



**Program Directory for
WebSphere Application Server V4.0.1
for z/OS and OS/390
For CBPDO Installation and ServerPac Reference**

Version 4 Release 0 Modification 1

Program Number 5655-F31

for Use with
OS/390 Release 8 or higher and z/OS

CBPDO Level SMC0134
Service Level PUT0108

Document Date: January 2002

Note!

Before using this information and the product it supports, be sure to read the general information under "Notices" on page vii.

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1.0 Introduction

This program directory is used only for reference if you are installing WebSphere Application Server V4.0.1 for z/OS and OS/390 with a SystemPac or ServerPac. When using these offerings, use the jobs and documentation supplied with the offering. This documentation may point you to specific sections of this program directory as required.

If you are installing WebSphere Application Server V4.0.1 for z/OS and OS/390 using the MVS Custom-Built Product Delivery Offering (CBPDO, 5751-CS3), a softcopy program directory is provided on the CBPDO tape which is identical to the printed copy shipped with your order. Your CBPDO contains a softcopy preventive service planning (PSP) upgrade for this product. All service and HOLDDATA for WebSphere Application Server V4.0.1 for z/OS and OS/390 are included on the CBPDO tape.

This program directory is intended for the system programmer responsible for program installation and maintenance. It contains information concerning the material and procedures associated with the installation of WebSphere Application Server V4.0.1 for z/OS and OS/390. You should read all of this program directory before installing the program and then keep it for future reference.

The program directory contains the following sections:

- 2.0, “Program Materials” on page 5 identifies the basic and optional program materials and documentation for WebSphere Application Server V4.0.1 for z/OS and OS/390.
- 3.0, “Program Support” on page 9 describes the IBM support available for WebSphere Application Server V4.0.1 for z/OS and OS/390.
- 4.0, “Program and Service Level Information” on page 11 lists the APARs (program level) and PTFs (service level) incorporated into WebSphere Application Server V4.0.1 for z/OS and OS/390.
- 5.0, “Installation Requirements and Considerations” on page 13 identifies the resources and considerations for installing and using WebSphere Application Server V4.0.1 for z/OS and OS/390.
- 6.0, “Installation Instructions” on page 29 provides detailed installation instructions for WebSphere Application Server V4.0.1 for z/OS and OS/390. It also describes the procedures for activating the functions of WebSphere Application Server V4.0.1 for z/OS and OS/390, or refers to appropriate publications.

Before installing WebSphere Application Server V4.0.1 for z/OS and OS/390, read 3.2, “Preventive Service Planning” on page 9. This section tells you how to find any updates to the information and procedures in this program directory.

1.1 WebSphere Application Server V4.0.1 for z/OS and OS/390 Description

WebSphere Application Server V4.0.1 for z/OS and OS/390 is an e-business application deployment environment built on open standards-based technology. It is the cornerstone of WebSphere application offerings and services, providing support for Servlets, JavaServer Pages (JSPs), and Enterprise Java Beans (EJB beans), in compliance with Java 2 Enterprise Edition (J2EE) specifications. Version 4 brought together Standard Edition and Enterprise Edition into a single product, providing a single offering. WebSphere Application Server V4.0.1 for z/OS and OS/390 continues to support connector access to CICS, IMS, and DB2, as well as support to connect among applications running on Web servers, CORBA application servers, and back-end systems such as DB2, CICS, and IMS. Included in this support is IBM Developer's Kit for the Java™ Platform 1.3.0, which provides the base support for applications at the Java 2 API level.

Note: WebSphere Application Server V4.0.1 for z/OS and OS/390 can operationally co-exist with WebSphere Application Server for OS/390 V3.0.2 Standard Edition and V3.5 Standard Edition, as long as the HFS file systems are mounted at unique mountpoints.

1.2 WebSphere Application Server V4.0.1 for z/OS and OS/390 FMIDs

WebSphere Application Server V4.0.1 for z/OS and OS/390 consists of the FMIDs listed in Figure 1. An explanation of the table headings is listed below.

Element Name	the name of the element
Level	the latest level of WebSphere Application Server in which the element changed. For non-exclusive elements, the equivalent level of the stand-alone product is listed in parentheses.
Excl	indicates whether the element is exclusive (available only in WebSphere Application Server V4.0.1 for z/OS and OS/390)
ALLOC	indicates whether the element has a sample allocate job
DDDEF	indicates whether the element has a sample job to define DDDEF entries
POST-I	indicates whether the element has any post-installation jobs
IVP	indicates whether the element has any installation verification procedure (IVP) jobs
MKDIR	indicates whether the element has any make directory jobs

Figure 1. WebSphere Application Server V4.0.1 for z/OS and OS/390 FMIDs

Element Name FMIDs	Level	E X C L	A L L O C	D D D E F	P O S T - I	I V P	M K D I R
Application Server H28W401	V4R0M1	Y	Y	Y	Y	Y	Y
IBM Developer Kit for OS/390 Java™ 2 Technology Edition HJVA130	V3R5M0 (IBM Developer Kit for OS/390, Java 2 Technology Edition, 5655-D35)	N	Y	Y	N	N	Y

2.0 Program Materials

An IBM program is identified by a program number and a feature number. The program number for WebSphere Application Server V4.0.1 for z/OS and OS/390 is 5655-F31.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature code, and are required for the use of the product. Optional Machine-Readable Materials are orderable under separate feature codes, and are not required for the product to function.

The program announcement material describes the features supported by WebSphere Application Server V4.0.1 for z/OS and OS/390. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

See Figure 1 for the list of FMIDs available for WebSphere Application Server V4.0.1 for z/OS and OS/390, or see the *MVS CBPDO Memo to User's Extension* for a full list of FMIDs and detailed information on tape volumes and file format.

The distribution medium for this program is magnetic tape or downloadable files. It is installed using SMP/E, and is in SMP/E RELFILE format. See 6.0, "Installation Instructions" on page 29 for more information about how to install the program.

Figure 2. Basic Material: Program Tape

Feature Number	Description	R/M
5812	WebSphere for z/OS	N
5812	IBM Developer Kit for OS/390	N

* R/M = Restricted Materials of IBM

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for WebSphere Application Server V4.0.1 for z/OS and OS/390.

2.3 Program Publications

The following sections identify the basic and optional publications for WebSphere Application Server V4.0.1 for z/OS and OS/390.

2.3.1 Basic Program Publications

Figure 3 on page 6 identifies the basic unlicensed program publications for WebSphere Application Server V4.0.1 for z/OS and OS/390. These publications may be viewed online or downloaded for printing at <http://www.ibm.com/software/webserver/appserv/>

<i>Figure 3. Basic Material: Unlicensed Publications</i>		
Publication Title	Form Number	Feature Number
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: Installation and Customization</i>	GA22-7834	
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: Messages and Diagnosis</i>	GA22-7837	
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: Operations and Administration</i>	SA22-7835	
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: Assembling Java 2 Platform, Enterprise Edition (J2EE) Applications</i>	SA22-7836	
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: Assembling CORBA Applications</i>	SA22-7848	
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: System Management User Interface</i>	SA22-7838	
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: Migration</i>	GA22-7860	
<i>WebSphere Application Server V4.0.1 for z/OS and OS/390: System Management Scripting Application Programming Interface</i>	SA22-7839	

2.3.2 Optional Program Publications

Figure 4 identifies the optional unlicensed program publications for WebSphere Application Server V4.0.1 for z/OS and OS/390. These publications may be viewed online or downloaded for printing at <http://www.ibm.com/software/webservers/appserv/library.html>

<i>Figure 4. Optional Material: Unlicensed Publications</i>	
Publication Title	Form Number
<i>Building Business Solutions with WebSphere</i>	SC09-4432
<i>Writing Enterprise Java Beans in WebSphere</i>	SC09-4431

Information about the IBM Developer Kit for OS/390 Java 2 Technology Edition product is available electronically at <http://www.s390.ibm.com/java>.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for WebSphere Application Server V4.0.1 for z/OS and OS/390.

2.5 Publications Useful During Installation

The publications listed in Figure 5 and Figure 6 may be useful during the installation of WebSphere Application Server V4.0.1 for z/OS and OS/390. If you are installing WebSphere Application Server V4.0.1 onto an OS/390 system, refer to the publications in Figure 5. If you are installing WebSphere Application Server onto a z/OS system, refer to the publications in Figure 6. To order copies for any of the listed publications, contact your IBM representative.

Publication Title	Form Number
<i>OS/390 Information Roadmap</i>	GC28-1727
<i>OS/390 MVS JCL Reference</i>	GC28-1757
<i>OS/390 MVS System Codes</i>	GC28-1780
<i>OS/390 MVS System Messages, Vol 1 (ABA-ASA)</i>	GC28-1784
<i>OS/390 MVS System Messages, Vol 2 (ASB-EZM)</i>	GC28-1785
<i>OS/390 MVS System Messages, Vol 3 (GDE-IEB)</i>	GC28-1786
<i>OS/390 MVS System Messages, Vol 4 (IEC-IFD)</i>	GC28-1787
<i>OS/390 MVS System Messages, Vol 5 (IGD-IZP)</i>	GC28-1788
<i>OS/390 SMP/E Commands</i>	SC28-1805
<i>OS/390 SMP/E Messages and Codes</i>	SC28-1738
<i>OS/390 SMP/E Reference</i>	SC28-1806
<i>OS/390 SMP/E User's Guide</i>	SC28-1740
<i>OS/390 Planning for Installation</i>	GC28-1726
<i>OS/390 UNIX System Services Command Reference</i>	SC28-1892
<i>OS/390 UNIX System Services Planning</i>	SC28-1890

If you are installing WebSphere Application Server V4.0.1 for z/OS and OS/390 onto a z/OS system, the following publications may be useful.

Figure 6. z/OS Publications Useful During Installation

Publication Title	Form Number
<i>z/OS Information Roadmap</i>	SA22-7500
<i>z/OS MVS JCL Reference</i>	SA22-7597
<i>z/OS MVS System Codes</i>	SA22-7626
<i>z/OS MVS System Messages, Vol 1 (ABA-AOM)</i>	SA22-7631
<i>z/OS MVS System Messages, Vol 2 (ARC-ASA)</i>	SA22-7632
<i>z/OS MVS System Messages, Vol 3 (ASB-BPX)</i>	SA22-7633
<i>z/OS MVS System Messages, Vol 4 (CBD-DMO)</i>	SA22-7634
<i>z/OS MVS System Messages, Vol 5 (EDG-GFS)</i>	SA22-7635
<i>z/OS MVS System Messages, Vol 6 (GOS-IEA)</i>	SA22-7636
<i>z/OS MVS System Messages, Vol 7 (IEB-IEE)</i>	SA22-7637
<i>z/OS MVS System Messages, Vol 8 (IEF-IGD)</i>	SA22-7638
<i>z/OS MVS System Messages, Vol 9 (IGF-IWM)</i>	SA22-7639
<i>z/OS MVS System Messages, Vol 10 (IXC-IZP)</i>	SA22-7640
<i>z/OS SMP/E Commands</i>	SA22-7771
<i>z/OS SMP/E Messages, Codes, and Diagnosis</i>	GA22-7770
<i>z/OS SMP/E Reference</i>	SA22-7772
<i>z/OS SMP/E User's Guide</i>	SA22-7773
<i>z/OS Planning for Installation</i>	GA22-7504
<i>z/OS UNIX System Services Command Reference</i>	SA22-7802
<i>z/OS UNIX System Services Planning</i>	GA22-7800

2.6 WebSphere for z/OS Tools and Supplements

For additional WebSphere for z/OS tools and supplements, go to:
http://www.ibm.com/software/webservers/appserv/zos_os390/download.html

3.0 Program Support

This section describes the IBM support available for WebSphere Application Server V4.0.1 for z/OS and OS/390.

