version 7 workspace. At this time, you should ensure that they projects have imported correctly, and that all references have been resolved.

Migrate Broker to version 7



4. Migrate broker to version 7

- *You can now administer the broker without a Configuration Manager*

The next stage is to migrate the broker runtime directly into the version 7 broker. The “mqsi migrate components” command can be used to perform this migration. At this point, the Configuration Manager used in version 6 is no longer required.

Remove old components from version 6 installation



**WMB Runtime
Install V7**



**WMB Tools
Install V7**



**WMQ
Install V7**



**Broker
V7**



**Workspace
V7**

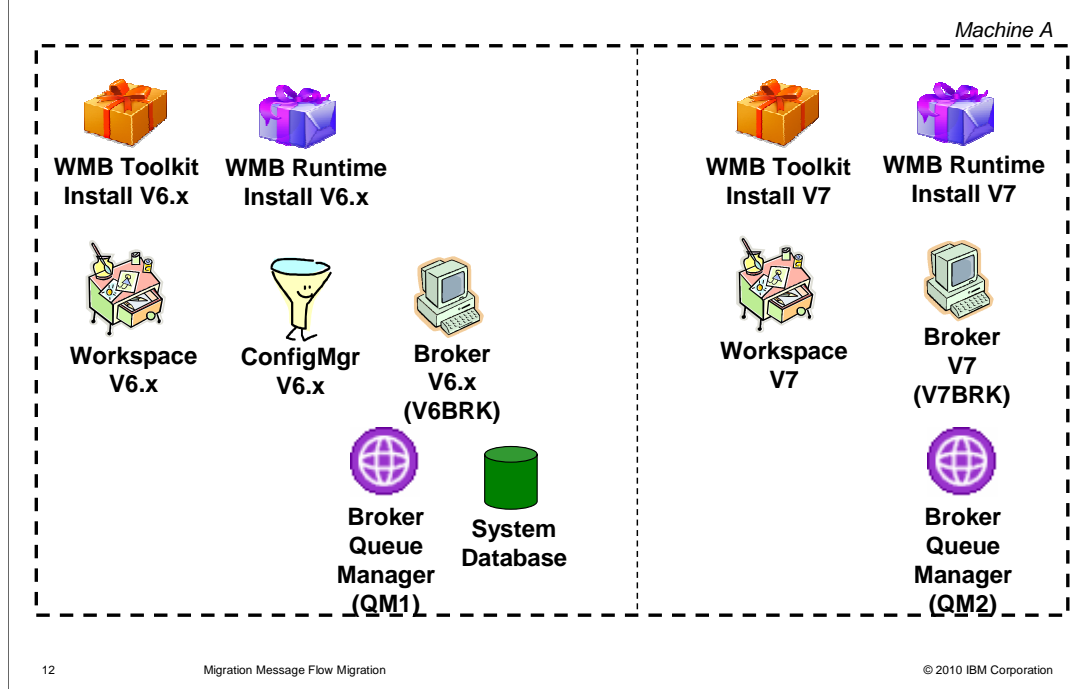


**Broker
Queue
Manager**

- Once ready, you can remove unnecessary components and programs

Once the migration has been thoroughly tested, you are able to completely remove the old version 6 components and product installations. You are now left with the complete installation at version 7, with significantly fewer product installations and defined components.

Consider a mirrored version 7 environment



An alternative approach is to use a mirrored environment. This still requires the version of WebSphere MQ to be upgraded to version 7.0.1 for the version 6 brokers. New version 7 broker and Toolkit workspaces are then defined alongside the old version 6 brokers. Applications are imported into the version 7 workspace, and new barfiles are created and deployed into the version 7 brokers. Once testing has completed, the applications can be switched from the version 6 brokers to the version 7 brokers.

Migration Details

- Migrating your Message Broker Toolkit artifacts
- Migrating the broker component
- Migrating broker connections

This session will now describe the detailed migration process for the toolkit artifacts such as message flows and message sets, the broker runtime, and any defined broker connections.

Migrating toolkit artifacts

- There is no explicit migration step for your toolkit project files
 - However, saving projects in the version 7 toolkit might make them unreadable by previous versions

- When you start a version 7 toolkit, create a new workspace and import any required files
 - Message flows, dictionaries, Java, XSLT ...
 - Message Broker Explorer can read any “.configmgr” files you import
 - These can be used to connect to brokers with the same connection characteristics as the Configuration Manager

- Remember: use version 6 tools for version 6 brokers; version 7 tools for version 7 brokers

First, the application artifacts contained within your workspace projects. When you first use a version 7 workspace, you should create a new workspace, rather than opening a version 6 or 6.1 workspace with the version 7 toolkit. Once the new workspace is available, export the required projects from the version 6 workspace, and import into the version 7 workspace. This is the only action that is required to make these projects available to the version 7 toolkit. Note that if these projects are then saved in the version 7 toolkit, they might not be readable by a version 6 or 6.1 toolkit, and compatibility is not guaranteed. You should define a new branch of your code repository, and create a new version of all the affected artifacts for use with version 7. If you then need to revert to version 6, then the old application artifacts will still be available.

