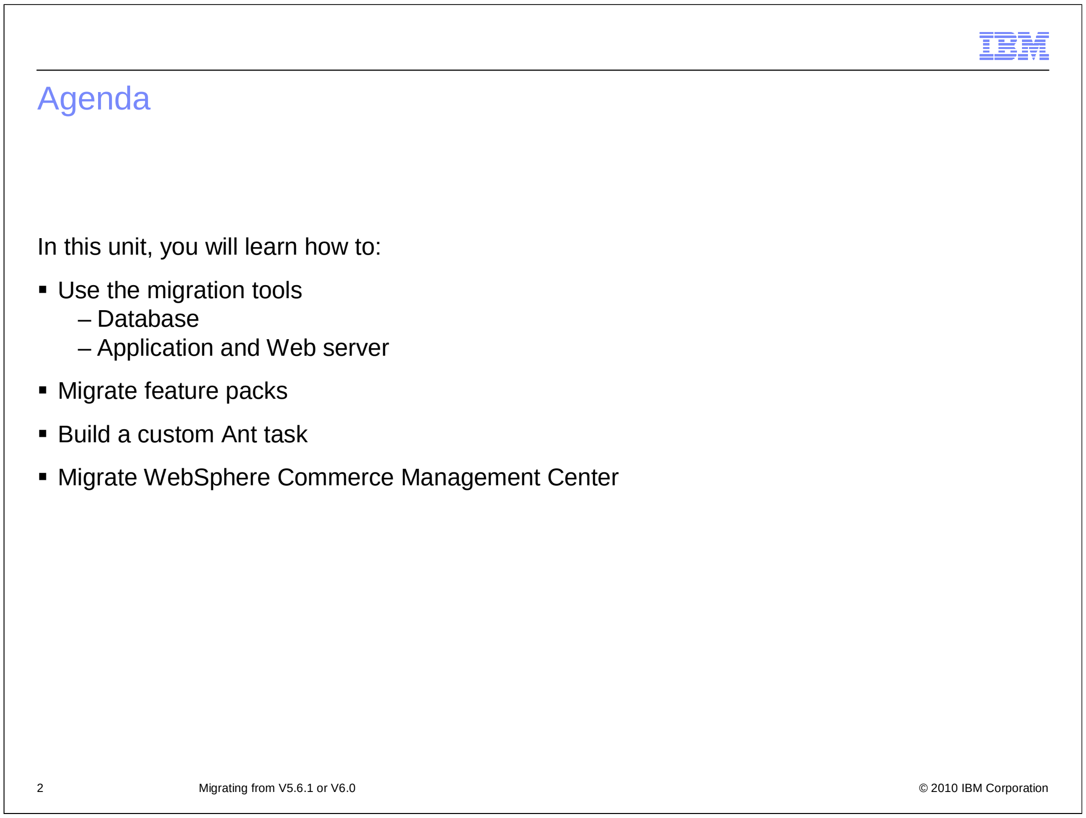
WebSphere Commerce V7

Migrating from V5.6.1 or V6.0

This presentation discusses migration from previous WebSphere® Commerce releases to version 7.

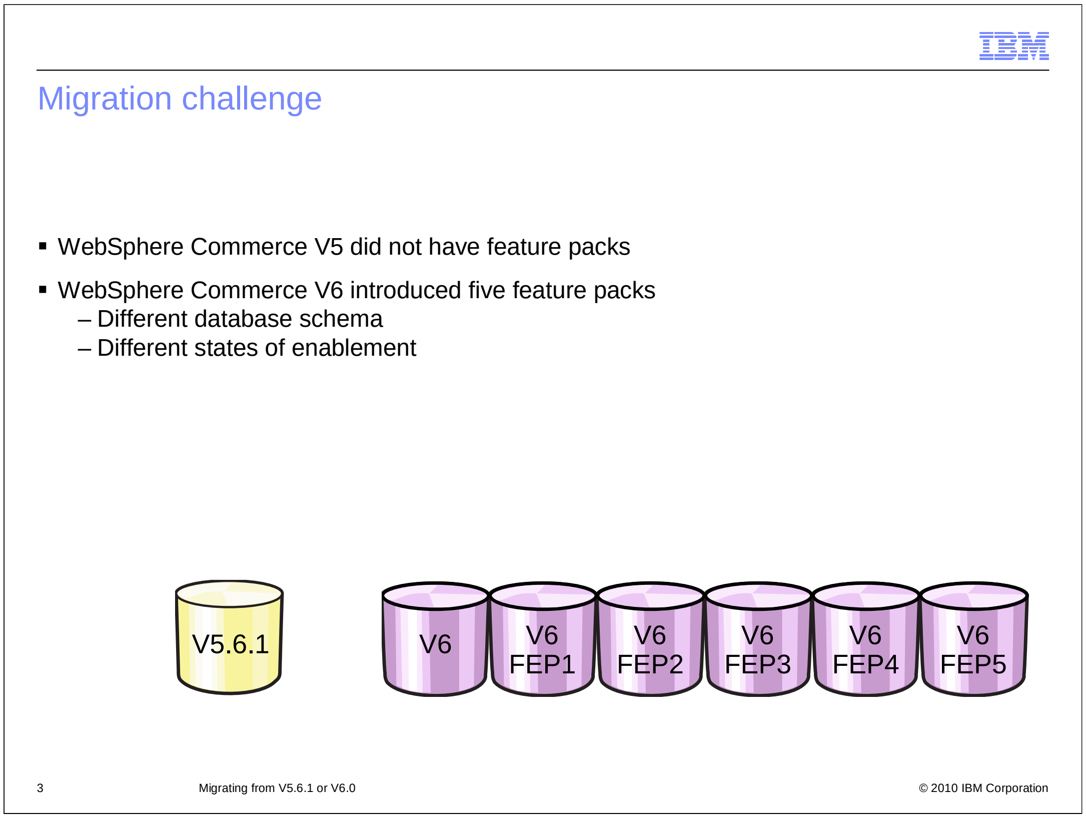


Agenda

In this unit, you will learn how to:

- Use the migration tools
  - Database
  - Application and Web server
- Migrate feature packs
- Build a custom Ant task
- Migrate WebSphere Commerce Management Center

The first topic is the migration tool which is available in version 7, followed by the steps for migrating version 6 feature packs. The version 7 migration utilities are built on Ant tasks. The next topic covered is building your own custom Ant tasks, and a brief review of how to migrate Management Center customizations using the comparison utility.



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Migration challenge

- WebSphere Commerce V5 did not have feature packs
- WebSphere Commerce V6 introduced five feature packs
  - Different database schema
  - Different states of enablement

V5.6.1
V6
V6 FEP1
V6 FEP2
V6 FEP3
V6 FEP4
V6 FEP5

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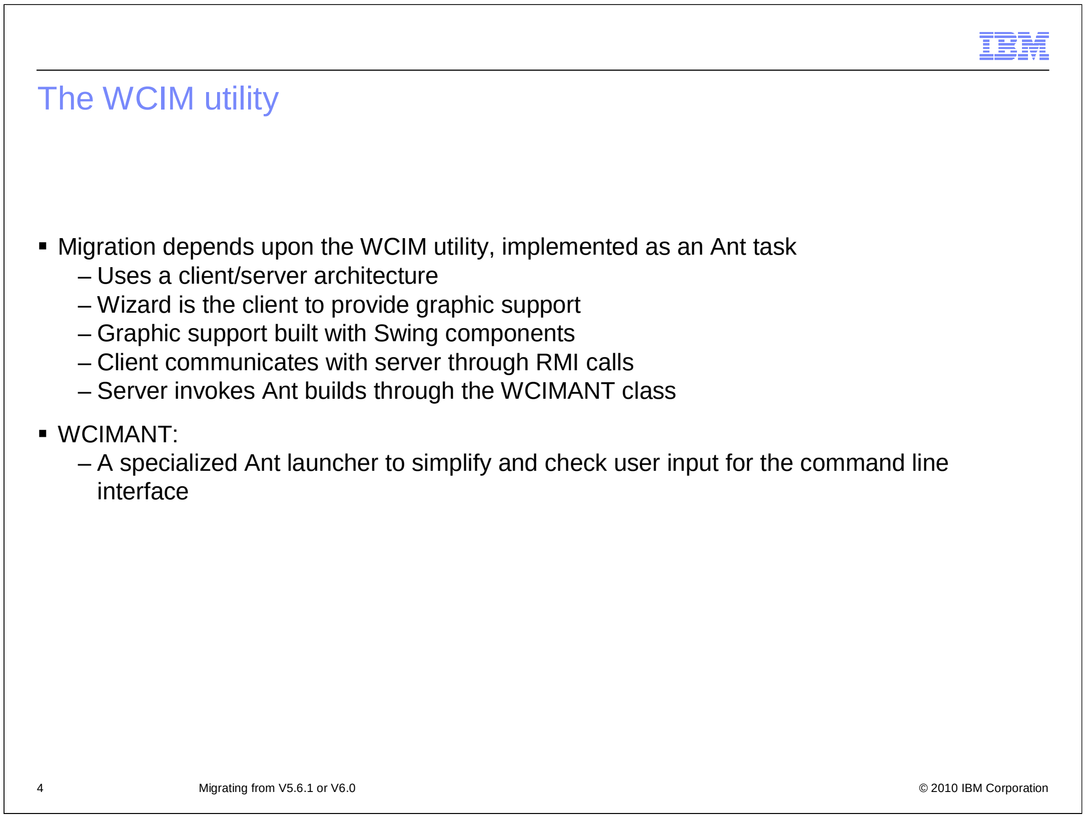
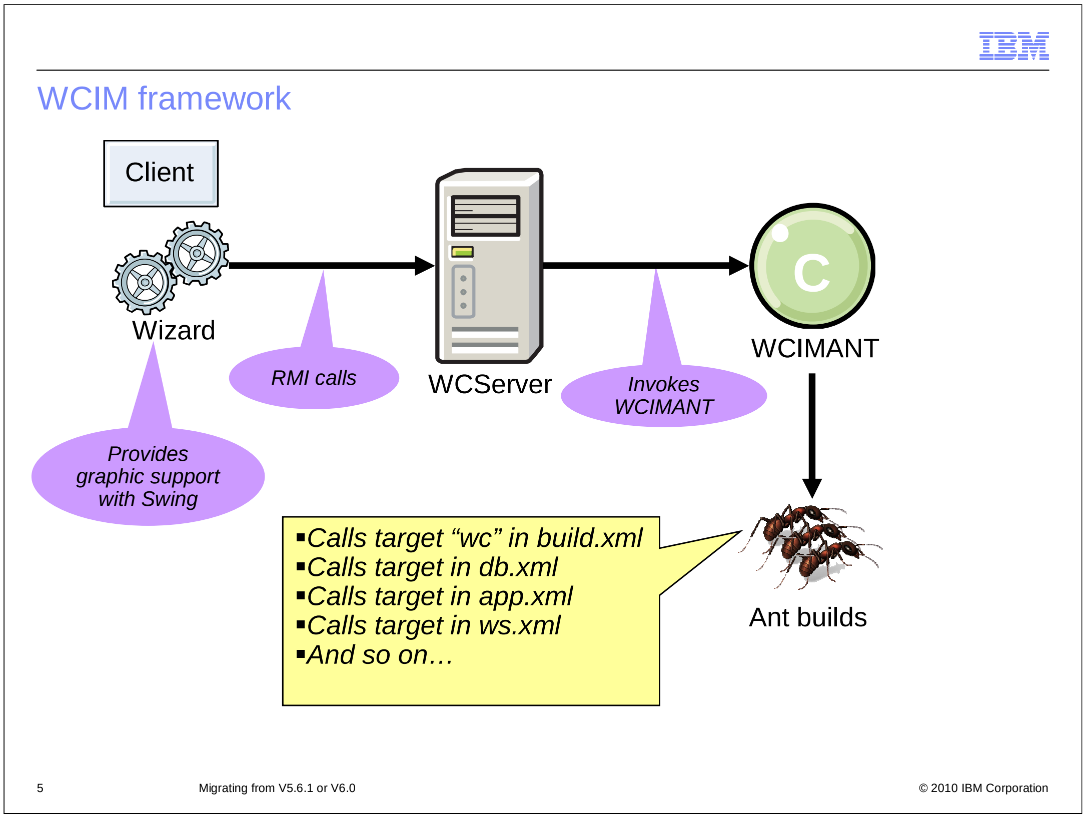
WebSphere Commerce version 5 did not have feature packs, therefore migration from version 5 to version 7 is easier and straight forward. Migration from version 6 to version 7 can be more challenging because of the many feature packs introduced in version 6. The migration tool does not make any assumptions about which feature packs you might have installed or which features you might have enabled. This means the migration tool needs to handle different database schema and different enablement states.



