



IBM Software Group

IBM WebSphere® Application Server V6

System management

Administrative clients overview



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This presentation will discuss the WebSphere Application Server administrative clients.

Goals

- Describe the following:
 - ▶ WebSphere Application Server V6 administrative clients

- Pre-requisites:
 - ▶ Basic understanding of WebSphere Application Server V6 System Management architecture

The goal of this presentation is to describe at a high level the administrative clients, and the changes from version 5.

Agenda

- Administrative clients overview
- User workspace
- Security roles
- Brief overview of the different administrative clients

The agenda for this presentation is to talk about the clients, the user workspace, the browser based Administrative Console, and some of the functions of the command line scripting client.

Overview

- Administrative clients have been enhanced in V6
- Clients use the Java™ Management Extensions (JMX) interface to interact with the System Management infrastructure
- Variety of administrative clients are supported
 - ▶ Browser based Administrative Console
 - ▶ Command-line scripting tool: wsadmin
 - ▶ Custom Java administrative applications using JMX APIs
 - ▶ ANT tasks that extend the capabilities of ANT to include product-specific functions
 - ▶ Several command line tools: start and stop servers, and so on



The administrative clients use JMX to interact with the Management Beans that comprise the System Management infrastructure. The three types of administrative clients are the Administrative Console, which is a web application accessed through a browser, and the command line scripting tool called wsadmin, and any custom third party program that adheres to the JMX specification.

All types of clients utilize the same APIs, the publicly available JMX APIs. These APIs are exposed to the outside world; there are no hidden APIs that the WebSphere administrative clients use.

To support the ANT tasks, WebSphere provides a copy of the Ant tool.

The command line tools work on the local node – these commands are discussed in a separate presentation

Administrative client workspace

- A temporary space given to the user when making configuration changes
 - ▶ Workspace not needed for operational changes
- XML configuration files are copied from the master repository to the workspace
- Different temporary spaces for each user
 - ▶ For console users, the Workspaces are retained persistently and can be reused in the next login
- “Save” operation applies the changes in the workspace to the master
 - ▶ Optimistic concurrency update during “Save” operation



The workspace is a temporary space created when you make administrative configuration changes with any of the Administrative Clients.

This workspace is created under the server specific profile’s “wstemp” (workspace temporary) directory based on the current login ID.

For the wsadmin client, a unique name for the workspace directory is dynamically generated as “Script<AAA>”, where AAA is generated.

The configuration XML files are copied from the Master repository and cached in the workspace, as the administrative client navigates through different configuration data.

For example: as you navigate the Administrative Console, the configuration XML files are cached in the workspace

When you Save the configuration, changes in the workspace are applied to master repository.

WebSphere Application Server performs optimistic concurrency update during “Save” operation.

If two administrators save the same xml file, the system will detect and warn you during the save operation that someone else had made changes to the same file.

Workspaces are not removed when you log out, so they can be reused in another login session for the same login ID.

Administrative security roles

- With security turned on, you can limit the function of the Administrative Clients for certain users
- Four security roles available

Role	View	Stop/Start	Configure
Monitor	X		
Operator	X	X	
Configurator	X		X
Administrator	X	X	X

The V6 System management administration is set up with four roles, which enable someone who logs in to have different levels of access control to system management functions.

The four roles are Administrator, Configurator, Operator and Monitor.

If you assign a user to the “monitor” role, that user can view the state of application servers, but not stop or start them.

More details of the Administration Security are provided in a separate presentation

Section

Administrative clients overview

The next section will provide a very brief overview on each of the Administrative clients

Administrative client: Administrative Console

- **Browser-based Administrative Console**
 - ▶ New appearance
 - ▶ New functionality
 - ▶ Improved usability
- **Administrative Console is a standard Java™ 2 Enterprise Edition (J2EE) application**
 - ▶ Installed during product installation
- **Ideal for new users or users who prefer a graphical interface**



In the WebSphere Application Server Version 4.0 Single Server Edition, a browser based administrative console was introduced. It allowed administration of the server through a browser interface interacting with a Web application running in the server. This allowed the server to be administered from anywhere it could be reached over the HTTP protocol without having to install a client side administrative application. In WebSphere Version 5, a browser based administrative console was used to allow administration of an entire cell or stand-alone single application server. V6 takes the same approach with new enhancements to the Administrative Console.

