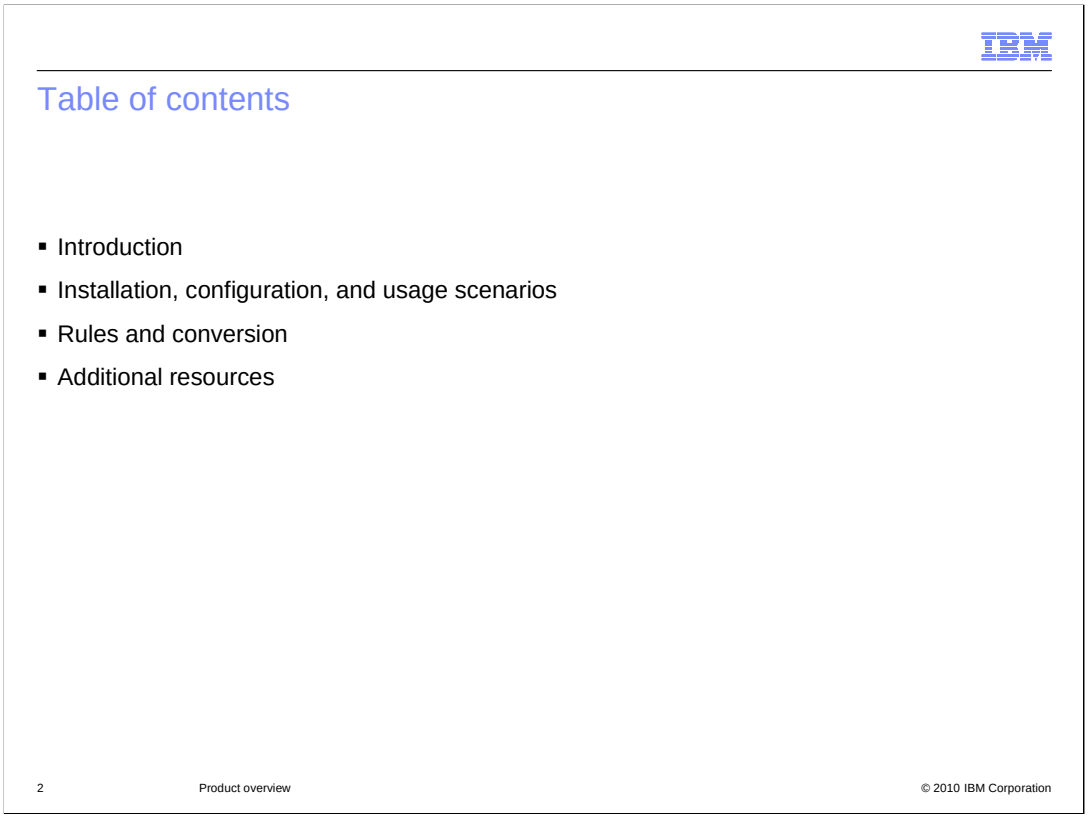
IBM WebSphere Application Server Migration Toolkit

Product overview

WebSphere software

This presentation provides an overview of the features and functionality for the WebSphere® Application Server Migration Toolkit.



This presentation begins with an introduction of the application migration tool, discussing what the tool does along with how it does it.

How to install, configure, and use the tool will follow the introduction.

Then you will see a high level overview of what you are migrating.

And finally at the end you will see some additional resources that can be used.

Introduction

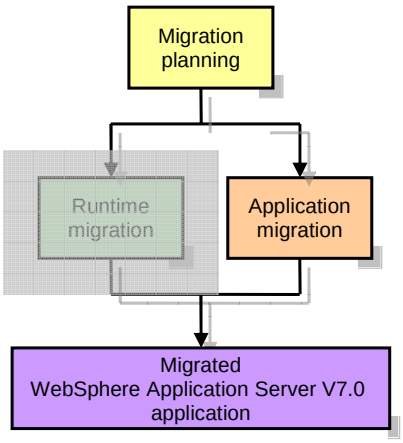
- Assists developers in migrating an application from another J2EE™ server to WebSphere Application Server V7
- Tool works with:
  - J2EE 1.4 WebLogic Server Applications
  - J2EE 1.4 JBoss Applications
  - Java EE 5 WebLogic Server Applications
  - Java EE5 JBoss Applications
- Provides simple and quick remediation tools to perform automatic migration
- Complete control over the migration process
  - Knowledge-based migration assistant improves the reliability of the migration

The Application Migration Tool assists developers in migrating their applications from one J2EE server to WebSphere Application Server V7. The tool currently works with WebLogic and JBoss supporting J2EE1.4 and Java EE5 applications for JBoss and Oracle WebLogic Server.

The tool give you complete control over the migration itself allowing you to carefully migrate the application looking at each individual code change needed or allows you to do a few clicks to complete the process.

Application migration - Defined

- Migration Planning: Perform detailed analysis to understand the overall cost and effort involved in performing the migration.
- Runtime migration: Define the topology for all of the runtime environments (for example, integration and QA), then install and configure.
- Application migration: Detect and transform vendor specific details from application source code.
- Result: Migrated application ready to run in a WebSphere Application Server environment.



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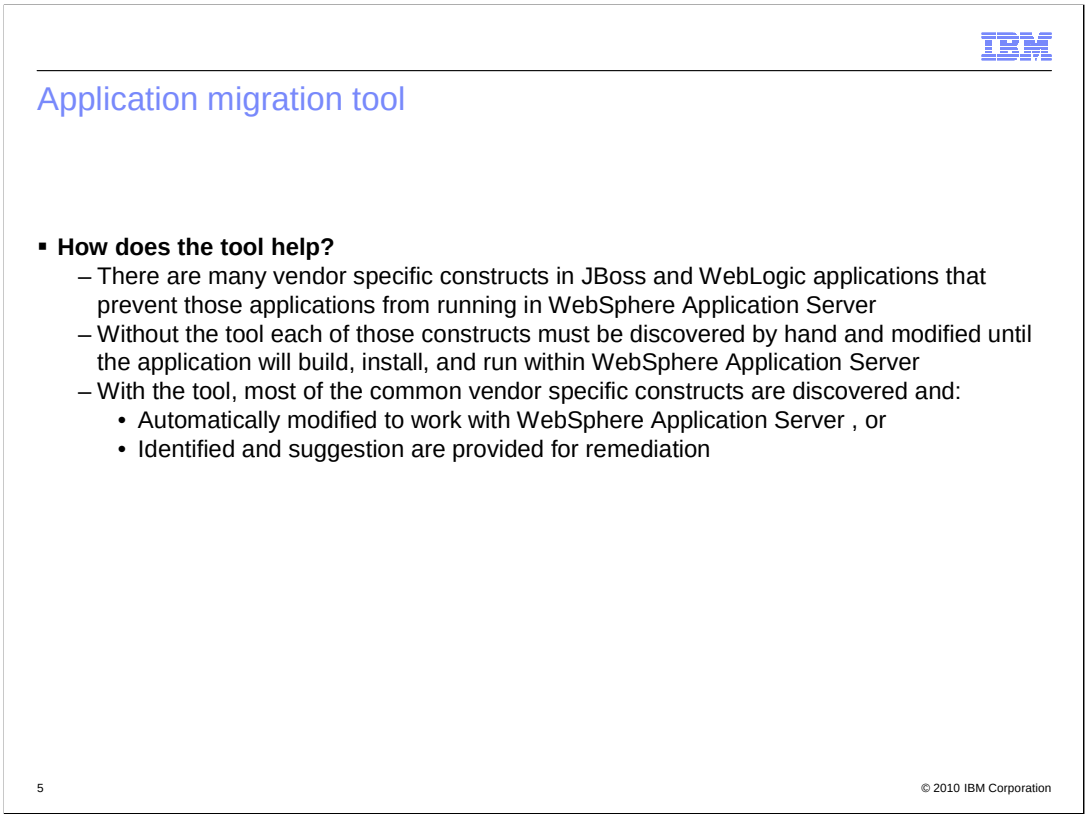
The tools in the migration toolkit focus around application migrations.

