



IBM Software Group

# IBM® WebSphere® Application Server V6 Express

## *Topology Options and Terminology*



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This presentation will introduce some topology options and define some of the terminology that is specific to WebSphere Application Server Express Version 6.

## Goals

Presentation  
applies to V6  
Express  
Package

- Introduce different WebSphere topology options
  - ▶ Stand-alone Node:
    - Express or Network Deployment Stand-alone Node
- Introduce V6 terminology
- Covered in other presentations:
  - ▶ Creating these topologies will be discussed in the “Installation and Migration” presentation

The goal of this presentation is to examine the topology and terminology associated with WebSphere Application Server Express.

## Agenda

- Stand-alone Node Topology
  - ▶ Application Server topology
  - ▶ Web Server topology

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### Symbols used in the presentation



▪ Instance of an Operating System  
▪ One Logical OS copy (Windows™) or Logical Partition (like in AIX® or z/OS®)



One Install of WebSphere product = One set of WebSphere install Binaries

The agenda for this presentation is simply to discuss the stand-alone node topology.

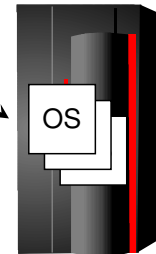
## Terminology: Operating System (OS)

- Distributed
  - ▶ Microsoft™ Windows™
  - ▶ UNIX™ – AIX™, Linux™/Intel™, Linux/PPC™, Linux on zSeries™, Solaris™, HP-UX™
- iSeries™: i5/OS™, OS/400™

The terms “distributed” or “distributed platforms” includes supported hardware other than the iSeries and zSeries hardware, and encompasses Windows, UNIX, and Linux operating systems.

## Terminology: Machine / Logical Partition (LPAR)

- Runs an instance of the OS
- Case 1: Physical machine can run only 1 OS instance
  - ▶ Example: Windows, Linux/Intel
- Case 2: Physical machine can run multiple OS instances, each in its own LPAR
  - ▶ Example: z/OS, AIX, zLinux, Linux/PPC
- WebSphere Application Server is installed on an **instance** of the OS



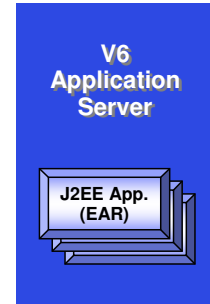
z/OS, AIX, etc.

Throughout this and the subsequent presentations, reference will sometimes be made to a machine, or to a system or to an LPAR. Logically speaking, these terms are often used in an interchangeable fashion. What is really meant is that entity in which an operating system instance is running. On the distributed platforms, for example Windows or Linux on Intel, this is analogous to a physical machine. However, for the z/OS platform this refers to an individual LPAR running within z/Series hardware, which normally has multiple LPARs configured and running.

## Terminology: Application Server

### ▪ Application Server

- ▶ Runs one or more J2EE applications
- ▶ Provides services required to run applications:
  - Web container, EJB container, JMS services, Security, Transactions, etc.
  - Operational management of the applications
- ▶ Runs as Java™ (JVM) process
  - Single JVM on non-z/OS systems
  - Multiple JVMs on z/OS system



“Server”, means a process which provides some function or functions. The functions can be things like providing a Web or Enterprise Java™ Bean (EJB) Container for hosting Java™2 Enterprise Edition (J2EE) artifacts, providing services such as Java™ Messaging Service (JMS) server or Naming, and providing configuration and operational management support.

These presentations use the term “process” loosely, as it is not always analogous to what is normally known as a process within an operating system. On the distributed platform it is, with a server being an operating system process that runs in a single JVM instance. However, on the z/OS platform, a server is composed of multiple operating system processes, each running in their own JVM. There is one Control Process and potentially many Servant Processes making up a z/OS WebSphere server.

Servers are defined though a set of XML configuration files which are maintained on the file system and read in by the server when starting up.

## Terminology: WebSphere Profiles



- WebSphere V6 files are split into 2 categories
  - ▶ Product Files - shared application binaries for WebSphere
  - ▶ User Files - set of user customizations
    - Includes WebSphere configuration, installed applications, resource adapters, properties, log files, transaction log files, etc.
    - Defines a profile
- Each Profile defines a WebSphere runtime environment
  - ▶ Profiles share product binaries



This is a replacement to the WebSphere V5 wsInstance function.

To understand Profiles, start by understanding the files that make up WebSphere Application Server. There are two categories of files: Product files and User files. The Product files include the application binaries needed to run the application server. The User files contain information used by the application server. For example, this is where variables are defined, resources are configured, log files are written, and so on. A Profile is a collection of these files, creating a WebSphere runtime environment. When combined with the shared binaries, a profile becomes a complete WebSphere Application Server installation.

This sharing of application binaries, and the separation of configuration files, is an efficient use of disk space. Also, with one set of binaries, updates to the code can be applied in one location per physical machine, even when multiple profiles are configured.

This is discussed in more detail in a separate WebSphere Profiles presentation.

## Section

# ***Stand-alone Application Server Topology***

This section covers the topology of the stand-alone WebSphere Application Server installation.



