

# Configuring *WebSphere Process Server & Business Process Manager* V7 on z/OS

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## WPS & BPM Subject Areas

- Products combined for Business Process Management:
  - WebSphere Application Server V7
    - + Feature Packs for SCA, XML & SDO V7
  - WebSphere Process Server V7
- Additional WebSphere Business Products:
  - Services Fabric, Business Space, Business Monitor, Compass, ... \*
- Possible Configurations
  - Standalone Server or Network Deployment, or “Custom”
    - Single Cluster
    - Remote Messaging (2 clusters)
    - Remote Messaging & Remote Support (3 clusters)
- Configuration tasks
  - Installation, Set-up, Customization, & Verification
  - Management, Operations, Performance Tuning & Trouble-Shooting

## Agenda



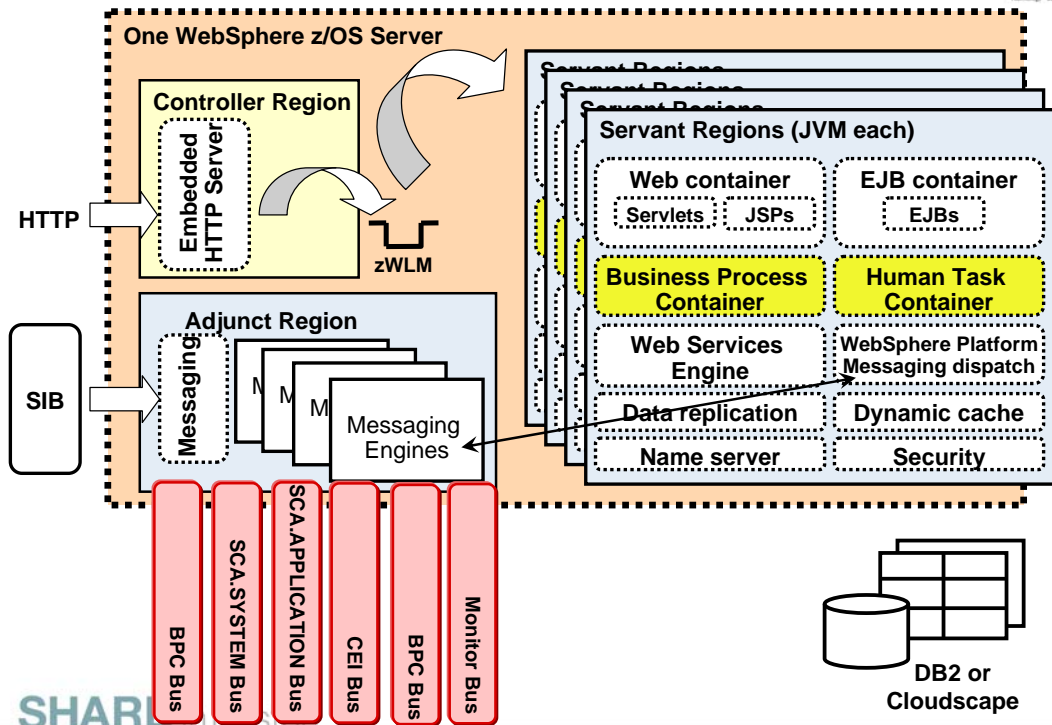
- Planning your configuration
  - Preparing your system Hardware, Software and Skills
- Creating WebSphere Servers, with Process Server
  - Creating Database resources
  - Configuring Clusters and Servers
  - Verifying the configuration with sample applications
- Additional WebSphere Business products
- Managing the BPM Environment
  - Performance Tuning
  - Trouble-shooting

## Process Server Components



- **Service Integration Buses & Messaging Engines**
  - SCA System & SCA Application buses
  - CEI bus, BPC bus
- **Common Even Infrastructure (CEI)**
  - Applications: event-application.ear & event-message.ear (MDB)
- **Business Process Choreographer** applications
  - Business Flow manager & Human Task Manager
  - BPC Explorer & Observer, Business Rules Manager
- **Databases & Data Sources**
  - Common WPS
  - CEI Event & Event Catalog
  - Business Process Container & BPC Reporter
  - Business Space
  - Messaging Engines (4 +)
- **Other BPM components:**
  - *Business Space, Fabric, & Monitor*

## WebSphere Process Server z/OS Architecture



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## WPS V.7.0.0.2 for z/OS (avail. 6/2010)



### Hardware Prerequisites:

- ✓ CPU resources: Multiple processors with zAAPs, zIIPs
  - ✓ See zPSG sizing tool, Plus adequate Real Memory
- ✓ Disk Storage for WPS & Config. HFS files, back-ups & DB2 tables
- ✓ Workstations for WID

### Software Prerequisites

- ✓ WAS for z/OS Version 7.0.0.7 or later
- ✓ WAS Feature Packs for SCA, SDO & XML (Opt'l Mat'ls)V7
- ✓ zPMT (WCT V 7.0.0.1 or ASTK)
- ✓ DB2 for z/OS Version 8.1 (PUT 0702) or later, or Ver. 9
- ✓ WebSphere Integration Developer (WID) V7

See [ibm.com/support/docview.wss?rs=2307&uid=swg27016269](http://ibm.com/support/docview.wss?rs=2307&uid=swg27016269)

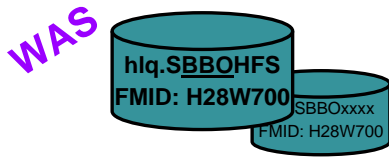
APAR/PTF Tables: [ibm.com/support/docview.wss?uid=swg27017312](http://ibm.com/support/docview.wss?uid=swg27017312)

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# BPM for z/OS V 7 Product Packaging

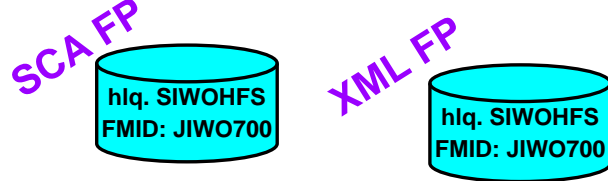


## WebSphere Application Server for z/OS



/usr/lpp/zWebSphere/V7R0

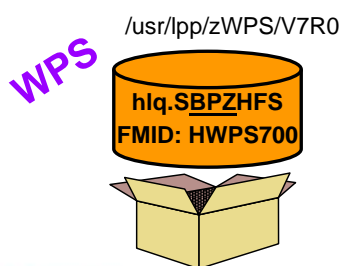
## WAS for z/OS Opt'l Materials SCA (incl. SDO) & XML Feature Packs



/usr/lpp/zWebSphere\_OM/V7R0/FPSCA

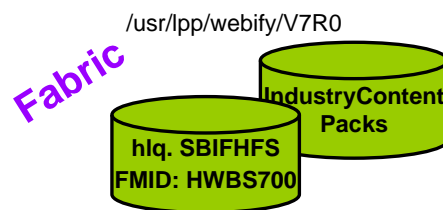
/usr/lpp/zWebSphere\_OM/V7R0/FPXML

## WebSphere Process Server for z/OS (includes WESB)



/usr/lpp/zWPS/V7R0

## WebSphere Business Services Fabric for z/OS



/usr/lpp/webify/V7R0

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# Production Topologies on z/OS



(Standalone server is not a Production Topology)

Distributed topologies (i.e., multiple clusters) don't apply to z/OS.

