IBM

Program Directory for

WebSphere Application Server

for z/OS V7.0.0

Version 7 Release 0 Modification 0

Program Number 5655-N02

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Note!

Before using this information and the product it supports, be sure to read the general information under Appendix A, "Notices" on page 58.

Contents

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1.0 Introduction

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 for z/OS V7.0.0.

The Program Directory contains the following sections:

- 2.0, "Program Materials" on page 19 identifies the basic and optional program materials and documentation for WebSphere Application Server for z/OS V7.0.0.

- 3.0, "Program Support" on page 24 describes the IBM support available for WebSphere Application Server for z/OS V7.0.0.

- 4.0, "Program and Service Level Information" on page 26 lists the APARs (program level) and PTFs (service level) incorporated into WebSphere Application Server for z/OS V7.0.0.

- 5.0, "Installation Requirements and Considerations" on page 27 identifies the resources and considerations required for installing and using WebSphere Application Server for z/OS V7.0.0.

- 6.0, "Installation Instructions" on page 41 provides detailed installation instructions for WebSphere Application Server for z/OS V7.0.0.

- 7.1, "Activating WebSphere Application Server" on page 56 describes how to prepare for the activation of WebSphere Application Server for z/OS V7.0.0 and provides links to complete activation documentation.

Before installing WebSphere Application Server for z/OS V7.0.0, read the *CBPDO Memo To Users* and the *CBPDO Memo To Users Extension* that were supplied with this program in softcopy form as well as this Program Directory and then keep them for future reference. Section 3.2, "Preventive Service Planning" on page 24 tells you how to find any updates to the information and procedures in this Program Directory.

WebSphere Application Server for z/OS V7.0.0 is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The Program Directory, which you are reading, is provided in softcopy form on the CBPDO tape provided with your order. All service and HOLDDATA for WebSphere Application Server for z/OS V7.0.0 are included on the CBPDO tape.

Do not use this Program Directory if you are installing WebSphere Application Server for z/OS V7.0.0 with a SystemPac or ServerPac. When using one of these offerings, use the jobs and documentation that is supplied with the offering. This documentation may point you to specific sections of the Program Directory as required.

1.1 WebSphere Application Server for z/OS V7.0.0 Description

WebSphere Application Server for z/OS V7.0.0 is a comprehensive, sophisticated Java 2 Enterprise Edition (Java EE), and Web Services technology-based application platform specifically designed to leverage the qualities of service inherent in the z/OS operating system.

WebSphere Application Server for z/OS V7.0.0 is designed for full Java EE 5 compatibility and support for Java Platform, Standard Edition (Java SE) 6. WebSphere Application Server for z/OS V7.0.0 delivers flexibility and power across the broadest range of customer IT environments. For customers who need to rapidly develop and deploy secure, portable applications that run on a multitude of server and desktop systems, WebSphere Application Server for z/OS V7.0.0 is the premier platform.

WebSphere Application Server for z/OS V7.0.0 is the foundation of the WebSphere software platform, and a key building block for a Service Oriented Architecture (SOA). As the leading Java EE and Web Services application platform, WebSphere Application Server for z/OS V7.0.0 delivers a high performance transaction engine that can help to build, run, integrate and manage dynamic, and on demand business applications.

WebSphere Application Server for z/OS V7.0.0 is designed to be equivalent, from a programming model perspective, with WebSphere Application Server and WebSphere Application Server Network Deployment for multiplatforms.

WebSphere Application Server for z/OS V7.0.0 provides a Java EE 5 compatible application server optimized to leverage the Qualities of Service inherent to the System z hardware and the z/OS operating system. With this release, WebSphere Application Server for z/OS V7.0.0 continues to deliver on the goal of common code with the WebSphere Application Server portfolio of products. V7.0.0 helps to leverage the transactional capabilities, scalability, availability, and reliability for which System z products are known and also provides ease-of-use enhancements.

WebSphere Application Server for z/OS V7.0.0 offers robust improvements, whether you are new to the product, or making the transition from a prior release.

WebSphere Application Server is a proven, high-performance transaction engine that can help you build, run, integrate, and manage dynamic business applications. It excels as the foundation for a service-oriented architecture with the following main benefits:

- Simple, rapid development and deployment

  Improve time to value and make the most of existing technology skills with easy-to-use features designed to get you to production fast.

  – Industry-leading, open standards programming models

  – Tight integration with Rational tools for first-class, application-building functionality

  – Tools and utilities to enable fast deployment

  WebSphere Application Server for z/OS V7.0.0 in this area has the following highlights:

- Simplification of the programming model with Java Platform, Enterprise Edition (Java EE) 5.0, including Enterprise JavaBeans (EJB) 3.0 and Java Persistence API (JPA) 1.0

- Java Platform, Standard Edition (Java SE) 6 for improved developer productivity and faster debugging

- Rational Application Developer ssemble and deploy module for the application server to help you create, test, and deploy applications, including a rapid-deployment feature for testing applications in the Version 7.0 runtime environment

- Easier movement of applications through development, test, and production systems with environment-neutral variables and configuration in simple properties files

- Secure and scalable SOA run time

Robust and secure run time ensures that applications and data are safe, with near continuous uptime for mission-critical applications

Run applications and data that help eliminate lost business opportunities with near continuous uptime for mission-critical applications.

- Fully secured environment out of the box, with simple configuration of additional security options

- Cutting-edge performance for real applications in commercial environments

- High Availability Manager, which provides better scaling so that more concurrent users can access an application

- A unified clustering framework that brings workload balancing, dependability, and other benefits to the application servers in your heterogeneous environment

WebSphere Application Server for z/OS V7.0.0 in this area has the following highlights:

- Multiple security domains provide flexibility for administrative and application security configurations

- Fine-grained administrative security through the administration console

- Security auditing service to assist with audit compliance

- WebSphere Proxy Server hardened for demilitarized zone (DMZ) topologies

- Resource efficient features and faster run time, with new high-performance Web services engine

- Extensible communication services

Increase your return on investment and improve the flexibility of your business by making application services more reusable and accessible to new users in unique ways.

- Extensive Web services support, which makes it easier to integrate applications inside the enterprise as well as externally with customers, partners, and suppliers

- Powerful messaging engine. Java Message Service (JMS) support enables applications to exchange messages asynchronously with other JMS clients by using JMS destinations (queues or topics)

- Tight integration with WebSphere MQ for diverse environments

- Ability to plug in the WebSphere Enterprise Service Bus for service mediation

- Session Initiation Protocol (SIP) servlet support for real-time collaboration

WebSphere Application Server for z/OS V7.0.0 in this area has the following highlights:

- Web services programming model enhancements, including WS-I Reliable Secure Profile support and Policy Sets for simple quality of service definition

- Fast new Java API for XML Web Services (JAX-WS) engine with improved administration for Web services applications

- Simplified administration of messaging engine with new wizards and administrative tasks

- Enhanced integration with WebSphere MQ

- Session Initiation Protocol (SIP) infrastructure enhancements

- Effective application management

Focus resources on innovation instead of maintenance, and reduce the costs of managing your environment with effective and easy-to-use management tools.

- Industry-leading, flexible, and scalable systems management capabilities

- Web-based administrative console

- Java Management Extensions (JMX)

- Tight integration with Tivoli software

WebSphere Application Server for z/OS V7.0.0 in this area has the following highlights:

- Reduced overhead of stand-alone server administration through the administrative agent console

- Increased scale of administration through the job manager console

- Library of sample scripts to perform common administrative actions on Version 6.1 and 7.0 systems

- Business-level applications, which are administration models that capture the entire definition of applications

- Management of DataPower appliances through the administrative console

1.1.1 WebSphere Application Server for z/OS V7.0.0 Functional Specifics

Security

WebSphere Application Server for z/OS V7.0.0 contains many new and changed features for those who are responsible for securing applications and the application serving environment.

- Auditing the security infrastructure

The security auditing subsystem has been introduced as part of the security infrastructure. The primary responsibility of the security infrastructure is to prevent unauthorized access and usage of resources. Utilizing security auditing has two primary goals:

– Confirming the effectiveness and integrity of the existing security configuration.

– Identifying areas where improvement to the security configuration might be needed.

Security auditing achieves these goals by providing the infrastructure that allows you to implement your code to capture and store supported auditable security events. During runtime, all code other than the Java EE application code is considered to be trusted. Each time a Java EE application accesses a secured resource, any internal application server process with an audit point included can be recorded as an auditable event.

The new auditing infrastructure offers the ability to record auditing events to a tamper proof file and through the z/OS System Management Facility (SMF) using the Type 83 subtype 5 record.

- Authorization providers

In WebSphere Application Server for z/OS V7.0.0, Java Authorization Contract for Containers (JACC) specification 1.4 is being applied. In JACC specification 1.4, we support Java EE5 that includes Servlet 2.5 and EJB 3. The biggest functional change with the introduction of JACC specification 1.4 is the inclusion of annotations for propagating security policy information.

- General default bindings for Web services security

The configuration of the default cell level and default server level bindings has changed in WebSphere Application Server for z/OS V7.0.0. Previously, you could configure only one set of default bindings for the cell, and optionally configure one set of default bindings for each server. In Version 7.0, you can configure one or more general provider bindings and one or more general client bindings. However, only one general provider binding and one general client binding can be designated as the default.

- Kerberos (KRB5) authentication mechanism support for security

Security support for Kerberos as the authentication mechanism has been added for this release of WebSphere Application Server. Kerberos is a mature, flexible, open, and very secure network authentication protocol. Kerberos includes authentication, mutual authentication, message integrity and confidentiality and delegation features.

- Multiple security domains

Multiple security domain support is new in this release of WebSphere Application Server. You can create different security configurations and assign them to different applications in WebSphere Application Server processes. By creating multiple security domains, you can configure different security attributes for both administrative and user applications within a cell environment. You can configure different applications to use different security configurations by assigning the servers or clusters or SIBuses that host these applications to the security domains. Only users assigned to the administrator role can configure multiple security domains.

- RSA token authentication mechanism

The RSA token authentication mechanism is new to this release of WebSphere Application Server. It aids the flexible management objective to preserve the base profiles configurations and isolate them from a security perspective. This mechanism permits the base profiles managed by an administrative agent to have different Lightweight Third-Party Authentication (LTPA) keys, different user registries, and different administrative users.

- Securing communications

  WebSphere Application Server provides several methods for securing communication between a server and a client. New in this release are functions that ensure secure communication between a server and a client. These functions focus on certificate management, authentication, and ensuring trust among the application server, administrative agent, and job manager. The new functions include:

  – Creating and using a certificate authority (CA) client to enable a CA to request, query, and revoke certificates.

  – Creating and using chained personal certificates to allow a certificate to be signed with a longer life span.

  – Creating and revoking certificate authority (CA) certificates to ensure secure communication between the CA client and the CA server.

  – Specifying default certificate expiration and keystore password during profile creation.

  – Using a simplified certificate renewal process.

  – Optionally administering SAF keyrings using the WebSphere Application Server administrative console.

- Single sign-on for HTTP requests using SPNEGO Web authentication

  In Version 6 Release 1 Modification 0, a trust association interceptor (TAI) that uses the Simple and Protected GSS-API Negotiation Mechanism (SPNEGO) to securely negotiate and authenticate HTTP requests for secured resources was introduced. In WebSphere Application Server 7.0, this function is now deprecated. SPNEGO Web authentication has taken its place to provide the following enhancements:

  – You can configure and enable SPNEGO Web authentication and filters on WebSphere Application Server by using the administrative console.

  – Dynamic reload of SPNEGO is provided without the need to stop and restart WebSphere Application Server.

  – Fallback to an application login method is provided if the SPNEGO Web authentication fails.

  – SPNEGO can be customized at the WebSphere security domain level. Read about Multiple security domains for more information.

Administration

WebSphere Application Server for z/OS V7.0.0 offers functionality for users who are going to customize, administer, monitor, and tune production server environments as well as those who are going to deploy and operate applications.

- Adding assured delivery to Web services through WS-ReliableMessaging Support for the WS-ReliableMessaging standard was first introduced as part of the IBM WebSphere Application Server Server Version 6.1 Feature Pack for Web Services. At that time, the Reliable Asynchronous Messaging Profile (RAMP) Version 1.0 specification used WS-ReliableMessaging to ensure the reliable delivery of messages, and the Feature Pack for Web Services in Version 6 Release 1 Modification 0 included default policy sets that support this specification. You can migrate WebSphere Application Server Version 6.1 WS-ReliableMessaging configurations that use RAMP-based policy sets to the current version of the product.