## Terminology: stand-alone Application Server

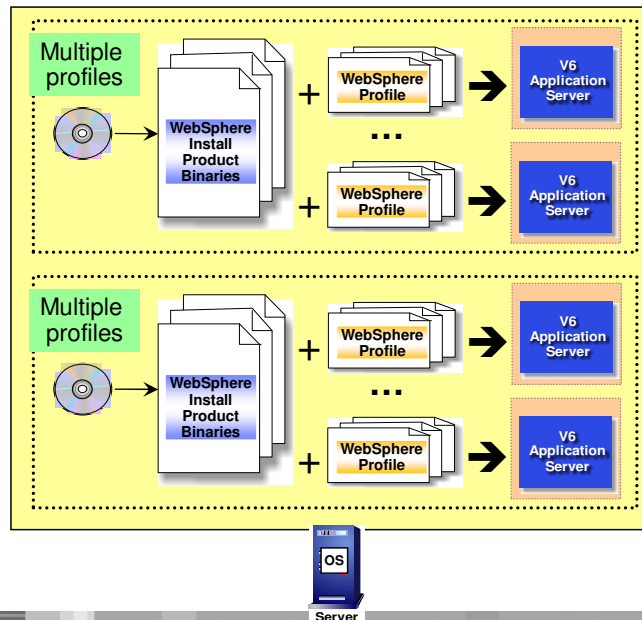
- Single node that runs one Application Server
- Independent of other nodes and other Application Servers
  - ▶ Cannot be managed by Deployment Manager



A stand-alone application server installation is a single node that runs one Application Server process.

## stand-alone Application Server: Topology

- Can have combination of multiple installs and multiple profiles
- Multiple profiles benefits
  - ▶ Uniform fixes applied to all profiles
  - ▶ Requires less disk space and less installs
- Multiple install benefits
  - ▶ Can manage fixes separately
  - ▶ Requires more disk space



By default, when you install the stand-alone server, it creates the first Instance of the Application server.

There can be only one Application Server within the same stand-alone install. If you need multiple servers within the same install, use the Server profiles mechanism.

When running multiple Servers on the same machine, assign unique ports to avoid port conflicts.

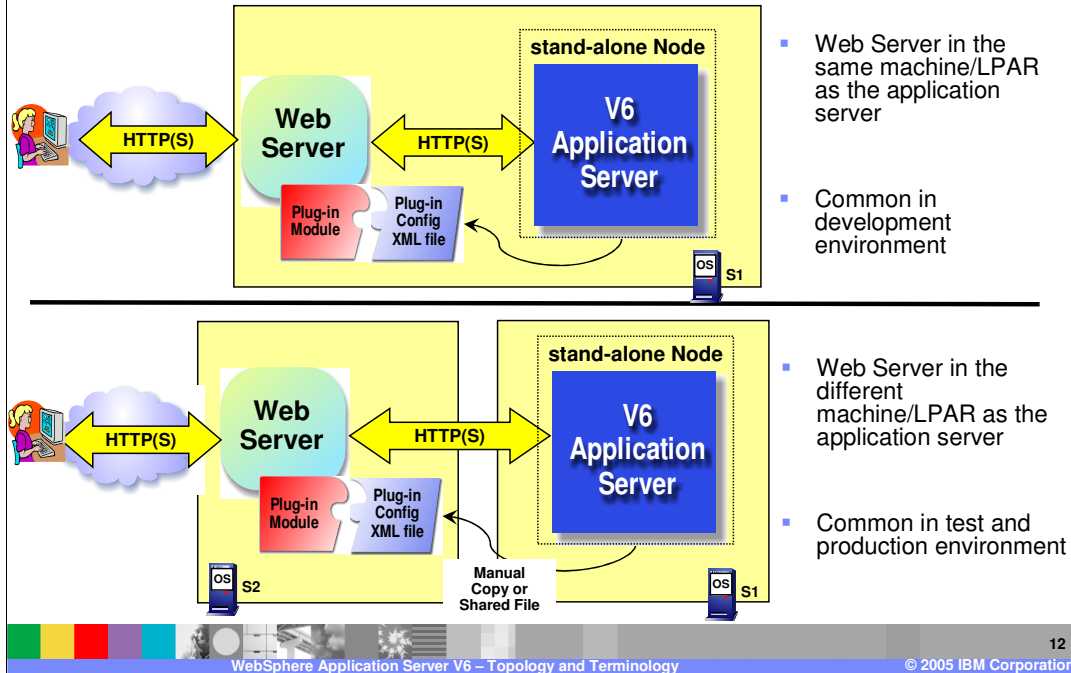
## Section

# ***Web Server Topology for Stand-alone Application Server***



This section will discuss the Web Server topology in a stand-alone Application Server environment.

## Web Server Topology Options: Single Server



Web Server can be on the same local machine as the Application Server or can be on a remote machine – remote to the Application Server. The local topology is more common in development environments and small shops.

## Web Server Definition in stand-alone Server

- Web Servers are now defined in WebSphere stand-alone Application Server topology
- This allows generation of custom plug-in configuration files
- Only one Web Server can be defined

New in WebSphere Application Server V6 is the ability to define a Web Server node with the Application Server topology. This allows creating custom plug-in configuration files for the defined Web Servers. The stand-alone Application Server can have only one Web Server definition, whereas the Network Deployment cell can have multiple Web Server definitions (explained later).

## Section

# *Summary and Reference*

## Summary

- stand-alone Application Server and its multiple Profiles capability provides a way for multiple independent development environments on a single WebSphere install
- Network Deployment Cell topology is discussed in a separate presentation

WebSphere Application Server V6 builds on top of the topology supported in Version 5. Installation has been simplified.

Information specific to the Network Deployment topology is presented in another module.

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