



IBM Systems - iSeries

e-business and Web serving

WebSphere Application Server - Express Version 5
Migration

Version 5 Release 4





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Note

Before using this information and the product it supports, be sure to read the information in "Notices," on page 19.

Third Edition (February 2006)

This edition applies to Version 5 of IBM WebSphere Application Server - Express for iSeries (product number 5722-IWE) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

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Migration

Migration tasks and tools allow you to transfer your existing configuration settings and existing applications to the new version of the product.

Product migration functions are provided by the migration tools in IBM^(R) WebSphere^(R) Application Server - Express. The only supported migration path is from WebSphere Application Server Version 3.5.6 (or higher) Standard Edition to WebSphere Application Server - Express.

This document provides detailed step-by-step instructions to successfully migrate your WebSphere Application Server Version 3.5.x instances to WebSphere Application Server - Express. The following topics take you through the migration process. It is recommended that you read each topic in the order listed, and that you read through the migration documentation at least once before you start the migration process.

For more information on the typical migration scenario, see **“Overview”**.



1. PLANNING

“Step 1: Plan your migration” on page 6

“Step 1: Plan your migration” on page 6

This topic describes the steps you should complete before starting the migration process. It also includes information on how to evaluate your current environment to ensure you meet the requirements for migration.



2. MIGRATING YOUR APPLICATIONS

“Step 2: Migrate your applications” on page 8

“Step 2: Migrate your applications” on page 8

This topic describes how to migrate your applications to WebSphere Application Server - Express. This involves modifying your applications to use the specifications supported by WebSphere Application Server - Express.



3. MIGRATING YOUR INSTANCES

“Step 3: Migrate your WebSphere Application Server instances” on page 14

“Step 3: Migrate your WebSphere Application Server instances” on page 14

This topic provides step-by-step instructions to migrate a WebSphere Application Server instance Version 3.5.x to a new WebSphere Application Server - Express instance.



4. COMPLETING THE MIGRATION

“Step 4: Complete the migration” on page 16

“Step 4: Complete the migration” on page 16

This topic describes the manual steps that you might need to perform to complete the migration process. These are steps that are not performed automatically by the WebSphere Application Server - Express migration tools.

Overview

Migration consists of stages that include scoping, skills migration, code migration, and runtime migration. Refer to these articles for reference on these stages and other general information on the migration process:

- Part 1: Designing Software for Change



- Part 2: Stages of Migration



- Part 3: Migration assessment



- Migrating Applications from WebSphere Application Server Standard Edition to WebSphere Application Server-Express V5



- WebSphere Application Server - Express V5.0 for iSeries



Note: These articles are not iSeries specific and may contain information not pertinent to iSeries.

WebSphere Application Server - Express migration leverages the existing environment and applications and changes them to be compatible with the WebSphere Application Server - Express environment. Existing application components and configuration settings are applied to the WebSphere Application Server - Express environment during the migration process.

Migration involves modifying your applications so that they run in WebSphere Application Server - Express and then migrating those applications and your environment to WebSphere Application Server - Express. The latter step can be performed by using the migration tools shipped with the product.

Migration Tools

Product migration functions are provided by the the WebSphere Application Server migration tools. These tools perform migration from Version 3.5.x to WebSphere Application Server - Express. The migration tools are comprised of the following commands:

- **WASPreUpgrade** saves Version 3.5 configuration data and applications from a previous version to a backup directory. For more information, see “The WASPreUpgrade script.”
- **WASPostUpgrade** restores Version 3.5 a configuration data and applications into WebSphere Application Server - Express. This command uses the output from the WASPreUpgrade command. For more information, see “The WASPostUpgrade script” on page 4.

The WASPreUpgrade script

The **WASPreUpgrade** script is a migration tool for migrating the configuration and applications of previous WebSphere Application Server versions to a WebSphere Application Server - Express application server node. The script is located in the /QIBM/ProdData/WebASE/ASE5/bin directory.

Authority

To run this script, your user profile must have *ALLOBJ authority.

Syntax

The syntax of the WASPreUpgrade script is:


```
WASPreUpgrade backupDirectory currentWASDirectory administrationNodeName
[ -instance instance ]
[ -nameServiceHost host_name [ -nameServicePort port_number ] ]
[ -traceString trace_spec [ -traceFile file_name ] ]
```

Parameters

The parameters of the WASPreUpgrade script are:

- **backupDirectory**
This is a required parameter and must be the first parameter that you specify. The value *backupDirectory* specifies the name of the directory where the script stores the saved configuration and files. This is also the directory from which the WASPostUpgrade tool reads the configuration and files. For example, if you are migrating a configuration from WebSphere Application Server Version 3.5, you could specify the `/home/was35_instancename/backup` directory. If the directory does not exist, the WASPreUpgrade script creates it.
- **currentWASDirectory**
This is a required parameter and must be the second parameter that you specify. The value *currentWASDirectory* specifies the name of the instance root directory for instance that you want to migrate. For Version 3.5.x this is `/QIBM/UserData/WebASStd/instance`, where *instance* is the name of the instance you want to migrate.
- **administrationNodeName**
This parameter is required and must be the third parameter that you specify. The value *administrationNodeName* specifies the name of the node that contains the administrative server for the previous version of the product. The value of this argument is case-sensitive and must match the node name given in the topology tree on the **Topology** tab of the administrative console for the previous version. The WASPreUpgrade tool uses this parameter to call the XMLConfig tool.
- **-instance**
This is an optional parameter. The value *instance* specifies the name of the WebSphere Application Server - Express instance to which you are migrating the configuration. If you do not specify this parameter, the script migrates the configuration of the default instance.
- **-nameServiceHost**
This is an optional parameter. The value *host_name* specifies the TCP/IP host name of the iSeries server. If you do not specify this parameter, the default host name is localhost.
- **-nameServicePort**
This is an optional parameter. The value *port_number* specifies specifies the bootstrap port for the administrative server for the instance from which you are migrating. If you do not specify this parameter, the default value is 900.
- **-traceString**
This is an optional parameter. The value *trace_spec* specifies the trace information that you want to collect. To gather all trace information, specify `"*=all=enabled"` (with quotation marks). The default is to not gather trace information. If you specify this parameter, you must also specify the `-traceFile` parameter.
- **-traceFile**
This is an optional parameter. The value *trace_file* specifies the name of the output file for trace information. If you specify the `-traceString` parameter but do not specify the `-traceFile` parameter, the script does not generate a trace file.

Logging

The WASPreUpgrade tool displays status to the screen while it is running. It also saves a more extensive set of logging information in the `WASPreUpgrade.log` file. This file is located in the *backupDirectory* directory, where *backupDirectory* is the value specified for the `backupDirectory` parameter.

Security

The WASPreUpgrade script uses the XMLConfig script to export configuration data from WebSphere Application Server Version 3.5 Standard Edition. If WebSphere security is enabled, ensure that the properties are configured properly in the sas.client.props property file for the Version 3.5 instance before running the WASPreUpgrade script or the script fails when it attempts to invoke the XMLConfig script. The following section in the Version 3.5 product information describe how to configure the sas.client.props property file. Follow the instructions that describe how to configure automatic authentication:

- **Version 3.5 Standard Edition:**Authenticating to the administrative server



Examples

Migrate from WebSphere Application Server Version 3.5.x Standard Edition

This example illustrates how to migrate from WebSphere Application Server Version 3.5.x Standard Edition. The backup directory is named `/home/was35_instancename/WebASAdv`, and the instance root of the previous version is `/QIBM/UserData/WebASAdv/default`. The administrative server is contained in `myNode`.

```
> WASPreUpgrade /home/was35_instancename/WebASAdv /QIBM/UserData/WebASAdv/default MYISERIES
```

The WASPostUpgrade script

The **WASPostUpgrade** command is a migration tool for migrating the configuration and applications of previous versions to a WebSphere Application Server - Express application server node. The script is located in the `/QIBM/ProdData/WebASE/ASE5/bin` directory.

The WASPostUpgrade tool installs all migrated applications into the `/QIBM/UserData/WebASE/ASE5/instance/installedApps` directory, where *instance* is the name of the instance to which you are migrating. The tool includes applications from the `installedApps` directory and other directories from the previous version.

Authority

To run this script, your user profile must have `*ALLOBJ` authority.

Syntax

The syntax of the WASPostUpgrade script is:

```
WASPostUpgrade backupDirectory [ -instance instance ]  
[ -cellName cell_name ] [ -nodeName node_name ]  
[ -webModuleAdditionalClasspath classpath ]  
[ -documentRootLimit number ]  
[ -substitute"key1=value1[;key2=value2;[...]]" ]  
[ -portBlock port_starting_number ] [ [ -traceString trace_spec  
[ -traceFile file_name ] ] ]
```

Parameters

The parameters of the WASPostUpgrade script are:

- **backupDirectory**
This is a required parameter. The value *backupDirectory* specifies the name of the directory in which the WASPreUpgrade tool stores the saved configuration and files, and from which the WASPostUpgrade tool reads the configuration and files.