- **Single Cluster** (Servants & Adjuncts provide nec. scaling)
  - Less Overhead, Smaller Memory footprint
  - Less Administrative effort
- **Extend Cluster with MQ shared Queues**
- Adding a second cluster depends on:
  - Available hardware resources (More Memory, Overhead)
  - Types of business processes & Application invocation patterns
  - How heavily you intend to use the CEI
  - How heavily you use Messaging Engines (Consider MQ)
- **Number of Cluster Members**
  - Availability demands a "rule of multiple"
    - 1 LPAR may be able to back up the work running on 2, using (IRD).
    - 2 LPARs have a better chance of backing up 3 without IRD

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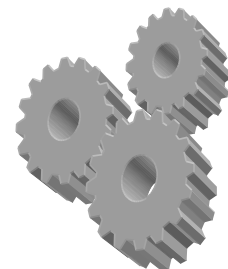
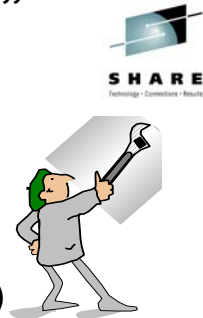
8

## III. Configuration Tasks



### Configuration Topics – “the plumbing”

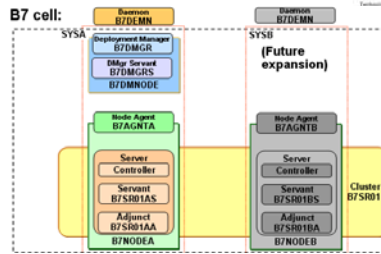
- **Getting Started** - an overview
  - Planning the Configuration
  - Preparing z/OS components
  - Creating DB2 Tables
  - Security Setup (& other post-configuration tasks)
- **Configuration Scenarios**
  - Network Deployment
    - **Start with Empty Node, DMgr, Federate**
    - (or start with standalone server, DMgr, Federate)
  - Standalone server (Derby or DB2)
- Extended Capabilities
  - WebSphere Business Services Fabric
  - Business Space powered by WebSphere
  - Business Monitor



# Planning cannot be over-emphasized



- Configuration **Topologies**
  - # of Clusters, # of cluster members
  - Draw a Picture!
- **Hardware** requirements
  - CPUs, Memory, Disk storage , Space allocations
- **Names** for
  - Cells, Nodes, Servers, Clusters, User & Group IDs, etc.
- **UNIX** file systems (use zFS)
  - Directories, and files (ownerships & permissions)
- **DB2** components & Names for . . .
  - Databases, Storage groups, Schemas, Buffer pools, ...
- **Security** Identities, Authentication aliases, EJBROLES



# Use a spreadsheet to plan your names . . .

- Originally provided in Techdoc PRS3341 for WAS V7



	A	B	C	D	E	F	G	H	I	J
1	<b>WebSphere Process Server for z/OS V7.0 &amp; Fabric Configuration Variab</b>									
2										
3	Choose the WPS configuration scenario									
4	WPS to be configured in a stand-alone server or in empty node(s)? ==>						EmptyNode			
5	Choose WPS Topology (single-cluster   two-clusters) ==>						single-cluster			
6	Enter single digit identifier for WPS cluster ==>						1			
7	For a single-cluster topology, this field is ignored.						2			
8										
9	Variables related to Target z/OS Image on which WebSphere and WPS will be Configured									
10	Enter Sysplex Name ==>						WTSCPLX1			
11	Enter Two Character Cell Abbreviation ==>						b7			
12	Enter the single digit Cluster Number of the cluster you are configuring ==>						1			
13										
14	Enter the first TCP/IP Port used by the cell ==>						27000			
15										
16	Cell topology A: Specify in advance how many nodes and clusters will be configured in the cell.									
17							Planned		Pre-assigned port range	
18	Total number of Clusters						1		27060 27079	
19	Total number of NodeGroups						1		27040 27059	

Several "worksheets" identified by the tabs along the bottom:

Documentation \ Variables \ Names \ Checklist \ DMGR \ EmptyNode\_P \ EmptyNode\_S \ JCL\_P \ WPS\_RACF \ WPS\_LDAP \ WPS.rsp \ DE \ dbDesign \ .

# Process Server extensions to the Spreadsheet

- in Additional Materials for Redbooks SG24-7703, -7733 & SG24-7831



	A	B	C	D	E	F	G	H	I	J	K
185											
186	DB2 Variables for WebSphere Process Server and Fabric										
187											
188	Enter HLQ dataset qualifier for the DB2 installation ==>	DSN910									
189	Enter HLQ dataset qualifier for the DB2 customization datasets ==>	DSN910									
190	Enter hlq of the customized SDSNEXIT dataset ==>	DSN910.#V0.SDSNEXIT									
191	DSNTEP2 Plan Name ==>	DSNTEP2									
192	Path to DB2 JDBC driver home directory ==>	fshared\db2910_jdbc									
193											
194	Enter name of RUNLIB.LOAD with DSNTIAD program ==>	DSN910.RUNLIB.LOAD									
195											
196	Enter DB2 Version location name ==>	WG31DB2									
197	Enter DB2 SSID or Data Sharing Group name ==>	DSN9									
198	Enter DB2 Version ==>	9									
199											
200	Enter the location of the DB2JccConfiguration.properties file ==>	f\user\wpswork									
201	Enter hostname for DB2 DDF listener ==>	wg31.washington.ibm.com									
202	Enter port for DB2 DDF listener ==>	9446									
203											
204											
205	Database variables for the WebSphere Process Server and Fabric databases.										
206											
207	WPS components to share one database? (Y/N) ...:	Y									
208	Message Engines to share one database? (Y/N) ...:	Y									
209											
210		Common	APP ME	BPC ME	CEI ME	SCA ME	BPC	Observer	CEI Event		
211	Abbreviation used to build names ==>	WPS	A	B	C	S	BPC	OBS	EVT		
212	Database Name ==>	B6WPSDB	B6WPSDB	B6WPSDB	B6WPSDB	B6WPSDB	B6WPSDB	B6WPSDB	B6WPSDB		
213	Schema Name ==>	B6WPS	B6S1A	B6S1B	B6S1C	B6S1S	B6WPS	B6WPS	B6WPS		
214											
215	Database storage group ==>	B6WPSSG	B6WPSSG	B6WPSSG	B6WPSSG	B6WPSSG	B6WPSSG	B6WPSSG	B6WPSSG		
216	Database volumes ==>	**	**	**	**	**	**	**	**		
217	Database VCAT ==>	WPSDB2	WPSDB2	WPSDB2	WPSDB2	WPSDB2	WPSDB2	WPSDB2	WPSDB2		
218											
219	Database 4K buffer pool ==>	BP1	BP3	BP3	BP3	BP3	BP5	BP7	BP9		
220	Database 32K buffer pool ==>	BP32K	BP32K	BP32K	BP32K	BP32K	BP32K	BP32K	BP32K		
221	Database index buffer pool ==>	BP2	BP4	BP4	BP4	BP4	BP6	BP8	BP10		

