



# z/OS Introduction and Workshop

## WebSphere Application Server

# Unit Objectives

After completing this unit, you should be able to:

- Describe WebSphere Application Server
- Be familiar with the WAS Administration Console

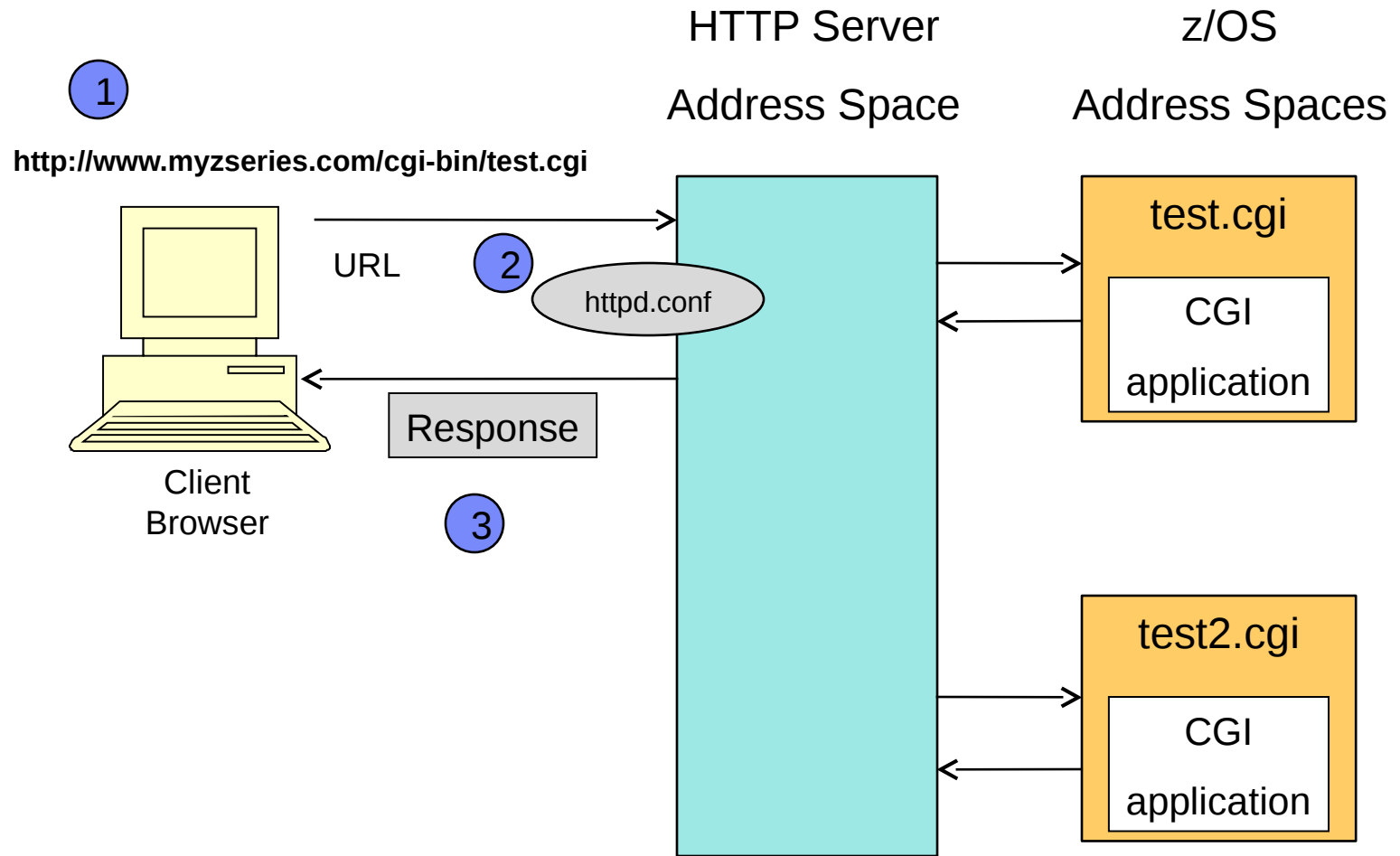
# Terminology

- **WebSphere Application Server**
  - Is the name of the product
  - Also used to refer to the actual process that runs the application code
- **Server**
  - This is the component that has the Java Virtual Machine (JVM)
  - This is where the application programs run
- **Cluster**
  - Logical term used to describe a group of servers

## Terminology continued....

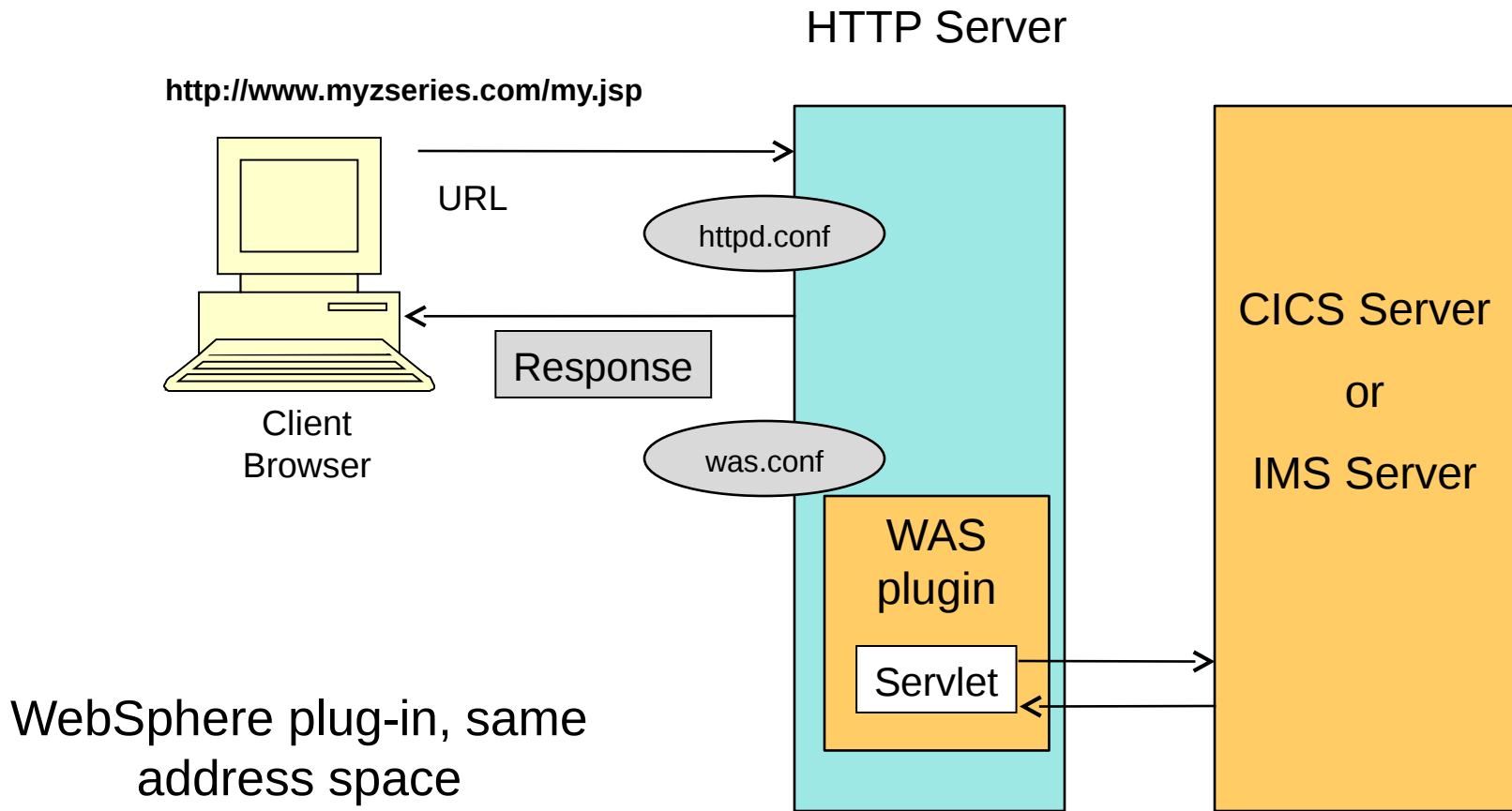
- **Node**
  - Logical term to describe a single machine that runs one or more servers
- **Cell**
  - Logical term that covers the complete WebSphere configuration
- **Daemon**
  - Separate process required on z/OS
  - Small component, needs little attention