The very first item to look at during a migration process it to do a full assessment of what needs to be changed during the migration planning. This can be one of the most time consuming events in that you have to research many different applications and configurations.

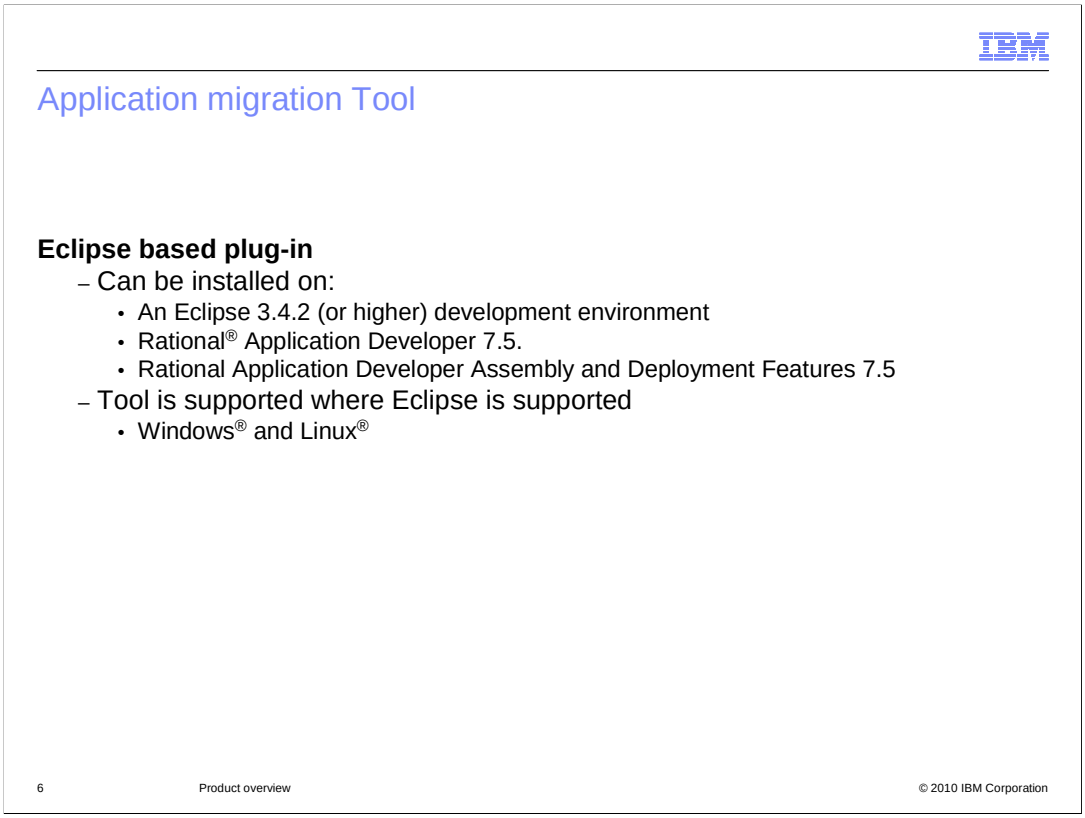
At a high level, the migration process consists of planning for your migration and then moving into two separate paths. One being the runtime migration and the other being application migration. The runtime migration focuses on the topology and configurations.

The application migration consists of detecting and transforming vendor specific details from the application source code. This process also requires testing to ensure the application changes are sufficient. This should be done for any application change and not just migrations.



There are many differences between JBoss, WebLogic, and WebSphere applications that are vendor specific that prevents applications from JBoss or WebLogic Server from running on WebSphere Application Server. The Application Migration Tool will find most of the common vendor specific constructs and either automatically modify source code or suggest manual changes for remediation.

Without the tool, the process is time consuming where you has to manually find all the incompatibilities in the source code.



The tool itself is an eclipse based plug-in that can be installed into Eclipse 3.4.2, 3.5, or 3.6.

It can also be installed into Rational Application Developer for a complete application development experience.

As is, the tool is supported where eclipse and Rational Application Developer are supported.

Application migration tool

- **Built on Rational Software Analyzer technology**
  - Rational Software Analyzer provides a single solution to identify, analyze, and fix application code quality and compliance requirements
    - Extended scanning capabilities and support for JSPs, XML, and manifest files
    - Custom rules for a set of known migration issues
    - Quick fixes for rule violations where possible
    - Built-in help information on the rules and quick fixes
    - Side by side review function to see the potential code changes

The Application Migration tool uses the technology from Rational Software Analyzer to extend their scanning capabilities and added support for scanning JSPs, XML, and Manifest files. The toolkit development team has built a custom set of rules for those known migration issues mentioned earlier. Quick fixes for rule violations have been provided along with built-in help for detailed information on the rules and quick fixes.

