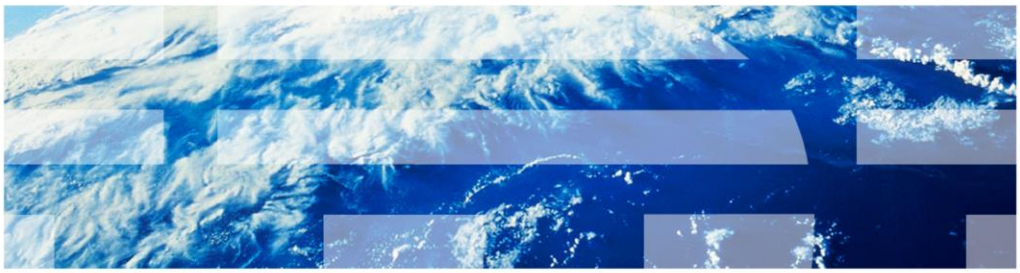
WebSphere Application Server Migration Toolkit V3.5

Overview



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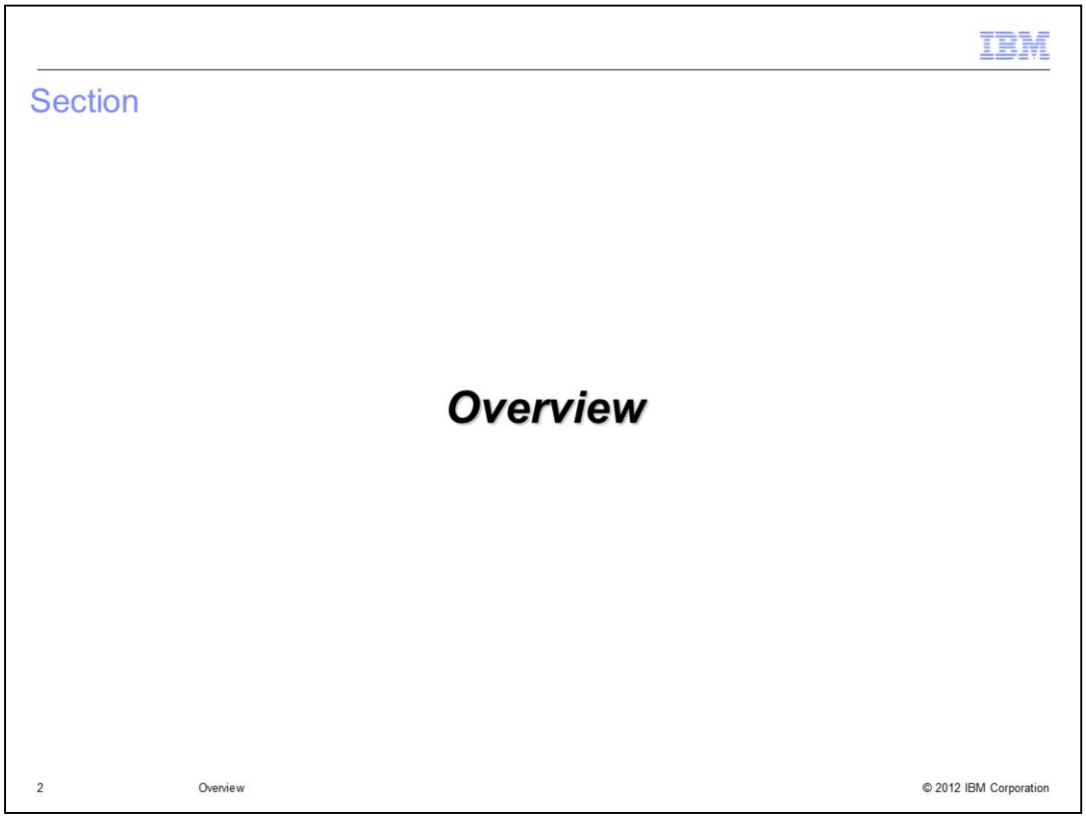
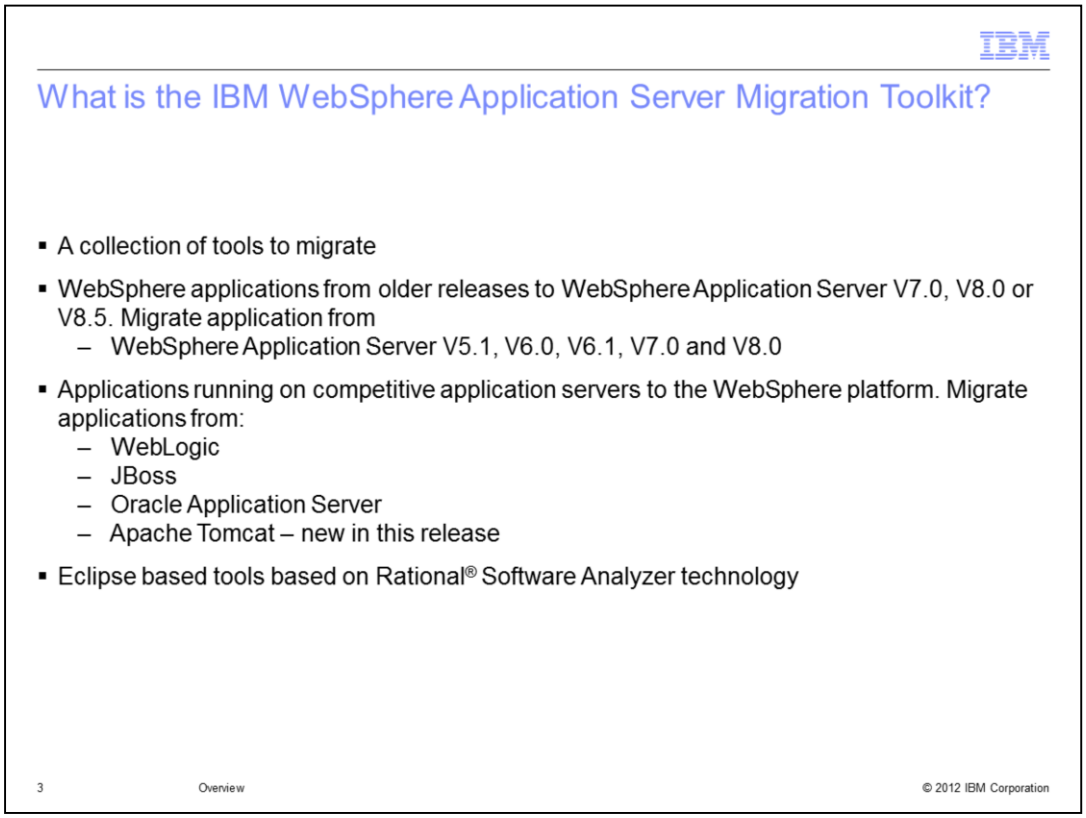
This presentation describes the functionality of the IBM WebSphere® Application Server Migration Toolkit Version 3.5 that is available from developerWorks® and supports migrating applications to IBM WebSphere Application Server V7, V8, and V8.5.



The IBM WebSphere Application Server Migration Toolkit will help you migrate applications from a number of competitive application servers to WebSphere Application Server as well as migrate to later versions of WebSphere Application Server.



The WebSphere Application Server Migration Toolkit provides a collection of tools that are used to migrate applications to run on WebSphere Application Server Version 7.0, 8.0 or 8.5.

The WebSphere Version to Version tool helps you to migrate applications between the versions of WebSphere. The tool supports moving from WebSphere Application Server V5.1, V6.0, V6.1, V7.0 and V8.0 to a later version including V7.0, V8.0, and now V8.5.

