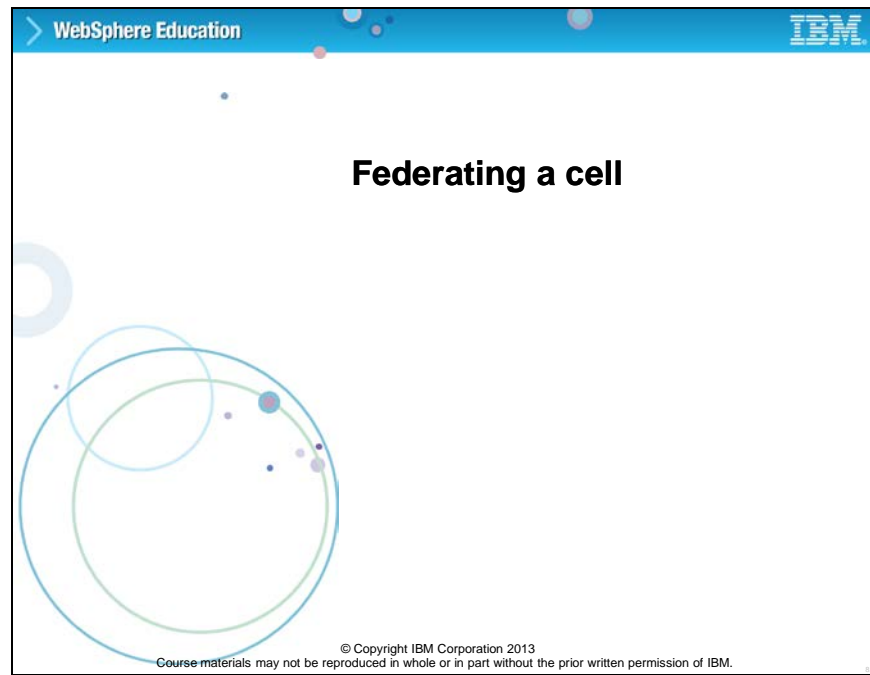


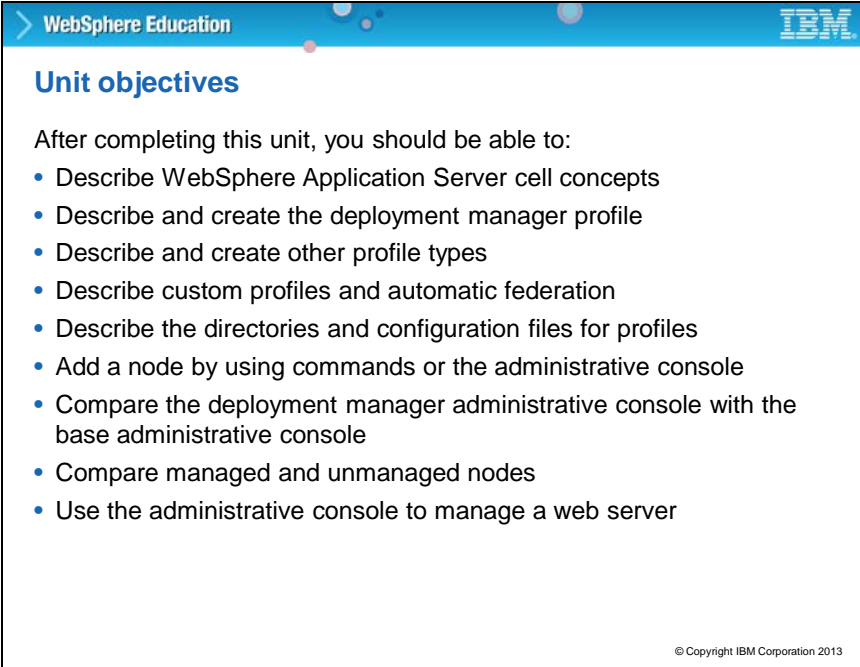
Slide 1



Federating a cell

In this unit, you learn the process of federating a base profile into a cell and the administration of a multinode distributed environment. You learn the process of how to create a deployment manager and federating base profiles into a cell.

Slide 2



The slide is titled 'WebSphere Education' in the top left corner and features the IBM logo in the top right corner. The main heading is 'Unit objectives' in blue. Below this, it states 'After completing this unit, you should be able to:' followed by a bulleted list of nine objectives. The slide also includes a copyright notice at the bottom right: '© Copyright IBM Corporation 2013'.

WebSphere Education

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Unit objectives

After completing this unit, you should be able to:

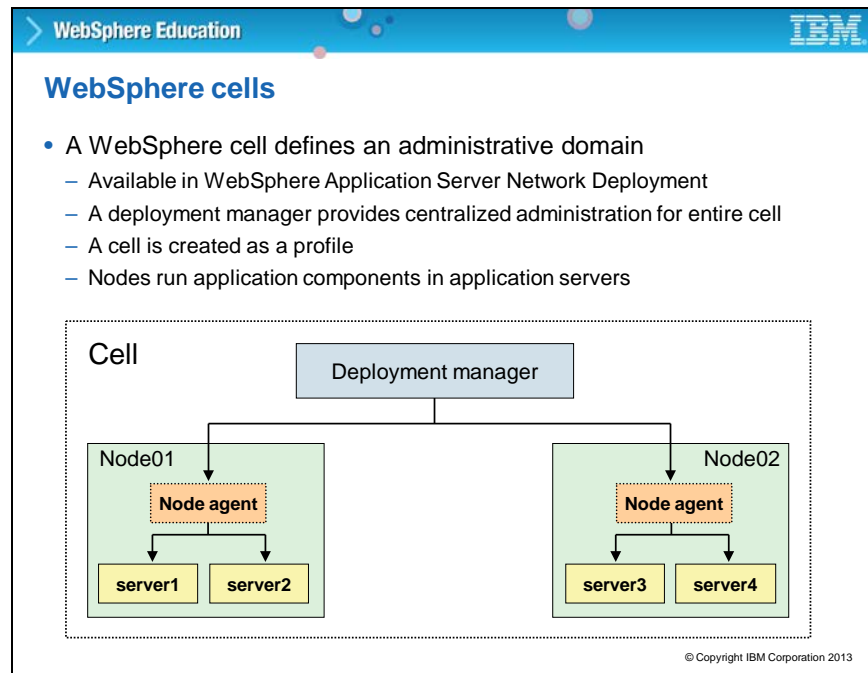
- Describe WebSphere Application Server cell concepts
- Describe and create the deployment manager profile
- Describe and create other profile types
- Describe custom profiles and automatic federation
- Describe the directories and configuration files for profiles
- Add a node by using commands or the administrative console
- Compare the deployment manager administrative console with the base administrative console
- Compare managed and unmanaged nodes
- Use the administrative console to manage a web server

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After completing this unit, you should be able to:

- Describe WebSphere Application Server cell concepts
- Describe and create the deployment manager profile
- Describe and create other profile types
- Describe custom profiles and automatic federation
- Describe the directories and configuration files for profiles
- Add a node by using commands or the administrative console
- Compare the deployment manager administrative console with the base administrative console
- Compare managed and unmanaged nodes
- Use the administrative console to manage a web server

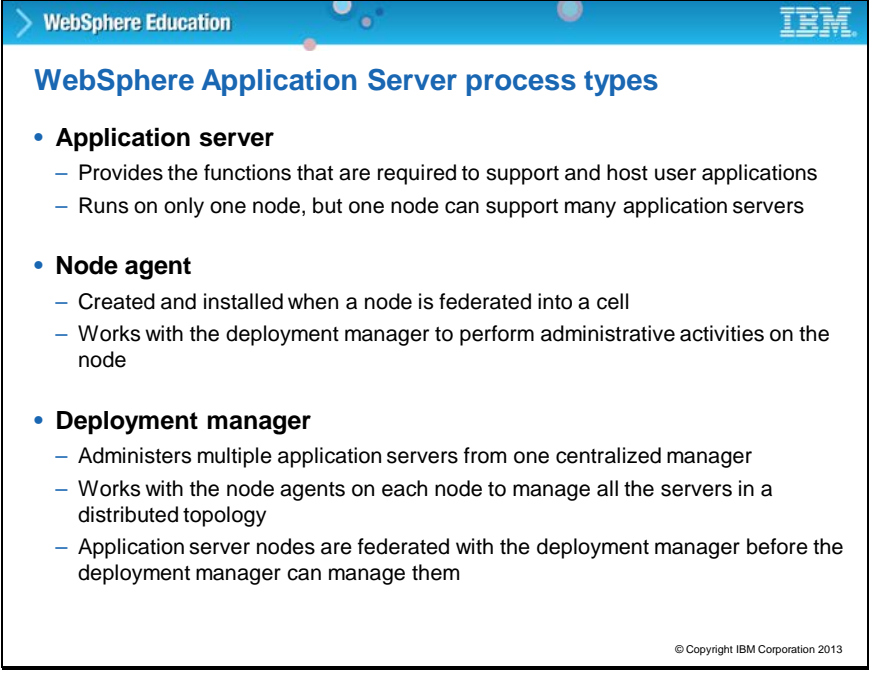
Slide 3



A WebSphere cell defines an administrative domain. A cell is a grouping of nodes into a single administrative domain. A cell can consist of multiple nodes, all administered from a deployment manager server. When a node becomes part of a cell (a federated node), a node agent server is created on the node to work with the deployment manager server to manage the WebSphere Application Server environment on that node. A cell includes the following characteristics:

- It is available in WebSphere Application Server Network Deployment.
- A deployment manager provides centralized administration for the entire cell.
- A cell is created as a profile and nodes run application components in application servers.