The WCIM utility

- Migration depends upon the WCIM utility, implemented as an Ant task
  - Uses a client/server architecture
  - Wizard is the client to provide graphic support
  - Graphic support built with Swing components
  - Client communicates with server through RMI calls
  - Server invokes Ant builds through the WCIMANT class
- WCIMANT:
  - A specialized Ant launcher to simplify and check user input for the command line interface

The migration utility is more robust in version 7 because it is built on the Ant task framework. The key to this framework is the WebSphere Commerce Instance Migration (WCIM) utility. This utility uses a client-server architecture. You need to start the server on the V7 system. You can start the client from where ever you want. The client is a wizard which is built with Swing components to provide the graphic support. The client sends RMI calls back to the server. The server invokes Ant tasks through the WCIMANT class to perform the migration of the database, application and Web server configuration.



WCIM framework

Client

Wizard

Provides graphic support with Swing

RMI calls

WCServer

Invokes WCIMANT

WCIMANT

- *Calls target “wc” in build.xml*
- *Calls target in db.xml*
- *Calls target in app.xml*
- *Calls target in ws.xml*
- *And so on…*

Ant builds

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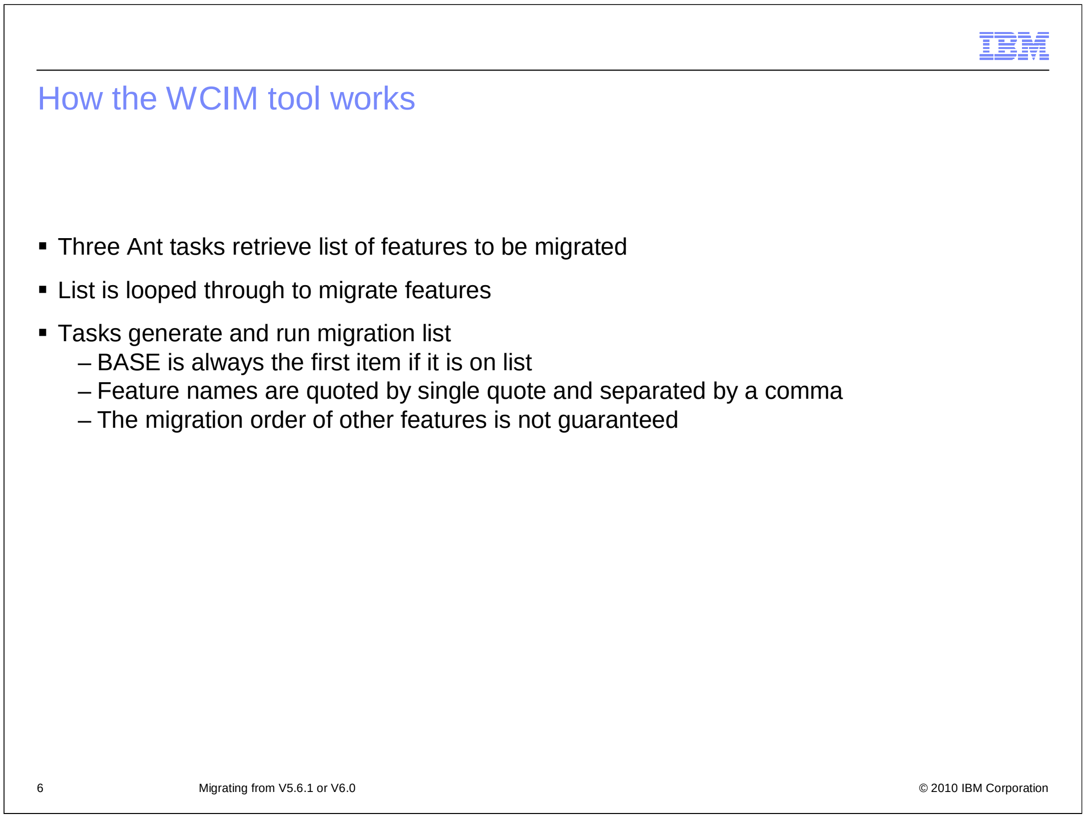
Here is a diagram of the migration framework. The client can reside on a different system than your WebSphere Commerce server and can access the server through the RMI calls. On the back end, the migration server invokes the Ant launcher, which in turn calls Ant scripts to do the migration work for you. These Ant scripts are divided into three groups: migrate the database, migrate the application and migrate the Web server. This framework is extendable. You can build your own scripts to migrate your own customizations.

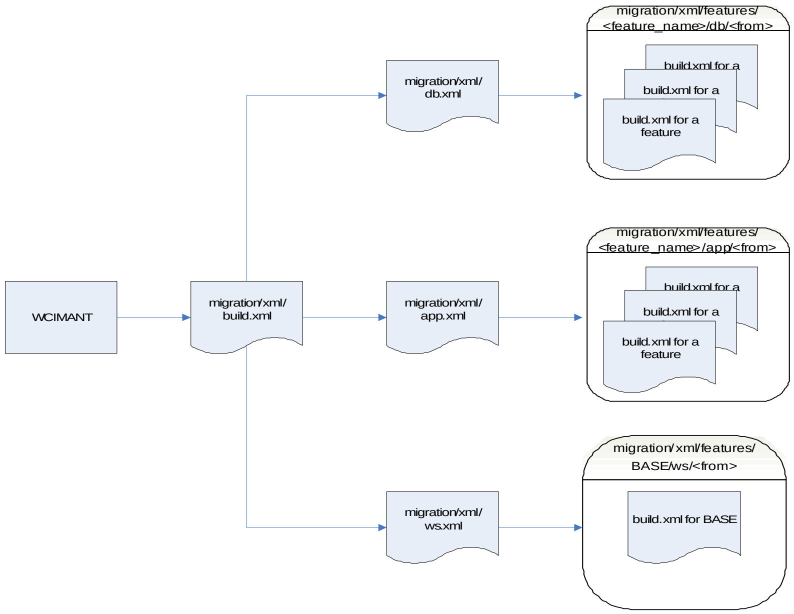


How the WCIM tool works

- Three Ant tasks retrieve list of features to be migrated
- List is looped through to migrate features
- Tasks generate and run migration list
  - BASE is always the first item if it is on list
  - Feature names are quoted by single quote and separated by a comma
  - The migration order of other features is not guaranteed

The Ant scripts are divided into three groups: migrate the database, migrate the application and migrate the Web server. Each of them retrieves the features that need to be migrated. The Ant script launcher loops through each Ant script and migrates the features one by one. If you have customizations that you want to migrate, you can add another Ant task into the loop so the customizations can be migrated as well. The base code is treated as a feature. The base is always the first item in the Ant task list and is always migrated first. Other features are migrated based on their specified dependencies. The migration order is not guaranteed. You can find the order in the log which can help you to do problem determination.

WCIMANT framework



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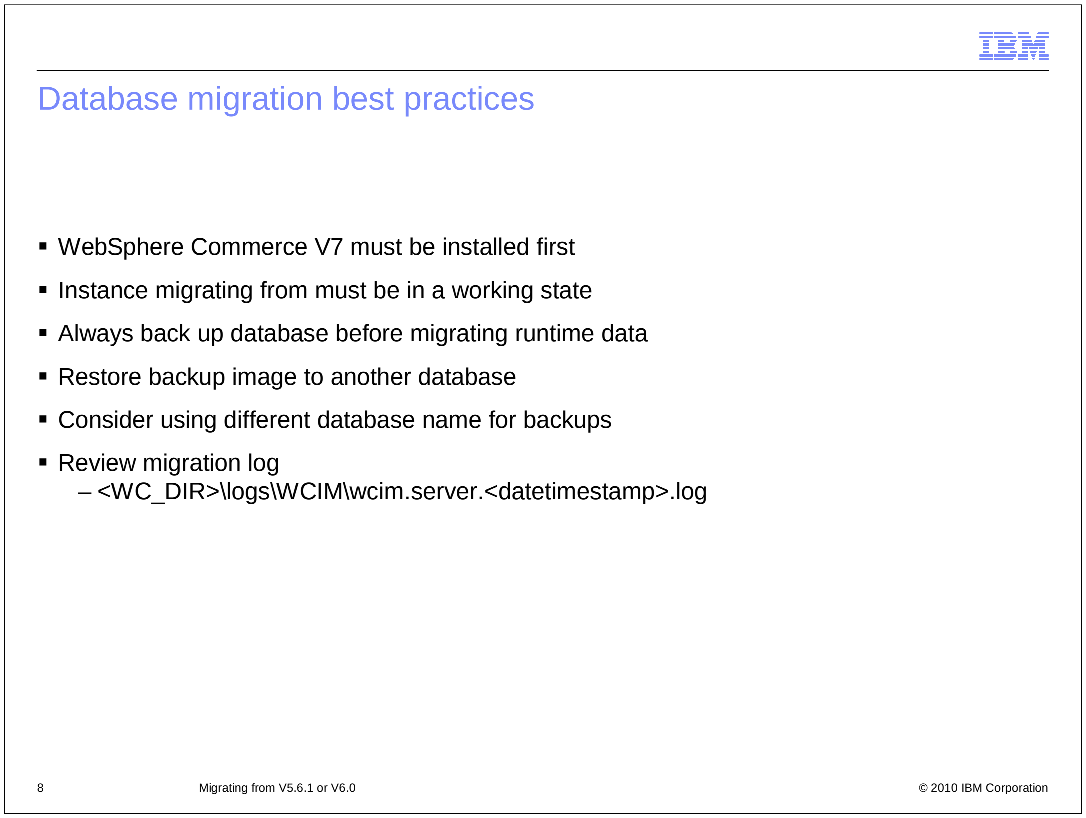
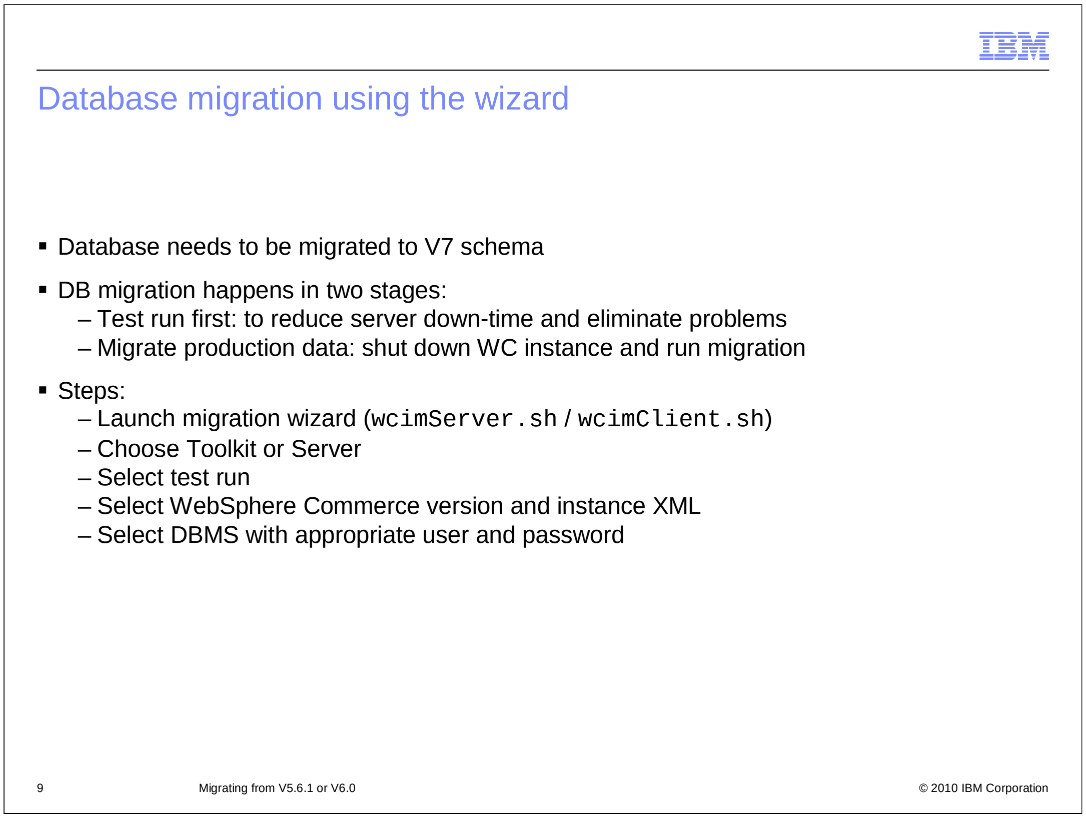
This diagram shows the migration script flow. The Ant launcher calls the migration scripts to migrate the database, application and Web server. Each tier contains Ant fragments, which then migrate a feature.