The competitive migration tools include features to migrate applications from

WebLogic to WebSphere

JBoss Application Server to WebSphere

Oracle Application Server to WebSphere

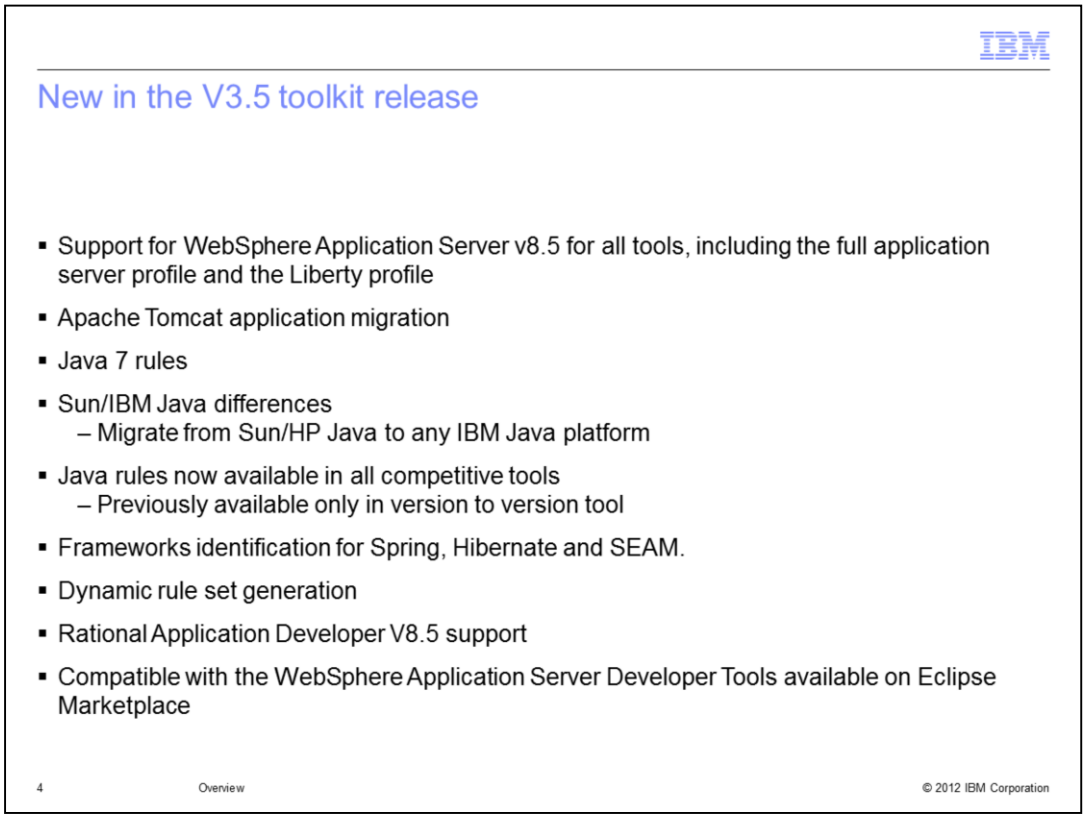
Apache Tomcat to WebSphere

This free toolkit eases the application migration process and speeds the time to value.

Each tool accomplishes this goal by programmatically scanning customer applications and indentifying the known changes required.

In many cases the tool is capable of making the application code changes. Where an automated fix is not available, the tool provides guidance on how to make the required change.

The tools are Eclipse based and are built using Rational Software Analyzer technology.



The IBM WebSphere Application Server Migration Toolkit V3.5 has a number of new features to align with WebSphere Application Server 8.5.

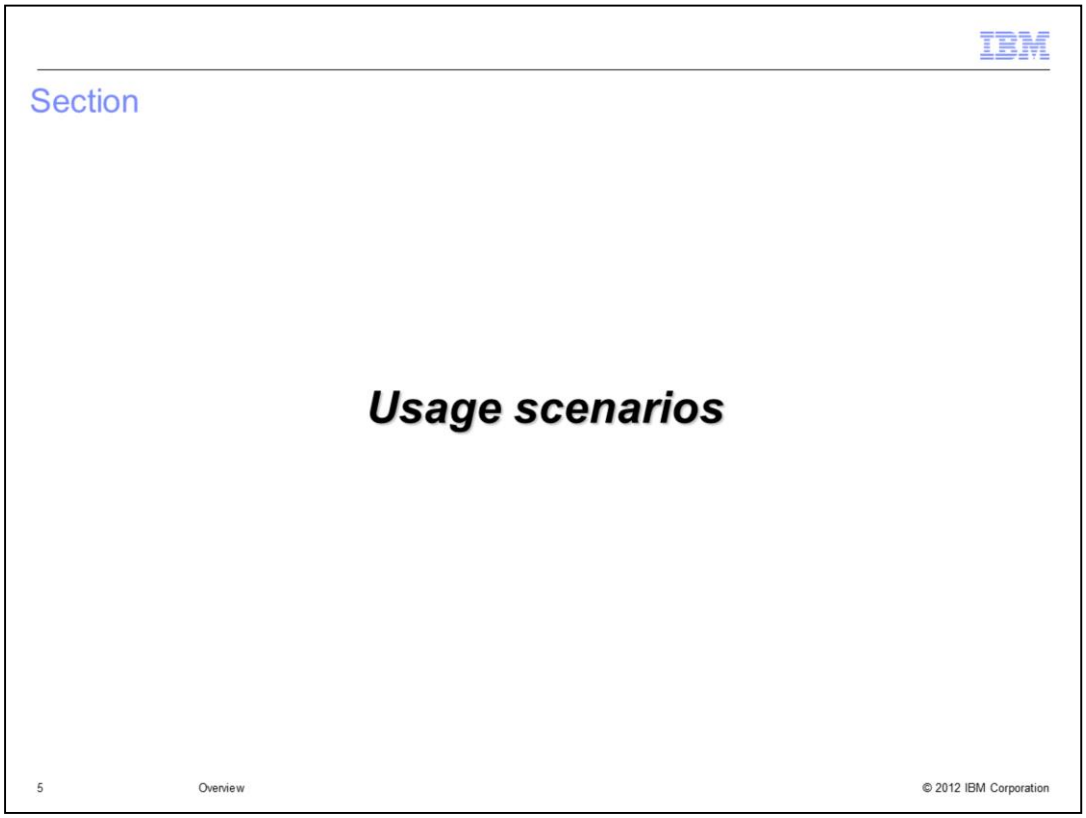
All tools are capable of migrating applications to the new WebSphere Application Server V8.5. Functionally compatible applications can run on the Liberty profile or the full application server profile. Applications running on Apache Tomcat can be migrated using the new Apache Tomcat to WebSphere tool and may be well-suited to run on the Liberty profile.

The tools provide a number of enhancements in the area of Java migration. New rules enable you to more easily migrate applications to use the optional Java 7 support available in WebSphere Application Server V8.5. Additional rules enable you to migrate from the Sun Java runtime to the IBM provided Java runtime. In previous releases of the tools, the Java related rules were only available in the WebSphere Version to Version tool. Now the Java rules are available to all the migration tools.