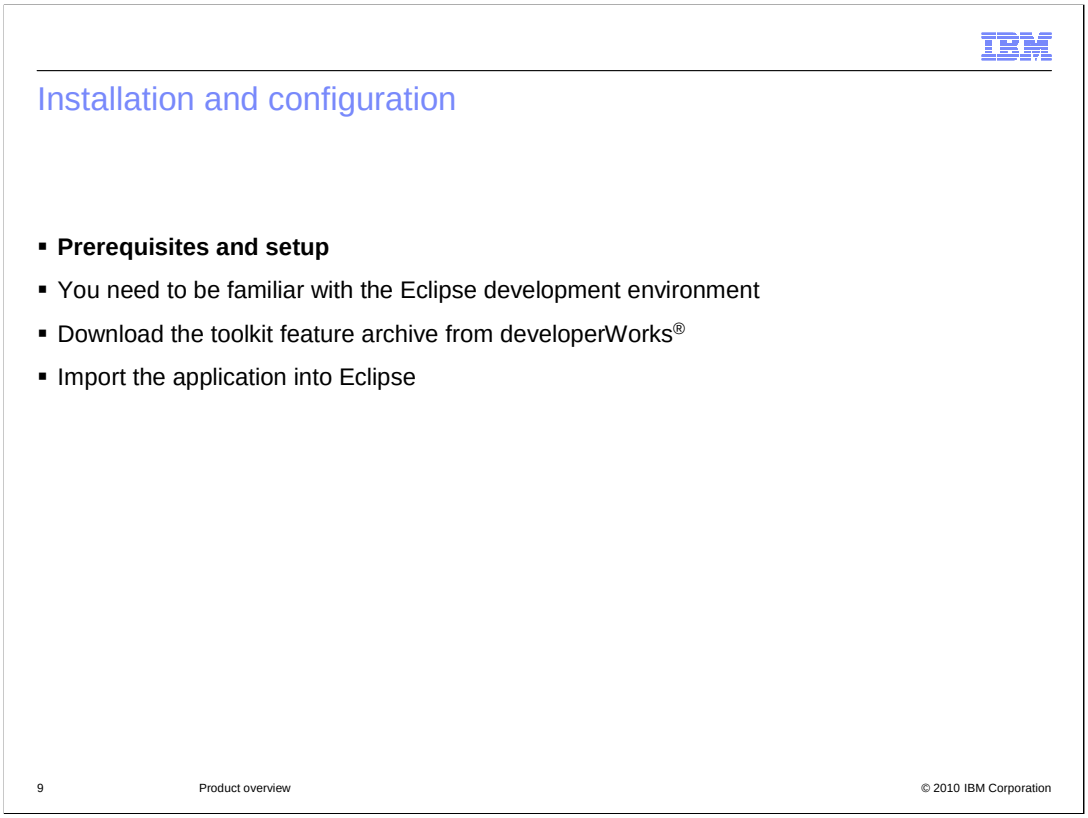
The tool also provides a side by side review function where you can see what code was found that needed to be migrated and what you are changing the source code to.

Rational Software Analyzer provides a single solution to identify, analyze, and fix application code quality and compliance requirements.

Section

Installation, configuration, and usage scenarios

This section will review installation, configuration, and usage scenarios.

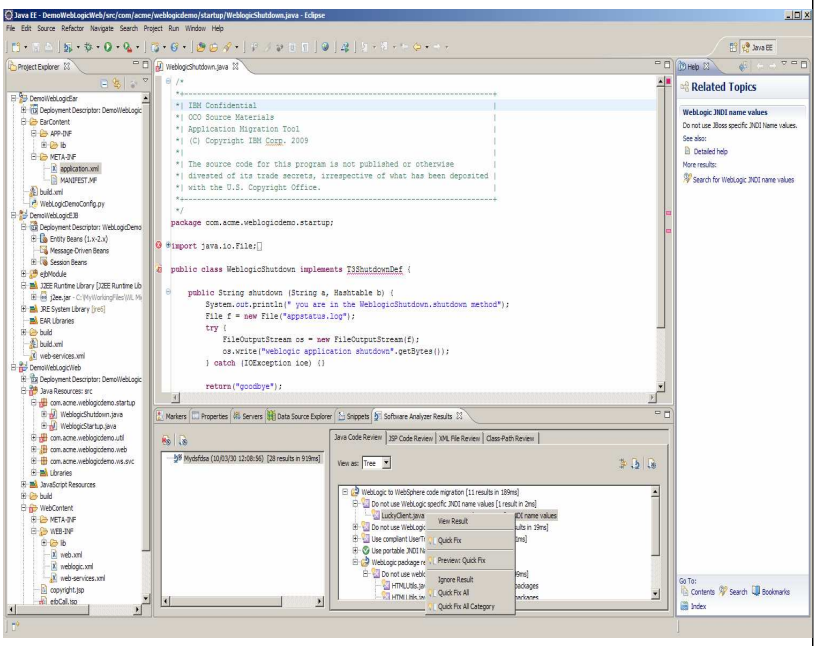


There are a few basic prerequisites. They include the following:

1. You need to have a good understanding of the Eclipse development environment.
2. You must download the toolkit feature archive from developerWorks.
3. You must import your applications into Eclipse if not already in that IDE.

Application migration tool – Installation and configuration flow

- Install into an existing Eclipse IDE as a plug-in
- Create a configuration to scan
- Launch the analyzer to analyze your applications
- Review the results
- Review the help Panels
- Preview the changes
- Apply the Fix
- Complete the process



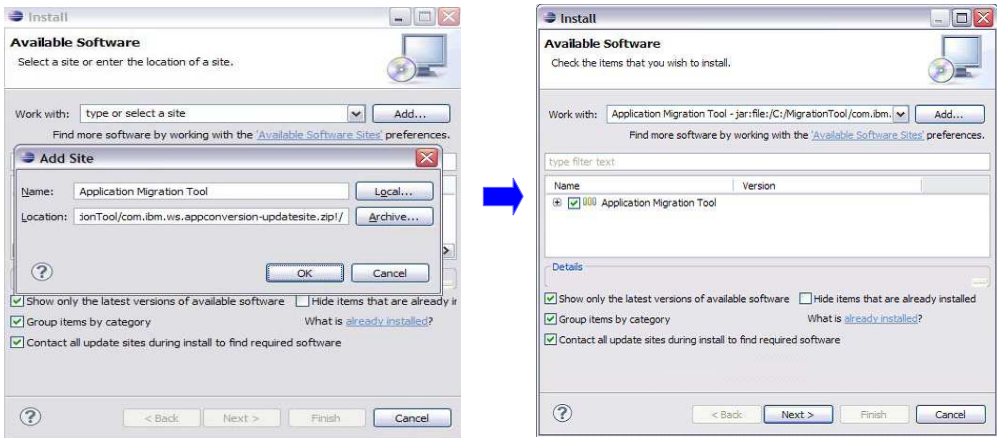
This presentation takes you through how to install the plug-in into eclipse, create a configuration, launch the analyzer, review the results, preview the changes, review the help, and apply the fix.