Database migration best practices

- WebSphere Commerce V7 must be installed first
- Instance migrating from must be in a working state
- Always back up database before migrating runtime data
- Restore backup image to another database
- Consider using different database name for backups
- Review migration log
  – <WC_DIR>\logs\WCIM\wcim.server.<datetimestamp>.log

This slide highlights the best practices for database migration. Before you begin the migration, you must have WebSphere Commerce version 7 installed. The instance that you are going to migrate from must be in a working state. You should always back up your database before you migrate the runtime data. It is always a best practice to put your backup on anther database with different name. After the migration finishes, you can check the log file to make sure everything was migrated successfully.



Database migration using the wizard

- Database needs to be migrated to V7 schema
- DB migration happens in two stages:
  - Test run first: to reduce server down-time and eliminate problems
  - Migrate production data: shut down WC instance and run migration
- Steps:
  - Launch migration wizard (`wcimServer.sh` / `wcimClient.sh`)
  - Choose Toolkit or Server
  - Select test run
  - Select WebSphere Commerce version and instance XML
  - Select DBMS with appropriate user and password

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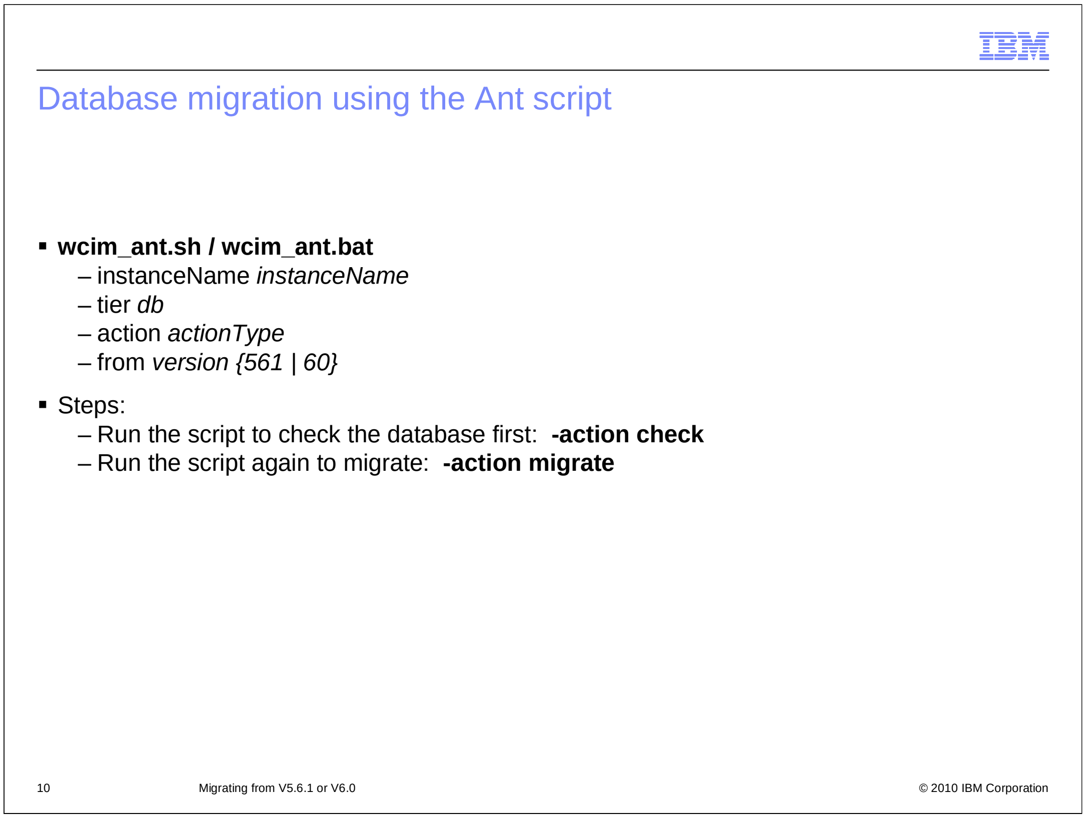
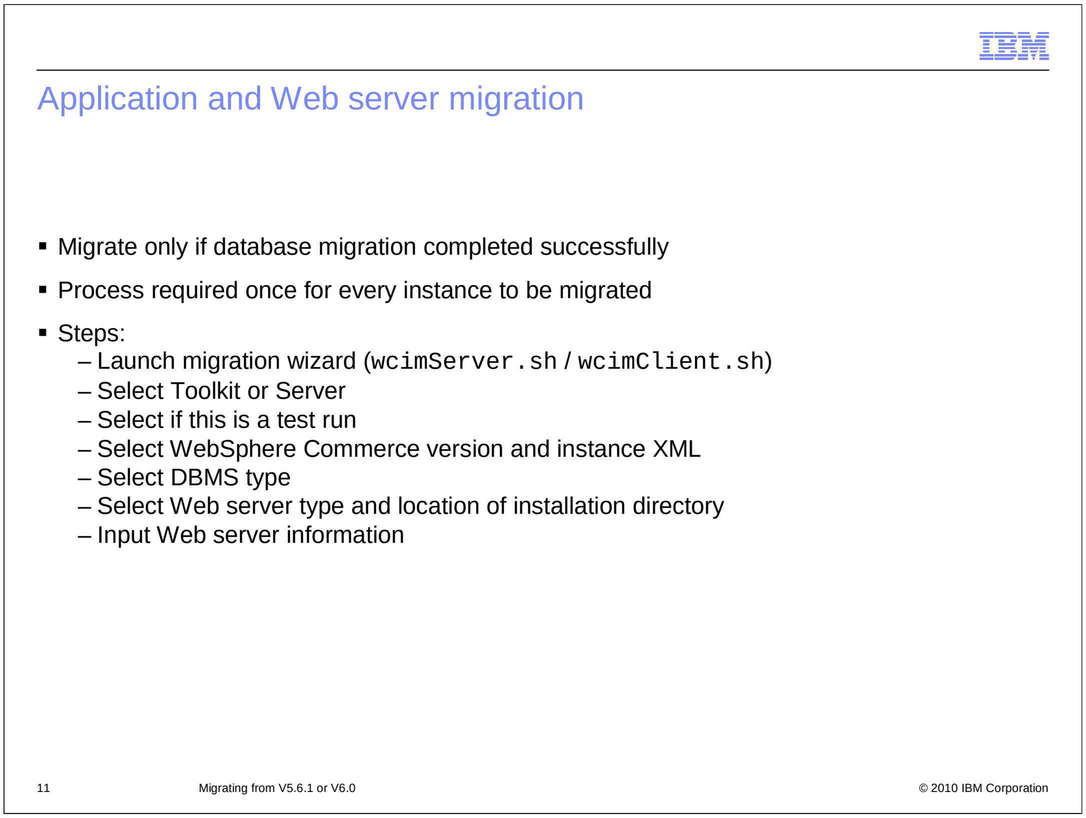
The database migration is started by the migration wizard. Database migration happens in two stages and both of them are mandatory. The first stage for the database migration is to do a test run. Once the test completes, you can migrate your production data. When you do the test run, you do not have to shut down your server. But when you are migrating the production data, the wizard shuts down your server, then migrates the database schema and the data. After you launch the migration wizard, you select the migration target, either toolkit or server. Select the test run when you run the wizard for the first time. You identify the previous version of the WebSphere Commerce you want to migrate from and the location of its instance XML. You then provide the database name, user name, and passwords for this database.



Database migration using the Ant script

- **wcim_ant.sh / wcim_ant.bat**
  - instanceName *instanceName*
  - tier *db*
  - action *actionType*
  - from *version {561* | *60}*
- Steps:
  - Run the script to check the database first: **-action check**
  - Run the script again to migrate: **-action migrate**

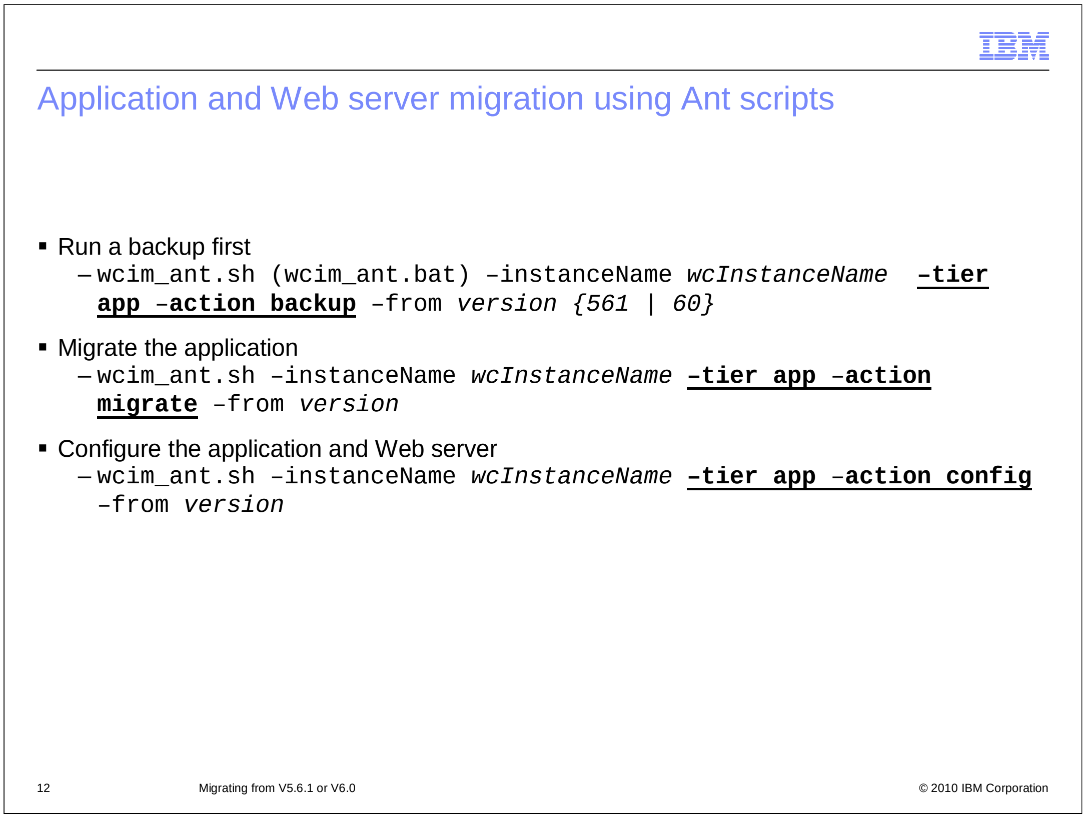
If you prefer, you can use the migration script to do the migration instead of the wizard. This slide shows the syntax of the script. First, you provide the WebSphere Commerce instance name for the database that you are migrating. The tier name for database migration is db. The action can be either “check” or “migrate”. You also specify which WebSphere Commerce version you want to migrate from.



