WebSphere Application Server for z/OS Version 6.1

Using zPMT and Spreadsheet to Build Quick Standalone

A step-by-step cookbook approach

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IBM Washington Systems Center

Don Bagwell
IBM Washington Systems Center
301-240-3016
`dbagwell@us.ibm.com`

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Overview

Purpose of this document

This document was written to provide a step-by-step cookbook illustration of building a WebSphere for z/OS Standalone environment using the zPMT configuration tool and the Microsoft Excel "Planning Spreadsheet".

> **Note:** This document is the V6.1 replacement of the WP100570 Techdoc.

What will the finished configuration look like?

Like this:
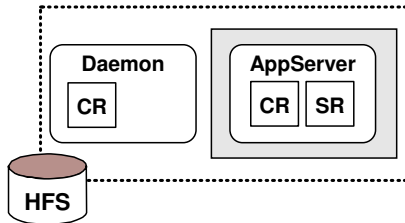
The finished configuration -- a "Standalone Application Server node"

Key assumptions

- *WebSphere Application Server for z/OS Version 6.1 has been installed on the system*

  These instructions are applicable to WAS z/OS V6.1 only.

- *Configuration would be a simple Standalone Server, not a "Network Deployment" configuration.*

  A Network Deployment configuration is more complex, involving more steps, and would be more difficult to explain while keeping it as simple as possible.

- *Cell would be for demonstration and testing purposes only; it would not be used for any production work.*

  A Standalone Server is somewhat limited in what it can do. It makes a great test or development environment. But it's not as well suited for heavy-duty production work.

- *We would abide by the naming convention and TCP port allocation convention used by the Planning Spreadsheet*

  The spreadsheet makes some assumptions about how things are named. You may want a slightly different naming convention. You're free to made modification, but we'd recommend you stay with the spreadsheet's names for the very first time

- *Workstation is running Windows operating system*

  The AST tool has a Linux version, but we're going to focus on the Windows version.

Post-SMP/E system programmer work

Creating the configuration is one thing, actually starting it is another. For WebSphere to start, certain things need to be in place on the z/OS system. We won't cover those in step-by-step detail. We do however give a list of what's required. See "Appendix A - Behind the Scenes System Programmer Work" starting on page 25.

How to use this document

Proceed from front to back, following the directions as provided.

Upfront Work

This is work you do prior to running the spreadsheet and the zPMT tool.

Get a copy of the planning spreadsheet

☐ Go to the following URL:

`http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1331`

☐ Select the following edition of the spreadsheet:

Edition of spreadsheet to select for this white paper

☐ Download a copy to your workstation. Don't do anything with it yet. Just download it.

Download and Install the AST with the zPMT tool

☐ Make sure your workstation is connected to a high-speed network connection. The AST tool is quite large (nearly 800MB) and you'll need the bandwidth to download it.

☐ Go to the following URL:

`http://www.ibm.com/support/docview.wss?uid=swg24014241`

☐ Scroll to "Download package" and select either FTP or DD:

Downloading AST installation executable

The file name downloaded will be: `esd.image.ast.win32.zip`

☐ Unzip that file into its own directory

☐ Double-click on the file `install.exe` and follow the prompts. Take the defaults. Do not do anything with installed product yet. That comes later.

Run Rational Produce Updater so AST is at most recent maintenance level

☐ Select the following:

Start ⇨ All Programs ⇨ IBM WebSphere

⇨ Application Server Toolkit V6.1.1 ⇨ Application Server Toolkit

☐ When the "Select a Workspace" window comes up, do the following:

Provide a location, such as:
`C:\zPMT\Standalone`

1

2 **Click "OK"**
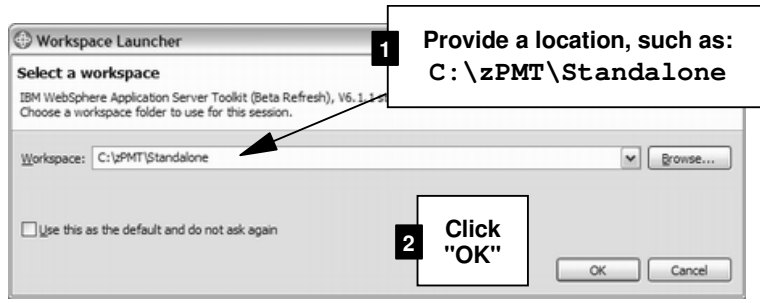
☐ When the product comes up, select:

Help ⇨ Software Updates ⇨ IBM Rational Product Updater

☐ You should see a window like this come up:

Select "Find Updates" **1**
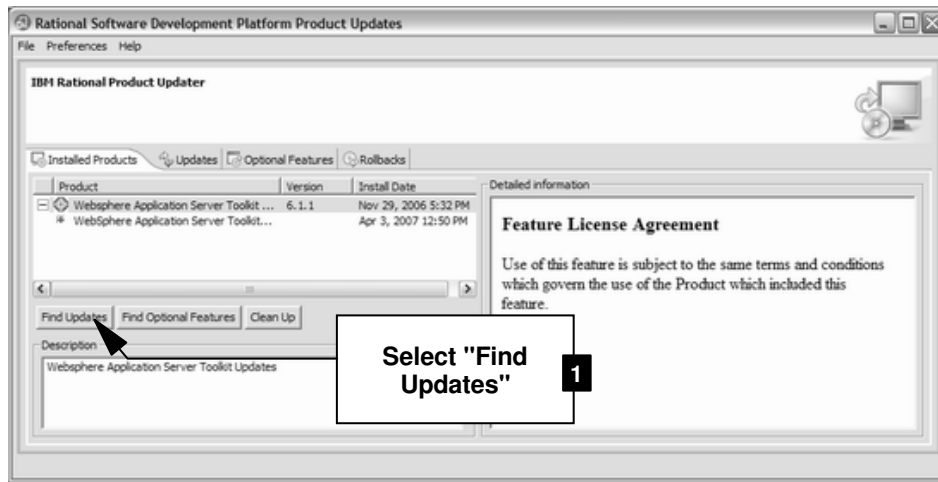
☐ Be patient as the updater function searches for updates:
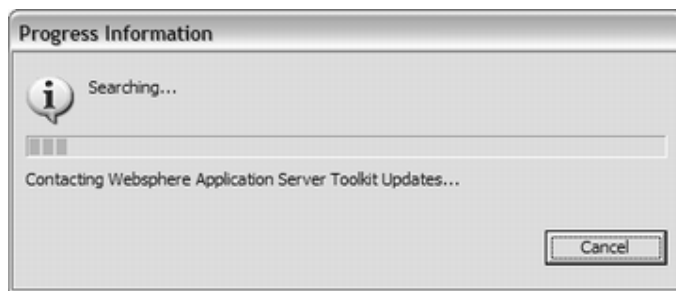
☐ If it finds available updates, it'll display a list. Select all the items on the list and click the "Install Updates" button.

> **Note:** This may take a long time -- as much as an hour or more. But it's important to have the latest level of the code.

☐ When the updates are done, close the Updater function and close the AST product as well.

Capture WebSphere product installation information

☐ Fill in the following information:

High Level Qualifier of target data sets	
Mount point of SBBOHFS data set	

Table 1 - SMP/E Information

Capture other MVS system information

☐ Fill in the following information:

MVS system name where configuration will run	
Sysplex Name Note	
Location of PROCLIB data set	
Host name of LPAR where server will reside ..	
Userid with UID=0 authority and its password Note	/

Table 2 - MVS System Information

Notes: • Sysplex name even if monoplex
  • UID=0 not strictly required, but using a UID=0 for this will make things easier.

Determine starting two characters of WebSphere names

The two characters are used as a prefix to all the names created. The first character must be alphabetical, the second may be alpha or numeric.   Examples: `AZ`, `B9`, `ZZ` ... whatever.

Note: Must be unique from any other WebSphere configuration on the same Sysplex.