  Following on from the RAMP Version 1.0 specification, the Web Services Interoperability organization (WS-I) Reliable Secure Profile working group has developed Version 1.0 of an interoperability profile dealing with secure, reliable messaging capabilities for Web services. This profile is similar to RAMP Version 1.0, except that it is updated to use WS-ReliableMessaging Version 1.1 with the OASIS WS-SecureConversation Version 1.3 specification. The WS-I RSP default policy sets provided in this version of WebSphere Application Server are an implementation of the Reliable Secure Profile Version 1.0 specification.

  If you create JAX-WS based WS-Notification services, you can apply WS-ReliableMessaging policies to them to make your WS-Notification services reliable. For more information, see Configuring WS-Notification for reliable notification.

- Administering nodes using the administrative agent

  The administrative agent provides a single interface to administer multiple unfederated application server nodes in, for example, development, unit test, or server farm environments. By using a single interface to administer your application servers, you reduce the overhead of running administrative services in every application server.

- Administering nodes using the job manager in a flexible management environment

  The job manager allows you to asynchronously submit and administer jobs for large numbers of unfederated application servers and deployment managers over a geographically dispersed area. Many of the management tasks that you can perform with the job manager are tasks that you can already perform with the product, such as application management, server management, and node management. However, with the job manager, you can aggregate the tasks and perform the tasks across multiple application servers or deployment managers.

- Advanced core group bridge configurations

  You can use a tunnel proxy peer access point when the core groups cannot directly communicate with each other because of a firewall. Typically, when a firewall exists between two core groups, the core groups cannot communicate with each other. However if a DMZ Secure Proxy Server for IBM„ WebSphere Application Server resides in the demilitarized zone (DMZ) outside of the firewall, you can create a tunnel access point group that enables you to establish a core group bridge tunnel between the core groups that are running on servers inside of the firewall, and the core groups that are running on the DMZ Secure Proxy Server for WebSphere Application Server.

- Application server custom properties for z/OS

  The server_region_request_cputimeused_limit custom property helps you to prevent a single application request from monopolizing the available CPU time because it allows you to limit the

amount of CPU time that a single request can use. A CPU monitor is invoked when a request is dispatched. If the request exceeds the specified amount of CPU time, the controller considers the request unresponsive. The controller then issues message BBOO0327, to let the requesting application know that the request was unresponsive. For this condition, an attempt is made to restrict the amount of CPU processing the request can acquire once it has exceeded the configured limit.

- Authentication generator or consumer token settings

  The LTPA Token V2.0 token type is available only for bindings using the new namespace in IBM„ WebSphere Application Server, Version 7.0 or later. When you select LTPA Token V2.0 as the token type for the token consumer, both LTPA tokens and LTPA V2.0 tokens can be consumed. To restrict the token consumer to LTPA V2.0 tokens only, select the Enforce token version check box.

  If you select LTPA Token as the token type for the token generator, single sign-on interoperability mode must be enabled. This is a setting in global security from Web and SIP security. If the interoperability flag is not set to enabled (true), an error occurs when the application that is attached to these bindings is started. If you want to use the LTPA token without checking the state of the interoperability flag, you can set the custom property, **com.ibm.wsspi.wssecurity.tokenGenerator.ltpav1.pre.v7**, on the token generator.

- Configuring a data source using the administrative console

  If you have defined security domains in the application server, you can click Browse... to select an authentication alias for the resource that you are configuring. Security domains allow you to isolate authentication aliases between servers. The tree view is useful in determining the security domain to which an alias belongs, and the tree view can help you determine the servers that will be able to access each authentication alias. The tree view is tailored for each resource, so domains and aliases are hidden when you cannot use them.

- Configuring client reroute for applications that use DB2 databases

  Client reroute for DB2 allows you to provide an alternate server location, in case the connection to the database server fails. If you decide to use client reroute with the persistence option, the alternate server information will persist across Java Virtual Machines (JVMs). In the event of an application server crash, the alternate server information will not be lost when the application server is restored and attempts to connect to the database.

- Configuring mail providers and sessions

  You can isolate a mail provider to allow different versions of the same provider to be loaded in the same Java Virtual Machine (JVM). For example, you might want to deploy multiple applications on a single server, but each application requires different versions or implementations of the mail provider. You can now isolate each version or implementation of the provider, and the provider will be loaded in its own class loader and will not interfere with other implementations. There are some general considerations for isolating any type of resource provider; refer to the topic on considerations for isolated resource providers for more information.

- Configuring Oracle Real Application Cluster (RAC) with the application server

  Using the Oracle JDBC driver, you can configure failover support, load balancing, or both, in an Oracle RAC environment.

- Configuring the callers for general and default bindings

  WebSphere Application Server for z/OS V7.0.0 provides support for multiple callers. The caller token used for authentication is the one with highest priority, based on decreasing order of preference. You can modify the order of the callers, as described in the topic "Changing the order of the callers for a token or message part."

- Configuring transaction properties for an application server

  In this release, both the WS-Transaction 1.1 and the WS-Transaction 1.0 specifications are supported. You can set the default WS-Transaction specification level for a server to use for outbound requests that include a Web Services Atomic Transaction (WS-AT) or Web Services Business Activity (WS-BA) coordination context.

- Core group discovery and failure detection protocols

  You can use an alternate protocol provider instead of the default Discovery Protocol and Failure Detection Protocol to monitor and manage communication between core group members. In general, alternate protocol providers, such as the z/OS Cross-system Coupling Facility (XCF)-based provider, use less system resources than the default Discovery Protocol and Failure Detection Protocol, especially during times when the core group members are idle. An alternate protocol provider generally use less system resources because it does not perform the member-to-member TCP/IP pinging that the default protocol providers use to determine if a core group member is still active.

- Deploying and administering business-level applications

  A business-level application is an administration model that provides the entire definition of an application as it makes sense to the business. It is a WebSphere configuration artifact, similar to a server or cluster, that is stored in the product configuration repository. A business-level application can contain artifacts such as Java Platform, Enterprise Edition (Java EE) applications or modules, shared libraries, data files, documents, and other business-level applications.

- Enabling or Disabling the reusable ASID function

  In z/OS releases prior to Version 1.9, a process (address space) which defined cross process services, such as the WebSphere Application Server for z/OS Controller Region, could result in its address space identifier (ASID) being marked as non-reusable. In z/OS Version 1.9, it became possible to request these processes to be managed so that the ASID can be reused.

- Enabling trusted context for DB2 databases

  With trusted connections you can:

  - Access the DB2 database with the caller identity, obviating the need to create a new connection for every user.

  - Preserve the identity of the end-user when the application server is interacting with the database.

  - Strengthen database security by avoiding granting all of the privileges to a single user.

  - Improve performance, as compared to the existing model of using the resetConnection() method to take advantage of identity propagation.

- Introduction: Application servers and component startup

You can improve system performance if you configure some of your application servers, such that each of their components are dynamically started as they are needed, instead of letting all of these components automatically start when the server starts. Selecting this option can improve server startup time, and reduce the memory footprint. Starting components as they are needed is most effective if all of the applications that are deployed on the application server are of the same type. For example, using this option works better if all of your applications are Web applications that use servlets, and JavaServer Pages (JSP). This option works less effectively if your applications use servlets, JSPs and Enterprise JavaBeans (EJB).

- Introduction: Clusters and component startup

Normal runtime processing automatically starts all server components during the server startup process. This processing applies to all servers, including servers that are part of a cluster. However, you can configure servers, including servers that are cluster members, such that not all of the server components start during the server startup process. This capability enables the server to consume resources as needed, thereby providing a smaller and more manageable footprint, and normally results in a performance improvement.

You can improve system performance if you configure each cluster member, such that each of their components are dynamically started as they are needed instead of letting all of these components automatically start when the cluster member starts. Selecting this option can improve cluster startup time, and reduce the memory footprint of the cluster members. Starting components as they are needed is most effective if all of the applications that are deployed on the cluster are of the same type. For example, using this option works better if all of your applications are Web applications that use servlets, and JavaServer Pages (JSP). This option works less effectively if your applications use servlets, JSPs and Enterprise JavaBeans (EJB).

- WS-Transaction policies

In this release, when you work with policy sets, you can configure the WS-Transaction policy type for the WS-AtomicTransaction (WS-AT) and the WS-BusinessActivity (WS-BA) protocols. You can configure the way in which a Java API for XML Web Services (JAX-WS) client handles WS-AT or WS-BA context. You can specify that the client must send context, can send context if it is available, or must not send context.

- Shared library settings

An isolated shared library enables one instance of the library classes to be shared only among associated applications and Web modules. An isolated shared library enables multiple applications or Web modules to share a common set of classes across a subset of the applications. Further, an isolated shared library supports versioning and loads the minimum number of library copies. The class loader created for an isolated shared library does not reload and, like a server class loader, exists for the lifetime of a server. For shared native libraries, you can use an isolated shared library to avoid errors resulting from reloading of native libraries.

- Using the script library to automate the application serving environment

The Jython script library provides a set of procedures to automate the most common application server administration functions. For example, you can use the script library to easily configure servers, applications, mail settings, resources, nodes, business-level applications, clusters, authorization

groups, and more. You can run each script procedure individually, or combine several procedures to quickly develop new scripts.

- Web Services-Interoperability Basic Profile

Building on the support for WS-I Basic Profile Version 1.0, WS-I Basic Profile V1.1, Attachment Profile V1.0, and Basic Security Profile (BSP) V1.0, you can implement Web services with WebSphere Application Server Version 7 using the following current emerging standard WS-I profiles:

  – WS-I Basic Profile V1.2 builds on WS-I Basic Profile V1.0 and WS-I Basic Profile V1.1 and adds support for WS-Addressing (WS-A) and SOAP Message Transmission Optimization Mechanism (MTOM). The WS-Addressing specification enables the asynchronous message exchange pattern so that you can decouple the service request from the service response. The SOAP header of the sender's request contains the wsa:ReplyTo value that defines the endpoint reference to which the provider's response is sent. Decoupling the request from the response enables long running Web services interactions. Leveraging the asynchronous programming model support in JAX-WS Version 2.1 in combination with WS-Addressing, you can now take advantage of the ability to create Web services invocations where the client can continue to process work without waiting for a response to return. This provides for a more dynamic and efficient model to invoke Web services. Using MTOM, you can send and receive binary data optimally within a SOAP message.

  – WS-I Basic Profile V2.0 builds on top of Basic Profile V1.2 with the addition of support for SOAP 1.2.

  – WS-I Basic Security Profile V1.1 extends the WS-I Basic Security Profile V1.0 standard by profiling the latest WS-Security V1.1 specification.

  – WS-I Reliable Secure Profile 1.0 builds on WS-I Basic Profile V1.2, WS-I Basic Profile V2.0, WS-I Basic Security Profile V1.0, and WS-I Basic Security Profile V1.1 and adds support for WS-Reliable Messaging 1.1, WS-Make Connection 1.0, and WS-Secure Conversation 1.3. WS-Reliable Messaging 1.1 is a session-based protocol that provides message level reliability for Web services interactions. WS-Make Connection 1.0 was developed by the WS-Reliable Messaging workgroup to address scenarios where a Web services endpoint is behind a firewall or the endpoint has no visible endpoint reference. If a Web services endpoint loses connectivity during a reliable session, WS-Make Connection provides an efficient method to re-establish the reliable session. Additionally, WS-Secure Conversation V1.3 is a session-based security protocol that uses an efficient symmetric key based encryption algorithm for message level security. WS-I Reliable Secure Profile V1.0 provides secure reliable session-oriented Web services interactions.

- DMZ Secure Proxy Server for WebSphere Application Server

The DMZ Secure Proxy Server for WebSphere Application Server installation allows you to install your proxy server in the DMZ, while reducing the security risk that would be presented if you choose to install an application server in the DMZ to host a proxy server. The risk is reduced by the DMZ Secure Proxy Server for WebSphere Application Server removing of all the functionality and the features that the application server possess that are not required to host the proxy servers, but could possibly be used for malicious purposes. Installing the DMZ Secure Proxy Server for WebSphere Application Server in the DMZ rather than the secured zone presents new security challenges. The DMZ Secure Proxy Server for WebSphere Application Server has been equipped with various capabilities to provide protection from these challenges.

- When to use a high availability manager

  In a high availability environment, you can configure your resource adapters for high availability. After a resource adapter is configured for high availability, the high availability manager assigns the resource adapter to a high availability group, the name for which is derived from the resource adapter key. The resource adapter key is the cell-scoped configuration ID of the resource adapter, and must be identical for all of the servers in a cluster that use the same resource adapter. The high availability manager then controls when each resource adapter is started.

- WS-ReliableMessaging: supported specifications and standards

  In this release, there are two types of WS-Notification service

  - **Version 7.0**: You configure a Version 7.0 WS-Notification service and service points if you want to compose a JAX-WS WS-Notification service with WS-ReliableMessaging, or if you want to apply JAX-WS handlers to your WS-Notification service. This is the recommended type of service for new deployments.