The Administrative Console application that runs in a WebSphere Application Server V6 server is a standard J2EE 1.4 Web Application, using servlets and JSPs.

A separate presentation on Browser based Administrative Console goes into the details and links to a demonstration.

Command line scripting tool: wsadmin

- wsadmin is the scripting interface for WebSphere Application Server V6
 - ▶ Introduced in V5
 - ▶ Robust scripting features and programming model
- wsadmin is based on Bean Scripting Framework (BSF)
 - ▶ Supports JACL and Jython languages
- Useful for automation

Wsadmin was introduced in V5 as a scripting interface for the Administrative Server. It is based on the Bean Scripting Framework that IBM made open source a while ago . Using this you can write scripts using the languages supported by the Bean Scripting Framework. Bean Scripting Framework supports several different languages. WebSphere supports two of the Bean Scripting Framework languages, JACL and Jython. Support, in this case, means that the WebSphere team has tested JACL and Jython and provides samples in these two scripting languages.

Custom administrative clients

- You can write a Java program that performs any administrative function using the JMX API
- You can also extend the basic administrative system to include your own managed resources

Custom Java administrative clients are stand-alone Java applications that use the JMX APIs provided by WebSphere. These are the same APIs that are used by other administrative clients.

You will need to be familiar with the APIs and the Managed Bean APIs to write your own administrative client.

Using Ant to automate tasks

- WebSphere Application Server V6 provides a set of Ant tasks that provide product-specific functions
 - ▶ Install and uninstall applications
 - ▶ Start and stop servers in a base configuration
 - ▶ Run administrative scripts or commands
 - ▶ Run the EJB deployment tool
 - ▶ Run the JSP pre-compilation tool
- Use the **ws_ant** command to run Ant for WebSphere Application Server
- Ant tasks for the product are in the Java package **com.ibm.websphere.ant.tasks**
 - ▶ The API documentation for this package contains detailed information about all of the Ant tasks that are provided



Apache Ant is a Java-based build tool. Ant has become a very popular tool among Java programmers. ANT is similar to UNIX Make command in one way. However, it uses XML-based configuration files. These files reference a target tree in which the various tasks listed on this page are run. Each task is run by an object that implements a particular Task interface, described in the **com.ibm.websphere.ant.tasks** Java package

Command line tools

- WebSphere Application Server V6 supplies command line tools that perform various administrative tasks
 - ▶ Like start or stop servers, addNode, backupConfig...
- Most of the commands are in the product install or the profile's "bin" directory
 - ▶ Commands run from the <WAS_HOME>/bin directory apply to the default profile, when no profile option is specified
 - ▶ Commands run from the <PROFILE_HOME>/bin directory apply only to that specific profile – no need to provide the profile option here - RECOMMENDED



Look at the WebSphere Start/Stop Process presentation and WebSphere Commands presentation for more detail on many of the commands supplied with WebSphere.

When running commands from the product install /bin directory, you will have to specify the "-profile" option for the command to apply to a specific non-default profile.

However, if you run the commands from the Profile /bin directory, the command will apply to that specific profile and there is no need to specify a profile

Summary

- WebSphere Application Server V6 provides multiple administrative client options
 - ▶ Web-based Administrative Console
 - ▶ wsadmin scripting tool
 - ▶ Task-based command line tools
 - ▶ Ant tasks
 - ▶ Custom Java Clients

In summary, this presentation has discussed the System Management administrative clients.

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