☐ Decide on a two-character name identifier and write it down here:

Two character cell identifier	

Table 3 - Two character cell identifier value

Determine how userid and group UID and GID will be handled

The WebSphere configuration will involve the creation of some security groups and security IDs. There are a few questions that need to be answered by your security administrator.

☐ Ask these questions:

	Question	Answer
Q1	Is the security product RACF, or other?	☐ RACF ☐ Other
Q2	Does it support AUTOUID and AUTOGID?	☐ Yes ☐ No
Q3	Do you allow different address spaces to use the same ID? Or does local policy require one unique ID per unique address space?	☐ Common ID permitted ☐ Unique IDs required
Q4	If Q2 = "No," then provide range of 10 UID values that may be used	Range start: _____ Range end: _____
Q5	Provide range of 5 GID values that may be used	Range start: _____ Range end: _____

Table 4 - Security administrator questions

Get TCP port range from networking support

☐ Go to your TCP networking administrator and ask for a block of 100 TCP ports.

TCP port range	

Table 5 - TCP port range

Note: All 100 won't be used. But spreadsheet requires that range.

The Spreadsheet, the zPMT and Creating Customized Jobs

In this section you'll fill out the spreadsheet, create the response file that is then imported into the zPMT tool, and then generate the customized jobs.

Fill out the spreadsheet

☐ Open the spreadsheet you downloaded earlier.

☐ Click on the "Variables" tab:

| Path to WebSphere Install HFS (SBBOHFS) ==> | /usr/lpp/zWeb |
| Use Intermediate Symbolic Link to WebSphere Install HFS (Y | N)? | Y |

► \ Documentation \ **Variables** \ DMGR (zPMT) \ Stand-Alone Server (zPMT) \ Federate (zPMT) \

☐ Referring back to the information you captured in the "Upfront Work" section, fill in the following fields:

> **Note:** Case does not matter. The spreadsheet will fold to uppercase where necessary.

4	Variables related to Target z/OS Image on which WebSphere will be Configured	
5	Enter Sysplex Name ==>	plex
6	Enter System Name on which dialog is running ==>	sysa
7		
8	Enter Two Character Cell Abreviation ==>	az
9	Enter One Letter Node (LPAR) Qualifier ==>	a
10		
11	Enter Save Customization Dataset HLQ ==>	was610.was
12		
13	Enter PROCLIB Dataset Name ==>	sys1.proclib
14	Shared PROCs (Y | N)?	Y
15	Enter SYSEXEC Dataset Name (Optional) ==>	
16		
17	Enter HLQ for Log Stream Data Sets ==>	ixglogr
18		
19	Variables related to WebSphere Installation Datasets	
20	Enter HLQ of SBB* Datasets (PDS(E)'s) ==>	was610.was
21	Run WebSphere from STEPLIB (Y | N)?	Y

Refer to the notes and work row by row based on the spreadsheet row number

Notes:

Row #   Instructions:

Row #	Instructions
5	Enter the Sysplex name (from table 2)
6	Enter the MVS system name (from table 2)
8	Provide the two character cell identifier (from table 3)
9	Provide a one-character identifier for the LPAR. For example, "A" if MVS system name is SYSA, or the number "1" if you use numbers to designate LPARs. The value is really somewhat arbitrary. It does not need to match exactly with a real system value.
11	Provide a value of xxCELL.STAND where xx is your two character cell identifier.
13	Provide your PROCLIB data set name (from table 2)
14	Allow to default to Y.

Row #	Instructions:
15	Leave blank
17	Allow to default.
20	Provide the HLQ you captured on table 1
21	Allow to default to `Y`

☐ Continue on the same "Variables" sheet.

23	Variables related to WebSphere Configuration HFS/ZFS		
24	Enter Configuration HFS Dataset HLQ ==>	omvs.was610	
25			
26	Enter Configuration HFS Dataset LLQ ==>	CONFIG.HFS	
27			
28	Enter Configuration HFS High Level Directory ==>	/wasv61config	
29	Separate Configuration HFS (Y | N)?	Y	
30			
31	Configuration Dataset(s) File System Type (HFS | ZFS) ==>	HFS	
32			
33		DMGR	Stand-Alone Server	Empty Node
34	Primary Space Allocation (CYL) ==>	420	420	300
35	Secondary Space Allocation (CYL) ==>	100	100	100
36	Volume (* if SMS Managed) ==>	*	*	*
37			
38	Path to WebSphere Install HFS (SBBOHFS) ==>	/usr/lpp/zWebSphere/V6R1	
39	Use Intermediate Symbolic Link to WebSphere Install HFS (Y | N)?	Y	

Notes:

Row #	Instructions:
24-36	Take defaults
38	Provide the mount point of the WebSphere z/OS SBBOHFS data set (from table 1)
39	*Change* to **N**

☐ Continue on the same "Variables" sheet.

41	Variables related to Security Definitions in support of WebSphere	
42	Reduced RACF definitions (Y | N)?	Y
43	Use z/OS Security Product (Y | N | WAS)?	Y
44	Use Security Domain Identifier in RACF Profiles (Y | N)?	Y
45	Security Domain Identifier ==>	AZ
46		
47	OMVS Home Directory for WebSphere Userids ==>	/var/WebSphere/home
48		
49	Use AUTOGID/AUTOUID (Y | N)?	Y
50	Enter Starting GID ==>	2500
51	Enter Starting UID ==>	2400

Notes:

Row #	Instructions:
42	Go back to Table 4 on page 6. Look at the answer provided for Q3: • If "Common IDs permitted", then provide `Y` • If "Unique IDs required", then provide `N`
43	Allow to default to `Y` for security on; set to `N` if you wish security to be off.
44	Allow to default to `Y`
45	This field is generated by the spreadsheet. It picks up your two-character cell identifier and uses that value here. Leave this field alone.

Row #	Instructions:
47	Allow to default to `/var/WebSphere/home` unless you know for certain `/var` is not supposed to be used. If you wish to change this to some other value, you may do so.
49	Go back to Table 4 on page 6. Look at the answer provided for Q2: • If "Yes," then allow this to default to `Y` • If "No," then change this to `N`
50	Go back to Table 4 on page 6. Look at the answer provided for Q5. Provide the **G**ID range *starting* number.
51	Go back to Table 4 on page 6. Look at the answer provided for Q4. Provide the **U**ID range *starting* number.

☐ Continue the "Variables" sheet:

53	Variables related to HTTP Server Configuration	
54	Create a Web Server Definition (Y | N)?	y
55	Web Server Name ==>	webserver1
56	Web Server TCP/IP Host Name or Address ==>	http.ip.com
57	Web Server Port ==>	80

Notes:

Row #	Instructions:
54	*Change* to `N`
55-57	Allow to default

☐ Skip to line 90 in the "Variables" sheet:

89	Variables related to Application Deployment in Stand-Alone Server (zPMT ONLY)	
90	Deploy Admin Console Application (Y | N)?	Y
91	Deploy Default Application (Y | N)?	Y
92	Deploy Samples (Y | N)?	N
93		
94	Job Card Customization (zPMT ONLY)	
95	Job Card Line 1:	(ACCTNO,ROOM),'USERID',CLASS=A,REGION=0M,
96	Job Card Line 2:	// MSGCLASS=A,NOTIFY=?
97	Job Card Line 3:	//*
98	Job Card Line 4:	//*
99		
100	Variables related to Application Server Toolkit (zPMT ONLY)	
101	AST Workspace Directory ==>	C:\Documents and Settings\Administrator\AST\workspace
102	Full directory path to generated responseFile ==>	C:\Documents and Settings\Administrator\AST61\z_responseFiles

Notes:

Row #	Instructions:
90 - 92	Allow all three of these lines to default.
95 - 98	This is used to create the `JOB` card in the customized jobs. Two things: 1. Modify the `JOB` card settings to reflect your local environment 2. Go back to Table 2 on page 6. Either add `USER=` and `PASSWORD=` so this job runs under the UID=0 ID captured, or make certain the submitted jobs run under an ID that has UID=0 authority.
101-102	Allow to default