Application migration tool - Flow (1 of 12)

Install the tool

Installed through standard Eclipse plug-in installation (**Help > Install new software**…) into the plug-ins directory

New versions are updated in a similar manner using the Eclipse software install mechanism.



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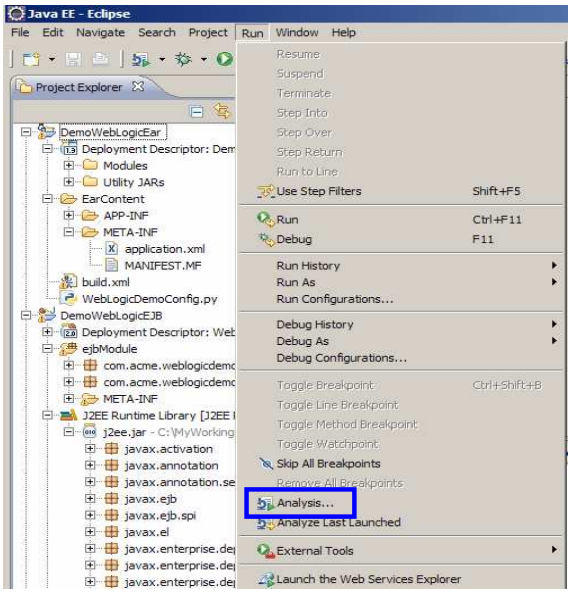
To install the Application Migration Tool you install with the standard eclipse plug-in installation, by selecting Help→ install new software. Ensure that you select “Contact all update sites during install to find required software” otherwise your installation might not have all required libraries for running the migration toolkit.

Once selected, just hit next and accept the license agreement and the toolkit will be installed. It will require a recycle of the eclipse IDE.

Note that if you are upgrading versions, you do that in the same fashion as a new installation.

Application migration tool - Flow (2 of 12)



- **Configure the tool**

  Two options to open configuration dialog

  1. Run – Analysis
  2. Select your project in the explorer, right click and select Software Analyzer

12 Product overview

Once the tool is installed you can configure the tool. There are two different options for configurations.

The first being to go to the toolbar at the top of your IDE and select Run and then Analysis.

The other option is to selection your project in the explorer as seen on the right of this screen capture, right click, and select Software Analyzer.

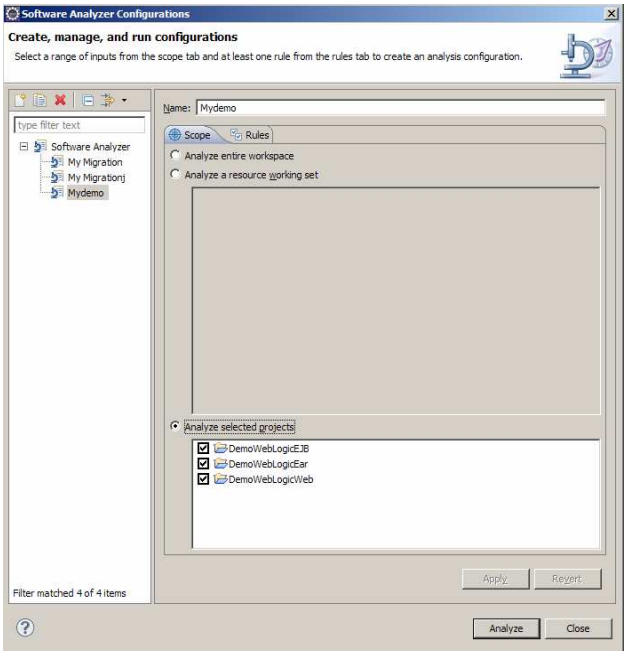
Once selected, a new dialog box is displayed.

Application migration tool - Flow (3 of 12)

- **Select your scope**

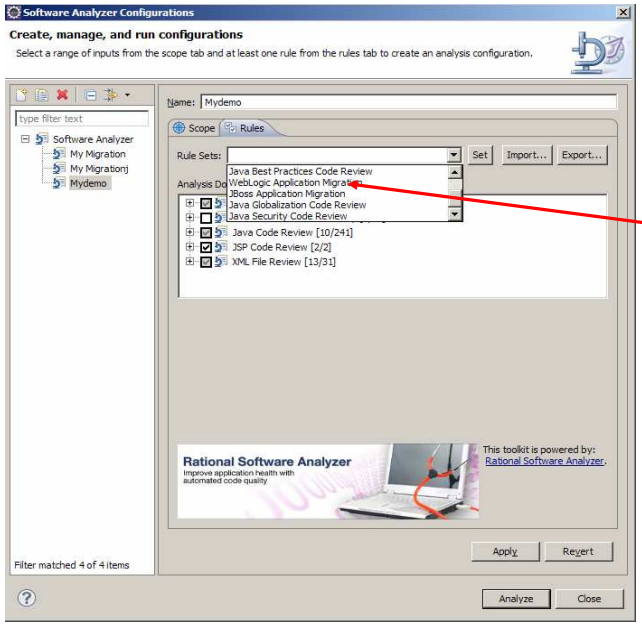
  Analyze entire workspace
  or
  Analyze a particular project

  One can also analyze specific folders or individual files within a project from the Eclipse Package Explorer View



You are now ready to do the configuration. The first is to select your scope. You can analyze the entire workspace, or select a particular project as seen in the screen capture.

Application migration tool - Flow (4 of 12)



Select the rules to be run from the drop down and select the Set button

WebLogic and JBoss rule sets provided for easy configuration

14 Product overview

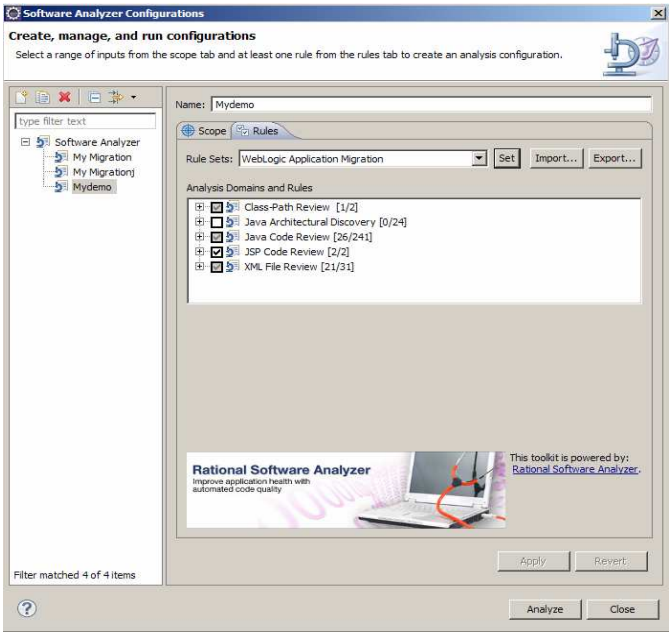
You then move over from the Scope tab to the Rules tab. Select the rule set drop down menu and select either the WebLogic of JBoss rule set depending on which application server you are migrating from.

