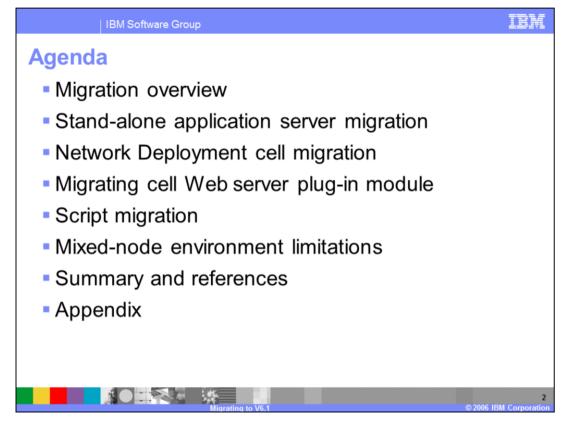
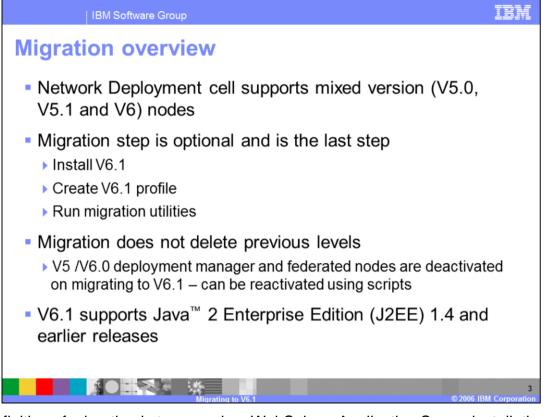


This presentation will focus on migrating to WebSphere® Application Server V6.1



An overview of the migration process will be provided, along with migration of the standalone Application Server, cell migration, Web server plug-in, script migration and mixed node environment limitations of WebSphere Application Server V6.1. Migration features new in V6.1 will also be discussed.

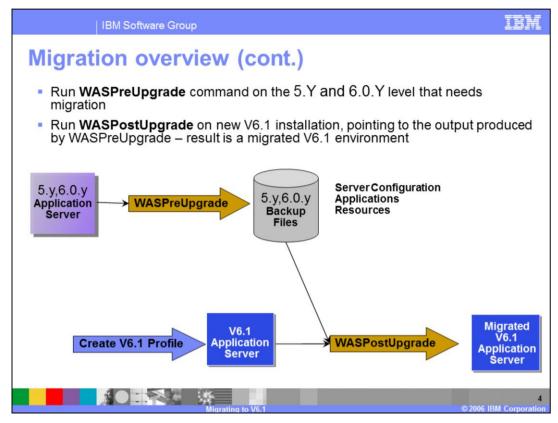


The definition of migration is to upgrade a WebSphere Application Server installation to a newer major release. WebSphere Application Server Version 6.1 migration leverages the existing environment and applications and changes them to be compatible with the WebSphere Application Server Version 6.1 environment. Existing application components and configuration settings are applied to the Version 6.1 environment during the migration process.

In order to minimize application downtime during migration, WebSphere Application Server V6.1 supports mixed version cells. This means that a cell can support both WebSphere Application Server V5 nodes and V6.1 nodes that operate in a fully functional cell.

Migration involves installing V6.1 and configuring at least one profile. Migration can be done by either running migration utilities, or installing and configuring the application and resources manually.

The previous version will still exist after running migration utilities. However, a V5 deployment manager will be disabled from operation after a migration using migration utilities. The V5 deployment manager can be re-enabled with a provided script.



The migration utilities consists of a pair of commands.

The **WASPreUpgrade** command is used to save an existing installed WebSphere version's configuration and applications into a migration-specific backup directory.

The **WASPostUpgrade** command is used to process the migration-specific backup directory that was created by WASPreUpgrade and import that configuration and enterprise applications into the current environment.

You must create at least one profile in order to perform a migration.

Source Product Scenario	V6.1.y Express	V6.1.y Base	V6.1.y ND standalone and custom profiles	V6.1.y Dmgr profile	V6.1.y client
/5.x.y, V6.0.y Express or Base or ND standalone	support	support	support		
/5.x.y, V6.0.y Base or ND rederated		support	support		
/5.x.y, V6.0.y ND Deployment Manager				support	
/5.x.y, V6.0.y Client					Support

The following combinations of WebSphere versions and offerings are directly supported for 6.1, that is, those scenarios where an Operating System (OS) upgrade or change is not required.

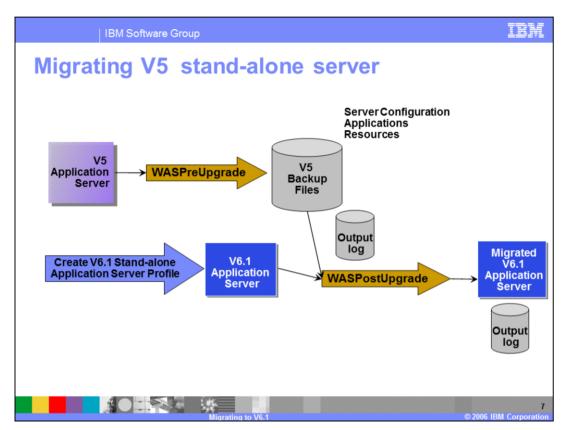
This component also provides some tools for upgrading J2EE 1.2 client resources and upgrading the configuration to the latest supported level for those configuration objects that support script compatibility.