# Worksheets help you along the way . . .



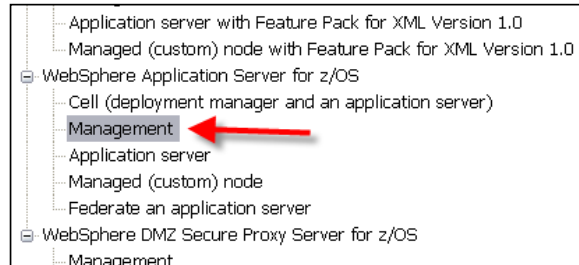
	A	B	C	D	E	F	G	H
14	The spread sheet consists of the following separate worksheets:							
15	<b>Documentation</b>	This work sheet						
16	<b>Variables</b>	Specify the variables for your WebSphere configuration on this worksheet. These \						
17	<b>Names</b>	All the naming convention rules are in formulae on this worksheet, therefore if you n All the other spreadsheets LOOKUP values from the <b>Names</b> worksheet instead of cc						
18	<b>Checklist</b>	Step-by-step instructions to define the WebSphere Application Server for z/OS cell Provides fields to copy/paste into ISPF or browser to facilitate the installation proces Use the Status column to record your progress.						
19	<b>DMGR</b>	Generated responseFile for WebSphere Customization Tools (zPMT) to configure th						
20	<b>Portal_D</b>	Portal z/OS ISPF panel image for Install Base Portal into DMGR Node						
21	<b>EmptyNode_P</b>	Generated responseFile for WebSphere Customization Tools (zPMT) to configure th						
22	<b>EmptyNode_S</b>	Generated responseFile for WebSphere Customization Tools (zPMT) to configure th						
23	<b>JCL_P</b>	Sample JCL to run on the Primary node's LPAR that performs tasks which are not p						
24	<b>JCL_S</b>	Sample JCL to run on the Secondary node's LPAR that performs tasks which are n						
25	<b>WPS_RACF</b>	Table that plans the users, groups and roles for use with WPS. Separate sections fc						
26	<b>WPS_LDAP</b>	An LDIF file showing the entries that must exist in LDAP to support the users, group This worksheet can be used to load the entries into an LDAP server.						
27	<b>DE</b>	Deployment Environment (DE) xml file that can be imported into the DE wizard to pr						
28	<b>dbDesign</b>	dbDesign document that can be used as input to zWPSConfig.sh and dbDesignGer						

# Setting Up WebSphere Application Servers



- Order of Augmentation for “stacked” products:

1. Create each Node with SCA, XML & SDO Feature Packs using WCT/zPMT (not ISPF dialogs.)
  - Empty nodes & standalone must be created with FPs
  - DMgr can be augmented later with FPs, but before WPS.
2. Augment Deployment Manager with WPS before federation.
3. Augment Empty Nodes  
(or Standalone Server)  
with WPS before federation
4. Federate Empty Nodes  
or Standalone Server



Name	Type	Product	Environment	Operating Sys...
b7dmnode_augzca	Augment	WebSphere Application Server...	Management with Feature Pack for SCA Version 1.0 - de...	z/OS
b7dmnode_augcdo	Augment	WebSphere Application Server...	Management with the SDO feature of the Feature Pack fo...	z/OS
b7dmnode_augwps	Augment	WebSphere Process Server fo...	Deployment manager with WebSphere Process Server - ...	z/OS
b7dmnode_augxml	Augment	WebSphere Application Server...	Management with Feature Pack for XML Version 1.0 - de...	z/OS
b7dmnode_base	Create	WebSphere Application Server...	Management - deployment manager	z/OS

## Planning & Preparing your z/OS system



**Allow for incremental maintenance upgrade for each Node:**

- Symbolic links pointing to SMP/E HFSes
  - zPMT provides a job to do these for WAS, FeaturePacks & WPS

**Security Definitions:**

- User & Group IDs – Discrete or General?
- UNIX UIDs & GIDs - RACF profiles instead of UID=0:
  - UNIXPRIV SUPERUSER.FILESYS, ...
- AUTOUID & AUTOUID?
- EJBROLE & GEJBROLE profiles
- APPL class profile
- SUROGGAT class for Admin ID so password not coded on JOB card.

**DB2 Elements:**

- Databases, Storage Groups, Bufferpools
- Schema and SQLID names, & GRANTs
- SYSADM, DBADM, and other privileges
- Stored Procedure Builder for WPS Relationships (DSNTPSMP)



## DB2 Planning:



### JDBC Data Sources & Databases used by WPS

- **WPSCommon** – Relationship, Mediation, Recovery, Business rules, Selector, Scheduler, ESB logging (57 Tables)
- **Business Space** – (34)
- **CEI** - Common Event Infrastructure - EVENT & EVENTCAT (38)
- **BPE** - Business Process Container & Human Task Manager (264)
- **SIBs** (4) – Messaging Engines (SCA, APPL, BPC, CEI) (12x4=48 tables)

#### Determine your naming conventions

- Plan ahead for Multiple Cells, Nodes, Clusters
- One database or multiple ?
- Use Current Schema or SQLID ?
- Work with your Database Administrator

### Separate Databases - Sample naming - Single database, or separate . . .



Component	DB Name	StorGroup	Schema (1)	Buffer-pools
Common WPS & ESB	xxWPSDB	xxWPSSTO	xxCELL	BP1, BP2
CEI	xxCEIDB	xxCEISTO	xxCELL	BP3, BP4
BPC	xxBPCDB	xxBPCSTO	xxCELL	BP5, BP6
BPC Reporter	xxBPRDB	xxBPRSTO	xxCELL	BP5, BP6
Business Space	xxBSPDB	xxBSPSTO	xxCELL	BP5, BP6
SIB-SCA	xxSIBDB	xxSIBSTO	xxCnS	BP7, BP8
SIB-APP	xxSIBDB	xxSIBSTO	xxCnA	BP7, BP8
SIB-CEI	xxSIBDB	xxSIBSTO	xxCnC	BP7, BP8
SIB-BPC	xxSIBDB	xxSIBSTO	xxCnB	BP7, BP8