3.1 Program Services

Contact your IBM representative for specific information about available program services.

3.2 Preventive Service Planning

Before installing WebSphere Application Server V4.0.1 for z/OS and OS/390, you should review the current Preventive Service Planning (PSP) information. If you obtained WebSphere Application Server V4.0.1 for z/OS and OS/390 as part of a CBPDO, there is HOLDDATA and PSP information included on the CBPDO tape.

If the CBPDO is more than two weeks old when you install it, you should contact the IBM Support Center or use S/390 SoftwareXcel to obtain the current "PSP Bucket".

PSP Buckets are identified by UPGRADEs, which specify product levels, and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for WebSphere Application Server V4.0.1 for z/OS and OS/390 are:

Figure 7. PSP Upgrade and Subset ID

UPGRADE	SUBSET	Description
WASAS401	WAS401	Application Server
JAVAOS390	HJVA130	IBM Developer Kit for OS/390 Java 2 Technology Edition

3.3 Statement of Support Procedures

Report any difficulties you have using this program to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Figure 8 identifies the component IDs (COMPID) for WebSphere Application Server V4.0.1 for z/OS and OS/390.

Figure 8. Component IDs

FMID	COMPID	Component Name	RETAIN Release
H28W401	5655A9801	WebSphere Application Server V4.0.1	401
H28W401	5655A9800	Web Container	401
HJVA130	5648C9800	IBM Developer Kit for OS/390 Java 2 Technology Edition (JAVA 2(1.3) Common)	130
HJVA130	5648C9801	IBM Developer Kit for OS/390 Java 2 Technology Edition (JAVA SDK for OS/390)	130

4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of WebSphere Application Server V4.0.1 for z/OS and OS/390. The program level refers to the APAR fixes incorporated into the program. The service level refers to the integrated PTFs.

4.1 Program Level Information

The following APAR fixes against previous releases of elements contained in WebSphere Application Server V4.0.1 for z/OS and OS/390 have been incorporated into this version. They are listed by FMID.

- **FMID H28W401 (Application Server)**

PQ49293 PQ50345 PQ50644 PQ50761 PQ51510 PQ51175 PQ51999 PQ51451
PQ51685 PQ51890 PQ51993 PQ51904 PQ52309 PQ52167 PQ52123 PQ52124
PQ48857 PQ51703 PQ51717 PQ52091 PQ53149
OW44233 OW44381 OW44382 OW44383 OW44455 OW44456 OW44463 OW44609
OW44610 OW44629 OW44630 OW44639 OW44640 OW44709 OW44799 OW44849
OW44885 OW45227 OW45367 OW45386 OW45496 OW45510 OW45543 OW45779
OW45816 OW45822 OW45845 OW45936 OW46201 OW46211 OW46423 OW46425
OW46469 OW46612 OW46625 OW46668 OW46956 OW46958 OW47037
OW47069 OW47145 OW47110 OW47298 PQ38770 PQ38895 PQ39215 PQ39897
PQ39844 PQ39848 PQ39936 PQ40030 PQ40125 PQ40245 PQ40315 PQ40361
PQ40375 PQ40377 PQ40378 PQ40527 PQ40530 PQ40655 PQ40710 PQ40801
PQ40870 PQ41019 PQ41169 PQ41419 PQ41427 PQ41492 PQ41672 PQ42869
PQ43240 PQ44247 PQ44428 PQ44741 PQ44770 PQ44825 PQ44850 PQ44966
PQ45003 OW48012 PQ46785 PQ46875 PQ46891 PQ46892 PQ46893
PQ46893 PQ47149 PQ47185 PQ47706 PQ47681 PQ47682 PQ48603 PQ48859
PQ49009 PQ49215 PQ49204 PQ49157 PQ48858 PQ49461 PQ48856 PQ50134
PQ49152 PQ49692 PQ50227 PQ49310 PQ50136 PQ50956 OW46996 PQ50227
PQ50136 PQ49857 PQ49872 PQ50486 PQ51052
PQ47172 PQ46512 PQ47284 PQ47578 PQ47610 PQ49054 PQ49448 PQ49276
PQ49962 PQ50790 PQ50839 PQ50945 PQ45791 PQ42649 PQ46870 PQ47901
PQ47065 PQ47220 PQ46705 PQ47897 PQ47500 PQ48553 PQ48406 PQ47341
PQ42711 PQ47850 PQ46526 PQ47684 PQ48493

The following APARs, which were reported on previous releases and closed FIN, have been included in this release.

OW45800 OW45815 OW45964 OW46004 OW46629 OW46650 OW46701 OW46746
PQ45298 OW46934 OW47008 OW47540 OW48063

- **FMID HJVA130 (IBM Developer Kit for OS/390 Java 2 Technology Edition)**

No APARs have been incorporated at this time.

4.2 Service Level Information

No PTFs against this version of WebSphere Application Server V4.0.1 for z/OS and OS/390 have been incorporated into the product tape.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating WebSphere Application Server V4.0.1 for z/OS and OS/390. The following terminology is used:

- *Driving system*: the system used to install the program.
- *Target system*: the system on which the program is installed.

In many cases, the same system can be used as both a driving system and a target system. However, you may want to set up a clone of your system to use as a target system by making a separate IPL-able copy of the running system. The clone should include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Some cases where two systems should be used include the following:

- When installing a new level of a product that is already installed, the new product will delete the old one. By installing onto a separate target system, you can test the new product while still keeping the old one in production.
- When installing a product that shares libraries or load modules with other products, the installation can disrupt the other products. Installing onto a test system or clone will allow you to assess these impacts without disrupting your production system.

Note: If your SMPLTS data set is currently a PDS, you must allocate a new PDSE, copy your existing SMPLTS into it, then change the SMPLTS DDDEF entry to indicate the new PDSE data set. For more information, see Figure 14 on page 21.

5.1 Driving System Requirements

This section describes the environment of the driving system required to install WebSphere Application Server V4.0.1 for z/OS and OS/390.

5.1.1 Machine Requirements

The driving system can run in any hardware environment that supports the required software.

5.1.2 Programming Requirements

Figure 9. Driving System Software Requirements

Program Number	Product Name and Minimum VRM/Service Level
5647-A01	OS/390 SMP/E Version 2 Release 7 or higher
	or
5655-G44	IBM SMP/E for z/OS and OS/390, V3 R1 or higher
5647-A01	OS/390 Version 2 Release 7 or higher and APAR OW43502. The fix for APAR OW43502 is needed only if installing on R8 or R9. It is not needed if installing on R10.
	or
5694-A01	z/OS Version 1 Release 1 or higher.

Notes:

1. UNIX must be up in full function mode on your driving system so that the utilities are available for the Shell Script support.
2. Before installing WebSphere Application Server V4.0.1 for z/OS and OS/390, you must ensure that the target system's HFS is available (OMVS active and the target file systems mounted) for processing.
3. If you are installing WebSphere Application Server V4.0.1 for z/OS and OS/390 into non-SMS-managed PDSEs, you need to install the following maintenance on the driving and/or target system where the non-SMS-managed PDSEs reside:
 - OS/390 DFP R7
 - UW65974
 - UW62253
 - UW64190
 - UW65985
 - UW66947
 - UW66208
 - UW67511
 - OS/390 BCP
 - UW66027 (Release 7)
 - UW66028 (Release 8 and Release 9)
 - OS/390 TSO/E Release 7 and higher
 - UW66144
 - OS/390 ISPF
 - UW66120 (Release 7)

- UW66121 (Release 8)
- OS/390 SMP/E Release 7 and higher
 - UR52136
- 4. An SMP/E utility entry for the binder is required. You can specify any of these program names in the UTILITY entry: IEWBLINK, HEWL, IEWL, LINKEDIT, or HEWLH096. (The linkage editor which uses the names HEWLKED, HEWLF064, IEWLF440, IEWLF880, and IEWLF128 cannot be used.)
- 5. The following installation jobs must be run under a userid with UID(0), or with a userid with read access to the BPX.SUPERUSER resource in the RACF facility class. The installation userid must also have read access to the facility class resource BPX.FILEATTR.PROGCTL. This requirement is stated in the sample job comments.
 - AJVISMKD
 - BBOISMKD

A userid with access to BPX.FILEATTR.PROGCTL is required because the program control bits are set by default for the IBM Developer Kit for OS/390 Java 2 Technology Edition directory /usr/lpp/java/IBM/J1.3/bin.

5.2 Target System Requirements

This section describes the environment of the target system required to install and use WebSphere Application Server V4.0.1 for z/OS and OS/390.

5.2.1 Machine Requirements

WebSphere Application Server V4.0.1 for z/OS and OS/390 will run on any hardware that supports the OS/390 operating system (V2 R8 and later) and the z/OS operating system. However, due to changes introduced in SDK 1.3.0, there are significant performance advantages for those applications doing floating point arithmetic if the machine has binary floating point hardware, such as S/390 Parallel Enterprise Server - Generation 5 and higher systems.

For similar reasons, applications currently running on a WebSphere Application Server for OS/390 Standard Edition or Enterprise Edition V3.02 server will face performance degradation if moved to a V4.0.1 server running on a machine without binary floating point hardware. A hardware upgrade is highly recommended prior to moving these applications to V4.0.1.

5.2.2 Programming Requirements

5.2.2.1 Mandatory Requisites

A mandatory requisite is defined as a product that is required without exception; this product either **will not install** or **will not function** unless this requisite is met. This includes products that are specified as REQs or PREs.

Note: PTFs listed in bold in Figure 10 are not included in the SMP/E logic on the product tape and the customer should install them or verify that they are already installed before starting WebSphere Application Server V4.0.1 for z/OS and OS/390.

