

RAD Server Tools Migration Guide from WSAD v5.1.x WebSphere Application Server v5.1 to RAD 7.x

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1.0 Introduction

This document provides information that will help you migrate from WebSphere Studio Application Developer (WSAD) v5.1.x with WebSphere Application Server (WAS) v5.1 to Rational Application Developer (RAD) with a WebSphere Application Server v6.x or WebSphere Application Server v7.x environment. This document also contains information that will help you to understand the changes in the server support between the WSAD and RAD.

There are different areas in RAD that requires migration. However, this document is scoped to the area of migration that is related to the RAD Server Tools including the WebSphere Test Environment (WTE).

***** IMPORTANT NOTE *****

Make sure you backup the existing environment and workspace before performing any of the migration steps described in this documentation.

1.1 Difference between the WSAD and RAD v7.x

In RAD v7.x, the WebSphere Application Server v5.1 server support uses the same WebSphere Test Environment (WTE) architecture as in WSAD. Server Tools adopts a new architecture on the integration to the WebSphere Application Server v6.x or later versions. There are a couple of benefits with this new and improved architecture:

1. *Comprehensive server support*

For the WTE v5.1 server, some modification was made to the server that introduced a number of restrictions to the server support. There were features on the WAS server that cannot be supported in the WTE v5.1 server, e.g. command line tools. Those restrictions also cause certain type of applications and operations fail to run on the WTE server.

In RAD 7.x WAS v6.0 server or later, RAD is doing silent install of the WAS server which means you can make use of the full capability of the WAS server.

2. *Predictable application publish*

The new architecture allows most of the application changes on the server to take effect without restarting the server to provide better developer experiences. You do not need to manually restart the application or the server. This change provides a more predictable application publish so that you are confident that the application change take effect when the application publish operations are completed.

Refer to the product documentation for details on when the changes will take effect on an application change:

RAD v7.0.0.x:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/topic/com.ibm.ws.ast.st.common.ui.doc/topics/csrvdbg.html>

RAD v7.5.x:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r5/topic/com.ibm.ws.ast.st.common.ui.doc/topics/csrvdbg.html>

3. *Enhanced EAR application support*

You can make use of the *enhanced EAR application* support to include some application specific configuration settings, e.g. data source definitions and application class loader settings. Enhanced EAR applications set up the server configuration as part of the application install without the extra setup on each server before publishing.

Refer to the product documentation for details on the enhanced EAR application:

RAD v7.0.0.x:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/topic/com.ibm.ws.ast.st.enhanced.ear.doc/topics/cenhcear.html>

RAD v7.5.x:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r5/topic/com.ibm.ws.ast.st.enhanced.ear.doc/topics/cenhcear.html>

4. ***Isolated environment for each server***

You can make use of the different WAS profiles to completely isolate the development environment including temporary directories and log directories for each profile. It also allows you to enable specific feature pack functions on different WAS profiles under a single copy of the WAS installation.

There are some server configuration changes with the new architecture:

1. For WAS v5.1 server support, the server configuration is stored in a server project within the workspace. For WAS v6.x or v7.0 server support, the server configuration is part of the profile settings under the server installation directory.
2. The way for configuring the server configuration has been changed from the WAS v5.1 to WAS v6.x or v7.0. Refer to this documentation for more details: http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/topic/com.ibm.etools.wesphere.tools.v51.doc/topics/tconfigure_rxd.html

2.0 Server Tools Migration

When migrating from WSAD to RAD, there are 3 main areas of migration for Server Tools:

1. Migrating WAS v5.1 WTE server configuration to a newer version of WebSphere Application Server
2. Runtime target for project compilation
3. Remote server support changes from v5.1 server to v6.x or v7.0 server

2.1 Migrating WTE v5.1 server configuration to a newer version of WebSphere Application Server

This section describes the steps to convert an existing WTE v5.1 server configuration to a WAS v6.x or v7.0. The WAS v6.x or v7.0 server comes with command line tools that allows you to migrate and apply a WAS v5.1 server configuration to an existing profile of WAS v6.x or v7.0.