  - **Version 6.1**: You configure a Version 6.1 WS-Notification service and service points if you want to expose a JAX-RPC WS-Notification service using the same technology provided in WebSphere Application Server Version 6.1, including the ability to apply JAX-RPC handlers to the service.

Troubleshooting/Capacity Planning/Servicing

WebSphere Application Server for z/OS V7.0.0 provides many new features for troubleshooting and servicing the product, with a focus on the ability to automatically detect and recover from problems as well as capturing important. data about the system's capacity for doing work.

- Subtype 9: Request Activity record

  When you do capacity planning, you need to look at the costs that are involved in running requests and how many requests you process over a set period of time. You can use the SMF Subtype 9 record to monitor which requests are associated with which applications, how many requests you get, and how much resource each request uses. You can also use this record to identify the application involved, the CPU time that the request consumes. Because a new record is created for each request, you can determine the number of requests that you get over a specific length of time.

- Using IBM Support Assistant

  IBM Support Assistant V4.0.2 is released with a host of new features and enhancements, making this version the most comprehensive and flexible yet. Our one-stop-shop solution to research, analyze and resolve software issues is now better than ever before, and you can still download it at no charge.

  IBM Support Assistant version 4.0 enhancements include:

  - Remote System Troubleshooting: Explore file systems, run automated data collectors and troubleshooting tools, and view the system inventory on remote systems.

  - Activity-based Workflow: Choose from support-related activities, or use the Guided Troubleshooter for step-by-step help with analysis and resolution.

  - Case Management: Organize your troubleshooting data in "cases"; then export and share these cases with other problem analysts or with IBM Support.

– Improved Flexibility: Add your own search locations, control updates by hosting your own update site, get the latest product news and updates.

Developer

WebSphere Application Server for z/OS V7.0.0 contains many new and changed features for application developers.

- Commit priority for transactional resources

  This release introduces resource commit ordering, where you control the order in which transactional resources are processed during two-phase commit processing. Resource commit ordering can increase the occurrence of one-phase commits and therefore improve performance, and reduce problems caused by transaction isolation.

- Configuring a data source using the administrative console

  If you have defined security domains in the application server, you can click Browse... to select an authentication alias for the resource that you are configuring. Security domains allow you to isolate authentication aliases between servers. The tree view is useful in determining the security domain to which an alias belongs, and the tree view can help you determine the servers that will be able to access each authentication alias. The tree view is tailored for each resource, so domains and aliases are hidden when you cannot use them.

- Configuring client reroute for applications that use DB2 databases

  Client reroute for DB2 allows you to provide an alternate server location, in case the connection to the database server fails. If you decide to use client reroute with the persistence option, the alternate server information will persist across Java Virtual Machines (JVMs). In the event of an application server crash, the alternate server information will not be lost when the application server is restored and attempts to connect to the database.

- Configuring Oracle Real Application Cluster (RAC) with the application serve

  Using the Oracle JDBC driver, you can configure failover support, load balancing, or both, in an Oracle RAC environment.

- Configuring resource adapters

  You can isolate a resource adapter to allow different versions of the same resource provider to be loaded in the same Java Virtual Machine (JVM). For example, you might want to deploy multiple applications on a single server, and each application requires different versions or implementations of the same resource adapter. You can now isolate each version or implementation of the resource adapter so that the classes of each adapter will be loaded by its own class loader, and the class loader will not inadvertently link with classes of the other versions or implementations of the adapter.

  Registering the resource adapter with the high availability manager specifies that the high availability (HA) manager will manage the lifecycle of a JCA 1.5 resource adapter in a cluster, ensuring that applications using resource adapters for inbound communication remain highly available. To that end, appropriate use of the HA capability options enable you to set up an environment that will be able to implement failover for inbound activity when a server goes down.

- Customizing and binding SQLJ profiles with the db2sqljcustomize tool

  The application server supports customizing and binding the SQLJ profiles in the administrative console or with scripting:

  – For administrative console support, read the topic on customizing and binding profiles for Structured Query Language in Java (SQLJ) applications.

  – For scripting support, see the topic on the application management command group for the AdminTask object.

- Deploying SQLJ applications that use bean-managed persistence, servlets, or sessions beans

  The application server includes these new features for SQLJ support for applications that use bean-managed persistence:

  – Customizing and binding SQLJ profiles with the administrative console or scripting.

  – Customizing and binding SQLJ applications again without needing to reinstall the application.

- Deploying Structured Query Language in Java (SQLJ) applications

  The application server includes enhanced SQLJ support for applications that use container-managed persistence (CMP). The new features include:

  – Deploying CMP beans during the application installation in the application server.

  – Customizing and binding SQLJ profiles with the administrative console or scripting.

  – Customizing and binding SQLJ applications again without needing to reinstall the application.

  These enhancements reduce the complexity of installing, deploying, and customizing SQLJ applications for both container-managed and bean-managed persistence.

- Enabling Web Services Addressing support for JAX-WS applications

  This release introduces a new way to enable WS-Addressing. You can now use JAX-WS 2.1 annotations and feature classes to enable WS-Addressing from either the server or the client. You also have more control over the behavior of WS-Addressing when using policy sets; you can specify whether WS-Addressing is enabled and whether to use synchronous, asynchronous, or both messaging patterns.

- JAXB

  WebSphere Application Server for z/OS V7.0.0 supports the JAXB 2.1 specification. JAX-WS 2.1 requires JAXB 2.1 for data binding. JAXB 2.1 provides enhancements such as improved compilation support and support for the @XMLSeeAlso annotation. With JAXB 2.1, you can configure the xjc schema compiler so that it does not automatically generate new classes for a particular schema. Similarly, you can configure the schemagen schema generator to not automatically generate a new schema. This enhancement is useful when you are using a common schema and you do not want a new schema generated. JAXB 2.1 also introduces the @XMLSeeAlso annotation that enables JAXB to bind additional Java classes that it might not otherwise know about when binding a Java class with this annotation. This annotation enables JAXB to know about all classes that are potentially involved in marshalling or unmarshalling as it is not always possible or practical to list all of the subclasses of a given Java class. JAX-WS 2.1 also supports the use of the @XMLSeeAlso annotation on a service

endpoint interface (SEI) or on a service implementation bean to ensure all of the classes referenced by the annotation are passed to JAXB for processing.

- JAX-WS

  WebSphere Application Server for z/OS V7.0.0 supports the JAX-WS 2.1 specification. JAX-WS 2.1 extends the functionality of JAX-WS 2.0 to provide support for the WS-Addressing in a standardized API. Using this function, you can create, transmit and use endpoint references to target a Web service endpoint. You can use this API to specify the action uniform resource identifiers (URIs) that are associated with the Web Services Description Language (WSDL) operations of your Web service. JAX-WS 2.1 introduces the concept of features as a way to programmatically control specific functions and behaviors. There are three standard features: the AddressingFeature for WS-Addressing, the MTOMFeature when optimizing the transmission of binary attachments, and the RespectBindingFeature for wsdl:binding extensions. JAX-WS 2.1 requires Java Architecture for XML Binding (JAXB) Version 2.1 for data binding.

- JPA Access Intent

  For a JPA persistence provider on the application server, the application can specify isolation and ReadLockMode based on a TaskName. The TaskName provides a better control over applying these characteristics. The application defines a set of entity types and their corresponding access intent for each TaskName defined in a persistence unit.

- JTA support

  This release features additional Java Transaction API (JTA) support. JTA 1.1 is supported through the introduction of the TransactionSynchronizationRegistry interface. System-level application components, such as persistence managers, resource adapters, enterprise beans, and Web application components, can use the TransactionSynchronizationRegistry interface to register with a JTA transaction Also, the UOWSynchronizationRegistry interface and the UOWManager interface are introduced so that all types of units of work (UOWs) that the product supports can register with a JTA transaction and can be manipulated.

- Local transaction containment (LTC)

  In this release, a local transaction containment (LTC) is shareable, that is, a single LTC can span multiple application components, including Web application components and enterprise beans that use container-managed transactions, so that those components can share connections without using a global transaction. Sharing a single resource manager between application components improves performance, increases scalability, and reduces lock contention for resources.

- Task overview: Data Studio pureQuery

  JPA in the Java EE and Java SE environments provides optional support for the DB2 pureQuery runtime environment. PureQuery is a high performance Java data access platform that helps manage applications that access data. PureQuery provides an alternate set of APIs that can be used instead of Java Database Connectivity (JDBC) to access the DB2 database.

- Using SOAP over Java Message Service to transport Web services

  WebSphere Application Server Version 7 introduces support for an emerging industry standard SOAP over JMS protocol. The SOAP over JMS specification provides a standard set of interoperability

guidelines for using a JMS-compliant transport with SOAP messages to enable interoperability between the implementations of different vendors. Using this standard, a mixture of client and server components from different vendors can interoperate when exchanging SOAP request and response messages over the JMS transport for both Java API for XML Web Services (JAX-WS) and Java API for XML-based RPC (JAX-RPC) Web services. By using the JMS transport, your enterprise beans based Web service clients and servers can communicate through JMS queues and topics instead of through HTTP connections.

- Web Services Addressing annotations

  This release provides support for the WS-Addressing annotations specified by the JAX-WS 2.1 standard. Use these annotations in the Java code for a Web service, to enable WS-Addressing support, to specify whether WS-Addressing information is required in incoming messages, and to specify actions to be associated with a Web service operation or fault response.

- Web Services Addressing support

  This release provides support for the Java API for XML-Based Web Services (JAX-WS) 2.1 API, which you can use to create portable applications that use WS-Addressing. Existing JAX-WS applications will work as before.

- Web Services Atomic Transaction support in the application serve

  WebSphere Application Server supports both the WS-Transaction 1.1 and the WS-Transaction 1.0 specifications. You can configure the default WS-Transaction specification level to use for outbound requests if the specification level that the server requires cannot be determined from the provider policy. This applies to outbound requests that include a Web Services Atomic Transaction (WS-AT) or Web Services Business Activity (WS-BA) coordination context.

- Web Services Atomic Transaction support in the application server

  WebSphere Application Server supports both the WS-Transaction 1.1 and the WS-Transaction 1.0 specifications. You can configure the default WS-Transaction specification level to use for outbound requests if the specification level that the server requires cannot be determined from the provider policy. This applies to outbound requests that include a Web Services Atomic Transaction (WS-AT) or Web Services Business Activity (WS-BA) coordination context.

- WS-ReliableMessaging: supported specifications and standards

  In this release, there are two types of WS-Notification service:

  - **Version 7.0**: You configure a Version 7.0 WS-Notification service and service points if you want to compose a JAX-WS WS-Notification service with WS-ReliableMessaging, or if you want to apply JAX-WS handlers to your WS-Notification service. This is the recommended type of service for new deployments.

  - **Version 6.1**: You configure a Version 6.1 WS-Notification service and service points if you want to expose a JAX-RPC WS-Notification service using the same technology provided in WebSphere Application Server Version 6.1, including the ability to apply JAX-RPC handlers to the service.

- Batch applications can call WebSphere Application Server

Optimized local adapters (OLA) provide a built-in and ready-to-use inbound adapter for WebSphere Application Server for z/OS that enables existing business and middleware applications written in native languages on z/OS like Cobol, PL/I, C/C++, and High Level assembler and running under environments from z/OS batch, CICS, and Unix System Services (USS) to immediately begin calling Java applications running as EJBs under WebSphere Application Server for z/OS.

OLA support also provides built-in capability for sending requests to external server programs running locally (on the same LPAR) using the J2EE Connect Architecture programming model (JCA 1.5). The target external server programs can be business or middleware applications developed in Cobol, PL/I, C/C++, or High Level assembler. z/OS batch, CICS, and USS (batch/shell- based) environments are also supported.

This support introduces a native language API that is usable from application-level exploiters, such as batch and CICS Cobol programs or middleware/subsystem-level exploiters (CICS system-level code).

Enabling OLA support requires additional setup steps. See the articles 'Using optimized local adapters for inbound support' and 'Using optimized local adapters for outbound support' in the WebSphere Application Server for z/OS Version 7.0 Information Center for more information.

- Availability of Security Assertion Markup Language (SAML)

Security Assertion Markup Language (SAML) is an XML based framework developed by the Organization for the Advancement of Structured Information Standards (OASIS). SAML is used to exchange user identity and security attributes between different parties. This is an open standard that can be used to exchange security information between different products.

SAML support in WebSphere Application Server Version 7.0 delivers SAML functionality for JAX-WS Web services. JAX-WS web services applications can use SAML assertions to represent user identity, user security attributes, and optionally, to sign and encrypt SOAP message elements.

