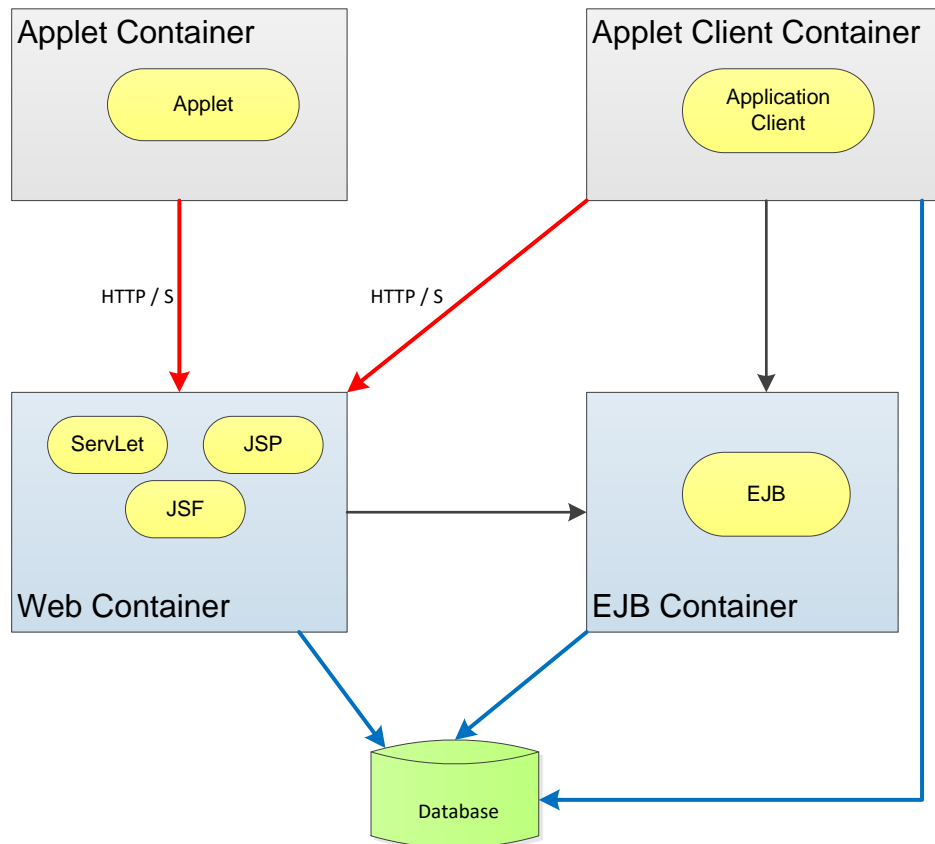
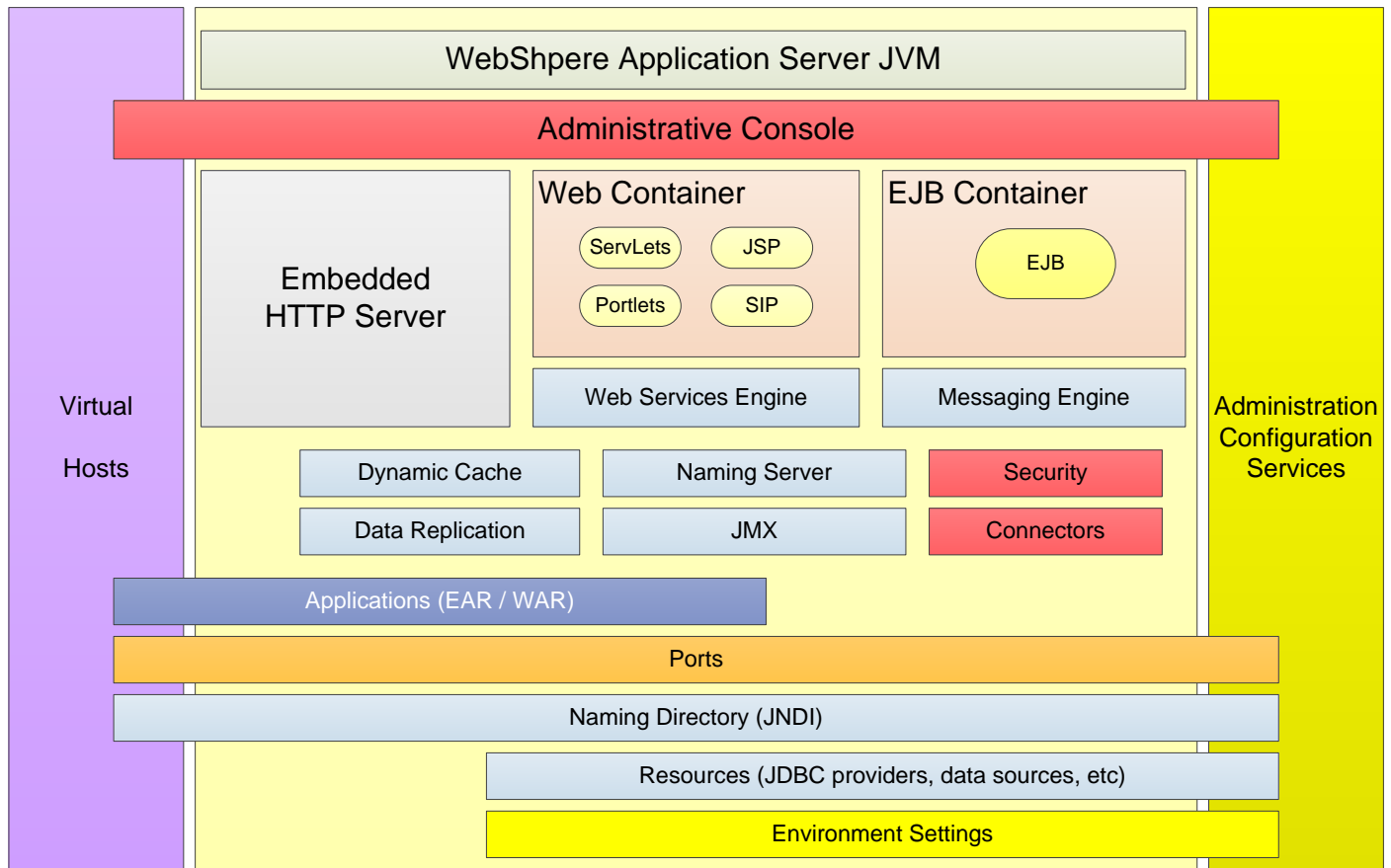