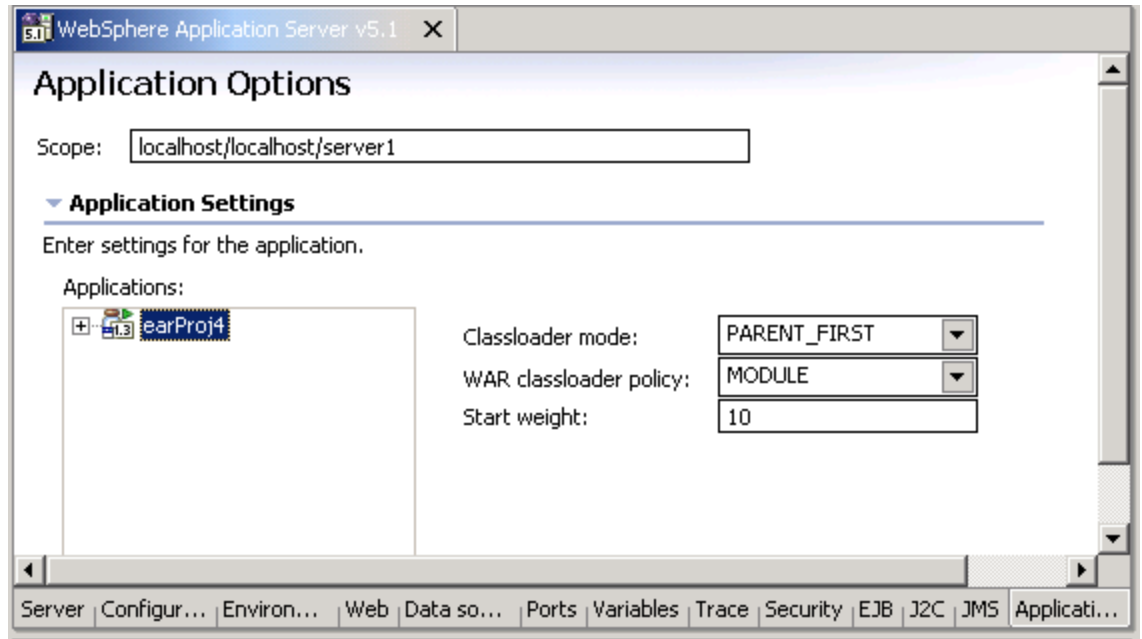
For WAS v5.1 server support, the server configuration is stored in a server project within the workspace. For WAS v6.x or v7.0 server support, the server configuration is part of the profile settings under the server installation directory. You can follow the steps in this section to migrate a WTE v5.1 server configuration to a later version of WAS server configuration that is stored under a given WAS server profile. Repeat these steps for each WTE v5.1 server configuration that you want to migrate.

2.1.0 Stop the WTE v5.1 server

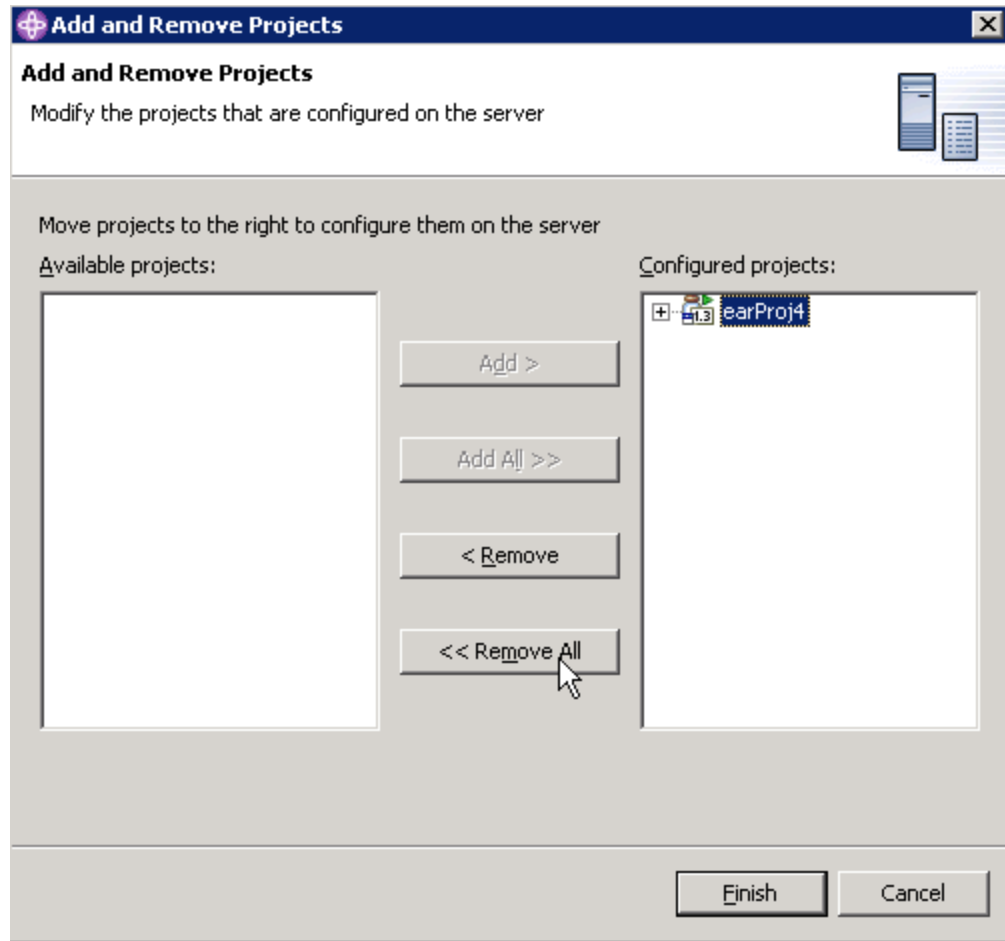
Stop the WTE v5.1 server that you want to perform the migration steps if the server is started.