- **-instance**
This is an optional parameter. The value *instance* specifies the name of the WebSphere Application Server - Express instance to which the script migrates your configuration.
- **-cellName**
This is an optional parameter. The value *cell_name* specifies the cell name that the script updates. If you do not specify this parameter, the script reads the configuration to determine the cell name. If only one cell name is found, the script updates that cell. If no cell name is found, or if more than one cell name is found, the script returns an error.
- **-nodeName**
This is an optional parameter. The value *node_name* specifies the node name that the script updates. If you do not specify this parameter, the script reads the configuration to determine the node name. If only one node name is found, the script updates that cell. If no node name is found, or if more than one node name is found, the script returns an error.
- **-webModuleAdditionalClasspath**
This is an optional parameter. The value *classpath* specifies the path or the path and file names of specific directories or files that you do not want copied into the Web archive (WAR) file that the script processes. Instead, the script adds the paths and files to the Web Module extension (ibm-web-ext.xmi) additionalClassPath attribute. If you want to specify multiple values for this parameter, separate them with a colon (:).
- **-documentRootLimit**
This is an optional parameter. The value *number* specifies the number of files that the script copies from the document-root field of your Web application. The default value is 300.
- **-substitute**
This is an optional argument. This parameter specifies values for security variables to substitute. (for example, -substitute "NODE_NAME=admin_node;APP_SERVER=default_server").
In the input XML data file, each key appears as \$key\$ for substitution. This argument replaces all occurrences of \$NODE_NAME\$ and \$APP_SERVER\$ with admin_node and default_server, respectively, in the input XML file.
If the substitution string contains semicolons, use \$semiColon\$ to separate it from the ";" delimiter.
- **-portBlock**
This is an optional parameter. The value *port_starting_number* specifies the first of a block of consecutive ports to assign when the script runs.
- **-traceString**
This is an optional parameter. The value *trace_spec* specifies the trace information that you want to collect. To gather all trace information, specify "*all=enabled" (with quotation marks). The default is to not gather trace information. If you specify this parameter, you must also specify the -traceFile parameter.
- **-traceFile**
This is an optional parameter. The value *trace_file* specifies the name of the output file for trace information. If you specify the -traceString parameter but do not specify the -traceFile parameter, the script does not generate a trace file.

Logging

The WASPostUpgrade tool displays status to the screen while running. It also saves a more extensive set of logging information in the WASPostUpgrade.log file. This file is located in the /QIBM/UserData/WebASE/ASE5/*instance*/logs directory, where *instance* is the name of the instance that you are migrating to.

Examples

Migrate from WebSphere Application Server Version 3.5.x Standard Edition

This example illustrates how to migrate from WebSphere Application Server Version 3.5.x, Advanced Edition. The WASPreUpgrade script created the backup directory named /home/was35_instancename/WAS35Std. The WASPostUpgrade script reads the configuration from this directory to migrate to WebSphere Application Server - Express.

```
WASPostUpgrade /home/was35_instancename/WAS35Std
```

Step 1: Plan your migration

Complete these steps before you migrate to WebSphere Application Server - Express.

1. Before you can migrate, you must install WebSphere Application Server - Express. For more information on installing WebSphere Application Server - Express, see WebSphere Application Server - Express installation in the *Installation* topic.
2. In addition to migrating your instances and applications, you also need to familiarize yourself with the tools and features of WebSphere Application Server - Express. The Administration topic describes administrative tasks and the tools that are provided to perform those tasks.
3. Verify that you have the minimum prerequisites required for migration. For more information, see "Migration prerequisites."
4. Evaluate the changes to API specification levels to determine what needs to be changed, if anything, in the applications that are to be migrated. Use these topics to plan your application migration requirements. For more information, see "API and Specifications for version 3.5.x."

Migration prerequisites

Before you migrate your old version of WebSphere Application Server, verify that you meet these requirements:

- **Minimum version of WebSphere Application Server Version 3.5.x**

If you are migrating from Version 3.5.x, you must be at Version 3.5.6 or higher.

To determine the current level of WebSphere Application Server installed on your system, perform these steps:

1. Enter this command on the CL command line:

```
WRKLNK ' /QIBM/ProdData/WebASAdv/properties/com/ibm/websphere/product.xml '
```

2. Specify option 5 (Display) next to the product.xml file to view the contents. The number within the <version> tags show the current version you have installed.

If you do not meet the minimum version, obtain the latest group PTF. See WebSphere Application Server PTFs for iSeries



for information on the correct group PTF for your i5/OS release level and WebSphere Application Server Version 3.5.x product.

- **WebSphere Application Server - Express must be installed.**

Follow the instructions Installation topic for more information. WebSphere Application Server - Express must be installed on the same iSeries server as the Version 3.5 product to be migrated.

- ***ALLOBJ authority is required.**

When you call the WasPreUpgrade and WasPostUpgrade migration tools, your user profile must have *ALLOBJ authority.

API and Specifications for version 3.5.x

If your existing applications currently support different specification levels than are supported by this version of the product, it is likely you must update at least some aspects of the applications to comply with the new specifications.

In many cases, IBM provides additional features and customization options that extend the specification level even further. If your existing applications use IBM extensions from earlier product versions, it might be necessary for you to perform mandatory or optional migration to use the same kinds of extensions in WebSphere Application Server - Express.

From Version 3.5.x to WebSphere Application Server - Express, main migration areas concern IBM extensions and migrating the Java specifications to Java 2.