Inside WebSphere Application Server

The anatomy of WebSphere Application Server is quite detailed so, for now, let's briefly outline some of the more important parts.

The following diagram shows the basic architecture model for a WebSphere Application server JVM:





JVM

All WebSphere Application Servers are essentially **Java Virtual Machines (JVMs)**. IBM has implemented the JEE application server model in a way that maximizes the JEE specification, and also provides many enhancements creating specific features for WAS. JEE applications are deployed to an Application Server.

Web container

A common type of business application is a web application. The WAS web container is essentially a Java-based web server contained within an application server's JVM, which serves the web component of an application to the client browser.

EJB container

Applications need not only comprise of web components. In a more complex enterprise-based... WebSphere Application Server terminology

Runtime binaries

The core product files are the actual product binary files, and can be shared by many profiles. The directory structure for the product has two major divisions of files in the installation root directory for the product. One division is the runtime binaries and the other is for profiles.

Profiles

A profile is an 'instance' of a WebSphere Application Server configuration. A profile contains its own set of administration scripts, its own environment, its own repository, and its own node agent. Many profiles can be created from a single install. Profiles can be installed to share runtime binaries allowing multiple profiles to benefit from a single maintenance update. It is also possible to allow...

WebSphere Application Server products

WebSphere Application Server also forms the base of WebSphere Application Server 8 Network Deployment (WAS-ND) Edition, which is designed for the more complex enterprise, with support for high availability such as clustering, failover, load balancing and work load management, and so on.

Other products in the WebSphere range include WebSphere Portal, WebSphere ESB, WebSphere Process Server, and many others. The following table provides a quick review of WebSphere Application Server products:

Product editions

| Product Edition | Description |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application Server | Build, deploy, and manage SOA business applications and services of all types. Application Server also known as Application Server Base is the foundation of the WebSphere Application Server suite. |
| Application Server – Express | An affordable solution at a reduced cost. |
| Application Server Community Edition | Lightweight Java EE application server based on open source Apache Geronimo. |
| Application Server Network Deployment | Provides high-availability with near-continuous availability along with advanced performance and management... |

Supported OS

WebSphere is supported on the following OS (Operating System) platforms:

- Windows
- AIX
- Linux
- Solaris
- i/OS
- z/OS

Beginning with Version 6.1 and now with Version 8, IBM is supporting open standard specifications and have aligned WAS with a view to a more common approach across all the platforms, to the extent that WAS now works with a large number of Web servers including Apache HTTP Server, Netscape Enterprise Server, Microsoft Internet Information Services (IIS), IBM HTTP Server for i5/OS, IBM HTTP Server for z/OS, and IBM HTTP Server for AIX/Linux/Microsoft Windows/Solaris.