2.1.1 Remove all the applications that are installed by RAD

1. WAS command line migration tools cannot handle applications installed by RAD so the RAD installed applications needs to be removed before running the WAS migration steps.
2. Keep a list of EAR projects that have been added to the server. You can find the current list of EAR projects added to the server by looking at the list of EAR applications that are shown on the application list on the ***Applications*** tab of the server editor.



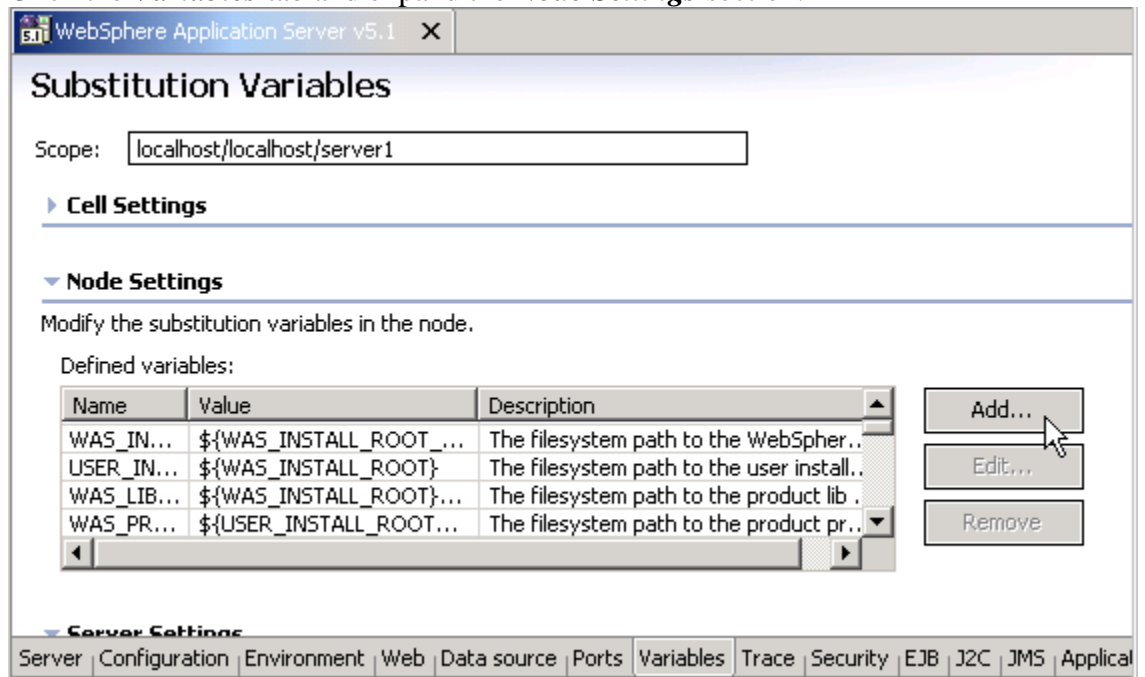
3. Remove all applications from the server using the *Add and remove projects..* dialog:



2.1.2 Update variables in the server configuration and disable the Universal Test Client

1. Open the server editor by double-clicking the server in the Servers view.

- Click the *Variables* tab and expand the *Node Settings* section.