The following table summarizes potential migration areas due to changes in supported specifications:

Specification	Support in Version 3.5	Support in WebSphere Application Server - Express	Must migrate from Version 3.5?	Details
JDBC	JDBC 1.0	JDBC 2.0	Yes	Many applications can run unchanged in WebSphere Application Server - Express although some changes may be required or recommended.
JavaServer Pages	JSP .91	JSP 1.2	Yes	JSP 1.0 and 1.1 APIs are a pure subset of JSP 1.2. For more information, see "Migrate Web applications" on page 9.
	JSP 1.0		No	
	JSP 1.1		No	
Servlets	Servlet 2.1	Servlet 2.3	Yes	Many Servlet 2.1 applications can run unchanged in WebSphere Application Server - Express although changes might be required or recommended. For more information, see "Migrate Web applications" on page 9.
	Servlet 2.2		No	Servlet 2.2 APIs are a pure subset of Servlet 2.3. For more information, see "Migrate Web applications" on page 9.

The following table summarizes potential migration areas due to changes in supported APIs:

API	Must migrate from Version 3.5?	Details
Sessions	Yes	Many applications can run unchanged in WebSphere Application Server - Express, although changes may be required or recommended. For more information, see "Migrate HTTP sessions" on page 10.

The following table summarizes potential migration areas due to changes in supported tools:

Tool	Must migrate from Version 3.5?	Details
XML Configuration Tool	Yes	Use JMX support provided by WSAAdmin. For more information, see The wsadmin administrative tool in the <i>Administration</i> topic.
WebSphere Control Program	Yes	Use JMX support provided by WSAAdmin. For more information, see The wsadmin administrative tool in the <i>Administration</i> topic.

Step 2: Migrate your applications

As technology advances, particularly in the area of Java components, new WebSphere Application Server product versions advance to support and extend the most recent open specification levels. If your existing applications currently support different specification levels than are supported by WebSphere Application Server - Express, it is likely you need to update at least a few aspects of the applications to comply with the new specifications.

See these topics for instructions on how to migrate your applications:

"Application assembly in WebSphere Application Server - Express"

This topic describes the changes in application assembly in WebSphere Application Server - Express.

"Migrate Web applications" on page 9

This topic describes how to determine what, if any, migration changes are required for your Web applications.

"Migrate HTTP sessions" on page 10

This topic describes how to determine what, if any, migration changes are required for your HTTP sessions.

"Migrate from wscp to wsadmin" on page 11

This topic describes how to determine what migration changes are required for your wscp commands.

Application assembly in WebSphere Application Server - Express

Version 3.5.x developers use the administrative console to create, edit, and view application configurations. WebSphere Application Server - Express developers use the WebSphere Development Studio Client for iSeries to package, edit, and view J2EE applications. For more information, see Step 4: Assemble your application in the *Application Development* topic.

Packaging J2EE applications includes:

- Copying appropriate files into the enterprise archive (EAR) file, including classes, JSP files, HTML, and image files.
- Defining deployment descriptor files for modules and applications.

Migrate Web applications

While version 2.3 of the servlet specification and version 1.2 of the JavaServer Pages (JSP) specification are supported by WebSphere Application Server Express, versions 1.1 and 1.2 of the JavaServer Pages (JSP) specification are compatible and the difference between versions 2.2 and 2.3 of the servlet specification are minor. There are behavioral differences between the Java 2 Enterprise Edition (J2EE) 1.2 and 1.3 specifications.

Servlet migration might be a concern for your application if it has these characteristics:

- It extends a `PageListServlet` that relies on configuration information in the servlet configuration XML file.
- It uses a servlet to generate HTML output.
- It calls the `response.sendRedirect()` method for a servlet by using the `encodeRedirectURL` function or by running it within a non-context root.
- URIs at WebSphere Application Server - Express are case sensitive when handled by the file serving servlet. That is, when a request is sent to WebSphere Application Server to serve a file, the filename as it exists in the file system must match the case as is specified on the URI. This is also true starting with WebSphere Application Server Version 3.5.6 and beyond. If you are migrating a Web application from WebSphere Application Server 3.5.5 (or earlier), you need to ensure your Web applications use proper case when referencing file served files.
- It is migrated from WebSphere Application Server Version 3.5, and it uses `ServletContext` attributes. Such attributes are accessed via the `ServletContext.getAttribute()` API during servlet execution. Websphere Application Server Version 3.5 provided these ways of setting `ServletContext` attributes:
 - Using the `ServletContext.setAttribute()` - a runtime servlet API available at V2.1 and v2.2.
 - By configuring at the administrative console by clicking on a the Advanced tab for a web application and updating the name and value pair for the Attributes field. Such attributes are set at application server or web application startup.

The second method of setting `ServletContext` methods is no longer available at WebSphere Application Server - Express, thus attributes can only be set during servlet runtime using `ServletContext.setAttribute()` - the first method above. If your web application at Version 3.5 relied on setting `ServletContext` attributes using the second method, you should convert over to use `getInitParameter()` and `getInitParameterNames()`, which are new servlet APIs as of v2.2.