Slide 4



The slide is titled "WebSphere Application Server process types" and is part of a "WebSphere Education" presentation. It lists three main process types:

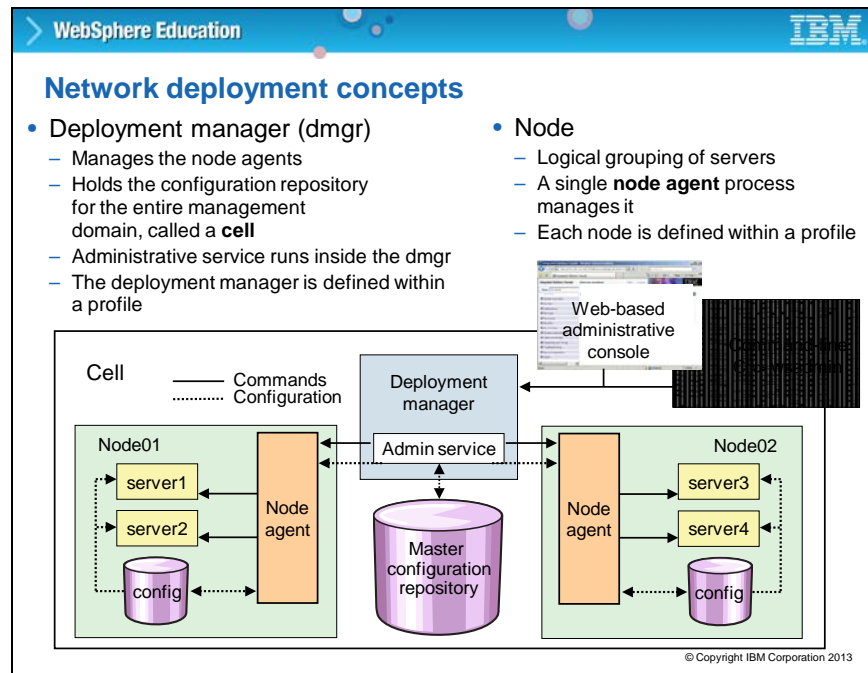
- **Application server**
 - Provides the functions that are required to support and host user applications
 - Runs on only one node, but one node can support many application servers
- **Node agent**
 - Created and installed when a node is federated into a cell
 - Works with the deployment manager to perform administrative activities on the node
- **Deployment manager**
 - Administers multiple application servers from one centralized manager
 - Works with the node agents on each node to manage all the servers in a distributed topology
 - Application server nodes are federated with the deployment manager before the deployment manager can manage them

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There are three main types of WebSphere managed processes that make up a cell. These server types interact to handle system administration.

- A WebSphere Application Server provides the functions that are required to support and host user applications. An application server runs on only one node, but one node can support many application servers.
- When a node is federated, a node agent is created and installed on that node. The node agent works with the deployment manager to do administrative activities on the node.
- With the deployment manager, you can administer multiple nodes from one centralized manager. The deployment manager works with the node agent on each node to manage all the servers in a distributed topology. Application server nodes are federated with the deployment manager before the deployment manager manages them.

Slide 5



The deployment manager works with the node agent on each node to manage all the servers in a distributed topology. The deployment manager holds the configuration repository for the entire management domain, called a cell. An administrative service runs inside the deployment manager. The deployment manager is defined within a profile.

A node is a logical group of WebSphere Application Server managed server processes that share a common configuration repository. A single node agent process manages a node. A node is associated with a single WebSphere Application Server profile. A WebSphere Application Server node does not necessarily have a one-to-one association with a system. One computer can host arbitrarily many nodes, but a node cannot span multiple computer systems. A node can contain zero or more application servers. When a node is part of a cell, the configuration and application files for all nodes in the cell are centralized into a cell master configuration repository.

The deployment manager server manages this centralized repository and synchronizes it to local copies that are held on each node. The local copy of the repository that is given to each node contains just the configuration information that the node needs, not the full configuration that the deployment manager maintains. When a deployment manager is registered with a job manager, the deployment manager continues to manage the centralized configuration repository.

Slide 6

WebSphere Education **IBM**

Profiles in network deployment

Profiles represent the nodes

- Multiple nodes can be installed on a single computer
- Nodes can contain a single stand-alone application server
- Nodes can be federated into a cell

Each profile uses the same product files regardless of type:

- Cell (deployment manager and a federated application server)
- Management
 - Administrative agent
 - Deployment manager
 - Job manager
- Application server
- Custom profile
- Secure proxy

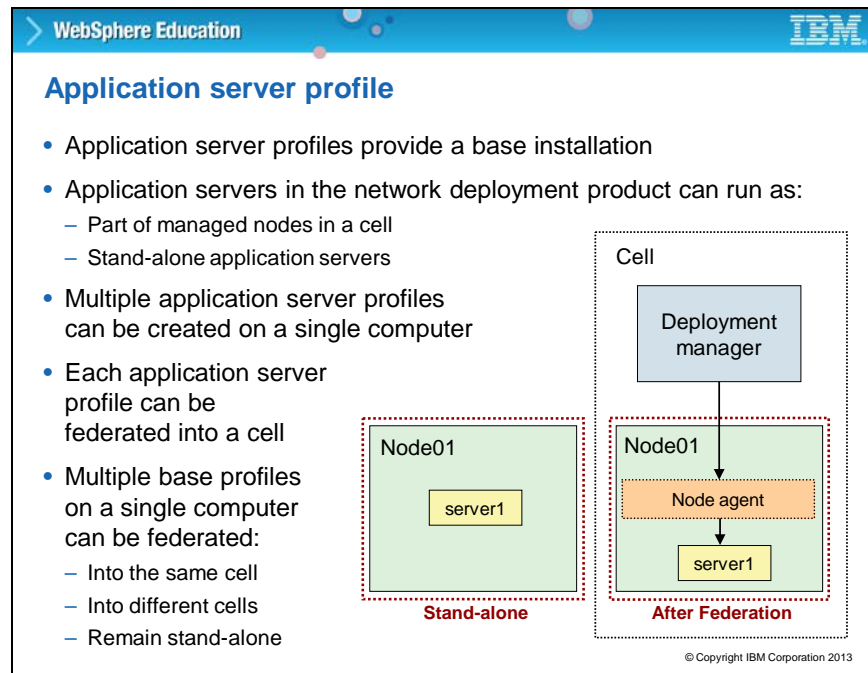
The diagram illustrates that multiple WebSphere profiles (profile 1, profile 2, profile 3) are built upon a common set of 'WebSphere install product binaries'. These binaries are then used to create different types of profiles. A bracket on the right groups the components into three main categories: 'Application server' (including Custom profile and Deployment manager), 'Job manager' (including Administrative agent), and 'Cell' (including Secure proxy).

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A profile defines the application server configuration and runtime environment. The profile includes all of the files that the server processes in the runtime environment and that you can change. After installing the core product files for the network deployment product, you must create a profile. In a network deployment environment, profiles represent the nodes.

Each profile uses the same product files regardless of type. The core product files are shared product binary files that do not change unless you install a refresh pack, a fix pack, or an interim fix. Some log information is also updated.

Slide 7



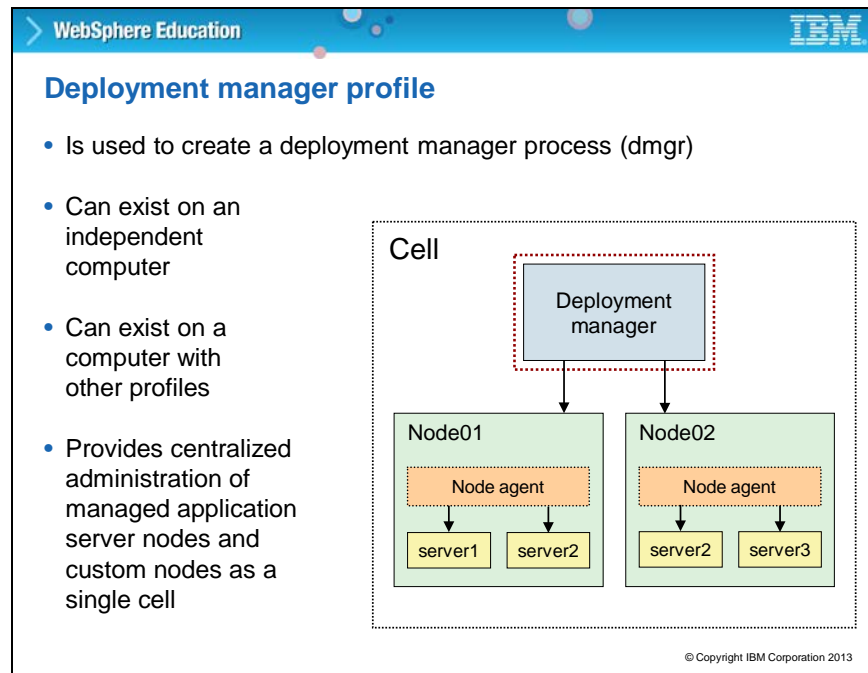
The application server profile defines a single stand-alone application server. Using this profile gives you an application server that can be run in unmanaged (stand-alone) mode or managed mode by federating it with the administrative agent profile.

Multiple application server profiles can be created on a single computer. Each application server profile can be federated into a cell. Multiple base profiles on a single computer can be federated into the same cell, into different cells, or they can remain stand-alone.

An important product feature is the ability to scale up a stand-alone application server profile by adding the application server node into a deployment manager cell. Multiple application server processes in a cell can deploy an application that is in demand. You can also remove an application server node from a cell to return the node to the status of a stand-alone application server.

Each stand-alone application server can optionally have its own administrative console application, which you use to manage the application server. You can also use the wsadmin scripting facility to do every function that is available in the administrative console application.