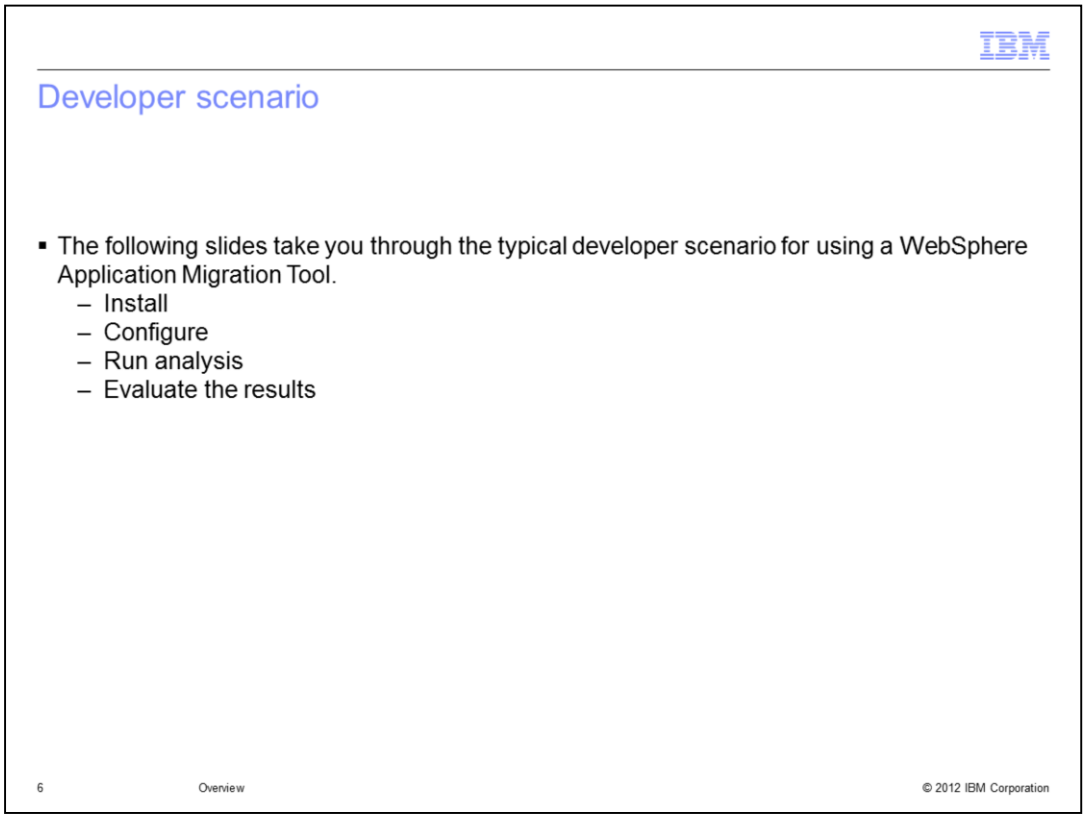
The competitive application migration tools have rules related to some of the popular frameworks including Spring, Hibernate, and SEAM. At the first level of support these frameworks are identified and information relevant to known migration issues is provided. A number of XML rules are provided to give further assistance with Spring configuration migration.

For all tools, dynamic rule set configuration is provided to allow you to chose the target version of WebSphere Application Server and your target Java version.

The tools can be used in Eclipse or Rational Application Developer and are compatible with the WebSphere Application Developer Tools available on Eclipse Marketplace.



The IBM WebSphere Application Server Migration Toolkit is used in the following scenarios for developers.



The following slides illustrate how a developer downloads the tools, installs the tools, and evaluates the application code.

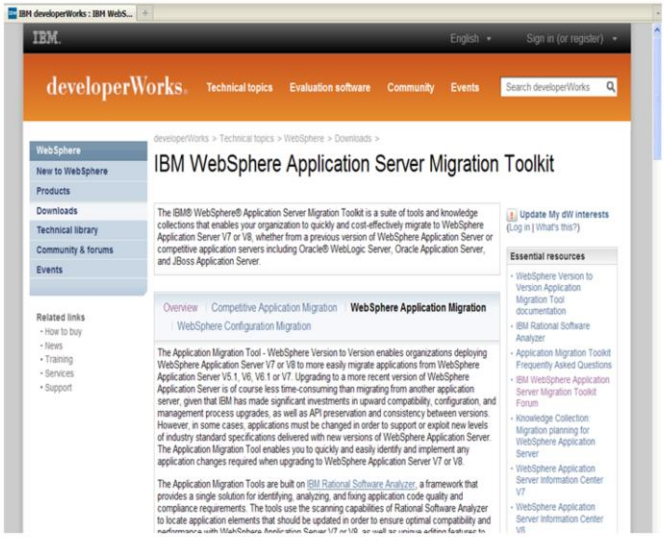
Developer scenario - Installation

Download the tools from developerWorks
- Version to Version
- WebLogic
- JBoss
- Oracle
- Apache Tomcat

Choose your IDE
- Eclipse v3.5 - v3.7
- Rational Application Developer V7.5, V8.0, v8.5

Install Prerequisites
- BIRT Framework
- Web tools
- Already included with Eclipse for Java EE or application developer.

Install tools
- Help menu



http://www.ibm.com/developerworks/websphere/downloads/migtoolkit/index.html

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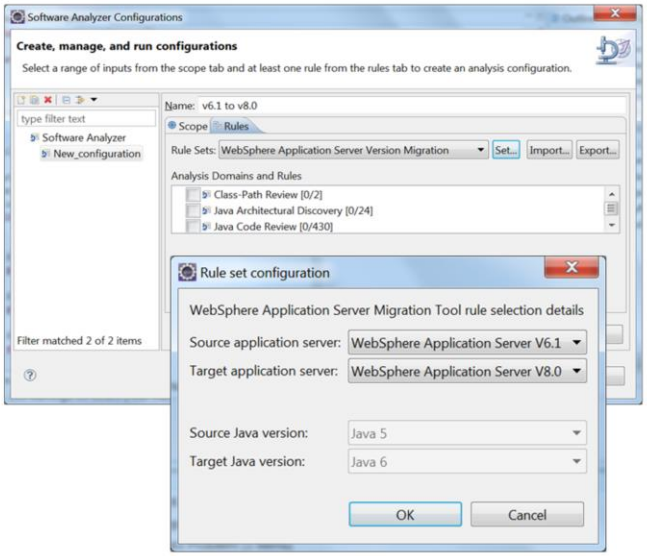
The tools are downloaded separately from developerWorks. You can choose just one tool to install, or all the tools can be installed together. The tools support Eclipsed based environments including Eclipse versions 3.5, 3.6 and 3.7. The supported versions of Rational Application Developer are versions 7.5, 8.0 and 8.5. Eclipse for Java EE developers includes the required prerequisites for the ***Eclipse BIRT Framework*** and the ***Web, XML and Java EE Development*** tools, as does Rational Application Developer. You must install these prerequisites for other versions of Eclipse.

To install the tool, open the Help menu in your IDE and choose ***Install new software…*** This opens a dialog where you can point to the zip archive downloaded from developerWorks.

Developer scenario - Configuration

- **Flexible migration configuration**
  - ✓ Create multiple configurations
  - ✓ Predefined rule sets
  - ✓ Import and export rule sets
  - ✓ Adjustable analysis scope
  - ✓ Integrated help
- **Dynamic rule set**
  - ✓ Target WebSphere V7.0, V8.0 or V8.5
  - ✓ Where applicable, choose source and target Java



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After installing the tool, configure the set of rules to run. Multiple migration configurations can be created to run different sets of rules. The configuration also defines the scope of the analysis. That is, it defines which code to run the analysis against. You can choose the entire work space or specific projects.