As a general comment, the easiest way to export and import projects is to use a project definition file, since this method retains the project naming conventions.

If you are planning to use the Message Broker Explorer, you can use an existing connection file from the version 6 toolkit. However, this can only be used if you have a single broker for each configuration manager, with both components running on a single queue manager. If you have several brokers managed by a single configuration manager, this technique cannot be used.

Extra considerations for publish / subscribe applications

- If you are migrating a publish / subscribe application and
 - You plan to carry on using it in Message Broker version 7, or
 - You plan to migrate the application to WebSphere MQ

- Then you need to run the WebSphere MQ version 7.0.1 command *migmqbrk* before you run *mqsigratecomponents*
 - This command transfers any Message Broker subscriptions to MQ

If you are planning to migrate a publish / subscribe application from Message Broker version 6 or 6.1, you must first decide whether to migrate the application to Message Broker version 7, or to WebSphere MQ. Depending on the nature of your application, it might be possible to migrate to an MQ-based application. In Message Broker version 7, the publish/subscribe matching and subscription management is done by MQ, so whichever migration approach you decide to use, you must migrate the existing subscriptions from Message Broker to MQ version 7.0.1. This is done by using the command “*mig mb b r k*”. This command is supplied by WebSphere MQ, not Message Broker. This command must be run against the Message Broker version 6 system.

Migrating the broker

V7 environment

```
mqsigratecomponents MYBROKER
```

- Use the *mqsigratecomponents* to migrate a broker:

- Use the -1, -2, or -3 flags to migrate the registry, MQ or database separately

- Migrating backwards (rollback)
 - If necessary, use *-t 6.x.x.x* to move the version 7 broker backwards, or
 - Restore system database from backups

- Use *mqsilist* to view all components in the current installation, or *mqsilist -a* to view all components on the machine

To migrate the broker runtime component, use the “mqs migrate components” command. To perform a normal migration, there is a single parameter, which is the name of the broker that is to be migrated. If the user ID that is performing this migration does not have all the required access privileges, the -1, -2 and -3 parameters can be used to perform the migration in stages.

To perform a rollback of the migration, use the *-t* option, and set the value of the parameter to indicate the specific service level of the target broker. For example, this can be “6.1.0.3”, which indicates version 6.1, fix pack 3.

A backward migration returns you to the state before you ran the migration command. If you have made any changes such as flows or broker settings, these will all be reverted. Alternatively, you can reinstate the old system by restoring from a backup of the original broker.

Migrating broker connections

- The Message Broker Explorer and Toolkit directly manage broker connections
 - All local brokers automatically shown
 - For each remote broker you want to administer, supply its connection details; they are then stored in a “.broker” file
 - Share broker connection information with co-workers using standard Eclipse team repositories (like CVS or SVN)

For local brokers, both the Message Broker Toolkit and the Message Broker Explorer will automatically detect the defined brokers, and create the required connections.

For remote brokers, you should supply the connection details for the required broker. The Message Broker Toolkit or the Message Broker Explorer will create the required connection file, These files are suffixed “.broker” (*dot broker*). They can be shared between instances of the Toolkit and the Explorer, and can be stored in a code repository such as CVS.

Migrating databases

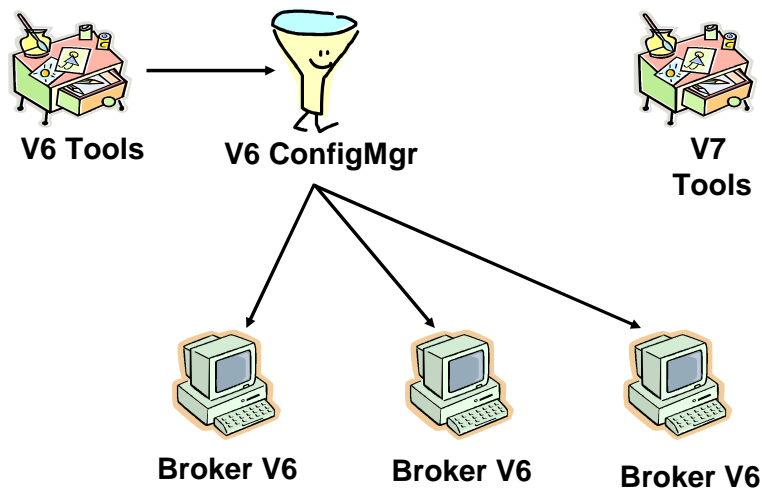
- Broker system database
 - *mqsigratecomponents* copies system database information into internal configuration store

- User databases
 - The default user ID and password for user databases (as stored in *mqsicreatebroker -u -p*) are carried forward
 - Use *mqsisetdbparms* to change the defaults in version 7

As discussed earlier, the broker system database is no longer required, so there is no migration process for this component. After the broker migration process is complete, this database can be dropped and removed.