Application and Web server migration

- Migrate only if database migration completed successfully
- Process required once for every instance to be migrated
- Steps:
  - Launch migration wizard (`wcimServer.sh` / `wcimClient.sh`)
  - Select Toolkit or Server
  - Select if this is a test run
  - Select WebSphere Commerce version and instance XML
  - Select DBMS type
  - Select Web server type and location of installation directory
  - Input Web server information

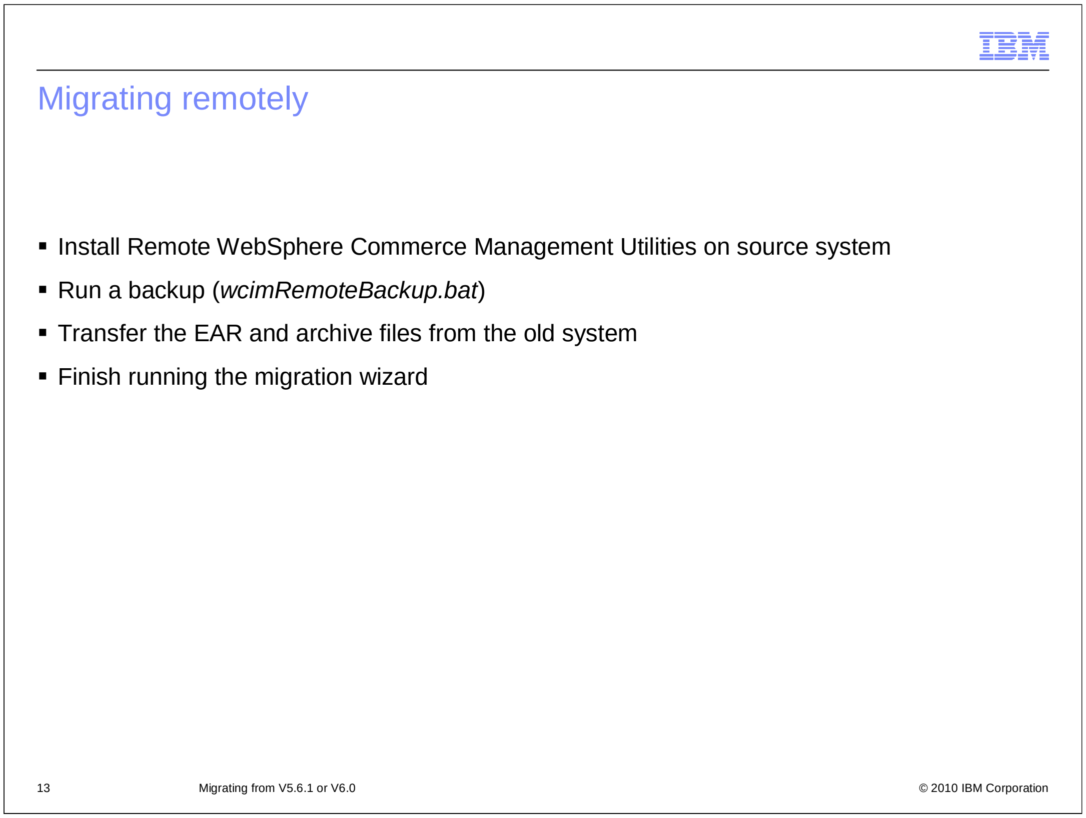
The application tier and the Web server tier can be migrated only after the database tier migration has completed successfully. The migration wizard guides you through the steps shown here to complete the migrations. Keep in mind that you can not proceed if a particular step fails. The wizard only allows you to continue after you fix the problem.



Application and Web server migration using Ant scripts

- Run a backup first
  - wcim_ant.sh (wcim_ant.bat) –instanceName *wcInstanceName* **–tier app –action backup** –from *version {561 | 60}*
- Migrate the application
  - wcim_ant.sh –instanceName *wcInstanceName* **–tier app –action migrate** –from *version*
- Configure the application and Web server
  - wcim_ant.sh –instanceName *wcInstanceName* **–tier app –action config** –from *version*

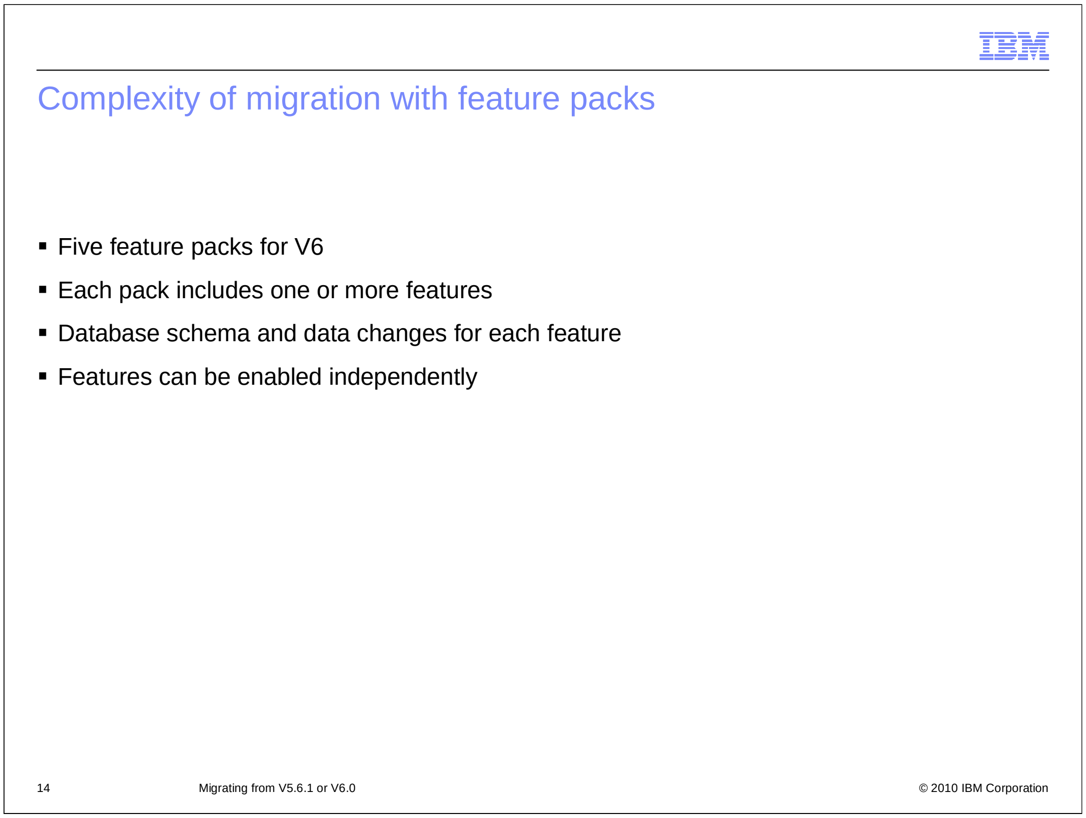
You can also use the command line script to migrate the application tier and the Web server tier. The syntax for the script is shown in the slide.



Migrating remotely

- Install Remote WebSphere Commerce Management Utilities on source system
- Run a backup (*wcimRemoteBackup.bat*)
- Transfer the EAR and archive files from the old system
- Finish running the migration wizard

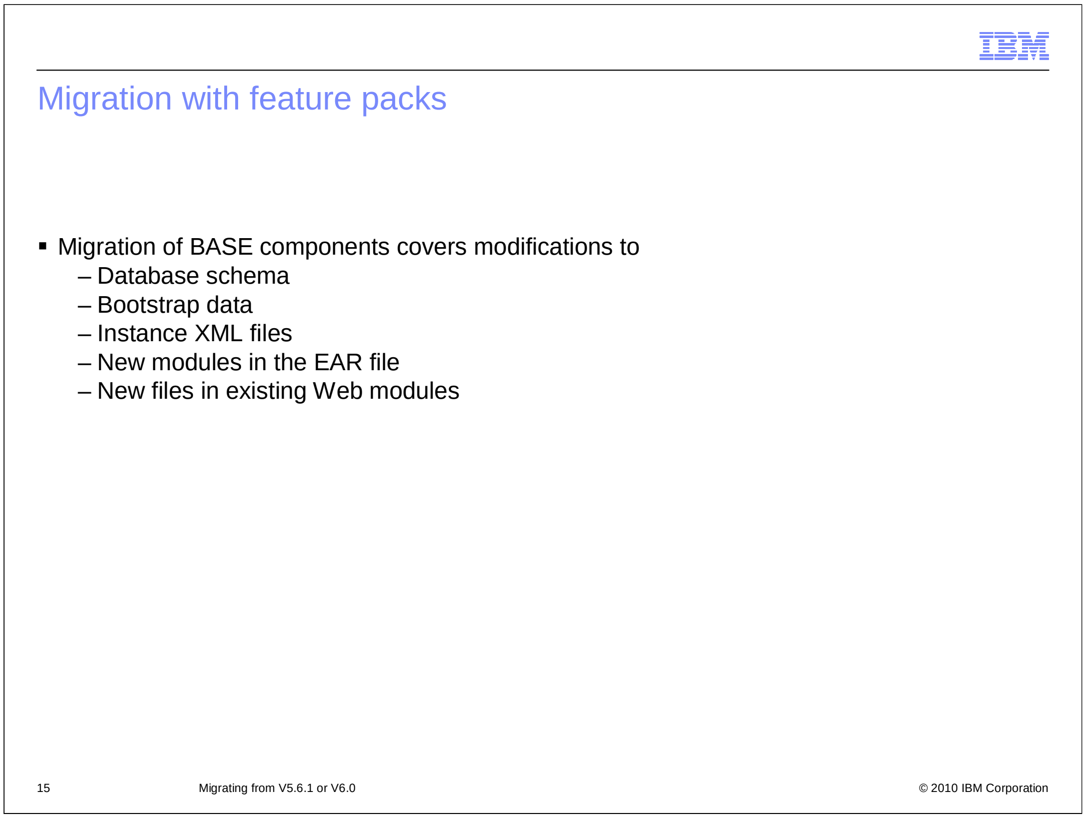
If you want to migrate from a remote system, you need to take some extra steps. First, you need to install the **Remote WebSphere Commerce Management Utilities** on the remote system. You need to run the backup utility to collect enough information to migrate your source hardware system to a new system. The information it collects includes the EAR file and several archive files. You manually transfer the generated files from the source system to the WebSphere Commerce version 7 system, then finish your migration by running the migration wizard.



Complexity of migration with feature packs

- Five feature packs for V6
- Each pack includes one or more features
- Database schema and data changes for each feature
- Features can be enabled independently

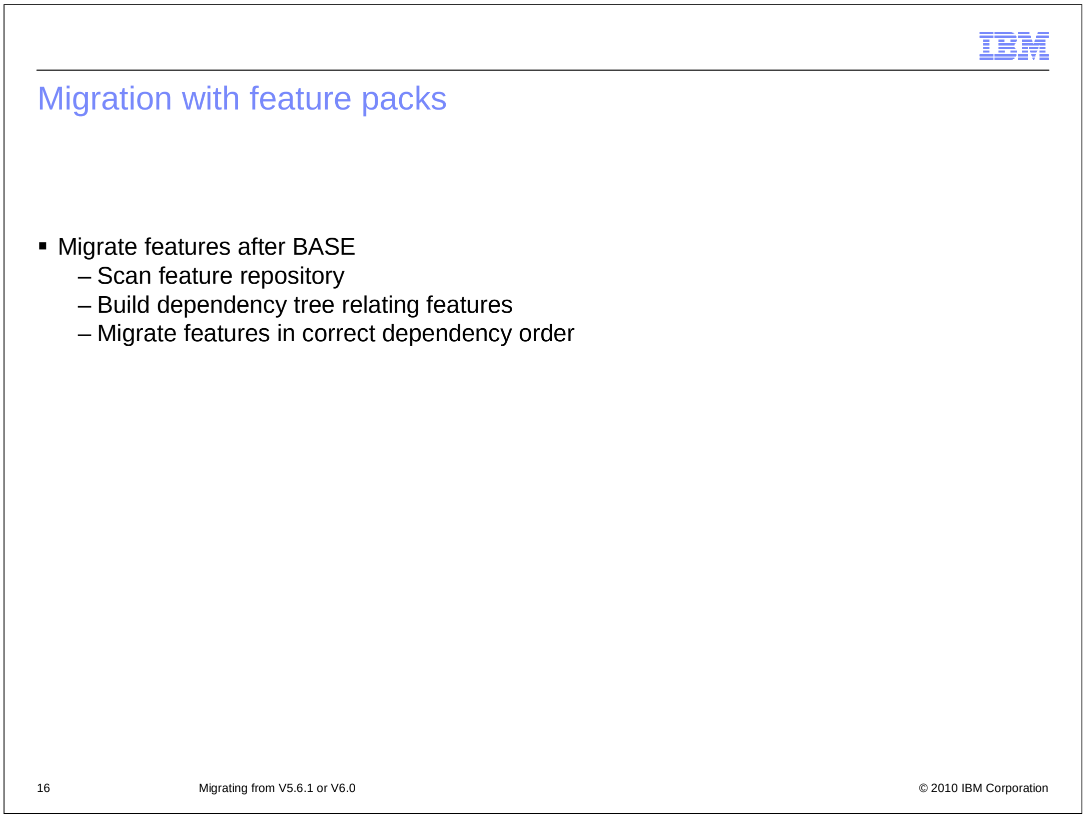
In version 6, five feature packs were delivered. Each feature pack includes one or more features. Each feature pack allows you enable the features independent of one another. Each feature typically has associated database schema and data changes. Because of the many permutations, migration from version 6 needs to handle very complex feature combinations.