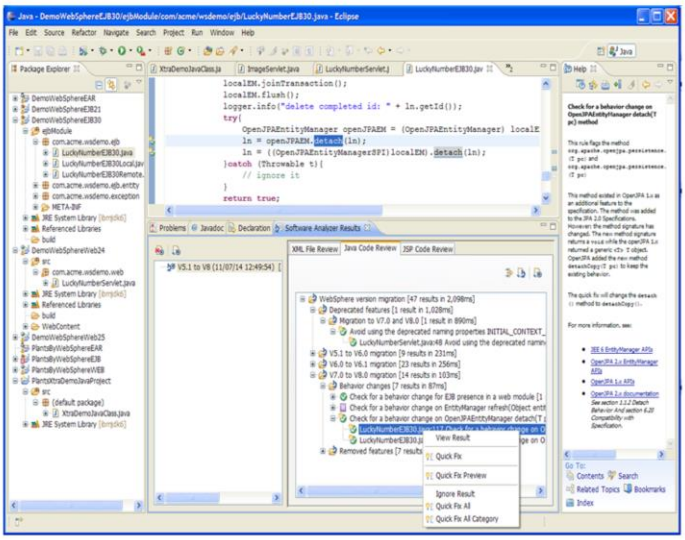
Rule sets are used to organize related groups of rules. The rule set configuration dialog lets you further customize your set of rules based on the version of WebSphere you are migrating to and your source and target Java versions. The source Java version is selectable when you are migrating from a competitive application server. The target Java version is selectable when you are migrating to WebSphere Application Server V8.5 where Java 6 or Java 7 can be used.

The rule configuration can be tailored by turning selected rules on or off. Also, rule configurations can be exported and imported to be shared between team members.

Developer scenario – Running analysis

Running the tool
- From the configuration dialog
- From the project explorer
- From the Run menu

Software Analysis View
- Rule information
- File information
- Java code review
- XML file review
- JSP code review
- Class path review



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After configuring the rules, analyze the code. Analysis can be started from the configuration dialog, by right clicking on a specific Java project, or from the ***Run*** menu.

The configured rules evaluate all the Java code, Java Server Pages (JSP) files. XML files, and MANIFEST.MF files within the scope of the analysis. Analysis generates the list of results in the ***Software Analysis Results*** tab. Within this tab, results are organized in different tabs for ***Java code review***, ***XML file review***, ***JSP Code Review***, and ***class path review***.

The results view provides detail on which rules trigger in the code, the file name, and the line number. When you double click a result, the file opens and the code is highlighted which may need migration.

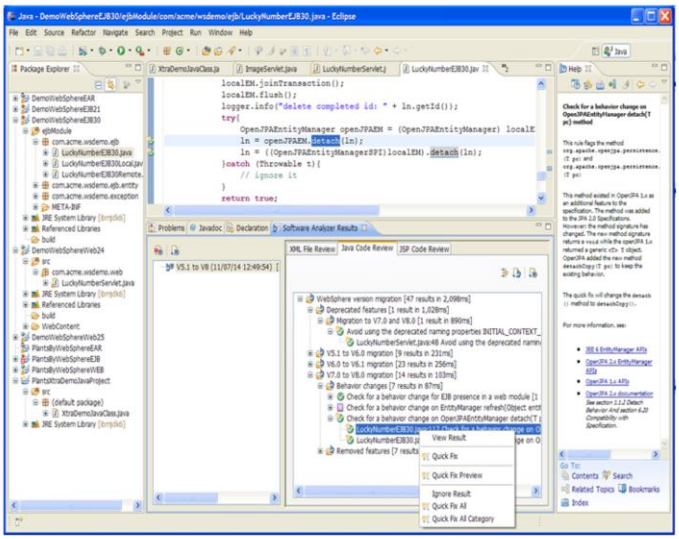
If you press F1 on a result, the high level help for the particular rule is displayed in the help tab. For each rule, there is a ***Detailed help*** link that, when selected, provides more information on the problem and how to migrate it.

Developer scenario – Migrating the results

Analyzing the results
- View result
- Quick fix preview
- Quick fix
- Quick fix all

Two options for quick fix all
- Rule level
- Category level

Direct navigation from the result to source code
- Java
- XML
- JSP
- MANIFEST.MF



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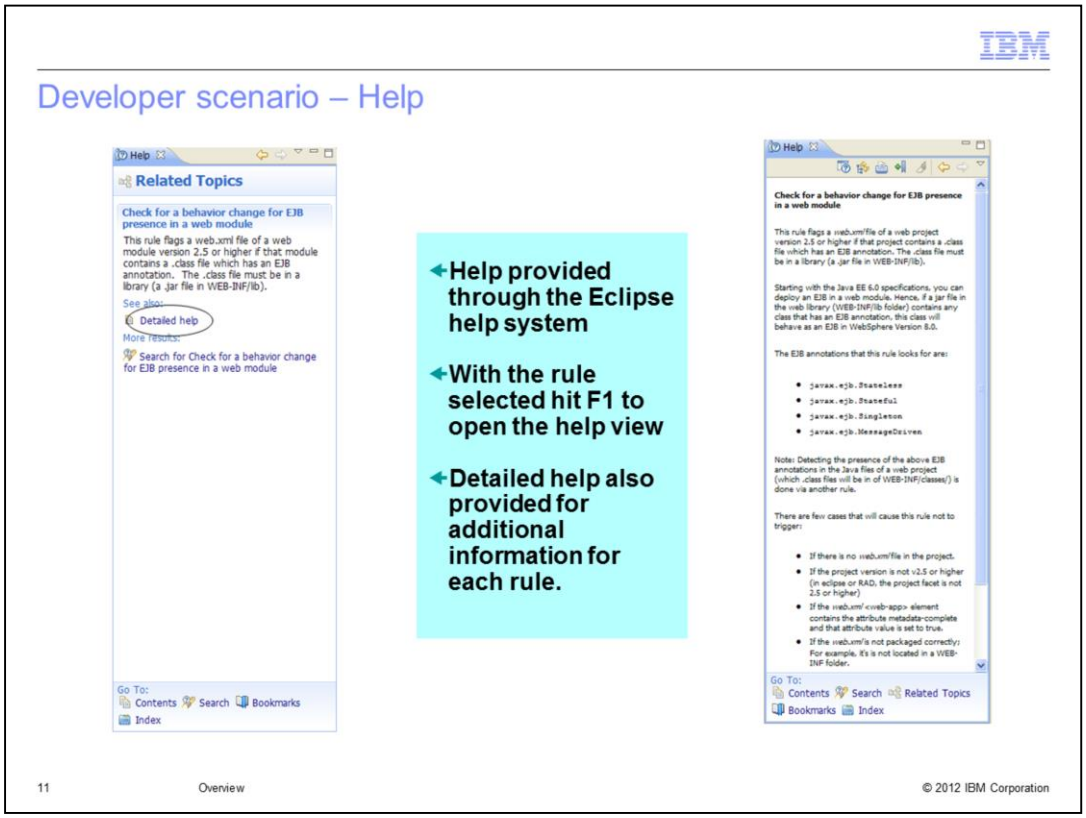
The process of migrating the code using the analysis results is driven from the ***Software Analysis Results*** tab. By going through each item you can evaluate the issue and perform a quick fix if one is provided or evaluate the information for a manual migration. Rules have 3 severities:

- Severe
- Warning
- Recommendation

Severe issues must be addressed. Warnings may affect your running application and should be evaluated. Recommendations are guidelines that you might want to consider such as API deprecations.