SAML is an XML-based framework that aims to solve the problem of exchanging security information. By the use of SAML assertions, security information related to a subject can be shared among service providers in a platform-agnostic way. Most importantly, for Web services using WS-Security to secure its messages, SAML can be used to secure the message exchange between different services. In SAML, the PKI based trust model is used to establish trust. With SAML, a platform-neutral, secure and scalable SSO solution can be implemented.

1.2 WebSphere Application Server for z/OS V7.0.0 FMIDs

WebSphere Application Server for z/OS V7.0.0 consists of the following FMIDs:

H28W700 - WebSphere Application Server for z/OS V7.0.0
JIWO700 - WebSphere Application Server for z/OS V7.0.0 Optional Materials
JDYZ700 - DMZ Secure Proxy Server for WebSphere Application Server

2.0 Program Materials

An IBM program is identified by a program number. The program number for WebSphere Application Server for z/OS V7.0.0 is 5655-N02.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature numbers. Basic Machine-Readable Materials are required to use the product.

The Optional Machine-Readable Materials are installed under and serviced by a separate FMID and not required for the product to function.

The program announcement material describes the features supported by WebSphere Application Server for z/OS V7.0.0. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

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 6.1, "Installing the WebSphere Application Server for z/OS" on page 41 for more information about how to install the program.

WebSphere Application Server for z/OS customers can choose ShopSystem z for internet delivery or receive 3490 tape cartridges and a choice of CDs or DVDs as boxed media. When electronic delivery is selected, the customer has the same window of time in which to download the CD/DVD contents as electronic images of the z/OS components - that is, two weeks.

Information about the physical tape for the Basic Machine-Readable Materials for WebSphere Application Server for z/OS V7.0.0 can be found in the *CBPDO Memo To Users Extension*.

In addition to the materials on tape there are CDROMs and DVDs shipped in the box (as follows).

These materials are shipped on either CDs or DVDs depending upon what was requested in your order. The function shipped includes:

- **WebSphere Application Server Supplements**

  - Application Client

  - IBM HTTP Server

  - Web server plug-in

- IBM Support Assistant

- WebSphere Customization Tools

  Note: The ISPF panels for configuring WebSphere Application Server for z/OS V7.0.0 are no longer supported. Configuring the product is now performed using the Profile Management Tool, which is

now in the WebSphere Customization Tools. It is critical that the person or persons configuring WebSphere Application Server for z/OS V7.0.0 have this software.

- **Additional software intended to be run on on non-z/OS platforms**, including:

    – Supplemental Material for AIX

    – Supplemental Material for HPUX

    – Supplemental Material for Linux

    – Supplemental Material for Solaris

    – Supplemental Material for Windows

The CDs and DVDs are grouped into kits and shipped as follows:

Note: Some software that are shipped in operating system specific packages on CDs are shipped in program specific packages on DVD because those DVDs contain software for multiple operating systems.

- **DVD/CD Kit Numbers**

```
LK4T-1408-00 - IBM Support Assistant
LK4T-1558-00 - WebSphere Customization Tools
LK4T-1546-00 - Supplemental Material for AIX
LK4T-1547-00 - Supplemental Material for HPUX
LK4T-1548-00 - Supplemental Material for Linux
LK4T-1549-00 - Supplemental Material for Solaris
LK4T-1550-00 - Supplemental Material for Windows
```

See the appropriate articles in the WebSphere Application Server Information Center for installation and use of these CDs.

2.2 Optional Machine-Readable Material

With this version of WebSphere Application Server a second FMID (JIWO700) is being supplied to hold optional materials. These components will be delivered through the service stream into a separate file system in separate directories within the file system. The install process for JIWO700 creates the product file system. Each of the optional offerings has install steps to create its own install structure under the directory created in this file system.

The WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server is also shipped as a separate FMID (JDYZ700) and installs into is own product data sets and product directory.

2.3 Program Publications

The following sections identify the basic and optional publications for WebSphere Application Server for z/OS V7.0.0. Please note the main documentation distribution medium for WebSphere Application Server for z/OS V7.0.0 is the Information Center, which can be accessed via the WebSphere Application Server for z/OS V7.0.0 product documentation page at
http://www.ibm.com/software/webservers/appserv/was/library/

In addition to the Information Center, WebSphere Application Server for z/OS V7.0.0 product documentation is available in PDF format at the same URL.

Once at the URL:

- Click the tab for the WebSphere Application Server for z/OS V7.0.0 release (identified as V7.0.0)
- Click "SHOW" under WebSphere Application Server- z/OS to see what product information is listed.
- Then click the appropriate hyperlink to access specific information:
    - online documentation (information center)
    - downloadable documentation (PDF)
    - License information
    - Release notes
    - Information on supported hardware and software

2.3.1 Basic Program Publications

Figure 1 identifies the basic unlicensed program publications for WebSphere Application Server for z/OS V7.0.0.

Figure 1. Basic Material: Unlicensed Publications	
Publication Title	**Form Number**
Program Directory for WebSphere Application Server for z/OS V7.0.0	GI11-4295-02
License Information WebSphere Application Server for z/OS V7.0.0	GA32-0595-00
Carefully read the WebSphere for z/OS V7.0.0 IBM International Program License Agreement #GA32-0595-00, a copy of which will be provided to you with the order (Hardcopy or Electronic format); the License Agreement may contain terms that supersede the licensed terms included with this program component.	

Figure 2 on page 22 identifies the basic unlicensed or licensed publications that are not available in hardcopy form, but are available through the internet or other media for WebSphere Application Server for z/OS V7.0.0.

All of the documents listed in Figure 2 on page 22 are available for download at the WebSphere Application Server for z/OS V7.0.0 Library page:

http://www.ibm.com/software/webservers/appserv/was/library/

See section 2.3, "Program Publications" on page 21 for specific details about accessing the WebSphere Application Server for z/OS V7.0.0 library.

Figure 2. Basic Material: Other Unlicensed or Licensed Publications		
Publication Title	Form Number	How Available
WebSphere Application Server for z/OS V7.0.0 Installing your application serving environment	GA32-0601	Library page
WebSphere Application Server for z/OS V7.0.0 Migrating, coexisting, and interoperating	GA32-0603	Library page
WebSphere Application Server for z/OS V7.0.0 Setting up the application serving environment	GA32-0602	Library page
WebSphere Application Server for z/OS V7.0.0 Developing and deploying applications	SA23-2251	Library page
WebSphere Application Server for z/OS V7.0.0 Securing applications and their environment	SA23-2250	Library page
WebSphere Application Server for z/OS V7.0.0 Administering applications and their environment	SA23-2249	Library page
WebSphere Application Server for z/OS V7.0.0 Tuning guide	SA23-2252	Library page
WebSphere Application Server for z/OS V7.0.0 Troubleshooting and support	GA32-0606	Library page

2.3.2 Optional Program Publications

Figure 3. Optional Material: Other Optional Publications		
Publication Title	Form Number	How Available
WebSphere Application Server for z/OS V7.0.0 Means and tools	REDP-6880-00	Red book website www.redbooks.ibm.com
Problem avoidance for WebSphere Application Server for z/OS V7.0.0	REDP-6003-00	Red book website www.redbooks.ibm.com
Problem determination for WebSphere Application Server for z/OS V7.0.0	SG24-6880-02	Red book website www.redbooks.ibm.com
WebSphere Application Server for z/OS V7.0.0 Connectivity Architectural Choices	SG24-6365-00	Red book website www.redbooks.ibm.com

2.4 Program Source Materials

Samples of source materials are provided in the WebSphere Application Server for z/OS V7.0.0 information center for the purpose of illustration.

2.5 Publications Useful During Installation

The publications listed in Figure 4 may be useful during the installation of WebSphere Application Server for z/OS V7.0.0. To order copies, contact your IBM representative or visit the IBM Publications Center on the World Wide Web at http://www.ibm.com/shop/publications/order.

You can also access these publications online at:

   http://www.ibm.com/servers/eserver/zseries/zos/bkserv/

At this URL, click on "Publication titles, filenames, form numbers" Then enter the form number of the publication.

Figure 4. Publications Useful During Installation	
Publication Title	**Form Number**
IBM SMP/E for z/OS Commands	SA22-7771
IBM SMP/E for z/OS Messages, Codes, and Diagnosis	GA22-7770
IBM SMP/E for z/OS Reference	SA22-7772
IBM SMP/E for z/OS User's Guide	SA22-7773
IBM Software Delivery Standard Packaging Rules for z/OS-Based Products	SC23-3695
z/OS MVS JCL Reference	SA22-7597
z/OS System Codes	SA22-7626

3.0 Program Support

This section describes the IBM support available for WebSphere Application Server for z/OS V7.0.0.

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 for z/OS V7.0.0, it is VERY IMPORTANT that you review the current Preventive Service Planning (PSP) information. The PSP buckets maintain current lists (which have been identified since the package was created) of any recommended or required service for this package's installation. This includes software PSP information that contains HIPER, special attention and/or required PTFs against the base release. If you obtained WebSphere Application Server for z/OS V7.0.0 as part of a CBPDO, there is HOLDDATA and PSP information included on the CBPDO.

If the CBPDO for WebSphere Application Server for z/OS V7.0.0 is more than two weeks old when you install it, you should retrieve and read the current Preventive Service Planning "bucket" (PSP bucket) before installing the product or applying service. Current PSP buckets for WebSphere Application Server for z/OS can be obtained by:

- Calling the support center to order them.

- Using SoftwareXcel to download them.

- Pointing your web browser to

    www.ibm.com/software/webservers/appserv/zos_os390/support/

  Then under the heading "Other Valuable Resources" and title "Planning Resources", clicking on the link, <u>Preventive Service Planning (PSP) Buckets</u> to access the applicable PSP upgrade.

While there can be overlap between SW, HW and functional PSP buckets, reviewing all that apply to this package will ensure that you identify any known service required for your installation of this package.

If you obtained WebSphere Application Server for z/OS V7.0.0 as part of a CBPDO, there is HOLDDATA included on the CBPDO.

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 for z/OS V7.0.0 are:

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Figure 5. PSP Upgrade and Subset ID		
UPGRADE	**SUBSET**	**Description**
WASAS700	H28W700	WebSphere Application Server for z/OS V7.0.0
WASAS700	JIWO700	WebSphere Application Server for z/OS V7.0.0 Optional Materials
WASAS700	JDYZ700	DMZ Secure Proxy Server for WebSphere Application Server

3.3 Statement of Support Procedures

Report any difficulties you have using this program to your IBM Support Center. For technical support assistance visit

> http://www.ibm.com/support

and perform a search on the symptoms you are experiencing with this program.

Be sure to collect symptom information about the error condition. You can go here:

> http://www.ibm.com/support/docview.wss?rs=404&context=SSEQTP&uid=swg21176043

to read about what symptom information to collect for WebSphere Application Server for z/OS V7.0.0. Then you can contact your IBM software support center at 1-800-IBM-SERV (800-426-7378), selecting option #2 for software assistance to resolve your problem. If an APAR is required, the Support Center will provide the address (or FTP site) to which any needed documentation can be sent.

Figure 6 identifies the component IDs (COMPID) for WebSphere Application Server for z/OS V7.0.0.

Figure 6. Component IDs			
FMID	**COMPID**	**Component Name**	**RETAIN Release**
H28W700	5655I3500	WebSphere Application Server for z/OS V7.0.0	700
JIWO700	5665I3509	Install Samples	700
JIWO700	----	Optional Materials delivered in this FMID will receive unique COMPIDs at the time of their delivery.	700
JIWO700	5655I3510	IHS for WebSphere	700
JIWO700	5655I3511	IHS 64 bit plug-in	700
JDYZ700	5655N0212	WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server	700
H28W700	5655N0213	WebSphere Application Server Customization Tools **Note:** This component does not run on z/OS.	700

4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of WebSphere Application Server for z/OS V7.0.0. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs incorporated into the program.

4.1 Program Level Information

All applicable WebSphere Application Server for z/OS service as of Service Level (Fix Pack) 6.1.0.9 of WebSphere Application Server V6.1.0 for z/OS has been incorporated into WebSphere Application Server for z/OS V7.0.0.

4.2 Service Level Information

The following PTFs against this release of WebSphere Application Server for z/OS V7.0.0 have been incorporated into the product tape.

UK39645,UK39770,UK39771,UK39793,UK39807,UK39809,UK39810,UK41764,UK41774,
UK41789,UK41790,UK41791,UK41815,UK41822,UK41831,UK41840,UK41846,UK41847,
UK45120,UK45160,UK45161,UK45162,UK45169,UK45191,UK45193,UK45199,UK45200,
UK45201,UK46314,UK46315,UK46322,UK46357,UK46358,UK46359,UK48200,UK48201,
UK48215,UK48217,UK48223,UK48224,UK48232,UK48233,UK48234,UK48237,UK48238,
UK48878,UK48879,UK48880,UK48920,UK51554,UK51556,UK51557,UK51562,UK51563,
UK51564,UK51565,UK51566,UK51567,UK52662,UK52698,UK52702,UK52708,UK52709,
UK52710,UK52711

Over time it is HIGHLY recommended that you frequently check the WebSphere Application Server for z/OS V7.0.0 PSP bucket for HIPER and SPECIAL Attention PTFs against all FMID(s) which should be installed.