# WAS – Dynamic Web Pages – HTTP Server

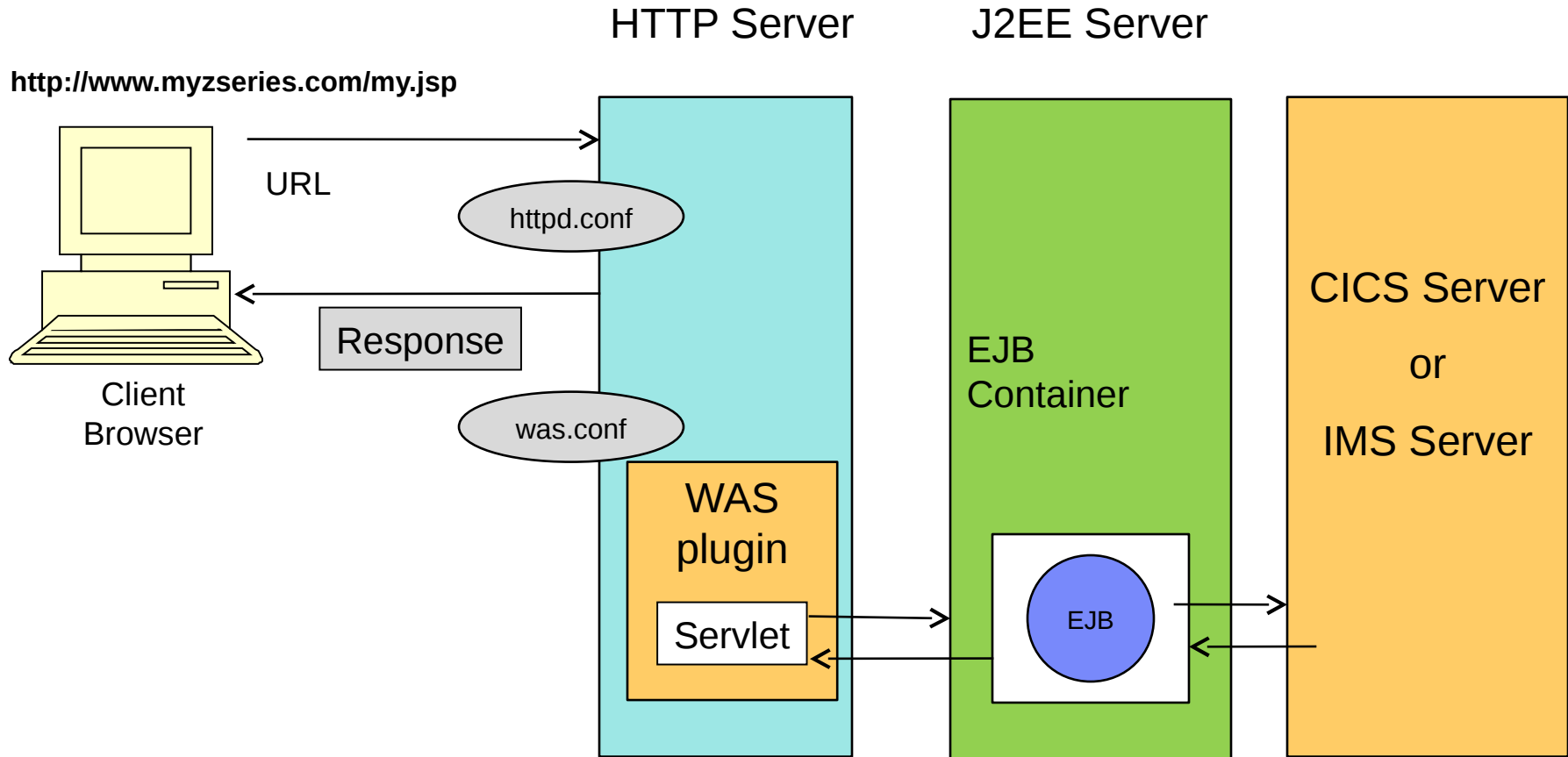


CGI – Common Gateway Interface

# WAS – Dynamic Web Pages – Interaction with WebSphere

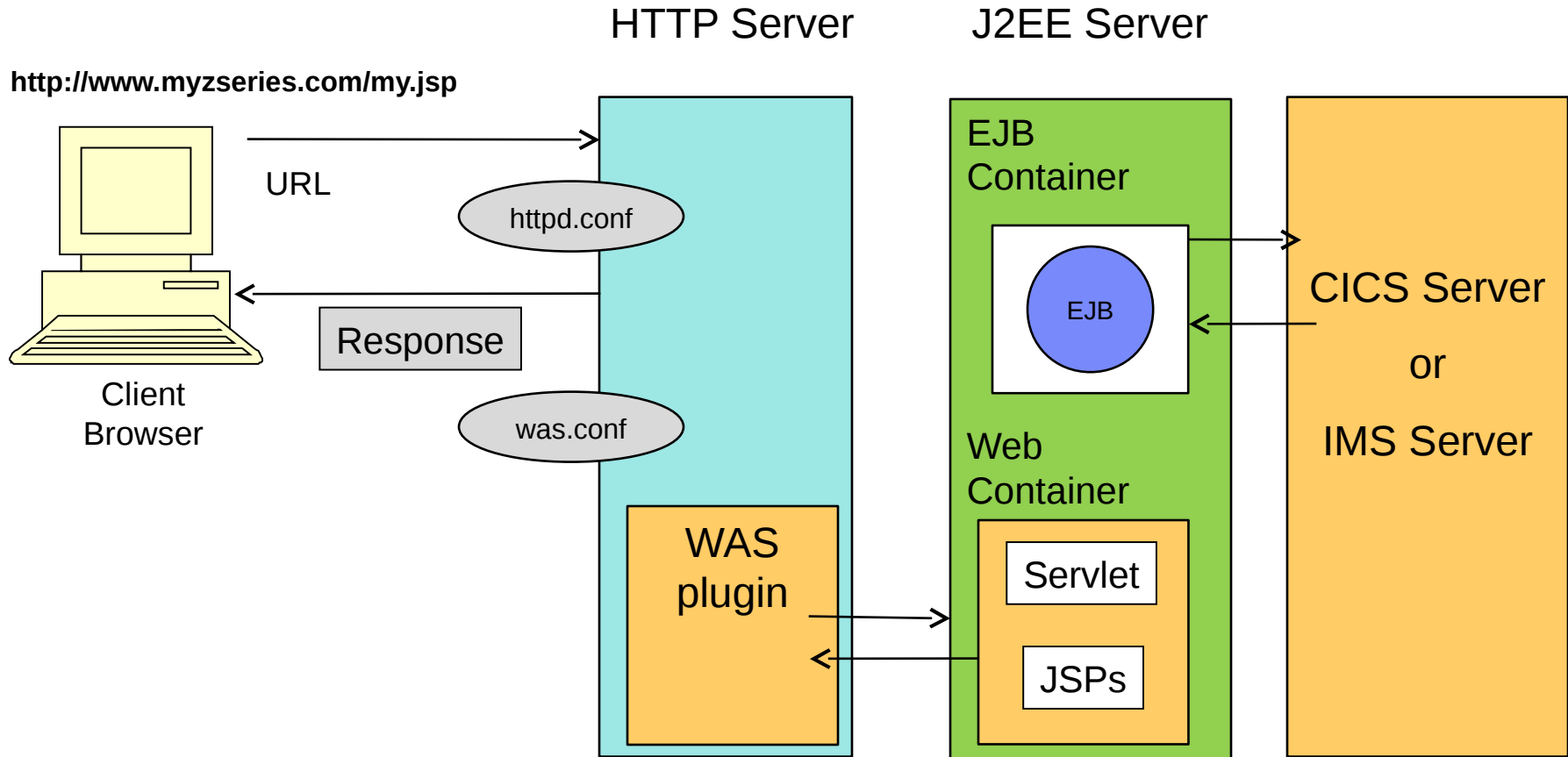


# WAS – Dynamic Web Pages – Interaction with WebSphere



Web container inside HTTP Server, separate EJB container