☐ Continue with the "Variables" sheet:

| 104	Variables related to SSL Configuration	
105	Generate Certificate Authority (CA) Certificate (Y | N)?	Y
106	Expiration Date for Certificate Authority ==>	2010/12/31
107	Enable SSL on Location Service Daemon (Y | N)?	Y
108		
109	Variables related to TCP/IP Network	
110	Enter TCP/IP Host Name for Stand-Alone Server ==>	base.ip.com
111	Enter TCP/IP Host Name for Deployment Manager ==>	dmgr.ip.com
112		
113	Register Stand-Alone Server's Daemon with WLM DNS (Y | N)?	N
114	Register Deployment Manager's Daemon with WLM DNS (Y | N)?	N
115		
116	Enter the hostname to bind Stand-Alone Server's ports to, or * for all >	*
117	Enter the hostname to bind Deployment Manager's ports to, or * for all >	*
118	Enter the hostname to bind Node Agent's ports to, or * for all >	*

Notes:

Row #   *Instructions:*

105-106	Take defaults
107	*Change* to **N**
110	Go back to Table 2 on page 6. Provide the LPAR host name here, for example www.mycorp.com or whatever your value is.
111	Allow to default. It won't matter what value is there ... we're not building a DMGR server.
113-118	Allow all to default

☐ Finish up with the "Variables" sheet:

120	TCP/IP Port Allocations					
121	Enter Starting TCP/IP Port ==>			9500		
122			Deployment	Node	App Srv #	
123		Daemon	Manager	Agent	01	02
124	JMX Soap		9510	9520	9540	9560
125	Bootstrap/ORB IIOP	9502	9511	9521	9541	9561
126	ORB SSL	9503	9512	9522	9542	9562
127	Cell/Node Discovery		9513	9523		
128	Node Multicast Discovery Port			9524		
129	High availability manager communication port		9515	9525	9543	9563
130	Session Initiation Protocol (SIP) Port				9544	9564
131	Session Initiation Protocol (SIP) Secure Port				9545	9565
132	Administrative console port		9518		9546	9566
133	Administrative...		9519		9547	9567
134					9550	9570
135	Servic...				9551	9571
136	Service Integration...				9552	9572
137	Service Integration MQ In...				9553	9573
138					9554	9574
139					9555	9575
140	HTTP				9548	9568
141	HTTP SSL				9549	9569
142	Interim Values for Stand-Alone Application Server's Daemon					
143	ORB IIOP	9500				
144	ORB SSL	9501				
145				Additional Node Agent Ports		
146	CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS			9530		
147	CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS			9531		
148	DRS_CLIENT_ADDRESS			9532		
149	NODE_IPV6_MULTICAST_DISCOVERY_ADDRESS			9533		
150	SAS_SSL_SERVERAUTH_LISTENER_ADDRESS			9534		

Only port values that will be used for Standalone Server

Notes:

Row #   *Instructions:*

121	Go back to Table 5 on page 7. Provide the TCP port range staring number here.

| Row #	Instructions:
124-150	All generated numbers. This table is provided so you can see the allocation of the ports from the range.

Note: The spreadsheet does *not* attempt to allocate ports efficiently. It tries to keep the last digit of the port consistent for all port types. For instance, HTTP ports all end in 8.

Create response file

☐ Click on the "Stand-Alone Server (zPMT)" tab:
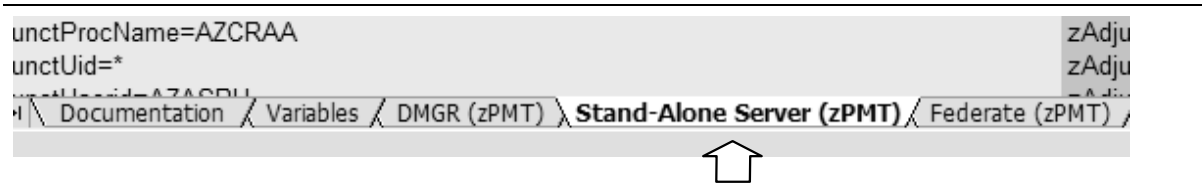
☐ Left mouse click on the column header for column A. That will select the whole column:
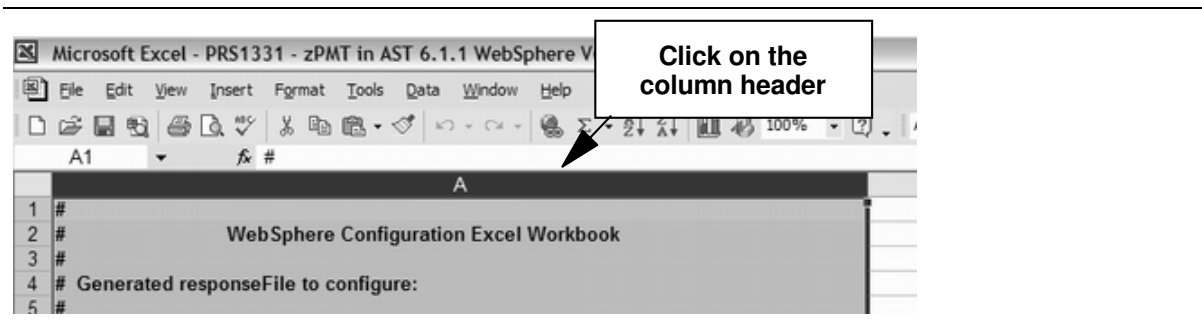
☐ Position cursor anywhere in the highlighted column A and *right* mouse click. Then select "Copy."

☐ Open up a copy of Notepad and paste the contents of the clipboard into the Notepad session.

☐ Save the file as `C:\response.txt.`

☐ Save the Excel spreadsheet with the cell name in the Excel file name -- ex: `MYCELL.xls`

☐ Close Excel.

Start zPMT and import response file

☐ Select the following:

Start ⇨ All Programs ⇨ IBM WebSphere

⇨ Application Server Toolkit V6.1.1 ⇨ Application Server Toolkit

☐ When the "Select a Workspace" window comes up, do the following:
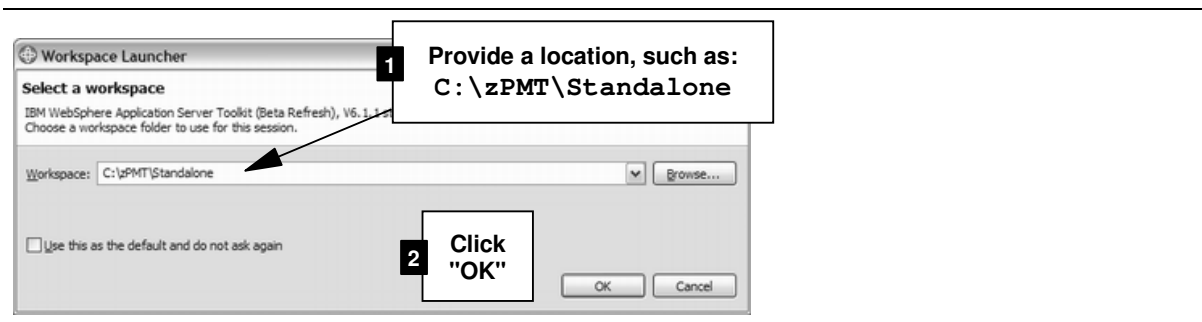
☐ When the product initializes, select:

*Window ⇨ Preferences*

☐ You should see this. Do as indicated:
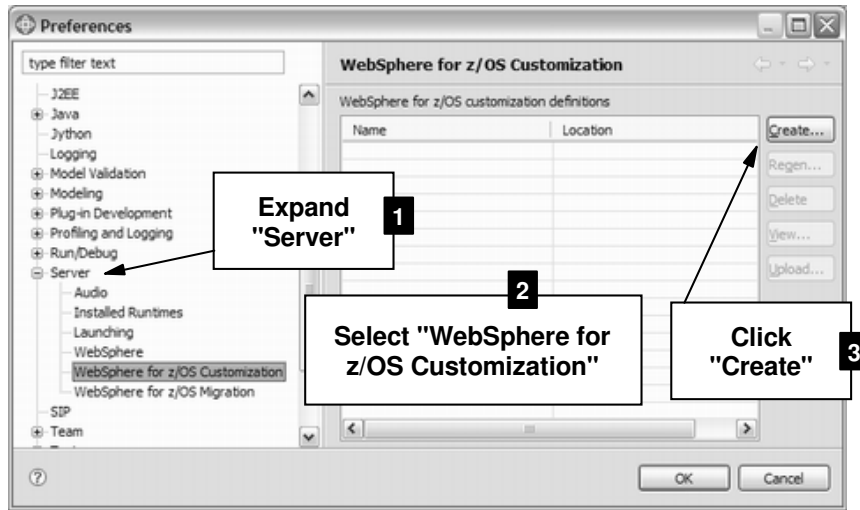
☐ At the general information panel, click "Next"

☐ Now select the configuration type you wish to create:
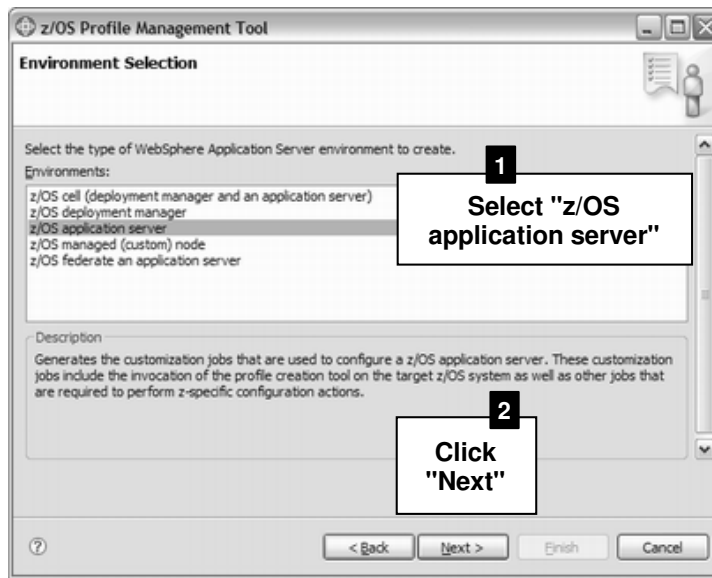
☐ It is now time to name your configuration and import the response file you saved earlier:
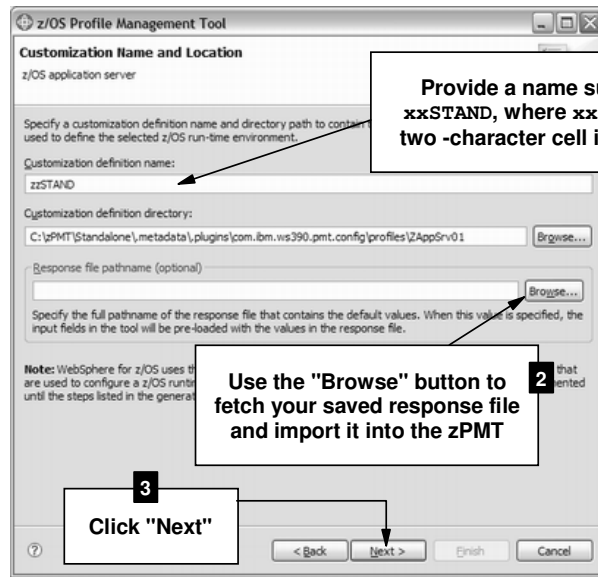
☐ Keep clicking "Next" -- 21 times to be precise -- until you get all the way to the "Customization Summary" panel. There you'll see a "Create" button.

☐ Click on "Create". This will generate the customized jobs.

☐ Click "Finish". You should now see this:
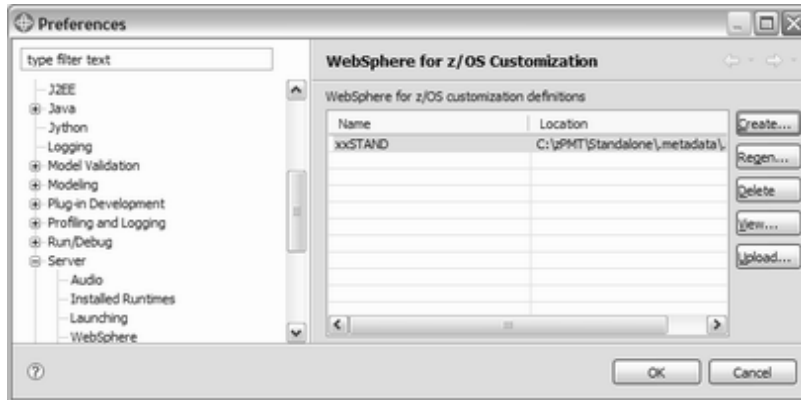
Note: The customized jobs are generated. They are on your PC's hard drive. The next step is to use the zPMT's built-in upload tool to get those jobs into an MVS partitioned data set so they can be submitted.

Upload customized jobs

☐ Do the following:
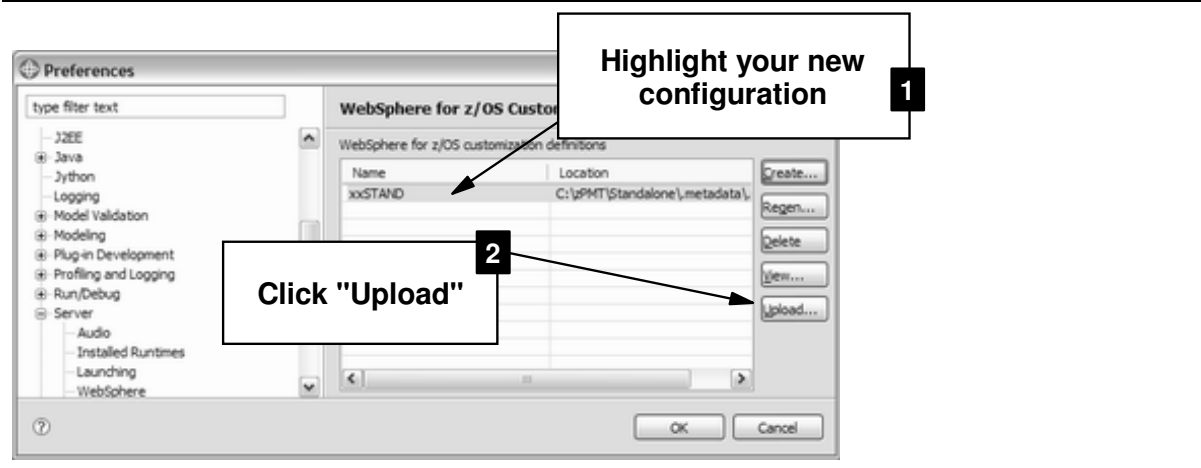
☐ Now do the following:
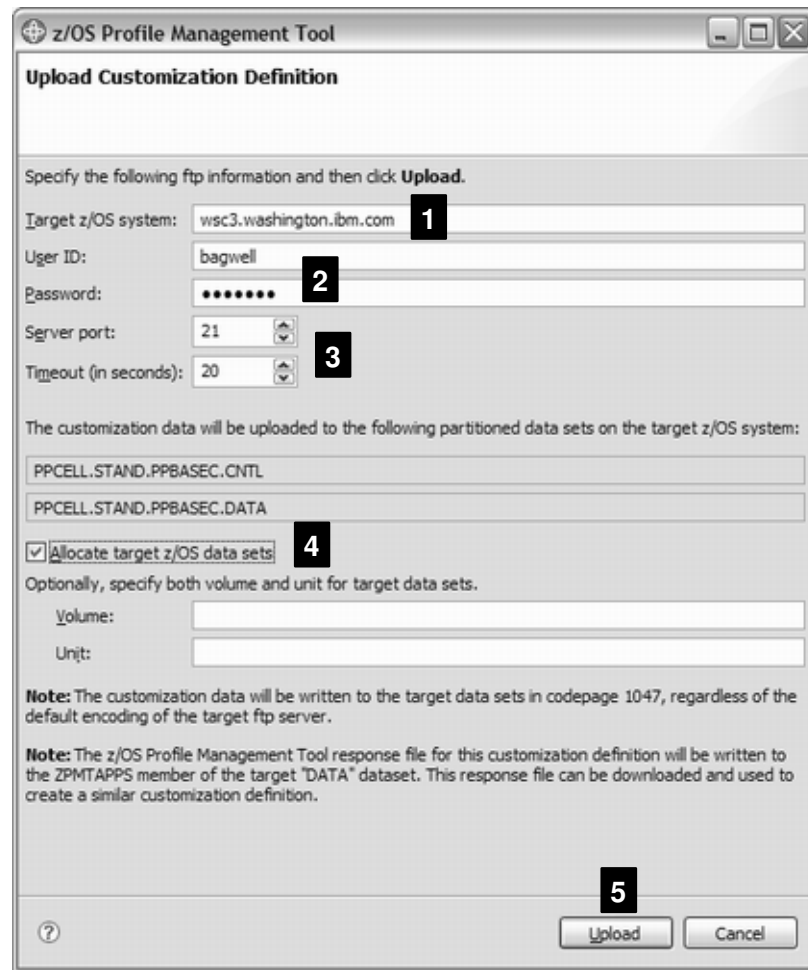
Notes:

1. The "Target z/OS system" value should be filled in based on what you supplied in the spreadsheet. If this is not correct, go back to the spreadsheet and correct there. Create a new response file and re-import into the zPMT tool.

2. Provide a valid userid and password pair that will allow the zPMT tool to establish an FTP session with the host.

3. The "Server port" defaults to 21, which is the industry standard for FTP. If your host system uses a different value, change the value here.

4. Check the "Allocate target z/OS data sets" checkbox unless you know for certain the data sets listed above the checkbox are already allocated and allocated properly.

5. Click the "Upload" button.

☐ Do as indicated:
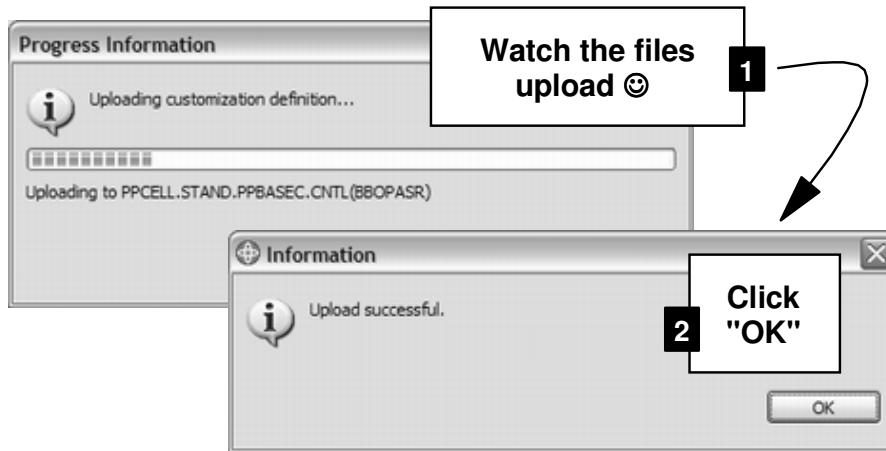
☐ You'll now be back at this panel. Click the "View" button:
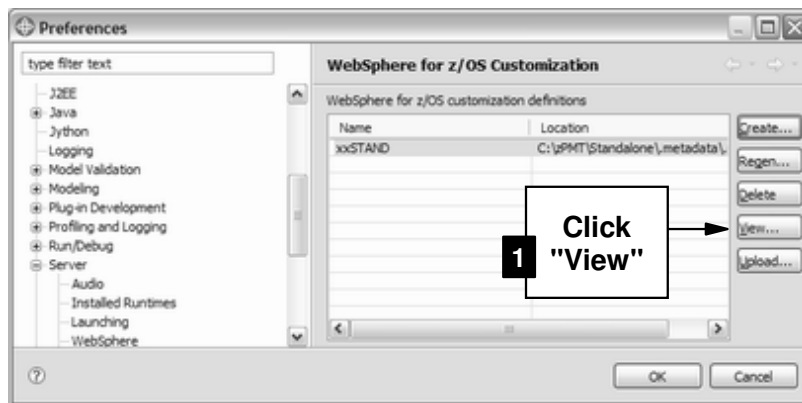
☐ Now do the following:
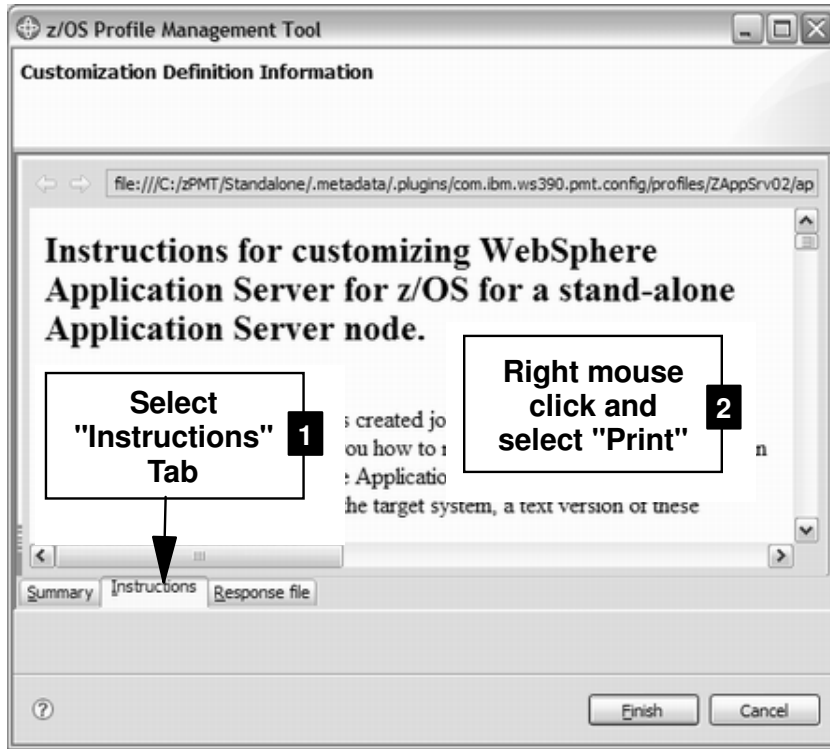
Note:	These are the instructions used to create the configuration.

☐ When you have the printout in hand, click the "Cancel" button to close the window.

Submit Customized Jobs and Start Server

Review of the instructions printed out

The instruction checklist is divided into two main sections:

- *"Manual configuration updates"* -- ten activities typically done by the system programmer. See "Appendix A - Behind the Scenes System Programmer Work" starting on page 25 for more information on these steps. These steps can be performed prior to running the jobs to create the configuration.

- *"Running the customized jobs"* -- 18 activities, most of which involve submitting jobs and reviewing their output.

In this section we will focus on the latter -- *"Running the customized jobs."*

Important notes!

- Run these jobs on the same MVS image as where you intend the WebSphere Standalone server to reside. That applies regardless of any shared HFS arrangements you may have.

- The jobs do different things, and require different authorities. The write-up that follows gives the authority each job needs. The easiest thing to do is use an ID with UID=0 and RACF Special. But if you don't have one ID that combines those two authorities, the separate IDs may be necessary.

Submit customized jobs

☐ Go to the `xxCELL.STAND.xxBASEy.CNTL` data set

where:
- `xx` is the two-character cell identifier value you used
- `y` is the single character LPAR identifier you used

☐ Work through the jobs in the order indicated here, which is taken directly from the instruction list we had you print out earlier.