Slide 8

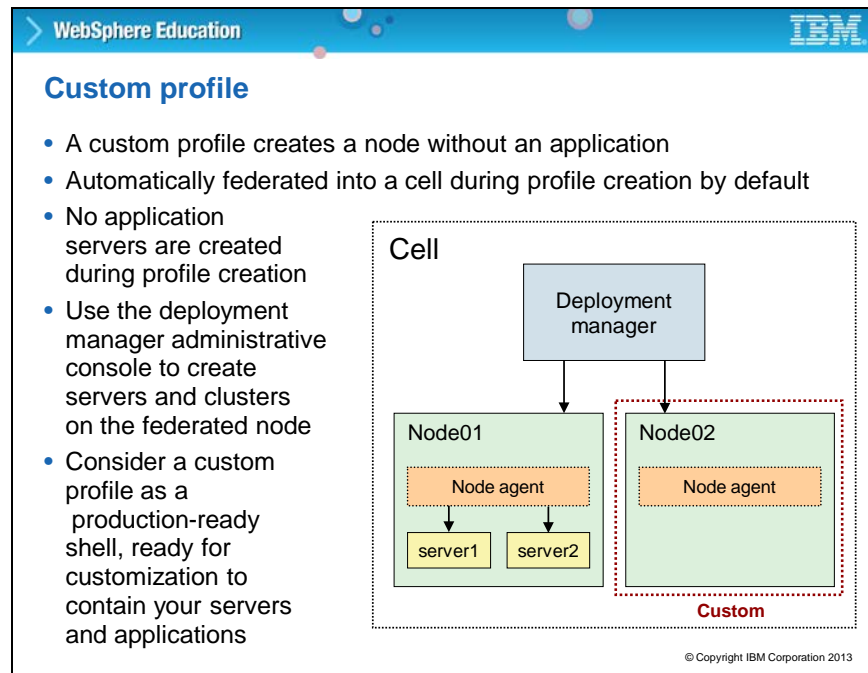


The deployment manager profile defines a deployment manager in a distributed server environment. Although you can conceivably have the Network Deployment edition and run only stand-alone servers, this action bypasses the primary advantages of Network Deployment, which are workload management, failover, and central administration.

The deployment manager profile provides the necessary configuration files for starting and managing the deployment manager server that it contains. The profile also provides everything necessary to configure and manage WebSphere Application Server profiles, or nodes, that are in the deployment manager cell.

The deployment manager profile contains an application server with a server name of dmgr. The dmgr application server is a special application server that contains the deployment manager. The dmgr server contains the network deployment administrative console application and the network deployment file transfer application. These applications enable the distributed management of one or more WebSphere Application Server profiles, or nodes.

Slide 9



A custom profile is an empty node without any server instance, intended for federation to a deployment manager. After federation, the deployment manager uses it as a target on which it can create for example application server profile instances.

Use the custom profile, which belongs to a deployment manager cell, to make applications available to the Internet or to an intranet under the management of the deployment manager. A custom profile does not have its own administrative console or scripting interface. You cannot manage the node directly with the wsadmin scripting facility. A custom profile does not include default applications or a default server as the application server profile does.

WebSphere Education
IBM

Creating profiles

Profile Management Tool

- Start menu (Windows only)
- Started from installation wizard
- Launch command-line tool **pmt.bat**
 - <was_root>\bin\ProfileManagement\
 - Similar command exists for UNIX
 - Wizard in First steps console

manageprofiles

- Command-line tool
- Use **manageprofiles** **-silent** option to create profiles in silent mode
- Other **manageprofiles** options include:
 - listProfiles**
 - delete**

The screenshot shows the 'Profile Management Tool 8.5' window. It has a title bar with a close button. Below the title bar is a section titled 'Environment Selection'. It contains a text box with the instruction 'Select a specific type of environment to create.' Below this is a list box labeled 'Environments:'. The list contains the following items: 'WebSphere Application Server' (expanded), 'Cell (deployment manager and a federated application server)', 'Management' (selected), 'Application server', 'Custom profile', and 'Secure proxy (configuration-only)'. A vertical scrollbar is on the right side of the list box.

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You can create profiles by using the Profile Management Tool or the `manageprofiles` command. The tool is started in several ways:

- On Windows, you can use the Start menu.
- It can be started from the installation wizard. The wizard is available from the First steps console.
- It can be started by using the command-line tool: `pmt`

The screen capture shows the Profile Management Tool Environment Selection window. Five environments can be selected from the listing:

- Cell, which includes deployment manager and a federated application server
- Management
- Application server
- Custom profile
- Secure proxy (configuration-only)

The Profile Management Tool calls profile **environments** because selecting **cell**, results in creating two profiles: a deployment manager profile and a federated application server profile. There is really no such thing as a cell profile. It is just a fast way to build a cell. Additionally, there are three types of management profiles: administrative agent, deployment manager, and job manager.

Slide 11

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Profile Management Tool: Launch and create

WebSphere Application Server **IBM**

First steps

[Installation verification](#)
Confirm that your server is installed and that it can start properly.

[Start the server](#)
Start the server and its applications.

[Administrative console](#)
Install and administer applications.

[WebSphere Customization Toolbox](#)
Launch this toolbox to access the Profile Management Tool and work with profiles, or to access the Migration Management Tool and migrate WebSphere Application Server 6.0, 6.1, 7.0 or 8.0 profiles to version 8.5.

1 Start the Profile Management Tool

Started from:

- **First steps** or **Windows Start menu > WebSphere Customization Toolbox**
- Command-line

Click **Launch Profile Management Tool** to manage profiles

2 Create a profile

Existing profiles are shown

Click **Create**

WebSphere Customization Toolbox 8.5

File Window Help

Profile Management Tool Welcome

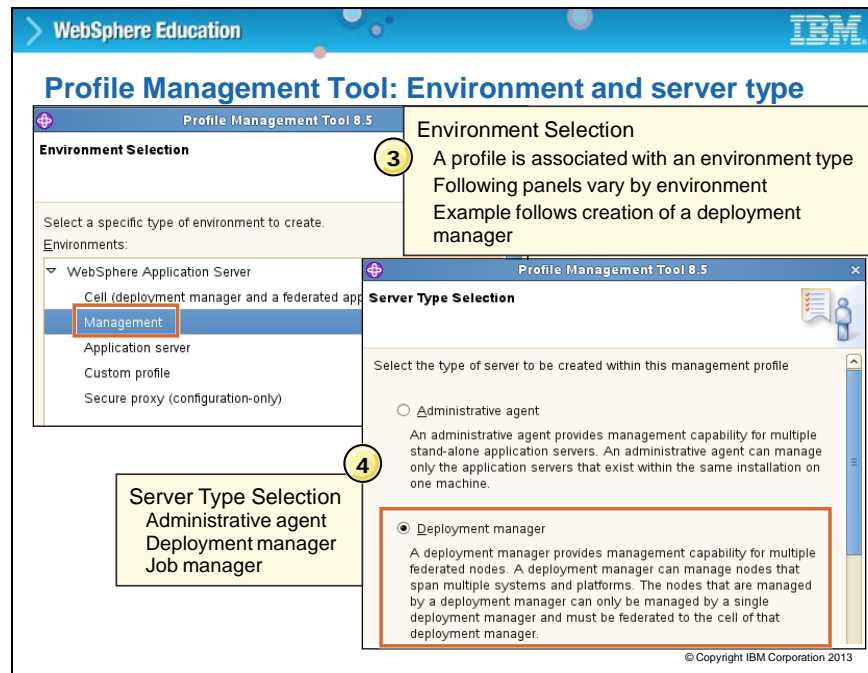
Profiles

Profile name	Environment	Profile path
profile1	Application server	/opt/IBM/WebSphere/AppServer/profile1

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To create a profile, start the WebSphere Customization Toolbox and then start the Profile Management Tool. The Profile Management Tool lists existing profiles. In the example, profile1 is shown. To begin the process of creating a profile, click **Create**.

Slide 12

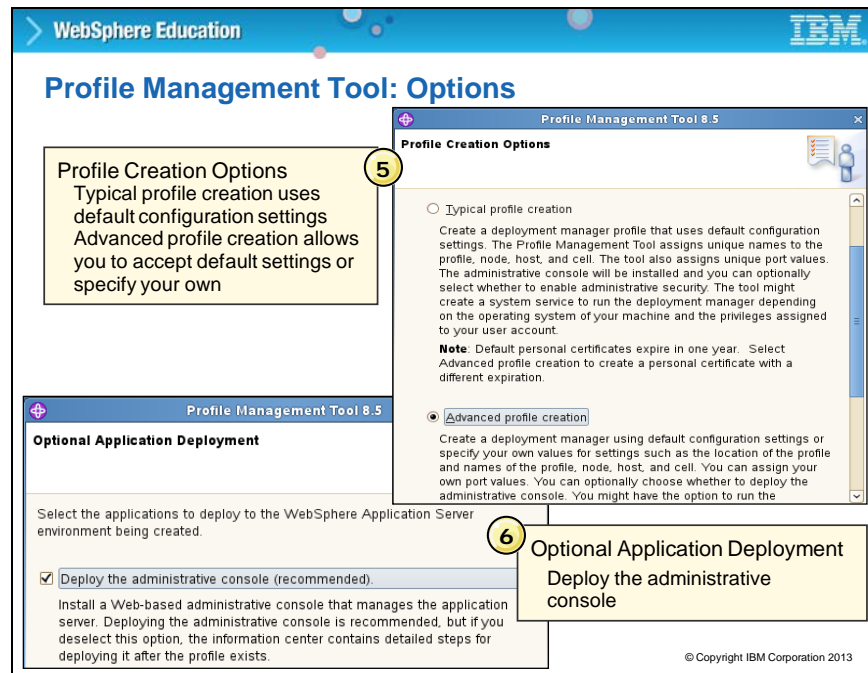


The environment selection window allows you to choose the type of environment for the new profile.