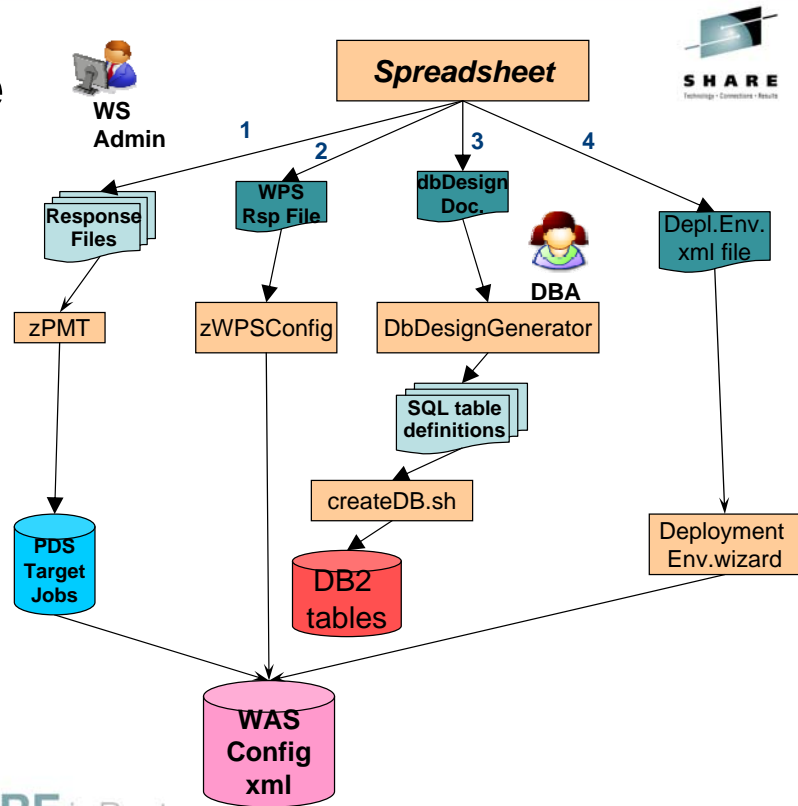
xx=cell identifier (for instance, 'B7' for B7CELL)

Cn = Cluster identifier ('C1')

(1) SIB databases have common tables names, so need unique schema

# Building the runtime

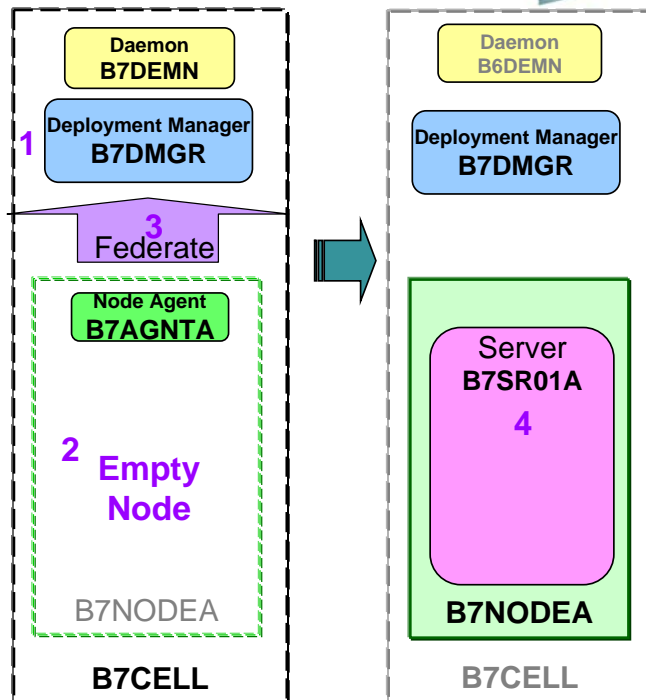
1. Create WAS
2. Augment WPS
3. Create DB Objects
4. Create Cluster



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## Starting with Deployment Manager & Empty Node (recommended)

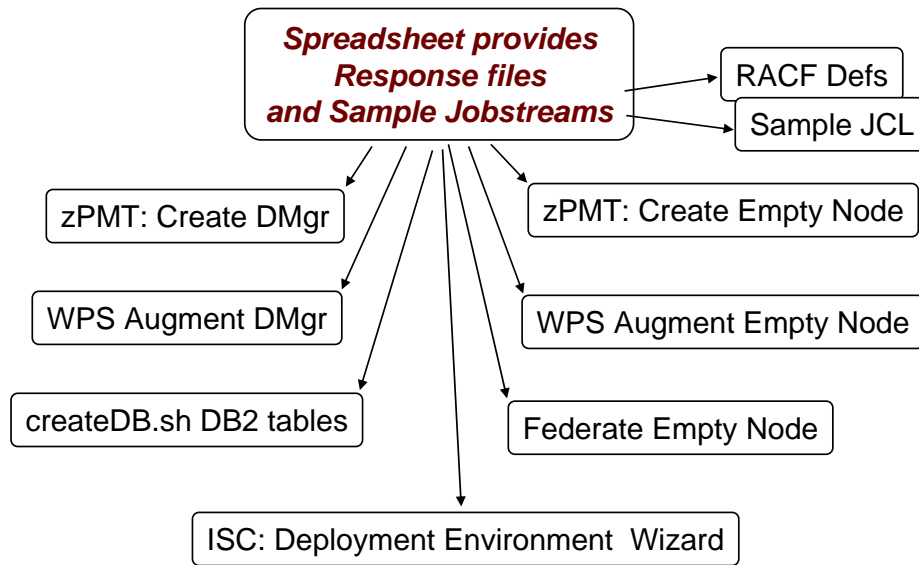
1. **Create Deployment Manager**
  - Augment with SCA, XML, SDO, and WPS
  - Create Database tables
  - Setup Security
  - Start up & Test
2. **Create Empty Node**
  - Augment with SCA, XML, SDO, and WPS
3. **Federate server** into ND cell
4. **Create Cluster / Server**
5. **Wizards to create SCA, CEI & BPC extensions**
6. Add Fabric, etc.
7. Configure Business Space



Reference: SC24-7831

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# You can get (almost) everything from the spreadsheet!



## Creating the target Servers

WAS V7 requires the Profile Management Tool (zPMT) – part of WCT  
Also use to Augment with “Feature Packs” – SCA, XML, SDO



**WebSphere Customization Tools**

File Window Help

Profile Management Tool Welcome

Customization Locations

Name	Version
B3_DMGR	7.0
B3_NodeC	7.0
B7DMGR_WSC	7.0

**Profile Management Tool 7.0**

### Augment Selection

Select the type of augmentation to apply.

Augment types:

- Deployment manager with WebSphere Enterprise Service Bus
- Deployment manager with WebSphere Process Server
- Management with Feature Pack for Modern Batch Version 1.0
- Management with Feature Pack for SCA Version 1.0
- Management with Feature Pack for XML Version 1.0
- Management with WebSphere Compute Grid Version 6.1.1
- Management with the SDO feature of the Feature Pack for SCA Version 1.0

Customization Definitions

Name	Type
B3_Dmgr	Cre
B3_Dmgr_FMsd	Aug
B3_Dmgr_FPSCA	Aug
B3_Dmgr_FPxml	Aug
B3_Dmgr_WPS	Aug

## Creating the Deployment Manager & Empty Node



1. Use spreadsheet to plan Deployment Mgr & Empty Node
  - Produce response files for zPMT & WPS augmentation

cklist / DMGR / EmptyNode\_P / JCL\_P / EmptyNode\_S / JCL\_S / WPS\_RACF / WPS\_LDAP / WPS\_rsp / Stand-Alone Server

2. Use the zPMT to create the installation jobs
  - Select App. server with Feature Pack for Web Services
  - Use response file from spreadsheet
3. Run the configuration jobs to create the server
4. Start the server and verify the configuration

## Augment Nodes with WPS



- Two scripts provided to Configure WPS
- Run against each node (Deployment Mgr & Empty Node):

### 1. zWPSInstall.sh in <wps\_smpe\_root>/zos.config/bin

- Creates symLinks in <app\_server\_root> to <wps\_smpe\_root>
- Updates the administration console for WPS/WESB

### 2. zWPSConfig.sh in <app\_server\_root>/bin/

- Reads installation-specific parm variables from “response” file.
- ‘Augments’ profiles to use the WPS functions.
- Creates resource definitions (data sources, databases, queues,...)
- Installs applications, profiles, scripts, SQL templates, etc.
- **Use the response files from the spreadsheet “WPS\_rsp” tab**

cklist / DMGR / EmptyNode\_P / JCL\_P / EmptyNode\_S / JCL\_S / WPS\_RACF / WPS\_LDAP / WPS\_rsp / Stand-Alone Server

(Do not start the server until DB2 tables created and Security setup.)