For user databases, there is little to include in a migration process. In Message Broker version 6.0 and 6.1, the broker contained the definition of a default user ID and password. This default is carried through to the version 7 broker in the migration step. If you want to make changes to these database setting, use the “mqs set db parms” command.

Migrating a domain – before migration



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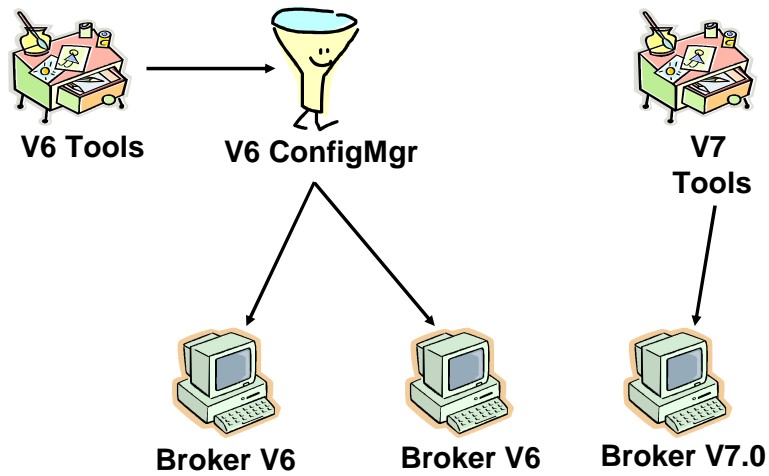
Migration Message Flow Migration

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Some broker installations are more complex, and use the broker domain structure support in Message Broker version 6. The configuration manager can be used to manage several broker instances, perhaps located on separate operating platforms. This example shows a single configuration manager, managing three brokers.

As before, before starting the migration, ensure that WebSphere MQ version 7.0.1 is installed, and all queue managers have been converted to use this new version. Install Message Broker version 7, alongside the existing Message Broker version 6 installation.

Migrating a domain – during migration



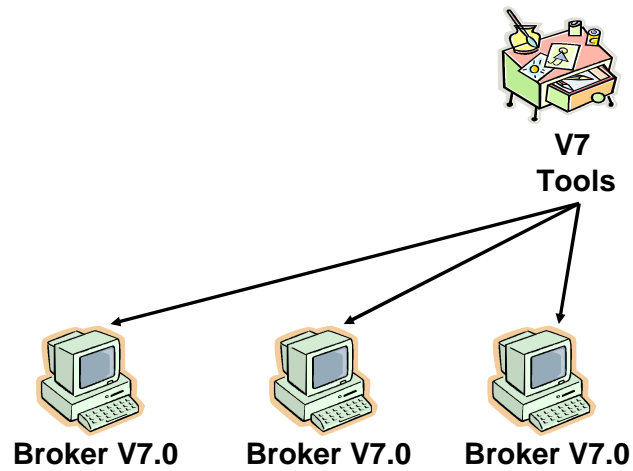
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Migration Message Flow Migration

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Each broker can then be migrated to version 7, and at this time it can now be managed by the version 7 tools. This is the Message Broker Toolkit, Explorer or command line interface.

Migrating a domain – after migration



When all brokers have been migrated to version 7, all management is done by the version 7 tools. At this point, all version 6 components can be removed, and Message Broker version 6 can be uninstalled.

Summary

- Message Broker version 7 contains several core architectural improvements
 - No database pre-requisite
 - No Configuration Manager
 - Converged MQ publish/subscribe

- Migration phases
 - Install WebSphere MQ version 7.0.1
 - Install WebSphere Message Broker version 7
 - Use *mqsigratecomponents* to quickly migrate a V6.0 / 6.1 broker, or create a mirrored environment for version 7 resources
 - Use version 7 tools to manage version 7 brokers

In summary, Message Broker version 7 has simplified the deployment architecture, and requires a pre-requisite level of WebSphere MQ version 7.0.1. Brokers can be migrated easily to version 7. Version 7 tools must be used to manage version 7 brokers, and these tools cannot be used to manage brokers using earlier versions of Message Broker.



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