<i>Figure 10 (Page 1 of 2). Mandatory Requisites</i>	
Program Number	Product Name and Minimum VRM/Service Level
Any one of the following:	
5647-A01	OS/390 R8 with APARs/PTFs: UQ28424, UQ29258, UQ29752, UQ30918, UQ31101, UQ33619, UQ33690, UQ35424, UQ39549, UQ41698, UQ41430, UQ43858, UQ44332, UQ45854, UQ46558, UQ46969, UQ49014, UW57102, UW58950, UW63449, UW63511, UW64467, UW65196, UW65457, UW66020, UW66059, UW66279, UW66426, UW66499, UW66631, UW66643, UW66944, UW67545, UW67580, UW67863, UW69103, UW69379, UW70547, UW71574, UW72071, UW72074, UW72077, UW72080, UW72127, UW72789, UW72914, UW73004, UW73407, UW73816, UW74572, UW78189, UW78425, UW78427, UW79242, UW72456, UW79369, UW79446
5647-A01	OS/390 R9 with APARs/PTFs: UQ28424, UQ35424, UQ41431, UQ41699, UQ43859, UQ44333, UQ45855, UQ46558, UQ46970, UQ49014, UW58950, UW65196, UW66059, UW66279, UW66280, UW66499, UW66643, UW66944, UW66945, UW67545, UW67547, UW67580, UW67581, UW67863, UW67865, UW69103, UW69105, UW70549, UW71574, UW72076, UW72079, UW72789, UW72918, UW73004, UW73407, UW74573, UW78190, UW78428, UW78429, UW81160, UW79242, UW72457, UW79371, UW79447
5647-A01	OS/390 R10 with APARs/PTFs: UQ43857, UQ45856, UQ46971, UQ49015, UW70444, UW70548, UW71651, UW71902, UW72075, UW72078, UW73408, UW73722, UW74449, UW78191, UW78426, UW78430, UW81159, UW79243, UW79370, UW79448

Figure 10 (Page 2 of 2). Mandatory Requisites

Program Number	Product Name and Minimum VRM/Service Level
5647-A01	z/OS R1 with APARs/PTFs: UQ43857, UQ45856, UQ49015, UW70444, UW70548, UW71902, UW72075, UW72078, UW73408, UW73722, UW78191, UW78426, UW78431, UW78432, UW79243, UW79370, UW79448
5647-A01	z/OS R2. There are no additional APARs/PTFs to be installed.
Any one of the following:	
5647-A01	OS/390 R8 Security Server with APARs/PTFs: UW63511, UW64467, UW65457, UW66426, UW69379, UW71574, UW76075, UW76456 UW79937, UW72458, UW78360, UW76120
5647-A01	OS/390 R9 Security Server with APARs/PTFs: UW63511, UW64467, UW65457, UW66426, UW69379, UW71574, UW76075, UW76456 UW79937, UW72458, UW78360, UW76120
5647-A01	OS/390 R10 Security Server with APARs/PTFs: UW71575, UW76076, UW76457 UW79934, UW79938, UW78361, UW76120
5647-A01	z/OS R1 with APARs/PTFs: UW71575, UW76076, UW76457 UW79938, UW78361, UW76120
5647-A01	z/OS R2. There are no additional APARs/PTFs to be installed.
And the following:	
5675-DB2	DB2 Version 7. Use of DB2 requires licensed utilities, from IBM or equivalent. 5697-E98 -- DB2 Utilities Suite, or equivalent , is recommended in addition to DB2 itself. UQ50308, UQ51529, UQ52259, UQ52315, UQ53392, UQ52145, UQ54728, UQ54729, UQ56929
5655-D35	IBM Developer Kit for OS/390 Java™ 2 Technology Edition (included with this product) with PTF UQ56153 Base Java support, plus CORBA ORB support

Note: If you plan to run multiple levels of DB2 in a data sharing environment (for example, 7.1 and 6.1 or 7.1 and 5.1), there are coexistence PTFs that need to be installed. Please consult the DB2 publications or support for the specific APARs to install.

5.2.2.2 Functional Requisites

A functional requisite is defined as a product that is **not** required for the successful installation of this product or for the basic function of the product, but **is** needed at run time for a specific function of this product to work. This includes products that are specified as IF REQs.

Note: PTFs listed in bold are not included in the SMP/E logic on the product tape and need to be ordered and installed separately.

<i>Figure 11. Functional Requisites</i>		
Program Number	Product Name and Minimum VRM/Service Level	Function
5647-A01	IBM HTTP Server V5.2 with PTF UQ57041 (OS/390 Release 8 or 9) or IBM HTTP Server V5.3 with PTF UQ57046 (OS/390 Release 10 or z/OS)	Serving HTTP Requests
5647-A01	OS/390 V2R8 (or higher) SecureWay Communications Server IP or a functionally equivalent product	Java networking classes
5647-A01	OS/390 V2R8 (or higher) SecureWay Communications Server X/Windows feature or a functionally equivalent product with X/Windows (X11R6) feature	Java windowing support
5647-A01	OS/390 R8 or higher Security Server (RACF) with APAR OW46859	EJB Roles support
5647-A01	OS/390 R8 or higher C/C++ with PTFs: UQ25762, UQ30331, UQ38764, UQ38765, UQ90002	WebSphere Business Application
5647-A01	OS/390 R8 DCE User Data Privacy DES feature	Component Broker Quality of Protection level of confidentiality
5647-147	CICS V1 R3	Component Broker Business Application (if using CICS/PAA)
5655-158	IMS V6 R1 with PTFs: UQ22097, UQ23685, UQ30721, UQ32135, UQ35463, UQ35464, UQ39673, UQ42049	Component Broker Business Application (if using IMS/PAA)

5.2.2.3 Toleration/Coexistence Requisites

A toleration/coexistence requisite is defined as a product or service which must be present on a sharing system. These systems can be other systems in a multisystem environment (not necessarily sysplex), a shared DASD environment (such as test and production), or systems that reuse the same DASD at different time intervals.

WebSphere Application Server V4.0.1 for z/OS and OS/390 has no toleration/coexistence requisites.

5.2.2.4 Incompatibility (Negative) Requisites

A negative requisite identifies products which must *not* be installed on the same system as this product.

WebSphere Application Server V4.0.1 for z/OS and OS/390 has no negative requisites.

5.2.3 DASD Storage Requirements

WebSphere Application Server V4.0.1 for z/OS and OS/390 libraries can reside on any DASD device supported by OS/390 or z/OS. Space requirements are given here in 3390 tracks.

Figure 12 lists the total space required for each type of library.

<i>Figure 12. Total DASD Space Required by WebSphere Application Server V4.0.1 for z/OS and OS/390</i>	
Library Type	Total Space Required (3390 tracks)
Target	10750
Distribution	16075
HFS	11250

Notes:

1. IBM recommends use of system-determined block sizes for efficient DASD utilization for all non-RECFM U data sets. For RECFM U data sets, IBM recommends a block size of 32760, which is the most efficient from a performance and DASD utilization perspective.
2. Abbreviations used for the data set type are:
 - U** Unique data set, allocated by this product and used only by this product. In order to determine the correct storage needed for this data set, this table provides all required information; no other tables (or program directories) need to be referenced for the data set size.
 - S** Shared data set, allocated by this product and used by this product and others. In order to determine the correct storage needed for this data set, the storage size given in this table needs to be added to other tables (perhaps in other program directories). If the data set

already exists, it must have enough free space to accommodate the storage size given in this table.

- E** Existing shared data set, used by this product and others. This data set is NOT allocated by this product. In order to determine the correct storage needed for this data set, the storage size given in this table needs to be added to other tables (perhaps in other program directories). This existing data set must have enough free space to accommodate the storage size given in this table.

If you currently have a previous version of the WebSphere Application Server installed in these libraries, the installation of this release will delete the old one and reclaim the space used by the old release and any service that had been installed. You can determine whether or not these libraries have enough space by deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

For more information on the names and sizes of the required data sets, please refer to 6.1.4, "Define Target and Distribution Libraries for WebSphere Application Server V4.0.1 for z/OS and OS/390" on page 39.

3. Abbreviations used for the HFS Path type are:

- N** New path, created by this product
- P** Previously existing path, created by another product
- X** Path created by this product, but may already exist from a previous release.

4. All target and distribution libraries have the following attributes:

- The default name of the data set may be changed.
- The default block size of the data set may be changed.
- The data set may be merged with another data set that has equivalent characteristics.
- The data set may be either a PDS or a PDSE.

5. All target libraries listed have the following attributes:

- The data set may be SMS-managed.
- It is not required for the data set to be SMS-managed.
- It is not required for the data set to reside on the IPL volume.
- The values in the "Member Type" column are not necessarily the actual SMP/E element types identified in the SMPMCS.

Figure 13 (Page 1 of 2). Storage Requirements for SMP/E Work Data Sets

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SMPWRK1	E	PDS	FB	80	120	10
SMPWRK2	E	PDS	FB	80	30	10
SMPWRK3	E	PDS	FB	80	9500	150

Figure 13 (Page 2 of 2). Storage Requirements for SMP/E Work Data Sets

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SMPWRK4	E	PDS	FB	80	40	10
SMPWRK6	E	PDS	FB	80	4100	100
SYSUT1	E	SEQ	--	--	7500	0
SYSUT2	E	SEQ	--	--	30	0
SYSUT3	E	SEQ	--	--	30	0
SYSUT4	E	SEQ	--	--	30	0

The following table provides an estimate of the storage needed in the SMP/E data sets for WebSphere Application Server V4.0.1 for z/OS and OS/390. The estimates must be added to those of any other programs and service being installed to determine the total additional storage requirements.

The SMPLTS data set must be a PDSE. If your existing SMPLTS is a PDS, you will need to allocate a new PDSE, copy your existing SMPLTS into it, then change the SMPLTS DDDEF entry to indicate the new PDSE data set.

Figure 14. Storage Requirements for SMP/E Data Sets

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SMPLTS	E	PDSE	U	0	6535	-
SMPMTS	E	PDS	FB	80	15	80
SMPPTS	E	PDS	FB	80	4000	80
SMPSCDS	E	PDS	FB	80	15	80
SMPSTS	E	PDS	FB	80	15	80

The following figures describe the target and distribution libraries and HFS paths required to install WebSphere Application Server V4.0.1 for z/OS and OS/390. The storage requirements of WebSphere Application Server V4.0.1 for z/OS and OS/390 must be added to the storage required by other programs having data in the same library or path.

Note: The data in these tables should be used when determining which libraries can be merged into common data sets. In addition, since some ALIAS names may not be unique, ensure that no naming conflicts will be introduced before merging libraries.

Figure 15. Storage Requirements for WebSphere Application Server V4.0.1 for z/OS and OS/390 Target Libraries

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SAJVSMP1	Sample	TVOL2	U	PDS	FB	80	3	2
SBBOCLIB	Clist	TVOL1	U	PDS	FB	80	5	20
SBBODBRM	DATA	TVOL1	U	PDS	FB	80	15	5
SBBODSD	DATA	TVOL2	U	PDSE	FB	80	255	-
SBBOEXEC	EXEC	TVOL1	U	PDS	VB	255	5	5
SBBOJCL	Sample	TVOL2	U	PDS	FB	80	30	10
SBBOLD2	LMOD	TVOL1	U	PDSE	U	0	5	-
SBBOLOAD	LMOD	TVOL1	U	PDSE	U	0	11670	-
SBBOLPA	LMOD	TVOL1	U	PDSE	U	0	20	-
SBBOMIG	LMOD	TVOL1	U	PDSE	U	0	30	-
SBBOMJPN	Message	TVOL1	U	PDS	FB	80	5	20
SBBOMLIB	Message	TVOL1	U	PDS	FB	80	5	20
SBBOMSG	Message	TVOL1	U	PDS	VB	255	5	5
SBBOPJPN	Panel	TVOL1	U	PDS	FB	80	10	20
SBBOPLIB	Panel	TVOL1	U	PDS	FB	80	5	20
SBBOSLB2	Skeleton	TVOL1	U	PDS	VB	255	5	5
SBBOSLIB	Skeleton	TVOL1	U	PDS	FB	80	20	20
SBBOULIB	LMOD	TVOL1	U	PDSE	U	0	1335	-
SEJSSAMP	Sample	TVOL2	U	PDS	FB	80	5	5
SEJSSDCK	Data	TVOL2	U	PDS	FB	80	10	5

Figure 16 (Page 1 of 2). WebSphere Application Server V4.0.1 for z/OS and OS/390 HFS Paths

DDNAME	TYPE	Path Name
SAJVHFSI	X	/usr/lpp/java/IBM
SBBOBIN	X	/usr/lpp/WebSphere/bin/IBM/
SBBOETC	X	/usr/lpp/WebSphere/samples/IBM/
SBBOEXP	X	/usr/lpp/WebSphere/lib/IBM/
SBBOINC	X	/usr/lpp/WebSphere/include/IBM/
SBBOLIB	X	/usr/lpp/WebSphere/lib/IBM/

Figure 16 (Page 2 of 2). WebSphere Application Server V4.0.1 for z/OS and OS/390 HFS Paths