The other internal servlets that are affected by the WebSphere Application Server - Express package name change are `DefaultErrorReporter` and `AutoInvoker`. Use the WebSphere Application Server - Express package name, `com.ibm.ws.webcontainer.servlet.DefaultErrorReporter` and `com.ibm.ws.webcontainer.servlet.AutoInvoker` for these servlets.

Web application migration tips

Some tips for migrating your Web applications include the following:

- Set a content type if your servlet generates HTML output.

The default behavior of the Web container changed in WebSphere Application Server - Express. If the servlet developer does not specify a content type in the servlet then the container is forbidden to set one automatically. Without an explicit content type setting, the content type is set to `null`. The Netscape browser displays HTML source as plain text with a null content type setting.

To resolve this problem, do one of the following:

- Explicitly set a content type in your servlet.
- Open the WAR file and enable the `autoResponseEncoding` static file setting.

Set the Java environment variable, `com.ibm.websphere.sendredirect.compatibility`, to `true` if you want your URLs interpreted relative to the application root.

Import your classes if your application uses unnamed packages. According to the JSP 1.2 specification, and unnamed package should not be used unless the class is explicitly imported.

For example, if `myServletClass` is in the unnamed package, and you reference it in a `<jsp:useServlet>` tag, then you must explicitly import `myServletClass` with the page directive `import` attribute, as shown in the following example:

```
<%@page import="myServletClass" %>
...
<jsp:useServlet id="myServlet" class="myServletClass" scope="session"/>
```

In WebSphere Application Server - Express, the JSP engine creates JSP page implementation classes in the `org.apache.jsp` package. If a class in the unnamed package is not explicitly imported, then the `javac` compiler assumes the class is in package `org.apache.jsp`, and the compilation fails.

Note: Avoid using the unnamed package altogether because in Java 2 SDK 1.4, the compiler does not accept simple names (or unnamed packages) in the import statements.

Issues concerning the migration of JSPs and Servlets

When you migrate from Version 3.5 to WebSphere Application Server - Express, servlets and JSPs that are installed in the default Web application (`default_app`) are not migrated by the WebSphere Application Server migration tools. Options to migrate application components that are installed in the `default_app` Web application are as follows:

1. Install the servlets and JSPs to a different Web application. The WebSphere Application Server migration tools will then migrate these application components.
2. Use the WebSphere Application Server migration tools to migrate the resources used by the servlets and JSPs that are installed in the default Web application. The migration tools will migrate resources, such as data sources and virtual hosts. After you have migrated the resources, manually migrate the servlets and JSPs without using the WebSphere Application Server migration tools.

If you use the IBM `<tsx:dbquery>` tag in any of your JSPs, you might need to make additional updates. In Version 5.0, the behavior of the tag's `id` attribute changed. In previous versions, the `id` attribute specified the object name of the bean, but now refers to the bean's key name that is stored in the page context. For more information, see `<tsx:dbquery>` in the *Application Development* topic.

Migrate HTTP sessions

If you have Version 3.5 applications running in Servlet 2.1 mode, some of the following WebSphere Application Server - Express differences might influence how you choose to track and manage sessions.

1. Session persistence is not supported in WebSphere Application Server - Express.
2. During application development, modify session-related APIs as needed. Some API changes are required in order to redeploy existing applications on WebSphere Application Server - Express. These include changes to the `HttpSession` API itself as well as issues associated with moving to support for the Servlet 2.3 specification. Certain Servlet 2.1 API methods have been deprecated in Servlet 2.3 API. These deprecated APIs still work in WebSphere Application Server - Express, but they may be removed in a future version of the API. Changes are summarized in the following list:
 - Replace instances of `getValue()` with `getAttribute()`
 - Replace instances of `getValueNames()` with `getAttributeNames()`
 - Replace instances of `removeValue()` with `removeAttribute()`

- Replace instances of `putValue()` with `setAttribute()`
3. During application development, modify Web application behavior as needed. In accordance with the Servlet 2.3 specification, `HttpSession` objects must be scoped within a single Web application context; they may not be shared between contexts. This means that a session can no longer span Web applications. Objects added to a session by a servlet or JSP in one Web application cannot be accessed from another Web application. The same session ID may be shared (because the same cookie is in use), but each Web application has a unique session associated with the session ID. WebSphere Application Server - Express provides a feature that can be used to extend scope of a session to enterprise application.
 4. Use administrative tools to configure Session Manager security settings as needed. Relative to session security, the default Session Manager setting for Integrate Security is now false. This is different from the default setting in some earlier releases.

Migrate from wscp to wsadmin

The wscp tool was a part of the administration repository support in WebSphere Application Server Version 3.5. You can use the WebSphere Application Server - Express scripting client program, wsadmin, to do the same kinds of things wscp did, and more. You can use the JAACL scripting language for scripts, but the elements specific to wsadmin are different from those available in wscp. This article shows how to create WebSphere Application Server - Express scripts that perform actions similar to those performed by wscp. Automatic conversion of scripts between the two releases is difficult.