> **Note:** The instruction list is also reproduced in the `BBOSSINS` member of the `CNTL` data set.

Step 1 - BBOSBRAJ job

Authority needed:	Authority to update data set.
What it does:	Creates RACF commands that `BBOSBRAK` job (next job) then executes to create profiles.
Successful completion:	Single step, single RC=0
Other notes:	
Complete:	❑

> **Not RACF?** Run this job. Then look at `**.DATA(BBOSBRAK)` member to see RACF profiles that will be created. Use that to translate to your SAF system command equivalents.

Step 2 - BBOSBRAK job

Authority needed:	RACF special
What it does:	Invokes the RACF commands held in the `**.DATA(BBOSBRAK)` member to create the common RACF MVS groups and IDs
Successful completion:	RACF profiles created successfully. RC=0 on step does not necessarily indicate success at creating RACF profiles. Inspect output.
Other notes:	Creates three group IDs and one user ID.
Complete:	❑

Not RACF?   Do **not** run this job. You will need to *manually* create equivalent profiles in your SAF system. Use `**.DATA(BBOSBRAK)` member to understand what profiles are needed.

Step 3 - BBOSBRAM job

Authority needed:	File system update authority. This is where a UID=0 ID makes things easy. But not strictly required. Read instruction information for "file system update authority" and see what `UNIXPRIV` access is needed so a UID=0 ID isn't needed.
What it does:	Creates a "home" directory for the IDs created in previous job.
Successful completion:	Single step, RC=0
Other notes:	
Complete:	❑

Not RACF?   Run this job. It does not invoke RACF. Rather, it merely creates directories.

Step 4 - BBOMSGC job

Authority needed:	Update for `SYS1.MSGENU` and `SYS1.MSGJPN`
What it does:	Copies members to the `SYS1.MSGENU` and `SYS1.MSGJPN` data sets. Used for message translation.
Successful completion:	Two steps, RC=0 for both
Other notes:	This is an *optional* job. Do not run if you don't require message translation.
Complete:	❑

Step 5 - BBOCBRAJ job

Authority needed:	Authority to update data set
What it does:	Creates RACF commands that BBOCBRAK job (next job) then executes to create profiles. Similar to the BBOSBRAJ, but the RACF commands created are different.
Successful completion:	Single step, single RC=0
Other notes:	
Complete:	❑

Not RACF? Run this job. Then look at **.DATA(BBOWBRAK) member to see RACF profiles that will be created. Use that to translate to your SAF system command equivalents.

Step 6 - BBOCBRAK job

Authority needed:	RACF special
What it does:	Invokes the RACF commands held in the **.DATA(BBOWBRAK) member to create the common RACF MVS groups and IDs
Successful completion:	RACF profiles created successfully. RC=0 on step does not necessarily indicate success at creating RACF profiles. Inspect output. See "other notes" next ...
Other notes:	Creates *many* profiles. You may see indications of profiles already existing. If back under Table 4 on page 6, under Q4, you indicated that "common ID" were permitted, then you *will* see the same ID being used for different address spaces -- the xxACRU ID will be created twice; it'll work the first time and fail the second. And the xxASRU will also be created twice, succeeding the first time and failing the second.
Complete:	❑

Not RACF? Do **not** run this job. You will need to *manually* create equivalent profiles in your SAF system. Use **.DATA(BBOWBRAK) member to understand what profiles are needed.

Step 6a - Give Admin ID a password

☐ The Admin ID of xxADMIN was created with no initial password. Do that now:

```
ALTUSER xxADMIN PASSWORD(zzzzzz) NOEXPIRED
```

where xx is your two character cell identifier, and zzzzzz is your new initial password

Step 7 - Check user ID authorizations

Authority needed:	Manual process ... no explicit job authority required
What it does:	Involves making sure xxCFG group ID has authority to access various datasets.
Successful completion:	When you have validated the ID authorizations
Other notes:	Rather than recreate the full text of instructions, we'll simply refer you back to the instruction member -- BBOSSINS. Consult that for instructions on what's required.
Complete:	❑

Step 8 - BBOWCHFS job

Authority needed:	File system update authority. UID=0 easiest. Otherwise, read instruction member and see what UNIXPRIV access is necessary. Job also requires authority to allocate file system dataset.
What it does:	Creates the configuration file system mount point, then allocates and mounts the file system.
Successful completion:	Two steps, RC=0 for both.
Other notes:	
Complete:	❑

Step 9 - BBOWHFSA job

Authority needed:	File system update authority. UID=0 easiest. Otherwise, read instruction member and see what UNIXPRIV access is necessary.
What it does:	Creates directories in new file system, and copies in various XML files.
Successful completion:	Three steps, RC=0 for each.
Other notes:	This job takes a minute or so.
Complete:	❑

Step 10 - BBOWCPY1 job

Authority needed:	Authority to copy members to SYS1.PROCLIB
What it does:	Copies JCL start procedures to PROCLIB.
Successful completion:	One step, RC=0.
Other notes:	
Complete:	❑

Step 11 - BBOWWPFA job

Authority needed:	File system update authority. UID=0 easiest. Otherwise, read instruction member and see what UNIXPRIV access is necessary.
What it does:	Creates the WebSphere "profile" inside your configuration file system.
Successful completion:	Thirteen steps, each RC=0
Other notes:	This job takes quite a long time. 10 minutes or more.
Complete:	❑

Step 12 - BBOWHFSB job

Authority needed:	File system update authority. UID=0 easiest. Otherwise, read instruction member and see what UNIXPRIV access is necessary.
What it does:	Sets configuration file system ownership and permissions.
Successful completion:	Four steps, each RC=0
Other notes:	
Complete:	❑

Step 13 - Access to SCEERUN and System SSL load modules

WebSphere needs access to the `SCEERUN`, `SCEERUN2` and System SSL load modules. We assumed they were in link list. If they are **not** in link list, then they need to be added to the `STEPLIB` concatenation.

> **Note:** If they *are* in link list, then you can skip to Step 14.

☐ Go to your `SYS1.PROCLIB` data set

☐ Edit each of the following members and add to the `STEPLIB` concatenation list, providing WebSphere access to the `SCEERUN`, `SCEERUN2` and System SSL load modules:

    ○ `xxACRyZ`

    ○ `xxASRyZ`

    ○ `xxCRAyZ`

    ○ `xxDEMNyZ`

where `xx` is your two-character cell identifier, and `y` is the LPAR identifier you provided.

☐ The next step involves editing a file in the configuration file system. The file is stored in EBCDIC, so you will be able to edit it using the normal ISPF editor. Do the following:

    ○ Go to either ISHELL, OMVS or a Telnet session (your preference)

    ○ Navigate to:

      `/wasv61config/xxcell/xxdmnode/DeploymentManager/profiles/default/bin`

    where `xx` is your two-character cell identifier.

    ○ Open for edit the file `setupCmdLine.sh`

    ○ Locate the following line (which should be on line 19):

      `STEPLIB=$STEPLIB:WAS610.WAS.SBBOLPA:...`

>   **Note:** The line is very long and extends beyond the right side of the viewable screen.

    ○ Scroll to the right and locate the end of the line

    ○ Add the `SCEERUN`, `SCEERUN2` and System SSL load module libraries at the end of the line, separating each with a colon - `:`

    ○ Save the file

Step 14 - Make sure RRS is active

☐ WebSphere requires RRS. Make sure it is started. Look for the message:

`ASA2011I RRS INITIALIZATION COMPLETE.  COMPONENT ID = SCRRS.`

If not started, start it.

Step 15 - Update WLM policy

☐ From the instruction member: "If your system is busy, you may want to include a rule in your WLM policy that OMVS work for job `xxSR01C` (such as the postinstaller step) is to run in a service class with a high service objective."

Step 16 - Start server

☐ Issue the following MVS start command:

```
START xxACRy,JOBNAME=xxSR01y,ENV=xxBASEy.xxNODEy.xxSR01y
```

where `xx` is your two-character cell identifier and `y` is your LPAR identifier.