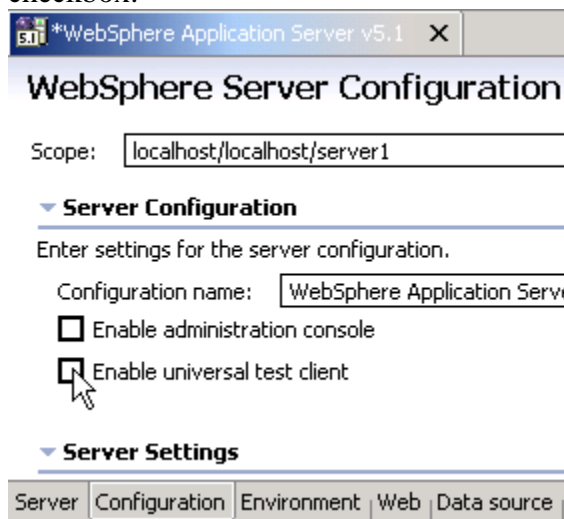


- Add the following variables to the node settings:

Variable name	Value
WAS_INSTALL_ROOT_PATH_MAP	<WSAD install directory>/runtimes/base_v51
SERVER_TEMP_DIR_PATH_MAP	<WSAD install directory>/runtimes/base_v51

where <WSAD install directory> is the installation directory of WSAD, e.g. C:\Program Files\IBM\WebSphere Studio\Application Developer.

- Switch to the *Configuration* tab and clear the *Enable the universal test client* checkbox.

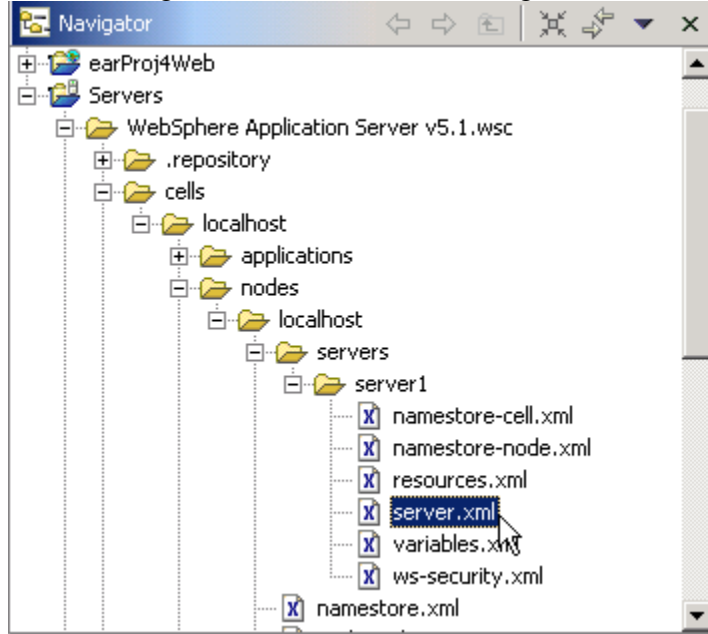


5. Save and then close the server editor.

2.1.3 Modify the server configuration log file settings

The log file mechanism for the WTE v5.1 server is different from the WAS 6.x or WAS v7 server. Therefore, the log file configuration needs to be changed.

1. From the *Navigator* view within the workspace, find the server.xml file of the server configuration as shown in the diagram below:

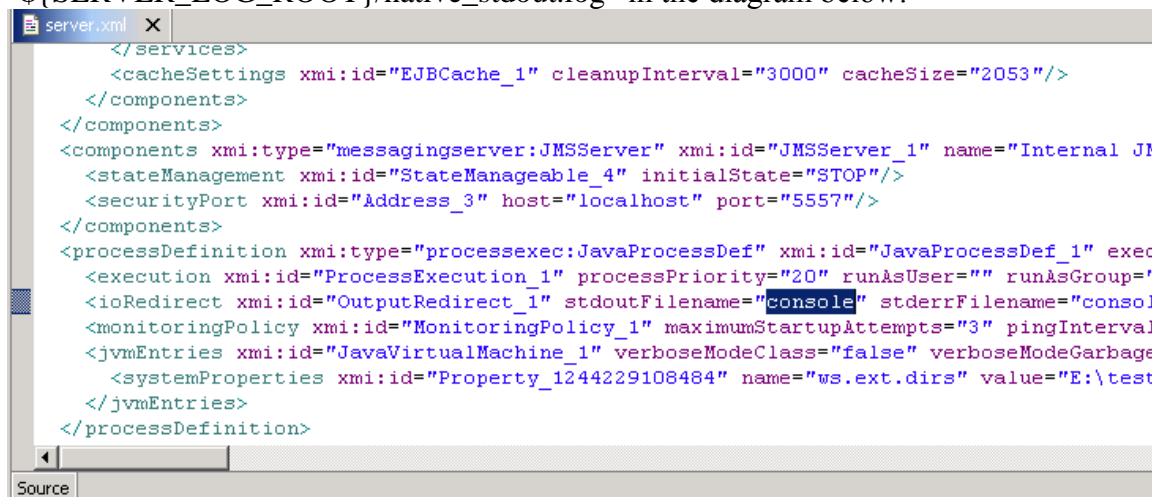


2. Open the server.xml file with the Source editor by right-clicking the server.xml file then select the menu item *Open With->Source Editor*.
3. Locate the following elements in the server.xml file and set with the following new values:

XML Tag Name	Parameter Name	Old Value	New Value
errorStreamRedirect	fileName	console	\${SERVER_LOG_ROOT}/SystemErr.log
outputStreamRedirect	fileName	console	\${SERVER_LOG_ROOT}/SystemOut.log
processDefinition->ioRedirect	stdoutFilename	console	\${SERVER_LOG_ROOT}/native_stdout.log
processDefinition->ioRedirect	stderrFilename	console	\${SERVER_LOG_ROOT}/native_stderr.log
processDefinition	executableName	\${JAVA_HOME}/bin/javaw	\${JAVA_HOME}/bin/java

For example, replace the highlighted value “console” with

“\${SERVER_LOG_ROOT}/native_stdout.log” in the diagram below:



```
server.xml x
</services>
<cacheSettings xmi:id="EJBCache_1" cleanupInterval="3000" cacheSize="2053"/>
</components>
</components>
<components xmi:type="messagingserver:JMSServer" xmi:id="JMSServer_1" name="Internal JM
<stateManagement xmi:id="StateManageable_4" initialState="STOP"/>
<securityPort xmi:id="Address_3" host="localhost" port="5557"/>
</components>
<processDefinition xmi:type="processexec:JavaProcessDef" xmi:id="JavaProcessDef_1" exec
<execution xmi:id="ProcessExecution_1" processPriority="20" runAsUser="" runAsGroup='
<ioRedirect xmi:id="OutputRedirect_1" stdoutFilename="console" stderrFilename="consol
<monitoringPolicy xmi:id="MonitoringPolicy_1" maximumStartupAttempts="3" pingInterval
<jvmEntries xmi:id="JavaVirtualMachine_1" verboseModeClass="false" verboseModeGarbage
<systemProperties xmi:id="Property_1244229108484" name="ws.ext.dirs" value="E:\test
</jvmEntries>
</processDefinition>
Source
```

4. Save and close server.xml.
5. Right-click the server on the Servers view and select **Publish** to force the changes to take place.

2.1.4 Run the WAS configuration migration scripts

1. Identify the WAS v6.x or WAS v7.0 profile that the server configuration will be migrated to. Create a new profile if such a profile does not exist. You can refer to this documentation for help on creating a new profile:
<http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/index.jsp?topic=/or.g.eclipse.wst.server.ui.ustrxd.doc.user/topics/cwover.html>
2. Run the WAS migration scripts WASPreUpgrade.bat and the WASPostUpgrade.bat by following the instructions in:
 - a. For WAS v6.0.x servers, refer to **Migration command line tools** section of the documentation titled “A quick guide for migrating to IBM WebSphere Application Server V6”:
http://www.ibm.com/developerworks/websphere/library/techarticles/0504_chalmers/0504_chalmers.html
 - b. For WAS v6.1 servers, refer to section **3b. Run the command line tools** of this documentation titled “A quick guide for migrating to WebSphere Application Server V6.1”:
http://www.ibm.com/developerworks/websphere/library/techarticles/0608_chalmers/0608_chalmers.html
 - c. For WAS v7 servers, refer to section **3b. Run the command line tools** of this documentation titled “A quick guide for migrating to WebSphere Application Server V7”:
http://www.ibm.com/developerworks/websphere/library/techarticles/0812_luchini/0812_luchini.html

2.1.5 Create a new server in RAD 7.x to point to the migrated WAS server profile

In RAD 7.x, create a server to point to the migrated WAS server profile in section 2.1.4. You can refer to this documentation for help on creating new servers to point to a given WAS server profile:

RAD v7.0.x -

http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/topic/com.ibm.ws.ast.st.v6.ui.doc/topics/twcertins_v6.html

RAD v7.5.x -

http://publib.boulder.ibm.com/infocenter/radhelp/v7r5/topic/com.ibm.ws.ast.st.v6.ui.doc/topics/twcertins_v6.html

2.1.6 Add the applications back to the server

Add the applications that you have removed from the server in step 2.1.1 back to the server by right-clicking the server and selecting the **Add and Remove Projects**. Before you perform this step in RAD 7.x, make sure you have imported and migrated the required applications into the RAD 7.x workspace.

You have created a server that points to a server profile with the server configuration migrated from a WTE v5.1 server.