Migration with feature packs

- Migration of BASE components covers modifications to
  - Database schema
  - Bootstrap data
  - Instance XML files
  - New modules in the EAR file
  - New files in existing Web modules

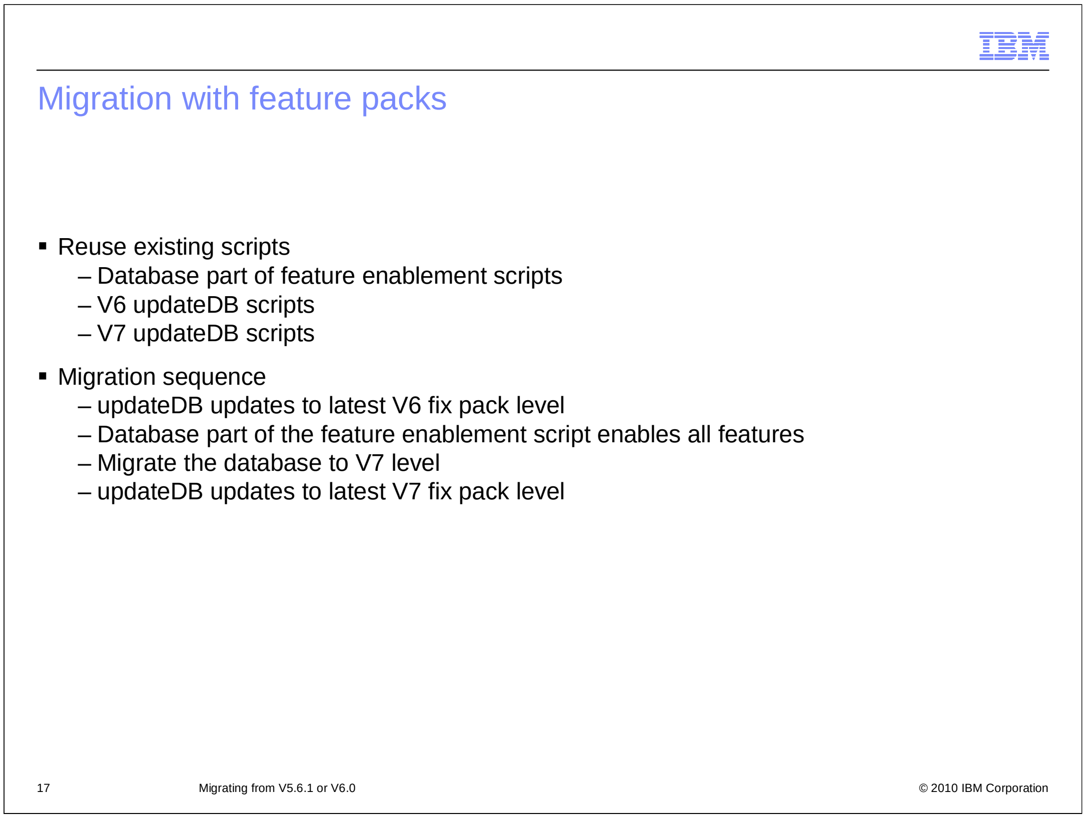
Base components are treated as a single feature which is always migrated first. This migration includes modifying the database schema, bootstrap data, instance XML files, adding new modules in the EAR, and adding new files in existing Web modules.



Migration with feature packs

- Migrate features after BASE
  - Scan feature repository
  - Build dependency tree relating features
  - Migrate features in correct dependency order

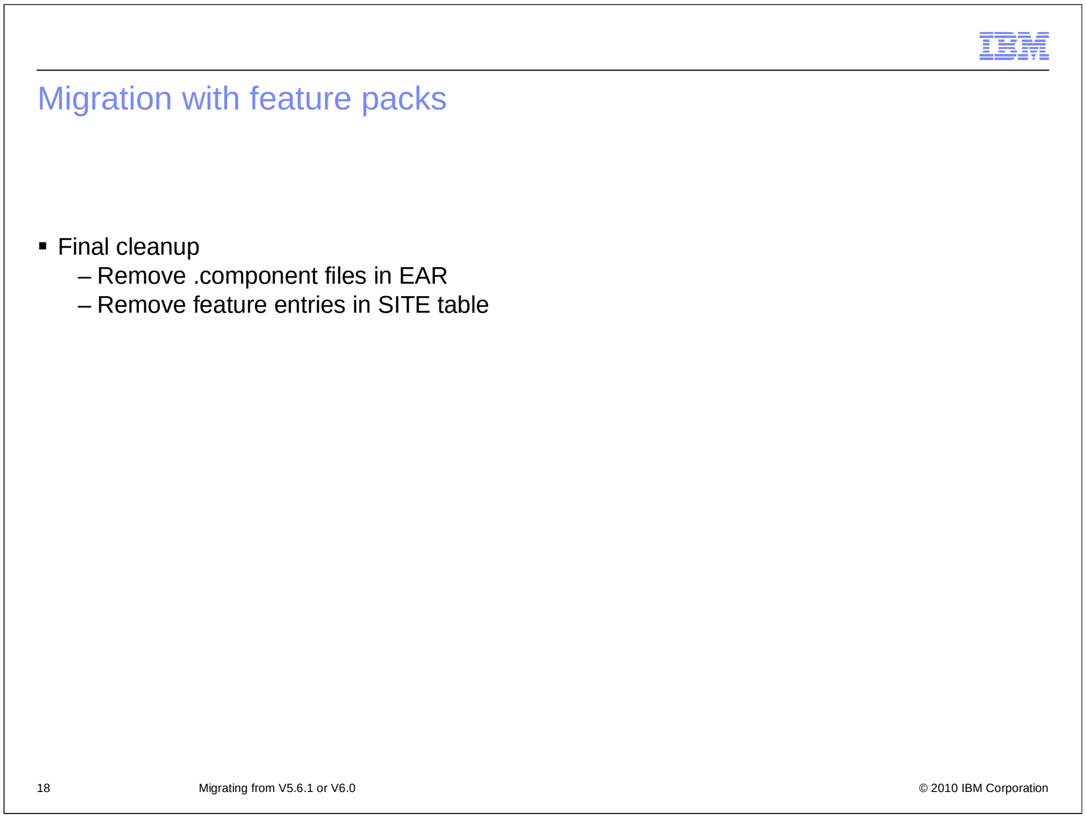
After the base is migrated, then the feature packs are migrated. The migration script looks through the repository of the features, builds a dependency tree relating the features, and migrates the features in order of their dependencies.



Migration with feature packs

- Reuse existing scripts
  - Database part of feature enablement scripts
  - V6 updateDB scripts
  - V7 updateDB scripts
- Migration sequence
  - updateDB updates to latest V6 fix pack level
  - Database part of the feature enablement script enables all features
  - Migrate the database to V7 level
  - updateDB updates to latest V7 fix pack level

The migration script reuses parts of the feature enablement scripts from both V6 and V7 by calling these parts directly. The updateDB script updates the database to the latest V6 fix pack level. The database part of the feature enablement script enables all the V6 features. The database is then migrated to the V7 level. Then updateDB updates the database to the latest V7 fix pack level.



Migration with feature packs

- Final cleanup
  - Remove .component files in EAR
  - Remove feature entries in SITE table

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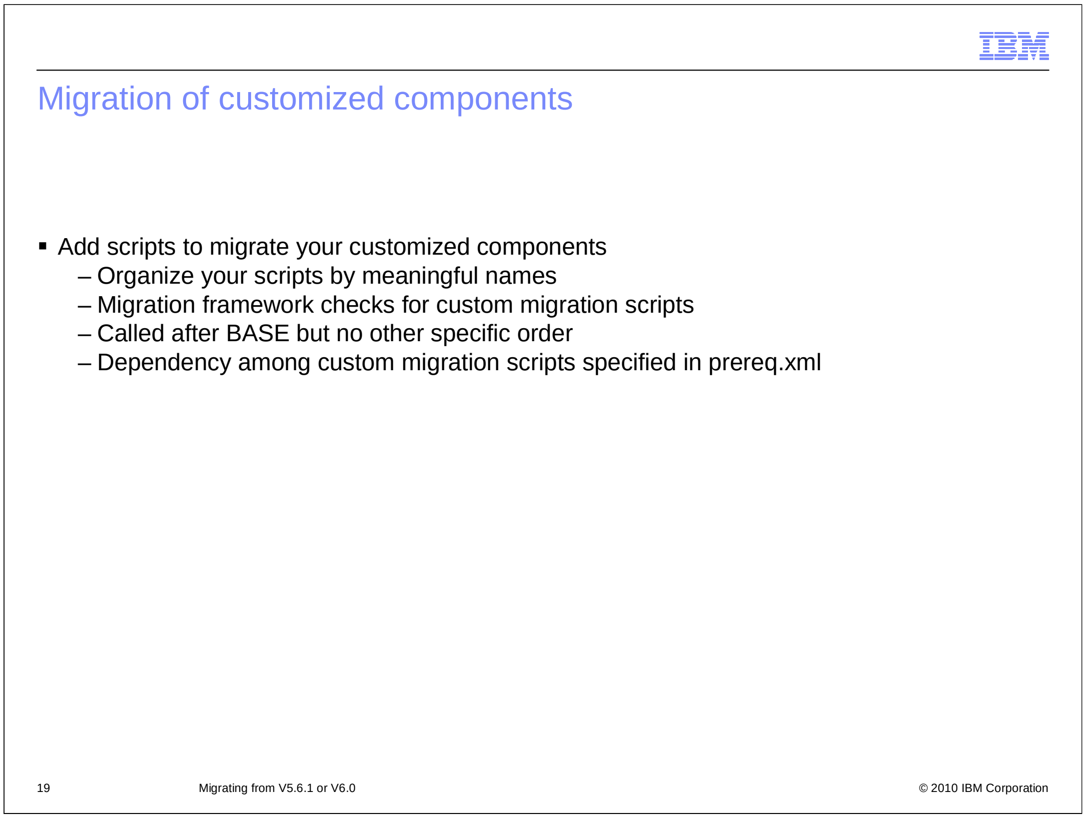
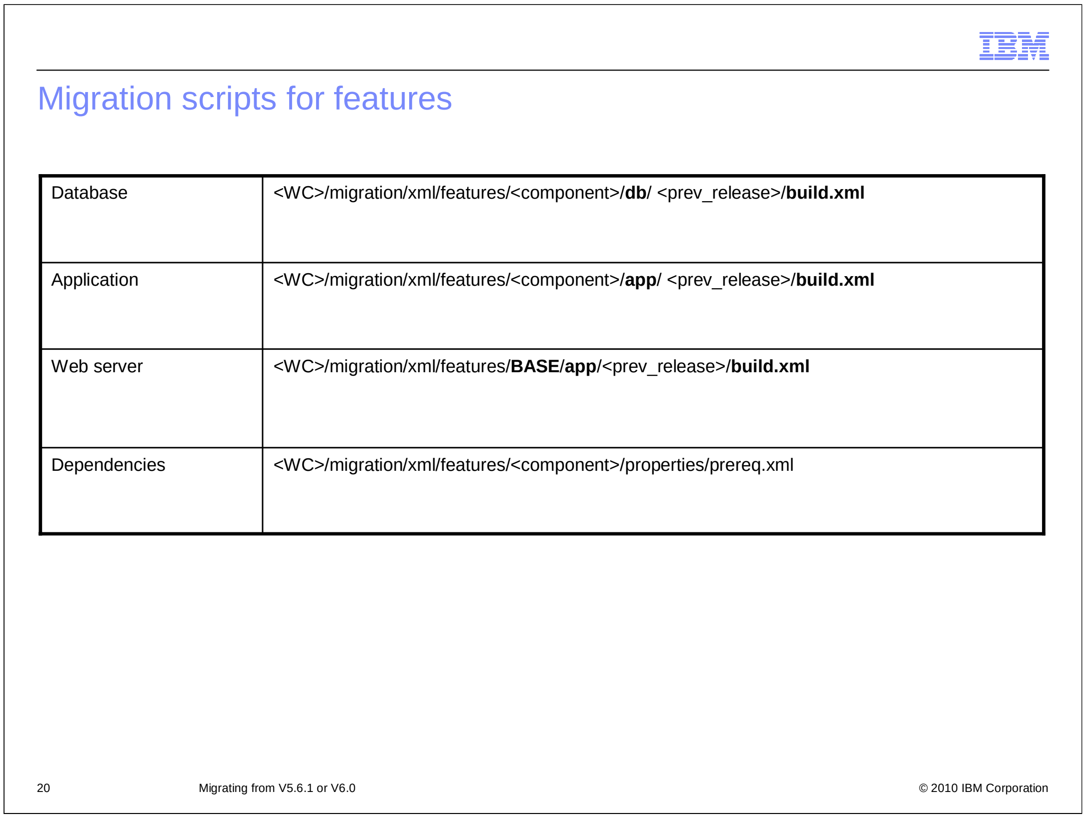
After the overall migration is done, the migration framework removes the component files from the EAR file. Finally, all the feature entries in the SITE table are removed.