When you select the management environment, the server type selection window opens. A management profile provides the server and services for managing multiple application server environments. You can select one of three types of management servers to create for the profile.

- The administrative agent profile provides enhanced management capabilities for stand-alone application servers. An administrative agent profile is created on the same node as the stand-alone servers and can manage only servers on that node.
- The Network Deployment edition also includes a deployment manager for tightly coupled management and a job manager for loosely coupled management of topologies that are distributed over multiple computers.
- A job manager profile defines a job manager. The job manager primary purpose is to support flexible management of WebSphere Application Server profiles and to queue jobs to registered servers.

Slide 13

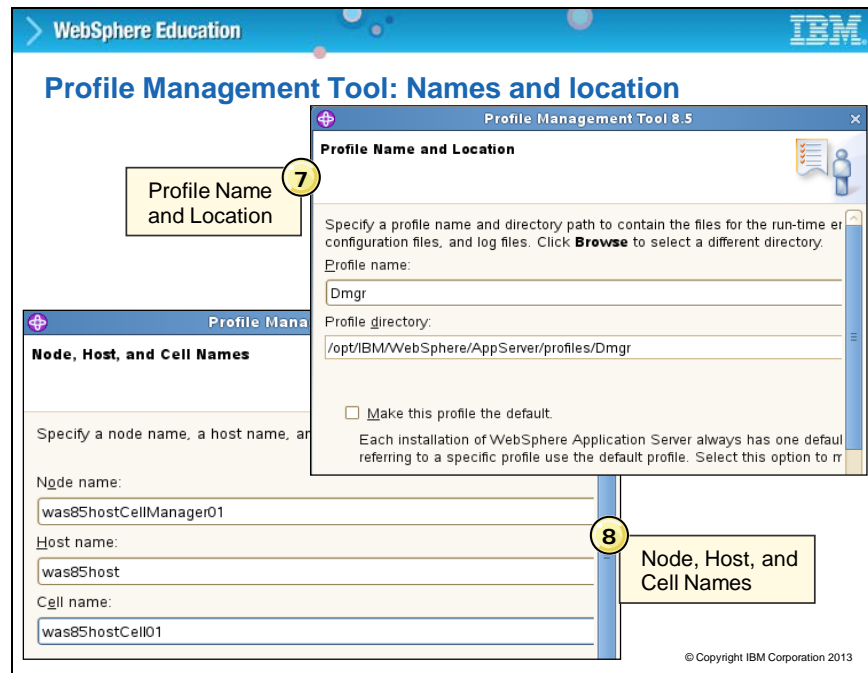


Configuration values can be assigned based on default configuration values or you can specify your own configuration values. The profile creation options allow you to choose which options best fit your needs. You can select either a typical or advanced profile creation option.

It is best to select the advanced profile creation option as this option creates a runtime environment by using default configuration settings or allows you to specify your own values for settings. You can set values for settings such as the location of the profile and names of the profile, node, and host. You can assign your own port values or you can optionally choose whether to deploy the administrative console and sample applications.

The **Deploy the administrative console** option installs a web-based administrative console that manages the application server. Deploying the administrative console is recommended, but if you clear this option, the information center provides detailed steps for deploying it after the profile exists. This option is selected by default.

Slide 14



From the profile name and location window, the profile name and profile directory path are specified. The directory contains the files for the runtime environment, such as commands, configuration files, and log files.

The node, host, and cell names window allows you to specify that information for the profile.

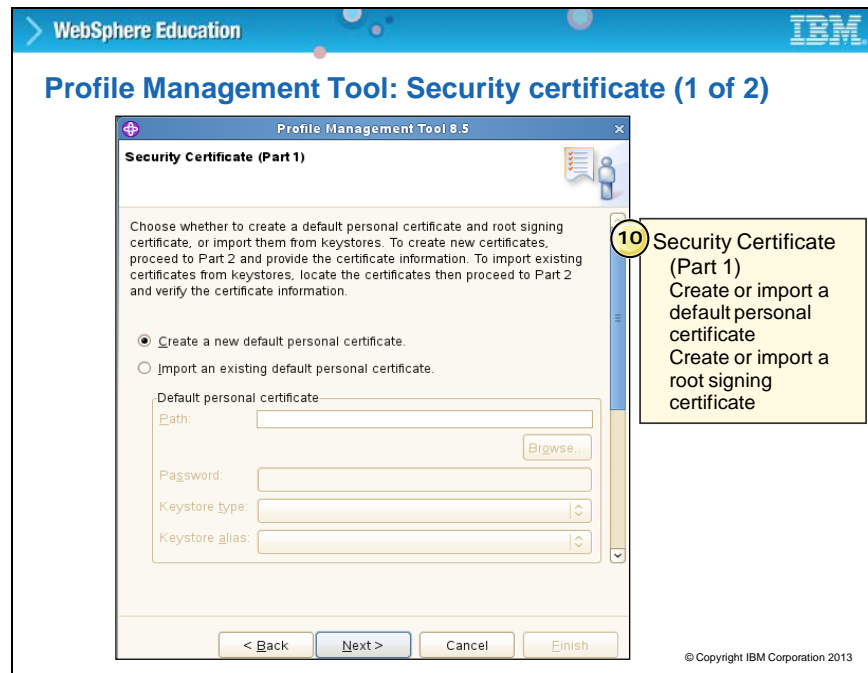
Any of these values can be modified to suit your environment.

The screenshot shows the 'Profile Management Tool: Security' window. The title bar reads 'Profile Management Tool 8.5'. The main heading is 'Administrative Security'. Below the heading, there is a paragraph explaining the purpose of administrative security. A checkbox labeled 'Enable administrative security' is checked. Below this, there are three input fields: 'User name:' with the value 'wasadmin', 'Password:' with masked characters, and 'Confirm password:' with masked characters. A yellow callout box with the number '9' points to the 'User name' field and contains the text 'Specify Administrative Security User name and password'. At the bottom of the window, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Finish'. A copyright notice '© Copyright IBM Corporation 2013' is visible in the bottom right corner.

From the administrative security window, choose whether to enable administrative security. All profiles except the custom profile can be secured by enabling the administrative security. This setting prevents users from gaining unauthorized access to the administrative console. If you enable administrative security during profile creation, you are asked for a user ID and password that **is** added to a file-based user registry with the Administrator role.

Consider enabling administrative security. An XML file-based user repository is created during profile creation and can be later federated with other repositories to provide a robust user registry for both administrative and application security. If you do not want to use the file-based repository, do not enable administrative security during profile creation and configure it manually later.

Slide 16

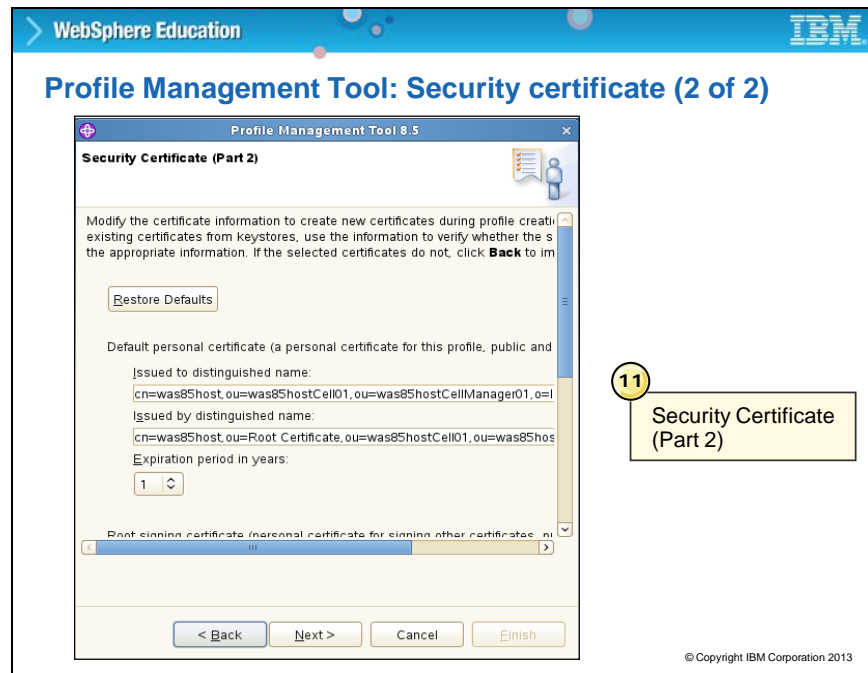


Each profile contains a unique chained certificate. A unique long lived root certificate that is generated when the profile was created, signs the chained certificate. When a profile is federated to a deployment manager, the signer for the root signing certificate is added to the common truststore for the cell.

From the security certificate (part 1) window, choose whether to create a default personal certificate and root signing certificate, or import them from keystores.