As you see in the screen capture there are additional rule sets that are provided for free that are from the full Rational Software Analyzer Product.

Application migration tool - Flow (5 of 12)

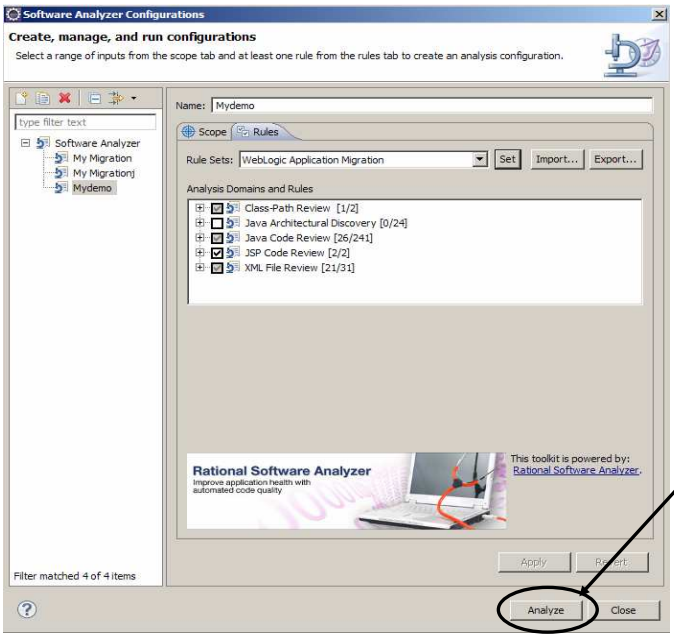
- **Optionally you can drill down into each of the categories to select individual rules**

  Allows you to ignore or select a subset of the rules you want to run



Instead of selecting a rule set you can optionally drill down into each category to select the rules that you want to run.

Application migration tool - Flow (6 of 12)



- **Analyze your project!**

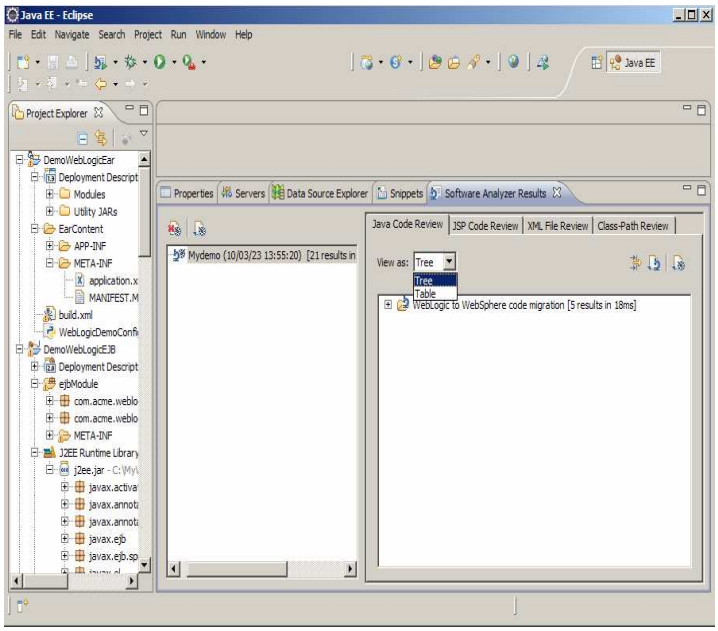
After the rules are selected, you can analyze the source code to give you the list of everything that needs to change.

16 Product overview

Now you are ready to analyze the project. Simply click the Analyze button and you are off.

Application migration tool - Flow (7 of 12)

- **View the results as a tree or table**
- **Results put into four categories**
- **Total displayed in the left box**



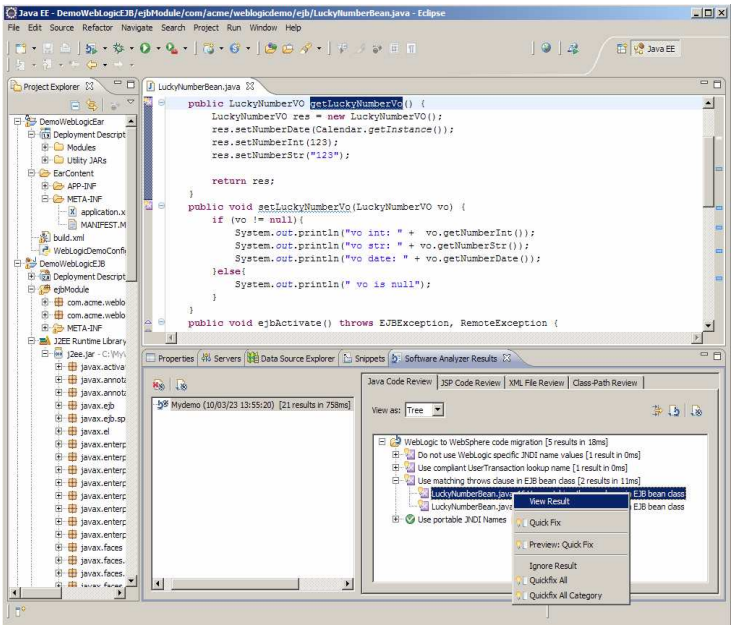
In just a matter of seconds, you now have your results.

You can view the results in a tree view or a table view.

The results are put into four possible categories. They are Java code review, JSP code review, XML File review, and Class-Path review for manifest files.

The total number of problems found is displayed in the left box.

Application migration tool - Flow (8 of 12)



View the result

Show the source code that needs to be changed

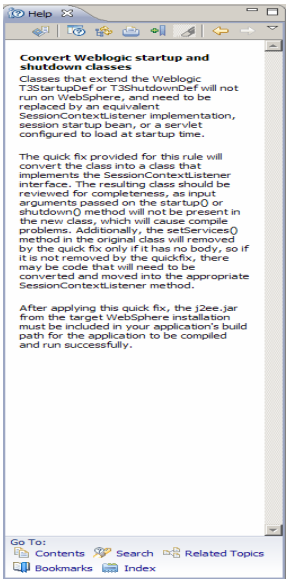
You are now ready to review the results.

In the Tree view drill down to one of the violations that was found and right click that rule. You will see several different options. The first is “view Result”.