2.2 Runtime target for project compilation

When projects are loaded from WSAD v5.1 to RAD v7, the project compilation libraries may not be setup properly which will causes compilation errors on the application projects.

For RAD 7.0.0.x, refer to the documentation the follow documentations for more information:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/topic/com.ibm.etools.websphere.tools.v51.doc/topics/tmigratev512tov7.html>

In RAD 7.5.x, a new migration framework is available to help migrating runtime targets for project compilation. Refer to this documentation for more information:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r5/topic/com.ibm.etools.publishing.server.doc/topics/tmigratev6tov75.html>

2.3 Remote server support changes from v5.1 server to v6.x server or v7.0

For WAS v5.1 remote server, the Remote Agent Controller (RAC) is required to be installed on the remote server machine. This extra setup is no longer required for the v6.x server or later support.

3.0 Server configuration sharing

For WTE v5.1 support, all the WAS server configuration is stored under the Server project and users can share the server configuration via the team support within the workspace.

For WAS v6.x or later version of server support in RAD 7.x, this is no longer the case. The WAS server configuration files are stored under WAS profile under the WAS installation directory. If you want to share the server configuration on different workspaces, you can refer to the documentation titled “[WebSphere Application Server Profile Management in Rational Application Developer](#)” for more information on this topic.

4.0 Publishing Performance

As indicated in section 1.0, the architecture of the WAS server support has been changed to provide better support on the WAS v6.0 or later versions of the server. Application changes will take effect when the publish operation has been completed.

This section describes some changes on the publishing performance because of the change in nature of the server support.

4.1 Publishing new applications or changing the structure of existing published applications

You may notice a change in performance when publishing new applications or changing the structure of existing published applications, e.g. adding or removing child modules from existing published applications.

In WTE v5.1, the server needs to be restarted whenever a new EAR project or new child module, e.g. Web or EJB module, are added to the server. For WAS v6.x or later server support, the tool will detect those changes and restart the application automatically as needed. This design allows changes to take effect immediately as parts of the application publish. The time for application publish may seem to be longer in those cases since the application is being restarted automatically as parts of the application publish.

If you add an application to the WTE v5.1 server, the application publish completes quickly. However, the changes do not actually take effect on the server and you have to manually restart the server for the server to pick up the changes. If you add the time to restart the server, the overall time taken before you can make use of the new changes in the WTE v5.1 server support is actually longer than the WAS v6.x or later server support.

4.2 Publishing delta application changes

In WTE v5.1, there are several types of changes that do not take place automatically during the application publish operation, e.g. any change in the deployment descriptor files. The user has to manually restart the application for the changes to take place. For example, if you add a new EJB to an EJB project that has already been published to the server, the publish operation seems to be completed very quickly. However, the changes do not really take effect on the server after the applications publish.

For WAS v6.x or later server support, the application will be restarted automatically as part of the application publish so that you can use the EJB immediately after the application publish without manually invoking an application restart operation.

Refer to the product documentation for details on when the changes will take effect on an application change:

RAD v7.0.0.x:

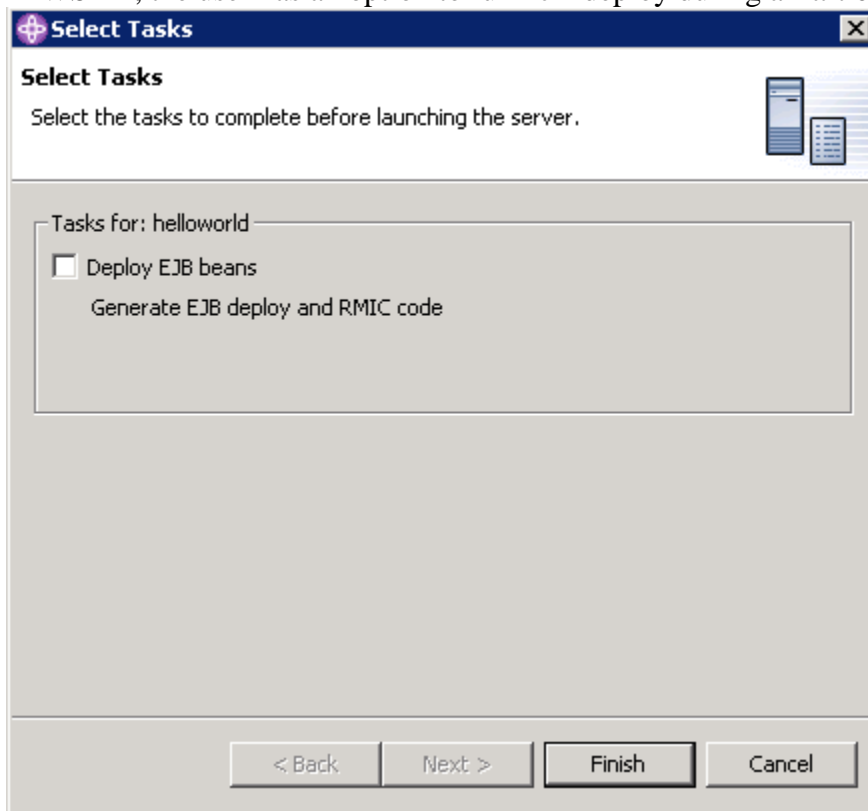
<http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/topic/com.ibm.ws.ast.st.common.ui.doc/topics/csrvdbg.html>