# Creating Databases & Tables:



## Three Phases:

1. **Plan your DB2 definitions** (Talk to your DB2 administrator!)
  - ▶ One Database, or Multiple DBs & StoGroups
  - ▶ Naming conventions for Databases, StoGroups, & Schema qualifiers
  - ▶ Database & Storage Group names needed to run zWPSConfig.sh
  - ▶ SQLIDs, GRANTs, Buffer Pools, & PRI/SEC Quantities
2. **Create the .sql (ascii) or .ddl (ebcdic) definition files**
  - a) Use `DbDesignGenerator.sh` to create the DBDesign document
  - b) Use `createDB.sh` script (recommended)
  - c) Use `zWPSConfig.sh`, for a standalone server
  - d) Other component-specific scripts (WPS, BPC, CEI, SIB)
3. **Execute the .sql/.ddl files**
  - a) Use `createDB.sh` script, or
  - b) Convert to EBCDIC, Copy to MVS datasets, & Use batch jobs or SPUFI

# Suggested database configuration steps



1. `zWPSInstall.sh` creates links for `DbDesignGenerator.sh`
2. `zWPSConfig.sh` creates directories used by `createDB.sh`.
3. `DbDesignGenerator.sh` generates SQL templates.
4. `createDb.sh` creates SQL statements and DB2 objects.

If you don't use `createDB.sh` to execute the SQL statements, there are two more steps:

- `Ddl2Pds.sh` copies the SQL statements to a PDS.
- `DSNTEP2` or `SPUFI` runs the SQL statements to create the DB2 objects.

Step-by-step instructions in SG24-7831 redbook.

## Database Design Generator



- Run DbDesignGenerator.sh in <WAS\_HOME>/util/dbUtils/
- Creates/Customizes **dbDesign** document & SQL scripts
- Start with the dbDesign file from the spreadsheet.
- Respond to the interactive prompts (see next foil.)
- SQL statements created in these sub-directories (by default):

```
../AppServer/util/dbUtils/WBI_XXX
  WBI_BPC_DB2-zOS-9-BPC
  WBI_BPC_ME_DB2-zOS-SibME
  WBI_BPCEventCollector_DB2-zOS-9-BPCReporting
  WBI_BSPACE_DB2-zOS-9-BSpace
  WBI_CommonDB_DB2-zOS-9-CommonDB
  WBI_CEI_EVENT_DB2-zOS-9-CEI
  WBI_CEI_ME_DB2-zOS-SibME
  WBI_SCA_APP_ME_DB2-zOS-SibME
  WBI_SCA_SYS_ME_DB2-zOS-SibME
```

- These are used by **createDB.sh** to create database tables.
- Tailor the SQL statements as necessary.

## Sample DbDesignGenerator prompts:



- ```
(1)Create database design for Standalone profile or Deployment Environme
(2)Create database design for single component (e.g. BPC, CEI etc)
(3)Edit existing database design
(4)Generate database scripts from a database design
(5)exit [q]
```

Please enter number for the design option :3

Please enter database design file:/u/hutchjm/wps7/db2/B9.dbDesign

[info] Please pick one of the following [database component(s)]:

- ```
(1)[CommonDB] WBI_CommonDB : [master] [status = not complete]
(2)[BPCReporting] WBI_BPCEventCollector : [status = not complete]
(3)[BPC] WBI_BPC : [status = not complete]
(4)[BSpace] WBI_BSPACE : [status = not complete]
(5)[CEI] WBI_CEI_EVENT : [status = not complete]
(6)[SibME] WBI_SCA_SYS_ME : [status = not complete]
(7)[SibME] WBI_BPC_ME : [parent = WBI_SCA_SYS_ME] [status = not complete]
(8)[SibME] WBI_CEI_ME : [parent = WBI_SCA_SYS_ME] [status = not complete]
(9)[SibME] WBI_SCA_APP_ME : [parent = WBI_SCA_SYS_ME] [status = not comp
(10)[save and exit]
```

## createDB.sh - Create (& run) sql files for DB2 Tables



- Copy `{wps_smpe_root}/zos.config/samples/createDB.sh` to working directory.
- Edit Names, Locations, and desired actions:
  - Generate .sql files for DB2 Tables - WPS, BPC, CEI, & SIBs
  - Execute .sql to Create the Tables.
- .sql files created in `./cdbtmp & {$WAS_HOME}/util/dbUtils` directories:
  - `BSpace.sql` Business Space tables
  - `bpc.sql` BPC tables
  - `bpcr.sql` BPC Reporter tables
  - `ceidb.sql` CEI tables
  - `common.sql` WPS (common) tables
  - `sibAPP.sql` SCA Application Bus tables
  - `sibBPC.sql` BPC Bus tables
  - `sibCEI.sql` CEI Bus tables
  - `sibSCA.sql` SCA System Bus tables

### Options to execute the .sql statements:

1. Use `createdDB.sh`, or . . .
2. Convert to EBCDIC, Copy to MVS files, and use SPUFI or Batch jobs.

Documented in help (type "`createDB.sh ?`") and Redbooks

## Creating the DB2 tables with SPUFI or DSNTEP2



- If you prefer to use **DSNTEP2**, or **SPUFI**, instead of `createDB.sh` script:
  - Convert the ascii SQL statements to EBCDIC DDL
  - Copy or FTP to FB-80 byte PDS members

- **Ddl2Pds.sh** script does this for you! - Sample batch job:

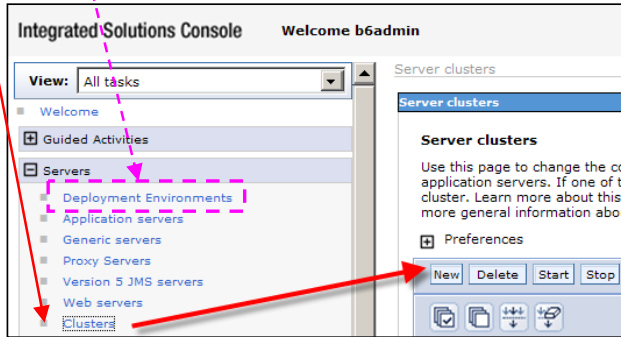
```
//DD22PDS EXEC PGM=IKJEFT01,REGION=0M
. . .
//SYSTSIN DD *
bpxbatch sh +
cd /u/hutchjm/wps7/db2; +
Ddl2Pds.sh -WorkDir /tmp +
-Prefix B7 +
-Component BPR +
-Source /wasv7config/b7cell/b7dmnode/DeploymentManager/util/dbUtils/+
WBI_BPCEventCollector_DB2-zOS-9-BPCReporting +
-PDS HUTCH.B7DDL
/*
```

# Creating Clusters and Servers



## ISC (Admin Console) “Wizards”:

- “Deployment Environment” (recommended), or ...
- Create Cluster, then SCA, CEI, BPC . .