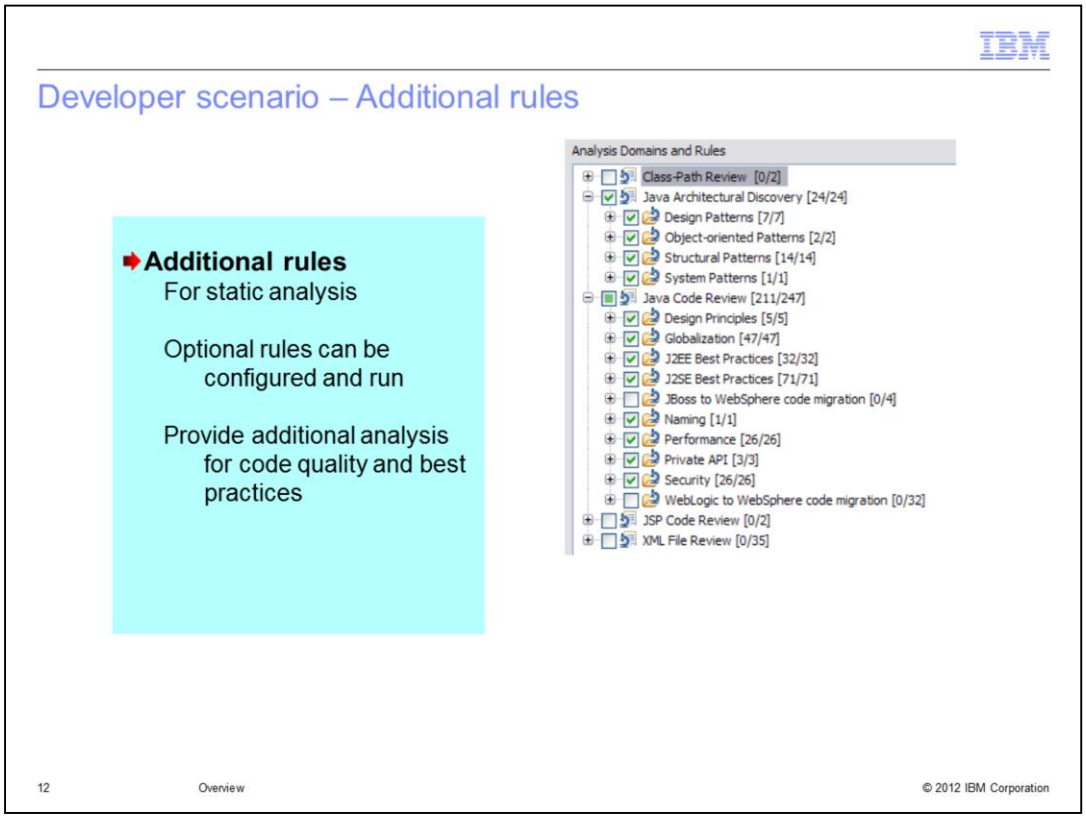
Also, as you look through the results, you will see that some severity icons have a small light bulb on them. This means that the rule has a quick fix that can be run to apply a change to your application. The quick fix preview option allows you to see a side-by-side comparison before and after the proposed code change. If you are happy with the change, you can choose ***Quick fix*** to apply the fix. ***Quick fix all*** and ***Quick fix all category*** allow you to apply a set of similar changes at the rule or the category level.

When a quick fix is not provided, if a change is necessary, it must be made manually. Look at the help provided for each rule to determine your course of action.



The rule help is an important part of the migration toolkit. There are two levels to the rule help. The initial help provides just a sentence or two describing what the rule migrates. You can open the first level of help by pressing F1 on a result for the rule.

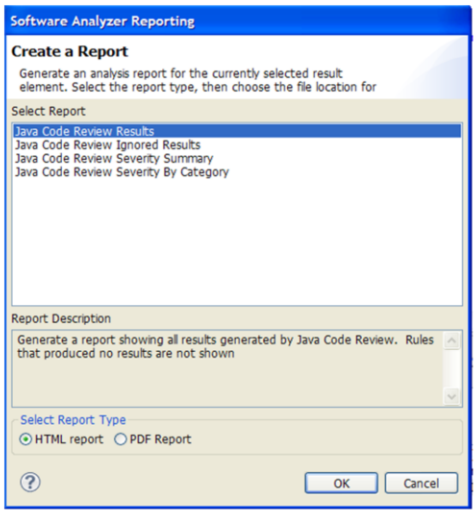
Navigate to the second level of help using the ***Detailed help*** link. This help gives examples and migration information as well as pointers to the information center and other related documentation.



Additional rules can be configured and run to perform additional static analysis on your code. The rules represent general rules for best programming practices. They are not mandatory for migration analysis, but provide an optional analysis of your code.

Developer scenario – Reports

- **Generate Reports**
  - Java Code Review
    - PDF
    - HTML
    - XML
  - Other Code Reviews
    - XML



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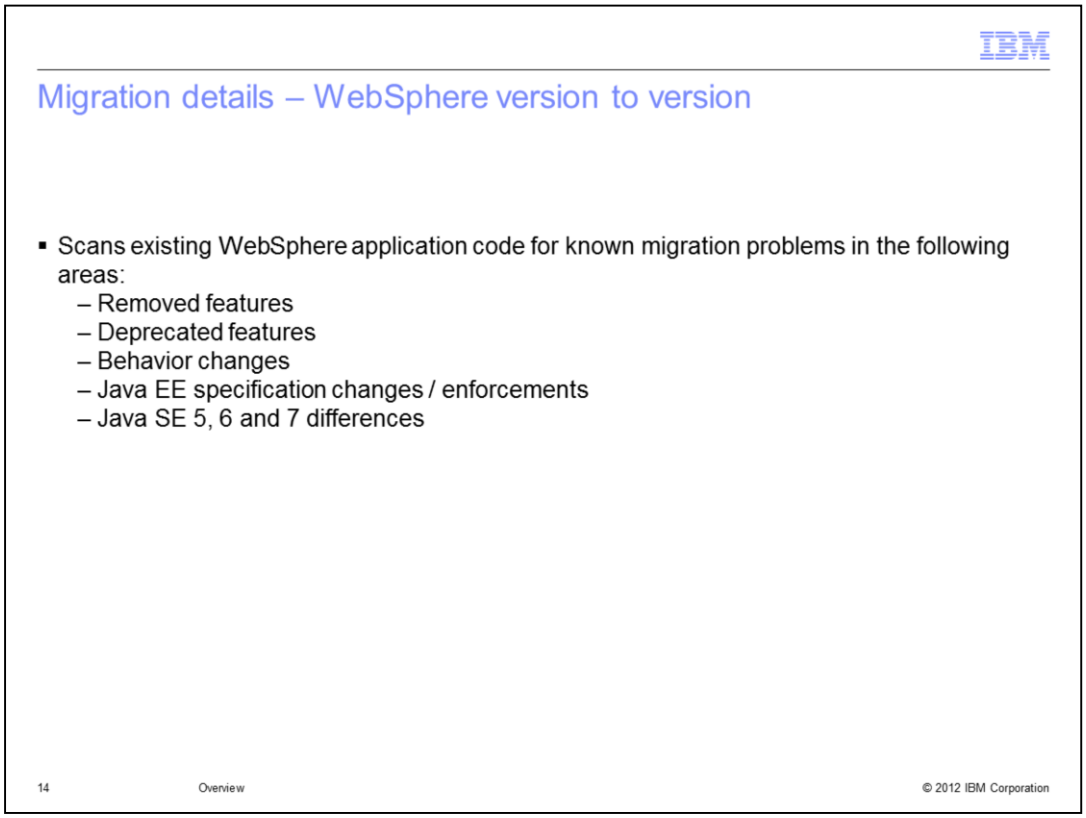
The tool provides a robust set of Java code review reports in HTML, PDF and XML output.

The XML, JSP and class path review results can be exported in XML file output.



The next few slides provide more detail on the types of artifacts that each tool will scan and highlight.

First, the WebSphere Application Server Version to Version migration tool scans for issues that affect an application moving to a more recent version of WebSphere.