## The Supported scenarios table reflecting product packaging is shown here

In this table \*.y indicates any PTF and Service pack level In this table V5.x.y indicates V5.0.y **and** V5.1.y



This section covers migration of a Stand-alone Application Server environment.



This example illustrates a more detailed picture of a migration sequence involving WebSphere Application Server V5 as the starting point of the migration.

1. If you are running your web server on a remote (from the application server) system, install the V6.1 web server plug-in code. For Web servers on i5/OS<sup>®</sup>, associate your web server instance with your new V6.1 http profile using the IBM Web Administration for i5/OS.

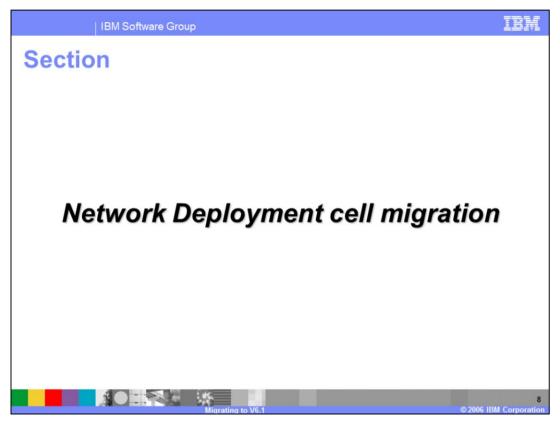
2. Create a V6.1 stand-alone application server profile using manageprofiles command

\*\* Note that before WASPreUpgrade can run, the servers that are part of the source installation must be stopped. You should stop these manually. If there are servers running, WASPreUpgrade attempts to stop any active servers.

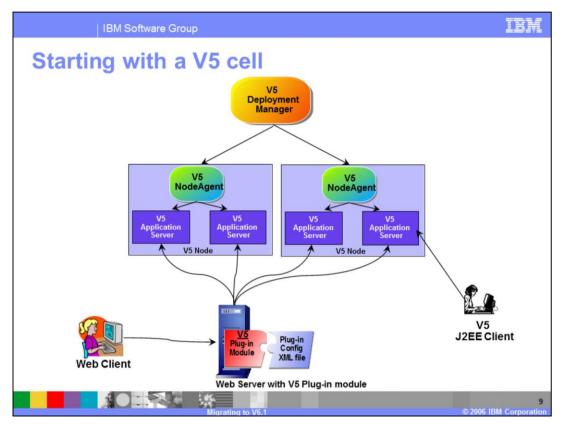
3. Run the **WASPreUpgrade** command which quickly copies your configuration to a backup copy

4. Run the **WASPostUpgrade** command which copies and transforms the configuration data from the backup into the new profile

- 5. Analyze the upgrade logs
- 6. Start the V6.1 Application Server and begin testing.

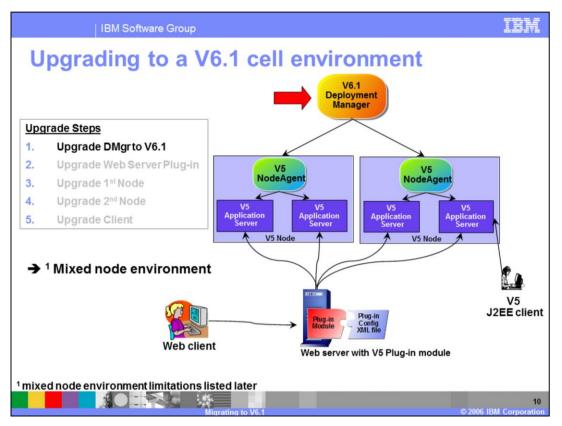


This section covers migration of Network Deployment Cells.



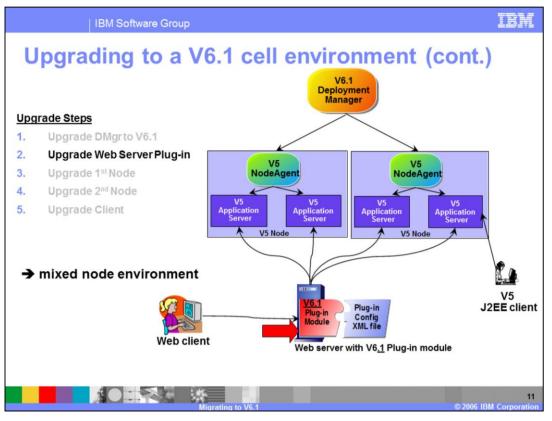
The next several slides shows the step-by-step process of migrating a full WebSphere Application Server V5 cell to a full WebSphere Application Server V6.1 cell, with intermediate Mixed V5 and V6.1 Nodes.

This scenario starts with a full V5 cell and V5 Web Server Plug-in as shown here. For this scenario assume you are running the Web server on a system or partition separate from the application server system. For scenarios where your web server and application server are on the same system or partition, there is no need to install the Web server plug-in code – it is included with the V6.1 server installation.