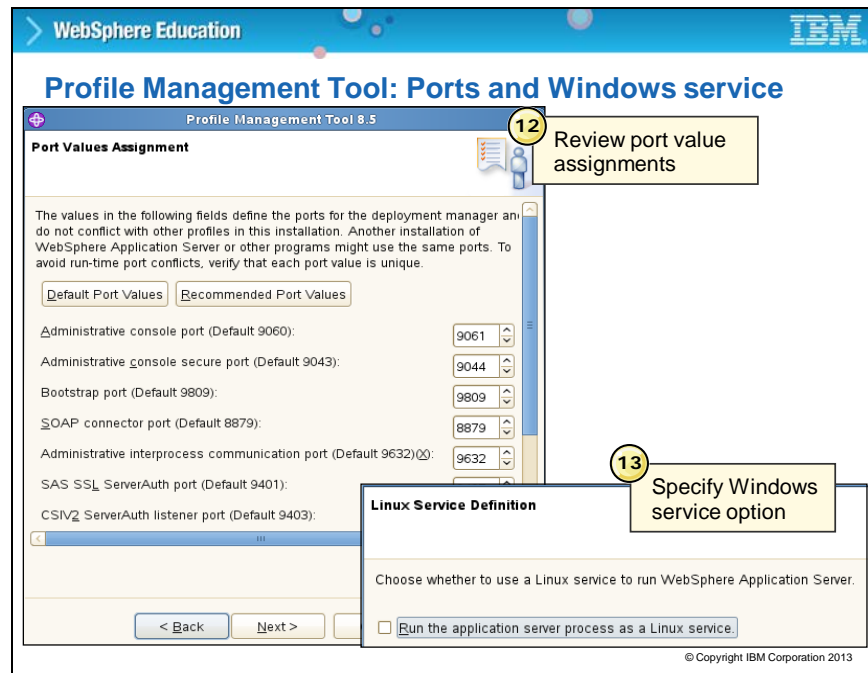
To create new certificates, proceed to security certificate (part 2) and provide more certificate information.

Slide 17



On the security certificate (part 2) window, you can modify the certificate information to create new certificates during profile creation. If you are importing certificates from keystores, use the information to verify whether the selected certificates contain the appropriate information.

Slide 18



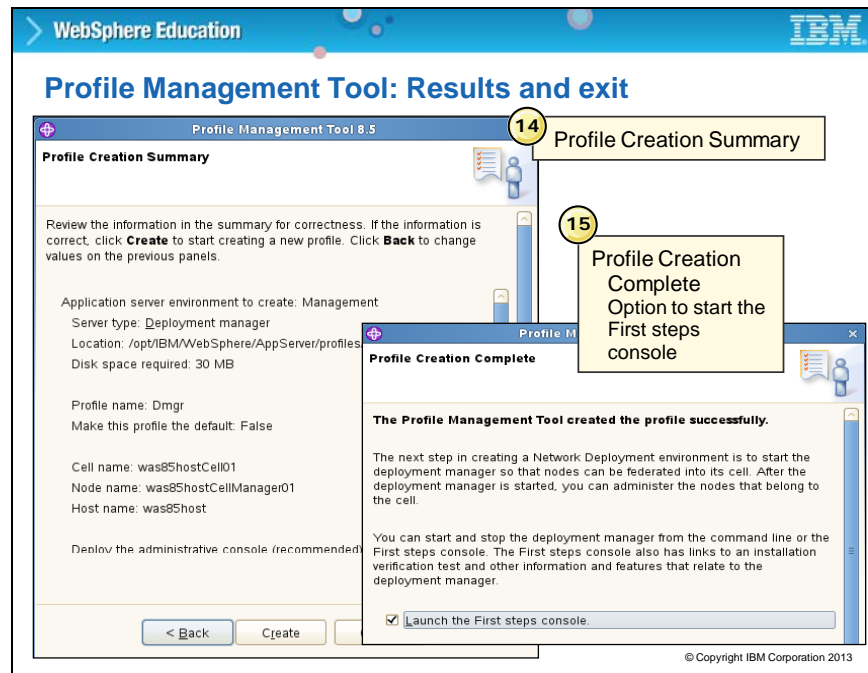
Every process uses a set of ports at run time. These ports must be unique to a system. The port values assignment window lists the values of the ports that the server is using. Another installation of WebSphere Application Server or other programs might use the same ports. To avoid runtime port conflicts, verify that each port value is unique. If the Profile Management Tool detects conflicts, a message shows at the top of the window and list the ports for which activity was detected.

When you take the Advanced path through the profile wizard, you have three options:

- Default Port Values: Use the default set of port numbers
- Recommended Port Values: Use the recommended set of port numbers. These ports were selected as unique to the WebSphere installation
- Manually customize the port numbers

When you create a profile on a Windows or Linux system, you have the option of running the server as a Windows service. This action provides you with a simple way of automatically starting the server process with the system. From the Service Definition window, choose whether to use a service to run the server.

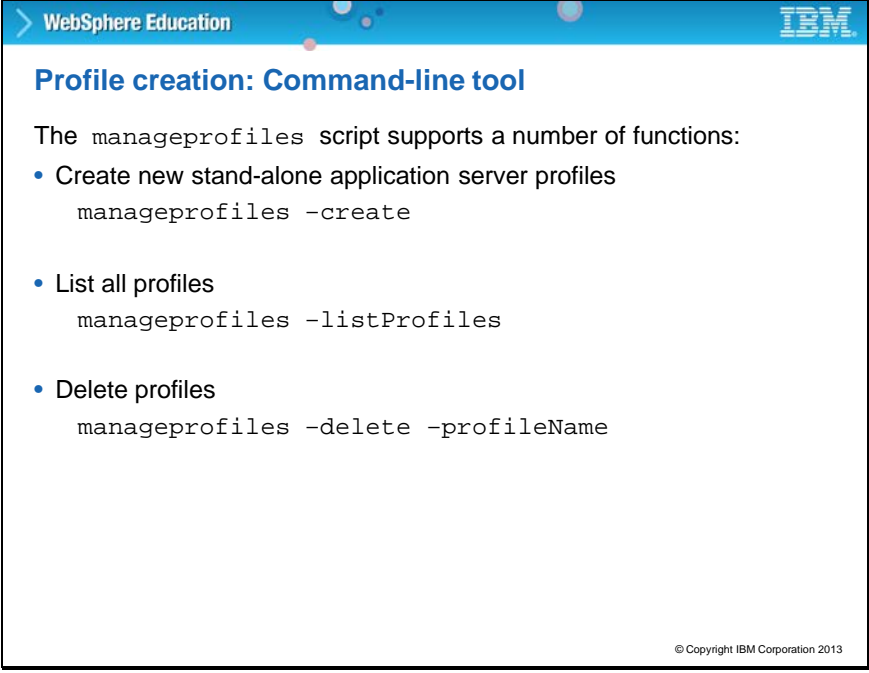
Slide 19



When all Profile Management Tool windows are completed, the Profile Creation Summary window shows the summary information that is based on the selections you made previously. Review the summary for accuracy before proceeding with the profile creation.

Review the results that are shown on the Profile Creation Complete window. If you want to start the First steps console, click **the Launch the First steps console** check box. The First steps console opens when you click **Finish**.

When you click Finish from the profile creation complete window, you return to the Profile Management Tool welcome window. The profile that you created is listed in the profile listing. You can continue to create more profiles or exit the tool. To exit the Profile Management Tool, click **File > Exit**.



The slide is titled "Profile creation: Command-line tool" and is part of a WebSphere Education presentation. It lists the functions of the `manageprofiles` script:

- Create new stand-alone application server profiles
`manageprofiles -create`
- List all profiles
`manageprofiles -listProfiles`
- Delete profiles
`manageprofiles -delete -profileName`

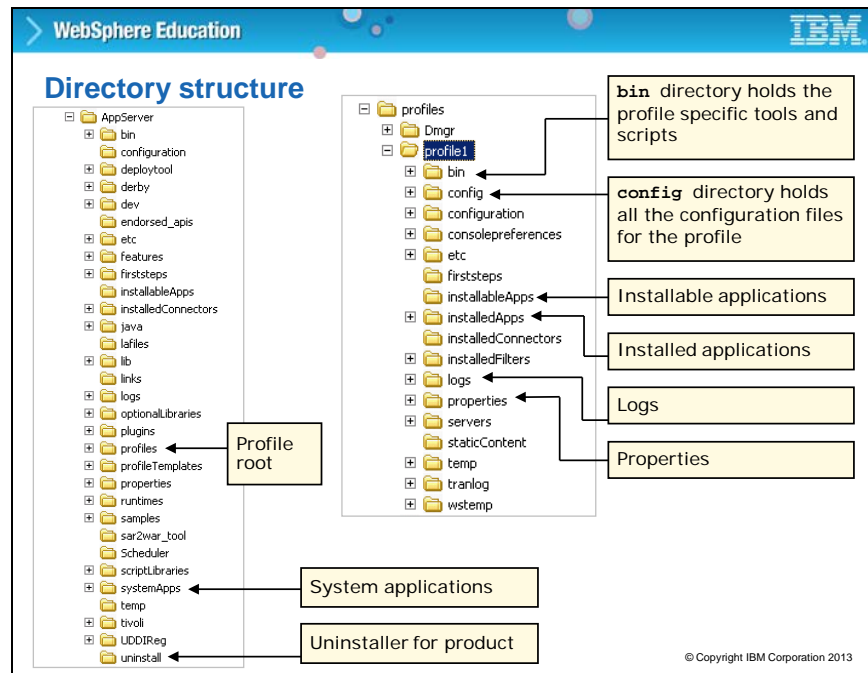
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Use the `manageprofiles` command to create, delete, augment, back up, and restore profiles, which define runtime environments. The `manageprofiles` script supports a number of functions:

- Create new stand-alone application server profiles by using the `manageprofiles -create`
- List all profiles by using `manageprofiles -listProfiles`.
- Delete a profile by using the `manageprofiles -delete` option.

Deleting a profile leaves a number of files behind, including the logs directory. If wanted, these files must be deleted manually.