Configuration commands for wscp

- create
- list
- modify
- remove
- show
- showall
- install
- uninstall
- all SecurityConfig commands
- all SecurityRoleAssignment commands
- clone
- removeClone

Other commands exist to provide `../admin/help` for configuration commands. These commands include `attributes`, `containment`, and `../admin/help`.

Operation commands for wscp

- start
- stop
- show (for runtime attributes)
- testConnection
- all DrAdmin commands
- regenPluginCfg

To convert wscp commands to wsadmin commands, follow these steps:

1. Find the corresponding configuration wsadmin WebSphere Application Server - Express object type for each configuration command. Use the AdminConfig `create`, `list`, `modify`, `remove`, `show`, and `showAttribute` commands to perform the same type of operations in WebSphere Application Server -

Express that you performed in Version 3.5. Use this table to determine the corresponding types:










wscp command	WebSphere Application Server - Express wsadmin configuration type
ApplicationServer	Server
Context	<i>Not applicable</i>
DataSource	DataSource
Domain	<i>Not applicable</i>
EnterpriseApp	ApplicationDeployment
GenericServer	Server
J2CConnectionFactory	J2CConnectionFactory
J2CResourceAdapter	J2CResourceAdapter
JDBCDriver	JDBCProvider
JMSConnectionFactory	JMSConnectionFactory
JMSDestination	JMSDestination
JMSProvider	JMSProvider
MailSession	MailSession
Module	ModuleDeployment
Node	Node
ServerGroup	ServerCluster
URL	URL
URLProvider	URLProvider
VirtualHost	VirtualHost

2. Use the online help command of the AdminConfig object to determine the WebSphere Application Server - Express attribute names. For example: attributes, defaults, parents, required, or types. These examples illustrate the use of this command:
 - This example lists the attributes available for the Server object type:
\$AdminConfig attributes Server
 - This example lists the types you can configure:
\$AdminConfig types
 - This example lists the objects which contain the DataSource object type:
\$AdminConfig parents DataSource
3. Convert application installation commands:
 - a. Run the installInteractive command on the AdminApp object from an interactive wsadmin session.
 - b. Locate message WASX7278I in the wsadmin.traceout log file and use the data in the message to construct an installation command for your application.
4. Convert operational commands. Use this table to determine how to convert operational commands:

wscp 3.5 action	wsadmin WebSphere Application Server - Express object and command	wsadmin WebSphere Application Server - Express MBean	wsadmin WebSphere Application Server - Express Operation
server start	AdminControl startServer		
server stop	AdminControl stopServer		
application start	AdminControl invoke	ApplicationManager	startApplication
application stop	AdminControl invoke	ApplicationManager	stopApplication

wscp 3.5 action	wsadmin WebSphere Application Server - Express object and command	wsadmin WebSphere Application Server - Express MBean	wsadmin WebSphere Application Server - Express Operation
check run-time attribute	AdminControl getAttribute	<i>mbean</i>	<i>attribute</i>
check run-time attributes	AdminControl getAttributes	<i>mbean</i>	<i>list of attributes</i>
regenPluginCfg	AdminControl invoke	PluginCfgGenerator	generate
testConnection	AdminControl testConnection		
enable security	securityon command in securityProcs.jacl		
disable security	securityoff command in securityProcs.jacl		

These help topics provide examples of migrating wscp commands to wsadmin commands. They are specific to migrating from WebSphere Application Server Version 4.0, but there are applicable to migrating from Version 3.5 also.

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- Example: Migrating - Regenerating the node plug-in configuration

- Example: Migrating - Stopping an application server

- Example: Migrating - Modifying the virtual host

- Example: Migrating - Modifying and restarting an application server

- Example: Migrating - Pinging running servers for the current state

- Example: Migrating - Removing an application server

- Example: Migrating - Installing an application

- Example: Migrating - Installing a JDBC driver

- Example: Migrating - Testing the DataSource object connection

- Example: Migrating - Enabling security



- Example: Migrating - Disabling security



Step 3: Migrate your WebSphere Application Server instances

After you have migrated your applications, you need to migrate your instance configurations.

Migration of WebSphere Application Server Version 3.5 Standard Edition to WebSphere Application Server - Express requires a product level of Version 3.5.6 or later.

See “Migration prerequisites” on page 6 to determine the currently installed product level of WebSphere Application Server Version 3.5.

“Migrate to a new WebSphere Application Server - Express instance”

This topic contains detailed information and step-by-step instructions for migrating a WebSphere Application Server Version 3.5.6 (or later) instance to a new WebSphere Application Server - Express instance.

Migrate to a new WebSphere Application Server - Express instance

Tools for migrating administrative configurations are provided for Versions 3.5 and later. This support enables Version 3.5.6 Standard Edition (or later) to be upgraded to WebSphere Application Server - Express.