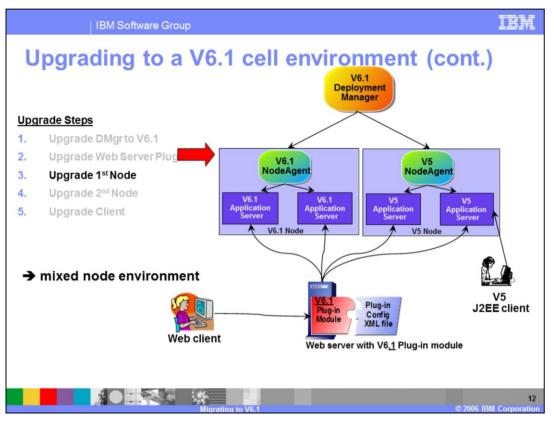


The first step is to migrate the V5 Deployment Manager to a V6.1 Deployment Manager profile with the same Cell name. Now you are in a Mixed Node environment.

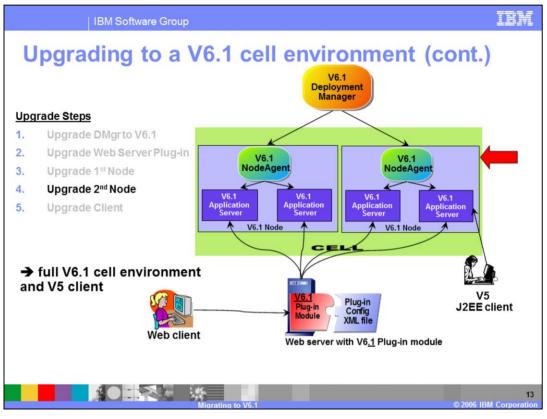
The result is that the V5 Deployment Manager is disabled. The V6.1 Deployment Manager now manages two V5 nodes. These nodes are fully operational.



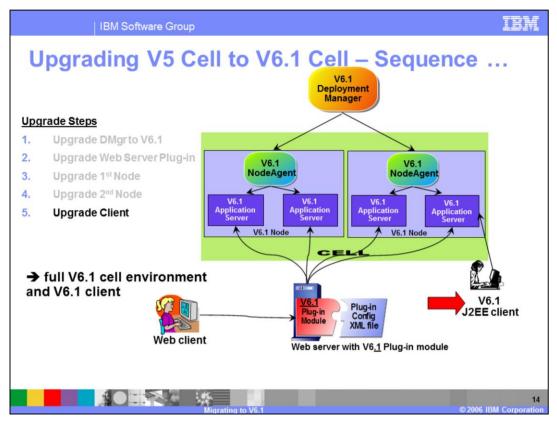
The next step is to upgrade the Web Server installation and WebSphere Plug-in with a manual installation. The V6.1 Web Server plug-in is compatible with earlier versions in that it can send requests to V5 Application Servers and V6 Application Servers.



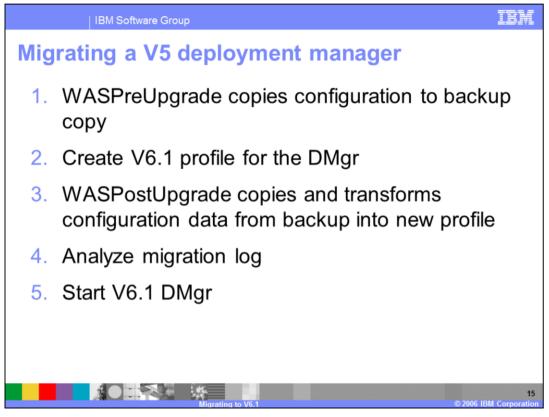
The next step is to migrate the first node using the migration utilities. Now the cell consists of a V5 node, and a V6.1 node, which are fully operational.



The next step is to migrate the second node. Both nodes are at V6.1 and are fully operational. Now the cell is a full V6.1 Cell. You still might have V5 Application Clients in the environment that are calling V6.1 Application Servers.



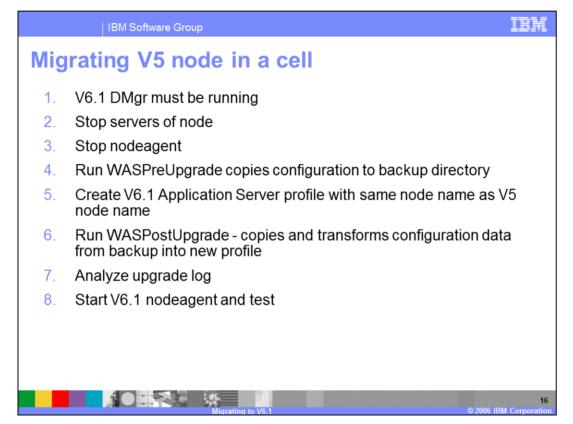
The last step is to migrate the J2EE client using the clientUpgrade command.



Before migrating a V5 Deployment manager, you must first stop it. The WASPreUpgrade will attempt to stop the Deployment Manager if it is running. To minimize down time, you should to stop the V5 Deployment manager after you create the V6.1 Deployment Manager profile.

Next, create a V6.1 profile for the Deployment Manager. You should make sure the cell name and node name match the cell name and node name for the V5 cell. Next, run the WASPostUpgrade command. This modifies the V6.1 Deployment Manager profile. Consult the output log for any errors. The log resides in the profile's logs directory. If you are running the WASPostUpgrade command from the product's bin directory, be sure to specify the –profileName parameter with the V6.1 Deployment Manager profile's name. For example, WASPostUpgrade –profileName my61Dmgr.