DDNAME	TYPE	Path Name
SBBOMSGE	X	/usr/lpp/WebSphere/msg/en_US/IBM/
SBBOSAMP	X	/usr/lpp/WebSphere/samples/IBM/
SEJSBINW	X	/usr/lpp/WebSphere/WebServerPlugIn/bin/IBM/
SEJSCJHW	X	/usr/lpp/WebSphere/WebServerPlugIn/classes/javax/servlet/http/IBM/
SEJSCJSW	X	/usr/lpp/WebSphere/WebServerPlugIn/classes/javax/servlet/IBM/
SEJSHESW	X	/usr/lpp/WebSphere/WebServerPlugIn/hosts/default_host/examples/servlets/IBM/
SEJSHEWW	X	/usr/lpp/WebSphere/WebServerPlugIn/hosts/default_host/examples/web/IBM/
SEJSLIBW	X	/usr/lpp/WebSphere/WebServerPlugIn/lib/IBM/
SEJSMMSG	X	/usr/lpp/WebSphere/WebServerPlugIn/msg/IBM/
SEJSPROW	X	/usr/lpp/WebSphere/WebServerPlugIn/properties/IBM/
SEJSPRWW	X	/usr/lpp/WebSphere/WebServerPlugIn/properties/com/ibm/websphere/IBM/

Figure 17 (Page 1 of 2). Storage Requirements for WebSphere Application Server V4.0.1 for z/OS and OS/390 Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
AAJVSMP1	U	PDS	FB	80	3	2
AAJVS390	U	PDS	VB	256	1772	2
ABBOCLIB	U	PDS	FB	80	5	20
ABBODBRM	U	PDS	FB	80	5	5
ABBOEXEC	U	PDS	VB	255	15	5
ABBOEXP	U	PDS	FB	80	290	10
ABBOINC	U	PDS	VB	255	2505	15
ABBOJAR	U	PDS	VB	255	760	5
ABBOJCL	U	PDS	FB	80	25	10
ABBOMJPN	U	PDS	FB	80	5	20
ABBOMLIB	U	PDS	FB	80	5	20
ABBOMSG	U	PDS	VB	255	5	5
ABBOOBJ	U	PDSE	U	0	7670	-
ABBOPJPN	U	PDS	FB	80	10	20
ABBOPLIB	U	PDS	FB	80	5	20

Figure 17 (Page 2 of 2). Storage Requirements for WebSphere Application Server V4.0.1 for z/OS and OS/390 Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
ABBOSAMP	U	PDS	VB	255	95	15
ABBOSLB2	U	PDS	VB	255	5	5
ABBOSLIB	U	PDS	FB	80	20	20
AEJSEMOD	U	PDSE	U	0	45	-
AEJSHFS	U	PDS	VB	1024	475	15
AEJSSAMP	U	PDS	FB	80	10	5

WebSphere Application Server V4.0.1 for z/OS and OS/390 will require additional space for data sets, HFS files, and DB2 tables used by customer applications. Space requirements will vary with the application.

5.3 FMIDs Deleted

Installing WebSphere Application Server V4.0.1 for z/OS and OS/390 may result in the deletion of other FMIDs. To see what FMIDs will be deleted, examine the ++VER statement in the product's SMPMCS.

If you do not wish to delete these FMIDs at this time, you must install WebSphere Application Server V4.0.1 for z/OS and OS/390 into separate SMP/E target and distribution zones.

Note: These FMIDs will not automatically be deleted from the Global Zone. Consult the SMP/E manuals for instructions on how to do this.

5.4 Special Considerations

WebSphere Application Server Version 4.0.1 for z/OS and OS/390 is a functional successor to the following products:

- WebSphere Application Server Version 3.02 Standard Edition
- WebSphere Application Server Version 3.02 Enterprise Edition
- WebSphere Application Server Version 3.5 Standard Edition
- WebSphere Application Server Version 4.0 for z/OS and OS/390

In addition, the Software Development Kit (SDK) included with WebSphere Application Server Version 4.0.1 is identical to the SDK contained in the following products:

- IBM Developer Kit for OS/390 Java 2 Technology Edition, V1.1 (5655-D35)
- WebSphere Application Server for OS/390 Version 3.5 Standard Edition (5665-F31)
- WebSphere Application Server Version 4.0 for z/OS and OS/390

and is a functional successor to various old Java levels.

If you have previously installed any of these products, you should take the following considerations into account when installing WebSphere Application Server Version 4.0.1 for z/OS and OS/390.

5.4.1 SMP/E Considerations

WebSphere Application Server Version 4.0.1 for z/OS and OS/390 will delete previous versions of WebSphere for OS/390 if installed into the same SMP/E zone. When installing WebSphere Application Server Version 4.0.1 for z/OS and OS/390 into the same SMP/E zones used for your OS/390 or z/OS operating system, you will either have to re-install WAS 4.01 in the new zones in which OS/390 or z/OS is installed when upgrading to a new release of OS/390 or z/OS, or use the SMP/E BUILD MCS command to get WAS 4.0.1 in the same SMP/E zones as the new release of OS/390 or z/OS.

We recommend that you install WebSphere Application Server Version 4.0.1 into a new set of SMP/E zones, including target, distribution, and HFS data sets to allow easier and separate migrations of z/OS or OS/390, and WebSphere. This program directory provides sample jobs to create such an SMP/E environment.

5.4.2 Selecting Driving System Mountpoints

During installation of WebSphere Application Server Version 4.0.1 for z/OS and OS/390 on the driving system, the target HFS file systems must be mounted at the following mountpoints:

- `/-PathPrefix-/usr/lpp/java`
- `/-PathPrefix-/usr/lpp/WebSphere`

where `/-PathPrefix-` is an HFS path prefix such as `/SERVICE` or `/WAS401`. Use of a path prefix allows maintenance to be applied to a copy of the WebSphere HFS data sets without disturbing the production HFS data sets. For more information on the use of an HFS path prefix during product maintenance, see the Unix System Services Planning book for your release of OS/390 or z/OS.

Care must be taken that maintenance is applied to the proper HFS. You may wish to use a separate HFS path prefix for each WebSphere release to prevent inadvertent modification of the wrong WebSphere level.

5.4.3 Selecting Target System Mountpoints

During customization and operation of WebSphere Application Server Version 4.0.1 for z/OS and OS/390 on the target system, the target HFS file systems must be mounted at the following mountpoints:

- an SDK mountpoint, normally `/usr/lpp/java`
- a WebSphere mountpoint, normally `/usr/lpp/WebSphere`.

If the SDK mountpoint is in use on the target system by an identical version of the SDK to that shipped in WebSphere Application Server Version 4.0.1 for z/OS and OS/390 (see list above), then the existing SDK HFS at this mountpoint can be replaced with the one installed as part of WebSphere Application Server Version 4.0.1 for z/OS and OS/390, after ensuring that the maintenance level of the new SDK is at least as high as that of the old SDK. (This should normally be the case, as WebSphere Application Server code usually requires a very current SDK maintenance level.)

If the SDK mountpoint is in use on the target system by an older version of Java, however, then either:

- The older Java level must be moved to another mountpoint, such as `/usr/lpp/java118`, and all existing references to the older Java level must be changed to refer to this alternate mountpoint, until older Java applications have been successfully migrated to the new SDK, or
- The new SDK must be mounted at another mountpoint, such as `/usr/lpp/java130`, and all references to the new SDK during WebSphere customization and operation must be changed to refer to this new mountpoint.

If WebSphere for z/OS and OS/390 Version 4.0 is already installed on the target system, then the same WebSphere mountpoint should be used for WebSphere for z/OS and OS/390 Version 4.0.1. The documented migration process will require that the old WebSphere HFS be mounted at this mountpoint up to a certain point in the migration process, after which the new WebSphere HFS will be mounted at this mountpoint and the old HFS will no longer be needed.

If the WebSphere mountpoint is in use on the target system by WebSphere 3.5 or earlier, then either:

- The older WebSphere code must be moved to another mountpoint, such as `/usr/lpp/WebSphere350`, and all existing references to the older WebSphere level must be changed to refer to this alternate mountpoint, until older WebSphere applications have been migrated to the new WebSphere level, or
- The new WebSphere code must be mounted at another mountpoint, such as `/usr/lpp/WebSphere401`, and all references to the new WebSphere code must be changed to refer to this new mountpoint.

In the remainder of this program directory, it is assumed that the SDK mountpoint and WebSphere mountpoint used for WebSphere for z/OS and OS/390 have been chosen according to the above requirements.

5.4.4 Removal of Older Java and WebSphere Levels

Java applications written to use older versions of Java (i.e., those versions prior to SDK 1.3.0) may not run properly with the SDK contained in WebSphere Application Server for z/OS and OS/390 Version 4.0.1. Information on incompatibilities between Java 1.1 and SDK 1.3.0 can be found on the Web at:

- <http://www.s390.ibm.com/java>

The older Java level(s) should be maintained until all applications dependent on them have been migrated to the new SDK.

WebSphere Application Server versions prior to WebSphere Application Server for z/OS and OS/390 Version 4.0 should be maintained until all applications have been migrated to Version 4.0.

WebSphere Application Server for z/OS and OS/390 Version 4.0 can be removed from the target system as soon as the migration process to WebSphere Application Server for z/OS and OS/390 Version 4.0.1 is complete.

6.0 Installation Instructions

This section describes the installation method, and the step-by-step procedures to install and activate the functions of WebSphere Application Server V4.0.1 for z/OS and OS/390.

Please note the following:

- WebSphere Application Server V4.0.1 for z/OS and OS/390 should be installed into a separate SMP/E zone from OS/390 or z/OS. IBM strongly recommends that the product be installed in a new set of SMP/E zones and libraries. This includes SMP/E target and distribution zones, as well as the HFS data set. A sample job to create and initialize the SMP/CSI and SMP/E control data sets is provided below; consult the SMP/E documentation for more information.
- Sample jobs have been provided to help perform some or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries required for SMP/E execution have been defined in the appropriate zones.
- The SMP/E dialogs may be used instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing WebSphere Application Server V4.0.1 for z/OS and OS/390

6.1.1 Create New SMP/E Zones for WebSphere Application Server V4.0.1

IBM strongly recommends that WebSphere Application Server V4.0.1 be installed in a new set of SMP/E zones and libraries. There are two sample jobs that follow. The first sample job provides an example of setting up a new SMP/E CSI (including a new GLOBAL zone) for WebSphere Application Server V4.0.1. You may use this sample if you wish to place this product in a new SMP/E GLOBAL zone - if you do use it, then you would also use the second sample job to set up the new target and distribution zones.

The second sample job provides an example of setting up new SMP/E target and distribution zones. You can use this job independent of the first sample job if you want to define new target and distribution zones in an existing SMP/E GLOBAL zone. By using your existing GLOBAL zone, you do not have to redefine many SMP/E GLOBAL data sets and the SMP/E OPTIONS entries. Please note that, if using just the second sample job, you will need to edit the job with the appropriate GLOBAL ZONEINDEX information, and any other information to reflect your SMP/E product environment.