If multiple application servers exist in your Version 3.5.x environment, you have these options:

- The migration tools merge applications from multiple application servers of a Version 3.5.x instance into a single EAR file containing multiple Web modules, one Web module for each application server to be migrated. The EAR file is deployed as a single application within the WebSphere Application Server - Express instance.
- If you do not want your applications merged into a single EAR file and run in the same application server, you need to separate them into different Version 3.5.x instances prior to running the migration tools. Each instance should have a single application server containing the desired Web application or applications. You then migrate each Version 3.5.x instance to a corresponding WebSphere Application Server - Express instance.
- Use the WebSphere Development Studio Client environment to build an EAR file for each 3.5.x application you have and deploy each EAR file into a single Express instance. This option does not use the migration tools shipped with WebSphere Application Server - Express.

A summary of the product migration process is as follows.

- Create a WebSphere Application Server - Express instance (page 14).
- Start the Version 3.5 instance that is being migrated (page 15).
- Save the Version 3.5 configuration (page 15).
- Restore the Version 3.5 configuration into a WebSphere Application Server - Express instance (page 15).
- Start the WebSphere Application Server - Express instance (page 16).

Create a WebSphere Application Server - Express instance

See Create a new application server in the *Administration* topic for details on how to create a WebSphere Application Server - Express instance.

Start the Version 3.5 instance that is being migrated

Perform the following steps to start the WebSphere Application Server Version 3.5 instance:

1. Enter the following command from an CL command line:

```
STRQSH
```

This starts the Qshell environment so that you can run WebSphere Application Server scripts.

2. Run the strwasinst script with the following parameters:

```
/QIBM/ProdData/WebASAdv/bin/strwasinst -instance 3.5.xInstanceName
```

where *3.5.xInstanceName* is the name of the Version 3.5.x instance that is being migrated. You must wait for the administrative server to start successfully before continuing.

Save the Version 3.5 configuration

If you have servlets in the Version 3.5.x **default_app** Web Application, the WasPreUpgrade migration tool does not migrate them. If you wish to have these servlets migrated, you must change the **default_app** name before calling WasPreUpgrade. See Issues concerning the migration of JSPs and Servlets (page 10) in the *Application Development* topic for more information.

Perform the following steps to save the Version 3.5 configuration:

1. Enter the following command from an CL command line:

```
STRQSH
```

This starts the Qshell environment so that you can run WebSphere Application Server scripts.

2. Run the WebSphere Application Server - Express WasPreUpgrade script as shown below:

```
/QIBM/ProdData/WebASE/ASE5/bin/WASPreUpgrade  
/backup/myBackupDirectory  
/QIBM/UserData/WebAsAdv/3.5.xInstanceName  
adminNodeName  
-nameServiceHost adminNodeName  
-nameServicePort port_number
```

where:

- */backup/myBackupDirectory* (required parameter) is the fully qualified path to the integrated file system directory where the WasPreUpgrade migration tool stores the saved configuration and files. The directory is created if it does not already exist. Additionally, the tool writes a log file called WasPreUpgrade.log that chronicles the steps taken by WasPreUpgrade.
- */QIBM/UserData/WebAsAdv/3.5.xInstanceName* (required parameter) is the fully qualified path of the Version 3.5.x administrative instance being migrated.
- *adminNodeName* (required parameter) is the name of the administration node for the Version 3.5.x instance. Generally, this is the iSeries host name from CFGTCP option 12. The WASPreUpgrade tool invokes the Version 3.5 XMLConfig tool using this parameter.
- The *-nameServiceHost* and *-nameServicePort* parameters are also passed to XMLConfig. They are needed to override the default host name and port number used by XMLConfig and are required parameters when the Version 3.5.x instance being migrated is not the default instance. The value for *-nameServiceHost* is the TCP/IP host name of the iSeries server. The value for the *-nameServicePort* is the bootstrap port for the Version 3.5.x administrative server. The default bootstrap port is 900.

For a full explanation of the WasPreUpgrade migration tool and parameters, see “The WASPreUpgrade script” on page 2.

Restore the Version 3.5 configuration into a WebSphere Application Server - Express instance

Perform the following steps to restore the Version 3.5 configuration into a WebSphere Application Server - Express instance:

1. Enter the following command from an CL command line:

STRQSH

This starts the Qshell environment so that you can run WebSphere Application Server scripts.

2. Run the WasPostUpgrade script with the following parameters:

```
/QIBM/ProdData/WebASE/ASE5/bin/WASPostUpgrade  
backupDirectoryName  
[-instance 5_instance_name]  
[-portBlock port_starting_number]
```

The first argument is required. Supported arguments include:

- **backupDirectory**
Required name of the directory in which the WASPreUpgrade tool stores the saved configuration and files, and from which the WASPostUpgrade tool reads the configuration and files. The WASPreUpgrade tool creates this directory if it does not already exist.
- **-portBlock**
This is an optional parameter. The value portblock specifies the first number of a block of port numbers that your instance uses. Specify the first port in a group of unused ports on your iSeries server. You can use the Work with TCP/IP Network Status (NETSTAT *CNN) command to display a list of port numbers that are currently being used. This parameter is case sensitive.
Note: Although this is an optional parameter, it is recommended that you always specify the parameter (or the specific port parameters, described below) if you do not want your instance's ports to conflict with the default instance's ports.