# WAS – Dynamic Web Pages – Interaction with WebSphere



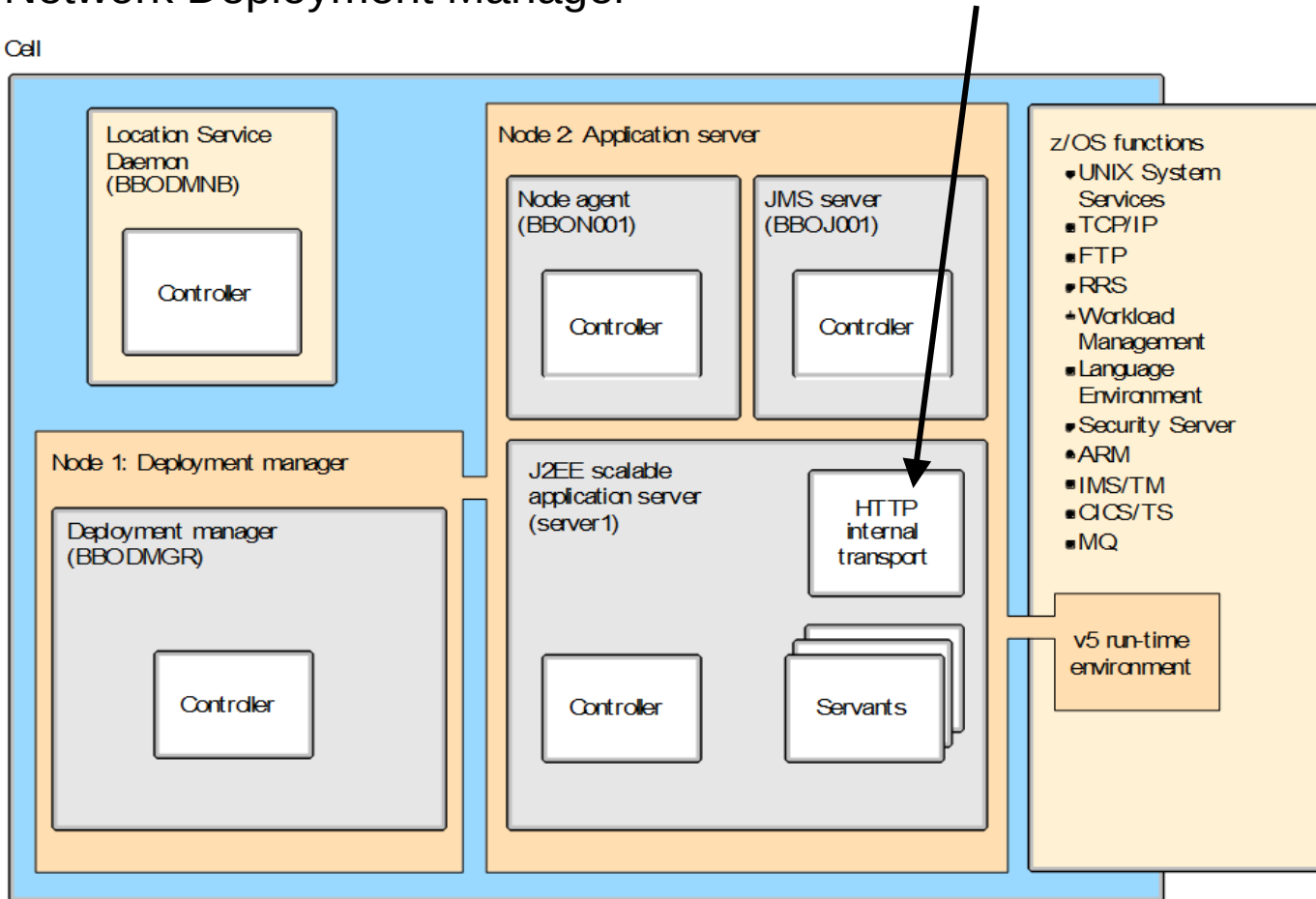
Separate J2EE server with both Web container and EJB container



# WebSphere Application Server Configuration on z/OS

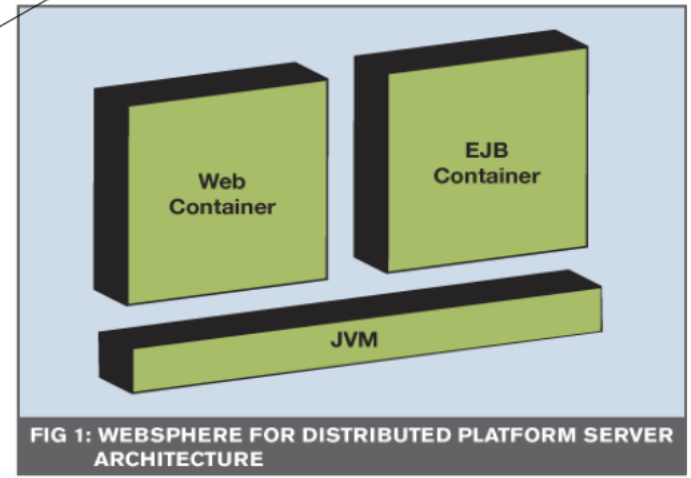
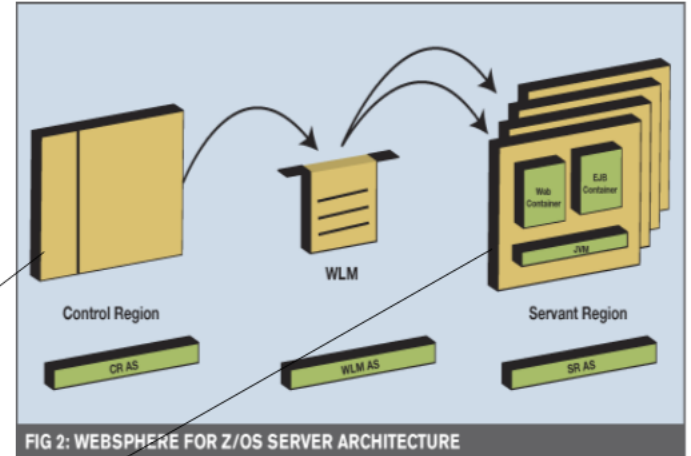
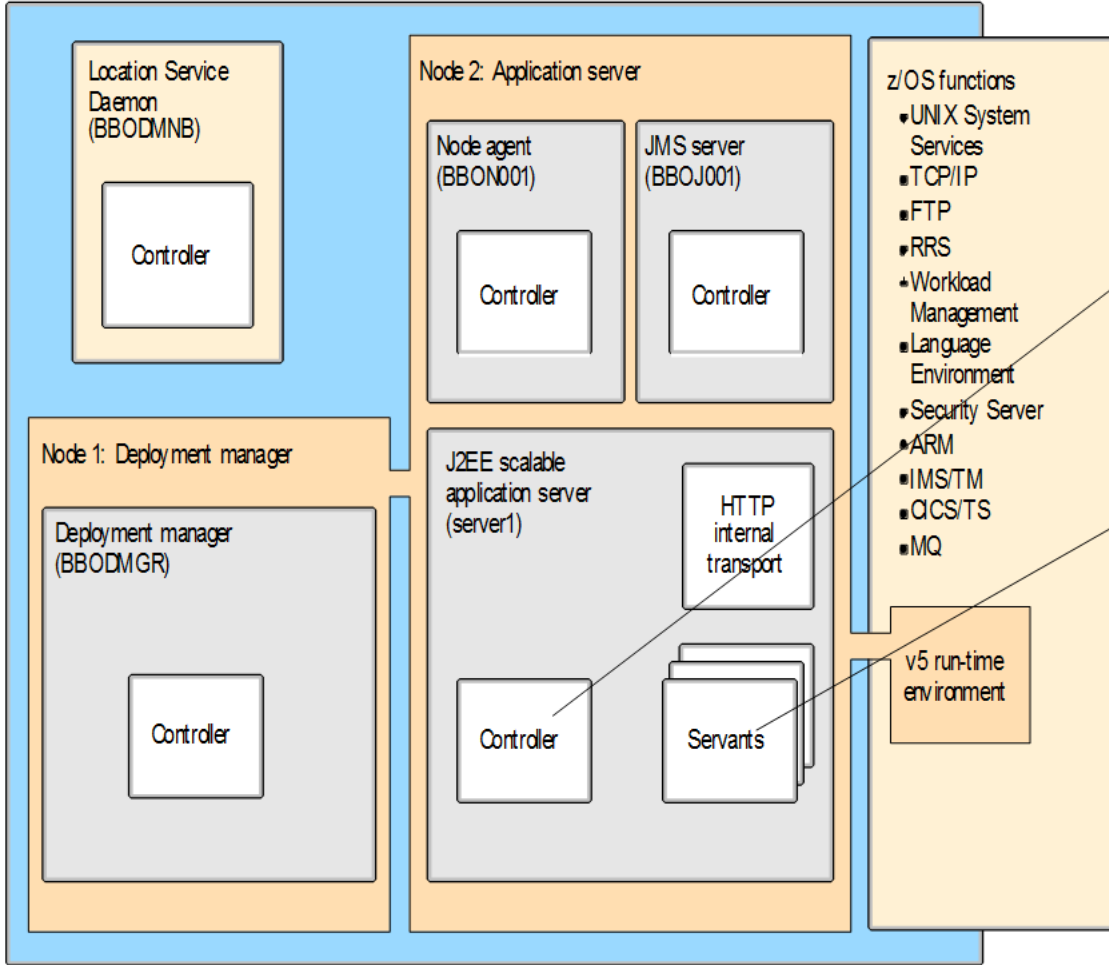
## Network Deployment Manager

