IBM® WebSphere® Application Server V6

z/OS Architecture

This presentation will focus on the Architecture of IBM WebSphere Application Server for z/OS, Version 6.

Goals

- Understand some of the architecture specifics of WebSphere Application Server for z/OS V6

The goal of this presentation is to provide the z/OS architecture specifics.

WASv601_zOS_Architecture.ppt

Agenda

- z/OS WebSphere Application Server Architecture
  - ▶ Major components inside the Server

The agenda for this presentation is to briefly examine the architecture of the WebSphere Application Server on the z/OS platform.
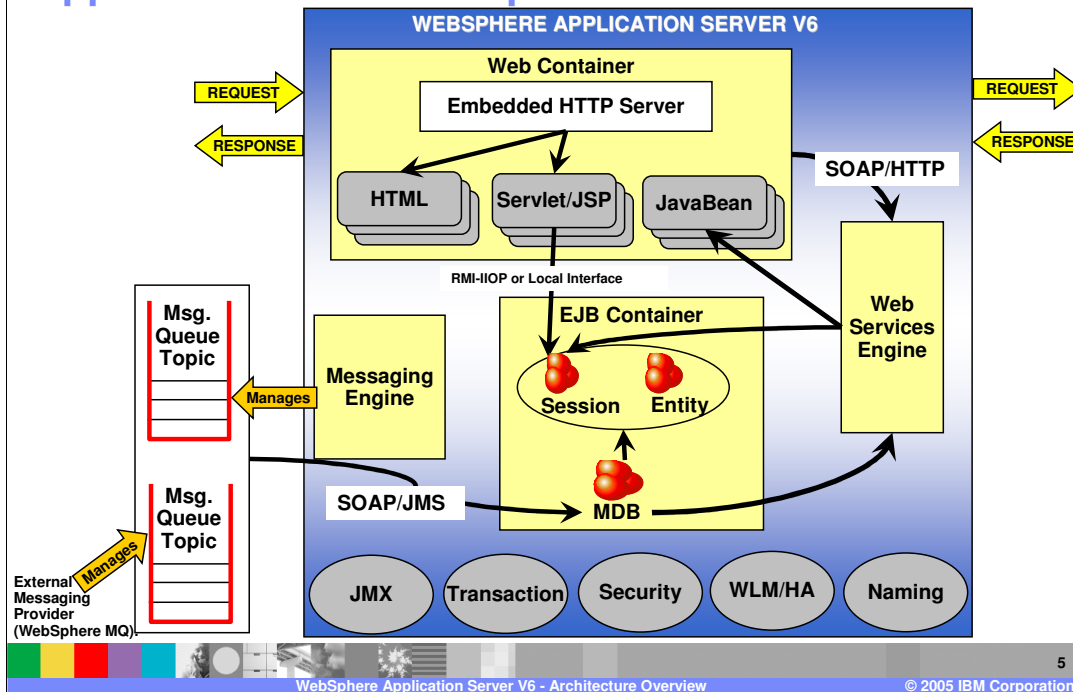
Section