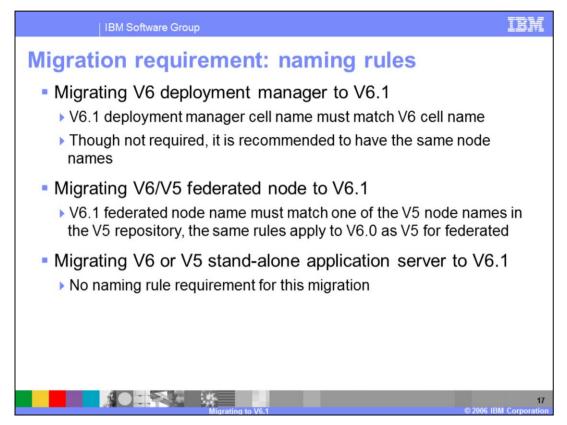
The V5 Deployment Manager is disabled from starting. If circumstances dictate that you must start the V5 Deployment Manager , you can re-enable the operation by running a wsadmin script migrationDisablementReversal.jacl from the previous deployment manager's bin directory.



To migrate a V5 node in a cell, the V6.1 Deployment Manager must be running, while the node agent and servers must be stopped. You can choose to create the V6.1 Application Server profile prior to stopping the V5 node if you want to minimze your down time.

Run WASPreUpgrade command which copies the configuration to the backup directory.

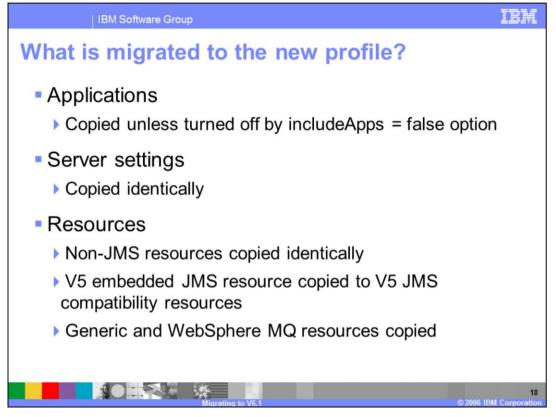
- Next, create an Application Server profile and ensure that the node name and server names are the same as the V5 node and server names.
- Next, run WASPostUpgrade, which first transforms the information in the backup directory into the V6.1 node profile. The V6.1 Deployment Manager is contacted and some of this information is transferred there. Analyze the output log in the node profile logs directory for any errors or warnings.
- Start the nodeagent using the startNode command from the V6.1 node profile. The nodeagent will synchronize with the Deployment Manager and the node migration is complete. You can then start the application servers and test the applications.



The only naming restrictions involve migrating nodes and deployment managers.

When migrating the deployment manager, the cell name in the V6.1 profile must match the cell name of the V5 deployment manager. When migrating a V6/V5 node in a cell, the node name in the V6.1 profile must match the node name of the V6/V5 node.

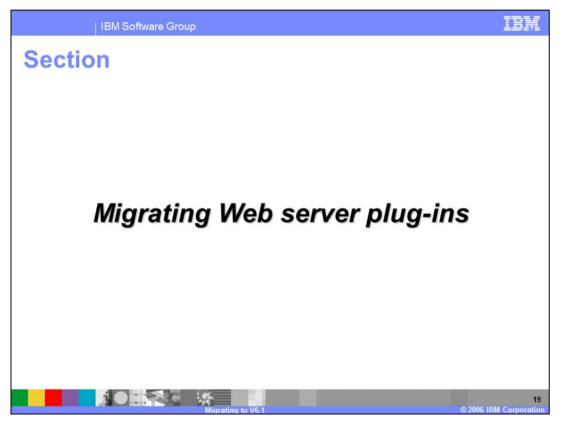
There are no naming restrictions when migrating stand-alone nodes or how you assign port numbers.



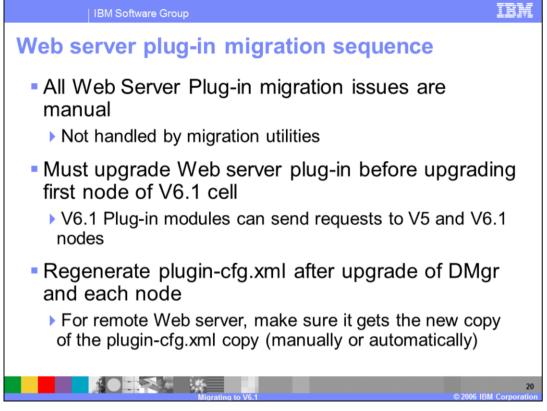
- Applications are copied to the new profile unless –includeApps=false is specified on the WASPostUpgrade command. Standard sample applications that are installed as WebSphere samples are always excluded from copying.

- All server settings are copied.

- All resources are copied. Note that some resources are considered deprecated. V5 JMS resources are copied, but you must navigate to the V5 JMS resources, which are distinctly identified from V6.1 JMS resources.

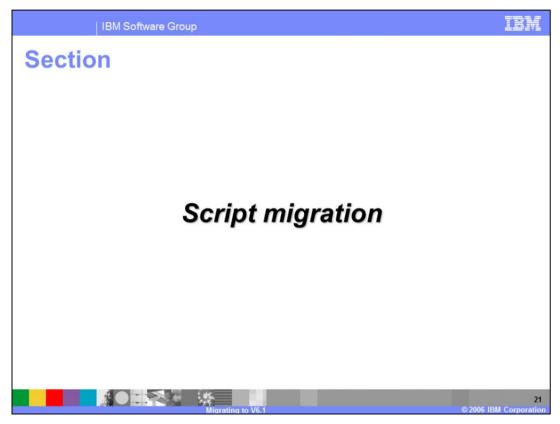


This section covers migrating Web server plug-ins.