☐ The order of start you'll see is this:

- The controller (`xxSR01y`) will start, but will pause for a bit

- The controller will start the Daemon server (`xxDEMNy`)

- When the Daemon finishes initializing the controller will continue until it initializes

- When the controller is up WLM will then automatically start a servant region (`xxSR01yS`)

☐ Look for the following message in the servant region (`xxSR01ys`):

```
BBOO0222I: WSVR0001I: Server SERVANT PROCESS xxsr01c open for
e-business.
```

That's a sign your server is ready to accept requests.

Step 17 - BBOWIVT job

☐ Skip it ... accessing the Admin Console is as good a verification test as any.

Access the Admin Console

☐ Re-open your saved planning spreadsheet.

☐ Go to the "Variables" tab

☐ Scroll down to the TCP port allocation table (near the bottom)

☐ Under the column "AppServer 01," locate the port for "Admin Console Port"

☐ From Internet Explorer, point your browser at:

```
http://<your_host_name>:yyyyy/ibm/console
```

where `yyyyy` is the Admin Console Port assigned to your new appserver.

☐ You'll very likely get a screen that looks like this:
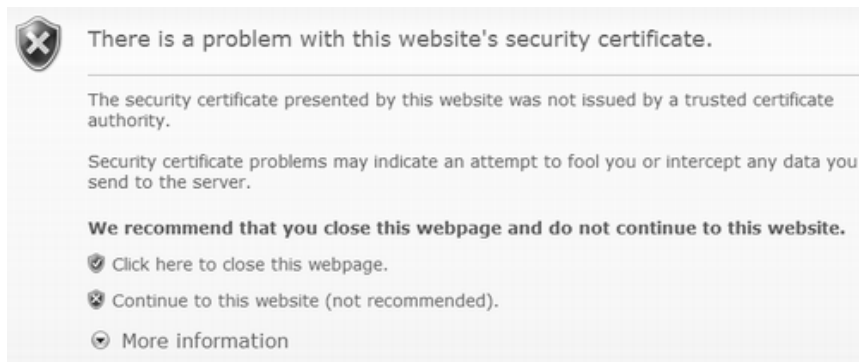
This is okay. It means your browser does not recognize the certificate generated by RACF. Click on the "Continue to this website" link.

☐ You should get a login panel that looks like this:

☐ Provide your Admin userid and password. The password you created back under "Step 6a - Give Admin ID a password" on page 20.

☐ You should receive the front page of the Admin Function:

Main screen of Admin Console

Note: Don't be surprised if it takes a while for the initial screen to load, or to load certain panels at first. Some of the JSP's need to be compiled when they're first touched.

Appendix A - Behind the Scenes System Programmer Work

The following is the actual "instruction member" from the Standalone Server creation. It lists the things a system programmer should or must do to allow the WebSphere server to actually start. Read through these instructions and review with the appropriate personnel to make sure they've been done.

Note: Substitute your two-character cell identifier for the "xx" throughout these instructions.

```
Doing manual configuration updates
----------------------------------

The customization dialog for WebSphere for z/OS does not attempt to
update configuration data for your base operating system or existing
subsystems. You must do the following manual steps prior to running
the WebSphere for z/OS configuration jobs.

Perform these steps to do manual configuration updates:

1.  Update BLSCUSER. Refer to member BBOIPCSP in

    xxCELL.STAND.xxBASEC.CNTL

    In order to use the IPCS support provided by the product, append
    the contents of this member to the BLSCUSER member in your IPCSPARM
    or system PARMLIB datasets.

    ----------------------------------------------------------------

2.  Update SCHEDxx. Refer to member BBOSCHED in

    xxCELL.STAND.xxBASEC.CNTL

    In order to set the correct program properties for the WebSphere
    for z/OS run-time executables, append the contents of this member
    to the SCHEDxx member in your system PARMLIB concatenation.

    Note: When you are finished, issue the command SET SCH=(xx,xx)
    to activate SCHEDxx and load a new program properties table.

    ----------------------------------------------------------------

3.  Make sure the following data sets are APF-authorized:

        WAS610.WAS.SBBOLPA
        WAS610.WAS.SBBOLOAD
        WAS610.WAS.SBBGLOAD
        WAS610.WAS.SBBOLD2

    Add these datasets to your PROGxx or IEAAPFxx parmlib members, as
    appropriate, ensuring you specify the correct volsers.

    ----------------------------------------------------------------

4.  If you want to collect the SMF120 records created by the run-time
    servers, update SMFPRMxx via the following:
    EXAMPLE:

        SUBSYS(STC,EXITS(IEFU29,IEFACTRT),INTERVAL(SMF,SYNC),
                    TYPE(0,30,70:79,88,89,120,245))
                                            ---

    For details on the SMF records, see related topics in the
```

WebSphere for z/OS Information Center at
http://www.ibm.com/software/webservers/appserv/zos_os390/library/

----

5. Update your active BPXPRMxx member to have the following WebSphere
    for z/OS configuration file system:

    OMVS.WAS610.xxCELL.xxNODEC.CONFIG.HFS

    mounted at:

    /wasv61config/xxcell/xxnodec

    in read/write mode.

    EXAMPLE:

        MOUNT FILESYSTEM('OMVS.WAS610.xxCELL.xxNODEC.CONFIG.HFS')
          MOUNTPOINT('/wasv61config/xxcell/xxnodec')
           TYPE(HFS)
           MODE(RDWR)

    If you are configuring in a sysplex environment, you may wish to
    to add the NOAUTOMOVE parameter as follows:

         MOUNT FILESYSTEM('OMVS.WAS610.xxCELL.xxNODEC.CONFIG.HFS')
          MOUNTPOINT('/wasv61config/xxcell/xxnodec')
           TYPE(HFS)
           MODE(RDWR) SYSNAME(SYSC) NOAUTOMOVE

    The NOAUTOMOVE parameter in the example above prevents the
    configuration file system from being mounted on a different z/OS
    system in a shared file system configuration, which could cause
    performance problems.

    ----

6. Update TCP/IP by reserving the following ports for WebSphere for
    z/OS:

        SOAP JMX Connector port   - 55640
        ORB port   - 55641
        ORB SSL port   - 55642
        Administrative console port   - 55646
        Administrative console secure port   - 55647

        HTTP Transport port   - 55648
        HTTPS Transport port   - 55649

        High availability manager communication port   - 55643
        Service Integration port   - 55650
        Service Integration Secure port   - 55651
        Service Integration MQ Interoperability port   - 55652
        Service Integration MQ Interoperability Secure port - 55653
        Session Initiation Protocol (SIP) port   - 55644
        Session Initiation Protocol (SIP) secure port   - 55645

        Daemon IP port   - 55600
        Daemon SSL port   - 55601

    View member BBOTCPIP in

    xxCELL.STAND.xxBASEC.CNTL

Add the contents of this member to the PORT section of the file
referenced by the DD statement for the TCP/IP profile in the
TCP/IP start procedure. Cut and paste from this member into the
data set used by your installation.

ATTENTION: If another application has already reserved any of these
ports for its own use, you must resolve the resulting conflict
before you continue. If you update the WebSphere for z/OS
customization dialog with new port specifications, be sure to
regenerate the customization jobs, data, and instructions.

    ----

7. The WebSphere product libraries will be placed in STEPLIB as
    needed, rather than in the system link pack area and system link
    list. Make sure that the target MVS system has at least 8MB
    of free storage in extended CSA for the daemon and for EACH
    node (deployment manager node or application server node).

    SBBOLOAD and SBBOLD2:
    ====================
    The following data sets will be placed in the STEPLIB concatenation
    for the location service daemon, controller and servant regions,
    and in the setupCmdLine.sh script in the WebSphere Configuration
    file system. You must not remove these STEPLIB statements.

    WAS610.WAS.SBBOLOAD
    WAS610.WAS.SBBOLD2

    BBORTS61:
    =========

    The BBORTS61 module is used by WebSphere Application Server for
    component trace support. A copy of this module (any maintenance
    level) must be in the system link pack area in order for CTRACE
    to work correctly.