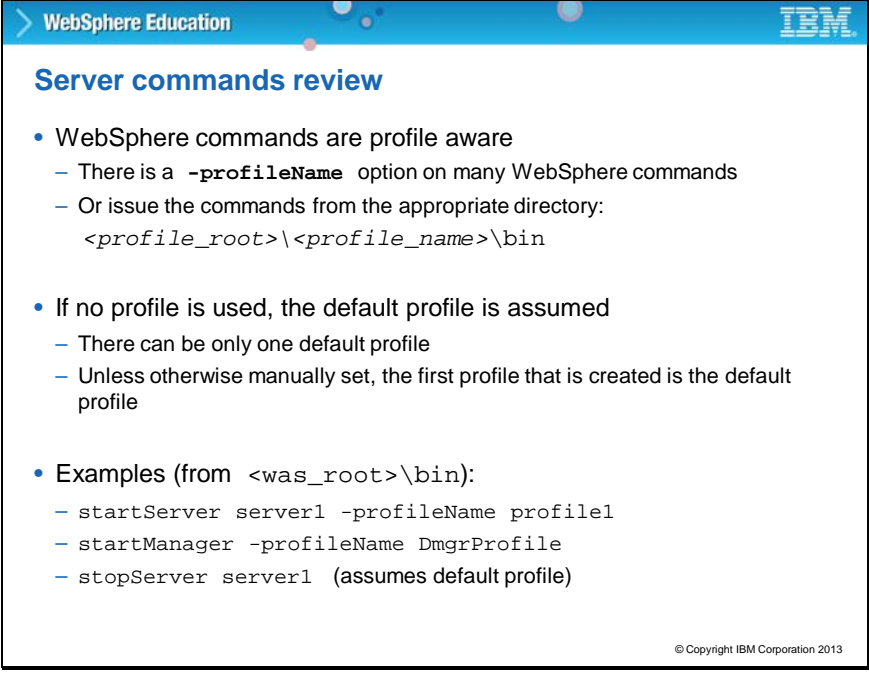
For more details about using the `manageprofiles` command, see the information center.



You can install the product and other components or create profiles in any directory where you have write access. Multiple installations of WebSphere Application Server products or components require multiple locations. The default directory structure is shown here.

- The directory of each profile contains the same standard directories.
- The bin directory holds the profile specific tools and scripts.
- The config directory holds all the configuration files for the profile.
- The installableApps directory holds applications that might be associated with the profile, but are not currently installed.
- The installedApps directory holds all installed applications for the profile.
- The logs directory holds all log files that are associated with the profile.
- The properties directory holds properties files that are associated with the profile.

Slide 22



The slide is titled "Server commands review" and is part of the "WebSphere Education" series, as indicated by the header. It contains three main bullet points. The first bullet point states that WebSphere commands are profile aware, with sub-points explaining the `-profileName` option and the directory structure `<profile_root>\<profile_name>\bin`. The second bullet point states that if no profile is used, the default profile is assumed, with sub-points explaining that there can be only one default profile and that the first created profile is the default. The third bullet point provides examples of commands from the `<was_root>\bin` directory, including `startServer server1 -profileName profile1`, `startManager -profileName DmgrProfile`, and `stopServer server1` (which assumes the default profile). The IBM logo is in the top right corner, and the copyright notice "© Copyright IBM Corporation 2013" is in the bottom right corner.

WebSphere Education

Server commands review

- WebSphere commands are profile aware
 - There is a `-profileName` option on many WebSphere commands
 - Or issue the commands from the appropriate directory:
`<profile_root>\<profile_name>\bin`
- If no profile is used, the default profile is assumed
 - There can be only one default profile
 - Unless otherwise manually set, the first profile that is created is the default profile
- Examples (from `<was_root>\bin`):
 - `startServer server1 -profileName profile1`
 - `startManager -profileName DmgrProfile`
 - `stopServer server1` (assumes default profile)

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WebSphere commands are profile aware. There is a `-profileName` option on many commands to specify that the profile or the command can be issued from the appropriate directory without specifying a profile name. For example, `<profile_root>\<profile>\bin`.

If no profile is specified, the default profile is assumed. Keep in mind that there can be only one default profile. Unless otherwise manually set, the first profile that is created, is the default profile. It is a good practice to always specify the name of the profile.

WebSphere Education

Profile precautions

When multiple profiles are created on a single computer, be careful:

- Use the correct profile bin directory to perform:
 - startServer
 - stopServer
 - serverStatus
- Be aware of possible port conflicts for node agents and application servers
- There can be multiple server1 instances on a single computer
- Ensure that consistent host names within a computer are used

Communications

Ports

Port Name	Port
BOOTSTRAP_ADDRESS	9810
SOAP_CONNECTOR_ADDRESS	8880
ORB_LISTENER_ADDRESS	9100
SAS_SSL_SERVERAUTH_LISTENER_ADDRESS	9401
CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS	9403
CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS	9402
WC_adminhost	9060
WC_defaulthost	9080
DCS_UNICAST_ADDRESS	9353
WC_adminhost_secure	9043
WC_defaulthost_secure	9443
SIP_DEFAULTHOST	5060
SIP_DEFAULTHOST_SECURE	5061
SIB_ENDPOINT_ADDRESS	7276
SIB_ENDPOINT_SECURE_ADDRESS	7286
SIB_MQ_ENDPOINT_ADDRESS	5558
SIB_MQ_ENDPOINT_SECURE_ADDRESS	5578
IPC_CONNECTOR_ADDRESS	9633

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Be careful when multiple profiles are created on a single computer. Use the correct profile bin directory to run the startServer, stopServer, and serverStatus commands.

Be aware of possible port conflicts for node agents and application servers. The screen capture lists ports in the administrative console for a resource. There might be multiple server1 instances on a single computer.

Verify that consistent host names within a computer are used. Be careful when using the Profile Management Tool. It can preinstall a default host name by adding the default DNS suffix to the short host name. This action can cause problems if other profiles used only the short host name.

It does not matter which form is used, short name or fully qualified name, but be consistent.

The image shows a side-by-side comparison of two WebSphere administrative consoles. The left console is the 'Deployment manager' and the right is the 'Stand-alone' console. Both have a blue header with 'WebSphere Education' and the IBM logo. The title 'Deployment manager console versus stand-alone console' is centered at the top.

Deployment manager console (left):

- Servers**
 - New server
 - Server Types
 - WebSphere application servers
 - WebSphere proxy servers
 - Generic servers
 - Version 5 JMS servers
 - WebSphere MQ servers
 - Web servers
 - Clusters
 - DataPower
 - Core Groups
- Applications
- Jobs
- Services
- Resources
- Security
- Environment
- System administration**
 - Cell
 - Job manager
 - Save changes to master repository
 - Deployment manager
 - Nodes
 - Node agents
 - Node groups
 - Centralized Installation Manager

Stand-alone console (right):

- Servers**
 - Server Types
 - WebSphere application servers
 - WebSphere MQ servers
 - Web servers
- Applications
- Services
- Resources
- Security
- Environment
- System administration**
 - Save changes to master repository
 - Console Preferences
 - Console Identity


Deployment manager

- Deployment manager administrative console has more functions for administration of the cell

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The deployment manager administrative console provides more tasks for administering a cell. The stand-alone administrative console does not provide these tasks. The example demonstrates a few differences between the deployment manager and stand-alone administrative consoles.

- Under **Servers** - The deployment manager provides more server task options for managing clusters, DataPower, and core groups.
- Under **System administration** - The deployment manager provides management tasks that are associated with administering a cell, nodes, node agents, and node groups.

WebSphere Education


Common command-line tools

- In several directories:
 - `<was_root>\bin`
 - `<profile_root>\<profile_name>\bin`
- Tools include:

Command	Function
addNode	Add a node to a cell
syncNode	Synchronize a node with the cell configuration
removeNode	Remove a node from a cell
cleanupNode	Cleans up a node configuration from the cell repository
startNode	Start the node agent
stopNode	Stop the node agent
startManager	Start the deployment manager
stopManager	Stop the deployment manager

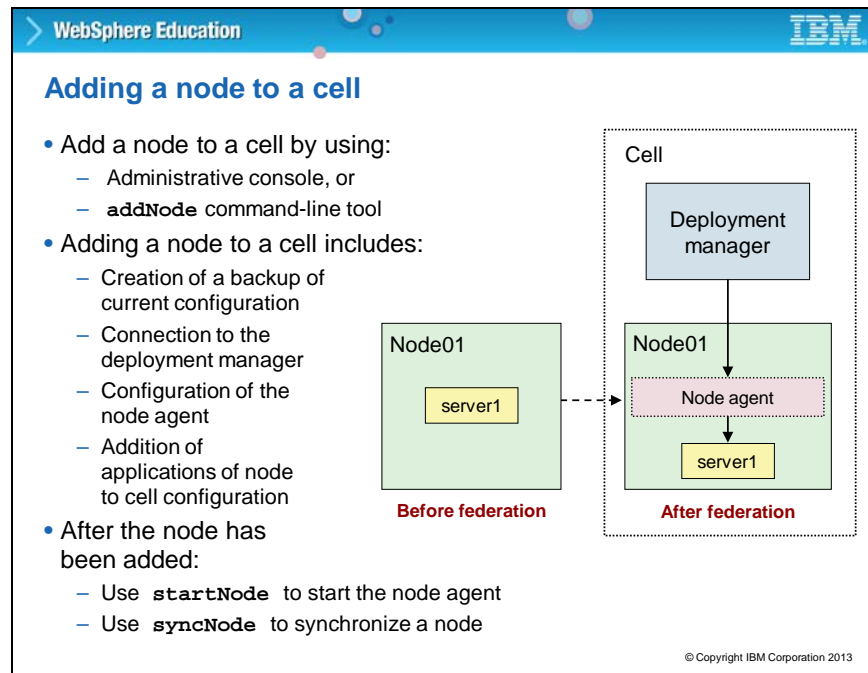
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Several tools are commonly used in a cell environment. The command-line tools are in several directories, as shown here. The table lists the commands that are available.