Migration of customized components

- Add scripts to migrate your customized components
  - Organize your scripts by meaningful names
  - Migration framework checks for custom migration scripts
  - Called after BASE but no other specific order
  - Dependency among custom migration scripts specified in prereq.xml

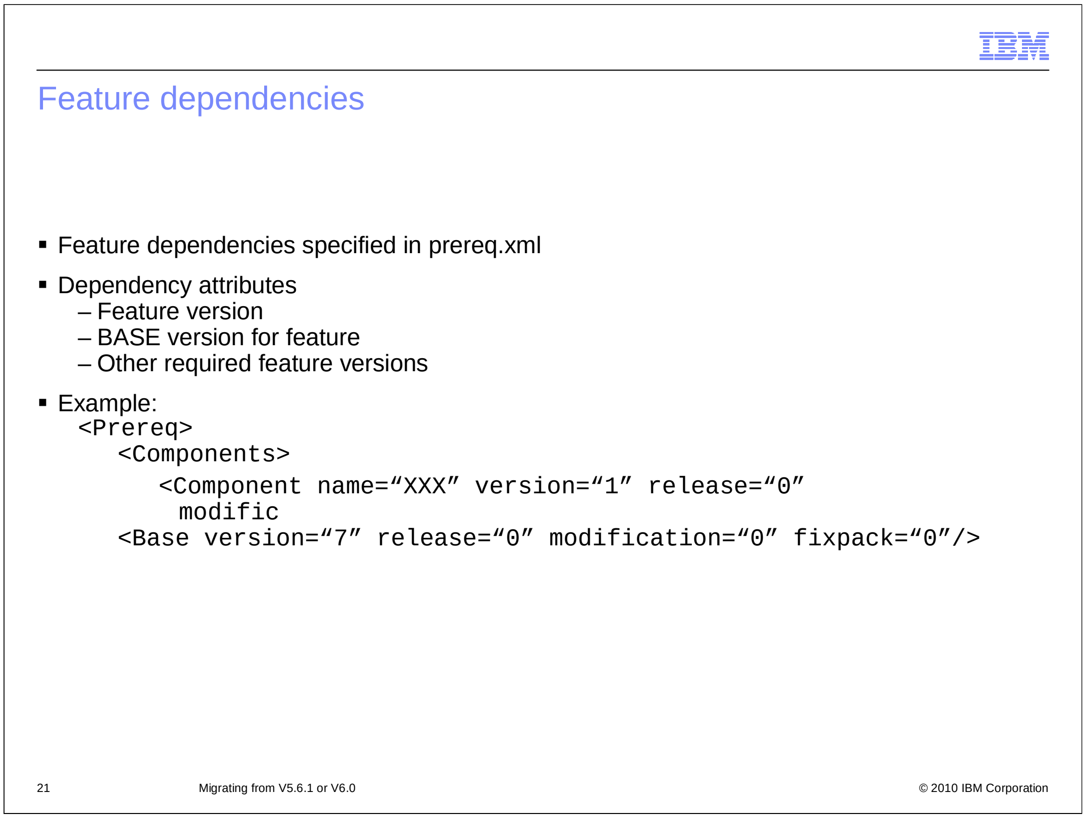
If you created your own new features, you are responsible for creating migration scripts for them. You can organize these scripts by choosing a meaningful name for them. The migration framework checks for the existence of the migration scripts and runs them after migrating the base script. The script invocation order is not guaranteed. You can specify the dependencies between your custom migration scripts in the prereq.xml file.



Migration scripts for features

Database	<WC>/migration/xml/features/<component>/**db**/ <prev_release>/**build.xml**
Application	<WC>/migration/xml/features/<component>/**app**/ <prev_release>/**build.xml**
Web server	<WC>/migration/xml/features/**BASE**/**app**/<prev_release>/**build.xml**
Dependencies	<WC>/migration/xml/features/<component>/properties/prereq.xml

This slide shows the locations of the feature migration scripts.

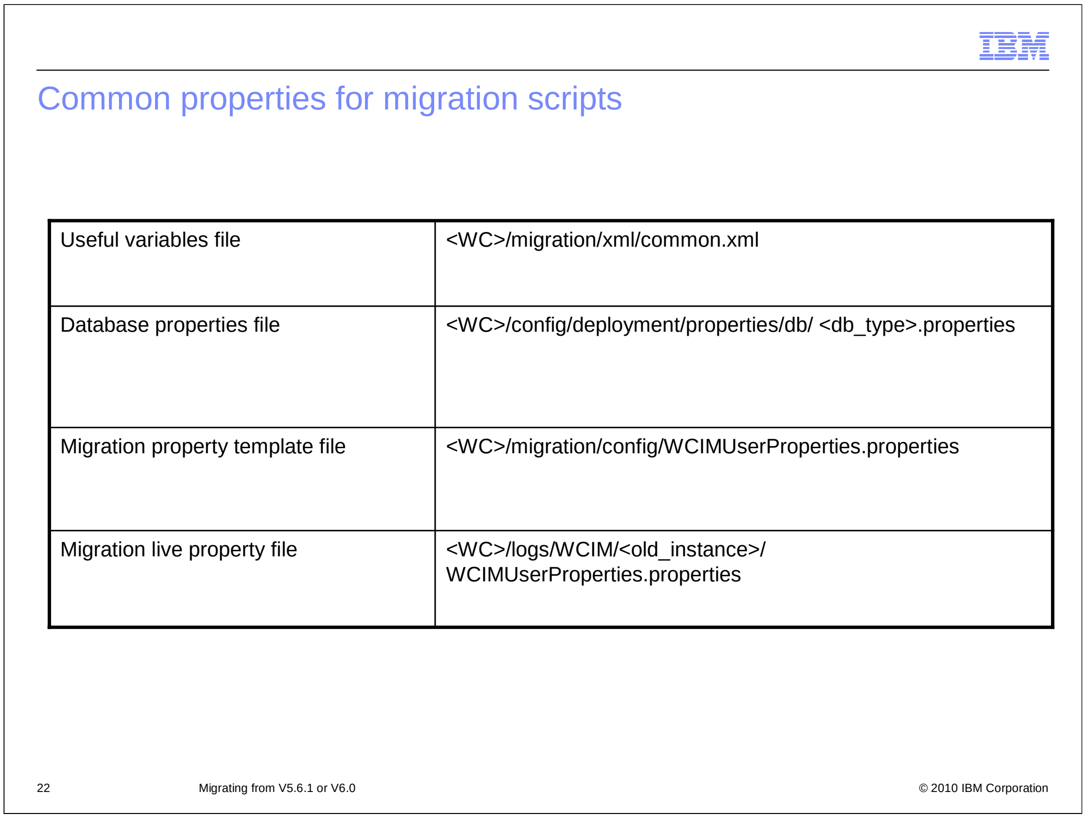


Feature dependencies

- Feature dependencies specified in prereq.xml
- Dependency attributes
  - – Feature version
  - – BASE version for feature
  - – Other required feature versions
- Example:

```
<Prereq>
   <Components>
      <Component name="XXX" version="1" release="0"
        modific
   <Base version="7" release="0" modification="0" fixpack="0"/>
```

In the prerequisite file, you specify the version of the feature you want to migrate, the version of the base and the version of other features it requires. This slide shows an example of the prerequisite file.



Common properties for migration scripts

Useful variables file	<WC>/migration/xml/common.xml
Database properties file	<WC>/config/deployment/properties/db/ <db_type>.properties
Migration property template file	<WC>/migration/config/WCIMUserProperties.properties
Migration live property file	<WC>/logs/WCIM/<old_instance>/WCIMUserProperties.properties

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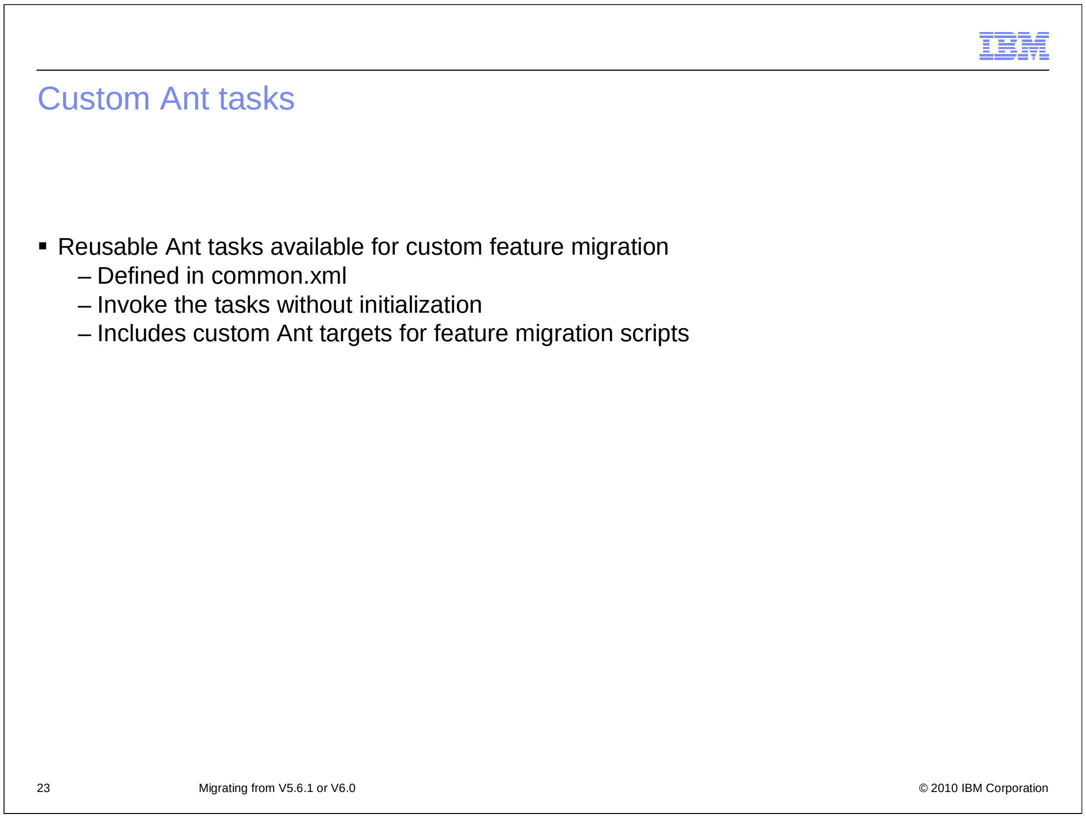
This slide shows the location of some common properties files used in migration. The migration framework uses the same database configuration information as the configuration manager. Most commonly used properties are stored in the common.xml file. If you are interested in how the migration framework works, you can look at the common.xml and the database properties files whose locations are shown in the first two rows of the table. Shown in row three, the WCIMUserProperties file has many migration property values defined. The migration framework takes this file as a template and generates a live copy, which records all the user's inputs and derived values. This file is very useful for problem determination.