All WebSphere target data sets are placed on volume **ttttt** and all SMP/E and distribution library data sets are placed on volume **dddddd**.

```

//W401SMPE JOB
//*=====
/* THIS JOB CREATES A NEW GLOBAL SMPE ENVIRONMENT
/* FOR WEBSHERE 4.0.1
//*=====
/*-----
/* THIS STEP ALOCATES THE NEW SMP/E CSI
/*-----
//BUILDCSI EXEC PGM=IDCAMS,REGION=4M
//SYSPRINT DD SYSOUT=*
//SMPE DD VOL=SER=dddddd,UNIT=3390,DISP=SHR
//SYSIN DD *
DEFINE CLUSTER( -
        NAME(WAS.V401.SMPE.CSI) -
        FREESPACE(10,5) -
        KEYS(24 0) -
        RECORDSIZE(24 143) -
        SHAREOPTIONS(2,3) -
        UNIQUE -
        VOLUME(dddddd) ) -
DATA( -
        NAME(WAS.V401.SMPE.CSI.DATA) -
        CONTROLINTERVALSIZE(4096) -
        CYLINDERS(25 5)) -
INDEX( -
        NAME(WAS.V401.SMPE.CSI.INDEX) -
        IMBED -
        CYLINDERS(2 1))
/*
/*-----
/* THE RACF GROUP AND PROFILE FOR THE NEW HLQ FOR THE *
/* SMPE DATASETS SHOULD ALREADY BE DEFINED. *
/*-----
/*
/*-----
/* THIS STEP INITIALIZES THE NEW CSI *
/*-----
//INITCSI EXEC PGM=IDCAMS,REGION=2M,COND=(0,LT)
//GBLCSI DD DSN=WAS.V401.SMPE.CSI,DISP=OLD
//ZPOOL DD DSN=SYS1.MACLIB(GIMZPOOL),DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
        REPRO OUTFILE(GBLCSI) INFILE(ZPOOL)
/*
/*-----*//
/* THIS STEP ALLOCATES THE BASE SET OF SMPE DATASETS. *//
/*-----*//
//SMPEDS EXEC PGM=IEFBR14
//SMPLOG DD DSN=WAS.V401.SMPLOG,DISP=(NEW,CATLG,DELETE),

```

```

//          DCB=(RECFM=VB,LRECL=510,BLKSIZE=3200),
//          UNIT=3390,VOL=SER=dddddd,
//          SPACE=(CYL,(5,2))
//SMPLOGA DD DSN=WAS.V401.SMPLOGA,DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=VB,LRECL=510,BLKSIZE=3200),
//          UNIT=3390,VOL=SER=dddddd,
//          SPACE=(CYL,(5,2))
//SMPPTS  DD DSN=WAS.V401.SMPPTS,DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=6160),
//          UNIT=3390,VOL=SER=dddddd,
//          SPACE=(TRK,(4000,400,80))
//*
//*-----*
//* THIS STEP CREATES THE GLOBAL ZONE ZONEINDEX ENTRY *
//*-----*
//GLOBAL EXEC PGM=GIMSMP
//SMPCSI DD DSN=WAS.V401.SMPE.CSI,DISP=SHR
//SMPLOG DD DSN=WAS.V401.SMPLOG,DISP=SHR
//SMPLOGA DD DSN=WAS.V401.SMPLOGA,DISP=SHR
//SMPPTS DD DSN=WAS.V401.SMPPTS,DISP=SHR
//SMPOUT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPCNTL DD *
SET      BDY(GLOBAL) .
UCLIN.
ADD GZONE
SREL(Z038)
ZONEINDEX((WAST,WAS.V401.SMPE.CSI,TARGET)
           (WASD,WAS.V401.SMPE.CSI,DLIB))
OPTIONS(OS390OPT)
ZDESC(GLOBAL Zone for WAS 4.0.1).
ENDUCL.
/*
/*-----*
/* THIS STEP CREATES THE OPTIONS ENTRY *
/*-----*
//OPTIONS EXEC PGM=GIMSMP,COND=(0,LT)
//SMPCSI DD DSN=WAS.V401.SMPE.CSI,DISP=SHR
//SMPLOG DD DSN=WAS.V401.SMPLOG,DISP=SHR
//SMPLOGA DD DSN=WAS.V401.SMPLOGA,DISP=SHR
//SMPPTS DD DSN=WAS.V401.SMPPTS,DISP=SHR
//SMPOUT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPCNTL DD *
SET BDY(GLOBAL) .
UCLIN.
ADD OPTIONS(OS390OPT)
RETRYDDN(ALL)
DSPREFIX(WAS.V401)

```

```

DSSPACE(5000,1000,1300)
NUCID(4)
ASM(ASMA90)
AMS(IDCAMS)
COPY(IEBCOPY)
HFSCOPY(BPXCOPY)
COMP(IEBCOPY)
RETRY(IEBCOPY)
LKED(HEWLH096)
ZAP(IMASPZAP)
UPDATE(IEBUPDTE).
ENDUCL.
/*
/*-----*
/* THIS STEP CREATES THE UTILITY ENTRIES *
/*-----*
//UTILS EXEC PGM=GIMSMP,COND=(4,LT)
//SMPCSI DD DSN=WAS.V401.SMPE.CSI,DISP=SHR
//SMPLOG DD DSN=WAS.V401.SMPLOG,DISP=SHR
//SMPLOGA DD DSN=WAS.V401.SMPLOGA,DISP=SHR
//SMPPTS DD DSN=WAS.V401.SMPPTS,DISP=SHR
//SMPOUT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPCNTL DD *
SET BDY(GLOBAL) .
UCLIN.
ADD UTILITY(ASMA90 ) NAME(ASMA90 ) RC(0) PRINT(ASMOUT)
    PARM(XREF(SHORT),NOLIST,DECK,NOOBJECT) .
ADD UTILITY(HEWLH096) NAME(HEWLH096) RC(4) PRINT(LKEDOUT)
    PARM(SIZE=(1526K,100K),NCAL,LIST,LET,XREF) .
ADD UTILITY(IDCAMS ) NAME(IDCAMS ) RC(0) PRINT(VSAMOUT) .
ADD UTILITY(IEBCOPY ) NAME(IEBCOPY ) RC(0) PRINT(COPYOUT) .
ADD UTILITY(BPXCOPY ) NAME(BPXCOPY ) RC(0) PRINT(SYSPRINT) .
ADD UTILITY(IEBUPDTE) NAME(IEBUPDTE) RC(0) PRINT(UPDTOUT) .
ADD UTILITY(IEV90 ) NAME(IEV90 ) RC(4) PRINT(ASMOUT)
    PARM(XREF(SHORT),NOLIST,DECK) .
ADD UTILITY(IEWL ) NAME(IEWL ) RC(4) PRINT(LKEDOUT)
    PARM(SIZE=(1526K,100K),NCAL,LIST,LET,XREF) .
ADD UTILITY(IMASPZAP) NAME(IMASPZAP) RC(0) PRINT(ZAPOUT) .
ENDUCL.
/*
/*-----*
/* THIS STEP DEFINES ALL THE NECESSARY BASE DDDEF ENTRIES *
/*-----*
//DDDEFS EXEC PGM=GIMSMP,COND=(4,LT)
//SMPCSI DD DSN=WAS.V401.SMPE.CSI,DISP=SHR
//SMPLOG DD DSN=WAS.V401.SMPLOG,DISP=SHR
//SMPLOGA DD DSN=WAS.V401.SMPLOGA,DISP=SHR
//SMPPTS DD DSN=WAS.V401.SMPPTS,DISP=SHR

```



```

//SMPOUT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPCNTL DD *
SET BDY(GLOBAL).
UCLIN.
ADD DDDEF(SMPTLIB) VOLUME(dddddd) UNIT(3390).
ADD DDDEF(SMPPTS ) DA(WAS.V401.SMPPTS) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPDEBUG) DA(WAS.V401.SMPDEBUG) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPLTS ) DA(WAS.V401.SMPLTS) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPMTS ) DA(WAS.V401.SMPMTS) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPSTS ) DA(WAS.V401.SMPSTS) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPLOG ) DA(WAS.V401.SMPLOG) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPLOGA) DA(WAS.V401.SMPLOGA) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPSCDS) DA(WAS.V401.SMPSCDS) SHR
UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPWRK1 ) SPACE(120,120) DIR(10) TRACKS).
ADD DDDEF(SMPWRK2 ) SPACE(30,30) DIR(10) TRACKS).
ADD DDDEF(SMPWRK3 ) SPACE(9500,950) DIR(150) TRACKS).
ADD DDDEF(SMPWRK4 ) SPACE(80,40) DIR(10) TRACKS).
ADD DDDEF(SMPWRK6 ) SPACE(4100,410) DIR(100) TRACKS).
ADD DDDEF(SYSUT1 ) SPACE(120,120) TRACKS).
ADD DDDEF(SYSUT2 ) SPACE(30,30) TRACKS).
ADD DDDEF(SYSUT3 ) SPACE(30,30) TRACKS).
ADD DDDEF(SYSUT4 ) SPACE(30,30) TRACKS).
ADD DDDEF(COPYOUT) SYSOUT(*).
ENDUCL.
/*
*****

//W401SMPE JOB
/*=====
/* THIS JOB CREATES A NEW TARGET AND DLIB ZONES FOR AN
/* EXISTING GLOBAL SMPE ENVIRONMENT FOR WEBSHERE 4.0.1
/*=====
/*
/*-----*//
/* THIS STEP ALLOCATES THE BASE SET OF SMPE DATASETS. *//
/*-----*//
//SMPEDS EXEC PGM=IEFBR14
//SMPLTS DD DSN=WAS.V401.SMPLTS,DISP=(NEW,CATLG,DELETE),
// DCB,LRECL=0,BLKSIZE=32760),DSNTYPE=LIBRARY,

```

```

//          UNIT=3390,VOL=SER=dddddd,
//          SPACE=(TRK,(6535,653,1))
//SMPMTS   DD  DSN=WAS.V401.SMPMTS,DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920),
//          UNIT=3390,VOL=SER=dddddd,
//          SPACE=(TRK,(15,5,80))
//SMPSCDS  DD  DSN=WAS.V401.SMPSCDS,DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=6160),
//          UNIT=3390,VOL=SER=dddddd,
//          SPACE=(TRK,(15,2,80))
//SMPSTS   DD  DSN=WAS.V401.SMPSTS,DISP=(NEW,CATLG,DELETE),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920),
//          UNIT=3390,VOL=SER=dddddd,
//          SPACE=(TRK,(15,2,80))
//*
//*-----*
//* THIS STEP ADDS THE TARGET AND DLIB ZONE NAMES AND POINTS TO
//* THE APPROPRIATE OPTIONS ENTRY.
//*-----*
//DEFZONE EXEC PGM=GIMSMP,COND=(0,LT)
//SMPCSI   DD  DSN=WAS.V401.SMPE.CSI,DISP=SHR
//SMPLOG   DD  DSN=WAS.V401.SMPLOG,DISP=SHR
//SMPLOGA  DD  DSN=WAS.V401.SMPLOGA,DISP=SHR
//SMPPTS   DD  DSN=WAS.V401.SMPPTS,DISP=SHR
//SMPOUT   DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//SMPCNTL  DD  *
  SET BDY(WAST).
  UCLIN.
  ADD TZONE(WAST) OPTIONS(OS390OPT) SREL(Z038) RELATED(WASD)
  ZDESC(TARGET Zone for WAS 4.0.1).
  ENDUCL.
  SET BDY(WASD).
  UCLIN.
  ADD DZONE(WASD) OPTIONS(OS390OPT) SREL(Z038) RELATED(WAST)
  ZDESC(DLIB Zone for WAS 4.0.1).
  ENDUCL.
/*
//*-----*
//* THIS STEP DEFINES ALL THE NECESSARY BASE DDDEF ENTRIES *
//*-----*
//DDDEFS  EXEC PGM=GIMSMP,COND=(4,LT)
//SMPCSI   DD  DSN=WAS.V401.SMPE.CSI,DISP=SHR
//SMPLOG   DD  DSN=WAS.V401.SMPLOG,DISP=SHR
//SMPLOGA  DD  DSN=WAS.V401.SMPLOGA,DISP=SHR
//SMPPTS   DD  DSN=WAS.V401.SMPPTS,DISP=SHR
//SMPOUT   DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//SMPCNTL  DD  *