    If a copy of BBORTS61 is currently loaded into LPA, you need take
    no further action.

    Otherwise, issue the following MVS console command to load BBORTS61
    into dynamic LPA:

      SETPROG LPA,ADD,MODNAME=BBORTS61,
            DSNAME=WAS610.WAS.SBBOLPA

    Alternatively, you can place the following statement in a parmlib
    PROGxx member which is activated with the SET PROG= command after
    system IPL is complete:

    LPA ADD MODNAME(BBORTS61)
      DSNAME(WAS610.WAS.SBBOLPA)

    Make sure that the BBORTS61 module is loaded into LPA after each
    system IPL.

    ----

8. WebSphere for z/OS customization assumes that the following system
    data sets are in the system link list:

    Language Environment   SCEERUN

```
                              SCEERUN2
```

```
System SSL                 SGSKLOAD (z/OS 1.5 and below)
                           SIEALNKE (z/OS 1.6 and above)
```

See the Language Environment Customization manual and the System
SSL Programming manual for your z/OS release for advice on placing
members from the libraries into the system link pack area.

Placing these data sets in the link list insulates your WebSphere
for z/OS configuration from changes in data set names (for example,
when migrating to z/OS 1.6).

If the Language Environment or System SSL load module libraries are
not in your system link list, you must perform the following steps
before starting any WebSphere Application Server for z/OS servers:

– Make sure the data sets are APF–authorized
– Complete the optional step below to add the data sets to STEPLIB
  in the server JCL and setupCmdLine.sh script(s).

If you regenerate server cataloged procedures at any point, make
sure the data sets are added to the new cataloged procedures.

----

9. If the error logstream
    xxCELL.ERROR.LOG
    does not already exist on your target system, make a copy of the
    appropriate job in the SBBOJCL data set, customize it according
    to the comments in the job, and run it:

        BBOERRLC   Create an error logstream in a coupling facility
        BBOERRLD   Create a DASD–only error logstream

----

10. WebSphere for z/OS regions open a large number of files (more than
    1024). Make sure your BPXPRMxx parmlib member(s) specify a value of
    MAXFILEPROC that is greater than or equal to 2000. Use the
    following MVS console command to see your current MAXFILEPROC
    setting:

      D OMVS,OPTIONS

Appendix B - Discarding Configuration and Cleaning Up

Suppose you've created this configuration and you want to throw it all away and do it again. How's that done? Here's how.

Clean up non-RACF components

This is relatively easy. Follow the instructions below:

File system and mount point

☐ Stop all the server address spaces

☐ Unmount the `OMVS.WAS610.xxCELL.xxNODEy.CONFIG.HFS` file system,where `xx` is your two-character cell identifier and `y` is your LPAR identifier

☐ Delete the `OMVS.WAS610.xxCELL.xxNODEy.CONFIG.HFS` data set, where `xx` is your two-character cell identifier and `y` is your LPAR identifier.

☐ Delete the directory `/wasv61config/xxcell`, and all sub-directories, where `xx` is your two-character cell identifier.

ID home directories

☐ Delete the following directories, all where `xx` is your two-character cell identifier:

   ○ `/var/WebSphere/home/xxCFG`

   ○ `/var/WebSphere/home/xxGUESTG`

   ○ `/var/WebSphere/home/xxSRG`

JCL start procedures

☐ Go to `SYS1.PROCLIB` and delete the following members, all where `xx` is your two-character cell identifier, and y your LPAR identifier.

   ○ `xxACRy`
   ○ `xxACRyZ`
   ○ `xxADMSH`
   ○ `xxASRy`
   ○ `xxASRyZ`
   ○ `xxCRAy`
   ○ `xxCRAyZ`
   ○ `xxDEMNy`
   ○ `xxDEMNyZ`

Customized job data sets

☐ Delete the following two data sets, where `xx` is your two character cell identifier and `y` your LPAR identifier.

   ○ `xxCELL.STAND.xxBASEy.CNTL`
   ○ `xxCELL.STAND.xxBASEy.DATA`

Clean up RACF profiles

Use this job to clean out all the profiles created by the various jobs. This only works when the SAF product is RACF. If you have a different product, you will need to construct a comparable job.

Substitute your two-character cell ID for `xx` throughout, change `y` to your LPAR identifer for the `STARTED` profiles, and make sure the job runs under an ID with RACF special.

```
//xxCLEAN   JOB (ACCTNO,ROOM),CLASS=A,REGION=0M,
//    USER=xxxxxx,PASSWORD=zzzzzz
//STEP1 EXEC PGM=IKJEFT01,DYNAMNBR=20,REGION=2M
//SYSTSPRT  DD SYSOUT=*
//*****************************************************************
//SYSTSIN   DD *
 /* USERS
 DELUSER xxACRU
 DELUSER xxADMIN
 DELUSER xxADMSH
 DELUSER xxASRU
 DELUSER xxGUEST
 DELUSER xxOWNER
 /* GROUPS
 DELGROUP xxCFG
 DELGROUP xxGUESTG
 DELGROUP xxSRG
 /* STARTED
 RDELETE STARTED xxACRy.*
 RDELETE STARTED xxADMSH.*
 RDELETE STARTED xxDEMNy.*
 RDELETE STARTED xxDMGRS.*
 RDELETE STARTED xxMGCR.*
 RDELETE STARTED xxSR01yA.*
 RDELETE STARTED xxSR01yS.*
 SETROPTS RACLIST(STARTED) GENERIC(STARTED) REFRESH
 /* CBIND
 RDELETE CBIND CB.BIND.xx.**
 RDELETE CBIND CB.xx.**
 SETROPTS RACLIST(CBIND) GENERIC(CBIND) REFRESH
 /* SERVER
 RDELETE SERVER CB.*.xxDMGR.*
 RDELETE SERVER CB.*.xxSR01.*
 RDELETE SERVER CB.*.xxSR01ADJUNCT.*
 SETROPTS RACLIST(SERVER) GENERIC(SERVER) REFRESH
 /* APPL
 RDELETE APPL xx
 SETROPTS RACLIST(APPL) GENERIC(APPL) REFRESH
 /* LOGSTRM
 RDELETE LOGSTRM xxCELL.ERROR.LOG
 SETROPTS RACLIST(LOGSTRM) GENERIC(LOGSTRM) REFRESH
 /* FACILITY
 RDELETE FACILITY BBO.SYNC.xxCELL.xxSR01
 RDELETE FACILITY BBO.TRUSTEDAxxS.xxCELL.xxSR01
 RDELETE FACILITY BBO.SYNC.xxCELL.**
 RDELETE FACILITY BBO.TRUSTEDAxxS.xxCELL.**
 SETROPTS RACLIST(FACILITY) GENERIC(FACILITY) REFRESH
 /* EJBROLE
 RDELETE EJBROLE  xx.administrator
 RDELETE EJBROLE  xx.adminsecuritymanager
 RDELETE EJBROLE  xx.configurator
 RDELETE EJBROLE  xx.deployer
 RDELETE EJBROLE  xx.monitor
 RDELETE EJBROLE  xx.operator
 RDELETE EJBROLE  xx.CosNamingCreate
 RDELETE EJBROLE  xx.CosNamingDelete
 RDELETE EJBROLE  xx.CosNamingRead
 RDELETE EJBROLE  xx.CosNamingWrite
 SETROPTS RACLIST(EJBROLE) GENERIC(EJBROLE) REFRESH
 /* CA CERTIFICATE
 RACDCERT CERTAUTH DELETE (LABEL('WebSphereCA.xxCELL'))
 SETROPTS RACLIST(FACILITY) GENERIC(FACILITY) REFRESH
 /*
```

Document Change History

Check the date in the footer of the document for the version of the document.

April 11, 2007	Original document.
April 11, 2007	Added Techdoc number WP100999 to the document. Fixed main title.

End of WP100999