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating WebSphere Application Server for z/OS V7.0.0. 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.

Although not applicable to WebSphere Application Server for z/OS V7.0.0, 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.

5.1 Driving System Requirements

This section describes the environment of the driving system required to install WebSphere Application Server for z/OS V7.0.0.

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 7. Driving System Software Requirements	
Program Number	**Product Name and Minimum VRM/Service Level**
5694-A01	Any of the following z/OS releases: • z/OS V1.7 with PTFs to satisfy APARs (UA19027, UA20075, UA20094, UA21373, UA21556, UA22890,UA23082, UA23129, UA23197, UA28149, UA29651, UA34282,UA39535, UA31615, UA41075, UA41251, UA41936) or later • z/OS V1.8 with PTFs to satisfy APARs (UA28150, UA28305, UA29009, UA29652, UA34283, UA39406,UA39536, UA39616, UA41076, UA41252, UA41937) or later • z/OS V1.9 with PTFs to satisfy APARs (UA39407, UA39537, UA39617, UA41077, UA41253, UA41938) or later • z/OS V1.10 with PTFs to satisfy APARS (UA41254) or later z/OS Unix System Services and the hierachical file system (HFS) or zSeries File System (zFS)
5655-I56	Java 2 Technology Edition SDK 1.4 or higher
5655-G44	IBM SMP/E for z/OS V3.3 with PTFs to satisfy APARs IO00462 and IR54653, or later

WebSphere Application Server for z/OS V7.0.0 installs in the z/OS (Z038) SREL.

Notes:

1. Because WebSphere Application Server uses the SDK as part of the SMP/E processing, you must configure the driving system to have SDK 1.4 or higher.

   You can download a free copy of Java SDK 1.4 at

   www-03.ibm.com/servers/eserver/zseries/software/java/j142pcont.html

   This SDK is different than the imbedded SDK mentioned in the following notes.

2. Unix must be up in full function mode on your driving system so that the utilities are available for the Shell Script support.

3. Before installing WebSphere Application Server for z/OS V7.0.0, you must ensure that the target system's HFS or zFS is available (OMVS active and the target file systems mounted) for processing.

4. The following installation jobs should be run under a userid with the authority to mount file systems and modify Unix System Services files. This installation userid must also have read access to the facility class resources BPX.FILEATTR.PROGCTL, BPX.FILEATTR.APF, and BPX.FILEATTR.SHARELIB.

   • For FMID - H28W700

- BBOISMKD

- BBOAPPLY (or other SMP/E APPLY job)

- For FMID - JIWO700

  - IWOISMKD

  - IWOAPPLY (or other SMP/E APPLY job)

- For FMID - JDYZ700

  - DYZISMKD

  - DYZAPPLY (or other SMP/E APPLY job)

See 6.1, "Installing the WebSphere Application Server for z/OS" on page 41 for a detailed listing of installation user ID requirements.

5.2 Target System Requirements

This section describes the environment of the target system required to customize and use WebSphere Application Server for z/OS V7.0.0.

5.2.1 Machine Requirements

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

5.2.2 Programming Requirements

5.2.2.1 Installation Requisites: An installation requisite is defined as a product that is required and **must** be present or one that is not required but **should** be present on the system for the successful installation of this product.

A mandatory installation requisite identifies products that are required, without exception, or this product **will not install** on your system; these requisites include products specified as PREs or REQs.

Figure 8. Mandatory Installation Requisites	
Program Number	**Product Name and Minimum VRM/Service Level**
5694-A01	Any of the following z/OS releases: • z/OS V1.7 with PTFs to satisfy APARs (UA19027, UA20075, UA20094, UA21373, UA21556, UA22890,UA23082, UA23129, UA23197, UA28149, UA29651, UA34282,UA39535, UA31615, UA41075, UA41251, UA41936) or later • z/OS V1.8 with PTFs to satisfy APARs (UA28150, UA28305, UA29009, UA29652, UA34283, UA39406,UA39536, UA39616, UA41076, UA41252, UA41937) or later • z/OS V1.9 with PTFs to satisfy APARs (UA39407, UA39537, UA39617, UA41077, UA41253, UA41938) or later • z/OS V1.10 with PTFs to satisfy APARS (UA41254) or later z/OS Unix System Services and the hierachical file system (HFS) or zSeries File System (zFS)

A conditional installation requisite identifies products that are **not** required for successful install but may resolve such things as certain warning messages at installation time. They include products that are specified as IF REQs.

WebSphere Application Server for z/OS V7.0.0 has **no** conditional installation requisites.

5.2.2.2 Operational Requisites: An operational requisite is one of the following:

• As a product that is required and **must** be present

• Or, a product that is not required but **should** be present on the system in order for this product to operate all or some of its functions.

A mandatory operational requisite identifies products that are required, without exception, or this product **will not operate** its basic function unless the requisite is met. This includes products specified as PREs or REQs.

Figure 9. Mandatory Operational Requisites	
Program Number	**Product Name and Minimum VRM/Service Level**
5694-A01	Any of the following z/OS releases: • z/OS V1.7 with PTFs to satisfy APARs (UA19027, UA20075, UA20094, UA21373, UA21556, UA22890,UA23082, UA23129, UA23197, UA28149, UA29651, UA34282,UA39535, UA31615, UA41075, UA41251, UA41936, UA43245, UA43873) or later • z/OS V1.8 with PTFs to satisfy APARs (UA28150, UA28305, UA29009, UA29652, UA34283, UA39406, UA39536, UA39616, UA41076, UA41252, UA41937, UA43741, UA43246, UA43874, UA44636, UA44655, UA45232) or later • z/OS V1.9 with PTFs to satisfy APARs (UA39407, UA39537, UA39617, UA41077, UA41253, UA41938, UA43742, UA43247, UA43875, UA44637, UA44656, UA45233) or later • z/OS V1.10 with PTFs to satisfy APARS (UA41254, UA42779, UA43248, UA43876, UA44638, UA44657, UA45234) or later • z/OS V1.11 z/OS Unix System Services and the hierachical file system (HFS) or zSeries File System (zFS)

The following z/OS elements, features, and components must be installed, enabled, and configured:

- z/OS Unix System Services and the hierarchical file system (HFS) or the zSeries File System (zFS)
- eNetwork Communications Server (TCP/IP) or equivalent of the HFS for one or more configuration file systems(s).
- Resource recovery services (RRS)
- System logger
- Security Server (RACF) or equivalent SAF security management product

A conditional operational requisite identifies products that are **not required** for the basic function but are needed at run time for this product to utilize specific functions. They may include products specified as IF REQs.

Figure 10 (Page 1 of 2). Conditional Operational Requisites		
Program Number	**Product Name and Minimum VRM/Service Level**	**Function**
5694-A01	z/OS Version 1.7 (or later) with PTFs for 64 bit enablement	64 bit enablement

Figure 10 (Page 2 of 2). Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5694-A01	Any of the following z/OS releases: • z/OS Version 1.8 with PTFs to satisfy APARs (OA22287 and OA22295 • z/OS 1.9 and above	Certificate management operations on System Authorization Facility (SAF) keyrings
5655-147	CICS TS V2.3 or later	Required if your application environment uses CICS Transaction Server.
5655-M15	CICS TS V3.1 or later	Would also satisfy the function above for CICS Transaction Server.
5655-M15	CICS TS V3.2 or later	Would also satisfy the function above for CICS Transaction Server.
5697-E93	CICS TG V6.0 or later	Required if your application environment accesses CICS TS through the CICS Transaction Gateway (CICS TG) See www.ibm.com/cics/ctg for more information.
5655-J38	IMS V9 or later	Required if your application environment accesses IMS through Java DataBase Connectivity (JDBC) or through IBM Connect/Connector for Java.
5635-A01	IMS V10	Would also satisfy the function above for IMS
5625-DB2	DB2 V8.1 and PTFs to satisfy APARs (PK00615, PQ84577, PQ87786, PQ88082, UQ86912) or later	Required if your application environment uses a DB2 database. Required to use Web Services UDDI and session persistence for Web container or if your application environment accesses DB2 through Java DataBase Connectivity (JDBC) or through IBM Connection/Connector for Java.
5635-DB2	DB2 V9.1	Would also satisfy the function above for DB2

5.2.2.3 Toleration/Coexistence Requisites: A toleration/coexistence requisite is defined as a product 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 for z/OS V7.0.0 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 for z/OS V7.0.0 has **no** negative requisites.

5.2.3 DASD Storage Requirements

WebSphere Application Server for z/OS V7.0.0 libraries can reside on all z/OS or z/OS.e supported DASD types.

Figure 11 lists the total space required for each type of library.

Figure 11. Total DASD Space Required by WebSphere Application Server for z/OS V7.0.0		
Library Type	**Total Space Required (3390 Tracks)**	**Component**
Target	50	WebSphere Application Server (H28W700)
Distribution	28500	WebSphere Application Server (H28W700)
HFS or zFS	49500	WebSphere Application Server (H28W700)
Target	20	WebSphere Application Server for z/OS V7.0.0 Optional Materials (JIWO700)
Distribution	4520	WebSphere Application Server for z/OS V7.0.0 Optional Materials (JIWO700)
HFS or zFS	18000	WebSphere Application Server for z/OS V7.0.0 Optional Materials (JIWO700) **Note:** The install process provides an estimated size, but the actual space needed for this file system entirely depends on the size and number of optional items you decide to install. The file system may be allocated smaller now and made larger as needed.
Target	50	WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server (JDYZ700)
Distribution	12310	WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server (JDYZ700)
HFS or zFS	21000	WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server (JDYZ700)

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. 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. 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. 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 release of this product 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 that apply to WebSphere Application Server for z/OS V7.0.0 , WebSphere Application Server for z/OS V7.0.0 Optional Materials, and WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server please refer to Figure 14 on page 35 and Figure 16 on page 37.

3. Abbreviations used for the HFS or zFS Path type are:

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

4. All target and distribution libraries listed 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 a PDS or PDSE, unless PDSE is explicitly specified.

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.

6. Some target libraries must be APF-authorized; some target libraries or library members must be placed in the LPA or LINKLST. See the customization instructions for details.

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
SMPWRK4	E	PDS	FB	80	80	10
SMPWRK6	E	PDS	FB	80	45000	400
SYSUT1	E	SEQ	--	--	24000	0
SYSUT2	E	SEQ	--	--	30	0
SYSUT3	E	SEQ	--	--	30	0
SYSUT4	E	SEQ	--	--	30	0

Figure 12. Storage Requirements for SMP/E Work Data Sets

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

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	30000	80
SMPSCDS	E	PDS	FB	80	15	80
SMPSTS	E	PDS	FB	80	15	80

Figure 13. Storage Requirements for SMP/E Data Sets

The following figures describe the target and distribution libraries and HFS or zFS paths required to install WebSphere Application Server for z/OS V7.0.0.