- The **addNode** command incorporates an application server installation into a cell. Depending on the size and location of the new node you incorporate into the cell, this command can take a few minutes to complete.
- The **syncNode** command forces a configuration synchronization to occur between the node and the deployment manager for the cell in which the node is configured.
- The **removeNode** command returns a node from a Network Deployment distributed administration cell to a stand-alone application server installation. The **removeNode** command removes only the node-specific configuration from the cell. This command does not uninstall any applications that are installed as the result of running an **addNode** command.
- The **cleanupNode** command cleans up a node configuration from the cell repository. Use this command to clean up a node only if you have a node that is defined in the cell configuration, but the node no longer exists.
- The **startNode** command reads the configuration file for the node agent process and constructs a launch command.
- The **stopNode** command reads the configuration file for the Network Deployment node agent process and sends a Java Management Extensions (JMX) command that tells the

node agent to shut down. By default, the **stopNode** command waits for the node agent to complete shutdown before it returns control to the command line.

- The **startManager** starts the deployment manager.
- The **stopManager** stops the deployment manager. It sends a Java Management Extensions (JMX) command to the manager that tells it to shut down. By default, the **stopManager** command waits for the manager to complete the shutdown process before it returns control to the command line.



The process of adding a node to a cell is known as federation. The process of federation creates a managed node with an application server and a node agent that belongs to a deployment manager cell.

A node is added to a cell by using the deployment manager administrative console, or the `addNode` command-line tool.

The process of adding a node to a cell includes: creation of a backup of the current configuration, connection to the deployment manager, configuration of the node agent, and addition of applications of the node to the cell configuration.

After the node is added to the cell, the following commands can be used: `startNode` to start the node agent, and `syncNode` to synchronize a node.

The graphic shows the process of adding a node to a cell with an unfederated node that includes a stand-alone application server. Following federation, you have a cell, which includes a deployment manager with connection to the node agent for the newly managed node and a node agent with connection to the application server of the node.

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Adding a node

- Deployment manager administrative console

Command line

```
addNode dmgr_host [dmgr_port] [-profileName profilename]
[-conntype type] [-excludesecuritydomains true | false] [-includeapps]
[-startingport portnumber] [-portprops qualified_filename]
[-nodeagentshortname name] [-nodegroupname name]
[-includebuses] [-registerservice] [-serviceusername name]
[-servicepassword password] [-coregroupname name] [-noagent]
[-statusport 1231] [-quiet] [-nowait] [-logfile filename] [-replacelog]
[-trace] [-username uid] [-password pwd] [-localusername localuid]
[-localpassword localpwd] [-help]
```

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A node can be added to a cell by either using the deployment manager administrative console or by using the addNode command.

In the administrative console, expand System administration. Click **Nodes > Add Node**. The addNode command syntax is shown here.

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Managed versus unmanaged nodes

- Managed nodes
 - Use node agent or administrative agent to manage their servers
 - Application server process runs within the deployment manager cell
- Unmanaged nodes
 - Node agent or administrative agent does not manage its servers
 - A stand-alone application server is an unmanaged node
 - Commonly used for web servers

Add Node

Use this page to add either a managed or an unmanaged node.

☒ Managed node
 Specifies the creation of a managed node. A managed node contains an application server process that runs within the deployment manager cell. The managed node is associated with a node agent process that maintains the configuration for the node and controls its operation. Choosing this option results in running the add node utility to federate an existing standalone application server.

☐ Unmanaged node
 Specifies the creation of an unmanaged node. An unmanaged node represents a node in the topology that does not have an application server process or a node agent process. Unmanaged nodes are for other server processes, such as Web servers that exist on their own node in the topology.

Next
Cancel

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Nodes can be managed or unmanaged. Both application servers and supported web servers can be on unmanaged or managed nodes.

For managed nodes, the node agent or administrative agent is used to manage its servers. The application server process runs within the deployment manager cell.

For unmanaged nodes, the node agent and administrative agent does not manage its servers. A stand-alone application server is an unmanaged node. This option is commonly used for web servers.

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Cell topology

- Cell topology can be viewed through the administrative console
 - From **System Administration > Cell > Local Topology**

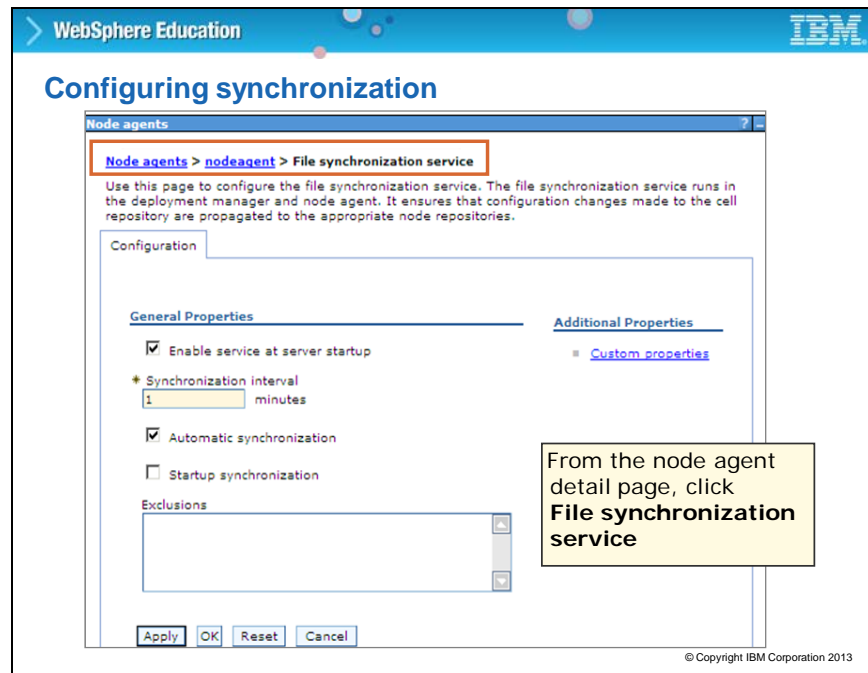
Configuration Local Topology

- [-] was85hostCell01
 - [-] Nodes
 - [-] was85hostCellManager01 (ND 8.5.5.0)
 - [-] Servers
 - dmgr
 - [-] was85hostNode01 (ND 8.5.5.0)
 - [-] Servers
 - nodeagent
 - server1
 - [-] was85hostNode02 (ND 8.5.5.0)
 - [-] Servers
 - nodeagent
 - server2
 - [-] ihsnode (No version)
 - [-] Servers
 - webserver1
 - [-] Applications
 - [-] Business-level applications
 - [-] Assets
 - [-] Clusters
 - [-] Node groups
 - [-] Core Groups

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The topology of a cell can be viewed by using the deployment manager administrative console. The topology page is used to set the discovery protocol for an existing cell. A cell is a configuration concept, a way for an administrator to logically associate nodes according to whatever criteria make sense in the administrator's organizational environment.

To view the cell topology, expand **System Administration** from the navigation tree and click **Cell > Local Topology**.



The file synchronization service runs in the deployment manager and node agent. The service verifies that configuration changes made to the cell repository are propagated to the appropriate node repositories.

Configuration of the file synchronization service is done by using the deployment manager administrative console. Configuration is set for each node agent.

To configure file synchronization, expand System administration from the navigation tree. Click Node agents and click the appropriate node agent to set the configuration. Under Additional Properties, click *File synchronization service*. You can set the following properties:

- The **Enable service at server startup** specifies whether the server attempts to start the file synchronization service. This setting does not cause a file synchronization operation to start. This setting is enabled by default.
- The **Synchronization Interval** specifies the number of minutes that elapse between synchronizations. Increase the time interval to synchronize files less often. Decrease the time interval to synchronize files more often.
- The **Automatic Synchronization** specifies whether to synchronize files automatically after a designated interval. When this setting is enabled, the node agent automatically contacts the deployment manager every synchronization interval to attempt to synchronize the configuration repository for the node with the master repository.

- The **Startup Synchronization** specifies whether the node agent attempts to synchronize the node configuration with the latest configurations in the master repository before starting an application server.

The default is to not synchronize files before starting an application server. Enabling the setting verifies that the node agent has the latest configuration but increases the amount of time it takes to start the application server.

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Remove a node from a cell

- Use the **removeNode** command to remove a node from a cell
 - Restores stand-alone configuration of the node from a backup
 - The **removeNode** command is equivalent to using the **Remove Node** action
- Use the **cleanupNode** (Force Delete) command to force the removal of a node from a cell
 - Used to clean up a node that is defined in the cell configuration, but no longer exists
 - The **cleanupNode** command is equivalent to using the **Force Delete** action

Add Node
Remove Node
Force Delete
Synchronize
Full Resynchronize
Stop

Select	Name	Host Name	Version	Discovery Protocol	Status
You can administer the following resources:					
<input type="checkbox"/>	was85hostCellManager01	was85host	ND 8.5.5.0	TCP	
<input type="checkbox"/>	was85hostNode01	was85host	ND 8.5.5.0	TCP	
Total 2					

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The **removeNode** command returns a node from a cell to a stand-alone application server installation. The **removeNode** command removes the node-specific configuration from the cell only. When a node is removed from a cell, the profile reverts to the configuration it had before it is federated into a cell. Any applications or configuration changes that were made while it was part of a cell are lost.

The **removeNode** command restores the stand-alone configuration of the node from a backup.

To remove a node by using the deployment manager administrative console, expand **System administration** and click **Nodes**. Select the node to remove and click **Remove Node**.

The **cleanupNode** command cleans up a node configuration from the cell repository.

The command is used to clean up a defined node in the cell configuration, but the node no longer exists.

To clean up a node by using the deployment manager administrative console, expand **System administration** and click **Nodes**. Select the target node and click **Force Delete**.