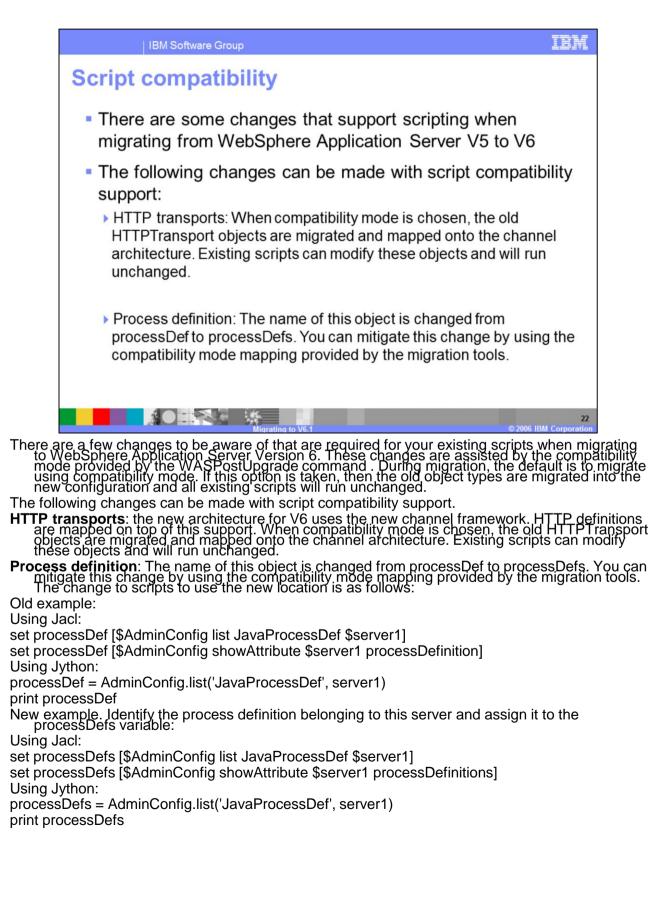


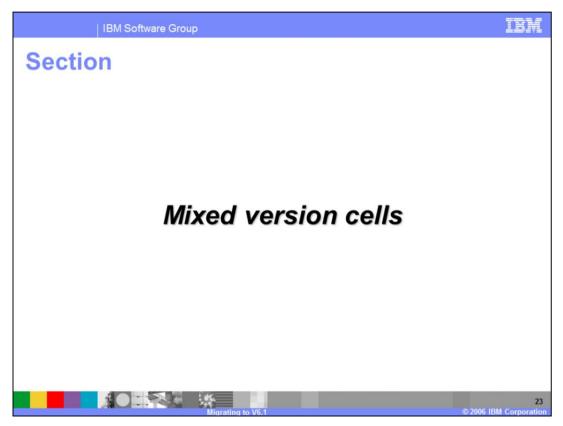
If a node configuration relies on a Web server, that Web server must be upgraded to a supported level. That upgrade is a manual installation of the new Web server and installation of the V6.1 Web server Plug-in files. The upgrade must happen before any WebSphere Application Server V6.1 node is tested. The alternative is that the HTTP request will not be routed to the V6.1 application server.

After migrating the Web server and Plug-in files, the Plug-in configuration file, plugincfg.xml, must be regenerated and copied after each node migration.

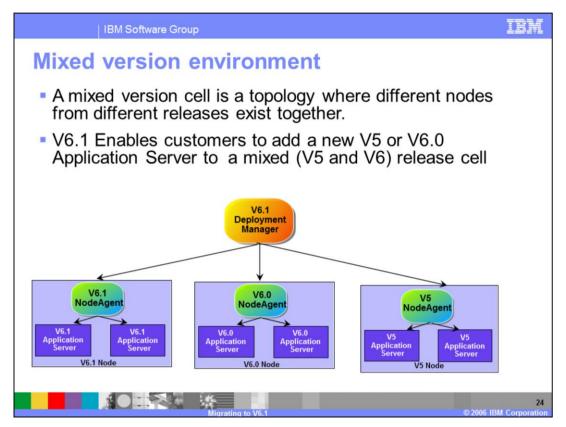


This section covers script migration.





This section covers mixed version cell environment limitations.



- A mixed version cell is a topology where different nodes from different releases exist together.
- V6.1 Enables you to add a new V5 or V6 Application Server to a mixed V5 and V6 release cell
- Support will be provided for a Deployment Manager (Dmgr) profile that has mixed Releases of nodes in the cell (5.0, 5.1, 6.0 or 6.1).
- V6.0.0 and V6.0.1 will not be supported in a Mixed node environment, so your V6.0 nodes should be at the V6.0.2 level. Migration support will still migrate these nodes during DMgr migration but will issue a warning message that the nodes cannot be managed by the V6.1 DMgr.