```

```

SET BDY(WAST).
UCLIN.
ADD DDDEF(SMPTLIB) VOLUME(ddddd) UNIT(3390).
ADD DDDEF(SMPPTS ) DA(WAS.V401.SMPPTS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPDEBUG) DA(WAS.V401.SMPDEBUG) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPLTS ) DA(WAS.V401.SMPLTS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPMTS ) DA(WAS.V401.SMPMTS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPSTS ) DA(WAS.V401.SMPSTS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPLOG ) DA(WAS.V401.SMPLOG) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPLOGA) DA(WAS.V401.SMPLOGA) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPSCDS) DA(WAS.V401.SMPSCDS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPWRK1 ) SPACE(120,120) DIR(10) TRACKS).
ADD DDDEF(SMPWRK2 ) SPACE(30,30) DIR(10) TRACKS).
ADD DDDEF(SMPWRK3 ) SPACE(9500,950) DIR(150) TRACKS).
ADD DDDEF(SMPWRK4 ) SPACE(80,40) DIR(10) TRACKS).
ADD DDDEF(SMPWRK6 ) SPACE(4100,410) DIR(100) TRACKS).
ADD DDDEF(SYSUT1 ) SPACE(7500,750) TRACKS).
ADD DDDEF(SYSUT2 ) SPACE(30,30) TRACKS).
ADD DDDEF(SYSUT3 ) SPACE(30,30) TRACKS).
ADD DDDEF(SYSUT4 ) SPACE(30,30) TRACKS).
ADD DDDEF(COPYOUT) SYSOUT(*).
ADD DDDEF(ASMOUT) SYSOUT(*).
ADD DDDEF(LKEDOUT) SYSOUT(*).
ADD DDDEF(VSAMOUT) SYSOUT(*).
ADD DDDEF(UPDTOUT) SYSOUT(*).
ADD DDDEF(ZAPOUT) SYSOUT(*).
ADD DDDEF(MACLIB ) DA(SYS1.MACLIB) SHR.
ADD DDDEF(SYSLIB ) CONCAT(MACLIB).

```

ENDUCL.

```
SET BDY(WASD).
```

UCLIN.

```

ADD DDDEF(SMPTLIB) VOLUME(ddddd) UNIT(3390).
ADD DDDEF(SMPPTS ) DA(WAS.V401.SMPPTS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPDEBUG) DA(WAS.V401.SMPDEBUG) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPLTS ) DA(WAS.V401.SMPLTS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPMTS ) DA(WAS.V401.SMPMTS) SHR
UNIT(3390) VOLUME(ddddd).
ADD DDDEF(SMPSTS ) DA(WAS.V401.SMPSTS) SHR

```

```

        UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPLOG ) DA(WAS.V401.SMPLOG) SHR
        UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPLOGA) DA(WAS.V401.SMPLOGA) SHR
        UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPSCDS) DA(WAS.V401.SMPSCDS) SHR
        UNIT(3390) VOLUME(dddddd).
ADD DDDEF(SMPWRK1 ) SPACE(120,120) DIR(10) TRACKS).
ADD DDDEF(SMPWRK2 ) SPACE(30,30) DIR(10) TRACKS).
ADD DDDEF(SMPWRK3 ) SPACE(9500,950) DIR(150) TRACKS).
ADD DDDEF(SMPWRK4 ) SPACE(80,40) DIR(10) TRACKS).
ADD DDDEF(SMPWRK6 ) SPACE(4100,410) DIR(100) TRACKS).
ADD DDDEF(SYSUT1 ) SPACE(120,120) TRACKS).
ADD DDDEF(SYSUT2 ) SPACE(30,30) TRACKS).
ADD DDDEF(SYSUT3 ) SPACE(30,30) TRACKS).
ADD DDDEF(SYSUT4 ) SPACE(30,30) TRACKS).
ADD DDDEF(COPYOUT) SYSOUT(*).
ADD DDDEF(ASMOUT) SYSOUT(*).
ADD DDDEF(LKEDOUT) SYSOUT(*).
ADD DDDEF(VSAMOUT) SYSOUT(*).
ADD DDDEF(UPDTOUT) SYSOUT(*).
ADD DDDEF(ZAPOUT) SYSOUT(*).
ADD DDDEF(MACLIB ) DA(SYS1.MACLIB) SHR.
ADD DDDEF(SYSLIB ) CONCAT(MACLIB).
ENDUCL.

```

/*

These two sample jobs are not shipped with this product.

For more information on setting up the SMP/E environment, see the *SMP/E User's Guide* for your release of z/OS or OS/390.

6.1.2 Create a Cross-Zone Set

WebSphere for z/OS and OS/390 requires that products to be used with it be at fairly current maintenance levels. Much of this prerequisite maintenance can be checked automatically by SMP/E, if **cross-zone processing** is used to check associated SMP/E zones for installed PTF levels.

There are two different methods that can be used for cross-zone processing. A zone group can be defined and added to the install jobs, or the XZGROUP operand can be used. XZGROUP(value) contains a list of ZONESETs or zones that are used to establish the zone group. Each value in the list must be a valid ZONESET or zone name. XZGROUP(value) would be added to the install jobs instead of adding the XZREQCHK operand to one or more ZONESETs.

The operand XZREQ provides a method for a user to more easily install cross-zone requisites. SMP/E identifies the cross-zone requisites needed in the set-to zone by reading CIFREQ data in the secondary zones of the zone group in effect for the current APPLY/ACCEPT commands. Any CIFREQ data that is

for FMIDs installed or being installed into the set-to zone that are not yet in the set-to zone causes the required SYSMODs to become candidates for installation. If the FORFMID operand is also used, the FMID specified on the CIFREQ must match one of the FMIDs specified on the FORFMID operand for the SYSMOD to become a candidate.

By adding the new XZREQ operand, the CIFREQ SYSMODs are installed automatically into the set-to zone. However, XZREQ does not install the CIFREQs in the other cross-dependent zones. An APPLY XZREQ needs to be performed against the other zones in order to synchronize service.

Note: If SYSMODs being installed into the set-to zone have requirements against the other cross-zones, that service must be APPLY'd to those zones before installation can be completed into the set-to zone.

For more information on this operand, refer to *OS/390 SMP/E Commands*, SC28-1805. See Figure 18 on page 38 for an example of how to set up the ZONEINDEX, ZONESET, and XZREQCHK for use during the APPLY/ACCEPT. See Figure 22 on page 45 for an example of the APPLY using the XZREQ operand.

```

//ZINDEX JOB (Job parameters)
//SMPE EXEC PGM=GIMSMP
//STEPLIB DD (If needed for SMP/E)
//SYSPRINT DD SYSOUT=*
//SMPCSI DD DSN=was.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BDY(GLOBAL) .
  UCLIN .
  ADD GLOBALZONE ZONEINDEX(
    (os390t,os390.target.csi,TARGET)
    (jes2tgt,jes2.target.csi,TARGET)
    (jes3tgt,jes3.target.csi,TARGET)
    (pptgt,pgmprod.target.csi,TARGET)
    (db2tgt,db2.target.csi,TARGET)
    (imstgt,ims.target.csi,TARGET)
    (cicstgt,cics.target.csi, TARGET)) .
  ADD ZONESET(XZONE)
  ZONE(wast,
    os390t,
    jes2tgt,
    jes3tgt,
    pptgt,
    cicstgt,
    db2tgt,
    imstgt)
  XZREQCHK(YES) .
  ENDUCL.
/*

```

Figure 18. Sample Job to Add XZREQCHK(YES) to a ZONESET Entry

Required Updates

1. Update the job parameters.
2. Update the STEPLIB DD statement (if necessary for your system).
3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
4. Update cross-dependency zones and CSI names.

Successful processing issues a return code of 0.

6.1.3 RECEIVE WebSphere Application Server V4.0.1 for z/OS and OS/390

RECEIVE FMIDs and service for the WebSphere Application Server V4.0.1 for z/OS and OS/390 elements by running the RCVPDO job. For more information, refer to *MVS CBPDO Memo to User Extension* included with the CBPDO.

The CBPDO contains all non-integrated PTFs for every WebSphere Application Server V4.0.1 for z/OS and OS/390 FMID. (Cumulative service is included in CBPDO orders, so there is no separate cumulative service tape.) Depending on the options selected when you ordered the CBPDO, your order may contain service for other products in your profile or for just the WebSphere Application Server V4.0.1 for z/OS and OS/390 FMIDs. As a result, maintenance may be delivered that is already APPLY'd and ACCEPT'd.

Successful RECEIVE processing issues a return code of 0.

6.1.4 Define Target and Distribution Libraries for WebSphere Application Server V4.0.1 for z/OS and OS/390

Sample jobs to allocate the target and distribution libraries, set up HFS directories, and create DDDEF entries for the WebSphere Application Server V4.0.1 for z/OS and OS/390 elements have been provided. After RECEIVE processing, the jobs can be found in the SMPTLIB data sets. Copy the sample jobs to a work data set and customize them. For specific instructions on customizing, see the comments in the sample jobs.

Figure 19 lists the locations of the sample ALLOCATE, MKDIR, and DDDEF jobs for WebSphere Application Server V4.0.1 for z/OS and OS/390.

<i>Figure 19. Sample Installation Jobs</i>			
Job Name	Job Type	Description	RELFILE
AJVALLOC	ALLOCATE	Sample job to allocate target and distribution libraries for IBM Developer Kit for OS/390 Java 2 Technology Edition	IBM.HJVA130.F2
BBOALLOC	ALLOCATE	Sample job to allocate target and distribution libraries for Application Server	IBM.H28W401.F1
AJVISMKD	MKDIR	Sample job to invoke the supplied AJVMKDIR EXEC to allocate HFS paths for IBM Developer Kit for OS/390 Java 2 Technology Edition	IBM.HJVA130.F2
BBOISMKD	MKDIR	Sample job to invoke the supplied BBOMKDIR EXEC to allocate HFS paths for Application Server	IBM.H28W401.F1
AJVDDDEF	DDDEF	Sample job to define SMP/E DDDEFs for IBM Developer Kit for OS/390 Java 2 Technology Edition	IBM.HJVA130.F2
BBODDDEF	DDDEF	Sample job to define SMP/E DDDEFs for Application Server	IBM.H28W401.F1

Submit the customized AJVALLOC and BBOALLOC jobs. Although you can modify the jobs to install into your root HFS, IBM strongly suggests that you allocate a new HFS for this product. You should receive a return code of 0. Check the allocation and deallocation messages to be certain the data sets were allocated and catalogued correctly.