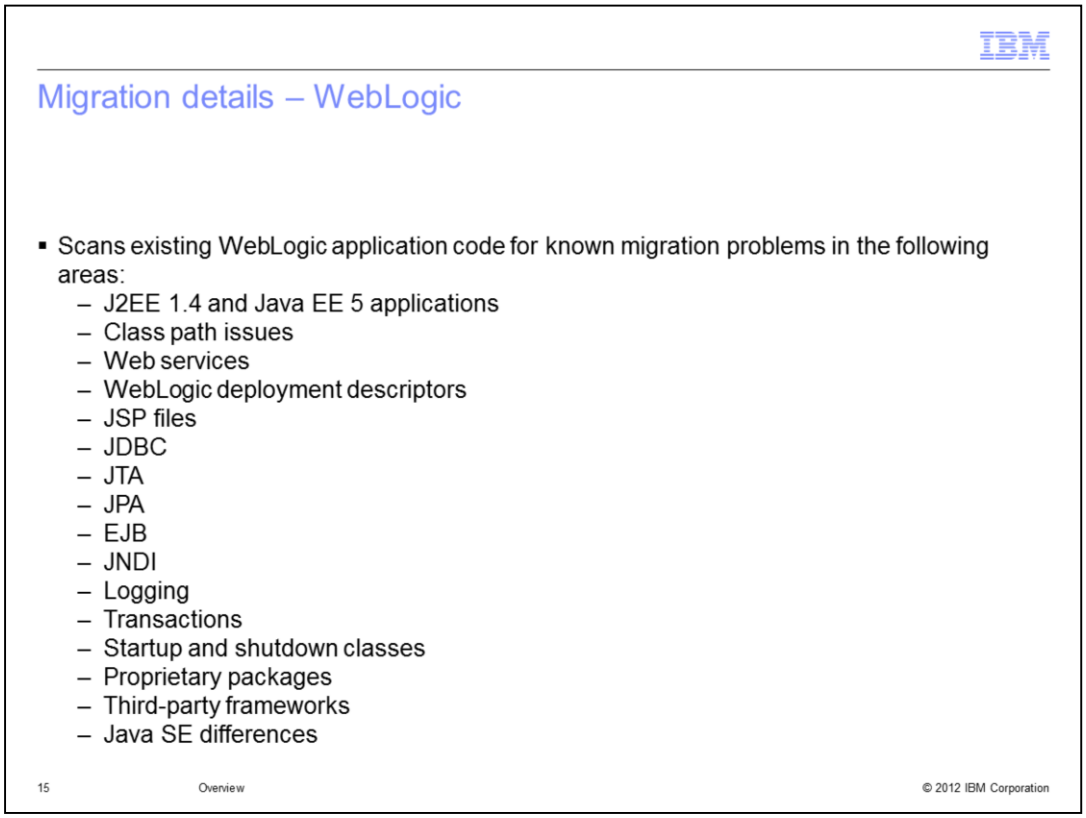
The use of removed APIs or features will be flagged by the migration tool. These APIs would have been deprecated in a previous release.

Deprecated features are also flagged. You are not required to change all deprecated APIs but be aware they may be removed in a future release.

If an API or function has a known behavior change and if the tool recognizes the use of that function, the application is flagged. Any information regarding migration or reversing the behavior is provided in the rule help.

Sometimes the Java EE specification is clarified or revised and the container must be changed to enforce the specification defined behavior. Known changes of this type are also flagged.

Since the version to version tool supports migration from WebSphere V5.1 which supported Java SE 1.4, there are rules to flag differences found in Java SE versions 5, 6, and now 7.



The WebLogic to WebSphere application migration tool scans for know differences between the two application servers. It primarily focuses on Java EE applications of version 1.4 or 5.

The tool scans for class path issues that can be resolved in the MANIFEST.MF.

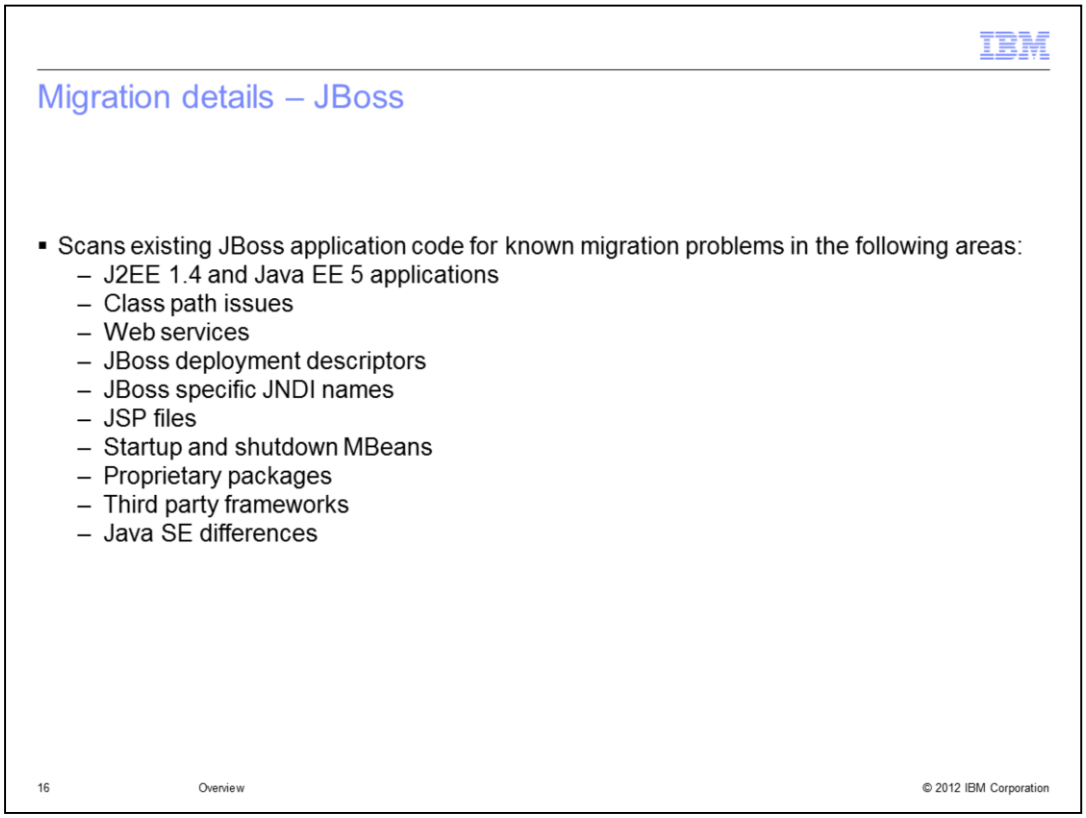
The tool has many rules and quick fixes related to WebLogic deployment descriptors. Many of the values in the WebLogic files can be moved to the IBM WebSphere extensions and bindings.

Other rules are related a variety of technologies including JNDI, JDBC, JPA, EJB, logging, user transactions, proprietary classes.

There is support for recognizing and mitigating issues with third-party frameworks such as Spring, Hibernate, and SEAM.

The tool also scans for differences in Java SE versions when there is a change in the Java version. The Java version change is configurable with the rule set.

The framework and Java support is common to all the competitive tools.