Cell



# WebSphere Application Server Configuration on z/OS

Cell



## Work Load Management (WLM)

- A base component of the operating system enables prioritization and balancing of work according to customer selected 'goals' or business policies.
- With workload management, you define performance goals and assign a business importance to each goal.
  - Goals:
    - Response-Time
    - Execution Velocity
    - Discretionary
  - Importance level (1-5)
- Goal is 1 or below (meeting goals)
  - All is well
- Goal is above 1 (failing to meet goals)
  - Revise performance goals or increase capacity

### Starting WebSphere Application Server V7

```
START XSDCR,JOBNAME=XSDMGR,ENV=XSCCELL.XSDMNODE.XSDMGR  
START XSACR1,JOBNAME=XSAGNT1,ENV=XSCCELL.XSNODE1.XSAGNT1
```

url:9505/ibm/console

**P XSDEM N** <<< Stop WebSphere Application Server V7

### Starting WebSphere Application Server V6.1

```
START XBMGCR,JOBNAME=XBDMGR,ENV=XBCELL.XBDMNODE.XBDMGR  
START XBACR1,JOBNAME=XBAGNT1,ENV=XBCELL.XBNODE1.XBAGNT1
```

url:8518/ibm/console

**P XBDEM N** <<< Stop WebSphere Application Server V6.1

### Post Installation Customization

XSCCELL.\* for WAS V7

XBCELL.\* for WAS V6.1

**\*Note: Above details apply only to class lab system**

[START XSDCR,JOBNAME=XSDMGR,ENV=XSCCELL.XSDMNODE.XSDMGR](#)

**\$HASP373 XSDMGR STARTED**

**BBOO0001I WEBSphere FOR Z/OS CONTROL PROCESS**

**XSCCELL/XSDMNODE/XSDMGR/XSDMGR IS STARTING.**

**BBOO0238I WEBSphere FOR Z/OS CONTROL PROCESS xscell/xsdmnode/dmgr IS STARTING.**

[START XSDEMNI,JOBNAME=XSDEMNI,ENV=XSCCELL.XSCCELL.S0W1,REUSASID=YES](#)

**\$HASP373 XSDEMNI STARTED**

**BBOO0007I WEBSphere FOR Z/OS DAEMON XSCCELL/XSDMNODE/XSCCELL/S0W1 IS STARTING.**

**BBOO0237I WEBSphere FOR Z/OS DAEMON xscell/xsdmnode/S0W1 IS STARTING.**

**BBOO0222I: WSVR0001I: Server CONTROL PROCESS dmgr open for e-business**

**BBOO0019I INITIALIZATION COMPLETE FOR WEBSphere FOR Z/OS CONTROL PROCESS XSDMGR.**

[START XSACR1,JOBNAME=XSAGNT1,ENV=XSCCELL.XSNODE1.XSAGNT1](#)

**\$HASP373 XSAGNT1 STARTED**

**BBOO0001I WEBSphere FOR Z/OS CONTROL PROCESS XSCCELL/XSNODE1/XSAGNT1/XSAGNT1 IS STARTING.**

**BBOO0238I WEBSphere FOR Z/OS CONTROL PROCESS xscell/xsnode1/nodeagent IS STARTING.**

**BBOO0222I: WSVR0001I: Server CONTROL PROCESS nodeagent open for e-business**

**BBOO0019I INITIALIZATION COMPLETE FOR WEBSphere FOR Z/OS CONTROL PROCESS XSAGNT1.**

**ADMS0003I: The configuration synchronization completed successfully.**

**BBOO0222I: ADMS0003I: The configuration synchronization completed successfully.**

# Address Spaces

**SDSF STATUS DISPLAY ALL CLASSES**

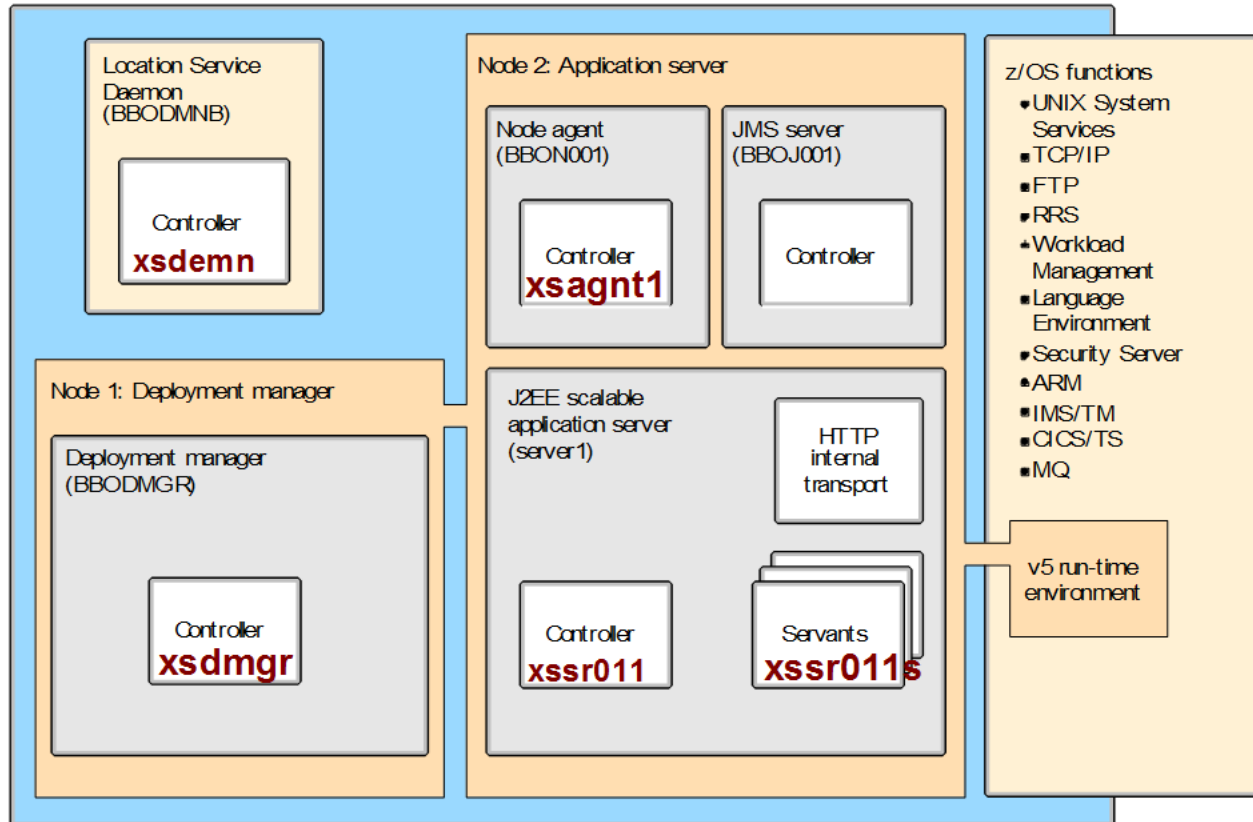
**PREFIX=X\* DEST=(ALL) OWNER=\***

<b>NP</b>	<b>JOBNAME</b>	<b>JobID</b>	<b>Owner</b>	<b>Queue</b>
	<b>XSAGNT1</b>	<b>STC01603</b>	<b>XSACRU</b>	<b>EXECUTION</b>
	<b>XSDMGRS</b>	<b>STC01602</b>	<b>XSASRU</b>	<b>EXECUTION</b>
	<b>XSDEMNI</b>	<b>STC01601</b>	<b>XSACRU</b>	<b>EXECUTION</b>
	<b>XSDMGR</b>	<b>STC01599</b>	<b>XSACRU</b>	<b>EXECUTION</b>