Figure 14. Storage Requirements for WebSphere Application Server for z/OS V7.0.0 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
SBBOEXEC	EXEC	TVOL1	U	PDS	VB	255	10	5
SBBOJCL	Sample	TVOL2	U	PDS	FB	80	10	5
SBBOMAC	MACRO	TVOL2	U	PDS	FB	80	10	5
SBBOMSG	Message	TVOL1	U	PDS	VB	255	10	5
SIWOEXEC	EXEC	TVOL1	U	PDS	VB	255	10	5
SIWOJCL	Sample	TVOL2	U	PDS	FB	80	10	5
SDYZEXEC	EXEC	TVOL1	U	PDS	VB	255	10	5
SDYZJCL	Sample	TVOL2	U	PDS	FB	80	10	5
SDYZMAC		TVOL2	U	PDS	FB	80	10	5
SDYZMSG	Message	TVOL1	U	PDS	VB	255	10	5

Figure 15. WebSphere Application Server for z/OS V7.0.0 HFS or zFS Paths		
DDNAME	T Y P E	Path Name
SBBOANT	N	/usr/lpp/zWebSphere/V7R0/IBM/
SBBOBIN1	N	/usr/lpp/zWebSphere/V7R0/bin/IBM/
SBBOEBCD	N	/usr/lpp/zWebSphere/V7R0/IBM/
SBBOJAR	N	/usr/lpp/zWebSphere/V7R0/IBM/
SBBOZAR	N	/usr/lpp/zWebSphere/V7R0/IBM/
SIWOBIN1	N	/usr/lpp/zWebSphere_OM/V7R0/IBM/
SDYZANT	N	/usr/lpp/zWebSphere_SPS/V7R0/IBM/
SDYZBIN1	N	/usr/lpp/zWebSphere_SPS/V7R0/bin/IBM/
SDYZEBCD	N	/usr/lpp/zWebSphere_SPS/V7R0/IBM/
SDYZJAR	N	/usr/lpp/zWebSphere_SPS/V7R0/IBM/
SMPJHOME	N	/usr/lpp/java/J5.0

Figure 16. Storage Requirements for WebSphere Application Server for z/OS V7.0.0 Distribution Libraries						
Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
ABBOANT	U	PDS	VB	255	8200	800
ABBOEBCD	N	PDS	VB	31000	40	50
ABBOEXEC	U	PDS	VB	255	10	5
ABBOINC	U	PDS	VB	255	51	5
ABBOJAR	U	PDS	VB	255	16000	100
ABBOJCL	U	PDS	FB	80	10	5
ABBOLOAD	U	PDS	VB	255	1040	-
ABBOMIG	U	PDS	VB	255	51	-
ABBOMAC	U	PDS	FB	80	10	5
ABBOMSG	U	PDS	VB	255	10	5
ABBOZAR	U	PDS	VB	255	2700	10
AIWOEXEC	U	PDS	VB	255	10	5
AIWOINC	U	PDS	VB	255	4500	10
AIWOJCL	U	PDS	FB	80	10	5
ADYZANT	U	PDS	VB	255	2100	250
ADYZEBCD	U	PDS	VB	31000	10	15
ADYZEXEC	U	PDS	VB	255	10	5
ADYZINC	U	PDS	VB	255	51	10
ADYZJAR	U	PDS	VB	255	9000	15
ADYZJCL	U	PDS	FB	80	10	5
ADYZLOAD	U	PDS	VB	255	1059	10
ADYZMAC	U	PDS	FB	80	10	5
ADYZMIG	U	PDS	VB	255	50	10
ADYZMSG	U	PDS	VB	255	10	5

WebSphere Application Server for z/OS V7.0.0 will require several thousand additional tracks (3390) for run-time data sets; the amount of space depends on the application server structure to be used, the applications to be run and the amount of data storage the applications will require.

5.3 FMIDs Deleted

Installing WebSphere Application Server for z/OS V7.0.0 might 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 for z/OS V7.0.0 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 for z/OS V7.0.0 is a functional successor to the following products:

- WebSphere Application Server Version 3.02 Standard Edition (5655-A98)
- WebSphere Application Server Version 3.02 Enterprise Edition (5655-A98)
- WebSphere Application Server Version 3.5 Standard Edition (5655-A98)
- WebSphere Application Server Version 4.0 for z/OS and OS/390 (5655-F31)
- WebSphere Application Server Version 4.0.1 for z/OS and OS/390 (5655-F31)
- WebSphere Application Server Version 5.0 for z/OS (5655-I35)
- WebSphere Application Server Version 5.1 for z/OS (5655-I35)
- WebSphere Application Server Version 6.0.1 for z/OS (5655-N01)
- WebSphere Application Server Version 6.1.0 for z/OS (5655-N01)

NOTE!

Only migration from WebSphere Application Server Version 5.1.x for z/OS and up is supported. See 7.2.1, " Migrating from Previous Releases of WebSphere Application Server" on page 57 for more information migrating.

The IBM Software Development Kit for z/OS Java 2 Technology Edition, Version 1.5, which is included as part of WebSphere Application Server for z/OS V7.0.0, is a functional successor to various Java products from IBM, including those shipped with previous releases of WebSphere Application Server for z/OS and OS/390.

If you have previously installed any of these products, you should take the following considerations into account when installing WebSphere Application Server for z/OS V7.0.0.

5.4.1 SMP/E Considerations

We recommend that you install WebSphere Application Server for z/OS V7.0.0 into a new set of SMP/E zones, including SMPCSI, target, distribution, and HFS or zFS data sets, to allow independent maintenance of WebSphere, z/OS, and other subsystems. This program directory provides sample jobs and instructions to create such an SMP/E environment.

If you install WebSphere Application Server for z/OS V7.0.0 into SMP/E target and distribution zones which contains a previous WebSphere Application Server release, you should completely remove the old release from the target and distribution zones **before** installing the new release. This can be done by receiving, applying, and accepting a "dummy sysmod" such as the following:

```
++FUNCTION (DELWAS6).
++VER(Z038) DELETE(
      H28W610 /* WebSphere Application Server 6.1.0 */
      ).
```

This will remove the old WebSphere release from target and distribution libraries as well as from the SMPCSI; therefore, you may wish to make copies of these libraries before applying the sysmod above. Once the old WebSphere release has been deleted, remove any DDDEFs for the old release from the target and distribution zones, and install the new WebSphere release with new target and distribution data sets, using the instructions in this program directory.

5.4.2 Selecting Driving System Mountpoints

During installation of WebSphere Application Server for z/OS V7.0.0 on the driving system, the product file system must be mounted at the following mountpoints:

For WebSphere Application Server for z/OS V7.0.0

-PathPrefix-/usr/lpp/zWebSphere/V7R0

For WebSphere Application Server for z/OS V7.0.0 Optional Materials

-PathPrefix-/usr/lpp/zWebSphere_OM/V7R0

For WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server

-PathPrefix-/usr/lpp/zWebSphere_SPS/V7R0

where -PathPrefix- is an HFS or zFS path prefix such as /SERVICE or /WAS70. Use of a path prefix allows maintenance to be applied to a copy of the WebSphere HFS or zFS data sets without disturbing the production HFS or zFS data sets. For more information on the use of an HFS or zFS path prefix during product maintenance, see the Unix System Services Planning book for your release of z/OS.

Care must be taken that maintenance is applied to the proper HFS or zFS. Be sure to verify that the correct HFS or zFS is mounted at your service mountpoint(s) whenever maintenance is applied.

5.4.3 Selecting Target System Mountpoints

During customization and operation of WebSphere Application Server for z/OS, the WebSphere Application Server for z/OS product file system must be mounted on the target system. The default mountpoint is:

/usr/lpp/zWebSphere/V7R0

If the optional materials are used, then the optional materials file system must also be mounted on the target system. The default mountpoint is:

/usr/lpp/zWebSphere_OM/V7R0

If the DMZ Secure Proxy Server is used, then the DMZ Secure Proxy Server file system must also be mounted on the target system. The default mountpoint is:

/usr/lpp/zWebSphere_SPS/V7R0

If you run several releases or service levels of WebSphere Application Server for z/OS concurrently or if you use WebSphere Application Server in a sysplex or multi-system environment, you may need to change these default mountpoints to meet local requirements.

Note: WebSphere Application Server for z/OS V7.0.0 also uses a "customization file system" for each server node. Data in this filesystem is **not** compatible with releases of WebSphere prior to WebSphere Application Server for z/OS V7.0.0. Do not attempt to reuse a customization file system from WebSphere Application Server V5.0, V5.1, V6.0.x, and V6.1.0 with WebSphere Application Server for z/OS V7.0.0.

5.4.4 Removal of WebSphere Levels

WebSphere Application Server versions prior to WebSphere Application Server for z/OS V7.0.0 should be maintained until all applications have been migrated to Version 7.0.0.

Refer to the WebSphere Information Center Reference Library for migrating to V7.0.0.

6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and activate the functions of WebSphere Application Server for z/OS V7.0.0, including the optional materials.

This release of WebSphere Application Server for z/OS V7.0.0 is installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. The SMP/E dialogs may be used to accomplish the SMP/E installation steps.

Note: WebSphere Application Server for z/OS V7.0.0 can be installed into new or existing SMP/E zones.

6.1 Installing the WebSphere Application Server for z/OS

Certain installation steps (as noted below) must be run from a userid that is defined to Unix Systems Services, and has the following attributes:

- Ability to mount filesystems and modify Unix System Services files any one of the following ways:
  - UID(0) or
  - READ access to the FACILITY class BPX SUPERUSER or
  - CONTROL access to the UNIXPRIV class SUPERUSER FILESYS, UPDATE access to the UNIXPRIV class SUPERUSER.FILESYS.MOUNT, and READ access tot he UNIXPRIV class SUPERUSER.FILESYS.CHANGEPERMS. (See the z/OS Unix System Service Planning publication for more information about UNIXPRIV classes.)
- READ access or higher to the BPX.FILEATTR.PROGCTL, BPX.FILEATTR.APF, and BPX.FILEATTR.SHARELIB facility classes is required.

WebSphere Application Server for z/OS supplies the following install samples:

- BBOCSICR - Create an SMP/E global zone
- BBOZNCRT - Create SMPE target and distribution zones
- BBOXZDEF - Add additional target zone definitions for cross-zone prerequisite checking
- BBOALLOC - Allocate target and distribution libraries
- BBOISMKD - Sample JOB to invoke supplied BBOMKDIR EXEC to create HFS or zFS paths
- BBODDDEF - Define SMP/E DDDEFs
- BBOAPPLY - SMP/E APPLY the product and service
- BBOACCEP - SMP/E ACCEPT the product and service

WebSphere Application Server for z/OS V7.0.0 Optional Materials supplies the following install samples:

- IWOALLOC - Allocate target and distribution libraries

- IWOISMKD - Sample JOB to invoke supplied IWOMKDIR EXEC to create HFS or zFS paths
- IWODDDEF - Define SMP/E DDDEFs
- IWOAPPLY - SMP/E APPLY the FMID and service
- IWOACCEP - SMP/E ACCEPT the FMID and service

WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server supplies the following install samples:

- DYZALLOC - Allocate target and distribution libraries
- DYZISMKD - Sample JOB to invoke supplied DYZMKDIR EXEC to create HFS or zFS paths
- DYZDDDEF - Define SMP/E DDDEFs
- DYZAPPLY - SMP/E APPLY the FMID and service
- DYZACCEP - SMP/E ACCEPT the FMID and service

6.1.1 SMP/E Considerations for Installing WebSphere Application Server for z/OS V7.0.0

We recommend that you install WebSphere Application Server for z/OS V7.0.0 into a new set of SMP/E zones, including target, distribution, and HFS or zFS data sets. This allows separate maintenance of z/OS and WebSphere software. Sample jobs BBOCSICR and BBOZNCRT can be customized for your system and used to create a new CSI and SMP/E TARGET and DLIB zones. These jobs can be found in the product RELFILE IBM.H28W700.F1, which is loaded during SMP/E processing; see Figure 17 for a list of sample jobs.

Note: If you choose to install WebSphere Application Server for z/OS V7.0.0 into existing SMP/E target and distribution zones, be sure to remove any previous versions of WebSphere Application Server from the zones and remove the previous version's DDDEFs **before** installing the new version. See 5.4.1, "SMP/E Considerations" on page 39 for more information.

WebSphere Application Server for z/OS V7.0.0 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 *IBM SMP/E for z/OS and OS/390 Reference* for more information about the SYSLIB concatenation.

6.1.2 Sample Jobs

Sample jobs to allocate the target and distribution libraries, set up HFS or zFS directories, and create DDDEF entries for the WebSphere Application Server for z/OS V7.0.0 elements have been provided.

Figure 17 lists the sample jobs for WebSphere Application Server for z/OS V7.0.0.

Figure 17. Sample Installation Jobs - H28W700			
Job Name	**Job Type**	**Description**	**RELFILE**
BBOCSICR	Setup	Sample job to create an SMP/E global zone	IBM.H28W700.F1
BBOZNCRT	Setup	Sample job to create SMP/E target and distribution zones	IBM.H28W700.F1
BBOXZDEF	Setup	Sample job to add additional target zone definitions for cross-zone prerequisite checking	IBM.H28W700.F1
BBOALLOC	ALLOCATE	Sample job to allocate target and distribution libraries for Application Server	IBM.H28W700.F1
BBOISMKD	MKDIR	Sample job to invoke the supplied BBOMKDIR EXEC to create HFS or zFS paths for Application Server	IBM.H28W700.F1
BBODDDEF	DDDEF	Sample job to define SMP/E DDDEFs for Application Server	IBM.H28W700.F1
BBOAPPLY	APPLY	Sample job to apply base and maintenance	IBM.H28W700.F1
BBOACCEP	ACCEPT	Sample job to accept base and maintenance	IBM.H28W700.F1

You can access the sample installation jobs by performing an SMP/E RECEIVE and then copying the jobs from the RELFILEs to a work data set for editing and submission. to find the appropriate RELFILE data set.

Each sample job contains comments with specific instructions for customization.