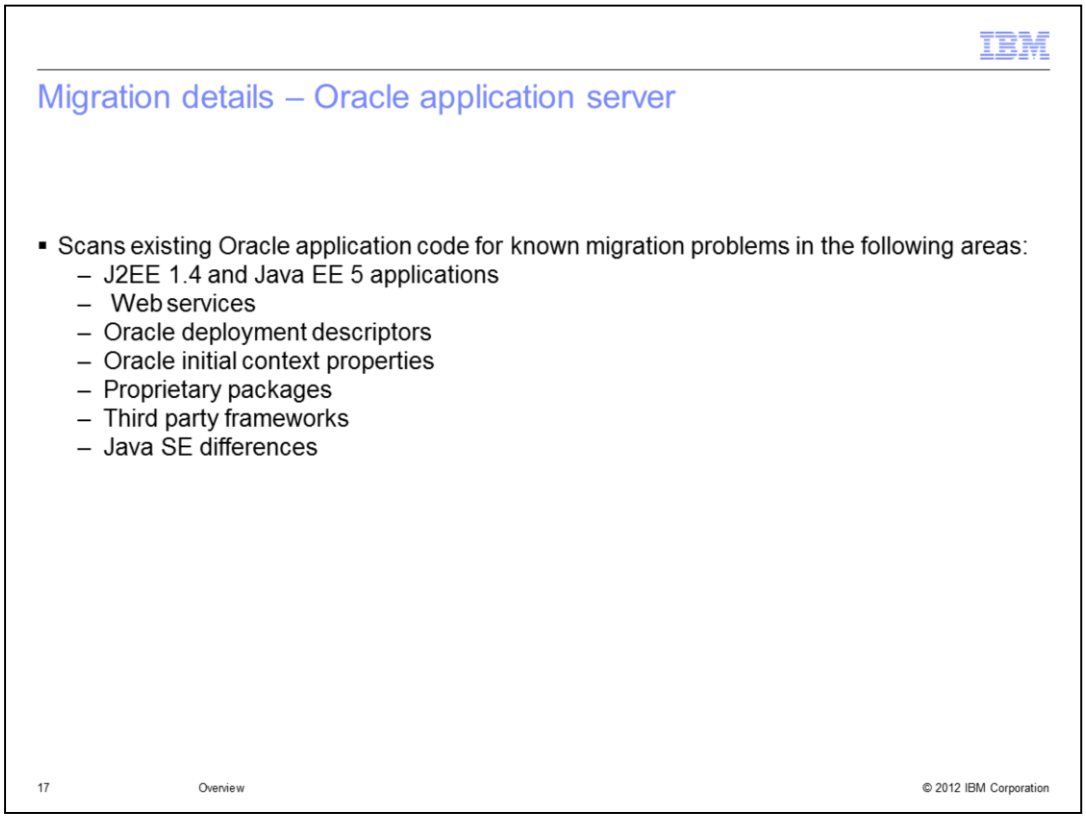


The JBoss to WebSphere application migration tool scans for known differences between the two application servers. It primarily focuses on Java EE applications of version 1.4 or 5.

The tool scans for class path issues that can be resolved in the MANIFEST.MF.

The JBoss tool has many rules and quick fixes related to JBoss deployment descriptors. Many of the values in the JBoss proprietary files can be moved to the IBM WebSphere extensions and bindings.

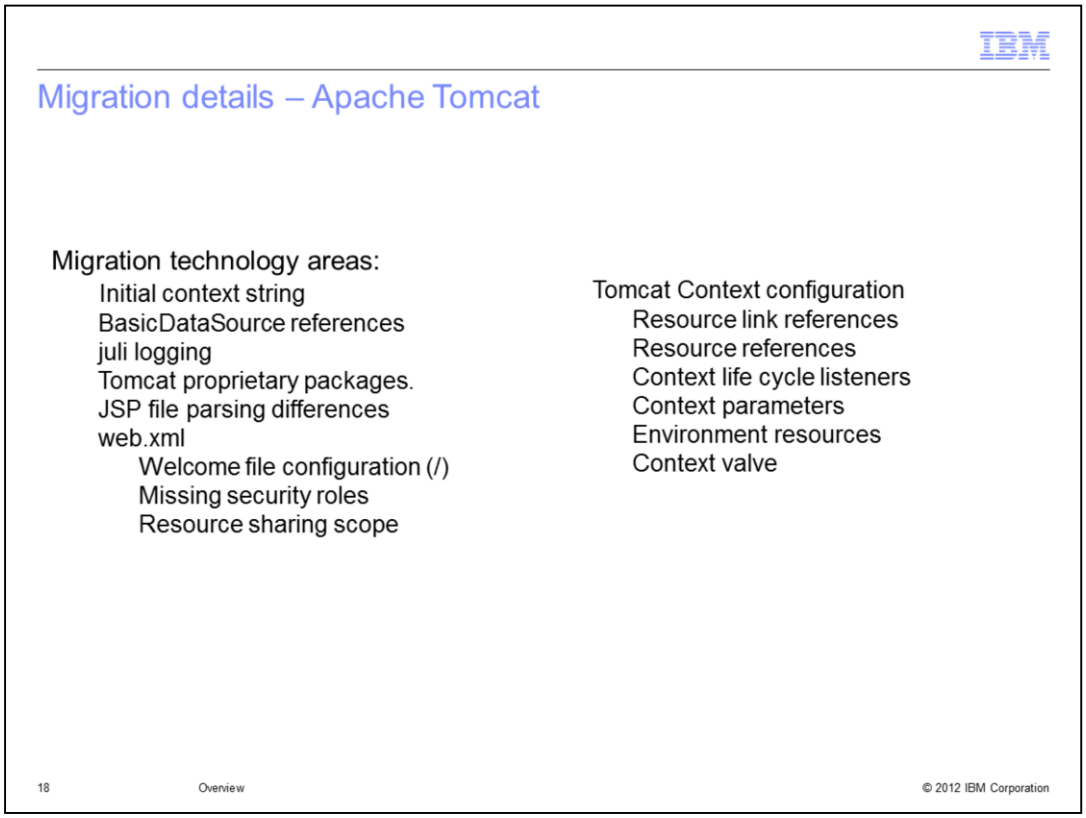
Other rules are related to a variety of issues including web services, JNDI names, and proprietary classes.



The Oracle Application Server to WebSphere application migration tool scans for a set of known differences between the two application servers. It primarily focuses on Java EE applications of version 1.4 or 5.

It has rules and quick fixes related to Oracle specific deployment descriptors. Many of the values in the Oracle proprietary files can be moved to the IBM WebSphere extensions and bindings.

Other rules are related to a variety of issues including web services, JNDI names, and proprietary classes and JSP taglibs.

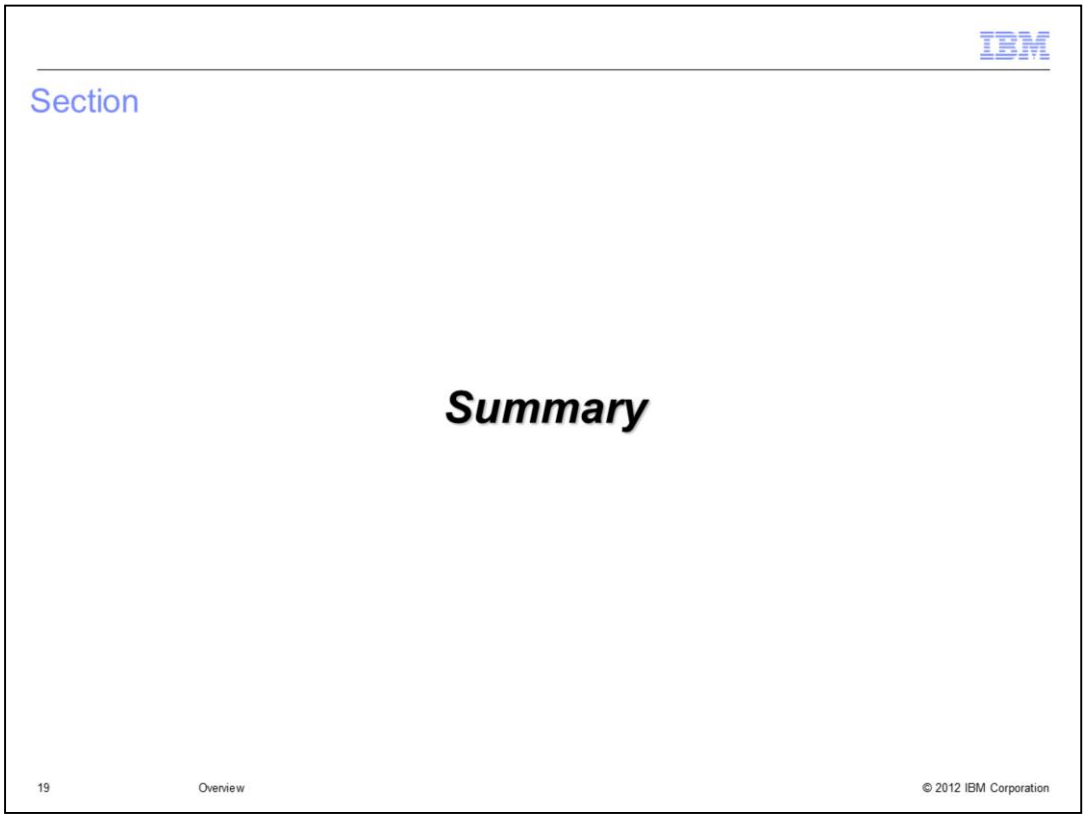


The Apache Tomcat to WebSphere application migration tool scans for known differences between the two application servers.