# WAS Configuration on z/OS – Network Deployment Manager

## Network Deployment Manager

Cell



# z/OS and Distributed – which Admin GUI is which?

Integrated Solutions Console Welcome wzadmin

z/OS

In other words – same look and feel

Suite Name	Version
<a href="#">WebSphere Application Server</a>	6.1.0.12

Integrated Solutions Console Welcome ed

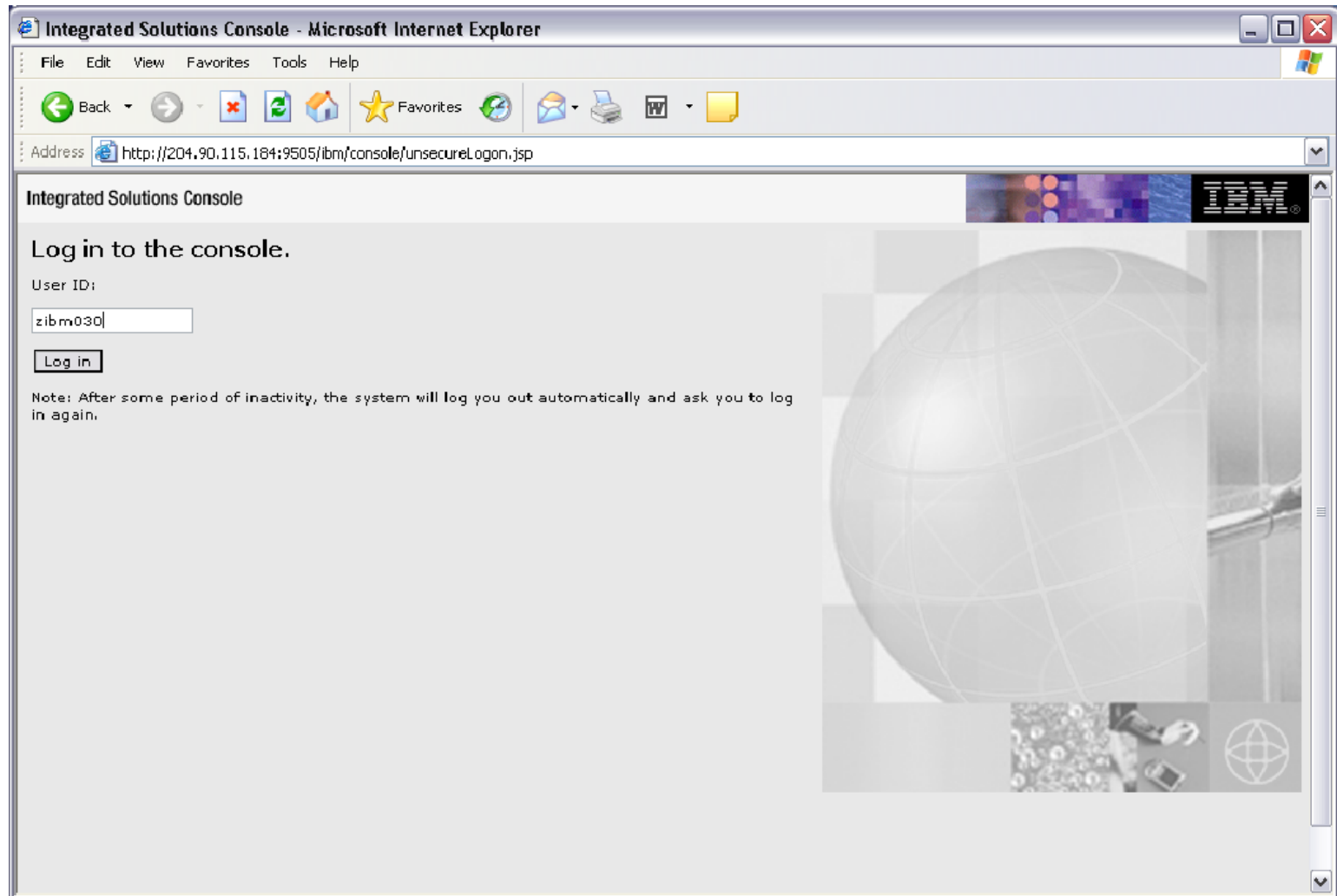
Distributed

In other words – same look and feel

Suite Name	Version
<a href="#">WebSphere Application Server</a>	6.1.0.9



# Administration Console



# Administration Console

Integrated Solutions Console - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://204.90.115.184:9505/ibm/console/login.do>

Integrated Solutions Console **Welcome zibm030** [Help](#) | [Logout](#)

View: All tasks

- Welcome
- Guided Activities
- Servers
- Applications
- Services
- Resources
- Security
- Environment
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting
- Service integration
- UDDI

Welcome

Integrated Solutions Console provides a common administrative console for multiple products. The table lists the product suites that can be administered through this installation. Select a product suite to view more information.

Suite Name	Version
<a href="#">WebSphere Application Server</a>	7.0.0.8

About this Integrated Solutions Console

Integrated Solutions Console, 7.0.0.8  
 Build Number: cf080948.14  
 Build Date: 12/1/09

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# Administration Console

Integrated Solutions Console - Microsoft Internet Explorer

Address: <http://204.90.115.184:9505/ibm/console/login.do>

Integrated Solutions Console Welcome zibm030 Help | Logout

Cell=xscell, Profile=default

View: All tasks

- Welcome
- Guided Activities
- 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
- Services
- Resources
- Security
- Environment
- System administration
- Users and Groups
- Monitoring and Tuning

Application servers

**Application servers**

Use this page to view a list of the application servers in your environment and the status of each of these servers. You can also use this page to change the status of a specific application server.

Preferences

New Delete Templates... Start Stop Restart ImmediateStop Terminate

Select	Name	Node	Host Name	Version	Cluster Name	Status
<input checked="" type="checkbox"/>	<a href="#">xssr011</a>	xsnode1	s0w1.dal-ebis.ihost.com	ND 7.0.0.8		

You can administer the following resources:

Total 1

Field help  
For field help info select a field label marker when the cursor is displayed

Page help  
[More information this page](#)

Command Assist  
[View administrative scripting command action](#)

**START XSACR1,AMODE=64,JOBNAME=XSSR011,ENV=XSCCELL.XSNODE1.XSSR011,  
REUSASID=YES,PARMS='-Dwas.status.socket=1082'**

\$HASP373 XSSR011 STARTED

BBOO0001I WEBSPPHERE FOR Z/OS CONTROL PROCESS XSCCELL/XSNODE1/XSSR011/XSSR011 IS STARTING.

BBOO0238I WEBSPPHERE FOR Z/OS CONTROL PROCESS xscell/xsnode1/xssr011 IS STARTING.

BBOO0222I: WSVR0001I: Server CONTROL PROCESS xssr011 open for e-business

BBOO0019I INITIALIZATION COMPLETE FOR WEBSPPHERE FOR Z/OS CONTROL PROCESS XSSR011.

BBOO0222I: ADMS0003I: The configuration synchronization completed successfully.

# Administration Console

Integrated Solutions Console - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address: http://204.90.115.184:9505/ibm/console/login.do

Integrated Solutions Console Welcome paul Help | Logout

View: All tasks

Cell=xscell, Profile=default Close page

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Use this page to view a list of the application servers in your environment and the status of each of these servers. You can also use this page to change the status of a specific application server.

Preferences

New Delete Templates... Start Stop Restart ImmediateStop Terminate

Select	Name	Node	Host Name	Version	Cluster Name	Status
<input type="checkbox"/>	<a href="#">xssr011</a>	xsnode1	sOw1.dal-ebis.ihost.com	ND 7.0.0.8		