You may also choose to copy the jobs from the tape or product files by submitting the job below. Use either the //TAPEIN or the //FILEIN DD statement, depending on your distribution medium, and comment out or delete the other statement. Add a job card and change the lowercase parameters to uppercase values to meet your site's requirements before submitting.

```
//STEP1    EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//TAPEIN   DD DSN=IBM.H28W700.F1,UNIT=tunit,
//         VOL=SER=volser,LABEL=(x,SL),
//         DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.H28W700.F1,UNIT=SYSALLDA,DISP=SHR,
//         VOL=SER=filevol
//OUT      DD DSNAME=jcl-library-name,
//         DISP=(NEW,CATLG,DELETE),
//         VOL=SER=dasdvol,UNIT=SYSALLDA,
//         SPACE=(TRK,(30,20,5))
//SYSUT3   DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN    DD *
```

```
     COPY INDD=xxxxIN,OUTDD=OUT
/*
```
In the sample above, update the statements as noted below:

> If using TAPEIN:
> > **tunit** is the unit value matching the product tape.
> > **volser** is the volume serial matching the product tape.
> > **x** is the tape file number where the data set name is on the tape.
> > (Refer to the documentation provided by CBPDO to see where IBM.H28W700.F1 is on the tape.)
> If using FILEIN
> > **filevol** is the volume serial of the DASD device where the downloaded files reside.
> OUT
> > **jcl-library-name** is the name of the output data set where the sample jobs will be stored.
> > **dasdvol** is the volume serial of the DASD device where the output data set will reside.
> SYSIN
> > **xxxxIN** is either TAPEIN or FILEIN depending on your input DD statement.

6.1.3 Allocate SMP/E CSI (Optional)

If you are using an existing CSI, do not execute this job.

If you are allocating a new SMP/E CSI data set for this install, edit and submit sample job BBOCSICR to allocate the SMP/E CSI data set for WebSphere Application Server for z/OS V7.0.0. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.4 Define New SMP/E TARGET and DLIB Zones (Optional)

Edit and submit sample job BBOZNCRT to define new SMP/E Target and Distribution zones. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.5 Add Target Zones for Cross-Zone Prerequisite Checking

Because the WebSphere Application Server component has a number of maintenance requirements for the target z/OS systems, we recommend that you add the appropriate SMP/E target zones (z/OS, DB2, CICS, and IMS) to the WebSphere Application Server SMP/E global zone. This will allow SMP/E to check each zone for maintenance required by WebSphere Application Server for z/OS V7.0.0.

Customize and run the BBOXZDEF job to add target zones to the global zone which will be used for the SMP/E APPLY and ACCEPT steps below.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.6 Perform SMP/E RECEIVE

Receive the function SYSMOD and service for the WebSphere Application Server for z/OS V7.0.0 by running the RCVPDO job and specifying FMID **H28W700**. 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 for z/OS V7.0.0 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.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.7 Define Target and Distribution Libraries

Customize and run the BBOALLOC sample job to define target and distribution libraries for WebSphere Application Server for z/OS V7.0.0.

Make sure the data sets are allocated on the desired volumes.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.8 Set Up HFS or zFS Directories

Customize the sample job BBOISMKD to mount the WebSphere Application Server for z/OS product HFS or zFS and create the HFS or zFS target directories needed to install WebSphere Application Server for z/OS V7.0.0.

Important!

- The BBOISMKD and BBODDDEF jobs use -PathPrefix- to represent a service directory on your driving system. It is assumed that you will be mounting WebSphere Application Server for z/OS V7.0.0 HFS or zFS data sets under a service directory that already contains the /usr and /usr/lpp directories. If you specify a -PathPrefix- directory which does not contain /usr and usr/lpp subdirectories, you must manually create these subdirectories before running the BBOISMKD job. If -PathPrefix-/usr/lpp is not a read/write HFS or zFS, you will need to manually create some additional subdirectories as well. See the comments in the BBOISMKD job for further information.

- The BBOISMKD job will mount the product HFS or zFS and create all product directories in it.

The customized sample job BBOISMKD must be run under a user ID with a number of system privileges; see 6.1, "Installing the WebSphere Application Server for z/OS" on page 41 for a summary of privileges that are needed to run BBOISMKD successfully

Expected Return Codes and Messages: You will receive a return code of 0 or 4 if this job runs correctly.

Check the job output to verify that all directories have been created.

Verify that the product HFS or zFS is mounted at

-PathPrefix-/usr/lpp/zWebSphere/V7R0

6.1.9 Define SMP/E DDDEFs

Customize and run the sample job BBODDDEF to create SMP/E DDDEFs for target and distribution data sets and directories.

Be sure to edit the SMPJHOME DDDEF entry to point to a Java SDK (having been already mounted on the driving system). This DDDEF is used during APPLY and RESTORE processing to locate the jar command.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.1.10 Perform SMP/E APPLY

Customize and run the sample job BBOAPPLY to perform an SMP/E APPLY CHECK of the WebSphere Application Server base and service.

The SMP/E apply job must be run with a user ID having a number of system privileges; see 6.1, "Installing the WebSphere Application Server for z/OS" on page 41 for a summary of privileges that are needed to run BBOAPPLY successfully.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass any of the following on the APPLY CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (bypassed SYSMODs are treated as warnings, not errors, by SMP/E).

Note: The GROUPEXTEND operand indicates that SMP/E should APPLY all requisite SYSMODS. The requisite SYSMODS may be part of other products; review the APPLY CHECK output carefully before proceeding.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly (or a return code of 4, if any HOLDs are bypassed).

Once you have resolved any problems indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

Expected Return Codes from APPLY:

You will receive a return code of 0 if this job runs correctly (or a return code of 4, if any HOLDs are bypassed).

6.1.11 Perform SMP/E ACCEPT

Customize and run the sample job BBOACCEP to perform an SMP/E ACCEPT CHECK of the WebSphere Application Server base and service.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass any of the following on the ACCEPT CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (bypassed SYSMODs are treated as warnings, not errors, by SMP/E).

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

Once you have resolved any problems indicated by the ACCEPT CHECK, remove the CHECK operand and run the job again to perform the ACCEPT.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.2 Installing the WebSphere Application Server for z/OS V7.0.0 Optional Materials

The optional materials for WebSphere Application Server for z/OS will be shipped as service to the function SYSMOD JIWO700. Follow the instructions in section to install the function SYSMOD and prepare the optional materials HFS or zFS.

The WebSphere Application Server for z/OS optional materials must be installed into SMP/E target and distribution zones that contain the WebSphere Application Server for z/OS base product. Install the JIWO700 function SYSMOD (and its service) into the same SMP/E zones used for H28W700.

6.2.1 Sample Jobs

Sample jobs to allocate the target and distribution libraries, set up HFS or zFS directories, and create DDDEF entries for the WebSphere Application Server for z/OS V7.0.0 Optional Materials have been provided.

Figure 18 lists the sample jobs for WebSphere Application Server for z/OS V7.0.0 Optional Materials.

Figure 18 (Page 1 of 2). Sample Installation Jobs - JIWO700			
Job Name	**Job Type**	**Description**	**RELFILE**
IWOALLOC	ALLOCATE	Sample job to add additional target zone definitions for WebSphere Application Server for z/OS V7.0.0 Optional Materials	IBM.JIWO700.F1

Figure 18 (Page 2 of 2). Sample Installation Jobs - JIWO700

Job Name	Job Type	Description	RELFILE
IWOISMKD	MKDIR	Sample job to invoke the supplied IWOMKDIR EXEC to create HFS or zFS paths for WebSphere Application Server for z/OS V7.0.0 Optional Materials	IBM.JIWO700.F1
IWODDDEF	DDDEF	Sample job to define SMP/E DDDEFs for WebSphere Application Server for z/OS V7.0.0 Optional Materials	IBM.JIWO700.F1
IWOAPPLY	APPLY	Sample job to apply base and maintenance	IBM.JIWO700.F1
IWOACCEP	ACCEPT	Sample job to accept base and maintenance	IBM.JIWO700.F1

You can access the sample installation jobs by performing an SMP/E RECEIVE and then copying the jobs from the RELFILEs to a work data set for editing and submission. See Figure 18 on page 47 to find the appropriate RELFILE data set.

Each sample job contains comments with specific instructions for customization.

You may also choose to copy the jobs from the tape or product files by submitting the job below. Use either the //TAPEIN or the //FILEIN DD statement, depending on your distribution medium, and comment out or delete the other statement. Add a job card and change the lowercase parameters to uppercase values to meet your site's requirements before submitting.

```
//STEP1    EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//TAPEIN   DD DSN=IBM.JIWO700.F1,UNIT=tunit,
//         VOL=SER=volser,LABEL=(x,SL),
//         DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.JIWO700.F1,UNIT=SYSALLDA,DISP=SHR,
//         VOL=SER=filevol
//OUT      DD DSNAME=jcl-library-name,
//         DISP=(NEW,CATLG,DELETE),
//         VOL=SER=dasdvol,UNIT=SYSALLDA,
//         SPACE=(TRK,(30,20,5))
//SYSUT3   DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN    DD *
    COPY INDD=xxxxIN,OUTDD=OUT
/*
```

In the sample above, update the statements as noted below:

> If using TAPEIN:
> > **tunit** is the unit value matching the product tape.
> > **volser** is the volume serial matching the product tape.
> > **x** is the tape file number where the data set name is on the tape.
> > Refer to the documentation provided by CBPDO to see where IBM.JIWO700.F1 is on the tape.
> If using FILEIN

filevol is the volume serial of the DASD device where the downloaded files reside.
OUT
    jcl-library-name is the name of the output data set where the sample jobs will be stored.
    dasdvol is the volume serial of the DASD device where the output data set will reside.
SYSIN
    xxxxIN is either TAPEIN or FILEIN depending on your input DD statement.

6.2.2 Perform SMP/E RECEIVE

Receive the function SYSMOD and service for the WebSphere Application Server for z/OS V7.0.0 Optional Materials by running the RCVPDO job and specifying FMID **JIWO700**. See the *MVS CBPDO Memo to User Extension* included with the CBPDO.

The CBPDO contains all non-integrated PTFs for every WebSphere Application Server for z/OS V7.0.0 Optional Materials 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.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.2.3 Define Target and Distribution Libraries

Customize and run the IWOALLOC sample job to define target and distribution libraries for the WebSphere Application Server for z/OS V7.0.0 Optional Materials.

Make sure the data sets are allocated on the desired volumes.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.2.4 Set Up HFS or zFS Directories

Customize the sample job IWOISMKD to mount the WebSphere Application Server for z/OS optional materials HFS or zFS and create the HFS or zFS target directories needed to install the WebSphere Application Server for z/OS V7.0.0 Optional Materials component.

> **Important!**
>
> - The IWOISMKD and IWODDDEF jobs use -PathPrefix- to represent a service directory on your driving system. It is assumed that you will be mounting WebSphere Application Server for z/OS V7.0.0 Optional Materials HFS or zFS data sets under a service directory that already contains the /usr and /usr/lpp directories. If you specify a -PathPrefix- directory which does not contain /usr and usr/lpp subdirectories, you must manually create these subdirectories before running the IWOISMKD job. If -PathPrefix-/usr/lpp is not a read/write HFS or zFS, you will need to manually create some additional subdirectories as well. See the comments in the IWOISMKD job for further information.
>
> - The IWOISMKD job will mount the product HFS or zFS, create all product directories in it and create the base directory for WebSphere Application Server for z/OS V7.0.0 Optional Materials.

The customized sample job IWOISMKD must be run under a user ID with a number of system privileges; see 6.1, "Installing the WebSphere Application Server for z/OS" on page 41 for a summary of privileges that are needed to run IWOISMKD successfully

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

Check the job output to verify that all directories have been created.

Verify that the product HFS or zFS is mounted at

   -PathPrefix-/usr/lpp/zWebSphere_OM/V7R0

6.2.5 Define SMP/E DDDEFs

Customize and run the sample job IWODDDEF to create SMP/E DDDEFs for target and distribution data sets and directories.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.2.6 Perform SMP/E APPLY

Customize and run the sample job IWOAPPLY to perform an SMP/E APPLY CHECK of the WebSphere Application Server for z/OS V7.0.0 Optional Materials. base and service.

The SMP/E apply job must be run with a user ID having a number of system privileges; see 6.1, "Installing the WebSphere Application Server for z/OS" on page 41 for a summary of privileges that are needed to run IWOAPPLY successfully.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass any of the following on the APPLY CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (bypassed SYSMODs are treated as warnings, not errors, by SMP/E).

Note: The GROUPEXTEND operand indicates that SMP/E should APPLY all requisite SYSMODS. The requisite SYSMODS may be part of other products; review the APPLY CHECK output carefully before proceeding.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly (or a return code of 4, if any HOLDs are bypassed).

Once you have resolved any problems indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

Expected Return Codes from APPLY:

You will receive a return code of 0 if this job runs correctly (or a return code of 4, if any HOLDs are bypassed).