Custom Ant tasks

- Reusable Ant tasks available for custom feature migration
  - – Defined in common.xml
  - – Invoke the tasks without initialization
  - – Includes custom Ant targets for feature migration scripts

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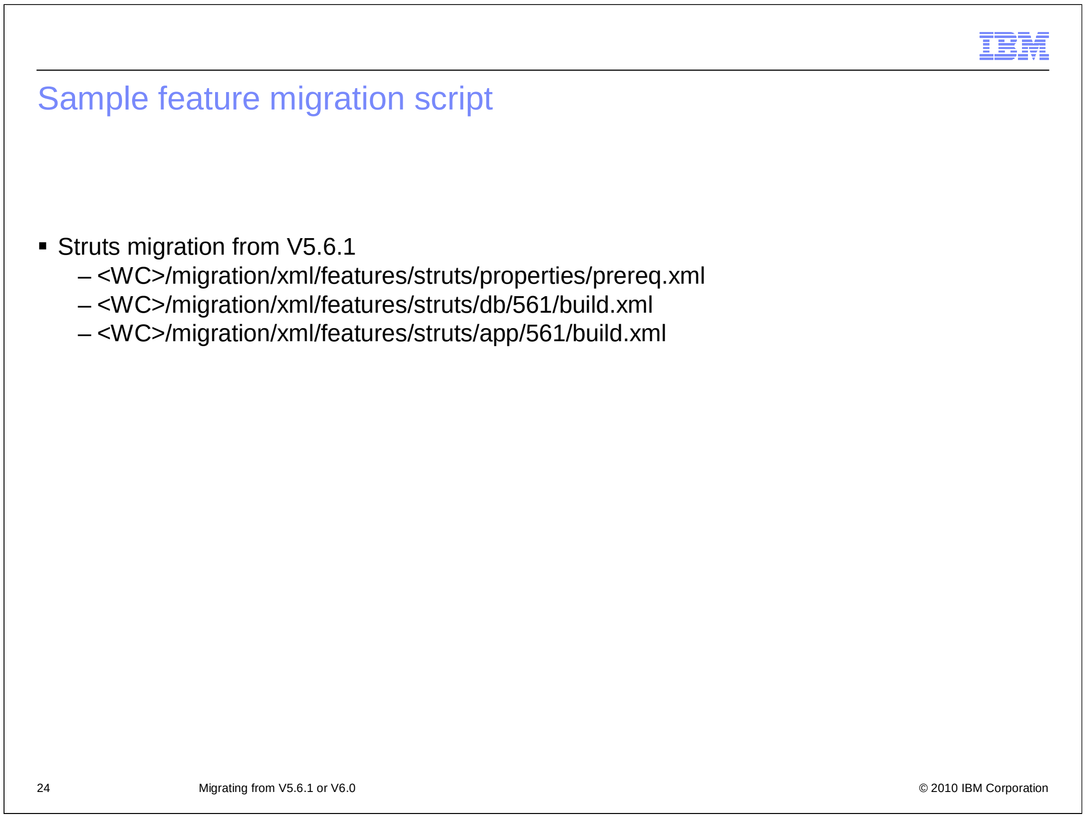
You need to build you own Ant task to migrate your custom features. There is a large choice of Ant tasks available for feature migration in the common.xml file. These Ant tasks can be invoked without initialization. The common.xml file also points to the custom Ant targets for the feature migration scripts.



Sample feature migration script

- Struts migration from V5.6.1
  - <WC>/migration/xml/features/struts/properties/prereq.xml
  - <WC>/migration/xml/features/struts/db/561/build.xml
  - <WC>/migration/xml/features/struts/app/561/build.xml

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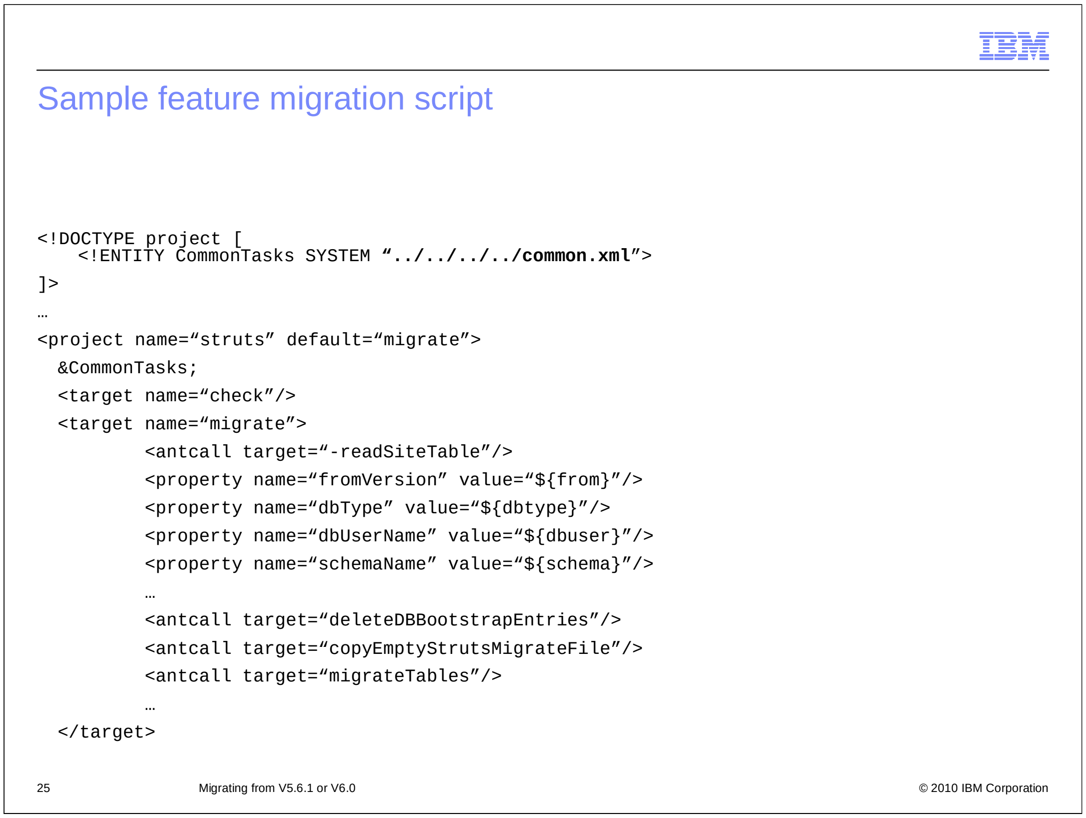
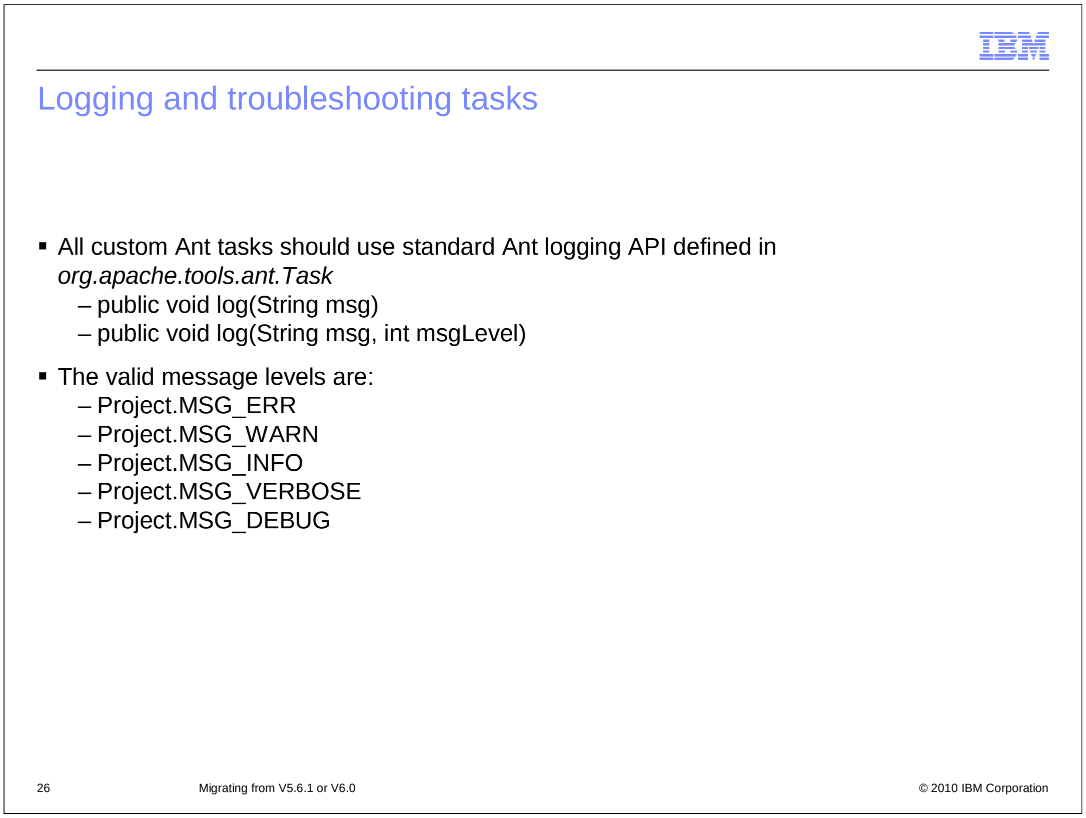
As a feature migration sample, the location of the scripts for Struts migration from version 5.6.1 to version 7 are listed here. These scripts include a prerequisite file, a build file for migrating the database and a build file for migrating the application.



Sample feature migration script

```
<!DOCTYPE project [
    <!ENTITY CommonTasks SYSTEM “../../../../common.xml”>
]>
…
<project name=“struts” default=“migrate”>
  &CommonTasks;
  <target name=“check”/>
  <target name=“migrate”>
          <antcall target=“-readSiteTable”/>
          <property name=“fromVersion” value=“${from}”/>
          <property name=“dbType” value=“${dbtype}”/>
          <property name=“dbUserName” value=“${dbuser}”/>
          <property name=“schemaName” value=“${schema}”/>
          …
          <antcall target=“deleteDBBootstrapEntries”/>
          <antcall target=“copyEmptyStrutsMigrateFile”/>
          <antcall target=“migrateTables”/>
          …
  </target>
```

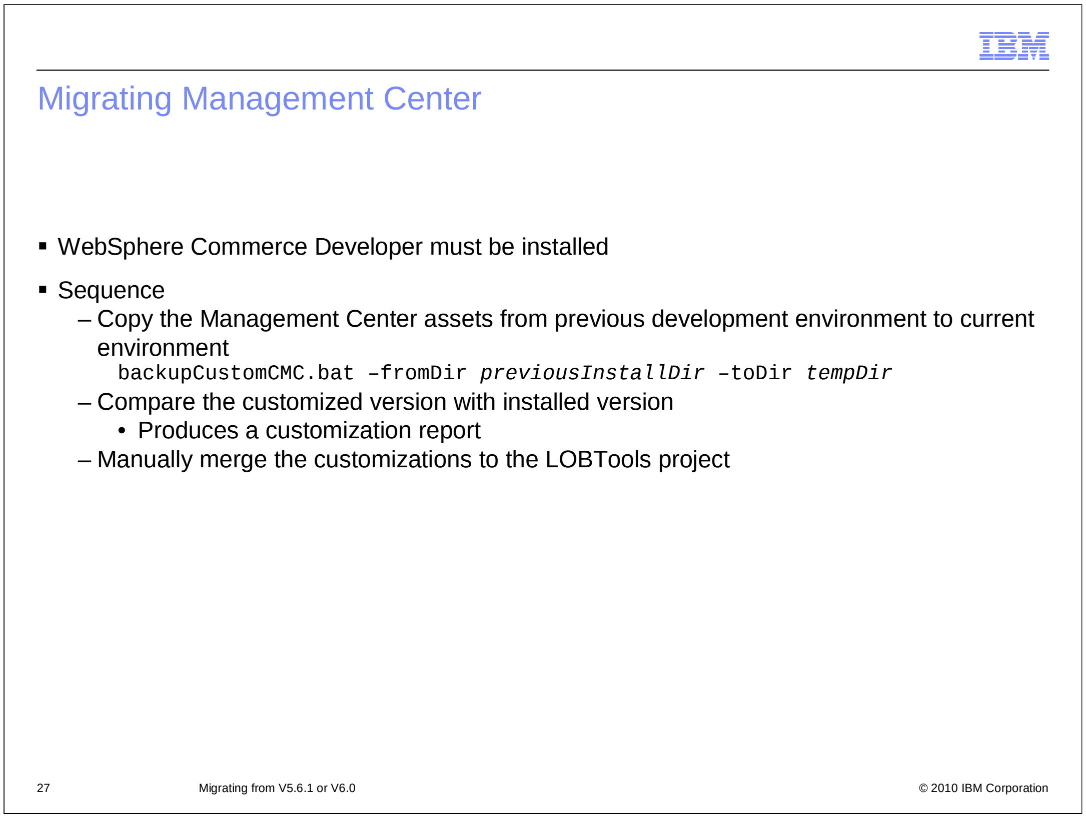
This slide shows an example of a build file for Struts database migration. You can see that it performs several actions such as **check** and **migrate**. When run, this script retrieves some property values and then calls several Ant targets.