Some	e restrictions were removed in V6.1				
	What is to be added to the Mixed Release Cell	Supported in V6	Supported in V6.02	Supported in V6.1	
Adding New	V6.0.2 Node	Yes	Yes	Yes	
Nodes	V5 Node	No	No	No	
Adding New	V6.0.2 Servers in V6.0.2 Node	Yes	Yes	Yes	
Servers	V5 Servers in V5 Node	No	Yes	Yes 1	
Adding New Cluster Members	V5 Server in V5 only Cluster	No	Yes	Yes <sup>1</sup>	
	V5 Server in V6 only Cluster	No	No	No	
	V6 Server in V5 only Cluster	No	No	No	
	V5 Server in mixed (V5 and V6) Cluster	No	Yes	Yes 1,2	
	V6 Server in mixed (V5 and V6) Cluster	Yes	Yes	Yes 1,2	

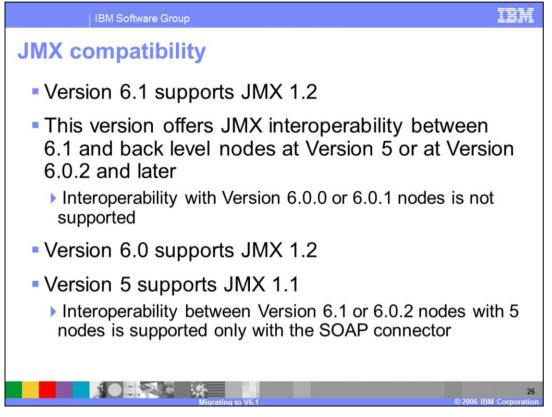
Some of the restrictions for a mixed release environment were relaxed in V6.0.2 and V6.1, and you can now add a new V5 cluster member to a pre-existing mixed cluster, or cluster containing only V5 members.

However, the ability to add V5 nodes into a V6.1 cell is still not supported. A node must be at version 6.0.2 or later to be federated into a V6.1 cell.

In Summary:

•V5 nodes can only be added to a V6 cell through migration.

- Creation of a V5 server in a V6-only cluster is not supported.
- Similarly, creation of a V6 server in a V5-only cluster is not supported.



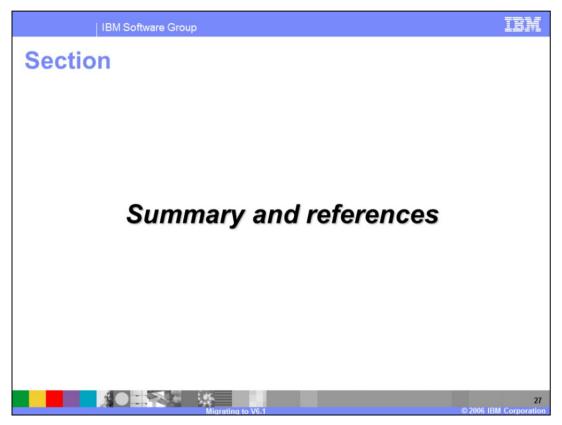
WebSphere Application Server version 6.1 supports JMX 1.2 and offers JMX interoperability between 6.1 and back level nodes at Version 5 or at Version 6.0.2 and later

Interoperability with Version 6.0.0 or 6.0.1 nodes is not supported.

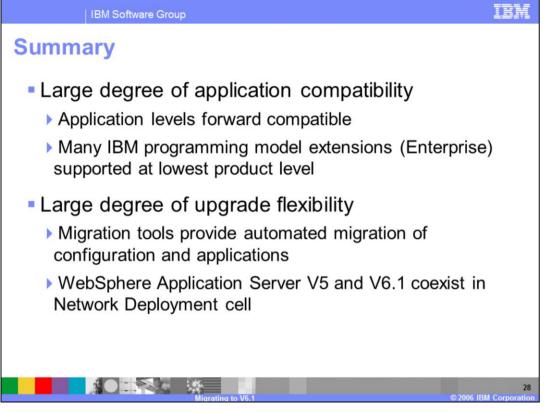
Version 6.0 supports JMX 1.2 and WebSphere Application Server version 5 supports JMX 1.1

Interoperability between Version 6.1 or 6.0.2 nodes with V5 nodes is supported only with the SOAP connector

The JMX V1.2 specification is compatible with the earlier JMX V1.0 specification. However, you might need to migrate custom MBeans that are supplied by products other than the Application Server from Version 5 to Version 6. The primary concern for these custom MBeans is related to the values that are used in key properties of the JMX ObjectName class for the MBean. The open source mx4j implementation more stringently enforces property validation according to the JMX 1.2 specification. Test the custom MBeans that you deployed in Version 5 in Version 6, to ensure compatibility. Full details of the JMX V1.2 specification changes from the JMX V1.0 specification are available in the JMX 1.2 specification.



This section summarizes the topics covered in this presentation.

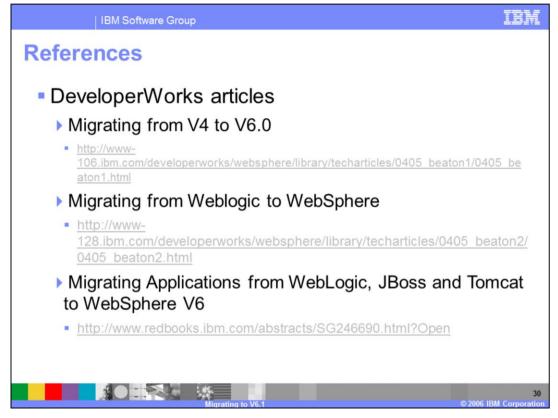


WebSphere Application Server V6.1 offers a great deal of application compatibility so that most applications will migrate to V6.1 with very little effort. Applications can be migrated using automated migration utilities, which allow rapid migration with a minimum of effort. The migration utilities allow a staged migration of Network Deployment cells such that nodes can be migrated one at a time as time permits allowing a more controlled migration with minimum downtime. Additionally mixed node and coexistence of V5/V6 are supported for 6.1.