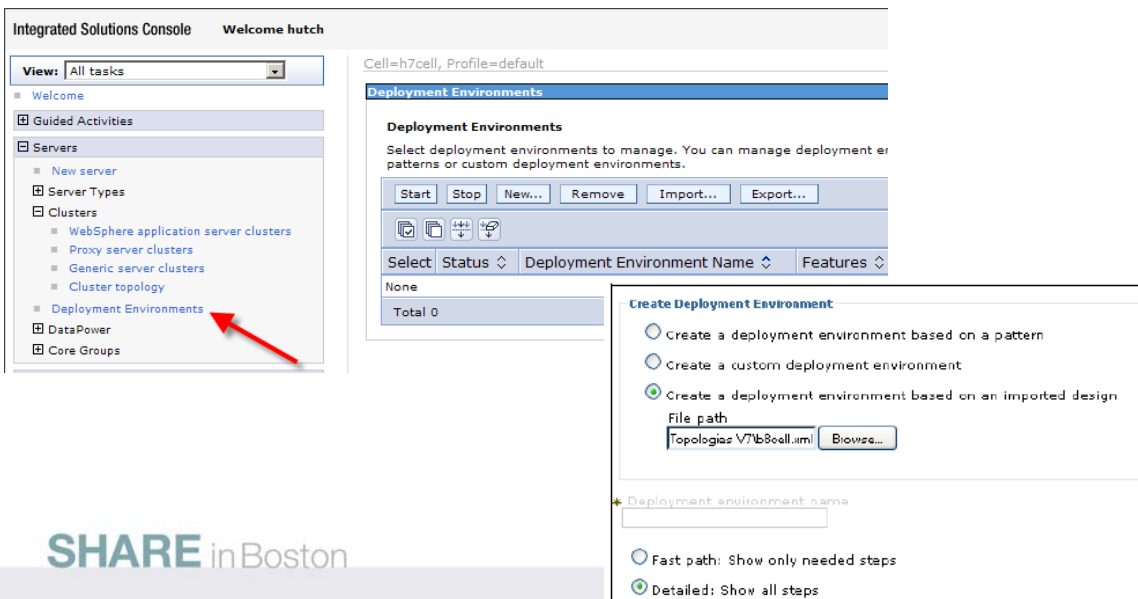


- Bus. Space → [Business Integration Configuration](#), [Business Space Configuration](#)
- SCA → [System REST Service Endpoints](#), [Service Component Architecture](#)
- CEI → [Common Event Infrastructure Destination](#), [Common Event Infrastructure Server](#)
- BPC → [Business Process Choreographer Containers](#), [Business Flow Manager](#)
- BPC explorer → [Human Task Manager](#), [Business Process Choreographer Explorer](#)

# Deployment Environment Wizard



- Select Servers > Deployment Environments
- Create deployment environment based on imported design
  - Use the ‘DE’ document from the spreadsheet





# Deployment Environment Wizard



Step through wizard Steps:

1. Select Nodes
2. Clusters
3. REST
4. Import dbDesign
5. Database
6. Security
7. BPC
8. Web App. Context Roots

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**Step 1: Select Nodes**

Select Nodes

Select the nodes to use for the development environment. For high-availability and availability in Business Space, you requires at least 1 node. For high-availability and available in Business Space, you host or virtual host and port that default to those of a cluster member. The default host name and port are:

**Step 2: Clusters**

**Step 3: System REST Service Endpoints**

**Step 4: Import database configuration**

Import database configuration file for features.

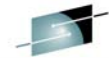
**Step 5: Database**

Database

Edit the database parameters for the data sources that are needed by this deployment environment.

Select	Component	Database Name	Schema	Create Tables	User Name	Password	Server	Provider
<input type="checkbox"/>	Business Process Choreographer	DB9F	B7CELL	<input type="checkbox"/>	B7DBU	*****	wpsplex.itsc	DB2 for z
<input type="checkbox"/>	Business Process Choreographer reporting function	DB9F	B7C1B	<input type="checkbox"/>	B7DBU	*****	wpsplex.itsc	DB2 for z
<input type="checkbox"/>	Business Process Choreographer	DB9F	B7CELL	<input type="checkbox"/>	B7DBU	*****	wpsplex.itsc	DB2 for z

## DE Wizard does all this:



9. Summary:

Click on "Finish and Generate..."

**Summary**

This summary shows an overview of your new deployment environment. To save the deployment environment definition, click on "Finish". To save the definition and generate the deployment environment, click on "Finish and Generate Environment".

**Overview**

Parameter	Value
Deployment Environment Pattern	Single Cluster
Deployment environment name	bitcell
Features	WPG
Deployment Environment Status	Incomplete

**Deployment Targets**

Cluster	Nodes
Application Deployment Target	bitnodes

**Data Sources**

Component	Database Name	Schema	Database Provider	Database Host
Business Process Choreographer	DB9F	B8CELL	D82UDB08390_V9_1	wts42.itso.ibm.com
Business Process Choreographer reporting function	DB9F	B8CELL	D82UDB08390_V9_1	wts42.itso.ibm.com
Business Process Choreographer	DB9F	B8C1B	D82UDB08390_V9_1	wts42.itso.ibm.com
Business Space	DB9F	B8CELL	D82UDB08390_V9_1	wts42.itso.ibm.com
Common Event Infrastructure	DB9F	B8CELL	D82UDB08390_V9_1	wts42.itso.ibm.com
Common Event Infrastructure	DB9F	B8C1C	D82UDB08390_V9_1	wts42.itso.ibm.com
Service Component Architecture	DB9F	B8C1A	D82UDB08390_V9_1	wts42.itso.ibm.com
Service Component Architecture	DB9F	B8C1B	D82UDB08390_V9_1	wts42.itso.ibm.com

**Security**

Component	Authentication	User Name
Business Process Choreographer	BPC_auth_alias	bitjmsu
Common Event Infrastructure	CommonEventInfrastructureJMSAuthAlias	bitjmsu
Service Component Architecture	SCA_auth_alias	bitjmsu

**Business Process Choreographer**

Parameter	Value
Business Process Choreographer Explorer context root	/bpc
Create a mail session to send e-mails	false
Mail session host	
Business Process Choreographer Explorer URL	
User for Administrator role	bitbpcadm
Group for Administrator role	bitbpcadg
User for Monitor role	bitbpcrm
Group for Monitor role	bitbpcrmg

**Business Rules Manager**

Parameter	Value
Business Rules Manager context root	/br

Buttons: Previous, Finish, Finish and Generate Environment, Cancel

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## Adjustments to Cluster configuration:



- Server and Cluster short names
- Ports numbers & Virtual hosts
- REST services endpoints
- JVM settings & Custom properties
- Set currentSchema for datasources
- Peer recovery and transaction logs

## Jython scripts available to make these adjustments:

- Additional material to RedBook SG24-7831
- Techdocs:  
WP101427, TD103685, TD105447, PRS2663, WP101170

## Validate Cluster Configuration



- Start Deployment manager & Node Agents
- ISC: “Start Cluster”
- Review Server logs in TSO/SDSF
- ISC: Explore Data Sources, Applications, Buses
- Integrated Applications:
  - Failed Event Manager
  - Relationship Manager
  - Common Base Event Browser
- Install Sample Applications:
  - WSCEcho
  - bpcivt (Vehicle Loan App.)
  - WscHtTest (Human Task)
- Test Sample Apps with BPC Explorer

## Misc. Topics



- Adding additional Nodes and Clusters
- Extending the Cell with other BPM products
- Performance Monitoring & Tuning
- Trouble-shooting & Tools
- References and other Resources

## Adding another Node (on another LPAR)



### Create New Empty Node (ISPF dialog or PMT)

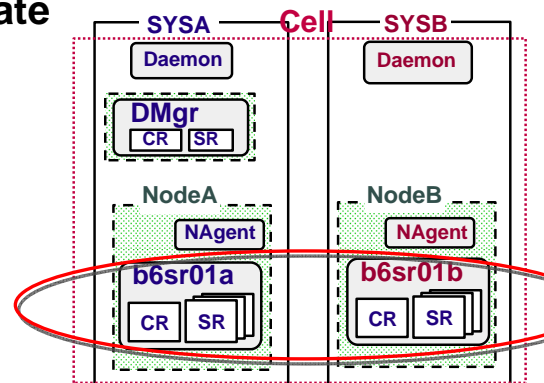
- Do not federate it yet

### Configure WPS:

- Run zSMPInstall.sh
- Run zWPSConfig.sh

### Run BBOWMNAN job to Federate

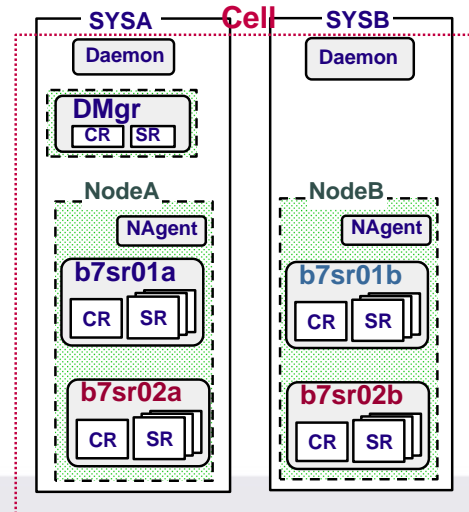
### Create new Cluster & Member



## Additional Clusters & Servers . . .



- **Additional Clusters may not be required on z/OS:**
  - Multiple servant regions provide multiple JVMs & scaling.
  - “Keep it simple” until you need multiple clusters for scaling, isolation, or administrative reasons.
- **Create Additional Clusters for:**
  - (use ‘defaultProcessServer’ template)
  - Configure SCA (Wizard) for MEs
  - **Isolated BPC Containers & Apps**
    - Separate Data sources & Databases req'd.
    - Additional BPC.cluster.Bus req'd
  - **Admin applications (CEI)**
  - **Other Applications**



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## Extending the Cell with other BPM products



- WebSphere Business Services Fabric
  - Foundation Pack
  - Tool Pack
  - Industry Solutions
- Business Space powered by WebSphere
- WebSphere Business Monitor
- BPM Feature Packs (avail. 6/11/2010)
  - WebSphere Process Server V7.0
  - WebSphere Enterprise Service Bus V7.0
  - WebSphere Integration Developer V7.0
  - WebSphere Adapters V7.0
  - WebSphere Business Monitor V7.0
  - WebSphere Industry Content Packs V7.0
  - WebSphere Service Registry & Repository V7.0
- HTTP Server & Proxy

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## Adding **WebSphere Business Services Fabric** :



- Planning and preparation
  - Software pre-requisites & Installing via SMP/E
  - Sample JCL and scripts for SymLinks & Security
- Instal Fabric in the deployment manager
  - zWBSFInstall.sh & zWBSFConfig.sh scripts
- Instal Fabric in a managed node
  - zWBSFInstall.sh & zWBSFConfig.sh scripts
- Complete cluster configuration for Fabric
  - Install applications via fabricAppDeploy.py jython script
- Verify the Fabric configuration
  - Fabric\_Catalog\_b7sr1\_WPS
  - Fabric\_Tools\_b7sr1\_WPS
  - Fabric\_Trace\_b7sr1\_WPS

## **Business Space powered by WebSphere**



### **Component of BPM products (WPS, Monitor)**

- Common interface for users to integrate Web interfaces
- Makes extensive use of REST Services
- Enabled for SA servers, but configured manually for ND:
  - Create Database Tables

### **ISC:**

- Resources > Create Data Source
- Clusters > Business Integration > Business Space Config
  - Install Business Space service
  - Install RESTServiceGateway.ear application

## Installing **WebSphere Business Monitor**



- **Install and Configure using component wizards**
- **Use Deployment Environment patterns & wizard:**
  - Install Business Monitor on each node
  - Create the Monitor Database
  - Create Deployment Manager & Custom node profiles (PMT)
  - Create and generate the Deployment Environment (wizard)
  - Save the configuration and sync the nodes
  - Run business space table script,

# Performance Tuning



### ***Exploit the Architecture:***

- Non-interruptable processes
- Query tables & Task lists
- Locality of reference
- Proximity of data

### ***Exploit z/OS sysplex:***

- Hardware CPU, DASD, Memory
- DB2
- MQ
- WLM to prioritize

### ***Optimize:***

- Mediations
- JVM & Heap settings
- Connection settings & Pools

### ***Minimize:***

- Logging & Tracing
- Event activity
- Serial/De-serialization
- BSM state transitions
- Asynchronous interactions
- Large Objects
- Java2 Security

See REDP-4664 “*WebSphere BPM V7 Performance Tuning*”

# Troubleshooting



## Common Problems:

- Spelling, TYping, & Following directions...
  - AppServer up (when it shouldn't be)
  - Scripts not run in the correct order
- Scripts interrupted
- Space exhausted in configuration HFS (& /tmp), or DB2 volumes
- Authorization problems (wrong UserID)
  - File/Directory - Ownership/Permissions
- UNIX env. setup: MAXFILEPROC, MAXTHREADS, MAXSOCKETS

## Skills Required:

- UNIX commands, Scripts, & Tools - Finding & using Logs & Traces
- DB2 Administration
- Experience, Contacts & Patience.