View Result allows you to look at the source code that needs to be changed.

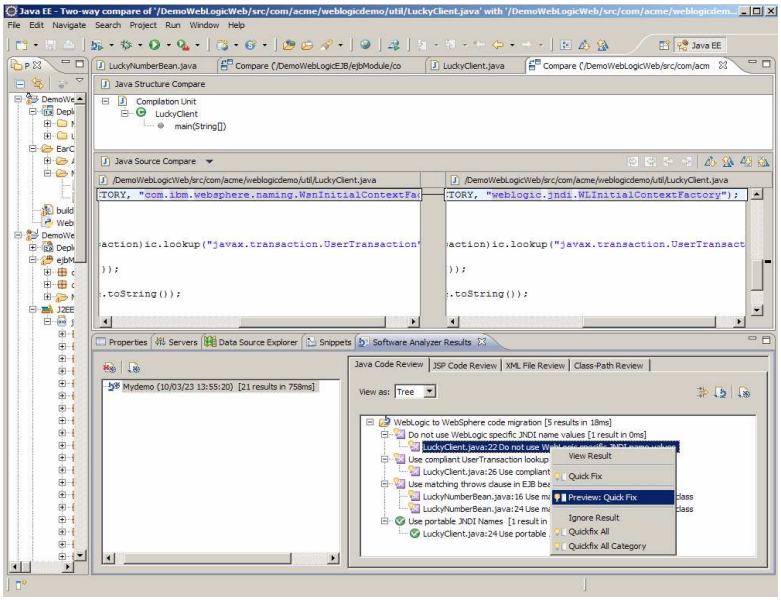
Application migration tool - Flow (9 of 12)

- **Help provided through the Eclipse help system**
- **With the rule selected hit F1**
- **Detailed help also provided for additional information**



You can also select the help. Hit F1 on the rule, and detailed help will appear.

Application migration tool - Flow (10 of 12)



Review the results

Side by side comparison of old source code and what it would look like after conversion

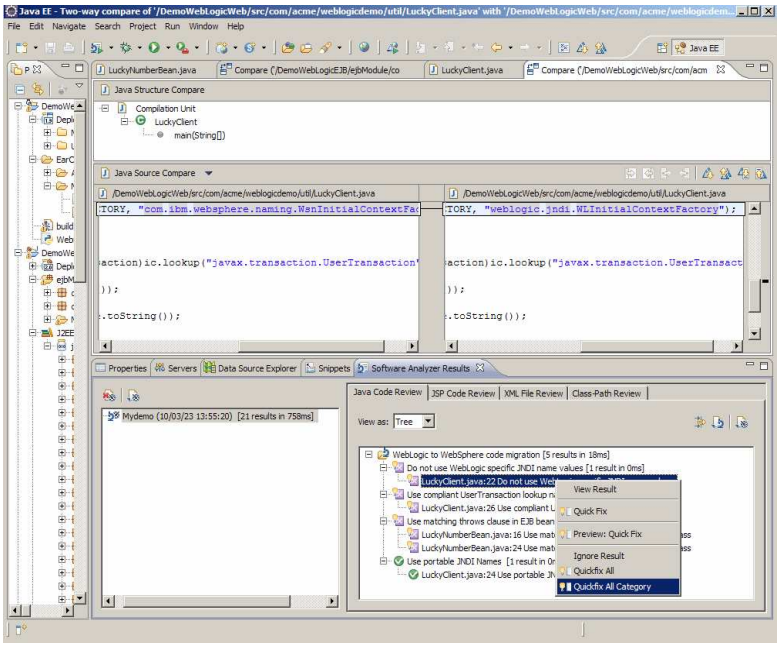
You are now ready to compare the source code with a before and after shot.

Once again right click the violation and select Preview Quick Fix. You will see the code on the left is what the tool is are recommending as a change, and the code on the right is the current code.

Application migration tool - Flow (11 of 12)

- **Two options for Quick Fix All**

1. Rule Level
2. Category Level

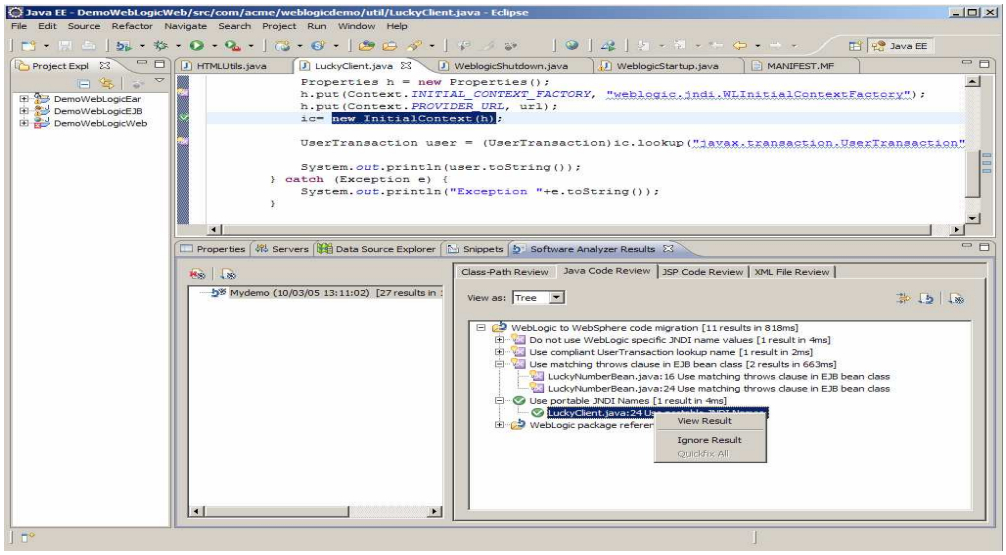


You are now ready to run the automatic fixes. This is called a quick fix. You can either fix each violation one at a time by right clicking and selecting quick fix or by doing quick fix all.

There are two options with quick fix all. You can do it at a rule level or a category level. This allows you full control of how you want to do global changes.

Application migration tool - Flow (12 of 12)

- **Some rules do not have Quick Fixes**
  Review the help for suggested solutions



As mentioned earlier, not all violations and rules have quick fixes. For those that do not, review the help for the suggested solutions.

Section

Rules and conversion

This section talks about the rules and conversion.