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Synchronization

- **Synchronize**
 - Uses the normal synchronization optimization algorithm
 - Node and cell configuration might still be out of synchronization after operation
- **Full Resynchronize**
 - Clears all synchronization optimization settings
 - No mismatch between node and cell configuration

Select	Name	Host Name	Version	Discovery Protocol	Status
You can administer the following resources:					
<input type="checkbox"/>	was85hostCellManager01	was85host	ND 8.5.5.0	TCP	
<input type="checkbox"/>	was85hostNode01	was85host	ND 8.5.5.0	TCP	
Total 2					

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If you add a managed node or change a managed node configuration, synchronize the node configuration. Synchronization can be done by selecting the nodes and clicking **Synchronize** or **Full Resynchronize**.

Clicking either option sends a request to the node agent for that node to synchronize the configuration immediately, instead of waiting for the periodic synchronization to occur. This action is important in certain cases such as if automatic configuration synchronization is disabled. A second example is if the synchronization interval is set to a long time, and a configuration change is made to the cell repository that must replicate to that node. Settings for automatic synchronization are on the File Synchronization Service page.

Synchronize requests for a node synchronization operation can be done by using the normal synchronization optimization algorithm. This operation is fast, but might not fix problems from manual file edits that occur on the node. It is still possible for the node and cell configuration to be out of synchronization after this operation is done.

Full resynchronize clears all synchronization optimization settings and synchronizes configurations anew, so there is no mismatch between node and cell configuration after this operation is done. This operation can take longer than the synchronize operation.

The **syncNode** command forces a configuration synchronization to occur between the node and the deployment manager for the cell in which the node is configured.

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WebSphere Education

Managing a web server: Adding a node to a cell

- Create an unmanaged node for defining remote web servers
 - From **System administration > Nodes > Add node**

Add Node

Use this page to add either a managed or an unmanaged node.

☐ Managed node
 Specifies the creation of a node that runs within the deployment process that maintains topology results in running.

☒ Unmanaged node
 Specifies the creation of a node topology that does not have a node agent running to manage the process. Unmanaged nodes are typically used to manage web servers.

☐ Recover an existing node
 Specifies to replace a damaged node and give it the same configuration as the original node in the cell with the same name.

Next Cancel

Nodes

Nodes > New...

Use this page to view or change the configuration for an unmanaged node. An unmanaged node is a node defined in the cell topology that does not have a node agent running to manage the process. Unmanaged nodes are typically used to manage web servers.

Configuration

General Properties

* Name: lwsnode
 * Host Name: was8host01
 * Platform Type: Windows

Apply OK Reset Cancel

Additional Properties

The additional properties will not be available until the general properties for this item are applied or saved.
☐ Custom Properties

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An application server works with a web server to handle requests for dynamic content, such as servlets, from web applications. A web server uses a web server plug-in to establish and maintain persistent HTTP and HTTPS connections with an application server.

Before beginning work to manage the web server, make sure that the appropriate plug-in file is installed on your web server.

The first step to establish communication with a web server is to create a node to manage the web server. Within a cell topology, unmanaged nodes are typically used to manage web servers.

To create an unmanaged node:

- From the navigation tree, expand **System administration** and click **Nodes > Add node**.
- Click **Unmanaged node** and click **Next**.
- From the new node page, provide the general properties for the unmanaged node. Click **OK**.

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Managing a web server: Add the web server

- Add the web server to the created node
 - From **Servers > Server Types > Web servers > New**

1 Select a node for the Web server and select the Web server type

Select a node that corresponds to the Web server you want to add.

Select node

ihsnode

* Server name
webserver01

* Type
IBM HTTP Server

3 Enter the properties for the new Web server

Enter the Web server properties.

* Port
80

* Web server installation location
C:\Program Files\IBM\HTTPServer

* Service name
IBMHTTPServerV8.0

* Plug-in installation location
c:\Program Files\IBM\HTTPServer\Plugins

Application mapping to the Web server
All

Enter the IBM Administration Server properties.

* Administration Server Port
8008

* Username
ihadmin

* Password

* Confirm password

☐ Use SSL

2 Select a Web server template

Select the template that corresponds to the server that you want to create.

Select	Template Name	Type	Description
<input checked="" type="radio"/>	IHS	System	The IHS Web Server Template

After a node is created to manage the web server, a web server definition can be created. The web server definition can be created by using the deployment manager administrative console. The web server definition adds the web server to the newly created node.

To create a web server definition:

- From the navigation tree, expand **Servers > Server Types**. Click **web servers > New**.
- Select the web server template that you want to correspond to the web server you want to create. The template is based on the type of web server you chose previously.
- Enter the properties for the new web server.

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Managing a web server: Plug-in configuration file

- The plug-in configuration file contains routing for all applications that are mapped to the web server
- After changes that affect routing, regenerate and propagate the plug-in file to the web server
 - From **Servers > Server Types > Web servers**

Web servers

Use this page to view a list of the installed Web servers.

☒ Preferences

1. Generate plug-in

Messages

PLGC0005I: Plug-in configuration file = C:\Program Files\IBM\WebSphere\AppServer\profiles\DmgrProfile\config\cells\was8host01Cell01\nodes\ihsnode\servers\webserver01\plugin-cfg.xml

PLGC0052I: Plug-in configuration file generation is complete for the Web server. was8host01Cell01.ihsnode.webserver01.

2. Propagate plug-in

Messages

PLGC0062I: The plug-in configuration file is propagated from C:\Program Files\IBM\WebSphere\AppServer\profiles\DmgrProfile\config\cells\was8host01Cell01\nodes\ihsnode\servers\webserver01\plugin-cfg.xml to c:\Program Files\IBM\HTTPServer\Plugins\config\webserver01\plugin-cfg.xml on the Web server computer.

PLGC0048I: The propagation of the plug-in configuration file is complete for the Web server. was8host01Cell01.ihsnode.webserver01.

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The plug-in configuration file contains routing for all applications that are mapped to the web server, passing HTTP requests from a web server to WebSphere Application Servers.

The plug-in is regenerated and propagated to the web server, following changes that affect routing. The plug-in configuration file is automatically generated by default, whenever the web server environment changes, with a few exceptions.

For example, the plug-in configuration file is regenerated whenever one of the following activities occurs:

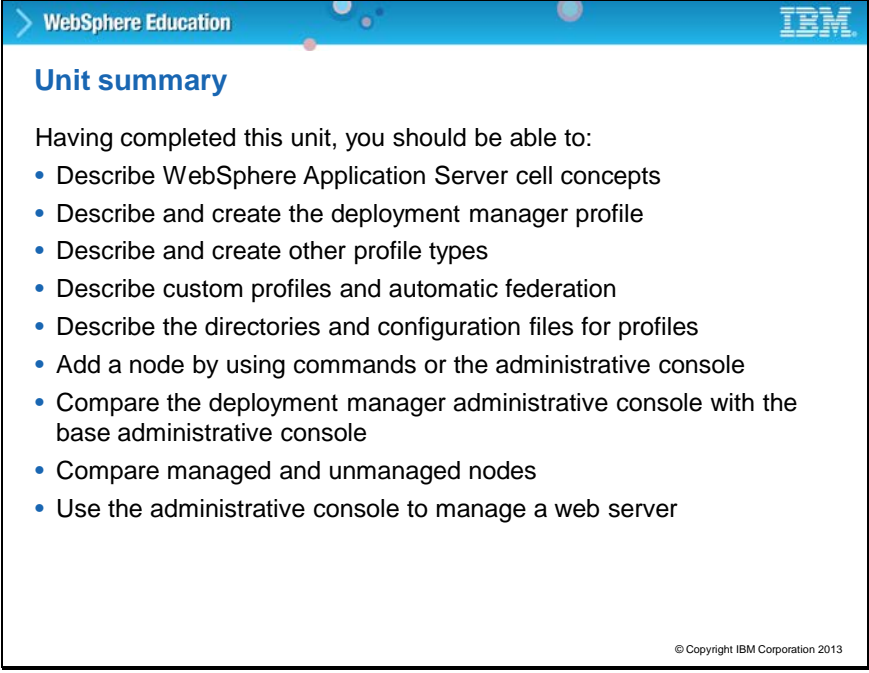
- A new application is deployed on an associated application server.
- The web server definition is saved.
- An application is removed from an associated application server.
- A new virtual host is defined.


You can manually generate and propagate a plug-in configuration file for a web server from the deployment manager administrative console. From the navigation tree, expand **Servers > Server Types**. Click **Web servers**.

To generate the plug-in configuration file, select the web server whose plug-in configuration file **must** be generated. Click **Generate Plug-in**.

To propagate the plug-in configuration file, select the web server whose plug-in configuration file **must** be propagated. Click **Propagate Plug-in**.

Slide 36

A presentation slide titled 'Unit summary' from the 'WebSphere Education' series, featuring the IBM logo in the top right corner. The slide lists learning objectives for completing the unit.

WebSphere Education 

Unit summary

Having completed this unit, you should be able to:

- Describe WebSphere Application Server cell concepts
- Describe and create the deployment manager profile
- Describe and create other profile types
- Describe custom profiles and automatic federation
- Describe the directories and configuration files for profiles
- Add a node by using commands or the administrative console
- Compare the deployment manager administrative console with the base administrative console
- Compare managed and unmanaged nodes
- Use the administrative console to manage a web server

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You completed this unit.

Having completed this unit, you should be able to:

- Describe WebSphere Application Server cell concepts
- Describe and create the deployment manager profile
- Describe and create other profile types
- Describe custom profiles and automatic federation
- Describe the directories and configuration files for profiles
- Add a node by using commands or the administrative console
- Compare the deployment manager administrative console with the base administrative console
- Compare managed and unmanaged nodes
- Use the administrative console to manage a web server