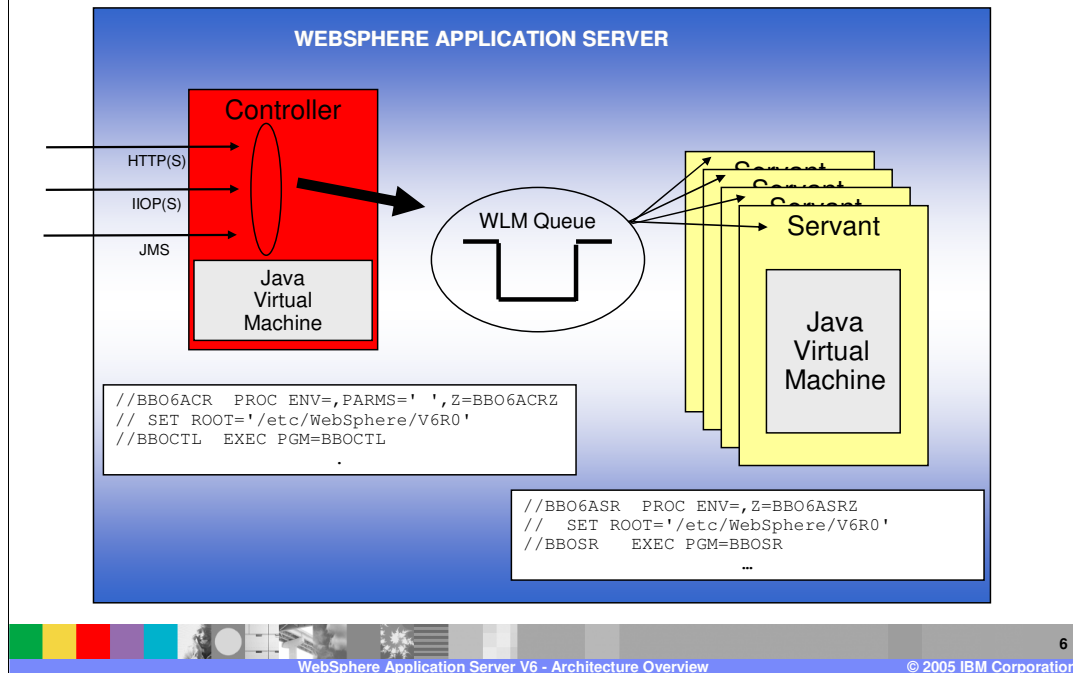# *WebSphere Application Server for z/OS*

This section will look at the generic 'Application Server' box and show you what it looks like on z/OS.

Here you see the major components of the WebSphere Application Server. On z/OS, there is a little more to the story so this presentation will take a step back and start with a less busy picture on the next slide.

z/OS Controllers vs. Servants

WEBSPHERE APPLICATION SERVER

Controller

HTTP(S)

IIOP(S)

JMS

Java Virtual Machine

WLM Queue

Servant
Servant
Servant
Servant

Java Virtual Machine

```
//BBO6ACR  PROC ENV=,PARMS=' ',Z=BBO6ACRZ
// SET ROOT='/etc/WebSphere/V6R0'
//BBOCTL  EXEC PGM=BBOCTL
                .
```

```
//BBO6ASR  PROC ENV=,Z=BBO6ASRZ
//  SET ROOT='/etc/WebSphere/V6R0'
//BBOSR    EXEC PGM=BBOSR
                ...
```

The z/OS server is actually split among address spaces. z/OS has the idea of a Controller address space which acts as the network endpoint for HTTP(S), IIOP(S) and messaging traffic. The Controller routes application work to a Work Load Manager (WLM) queue from which a second address space, a Servant, will select and execute work. The Controller is started with a JCL Start procedure that is created for you during customization. The Servants are started and stopped by WLM depending on workload.

The application code will run in the servant regions, isolated from the WebSphere runtime code. Notice that both the Controller and Servant regions contain a JVM.