Logging and troubleshooting tasks

- All custom Ant tasks should use standard Ant logging API defined in *org.apache.tools.ant.Task*
  - public void log(String msg)
  - public void log(String msg, int msgLevel)
- The valid message levels are:
  - Project.MSG_ERR
  - Project.MSG_WARN
  - Project.MSG_INFO
  - Project.MSG_VERBOSE
  - Project.MSG_DEBUG

If you are building your own custom Ant script, you should use the standard Ant logging API. The message levels for logging are shown here.

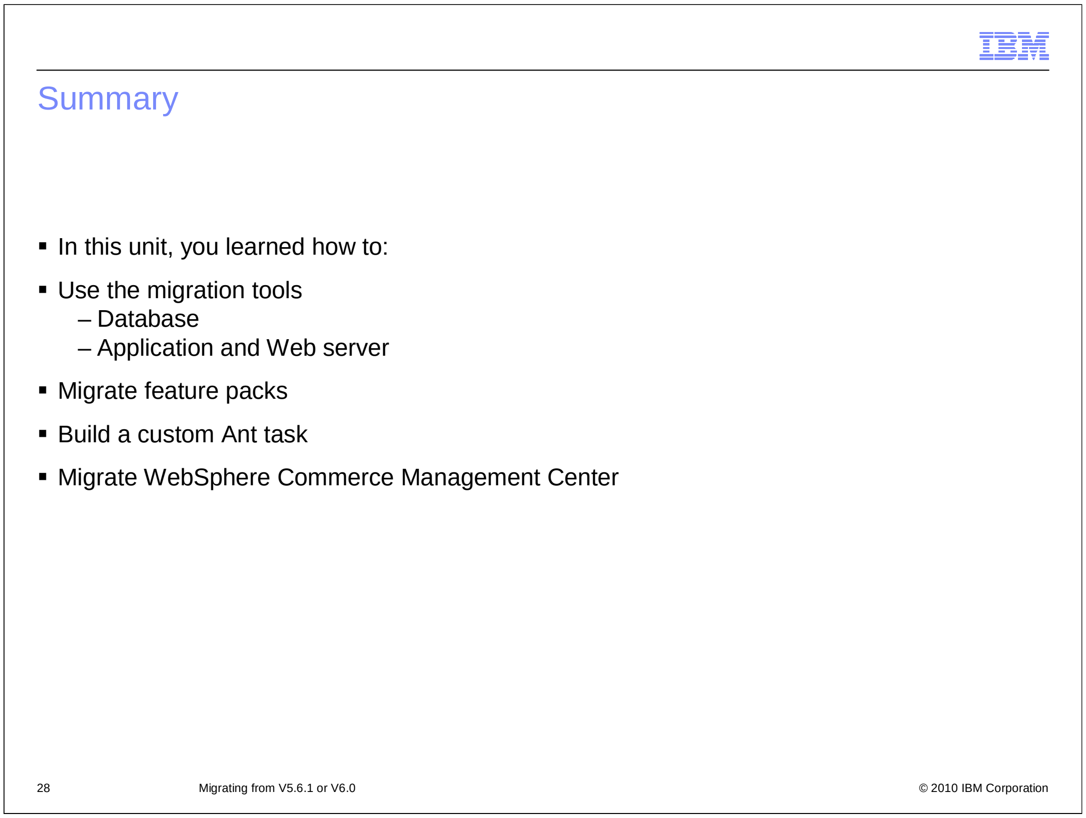


Migrating Management Center

- WebSphere Commerce Developer must be installed
- Sequence
  - Copy the Management Center assets from previous development environment to current environment

    ```
    backupCustomCMC.bat –fromDir previousInstallDir –toDir tempDir
    ```
  - Compare the customized version with installed version
    - Produces a customization report
  - Manually merge the customizations to the LOBTools project

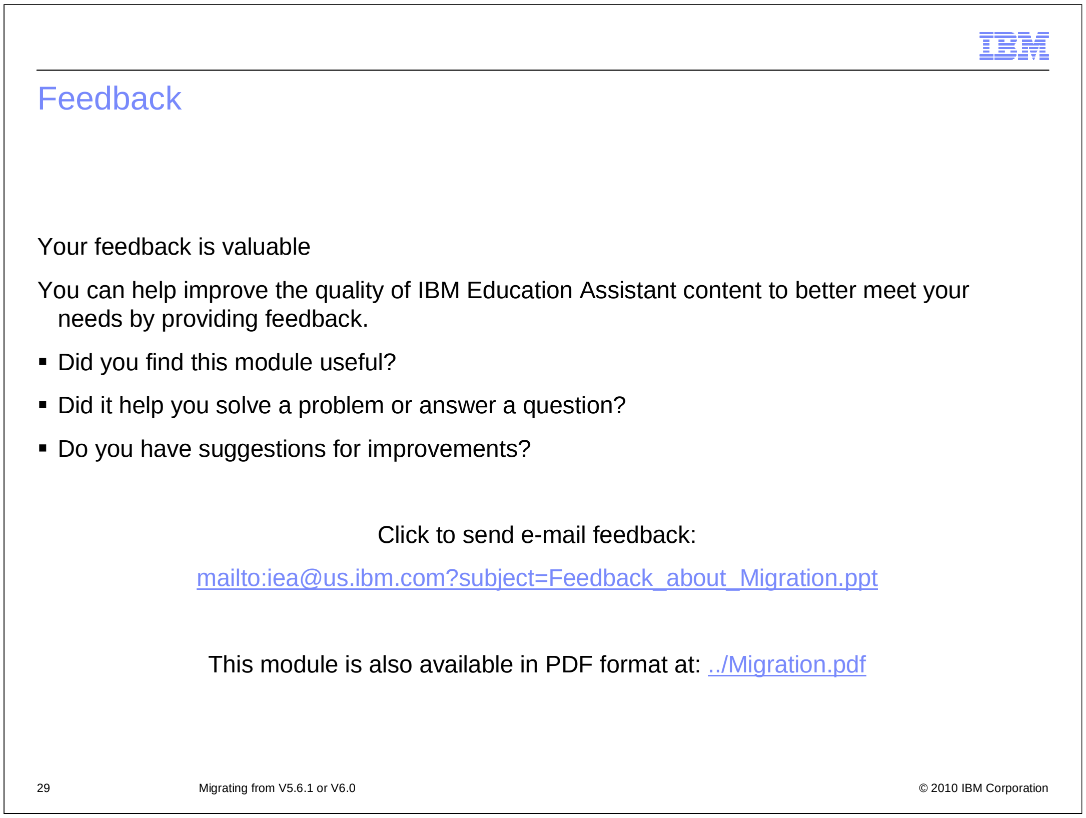
For the Management Center migration, if you have customized any OpenLaszlo files, you need to install WebSphere Commerce Developer to migrate them. In the Developer environment, there is a Rational® Application Developer plug-in which enables you to compare your customized version with the V7 files. You have to make a decision whether you want to take the IBM changes, keep your own changes, or merge them together. Once you finish your migration, you need to test and deploy it into the runtime. More information on the Management Center compare utility is available in the presentation titled “Custom code migration” located in the feature pack 4 section.



Summary

- In this unit, you learned how to:
- Use the migration tools
  - Database
  - Application and Web server
- Migrate feature packs
- Build a custom Ant task
- Migrate WebSphere Commerce Management Center

In this presentation, you learned how to use the migration tools to migrate the WebSphere Commerce database, application and Web server. You also learned how to migrate the feature packs and build your own custom Ant tasks. Finally, you learned how to migrate Management Center with WebSphere Commerce Developer.



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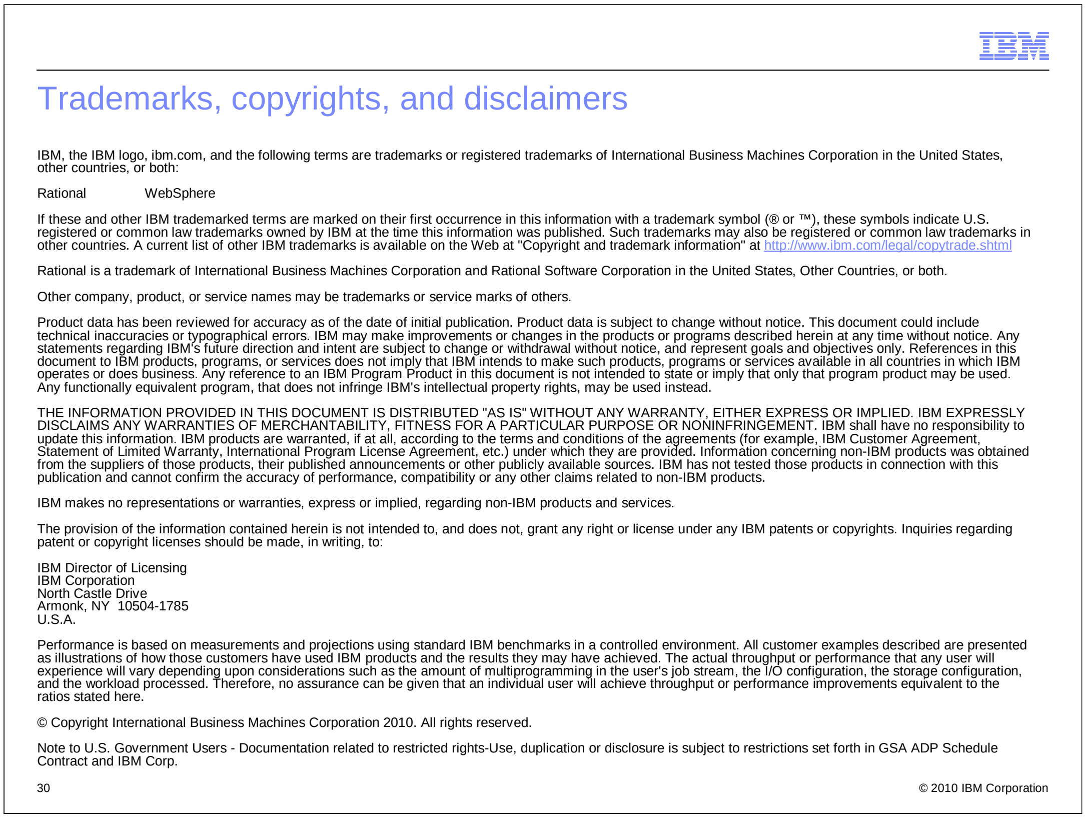

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