Following is a table of Platforms and recommended versions of OS:

| OS | Supported Version |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Linux 32 | <ul style="list-style-type: none"> • Red Hat Enterprise Linux (RHEL) 5.0 Advanced Platform (32- and 64-bit kernels) • Red Hat Enterprise Linux 5.0 Desktop editions (32- and 64-bit kernels) • SUSE Linux Enterprise Desktop (SLED) 10.0 (32- and 64-bit kernels) • SUSE Linux Enterprise Desktop 11.0 (32- and 64-bit kernels) • SUSE Linux Enterprise Server (SLES) 10.0 (32- and 64-bit kernels) • SUSE Linux Enterprise Server 11.0 (32- and 64-bit kernels) |
| Linux 64 | <ul style="list-style-type: none"> • Red Hat Enterprise Linux 5.0 Advanced Platform (64-bit... |

Summary

In this chapter, we have been introduced to WebSphere Application Server v8 capabilities and features to be compliant with JEE version 6. We had a look at the four main components of the JEE 6 platform to provide some context for understanding the WAS 8 internals.

We have explained key terms relating to WAS and explained WebSphere Application Server profiles. We learned that WebSphere Application Server base is the base product on which a suite of extended business products are offered by IBM, which include Application Server, and we briefly covered these products.

Understanding WAS is critical to understanding all the other products in the WebSphere brand.

Installing WebSphere Application Server

To learn how to administer IBM WebSphere Application Server (WAS), we first need to know how to install the product. As we discussed in Chapter 1, **WebSphere Application Server 8.0: Product Overview** WAS v8 is based on JEE 6 and can run on many platforms from Windows through to UNIX and even mainframes.

Note

It is possible to install WAS on the CentOS 5.6 Linux distribution. CentOS is based on rebuilt RedHat source packages, and is free to download; however, running WAS on CentOS is not officially supported by IBM.

This section explains the topics in detail, so if you want to read this chapter in one sitting, you may want to get comfortable. We have many topics to cover, as mentioned in the following list:

- Planning an application server install
- Installation scenarios
- Preparation and prerequisites
- Graphical installation
- Installing base binaries
- Understanding profile types
- Installing profiles
- Verifying an installation
- Administration console
- Uninstalling WAS
- Silent installs

Administrative console

To test our application server is functioning correctly, we will log in to the administration console. The administration console is a web application, which is used to configure the WebSphere Application Server. You can use it to perform tasks such as:

- Add, delete, start, and stop application servers
- Deploy new applications to a server
- Start and stop existing applications, and modify certain configurations
- Add, delete, and edit resource providers
- Configure security, including access to the administrative console
- Details are covered in Chapter 4, Security.
- Collect data for performance and troubleshooting purposes
- Details are covered in Chapter 8, Monitoring and Tuning.

Currently, the application server is in a stopped state. Before we can log in to the admin console, we must start the newly created application server. To start the application server, we can use a special command script. Command scripts are found in the `<was_profile_root>` directory.

There are two scripts that we will use often throughout the book to start and stop WAS.

| Script Name | Description |
|------------------------|--------------------------------------|
| startServer.sh (Linux) | Used to start a given application... |

Uninstalling WAS

Before we move on and cover how to do a silent (no GUI) installation of WAS, we need to cover how to uninstall WAS. It is important to know how to uninstall WAS correctly because if you don't, residual folders and files can be left behind.

If you try to install WAS over an existing WAS installation, the wizard will exit in error. So if you purposely want to re-install again into the same folder path, you need to ensure that WAS is removed correctly before you do so.

What we will do is remove the installation we created earlier and then re-create the same setup using a command-line based silent installation.

First we need to stop the WAS process using the stop server command located in the following folder `<was_root>/<profile_root>/bin`

1. For Linux:

Copy

```
<was_profile_root>/bin/stopServer.sh server01
```

2. For Windows:

Copy

```
<was_profile_root\bin\stopServer.bat server01
```

Manually deleting profiles

Before uninstalling WAS binaries it is good practice to remove profiles ahead of uninstalling WAS. To delete a profile, you can use the `manageprofiles.sh` command-line script. Using a SSH/Terminal session for Linux (or command prompt in the case...

The programming model for applications deployed on this product has the following aspects:

- Java™ specifications and other open standards for developing applications
- WebSphere® programming model extensions to enhance application functionality
- Containers and services in the application server, used by deployed applications, and which sometimes can be extended

The diagram shows a single application server installation. The parts pertaining to the programming model are discussed here. Other parts comprise the product architecture, independent of the various application types outlined by the programming model