Total 1

**Help**

**Field help**  
For field help info select a field label marker when the cursor is displayed

**Page help**  
[More information this page](#)

**Command Assist**  
[View administrative scripting command action](#)

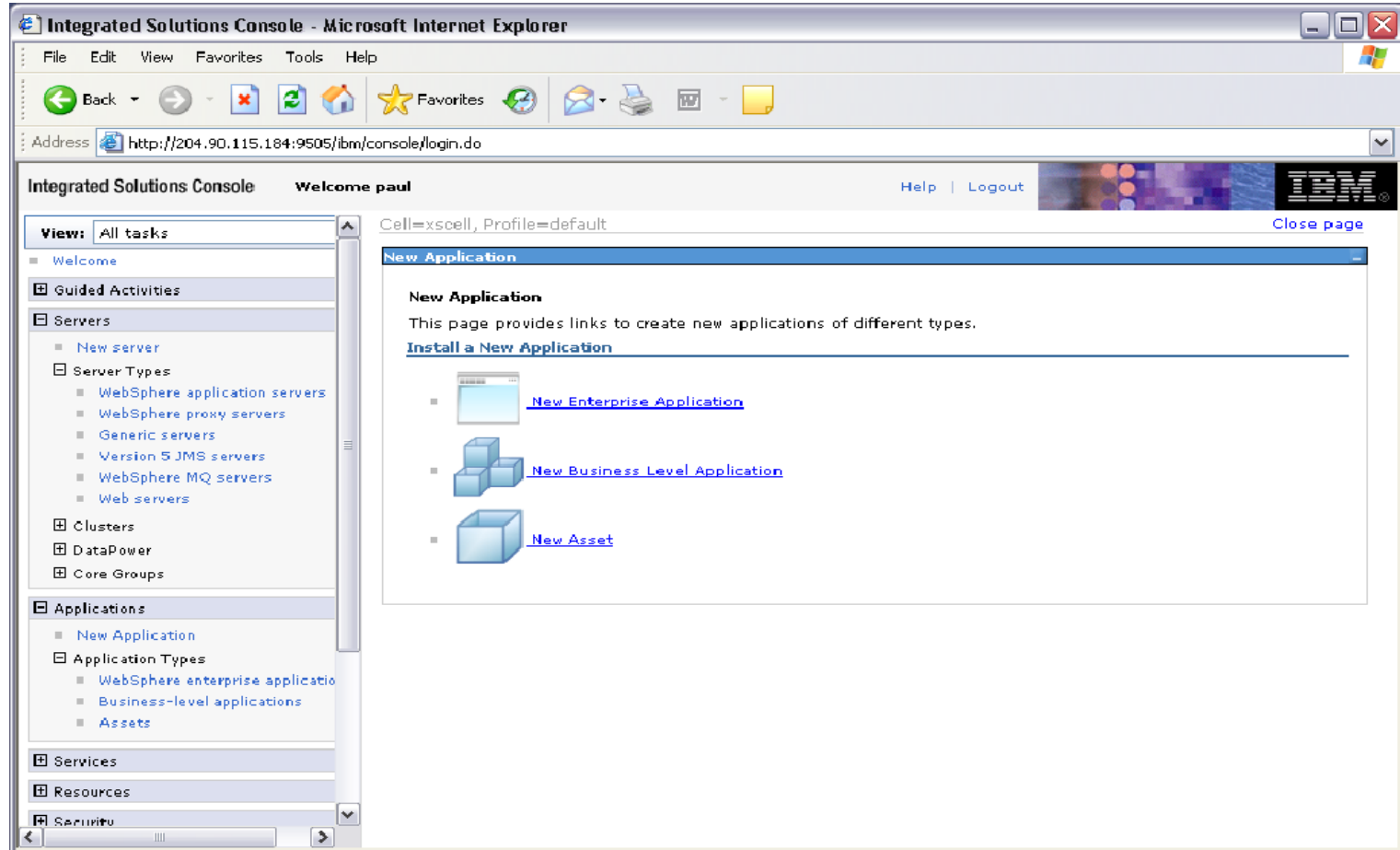
# Address Spaces

## **SDSF STATUS DISPLAY ALL CLASSES**

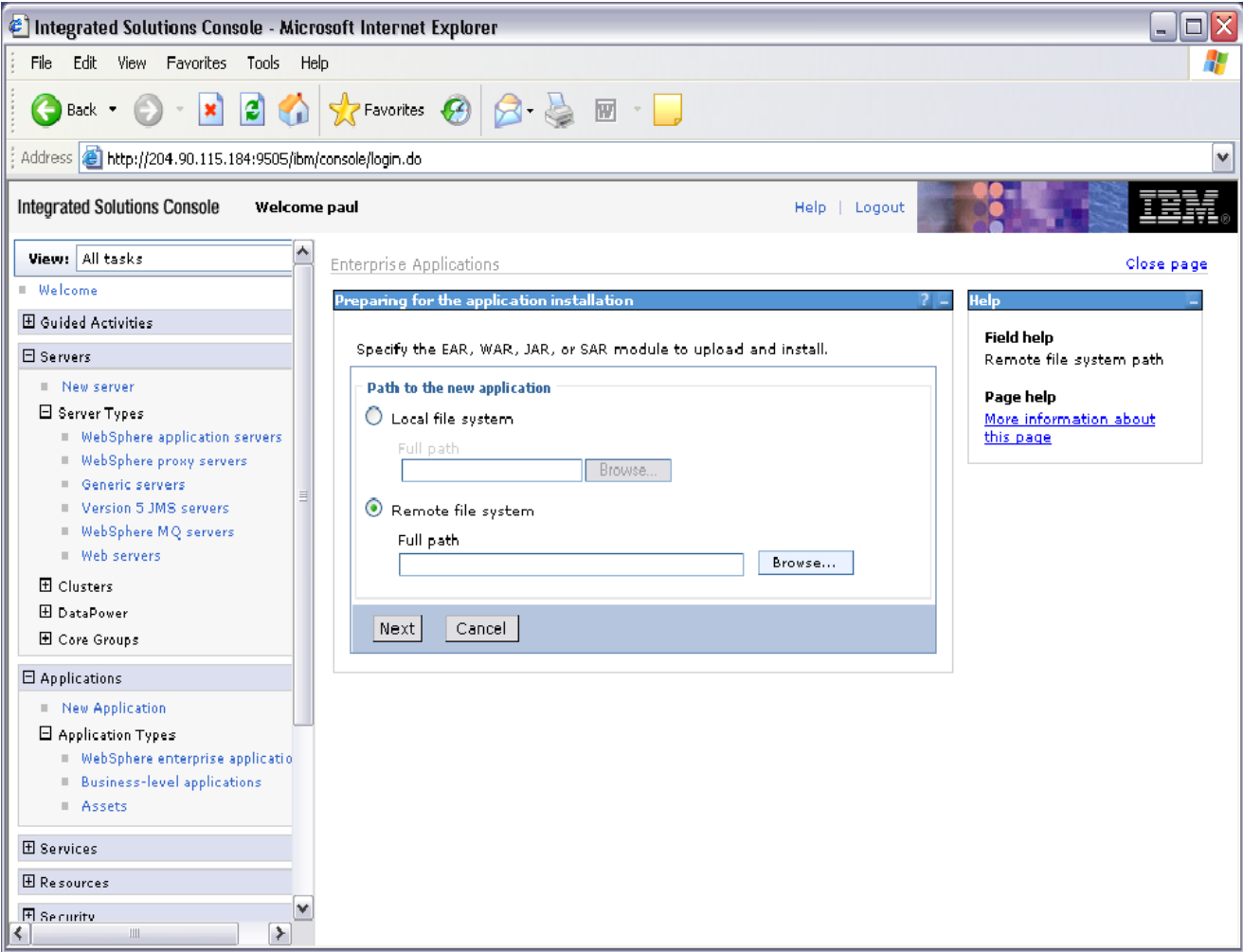
**PREFIX=X\* DEST=(ALL) OWNER=\***

<b>NP</b>	<b>JOBNAME</b>	<b>JobID</b>	<b>Owner</b>	<b>Queue</b>
	<b>XSSR011S</b>	<b>STC01612</b>	<b>XSASRU</b>	<b>EXECUTION</b>
	<b>XSSR011</b>	<b>STC01608</b>	<b>XSACRU</b>	<b>EXECUTION</b>
	<b>XSAGNT1</b>	<b>STC01603</b>	<b>XSACRU</b>	<b>EXECUTION</b>
	<b>XSDMGRS</b>	<b>STC01602</b>	<b>XSASRU</b>	<b>EXECUTION</b>
	<b>XSDEMN</b>	<b>STC01601</b>	<b>XSACRU</b>	<b>EXECUTION</b>
	<b>XSDMGR</b>	<b>STC01599</b>	<b>XSACRU</b>	<b>EXECUTION</b>