Now that you have seen the basic Controller Region/Servant Region split, the next step is to incorporate the Application Server Components into the mix. You will see that on the next slide.
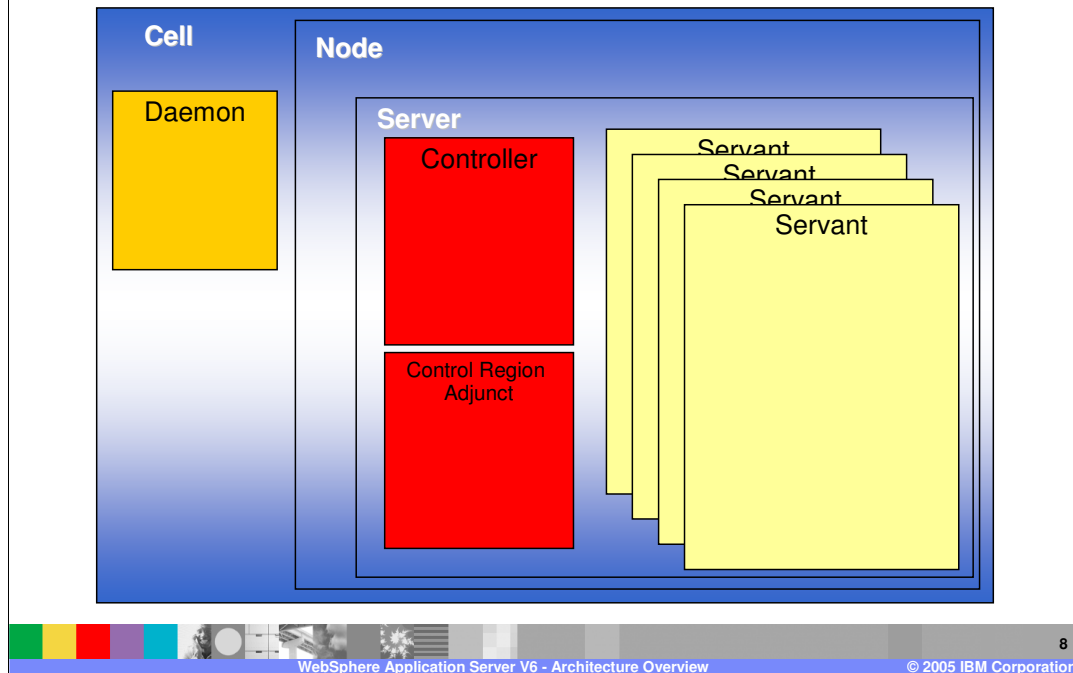
z/OS Application Server Components
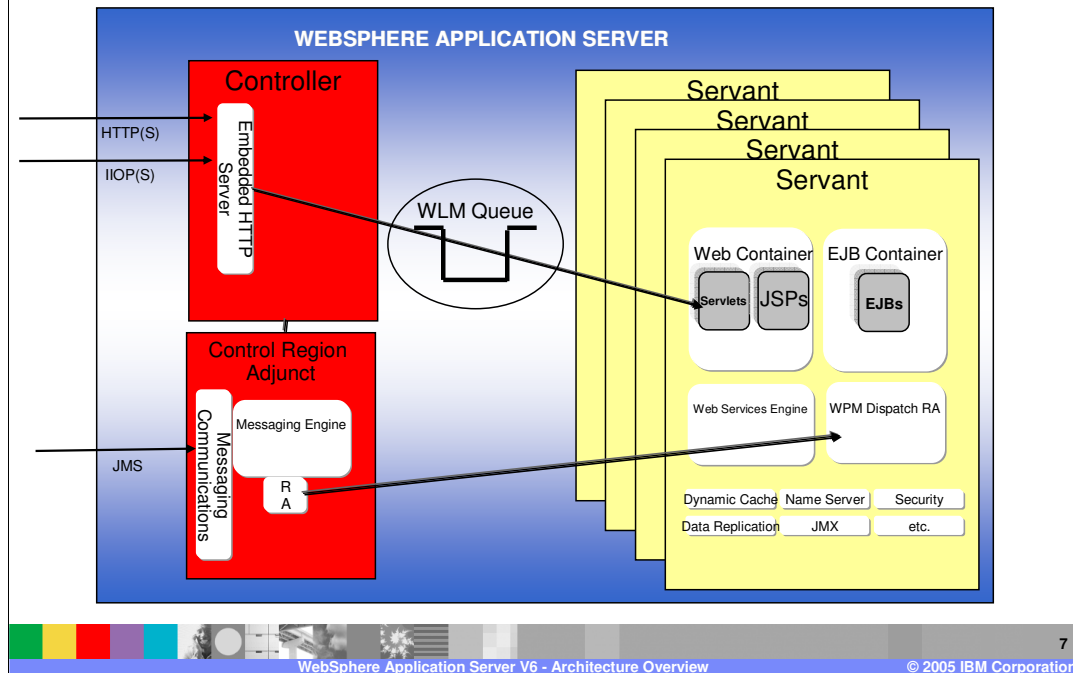
Notice that there is a new box called the Control Region Adjunct, or CRA. This is a new address space in V6.0.1 that works in conjunction with the Controller as the communications endpoint for messaging. The Controller is responsible for IIOP and HTTP communications. Unlike the Controller which is always there, the Control Region Adjunct is only present when the a server becomes a bus member and has a messaging engine created. The messaging engine runs in the CRA, communicating with the Resource Adapter (RA) shown. The RA is really split across the two processes where the WPM Dispatch RA is where the MDBs eventually get dispatched.