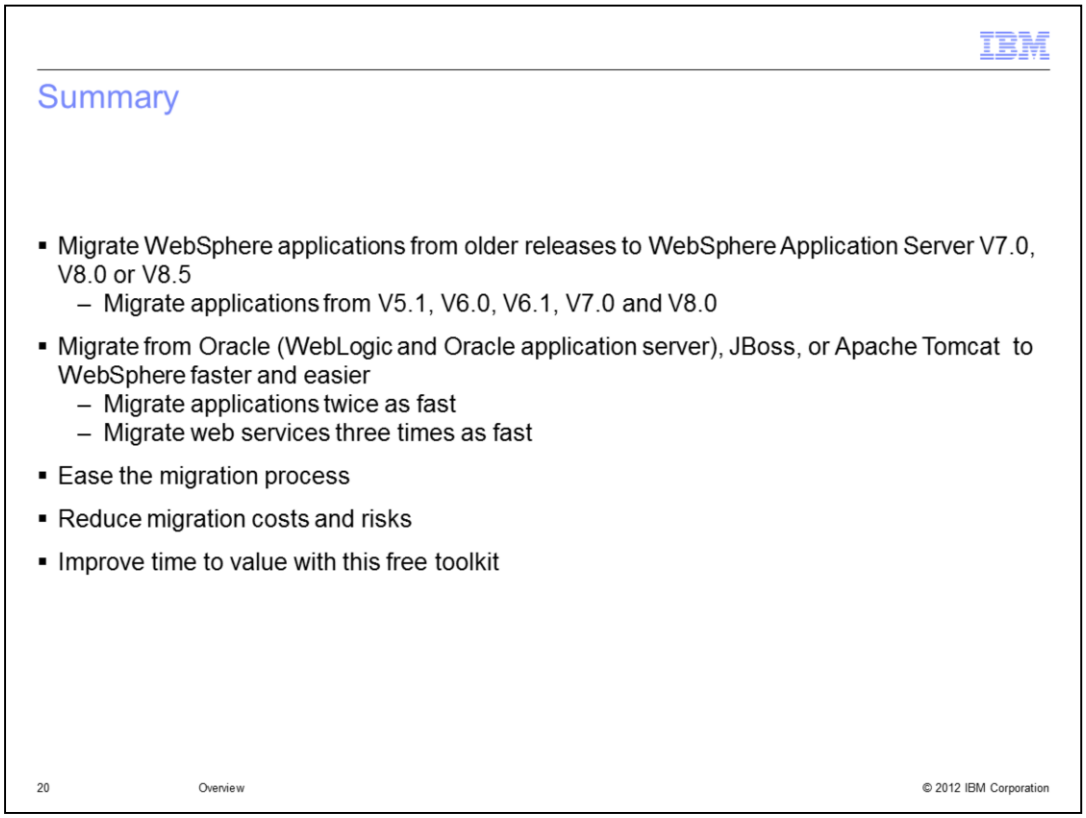
The tool scans for Tomcat specific Java differences including the initial context string, BasicDataSource references, logging, and Tomcat proprietary packages.

There is a rule for a known difference in JSP file parsers.

The tool will flag issues with web.xml that are allowed in Tomcat. Also, there are a number of rules that will migrate information from a context.xml found within the application. Web.xml entries as well as bindings are created by the quick fixes.



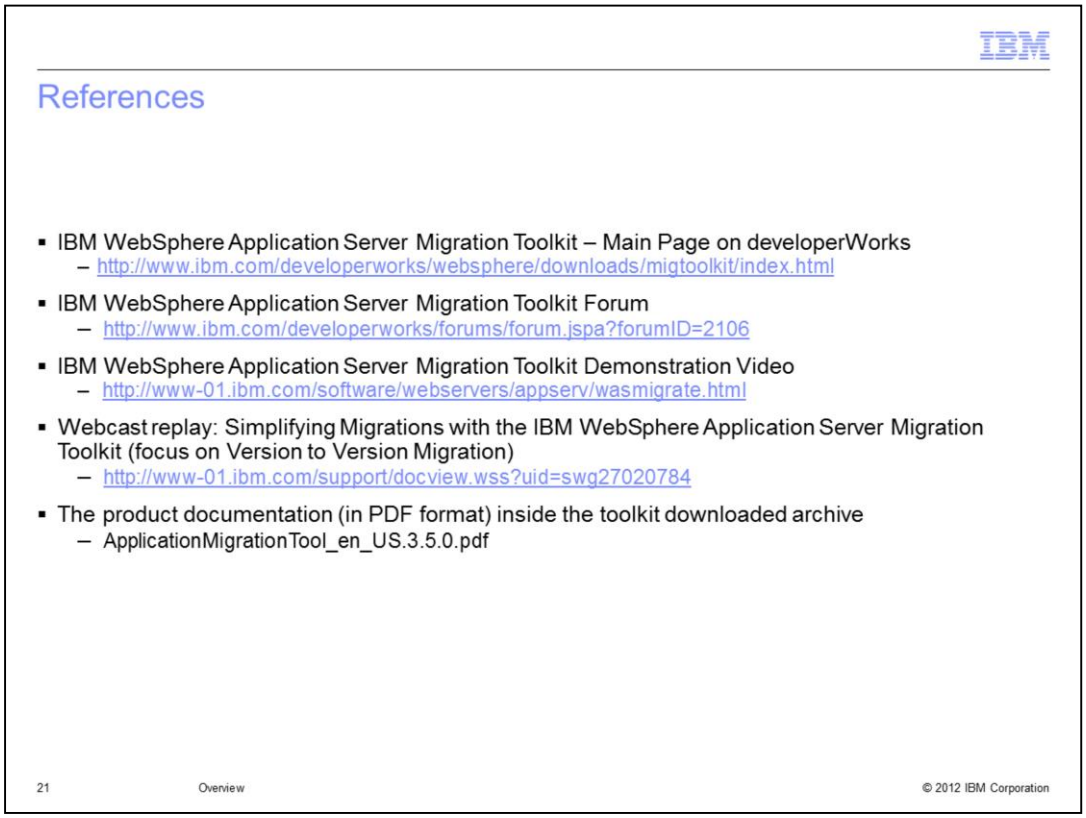
To recap the IBM WebSphere Application Server Migration Toolkit makes it easier than ever to migrate applications to WebSphere Application Server V7.0, V8.0, and V8.5.



You can migrate from WebSphere Application Servers as far back as V5.1 and migrate to Version 7, 8, or 8.5.

Use the toolkit to determine the issues you might encounter when moving from competitive application servers.

Like many of our customers, you can get to WebSphere faster and reduce your costs and risks with this free toolkit.



See the following references for additional information about the IBM WebSphere Application Server Migration Toolkit.

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