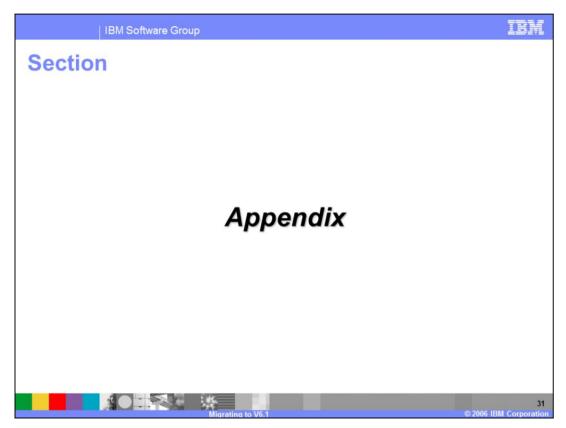
WebSphere Application Server Version 6.1 migration leverages the existing environment and applications and changes them to be compatible with the WebSphere Application Server Version 6.1 environment. Existing application components and configuration settings are applied to the Version 6.1 environment during the migration process.



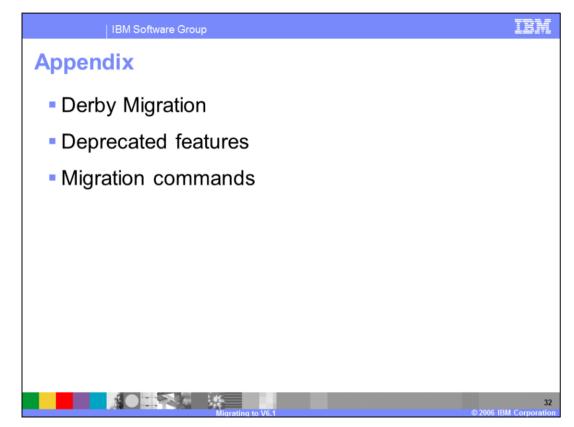
Additional references include the V6.1 for i5/OS migration documentation and various IBM Redbooks covering WebSphere Application Server and migration topics.



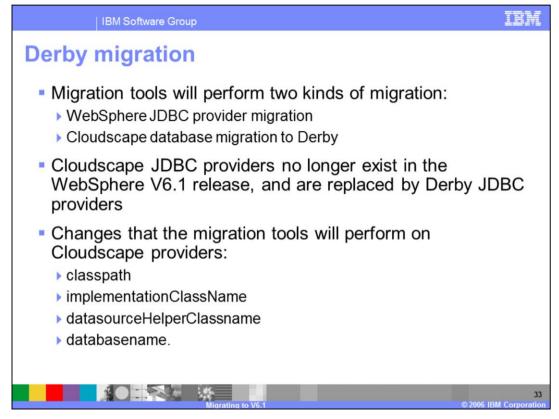
Shown here are some useful links covering specific migration scenarios.



This section provides an appendix of references.



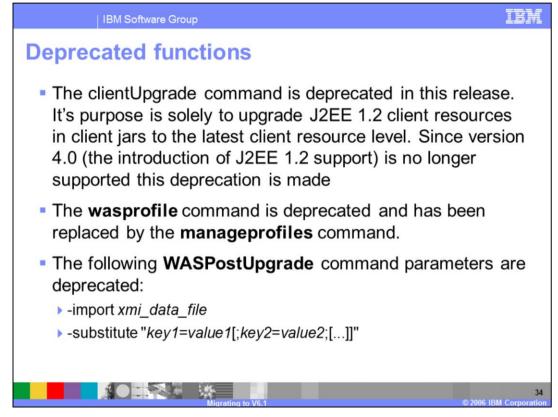
The topics shown here are covered the appendix.



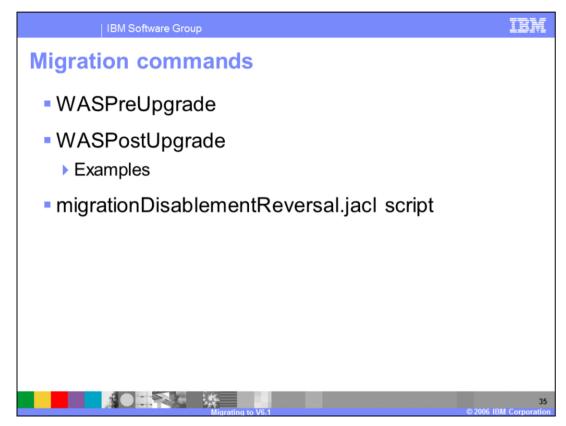
WebSphere V6.1 ships and supports Derby v10.1 which is the open source follow on release of Cloudscape V5.1.

Cloudscape migration from one release to the next used to be (prior to Derby) as simple as appending "upgrade=true" to the database (or add the "upgrade=true" as a connection attribute). This Cloudscape migration story has changed, however, and a manual/explicit migration is needed to move database instances from Cloudscape V5.1 to Derbyv10.1

WebSphere provides a Qshell script that users and migration tool can call to do the migration. The migration script is called db2Migrate.sh and is located in install\_root/derby/embedded/bin. The migration script will take two parameters <old database name> and <new database name>.