6.1.5 Set Up HFS Directories for WebSphere Application Server V4.0.1 for z/OS and OS/390

At this time, you need to make the HFS data sets which will contain the HFS target directories available to install WebSphere Application Server V4.0.1 for z/OS and OS/390. (Remember, although you can install WebSphere Application Server V4.0.1 for z/OS and OS/390 into your existing root HFS data set, IBM strongly recommends that they be separate.) There are two HFS data sets which are required for WebSphere Application Server V4.0.1 for z/OS and OS/390. For Application Server, sample job BBOALLOC, which you ran in the previous section, allocated the Application Server HFS data sets. For IBM Developer Kit for OS/390 Java 2 Technology Edition, you must manually create the Java HFS. The following JCL can be used:

```
//W401AJVA JOB
//*-----*//
//* THIS STEP ALLOCATES THE NEW JAVA HFS *//
//*-----*//
//ALLOCHFS EXEC PGM=IEFBR14
//HFS DD DSN=your.java.hfs,
// UNIT=3390,VOL=SER=tttttt,
// SPACE=(CYL,(350,15,1)),
// DSNTYPE=HFS,
// DISP=(NEW,CATLG)
```

Figure 20. Sample Allocate Job for Java HFS

Modify this job to meet your installation standards, and submit it. Alternatively, you can allocate the Java HFS using ISPF option 3.2.

Important!

During the creation of the mountpoints and the mounting of the HFS data sets, the convention `-PathPrefix-/usr/lpp/mountpoint` is used. `-PathPrefix-` allows you to specify a service directory on your driving system. It is assumed that you will be mounting the WebSphere Application Server V4.0.1 for z/OS and OS/390 HFS data sets under a service directory which already contains the `/usr` and `/usr/lpp` directories. If this is not the case, you must create the `/usr` and `/usr/lpp` directories manually under your `-PathPrefix-` directory **prior** to running the sample commands to create the mountpoint and mount the HFS for IBM Developer Kit for OS/390 Java 2 Technology Edition since the commands shown are UNIX and TSO commands.

If you have allocated the optional HFS data sets for WebSphere Application Server V4.0.1 for z/OS and OS/390, you must make them available on your driving system for installation. For IBM Developer Kit for

OS/390 Java 2 Technology Edition, use the following sample commands to create the mountpoint and mount the IBM Developer Kit for OS/390 Java 2 Technology Edition HFS data set:

- From the Unix shell:

```
mkdir -PathPrefix-/usr/lpp/java
```

- From TSO:

```
MOUNT FILESYSTEM('your.java.hfs')  
MOUNTPOINT('-PathPrefix-/usr/lpp/java') TYPE(HFS) MODE(RDWR)
```

Run the customized sample jobs AJVISMKD and BBOISMKD, listed in Figure 19 on page 39, from a userid that is UID(0) or which has read access to the BPX.SUPERUSER resource in the RACF facility class. You will receive a return code of 0 for each step, if it is successful.

Once the customized sample jobs AJVISMKD and BBOISMKD, provided in Figure 19 on page 39, have been run, and before continuing with the installation of WebSphere Application Server V4.0.1 for z/OS and OS/390, you must verify the following:

1. You have allocated two HFS data sets for WebSphere Application Server V4.0.1 for z/OS and OS/390 - one for each element (Application Server and IBM Developer Kit for OS/390 Java 2 Technology Edition).
2. You have defined a mountpoint for each of the two HFS data sets (for instance: -PathPrefix-/usr/lpp/WebSphere and -PathPrefix-/usr/lpp/java).
3. You have mounted the two HFS data sets, one for each element (Application Server and IBM Developer Kit for OS/390 Java 2 Technology Edition), to your driving system.

After you have verified the above items, continue with the installation in defining the DDDEFS for WebSphere Application Server V4.0.1 for z/OS and OS/390.

6.1.6 Define DDDEFs for WebSphere Application Server V4.0.1 for z/OS and OS/390

Run the customized sample jobs AJVDDDEF and BBODDDEF to create SMP/E DDDEFs for target and distribution data sets. You should receive a return code of 0. If any of the DDDEF entries exist, you will get a non-zero return code. Check the output to see what caused the non-zero return code.

Figure 19 on page 39 lists the locations of the sample jobs.

6.1.7 SMP/E CALLLIBS Processing and Side Decks Processing

WebSphere Application Server V4.0.1 for z/OS and OS/390 uses the CALLLIBS function provided in SMP/E and definition side decks to resolve external references during installation. When WebSphere Application Server V4.0.1 for z/OS and OS/390 is installed, ensure that DDDEFs exist for the following libraries in the WebSphere Application Server V4.0.1 target zone:

- Application Server
 - CSSLIB (OS/390 callable services)
 - SCEECPP (OS/390 Language Environment)
 - SCEELKED (OS/390 Language Environment)
 - SCEELKEX (OS/390 Language Environment)
 - SCEEOBJ (OS/390 Language Environment)
 - SCEESPC (OS/390 Language Environment)
 - SCLBSID (OS/390 C/C++ IBM Open Class Library)
 - SCSFMOD0 (OS/390 Integrated Cryptographic Service Facility)
 - SIMWSA (OS/390 HTTP Server)
 - SGSKHFS (OS/390 Cryptographic SSL Services System)
 - SGLDHCLI (OS/390 LDAP Client)

The DDDEFs should point to the appropriate data sets used by the target OS/390 or z/OS system; that is, the version of OS/390 or z/OS on which the Application Server will be run, if different from that of the system being used to install the product.

- IBM Developer Kit for OS/390 Java 2 Technology Edition
 - No CALLLIBS are used

Notes:

1. The DDDEFs above are used only to resolve the link-edit for WebSphere Application Server V4.0.1 for z/OS and OS/390 using CALLLIBS. These data sets are not updated during the installation of WebSphere Application Server V4.0.1 for z/OS and OS/390.
2. SCEERUN must be in either the LNKLIST or STEPLIB of the APPLY jobs for the installation to be successful.

WebSphere Application Server V4.0.1 for z/OS and OS/390 installation does not require a DDDEF for SYSLIB; however, SMP/E APPLY processing expects to find one. If necessary, create DDDEFs for SMPMTS and SYS1.MACLIB, and create a SYSLIB DDDEF that points to a concatenation of these two data sets. See *OS/390 SMP/E Reference* for more information about the SYSLIB concatenation.

6.1.8 Perform SMP/E APPLY CHECK for WebSphere Application Server V4.0.1 for z/OS and OS/390 FMIDs and Service

Run an APPLY CHECK to identify any requisite service and additional holds—for example, HOLDSYS(DOC,EC)—that might need to be resolved before APPLY processing. Resolve any holds and receive any requisite service identified by the APPLY CHECK before the next step.

Figure 21 on page 43 shows a sample APPLY CHECK for WebSphere Application Server V4.0.1 for z/OS and OS/390.

```

//CHECK JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD (if needed for SMP/E)
//SMPCSI DD DSN=was.global.csi,DISP=SHR
//SMPCNTL DD *
    SET BOUNDARY(targetzone)
    OPTIONS(OS390OPT) .
    APPLY CHECK XZREQ
        FORFMID(HJVA130, H28W401)
        SELECT(HJVA130, H28W401)
        GROUPEXTEND(NOAPARS,NOUSERMODS)
        BYPASS(HOLDSYSTEM) .
/*

```

Figure 21. SMP/E APPLY CHECK

Required Updates

1. Update the job parameters.
2. Update the STEPLIB DD statement (if necessary for your system).
3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
4. Update targetzone to your target zone name.

Expected Return Codes and Messages:

If cross-zone requisites encounter problems, the following messages may be issued:

- “GIM35925I CROSS-ZONE REQUISITE SYSMOD aaaaaaa REQUIRED IN ZONE bbbbbbb WAS MISSING.”

Where

aaaaaaa -- SYSMOD ID

bbbbbbb -- zone name that needs the cross-zone requisite

If service containing ++**HOLD** is being installed, then RC=4 and the following messages will be issued:

- “GIM42001W THE FOLLOWING CONDITIONS FOR SYSMOD aaaaaaa WERE NOT SATISFIED, BUT WERE IGNORED BECAUSE THE BYPASS OPERAND WAS SPECIFIED. PROCESSING CONTINUES.”

where aaaaaaa--SYSMOD ID

- “GIM35966I SYSTEM HOLD aaaaaaa ORIGINATED BY SYSMOD bbbbbbb WAS BYPASSED.”

where: aaaaaaa--system hold reason ID and bbbbbbb--SYSMOD ID

Otherwise RC=0

Notes:

1. The XZREQ operand only needs to be specified when cross-zone processing is required. If this operand is specified when there is no zone group set up, the following message will be received, which is acceptable:
 - “GIM50810W THE XZREQ OPERAND WAS SPECIFIED ON THE APPLY COMMAND BUT SINCE NO ZONES WERE APPLICABLE FOR CROSS-ZONE REQUISITE CHECKING, THE XZREQ OPERAND WILL BE IGNORED.”
2. PDO customers installing on an OS/390 R9 system, using the SMP/E cross zone function on the APPLY CHECK, will see the following message:
 - “GIM35925I CROSS-ZONE REQUISITE SYSMOD UQ44332 REQUIRED IN ZONE xxxxxxx WAS MISSING.”

This message can be ignored and bypassed. UQ44332 belongs to the OS/390 R8 LE element HLE6608, and is not part of OS/390 R9.

6.1.9 Perform SMP/E APPLY for WebSphere Application Server V4.0.1 for z/OS and OS/390 FMIDs and Service

Once all exceptions reported by the APPLY CHECK have been resolved, run the SMP/E APPLY step to install the WebSphere Application Server V4.0.1 for z/OS and OS/390 products. This job must be run under a userid with either UID(0), or with a userid with read access to the BPX.SUPERUSER and BPX.FILEATTR.PROGCTL resource in the RACF facility class. **In addition, you must remove the LISTPRIV parameter from your GLOBAL zone linkedit utility in your SMP/E CSI.**

Note: Using NOLIST in the SMP/E UTILITY entry for the binder will allow APPLY processing to complete faster, as well as reduce the amount of output generated by more than half (without using NOLIST, approximately 10 million lines of output are created).

Figure 22 on page 45 shows a sample APPLY for the WebSphere Application Server V4.0.1 for z/OS and OS/390 functions, plus RECEIVE'd PTFs for these functions.

```

//APPLY JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD (if needed for SMP/E)
//SMPCSI DD DSN=was.global.csi,DISP=SHR
//SMPCNTL DD *
    SET BOUNDARY(targetzone)
    OPTIONS(OS390OPT) .
    APPLY XZREQ
        FORFMID(HJVA130, H28W401)
        SELECT(HJVA130, H28W401)
        GROUPEXTEND(NOAPARS,NOUSERMODS)
        BYPASS(HOLDSYSTEM) .
/*

```

Figure 22. SMP/E APPLY

Required Updates

1. Update the job parameters.
2. Update the STEPLIB DD statement (if necessary for your system).
3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
4. Update targetzone to your target zone name.

Expected Return Codes and Messages:

During the link-edit processing the following message IEW2454W may be issued.

- “IEW2454W SYMBOL xxxxxxxx UNRESOLVED. NO AUTOCALL (NCAL) SPECIFIED.”

These messages are acceptable and can be ignored.

If service containing ++**HOLD** is being installed, then RC=4 and the following messages will be issued:

- “GIM42001W THE FOLLOWING CONDITIONS FOR SYSMOD aaaaaaa WERE NOT SATISFIED, BUT WERE IGNORED BECAUSE THE BYPASS OPERAND WAS SPECIFIED. PROCESSING CONTINUES.”

where aaaaaaa--SYSMOD ID

- “GIM35966I SYSTEM HOLD aaaaaaa ORIGINATED BY SYSMOD bbbbbbb WAS BYPASSED.”

where: aaaaaaa--system hold reason ID and bbbbbbb--SYSMOD ID

Otherwise RC=0

6.1.10 Perform SMP/E ACCEPT CHECK for WebSphere Application Server V4.0.1 for z/OS and OS/390 FMIDs and Service

Run an ACCEPT CHECK to identify any requisite service and additional holds—for example, HOLDSYS(DOC,EC)—that may need to be resolved before ACCEPT processing. Resolve any holds, and RECEIVE and APPLY any requisite service identified by ACCEPT CHECK before the next step.