## Troubleshooting zSMPInstall.sh – Knowing where to look:



### Log files (ASCII)

- `{app_server_root}/logs/wbi/install/installconfig.log`
  - Look here for first indication of an error.
  - Find 'SEVERE' to determine error
  - Find 'Buildfile' **previous** to see what .ant task was running . . .
  - Look in corresponding .ant.log file(s) for more information:
- `{app_server_root}/logs/wbi/ - xxx.ant.log files:`
  - 2503 Jan 4 15:06 100SCleanOSGICache.ant.log
  - 496360 Jan 4 15:06 94SDeployCoreAdminConsolePlugins.ant.log
  - 4339 Jan 4 15:06
  - 3748 Jan 4 14:57 93SDeployWBICommonAdminConsolePlugins.ant.log
  - 4165 Jan 4 14:57 93SDeployServerAdminConsolePlugins.ant.log
  - 3540 Jan 4 14:57 93SDeployBPCAdminConsolePlugins.ant.log
  - 4635 Jan 4 14:57 85SConfigNoProfileFirstStepsWBI.ant.log
  - 2777 Jan 4 14:57 90SCleanDeployTool.ant.log
  - 2919 Jan 4 14:57 90SConfigWBIMigrationScript.ant.log
  - 3054 Jan 4 14:57 90SConfigureWSProfileForWBI.ant.log
  - 2726 Jan 4 14:57 91SConfigNoProfileFirstStepsCharset.ant.log
  - 2591 Jan 4 14:57 80SCopyInstallValidatorLog.ant.log

# Troubleshooting zWPSConfig.sh example:



**High-level View:** {app\_server\_root}/logs/wbi/zWPSConfig.trace

**Default log - Start here:**

```
{app_server_root}/logs/manageprofiles/default_augment.log  
{app_server_root}/logs/manageprofiles/default/
```

**Example:**

**1. default\_augment.log – go to end**

```
<message>Returning with return code: INSTCONFFAILED</message>
```

**2. find 'SEVERE'**

```
<level>SEVERE</level> <message>Failed to execute: CREATE TABLESPACE SCHEDTS LOCKSIZ ROW CCSID UNICODE  
BUFFERPOOL BP0 IN SCELLDB USING STOGROUP SSDBSTO</message>
```

**3. default\_augment.log – find 'Buildfile' PREV**

```
<message>Buildfile:  
./profileTemplates/default.wbiserver/actions/configAppSchedulerDBTables.ant</message>
```

**4. {app\_server\_root}/logs/manageprofiles/default/  
configAppSchedulerDBTables.ant.log**

```
[sql] Failed to execute: CREATE TABLESPACE SCHEDTS LOCKSIZE ROW CCSID UNICODE BUFFERPOOL BP0 IN SCELL  
USING STOGROUP SSDBSTO  
Immediate:807:DB2 engine SQL error, SQLCODE = -601, SQLSTATE = 42710,  
error tokens = SCELLDB.SCHEDTS;TABLESPACE
```

# Troubleshooting – Tracing:



- Scripts: add this parm:  
-trace \*=all=enabled
- wsadmin.sh  
update {profile\_root}/properties/wsadmin.properties file – uncomment the following line:  
#com.ibm.ws.scripting.traceString=com.ibm.\*=all=enabled  
**Trace directed to ...**  
com.ibm.ws.scripting.traceFile={profile\_root}/logs/wsadmin.traceout
- Runtime servers: MVS Command (**dynamic!**):  
modify <server>,tracejava='com.ibm.bpe.\*=all=enabled'  
**reset with:**  
modify <server>,traceinit



## Tools - Running Shell Scripts ...



### 1. Running shell scripts in background to disconnect:

```
nohup sh -c './wasv6config/b7cell/nodea/AppServer/bin/zWPSConfig.sh \  
-augment -response /u/user1/wpswork/b7Profile.rsp' \  
>/tmp/b7WPSConfig.out 2>&1 &
```

### 2. Running shell scripts as a batch job:

```
//B7DMCFG JOB (0), 'WPS SETUP', CLASS=A, REGION=0M, \  
//*-----* \  
//* Run zWPSConfig.sh for DMGR's node * \  
//*-----* \  
//ZWPSCFG EXEC PGM=IKJEFT01, TIME=1440 \  
//SYSTSPRT DD SYSOUT=* \  
//BPXOUT DD SYSOUT=* \  
//STDERR DD SYSOUT=* \  
//STDOUT DD SYSOUT=* \  
//SYSTSIN DD * \  
BPXBATCH SH + \  
cd /wasv7config/b7cell/b7dmnode/DeploymentManager/bin; + \  
./zWPSConfig.sh -response /var/WebSphere/home/B7CFG/wpswork/+ \  
b7DmgrDB2.rsp -augment
```

### 3. Use workstation text editor to compose long UNIX commands, then copy & paste into UNIX command line.

## Summary & Recommendations



- **Configuring a Standalone server with Cloudscape is simple** (maybe try it for your first test config.)
- **Configuring Network Deployment cell requires additional steps to configure clustered servers and create DB2 tables.**
  - New scripts in V7 to automate database resources generation.
  - Deployment Environment wizard simplifies the configuration tasks.
- **Recommended configuration steps in RedBook [SC24-7831](#) “z/OS Business Process Management V7 Production Topologies”**
- **Use the InfoCenter to understand each of the configuration steps.**
- **See “Additional References” for more valuable help.**

## Web Site References for WPS V7



**Product:** <http://www.ibm.com/software/integration/wps>

**InfoCenter:** WPS V7 for z/OS InfoCenter at <http://www.ibm.com/software/integration/wps/library/index.html>

**IBM Education Assistant** <http://publib.boulder.ibm.com/infocenter/ieduasst/v1r1m0/index.jsp>

- (Look under WebSphere Business Process Management or WebSphere Process Server)

**RedBooks:** [redbooks.ibm.com](http://redbooks.ibm.com)

- **SC24-7831 “z/OS Business Process Management V7 Production Topologies”**
- **REDP-4664 “WebSphere Business Process Management V7 Performance Tuning”**

**Techdocs:** [ibm.com/support/techdocs](http://ibm.com/support/techdocs)

- TD105453 “WebSphere Process Server for z/OS V 7 Configuration Tips”
- WP101218 “Performing Installation Verification for WPS on z/OS”

**Education:** WPS V7 for z/OS Implementation Workshop (Wildfire class ZWPS7)

- [ibm.com/support/techdocs/atmstr.nsf/WebIndex/PRS1778](http://ibm.com/support/techdocs/atmstr.nsf/WebIndex/PRS1778)

**Hardware/Software Requirements**

- [ibm.com/support/docview.wss?rs=2307&uid=swg27016269](http://ibm.com/support/docview.wss?rs=2307&uid=swg27016269)

**ProgramDirectory**

- [ibm.com/e-business/linkweb/publications/servlet/pbi.wss?CTY=US&FNC=SRX&PBL=GI13-0553-00](http://ibm.com/e-business/linkweb/publications/servlet/pbi.wss?CTY=US&FNC=SRX&PBL=GI13-0553-00)

**Support site**

- [ibm.com/support/entry/portal/Overview/Software/WebSphere/WebSphere\\_Process\\_Server](http://ibm.com/support/entry/portal/Overview/Software/WebSphere/WebSphere_Process_Server)

**APAR/PTF Tables**

- [ibm.com/support/docview.wss?uid=swg27017812](http://ibm.com/support/docview.wss?uid=swg27017812)