Most of the components are present in the Servant Region. This is where the application code is going to run.

A cell is more than just Server Regions. On the next slide, you will explore other parts of the cell.

z/OS Stand-Alone Application Server

Cell

Node

Daemon

Server

Controller

Control Region
Adjunct

Servant
Servant
Servant
Servant

8

WebSphere Application Server V6 - Architecture Overview   © 2005 IBM Corporation
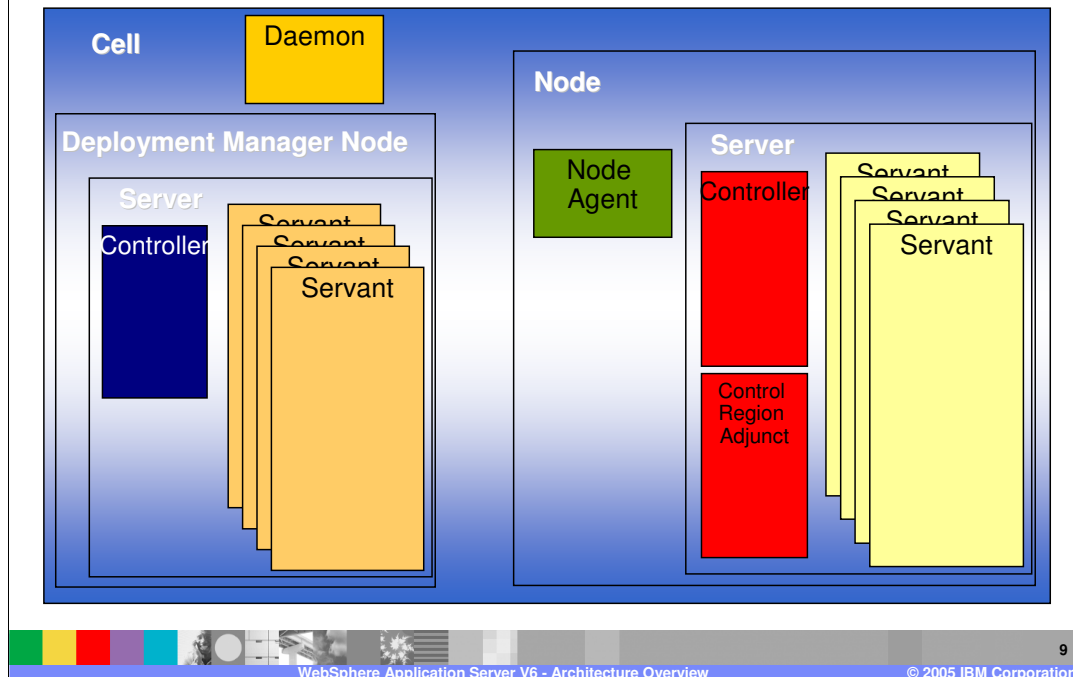
The first entity you will probably configure is a Stand-Alone Application Server. Notice a new box labeled the Daemon. This is a single address space and will serve as the Location Service Daemon. It will be started automatically when your server is started. There will be one of these per cell per LPAR. You will see this in more detail in the Network Deployment configuration. The idea of a cell is not that interesting in the Stand-Alone Application Server case, but you can see where the multi-address space server fits into the picture. The Administrative application will be running along with your own applications in the Server pictured in this slide.