RAD v7.5.x:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r5/topic/com.ibm.ws.ast.st.common.ui.doc/topics/csrvdbg.html>

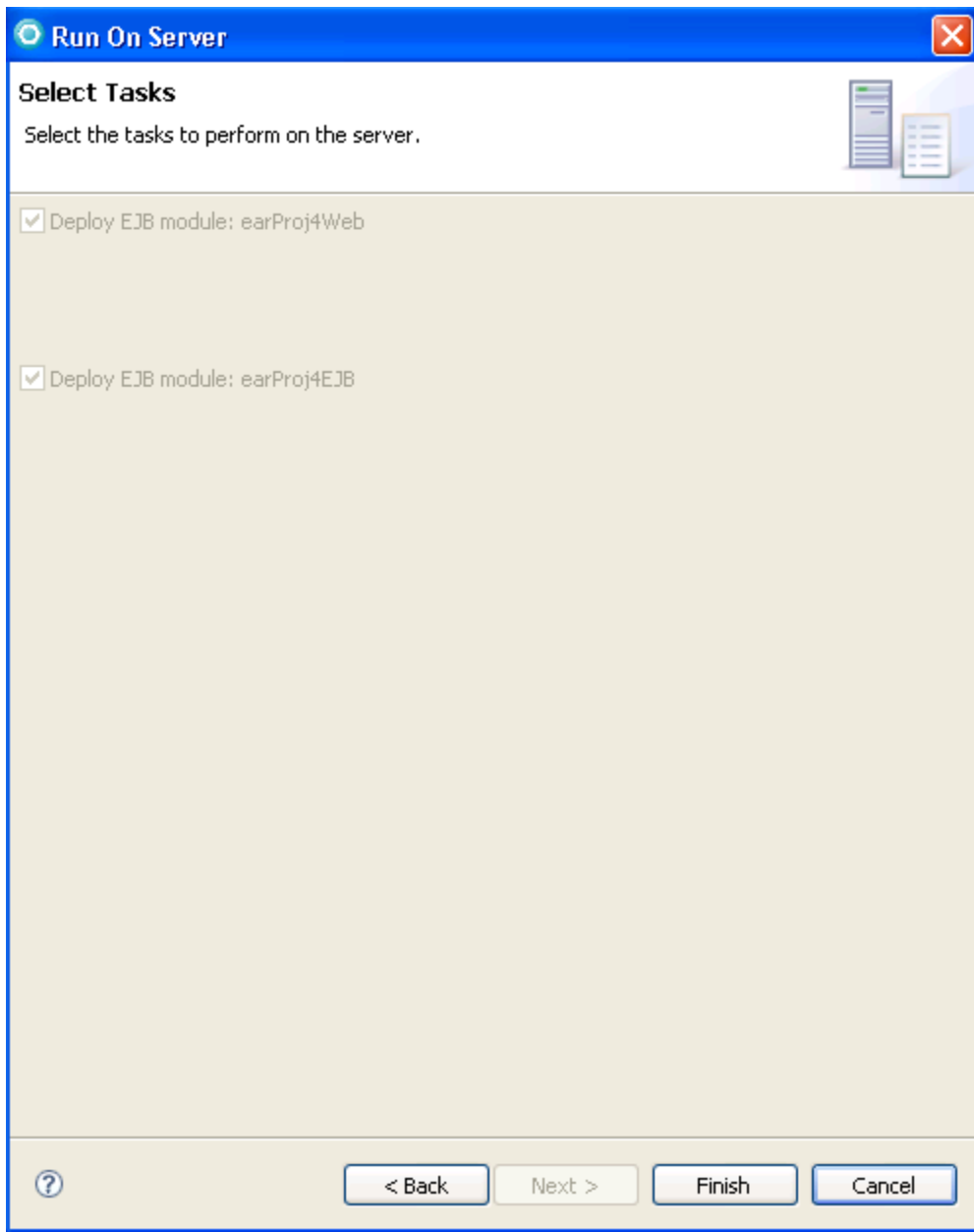
4.3 JEE deploy operations

In WSAD, the user has an option to run EJB deploy during a *Run on Server* operation:



This operation is disabled by default and you have to manually select that so that the EJB deploy will run before the *Run on Server* operation.