# Administration Console

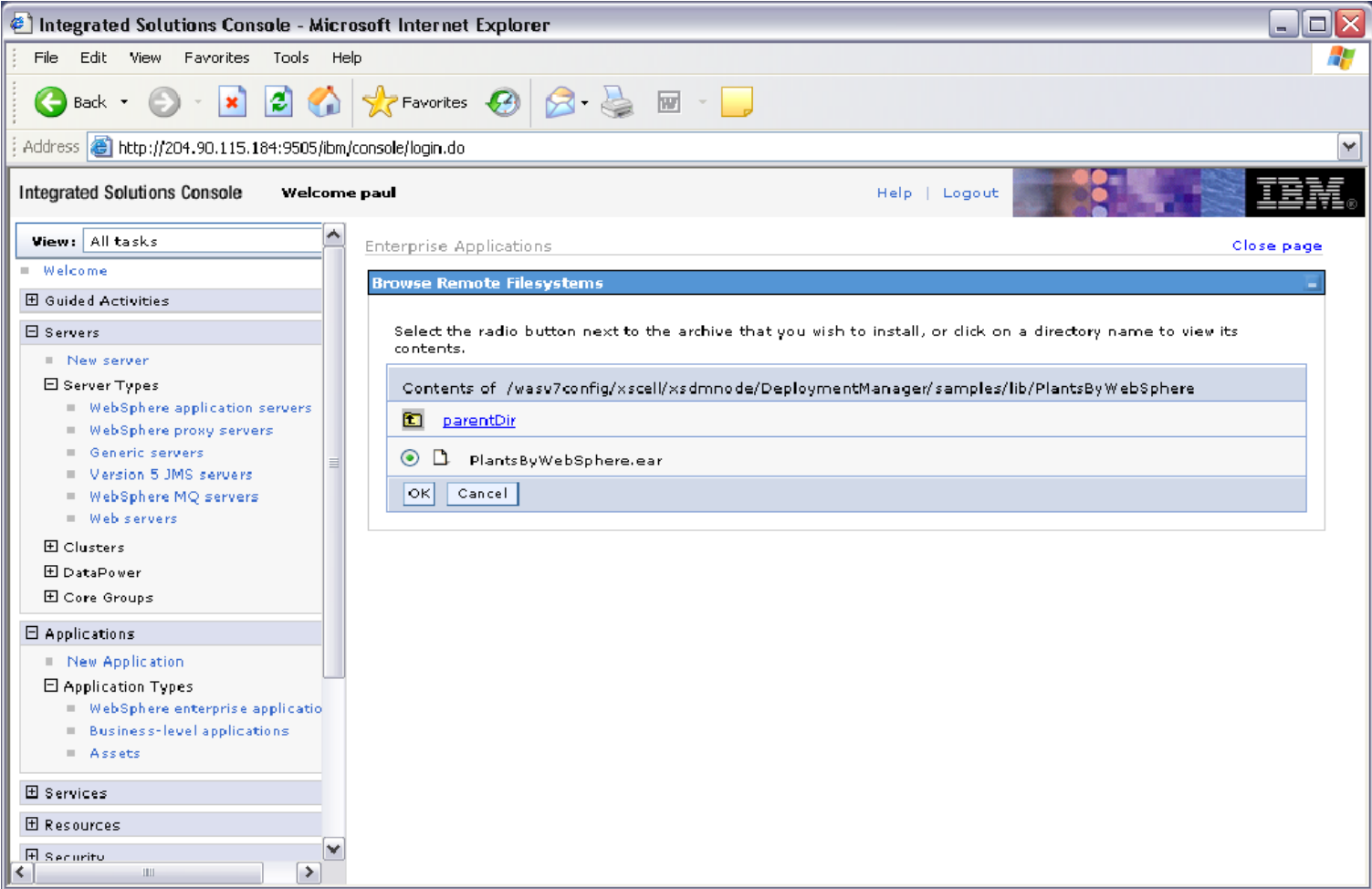


# Administration Console





# Administration Console



## Documentation & Professional Manuals

- **WAS Education Assistant**
- **WAS IBM Redbooks**
- **WAS Manuals**
- **WAS General Information**

# Unit summary

## Having completed this unit, you should be able to:

- Describe WebSphere Application Server
- Be familiar with the WAS Administration Console

# **WebSphere Application Server**

## **Distributed vs. z/OS**

### **Additional material**

# Similarities

- **Code base**
  - Since V6.0, code base for WebSphere on z/OS same as used on distributed
    - Which is since Mar 2005
  - Includes
    - Portal
    - Process Server
    - etc
  - Has extra code to take advantage of z/OS
- **Things that are the same:**
  - J2EE Specification support
  - Terminology
  - Product and maintenance release dates
  - Administration

# J2EE Specification support

- **J2EE Applications**

- Written to the specification
- Will run unchanged in WAS on z/OS
  - No need to recompile
  - IBM Techdoc: Moving Applications to WebSphere on z/OS
    - ❖ <http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101093>

# Maintenance levels

- **WebSphere on z/OS**
  - Uses same maintenance nomenclature
- **From log on z/OS**
  - BBOM0007I CURRENT CB SERVICE LEVEL IS build level [6.1.0.12](#) ([cf120738.13](#)) release WAS61.ZNATV date 09/25/07 00:03:32.
- **From log on Windows**
  - WebSphere Platform 6.1 [BASE [6.1.0.19](#) [cf190836.04](#)]

# z/OS and Distributed – which Admin GUI is which?

Integrated Solutions Console Welcome wzadmin

z/OS

View: All tasks

- Welcome
- Guided Activities
- Servers
  - Application servers
  - Generic servers
  - Proxy Servers
  - Version 5 JMS servers
  - Web servers
  - Clusters

Welcome

Integrated Solutions Console provides a common administration console for multiple products. The table lists the product suites that can be administered through this installation. Select a product suite to view more information.

Suite Name	Version
<a href="#">WebSphere Application Server</a>	6.1.0.12

About this Integrated Solutions Console

Integrated Solutions Console,  
6.1.0.12  
Build Number: cf120738.13  
Build Date: 9/25/07

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In other words – same look and feel

Integrated Solutions Console Welcome ed

Distributed

View: All tasks

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  - Application servers
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<a href="#">WebSphere Application Server</a>	6.1.0.9

About this Integrated Solutions Console

Integrated Solutions Console,  
6.1.0.9  
Build Number: cf90722.41  
Build Date: 6/9/07

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In other words – same look and feel



# wsadmin on z/OS and distributed

```
WZADMIN @ SC55:/WebSphereEd/wzcell/dmgr/DeploymentManager/profiles/default/bin> ./wsadmin.sh  
-port 7010 -user wsadmin -password xyz -lang jython
```

```
WASX7209I: Connected to process "dmgr" on node wzdnode using SOAP connector; The type of process  
is: DeploymentManager
```

```
WASX7031I: For help, enter: "print Help.help()"
```

```
wsadmin>AdminControl.completeObjectName("type=DeploymentManager,*")
```

```
'WebSphere:name=DeploymentManager,process=dmgr,platform=common,node=wzdnode,diagnosticProvi  
der=true,version=6.1.0.12,type=DeploymentManager,mbeanIdentifier=DeploymentManager,cell=wzcell,spec  
=1.0'
```

```
C:\zProducts\was61\AppServer\profiles\Dmgr01\bin>wsadmin -lang jython
```

```
WASX7209I: Connected to process "dmgr" on node Dmgr01 using SOAP connector; The type of process  
is: DeploymentManager
```

```
WASX7031I: For help, enter: "print Help.help()"
```

```
wsadmin>AdminControl.completeObjectName("type=DeploymentManager,*")
```

```
'WebSphere:name=DeploymentManager,process=dmgr,platform=common,node=Dmgr01,diagnosticProvid  
er=true,version=6.1.0.9,type=DeploymentManager,mbeanIdentifier=DeploymentManager,cell=Dmgr01,spec  
=1.0'
```

# Tracing via Admin GUI – z/OS and Distributed

https://wtsc55.itso.ibm.com:7019/ibm/console/login.do?action=secure

wzadmin **z/OS** Help

Application servers

[Application servers](#) > [wzsr01a](#) > [Diagnostic Trace Service](#)  
**Detail Levels**

Use log levels to control which events are processed by J Components to specify a log detail level for individual components. Groups to specify a log detail level for a predefined group. Click a component or group name to select a log detail level. Levels are cumulative; a level near the top of the list includes subsequent levels.

Configuration **Runtime**

**General Properties**

Change Log Detail Levels

<b>Components</b>	*=info
Groups	

- \* [All Components]
- ConfigError
- ConnLeakLogic

http://192.168.1.3:9063/ibm/console/login.do

ed **Distributed** Help

Application servers

Application servers

[Application servers](#) > [server-1](#) > [Change Log Detail Level](#)  
**Detail Levels**

Use log levels to control which events are processed by J Components to specify a log detail level for individual components. Groups to specify a log detail level for a predefined group. Click a component or group name to select a log detail level. Levels are cumulative; a level near the top of the list includes subsequent levels.

Configuration **Runtime**

**General Properties**

Change Log Detail Levels

<b>Components</b>	*=info
Groups	

- \* [All Components]
- ConfigError
- JaasWCCMHelper

# Trace via wsadmin on z/OS and distributed

```
WASX7209I: Connected to process "dmgr" on node wzdmmode using SOAP connector; The type of process is: DeploymentManager
```

**z/OS**

```
WASX7031I: For help, enter: "print Help.help()"
```

```
wsadmin>ts = AdminControl.completeObjectName('type=TraceService,process=wzsr01a,*')
```

```
wsadmin>AdminControl.setAttribute(ts, 'traceSpecification', 'com.ibm.*=all=enabled')
```

```
BossLog: { 0096} 2008/09/25 07:10:48.934 01 SYSTEM=SC55 SERVER=WZSR01A PID=0X02010237  
./bborjtr.cpp+440412145 ... BBOO0222I: TRAS0018I: The trace state has changed. The new trace state is  
*=info:com.ibm.*=all.
```

```
WASX7209I: Connected to process "dmgr" on node Dmgr01 using SOAP connector; The type of process is:  
DeploymentManager
```

**Distributed**

```
WASX7031I: For help, enter: "print Help.help()"
```

```
wsadmin>ts = AdminControl.completeObjectName('type=TraceService,process=server-1,*')
```

```
wsadmin>AdminControl.setAttribute(ts, 'traceSpecification', 'com.ibm.*=all=enabled')
```

```
[25/09/08 17:17:05:099 EST] 0000002c ManagerAdmin I
```

```
TRAS0018I: The trace state has changed. The new trace state is *=info:com.ibm.*=all.
```

## In short...

- **From an administration point of view**
  - Lots of similarities
    - Admin Gui – same
    - wsadmin – same
    - Terminology - same
- **If you have skills as an administrator for WebSphere on Windows or Unix**
  - Then those same skills transfer seamlessly to WebSphere on z/OS