Next, look at how the picture changes in the Network Deployment configuration.

z/OS Network Deployment Configuration

Cell

Daemon

Node

Deployment Manager Node

Server

Controller

Servant
Servant
Servant
Servant

Node Agent

Server

Controller

Control Region Adjunct

Servant
Servant
Servant
Servant

There are a couple of new things on this slide. Notice the new box, the Node Agent. This is another single address space and is used to communicate with the Deployment Manager to manage the application servers in the node. Notice also that there are now 2 nodes in the cell. The Deployment Manager node is a special purpose node where the Administrative Console application will run. No user applications will run in the Deployment Manager node but it has the same server structure as the base application server node, minus the Control Region Adjunct address space. WLM will start servant regions as needed to service the requests coming into it from the nodes in the cell.   The node on the left has been 'federated' into the cell with the Deployment Manager using the addNode command.

WebSphere Topology
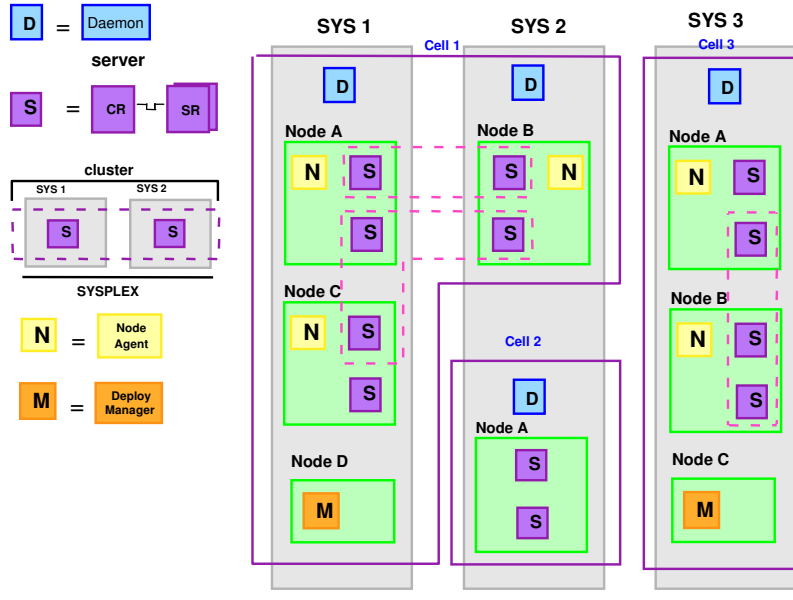
This slide shows how cells can span LPARs. Note that while cells can span LPARs, they must be contained within a sysplex. It also introduces the idea of clusters where you can install applications to achieve high availability of your applications. Cell1 spans SYS1 and SYS2 and also has a cluster defined that includes a server from NodeA and another from NodeB. By creating a cluster across LPARs, your application will still be available if one of the LPARs goes down for any reason.

There can be one Daemon per cell per LPAR. This is illustrated on this slide. Each of the LPARs in cell1 has its own Daemon. Each LPAR that participates in the cell will have one. Cell3 is fully contained within SYS3 and has 2 nodes defined on the LPAR. Finally, Cell2 is a stand-alone server that has not been federated into a Deployment Manager cell yet.

The last section is the Summary

Summary

- Introduced some architecture specifics of WebSphere Application Server for z/OS V6

- Introduced the various address spaces that represent WebSphere on z/OS

In summary, this presentation has covered some of the specifics of the Application Server architecture on z/OS. It showed the various address spaces that are integral to the WebSphere Application Server on z/OS, and how they interact. Most of the time when talking about the application server, these entities aren't shown. Realize that they are there 'behind the scenes' though!

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