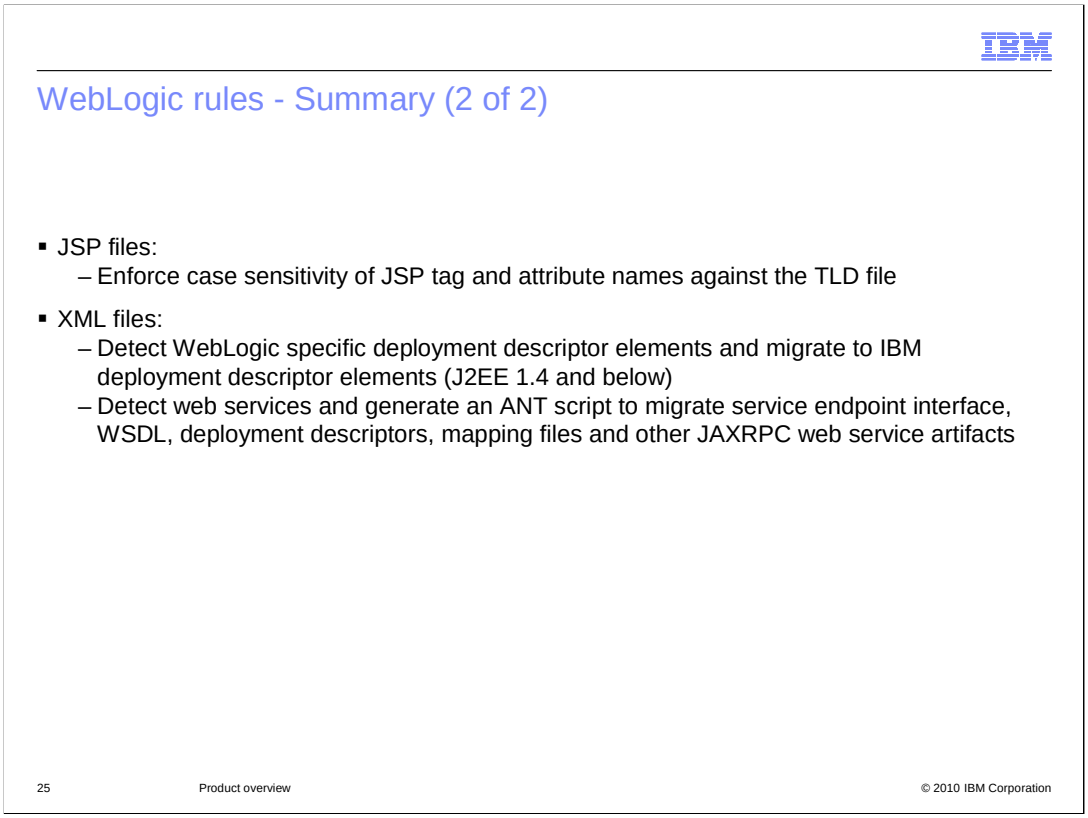
WebLogic rules - Summary (1 of 2)

- Java source code:
  - Detect WebLogic J2EE specification violations
  - Detect WebLogic proprietary APIs
  - Detect WebLogic proprietary JNDI name values
  - Detect proprietary package references. Convert to standards based package references
  - Detect Java EE 5 items including JPA, JDBC, XML JTA, and logging items
- Manifest files:
  - Add WebLogic implicit paths to the class path

The migration tool provides rules around Java source, Manifest files, JSPs, and XML files.

For the Java source code the tool detects J2EE specification violations, WebLogic proprietary APIs, proprietary jndi names values, package references, and Java EE 5 items for JPA, JDBC, XML, JTA, and logging.

As for manifest files, the tool looks for implicit paths and adds them to the class path.



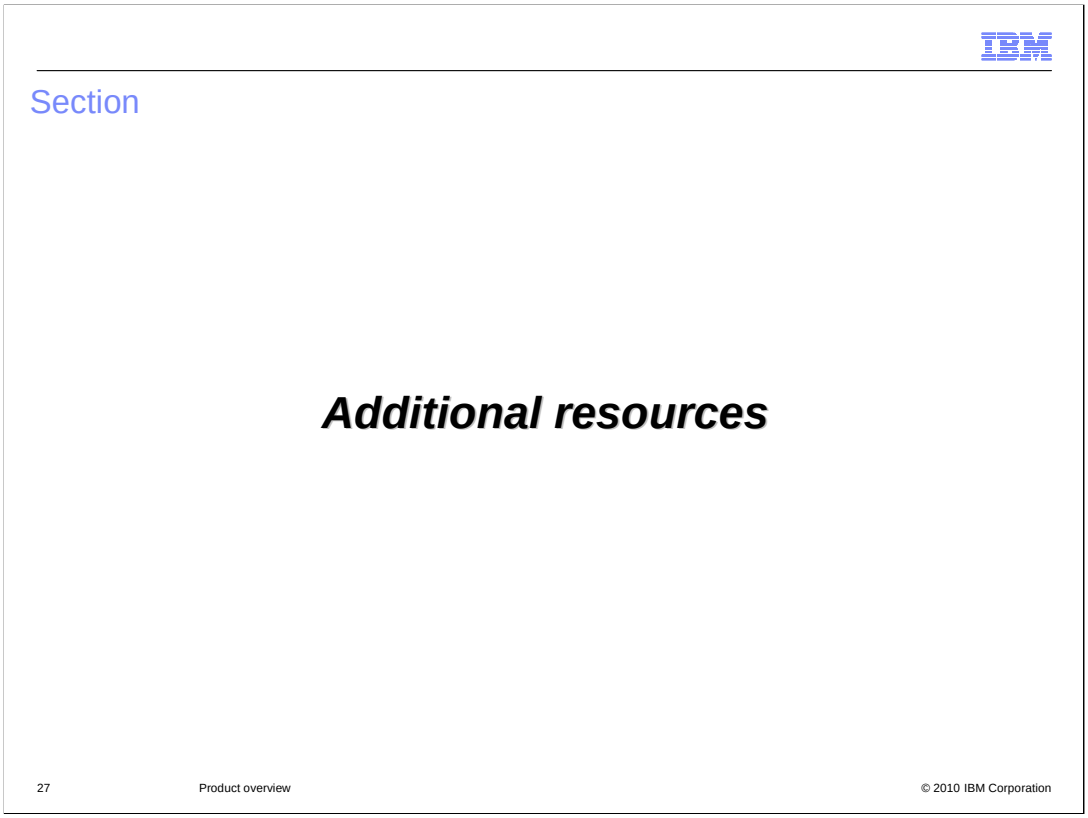
For the JSP scans and WebLogic rules, case sensitivity of JSP tag and attribute names is enforced against the TLD file.

Finally for the XML files the tool detects specific deployment descriptor elements and generates an ant script to migrate your web services artifacts.