# So what is different ?

- **Working on z/OS**
- **Information about running WAS processes**
- **Logs**
- **Threads in the JVM**
- **Installation**
- **Configuration**

# Working on z/OS

- **Windows**
  - Has its user interface – the GUI we’ve all grown to love ;-)
- **Unix**
  - Has its user interface
  - Either command line or GUI
- **z/OS**
  - Has its own user interface as well
  - Several in fact
    - TSO, ISPF
    - Telnet
    - Rational Application Developer for z
- **Bottom line**
  - The WebSphere administrator for WebSphere on z/OS
    - needs to know some TSO, ISPF basics
    - But does not need to be a z/OS guru

# Telnet into z/OS

```
C:\ Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Administrator>cd..
C:\Documents and Settings>cd..
C:\>telnet wtsc55oe.itso.ibm.com
```



```
C:\ Telnet wtsc55oe.itso.ibm.com
EZYTE27I login: edmcar
EZYTE28I edmcar Password:
IBM
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(C) Copyright Mortice Kern Systems, Inc., 1985, 1996.
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EDMCAR @ SC55:/u/edmcar>ls -lrt
total 1996
drwxr-xr-x    2 HAIMO    SYS1          256 Jul  7  2004 wasv5Config
-rwxr-xr-x    1 HAIMO    SYS1        422003 Sep 12  2004 messagingImpl.jar
-rw-r-----  1 HAIMO    SYS1         2507 Jun 10  2005 Define-CICS.jacl
```

# What WebSphere processes are running?

Windows  
Task Manager

Image Name	User Name	CPU	Mem Usage
ISSVC.exe	SYSTEM	00	64 K
java.exe	SYSTEM	00	16,624 K
java.exe	e354457	00	99,136 K
java.exe	e354457	00	118,596 K
java.exe	e354457	00	217,104 K
java.exe	e354457	00	157,072 K
javaw.exe	SYSTEM	00	444 K

Unix  
top

Q: Which java process is the DMGR and which is the node agent?

Q: Can you monitor WebSphere processes on other machines?

```
top - 03:47:30 up
Tasks: 53 total,
Cpu(s): 3.0%us, 0.0%sy, 0.0%ni, 70.0%id, 0.4%wa, 0.0%hi, 0.0%st, 0.0%rs
Mem: 6171308k total, 3216564k used, 2954744k free, 170640k buffers
Swap: 0k total, 0k used, 0k free, 2571900k cached
```

PID	USER	PR	NI	UIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
7106	root	25	0	475m	204m	5452	S	4	3.4	1:06.66	java
7424	root	25	0	437m	134m	5472	S	1	2.2	0:52.55	java
1	root	16	0	848	312	264	S	0	0.0	0:18.99	init
2	root	RT	0	0	0	0	S	0	0.0	0:00.02	migration/0
3	root	34	19	0	0	0	S	0	0.0	0:00.00	ksoftirqd/0



# On z/OS - the view from SDSF

	JOBNAME	StepName	ProcStep	JobID	Owner	Real	
Daemon	WZDEMNI	WZDEMNI	BBODAEMN	STC07908	WZDMN	6785	
<b>Via SDSF</b> - with a good naming convention, able to determine which STC is DMGR etc - Able to view WebSphere STCs running on any LPAR in the Sysplex							
Node Agent	WZNODE5	WZNODE5	BBOCTL	STC07909	WZASCR1	43T	
Server	Control	WZSR01A	WZSR01A	BBOCTL	STC07923	WZASCR1	67T
	Servants	WZSR01AS	WZSR01AS	BBOSR	STC08092	WZASSR1	86T
		WZSR01AS	WZSR01AS	BBOSR	STC08065	WZSRSR1	87T
	Adjunct	WZSR01AA	WZSR01AS	BBOSR	STC08066	WZSRSR1	85T
Server		WZSR64A	WZSR64A	BBGCTL	STC07928	WZASCR1	88T
		WZSR64AS	WZSR64AS	BBGSR	STC08091	WZASSR1	255T

# WebSphere logs

- **On distributed**
  - SystemOut.log
  - SystemErr.log
  - native\_stderr.log
    - Verbose Garbage collection
- **On z/OS**
  - What is normally written to these files is written to z/OS spool

# WebSphere logs on z/OS

```

Display Filter View Print Options Help
-----
SDSF JOB DATA SET DISPLAY - JOB WZDMGRS (STC25557)
COMMAND INPUT ==> _
NP DDNAME StepName ProcStep DSID Owner C Dest
JESMSGLG JES2 2 WZDMSR1 S
JESJCL JES2 3 WZDMSR1 S
JESYSMSG JES2 4 WZDMSR1 S
SYSOUT ← WZDMGRS 105 WZDMSR1 S
SYSPRINT ← WZDMGRS 106 WZDMSR1 S
  
```

SystemErr.log

native\_stderr.log

SystemOut.log

- This is default setup
  - Custom properties can be used to write old log data from spool to a file
    - ras\_stderr\_ff\_interval, ras\_stdout\_ff\_interval
- Can change JCL so that SystemOut and SystemErr
  - Are written to files
  - But no rolling capability
  - See:
    - <http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/TD101087>

# Threads in the JVM

- **On Distributed**
  - Can set number of threads to any value
- **On z/OS**
  - Number of threads determined by workload profile selected
- **Workload Profile**
  - Set via wsadmin or adminconsole:
    - Servers >> Application Servers >> server\_name >> ORB Service>> Advanced Settings >> "Workload Profile"
  - Can be set to:
    - ISOLATE (1 thread)
    - NORMAL (3 threads)
    - CPUBOUND (# of CPs-1, minimum of 3)
    - IOBOUND (Number of CPs\*3, Min=5, Max=30)
    - LONGWAIT (40)
  - V7 – provides property to set custom value
- **WebSphere for z/OS doesn't need threads as placeholders for work**
  - WLM queues are used for that

# Installation

- **On Windows and Unix**
  - Typically run WebSphere supplied install GUI or install script
    - Which installs the software into some specified location
- **On z/OS**
  - All z/OS software installed via z/OS mechanism called SMP/E
    - SMP/E has been in use for over 20 years for software install
    - Typically done by your friendly neighbourhood z/OS System programmer
  - Can have different versions of WebSphere installed at the same time
    - In fact can have different maintenance levels of a WebSphere version installed at the same time
      - ❖ And in use

# Configuration on Distributed

- **On Windows and Unix**
  - Can use GUI
  - Or run WebSphere supplied command:
    - manageprofiles
      - ❖ To create profiles for nodes etc
- **On z/OS**
  - Different process
  - If you're going to get anywhere with this then you..
    - Need to accept it is a different process
    - Be willing to learn
- **If you are new to z/OS**
  - You need someone with z/OS experience to assist you

# Configuration on z/OS

- **Process to build a cell:**
  - Use TSO/ISPF or Windows Eclipse based tool
  - In which supply various values such as:
    - Started task names
    - Security related userid's
    - TCPIP port numbers
    - Cell, node and server names
  - Generates small number of batch jobs
  - Run batch jobs to create cell
- **Keep sense of perspective**
  - Generally you are not building WebSphere cells everyday
  - Most work in WebSphere around day to day administration
    - Installing applications
    - Defining resources
    - Helping application developers to solve their problems etc etc

# Separation of product and configuration data

- **On distributed typically**
  - Configuration data that defines a cell
    - Stored under config sub-directory
    - Which is located under root directory where product code installed
- **On z/OS**
  - Product code stored in one file
  - Configuration data stored in different file
- **Advantages**
  - Easy to manage multiple versions of WebSphere
    - And even multiple versions at multiple maintenance levels
  - Easy to change a cell to run on a new maintenance level
    - And to fall back to previous maintenance level



# And now for the big difference...

- **A WebSphere server on Windows and Unix**
  - Is one JVM
- **On z/OS**
  - A WebSphere server split into two components
    - Control Region
      - A JVM
      - Handles receiving requests and sending the response
    - One or more Servant Regions
      - A JVM
      - Where the application code runs

# Why is server split asunder?

- **Control region**
  - Runs authorised code
    - Has access to restricted z/OS functionality
  - Handles HTTP/S communications
- **Servant region**
  - Does not run authorised code
    - Just application code
  - Means application code cannot get access to authorised z/OS services
  - Prevents application code being used to attack the system

# The Control Region is watching

- **Control region**
  - For each request
    - Records time dispatched
  - If no reply within specified timeout period
  - Kills the servant region
  - WAS V7
    - Introduces more advanced options
- **Why does request not complete within timeout period?**
  - Typically some backend system not responding
  - Could also be that application is looping
- **On distributed – what would happen in such a case?**
  - Nothing until someone intervenes
- **On z/OS**
  - Servant cancels results in automatic restart of new one
  - If second servant already running, then it take new requests immediately