When a function is deprecated, it will be removed in a later release of the product. Generally, IBM will not remove a function or feature until at least two major releases or three full years (whichever is longer) after the release in which it is deprecated. In rare cases, it might become necessary to remove functions/features sooner.



The next screens show migration commands with some examples.

IBM Software Group			IBN		
NASPreUpgrade command syntax					
WASPreUpgrade <backupdirectoryname> <currentwebspheredirectory> [-traceString <trace_spec> [-traceFile <file_name>]] <options></options></file_name></trace_spec></currentwebspheredirectory></backupdirectoryname>					
Required Parameters					
-backupDirectoryName	output backup directory				
-currentWebSphereDirectory	Current installation				
Optional Parameters					
-traceString <trace_spec> [-traceFile <t< td=""><td>Used to gather tra- information</td><td>ce</td></t<></trace_spec>	Used to gather tra- information	ce			
Value of traceString is "*=all=enabled"	with quotation marks	5			
Example: WASPreUpgrade /WAS5Back	up /QIBM/UserData/V	WebASE/ASE5/myinst	ance		
Migrating to V5.1		© 2006 IBM	I Corpora		

The first two parameters for the WASPreUpgrade command are required and positional; the others are optional. The example given would also be the same for V6.

WASPreUpgrade backupDirectoryName currentWebSphereDirectory

[-traceString <trace\_spec> [-traceFile

<file\_name>]]

The first two parameters are required and positional. The others are optional.

backupDirectoryName - The name of the directory in which to store the saved configuration and files. The directory is created if it does not already exist. This is a required parameter.

currentWebSphereDirectory - The name of the root directory for the current WebSphere Application Server instance. For i5/OS, it is the instance of profile root directory. This can be any of the <u>version-offering combinations</u> listed in the first column of the table. This is a required parameter.

[-traceString <trace\_spec> [-traceFile <file\_name>]] - These optional parameters are used to gather trace information for use by IBM service personnel. The value of the traceString parameter is "\*=all=enabled"and must be specified with quotation marks to be processed correctly.

An example for version 5 Express is:

WASPreUpgrade /WAS5Backup /QIBM/UserData/WebASE/ASE5/myinstance

For more information, see the WebSphere V6.1 Information Center for more options and details regarding the WASPreUpgrade command.

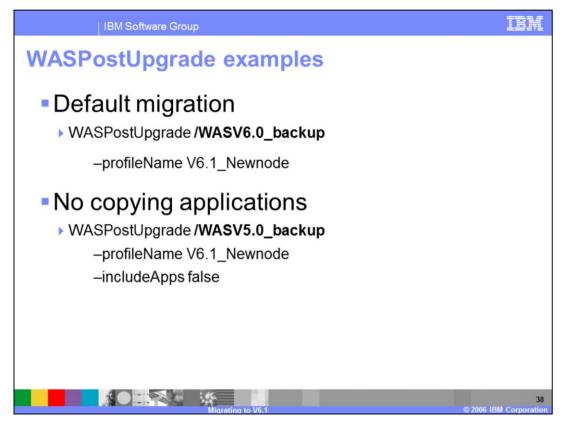
VASPostUpgrade command syntax				
toryName(-oldProfile <profile name="">][]</profile>				
output of WASPreUpgrade				
A profile in V6.0 and an instance name in V5				
V6.1 profile name				
starting seed to create new ports				
true/false decision to backup the new install config				
true/false decision to add or replace virtual host ports				
true/false decision to migrate applications				
true/false decision to migrate definitions in configuration				
Parameters passed to wsadmin during installation of the application during migration				
Used to gather trace information				

WASPostUpgrade backupDirectoryName [-oldProfile <profile name>][.....]

## Example:

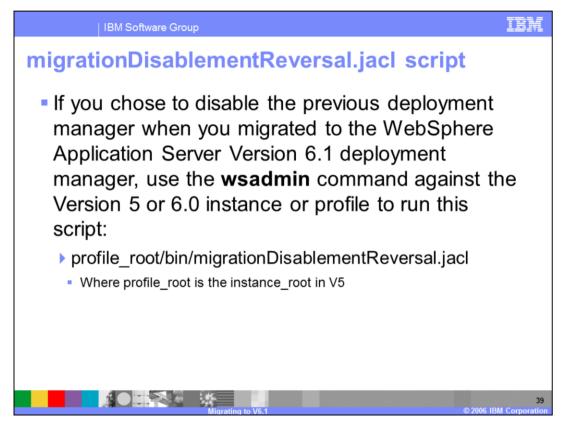
WASPostUpgrade /myinstance/WAS5Backup -oldProfile myinstance -profileName myinstance

For more information, see the WebSphere V6.1 Information Center for more options and detail regarding the WASPostUpgrade command.



The first example shows the most simple case using the defaults. If you omit the – profileName option, the default profile is used.

The second example omits copying applications. This means just server configurations and resources are copied.



Use the following parameters: *app\_server\_root*/bin/wsadmin -instance instance -conntype NONE -f *profile\_root*/bin/migrationDisablementReversal.jacl

To restore the Version 5.1 default deployment manager, for example, you might use the following command:/QIBM/ProdData/WebAS51/ND/bin/wsadmin -instance default - conntype NONE -f

/QIBM/UserData/WebAS51/ND/default/bin/migrationDisablementReversal.jacl

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