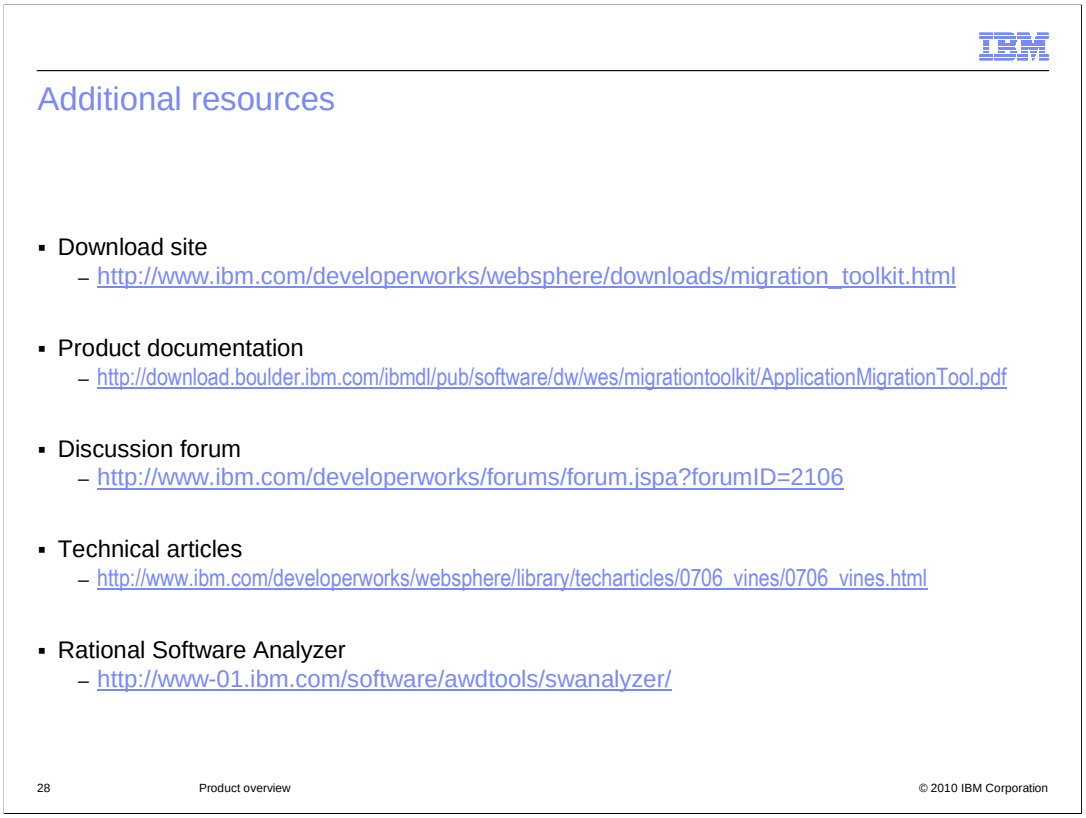
JBoss rules - Summary

- Java source code:
  - Detect JBoss application start up techniques
  - Detect JBoss proprietary JNDI name values
  - Detect proprietary package references
- Manifest files:
  - Add JBoss implicit paths to the class path
- XML files:
  - Detect JBoss specific deployment descriptor elements and migrate to IBM deployment descriptor elements (J2EE 1.4 and below)
  - Detect web services and generate and an ANT script to migrate Service Endpoint Interface, WSDL, deployment descriptors, mapping files and other JAXRPC web service artifacts

The tool does do similarly for JBoss rules, looking for Java source code proprietary information, and looking at the manifest files and XML files similar to the function in the WebLogic Server rules.



This section contains some additional resources where you can find more information about the Migration Toolkit.



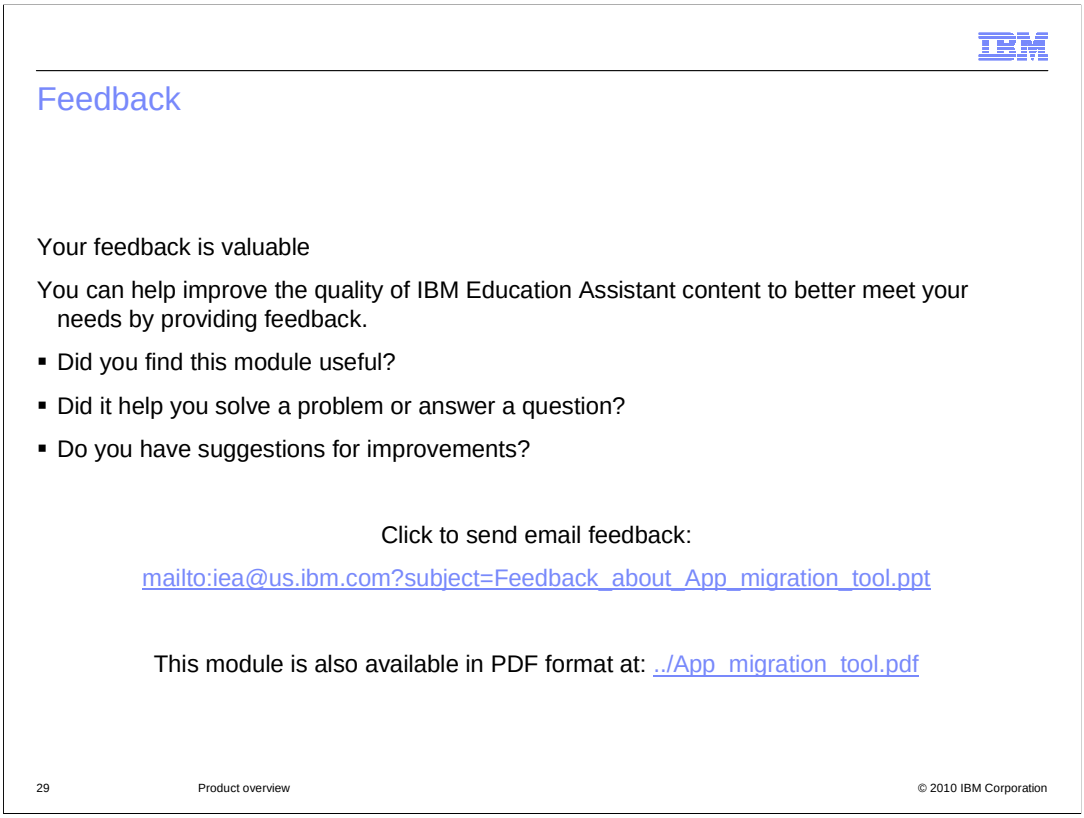
See the download side for detailed information and the download itself.

The product documentation is provided at the download site, as is the download .zip file itself.

There is a discussion forum where you can ask questions or look for new updates.

A technical article that talks about these types of migrations in depth is also provided.

And finally here is another link to the Rational Software Analyzer product.



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