



**Program Directory for  
IBM Ported Tools for z/OS**

V1.1.4

Program Number 5655-M23

FMIDs HOS1110, HPRL110, HPHP110, HPUT110, HHAP700

for Use with  
z/OS V1.7 or later

Document Date: November 21, 2008

GI10-0769-04

**Note**

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 41.

A form for reader's comments appears at the back of this publication. When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 2006, 2008. All rights reserved.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

---

# Contents

<b>1.0 Introduction</b>	1
1.1 IBM Ported Tools for z/OS Description	2
1.1.1 Perl for z/OS Description	2
1.1.2 PHP for z/OS Description	3
1.1.3 Supplementary Toolkit for z/OS Description	3
1.1.4 IBM HTTP Server V7.0 Description	4
1.2 IBM Ported Tools for z/OS FMIDs	4
<b>2.0 Program Materials</b>	5
2.1 Basic Machine-Readable Material	5
2.2 Optional Machine-Readable Material	6
2.3 Program Publications	6
2.3.1 Basic Program Publications	6
2.3.2 Optional Program Publications	6
2.4 Program Source Materials	7
2.5 Publications Useful During Installation	7
<b>3.0 Program Support</b>	9
3.1 Program Services	9
3.2 Preventive Service Planning	9
3.3 Statement of Support Procedures	10
<b>4.0 Program and Service Level Information</b>	11
4.1 Program Level Information	11
4.2 Service Level Information	11
<b>5.0 Installation Requirements and Considerations</b>	13
5.1 Driving System Requirements	13
5.1.1 Machine Requirements	13
5.1.2 Programming Requirements	13
5.2 Target System Requirements	15
5.2.1 Machine Requirements	15
5.2.2 Programming Requirements	15
5.2.2.1 Installation Requisites	15
5.2.2.2 Operational Requisites	16
5.2.2.3 Toleration/Coexistence Requisites	18
5.2.2.4 Incompatibility (Negative) Requisites	18
5.2.3 DASD Storage Requirements	18
5.3 FMIDs Deleted	24
5.4 Special Considerations for IBM Ported Tools for z/OS	25
5.5 Special Considerations for Perl for z/OS	25
5.6 Special Considerations for PHP for z/OS	25

5.7	Special Considerations for Supplementary Toolkit for z/OS	25
5.8	Special Considerations for IBM HTTP Server V7.0	26
<b>6.0</b>	<b>Installation Instructions</b>	<b>27</b>
6.1	Installing IBM Ported Tools for z/OS	27
6.1.1	SMP/E Considerations for Installing IBM Ported Tools for z/OS and its features	27
6.1.2	SMP/E Options Subentry Values	28
6.1.3	SMP/E CALLLIBS Processing	28
6.1.4	Sample Jobs	28
6.1.5	Perform SMP/E RECEIVE	30
6.1.6	Allocate SMP/E Target and Distribution Libraries	30
6.1.7	Allocate HFS or zFS Paths	30
6.1.8	Create DDDEF Entries	32
6.1.9	Perform SMP/E APPLY	32
6.1.10	Perform SMP/E ACCEPT	35
6.1.11	Run REPORT CROSSZONE	36
6.2	Activating IBM Ported Tools for z/OS	36
6.2.1	HFS or zFS Execution	37
6.3	Activating Perl for z/OS	37
6.3.1	HFS or zFS Execution	37
6.4	Activating PHP for z/OS	37
6.4.1	HFS or zFS Execution	37
6.5	Activating Supplementary Toolkit for z/OS	38
6.5.1	HFS or zFS Execution	39
6.6	Activating IBM HTTP Server V7.0	39
6.6.1	HFS or zFS Execution	39
<b>7.0</b>	<b>Notices</b>	<b>41</b>
7.1	Trademarks	42
<b>Reader's Comments</b>		<b>45</b>

---

## Figures

1.	Optional Material: Other Optional Publications	6
2.	Publications Useful During Installation	7
3.	PSP Upgrade and Subset ID	9
4.	Component IDs	10
5.	Driving System Software Requirements (excluding IBM HTTP Server V7.0)	14
6.	Driving System Software Requirements for IBM HTTP Server V7.0	14
7.	Mandatory Installation Requisites	15
8.	Conditional Installation Requisites for Perl for z/OS	15