For the -portBlock parameter, the script checks instances of WebSphere Application Server - Express. The script is not able to detect port usage by other applications, including previous versions of WebSphere Application Server.

For a full explanation of the WasPostUpgrade migration tool and parameters, see "The WASPostUpgrade script" on page 4.

Start the WebSphere Application Server - Express instance

Perform the following steps to start the WebSphere Application Server - Express instance:

1. Enter the following command from an CL command line to start the QASE5 subsystem if it is not already started:

```
STRSBS QASE5/QASE5
```

2. Enter the following command from an CL command line:

```
STRQSH
```

This starts the Qshell environment so that you can run WebSphere Application Server scripts.

3. Run the startServer script with the following parameters:

```
/QIBM/ProdData/WebASE/ASE5/bin/startServer  
-instance 50InstanceName 50ApplicationServerName
```

where *50InstanceName* is the name of the WebSphere Application Server - Express instance created in an earlier step, and *50ApplicationServerName* is the name of the WebSphere Application Server - Express application server created in an earlier step.

Step 4: Complete the migration

This topic describes the manual steps that you might need to perform to complete the migration process. These are steps that are not performed automatically by the WebSphere Application Server - Express migration tools.

Change the HTTP transport after migration

If the -portBlock parameter was not specified in the WASPostUpgrade script, you need to use the WebSphere Application Server - Express administrative console to adjust the ports manually after migration has completed.

1. Use the WebSphere Application Server - Express administrative console to change the HTTP transport port:
 - a. Navigate to **Servers** → **Application Servers** → *my_server* where *my_server* is the name of the application server that was migrated.
 - b. Click **Web Container**.
 - c. Click **HTTP transports**.
 - d. Click on a host.
 - e. Adjust the **Port** property by entering a port not currently in use on your iSeries server. Record both the old and new port numbers; they are needed for step 2.
 - f. Click **OK**.
 - g. Repeat for each host.
2. Adjust your Virtual hosts to correspond to your HTTP transport.
 - a. Click **Environment** → **Virtual Hosts**.
 - b. Select your virtual host.
 - c. Click **Host Aliases**.
 - d. Click **New**.
 - e. Select one of the ports that were changed in step 1.
 - f. Enter the port that this was changed to in step 1.
 - g. Click **OK**.
 - h. Repeat for each port that was changed in step 1.
3. Click **Save**.
4. Regenerate your plugin configuration.
 - a. Navigate to **Environment** → **Update Web Server Plugin**.
 - b. Click **OK**.

Migrate the web server plug-in

If the WebSphere Application Server Version 3.5.x plug-in for your web server uses Open Servlet Engine (OSE) transport, you must switch to HTTP transport when migrating to WebSphere Application Server - Express.

The following instructions are specific to the Web server being supported and assume that you can successfully migrate existing Web applications:

Plug-in migration has been tested with the following Web server products:

- IBM HTTP Server (original) for iSeries (V4R5)
- IBM HTTP Server (powered by Apache) for iSeries (V5R1)
- Lotus Domino HTTP Server

Use the following steps to migrate the plug-in configuration:

1. Configure an HTTP server instance

There are two options to choose from:

- Create a new HTTP server instance to be used by the WebSphere Application Server - Express instance. This method allows both Websphere Version 3.5.x and WebSphere Application Server - Express instances to continue operating correctly.
- Update the HTTP server instance configuration for the Websphere Version 3.5.x instance that is being migrated. This method changes the HTTP instance configuration to work with the WebSphere Application Server - Express instance and makes the Websphere Version 3.5.x instance no longer usable.

For more information, see Start the HTTP Server Administration interface.

2. **Configure the virtual host for the WebSphere Application Server - Express instance.**

This step ensures that both the host and HTTP transport port number exist in the virtual host list. For more information, see Manage virtual hosts for your application server in the *Administration* topic.

3. **Regenerate the Web server plugin configuration**

This step needs to be done after any configuration changes have been made.

Change the ConnectionIOTimeout properties for the Web container

Performance changes to the WebSphere HTTP plug-ins may result in **InterruptedIOTimeout** exceptions while reading large requests, such as receiving file uploads to a servlet. Increase the **ConnectionIOTimeout** value in the Web Container of your application as follows:

1. In the topology tree, expand **Servers** and click **Application Servers**.
2. On the **Application Servers** page, click the name of the server that you want to modify.
3. On the server's detail page, click **Web Container**.
4. On the **Web Container** page, click **HTTP Transports**.
5. On the **HTTP Transports** page, click the transport that you want to modify.
6. Click **Custom properties**.
7. Click **New** and add a property named **ConnectionIOTimeout**. Set the property to the maximum time a servlet or JSP waits for a client to transmit request data.
8. After you add a virtual host alias, you must restart the application server. See Start and test your application server in the *Administration* topic for more information.

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