In RAD 7.0.0.x, a JEE deploy, including both EJB and Web Services deploy, will always run as part of the run on server operation. Therefore, you may experience a slight delay in the publish operation.

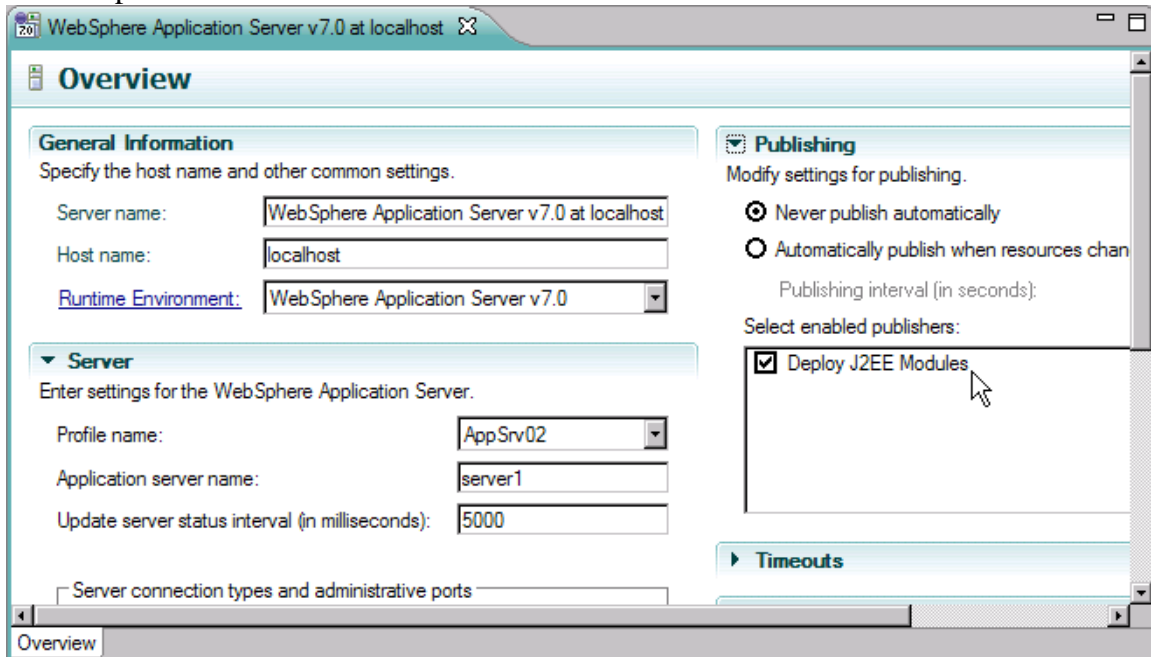


This change was to ensure all the deploy code is generated before the run on server operation to provide a consistent application publish behavior. The JEE deploy is incremental so the performance impact should be minimal if the deploy code is already generated.

To learn more about disabling this deployment task see <http://www.ibm.com/support/docview.wss?uid=swg1PK46870>. The system property referenced in this article can be set by editing the file `./SDP70/configuration/config.ini` and adding the following line:

DISABLE_PUBLISH_GEN_DEPLOYCODE=true

In RAD 7.5.2 or later, this option has been further improved to become a configurable option on the server editor. You no longer have to choose the settings on every *Run on Server* operation.



This option also allows you to control on when the J2EE deploy is being run to further streamline publishing performance.

4.4 Other publishing options

There are other publishing options that may affect the publishing performance. Refer to the product documentation for more information:

RAD v7.0.0.x:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r0m0/topic/com.ibm.ws.ast.st.v6.ui.doc/topics/tpublishv6.html>

RAD v7.5.x:

<http://publib.boulder.ibm.com/infocenter/radhelp/v7r5/topic/com.ibm.ws.ast.st.v6.ui.doc/topics/tpublishv6.html>

5.0 Conclusion

This document describes the steps on migrating from WSAD v5.1.x WebSphere Application Server v5.1 to RAD 7.x. We have also discussed the main differences in the RAD Server Tools support between WSAD and RAD.