Figure 23 shows a sample ACCEPT CHECK for WebSphere Application Server V4.0.1 for z/OS and OS/390.

```
//CHECK JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD (if needed for SMP/E)
//SMPCSI DD DSN=was.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(dlibzone)
  OPTIONS(OS390OPT) .
  ACCEPT CHECK
  FORFMID(HJVA130, H28W401)
  SELECT(HJVA130, H28W401)
  GROUPEXTEND(NOAPARS,NOUSERMODS)
  BYPASS(HOLDSYS) .
/*
```

Figure 23. SMP/E ACCEPT CHECK

Required Updates

1. Update the job parameters.
2. Update the STEPLIB DD statement (if necessary for your system).
3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
4. Update dlibzone to your dlib zone name.

Expected Return Codes and Messages:

If service containing ++**HOLD** is being installed, then RC=4 and the following messages will be issued:

- “GIM42001W THE FOLLOWING CONDITIONS FOR SYSMOD aaaaaaa WERE NOT SATISFIED, BUT WERE IGNORED BECAUSE THE BYPASS OPERAND WAS SPECIFIED. PROCESSING CONTINUES.”
where aaaaaaa--SYSMOD ID
- “GIM35966I SYSTEM HOLD aaaaaaa ORIGINATED BY SYSMOD bbbbbbb WAS BYPASSED.”

where: aaaaaaaa--system hold reason ID and bbbbbbb--SYSMOD ID

Otherwise RC=0

6.1.11 Perform SMP/E ACCEPT for WebSphere Application Server V4.0.1 for z/OS and OS/390 FMIDs and Service

Figure 24 shows a sample ACCEPT for WebSphere Application Server V4.0.1 for z/OS and OS/390.

```
//ACCEPT JOB <job parameters>
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//STEPLIB DD (if needed for SMP/E)
//SMPCSI DD DSN=was.global.csi,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(dlibzone)
  OPTIONS(OS390OPT) .
  ACCEPT
  FORFMID(HJVA130, H28W401)
  SELECT(HJVA130, H28W401)
  GROUPEXTEND(NOAPARS,NOUSERMODS)
  BYPASS(HOLDSYS) .
/*
```

Figure 24. SMP/E ACCEPT

Required Updates

1. Update the job parameters.
2. Update the STEPLIB DD statement (if necessary for your system).
3. Replace the CSI name on the SMPCSI DD statement with your CSI name.
4. Update dlibzone to your dlib zone name.

Expected Return Codes and Messages:

If service containing ++**HOLD** is being installed, then RC=4 and the following messages will be issued:

- “GIM42001W THE FOLLOWING CONDITIONS FOR SYSMOD aaaaaaa WERE NOT SATISFIED, BUT WERE IGNORED BECAUSE THE BYPASS OPERAND WAS SPECIFIED. PROCESSING CONTINUES.”

where aaaaaaa--SYSMOD ID

- “GIM35966I SYSTEM HOLD aaaaaaa ORIGINATED BY SYSMOD bbbbbbb WAS BYPASSED.”

where: aaaaaaa--system hold reason ID and bbbbbbb--SYSMOD ID

Otherwise RC=0

6.2 Activating WebSphere Application Server V4.0.1 for z/OS and OS/390

6.2.1 Migrating from Previous Releases of WebSphere Application Server

If you are migrating from WebSphere Application Server / Standard Edition Version 3.02 or Version 3.5, you may wish to move the older version's HFS data set to a new mountpoint on the target system before continuing; see 5.4.3, “Selecting Target System Mountpoints” on page 26, and Appendix A, “HFS Considerations for Co-Existent Versions” on page 51.

If you are migrating from WebSphere Application Server / Enterprise Edition Version 3.02, you will be required to do a cold start installation of WebSphere Application Server Version 4.0.1, replacing the prior level. See *WebSphere Application Server Version 4.0.1 for z/OS and OS/390: Migration* for details.

If you are migrating from WebSphere Application Server V4.0 for z/OS and OS/390, you must shut down your WebSphere Application Server address spaces before continuing, then unmount the WebSphere V4.0 HFS target (SMP-maintained) data sets. Leave the WebSphere configuration HFS mounted at /WebSphere390.

For more information on migration, see *WebSphere Application Server Version 4.0.1 for z/OS and OS/390: Migration*.

6.2.2 Mount the HFS Data Sets on the Target System

Before proceeding with activation, unmount the WebSphere Application Server HFS data sets on the driving system, and mount them on the target system at the target system mountpoints. See 5.4.3, “Selecting Target System Mountpoints” on page 26 for assistance in selecting these mountpoints. If you have selected the default mountpoints, you can use the following TSO commands on your target system to mount the HFS data sets:

```
MOUNT FILESYSTEM('your.java.hfs') MOUNTPOINT('/usr/lpp/java/IBM') TYPE(HFS) MODE(READ)
MOUNT FILESYSTEM('your.was.hfs') MOUNTPOINT('/usr/lpp/WebSphere') TYPE(HFS) MODE(READ)
```

You will probably want to add these mounts to your BPXPRMxx members in parmlib to ensure that these data sets are always mounted. If, at a later date, you need to perform service on the WebSphere Application Server V4.0.1 for z/OS and OS/390 product,

- Temporarily unmount the HFS data sets.
- Mount both data sets at the service (-pathprefix-) mountpoint you created for installation.
- Apply the service.
- Unmount both data sets from the service mountpoint.

- Remount them at the production mountpoints given above.

6.2.3 Activating Application Server

WebSphere Application Server V4.0.1 for z/OS and OS/390: Installation and Customization, GA22-7834, contains the step-by-step procedures to activate the functions of Application Server.

6.2.4 Activating IBM Developer Kit for OS/390 Java 2 Technology Edition

There are no further actions to perform to activate IBM Developer Kit for OS/390 Java 2 Technology Edition other than the actions documented in this program directory.

6.2.4.1 Update the Environment Path

IBM Developer Kit for OS/390 Java 2 Technology Edition is invoked as a command under the UNIX System Services shell. The path environment variable must be updated to point to the Java executables so that the command will be found. This can be done with the following shell command:

```
export PATH=/usr/lpp/java/IBM/J1.3/bin:$PATH
```

The export command references the default path into which IBM Developer Kit for OS/390 Java 2 Technology Edition was installed. If you changed the default path, change the export command accordingly.

Alternatively, you can add the IBM Developer Kit for OS/390 Java 2 Technology Edition path to the system path variable contained in `/etc/profile`.

Once the path environment variable has been set, you can enter the following shell commands:

```
java
```

```
java -version
```

IBM Developer Kit for OS/390 Java 2 Technology Edition is successfully installed if the `java` command responds with a summary of available options and the version option responds with the current version of the IBM Developer Kit for OS/390 Java 2 Technology Edition code.

6.2.5 Using the Just-In-Time Compiler

IBM Developer Kit for OS/390 Java 2 Technology Edition contains a Just-In-Time (JIT) compiler built specifically for OS/390. The JIT compiler provides execution time improvements over the interpreter. By default, the JIT compiler is activated, but can be deactivated by setting an environment variable.

To deactivate usage of the JIT, issue the following shell command prior to invoking Java:

```
export JAVA_COMPILER=
```

To activate usage of the JIT after it has been deactivated, issue the following shell command prior to invoking Java:

```
unset JAVA_COMPILER
```

Note that the environment variable names and values are case sensitive and should be entered exactly as shown.

6.2.6 Using Windowing Support

To use the Java Windowing Support (AWT), the X/Windows feature of TCP/IP must be installed on the OS/390 or z/OS host. Your workstation must also have the appropriate X/Windows server software to communicate with the host.

The DISPLAY environment variable must be set to the IP address or name of the X server (the workstation) on which the window is to be displayed. For example,

```
export DISPLAY=myhost.hursley.ibm.com:0.0
```

defines myhost.hursley.ibm.com as the workstation running the X server.

The DISPLAY variable must be set prior to invoking Java.

6.2.7 Audio Support

Audio is not supported when running applets. An applet that attempts to use audio will function, but no audio will be produced.

For general information about running Java applications and compiling Java source, visit the Web site <http://www.ibm.com/java>.

Appendix A. HFS Considerations for Co-Existent Versions

Customers who have previously installed WebSphere Application Server V3.02 or WebSphere Application Server V3.5 on their systems may already have an HFS mounted at `/usr/lpp/WebSphere`, the default mountpoint for WebSphere Application Server V4.0.1 for z/OS and OS/390. It is recommended that you do not remove these products until you have migrated any existing applications to the new level of the WebSphere Application Server.

Because the `/usr/lpp/WebSphere` mountpoint occurs in more places in WebSphere Application Server V4.0.1 for z/OS and OS/390 installation jobs and customization files than in earlier releases, it is recommended that you move the previous WebSphere Application Server HFS to another mountpoint before installing the WebSphere Application Server V4.0.1 for z/OS and OS/390. This can be done as follows.

- Locate and back up all `httpd.conf` and `was.conf` files used on your target system(s).
- Shut down all HTTP servers on the target system(s).
- Create a new version-specific mountpoint, such as `/usr/lpp/WebSphere302` or `/usr/lpp/WebSphere350`, and mount your existing WebSphere Application Server HFS at this new mountpoint.
- Update all `httpd.conf` and `was.conf` files to use the new mountpoint.
- Restart the HTTP servers on the target system(s) and verify that they work correctly.
- Update any BPXPRMxx parmlib members to mount the old WebSphere Application server at the version-specific mountpoint.
- Update any cron jobs, shell scripts, or other code that refers to the `/usr/lpp/WebSphere` mountpoint.
- Update product service procedures to ensure service is applied to the appropriate HFS. This includes changing the service mountpoint so that it is unique, and updating the DDDEFs in the SMP/E environment in which the older version is installed. We recommend using unique `-PathPrefix-` values to separate the service trees.

Once this has been done on all target systems, the `/usr/lpp/WebSphere` mountpoint will be available for reuse. Installation and customization of WebSphere Application Server V4.0.1 for z/OS and OS/390 may continue using the default service mountpoint and production mountpoint.

Alternatively, if it is not possible to move the older version of WebSphere Application Server to a different mountpoint, you will need to install WebSphere Application Server V4.0.1 for z/OS and OS/390 at a mountpoint other than the default. This can be done as follows:

- Create a unique service mountpoint and production mountpoint for WebSphere Application Server V4.0.1 for z/OS and OS/390. We recommend using a `-PathPrefix-` to make the service path unique. Otherwise, you would have to update sample BBOISKMD with the new path name. For a production path, you may want to choose some other path, such as `/usr/lpp/WebSphere40`.
- Modify the BBODDDEF sample to create the proper DDDEFs. This is simple if you use the `-PathPrefix-` method.

- SMP/E-install WebSphere Application Server V4.0.1 for z/OS and OS/390.
- Mount your HFS at the version-specific production mountpoint.
- During customization of WebSphere Application Server V4.0.1 for z/OS and OS/390, use the WebSphere customization dialog to change the default mountpoint. The customization process will automatically insert the new mountpoint wherever it should go. You may wish to temporarily unmount your older version of the HFS during customization of WebSphere Application Server V4.0.1 for z/OS and OS/390 to prevent accidental access to the older version of the HFS.

Reader's Comments

Program Directory for WebSphere Application Server V4.0.1 for z/OS and OS/390 Service Level PUT0108

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