6.2.7 Perform SMP/E ACCEPT

Customize and run the sample job IWOACCEP to perform an SMP/E ACCEPT CHECK of the WebSphere Application Server for z/OS V7.0.0 Optional Materials.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass any of the following on the ACCEPT CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (bypassed SYSMODs are treated as warnings, not errors, by SMP/E).

Once you have resolved any problems indicated by the ACCEPT CHECK, remove the CHECK operand and run the job again to perform the ACCEPT.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.3 Installing DMZ Secure Proxy Server for WebSphere Application Server

The DMZ Secure Proxy Server for WebSphere Application Server must be installed into SMP/E target and distribution zones than contain the WebSphere Application Server for the z/OS base product. Install the JDYZ700 function sysmod (and its service) into the same SMP/E zones used for H28W700.

Certain installation steps (as noted below) must be run from a userid that is defined to Unix Systems Services, and has the following attributes:

- Ability to mount filesystems and modify Unix System Services files any one of the following ways:
    - UID(0) or
    - READ access to the FACILITY class BPX SUPERUSER or

- CONTROL access to the UNIXPRIV class SUPERUSER FILESYS, UPDATE access to the UNIXPRIV class SUPERUSER.FILESYS.MOUNT, and READ access tot he UNIXPRIV class SUPERUSER.FILESYS.CHANGEPERMS. (See the z/OS Unix System Service Planning publication for more information about UNIXPRIV classes.)

- READ access or higher to the BPX.FILEATTR.PROGCTL, BPX.FILEATTR.APF, and BPX.FILEATTR.SHARELIB facility classes is required.

6.3.1 Sample Jobs

Sample jobs to allocate the target and distribution libraries, set up HFS or zFS directories, and create DDDEF entries for the DMZ Secure Proxy Server for WebSphere Application Server elements have been provided.

Figure 19 lists the sample jobs for DMZ Secure Proxy Server for WebSphere Application Server.

Figure 19. Sample Installation Jobs - JDYZ700			
Job Name	**Job Type**	**Description**	**RELFILE**
DYZALLOC	ALLOCATE	Sample job to allocate target and distribution libraries for DMZ Secure Proxy Server for WebSphere Application Server	IBM.JDYZ700.F1
DYZISMKD	MKDIR	Sample job to invoke the supplied BBOMKDIR EXEC to create HFS or zFS paths for DMZ Secure Proxy Server for WebSphere Application Server	IBM.JDYZ700.F1
DYZDDDEF	DDDEF	Sample job to define SMP/E DDDEFs for DMZ Secure Proxy Server for WebSphere Application Server	IBM.JDYZ700.F1
DYZAPPLY	APPLY	Sample job to apply base and maintenance	IBM.JDYZ700.F1
DYZACCEP	ACCEPT	Sample job to accept base and maintenance	IBM.JDYZ700.F1

You can access the sample installation jobs by performing an SMP/E RECEIVE and then copying the jobs from the RELFILEs to a work data set for editing and submission. See Figure 19 to find the appropriate RELFILE data set.

Each sample job contains comments with specific instructions for customization.

You may also choose to copy the jobs from the tape or product files by submitting the job below. Use either the //TAPEIN or the //FILEIN DD statement, depending on your distribution medium, and comment out or delete the other statement. Add a job card and change the lowercase parameters to uppercase values to meet your site's requirements before submitting.

```
//STEP1    EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//TAPEIN   DD DSN=IBM.JDYZ700.F1,UNIT=tunit,
//         VOL=SER=volser,LABEL=(x,SL),
//         DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.JDYZ700.F1,UNIT=SYSALLDA,DISP=SHR,
//         VOL=SER=filevol
//OUT      DD DSNAME=jcl-library-name,
//         DISP=(NEW,CATLG,DELETE),
//         VOL=SER=dasdvol,UNIT=SYSALLDA,
//         SPACE=(TRK,(30,20,5))
//SYSUT3   DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN    DD *
   COPY INDD=xxxxIN,OUTDD=OUT
/*
```

In the sample above, update the statements as noted below:

> If using TAPEIN:
> > **tunit** is the unit value matching the product tape.
> > **volser** is the volume serial matching the product tape.
> > **x** is the tape file number where the data set name is on the tape.
> > (Refer to the documentation provided by CBPDO to see where IBM.JDYZ700.F1 is on the tape.)
> If using FILEIN
> > **filevol** is the volume serial of the DASD device where the downloaded files reside.
> OUT
> > **jcl-library-name** is the name of the output data set where the sample jobs will be stored.
> > **dasdvol** is the volume serial of the DASD device where the output data set will reside.
> SYSIN
> > **xxxxIN** is either TAPEIN or FILEIN depending on your input DD statement.

6.3.2 Perform SMP/E RECEIVE

Receive the function SYSMOD and service for the DMZ Secure Proxy Server for WebSphere Application Server by running the RCVPDO job and specifying FMID **JDYZ700**. 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 for z/OS V7.0.0 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.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.3.3 Define Target and Distribution Libraries

Customize and run the DYZALLOC sample job to define target and distribution libraries for DMZ Secure Proxy Server for WebSphere Application Server.

Make sure the data sets are allocated on the desired volumes.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.3.4 Set Up HFS or zFS Directories

Customize the sample job DYZISMKD to mount the WebSphere Application Server DMZ Secure Proxy Server product HFS or zFS and create the HFS or zFS target directories needed to install WebSphere Application Server for z/OS V7.0.0 DMZ Secure Proxy Server.

> **Important!**
>
> - The DYZISMKD and DYZDDDEF jobs use -PathPrefix- to represent a service directory on your driving system. It is assumed that you will be mounting DMZ Secure Proxy Server for WebSphere Application Server HFS or zFS data sets under a service directory that already contains the /usr and /usr/lpp directories. If you specify a -PathPrefix- directory which does not contain /usr and usr/lpp subdirectories, you must manually create these subdirectories before running the DYZISMKD job. If -PathPrefix-/usr/lpp is not a read/write HFS or zFS, you will need to manually create some additional subdirectories as well. See the comments in the DYZISMKD job for further information.
>
> - The DYZISMKD job will mount the product HFS or zFS and create all product directories in it.

The customized sample job DYZISMKD must be run under a user ID with a number of system privileges; see 6.3, "Installing DMZ Secure Proxy Server for WebSphere Application Server" on page 51 for a summary of privileges that are needed to run DYZISMKD successfully

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

Check the job output to verify that all directories have been created.

Verify that the product HFS or zFS is mounted at

    -PathPrefix-/usr/lpp/zWebSphere_SPS/V7R0

6.3.5 Define SMP/E DDDEFs

Customize and run the sample job DYZDDDEF to create SMP/E DDDEFs for target and distribution data sets and directories.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

6.3.6 Perform SMP/E APPLY

Customize and run the sample job DYZAPPLY to perform an SMP/E APPLY CHECK of the DMZ Secure Proxy Server for WebSphere Application Server base and service.

The SMP/E apply job must be run with a user ID having a number of system privileges; see 6.3, "Installing DMZ Secure Proxy Server for WebSphere Application Server" on page 51 for a summary of privileges that are needed to run DYZISMKD successfully.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass any of the following on the APPLY CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (bypassed SYSMODs are treated as warnings, not errors, by SMP/E).

Note: The GROUPEXTEND operand indicates that SMP/E should APPLY all requisite SYSMODS. The requisite SYSMODS may be part of other products; review the APPLY CHECK output carefully before proceeding.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly (or a return code of 4, if any HOLDs are bypassed).

Once you have resolved any problems indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

Expected Return Codes from APPLY:

You will receive a return code of 0 if this job runs correctly (or a return code of 4, if any HOLDs are bypassed).

6.3.7 Perform SMP/E ACCEPT

Customize and run the sample job DYZACCEP to perform an SMP/E ACCEPT CHECK of the DMZ Secure Proxy Server for WebSphere Application Server base and service.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass any of the following on the ACCEPT CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of **ERRORS** and not of **WARNINGS** (bypassed SYSMODs are treated as warnings, not errors, by SMP/E).

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

Once you have resolved any problems indicated by the ACCEPT CHECK, remove the CHECK operand and run the job again to perform the ACCEPT.

Expected Return Codes and Messages: You will receive a return code of 0 if this job runs correctly.

7.0 Activation Instructions

7.1 Activating WebSphere Application Server

WebSphere Application Server for z/OS V7.0.0 must be configured once SMP/E installation is complete. See *WebSphere Application Server for z/OS V7.0.0 Installing your application serving environment* , GA32-0601 for more information along with additional information from the WebSphere Information Center, which is located at:

> http://www.ibm.com/software/webservers/appserv/was/library/

At this location click "SHOW" for WebSphere Application Server - z/OS. Then either select *information center documentation* and topic **Installing Your Application Server Environment**

OR

Select the *BOOK format documentation* and topic **Installing Your Application Server Environment**.

7.1.1 Mount the HFS or zFS Data Set on the Target System

Before proceeding with activation, unmount the WebSphere Application Server HFS or zFS 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 40, for assistance in selecting the mountpoints. If you have selected the default mountpoints, you can use the following TSO commands on your target system to mount the HFS or zFS data sets:

```
MOUNT FILESYSTEM('hlq.SBBOHFS') MOUNTPOINT('/usr/lpp/zWebSphere/V7R0') TYPE(HFS) MODE(READ)
MOUNT FILESYSTEM('hlq.SIWOHFS') MOUNTPOINT('/usr/lpp/zWebSphere_OM/V7R0') TYPE(HFS) MODE(READ)
MOUNT FILESYSTEM('hlq.SDYZHFS') MOUNTPOINT('/usr/lpp/zWebSphere_SPS/V7R0') TYPE(HFS) MODE(READ)
```

If you choose not to install the optional materials or DMZ Secure Proxy Server, omit the MOUNT commands for those file systems that were not created.

You will probably want to add these mounts to your BPXPRMxx members in parmlib to ensure that these data sets is always mounted. When, at a later date, you need to perform service on the WebSphere Application Server for z/OS V7.0.0 product:

- Temporarily unmount the HFS or zFS data sets
- Mount the HFS or zFS data sets to be serviced at the service (-PathPrefix-) mountpoints you created for installation.
- Apply the service.
- Unmount the HFS or zFS data sets from the service mountpoints.
- Remount at the production mountpoints.

7.2 Activating DMZ Secure Proxy Server for WebSphere Application Server

The DMZ Secure Proxy Server uses a limited subset of WebSphere Application Server modules in order to provide a secure proxy environment in the "demilitarized zone" (a computer system or systems separated by a firewall from the systems running the base WebSphere Application Server product). This reduced set of modules is contained in the SDYZHFS product filesystem.

Before configuring secure proxy servers in the demilitarized zone, you must copy the SDYZHFS product file system to the z/OS system(s) on which you wish to configure the servers. A single shared copy of SDYZHFS can be used if desired; however, to ensure proxy security, the systems running the secure proxy servers should not have access to the WebSphere Application Server product file system, SBBOHFS. See the Topic, *Setting up intermediary services* in the WebSphere Application Server for z/OS V7.0.0 Information Center for more information.

7.2.1   Migrating from Previous Releases of WebSphere Application Server

WebSphere Application Server for z/OS V7.0.0 supports migration from V5.1.x and later releases.

For migration information, see Topic *Migrating, coexisting, and interoperating* in the WebSphere Application Server for z/OS Information Center, which is accessible via the library Web site:

   http://www.ibm.com/software/webservers/appserv/was/library/

Appendix A. Notices

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Program Directory for WebSphere Application Server for z/OS V7.0.0, March 19, 2010

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┌─ RATING SCALE ──────────────────────────────────────────
│   very                        very        not
│  satisfied  <====================>  dissatisfied  applicable
│     1        2       3       4        5            N
│
```

	Satisfaction					
Ease of product installation	1	2	3	4	5	N
Contents of Program Directory	1	2	3	4	5	N
Installation Verification Programs	1	2	3	4	5	N
Time to install the product	1	2	3	4	5	N
Readability and organization of Program Directory tasks	1	2	3	4	5	N
Necessity of all installation tasks	1	2	3	4	5	N
Accuracy of the definition of the installation tasks	1	2	3	4	5	N
Technical level of the installation tasks	1	2	3	4	5	N
Ease of getting the system into production after installation	1	2	3	4	5	N

How did you order this product?

___ CBPDO
___ CustomPac
___ ServerPac
___ Independent
___ Other

Is this the first time your organization has installed this product?

___ Yes
___ No

Were the people who did the installation experienced with the installation of z/OS products?

___ Yes

__   No

If yes, how many years? __

If you have any comments to make about your ratings above, or any other aspect of the product installation, please list them below:

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Please provide the following contact information:

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