9.	Conditional Installation Requisites for PHP for z/OS	16
10.	Conditional Installation Requisites for Supplementary Toolkit for z/OS	16
11.	Conditional Installation Requisites for IBM HTTP Server V7.0	16
12.	Mandatory Operational Requisites (excluding IBM HTTP Server V7.0)	17
13.	Mandatory Operational Requisites for IBM HTTP Server V7.0	17
14.	Conditional Operational Requisites for PHP for z/OS	17
15.	Total DASD Space Required by IBM Ported Tools for z/OS	18
16.	Total DASD Space Required by Perl for z/OS	19
17.	Total DASD Space Required by PHP for z/OS	19
18.	Total DASD Space Required by Supplementary Toolkit for z/OS	19
19.	Total DASD Space Required by IBM HTTP Server V7.0	19
20.	Storage Requirements for IBM Ported Tools for z/OS Target Libraries	21
21.	Storage Requirements for Perl for z/OS Target Libraries	21
22.	Storage Requirements for PHP for z/OS Target Libraries	21
23.	Storage Requirements for Supplementary Toolkit for z/OS Target Libraries	21
24.	Storage Requirements for IBM HTTP Server V7.0 Target Libraries	22
25.	IBM Ported Tools for z/OS HFS or zFS Paths	22
26.	Perl for z/OS HFS or zFS Paths	22
27.	PHP for z/OS HFS or zFS Paths	22
28.	Supplementary Toolkit for z/OS HFS or zFS Paths	23
29.	IBM HTTP Server V7.0 HFS or zFS Paths	23
30.	Storage Requirements for IBM Ported Tools for z/OS Distribution Libraries	23
31.	Storage Requirements for Perl for z/OS Distribution Libraries	23
32.	Storage Requirements for PHP for z/OS Distribution Libraries	23
33.	Storage Requirements for Supplementary Toolkit for z/OS Distribution Libraries	24
34.	Storage Requirements for IBM HTTP Server V7.0 Distribution Libraries	24
35.	SMP/E Options Subentry Values	28
36.	Sample Installation Jobs	29
37.	SMP/E APPLY CHECK sample	34
38.	SMP/E ACCEPT CHECK sample	35



---

## 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 IBM Ported Tools for z/OS™, which includes the following features:

- IBM Ported Tools for z/OS
- Perl for z/OS
- PHP for z/OS
- Supplementary Toolkit for z/OS
- IBM HTTP Server V7.0

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 5 identifies the basic and optional program materials and documentation for IBM Ported Tools for z/OS.
- 3.0, “Program Support” on page 9 describes the IBM support available for IBM Ported Tools for z/OS.
- 4.0, “Program and Service Level Information” on page 11 lists the APARs (program level) and PTFs (service level) incorporated into IBM Ported Tools for z/OS.
- 5.0, “Installation Requirements and Considerations” on page 13 identifies the resources and considerations required for installing and using IBM Ported Tools for z/OS.
- 6.0, “Installation Instructions” on page 27 provides detailed installation instructions for IBM Ported Tools for z/OS, Perl for z/OS, PHP for z/OS, Supplementary Toolkit for z/OS, and IBM HTTP Server V7.0. It also describes the procedures for activating the functions of IBM Ported Tools for z/OS, Perl for z/OS, PHP for z/OS, Supplementary Toolkit for z/OS, and IBM HTTP Server V7.0, or refers to appropriate publications.

Before installing IBM Ported Tools for z/OS, 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 9 tells you how to find any updates to the information and procedures in this Program Directory.

IBM Ported Tools for z/OS is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The Program Directory is provided in softcopy form on the CBPDO tape which is identical to the hardcopy form provided with your order. All service and HOLDDATA for IBM Ported Tools for z/OS are included on the CBPDO tape.

Do not use this Program Directory if you are installing IBM Ported Tools for z/OS with a SystemPac or ServerPac. When using these offerings, use the jobs and documentation supplied with the offering. This documentation may point you to specific sections of the Program Directory as required.

---

## 1.1 IBM Ported Tools for z/OS Description

If you are installing Perl for z/OS, see 1.1.1, “Perl for z/OS Description.” If you are installing PHP for z/OS, see 1.1.2, “PHP for z/OS Description.” If you are installing Supplementary Toolkit for z/OS, see 1.1.3, “Supplementary Toolkit for z/OS Description.”

IBM Ported Tools for z/OS contains two base components: OpenSSH and Xvfb.

For the Xvfb function, you will need PTFs UA21829 and UA32671.

OpenSSH provides secure encryption for both remote login to the z/OS shell and remote file transfer. The following are some of the utilities that it includes:

- **ssh**, a client program for logging into a z/OS shell. It is an alternative to **rlogin**.
- **scp** for copying files between networks. It is an alternative to **rcp**.
- **sftp** for file transfers over an encrypted **ssh** transport. It is an interactive file transfer program similar to **ftp**.
- **sshd**, a daemon program for **ssh** that listens for connections from clients. The IBM Ported Tools for z/OS implementation of **sshd** supports both **SSH** protocol versions 1 and 2 simultaneously.

Other basic utilities such as **ssh-add**, **ssh-agent**, **ssh-keysign**, **ssh-keyscan**, **ssh-keygen** and **sftp-server** are also included.

To ensure secure encrypted communications, IBM Ported Tools for z/OS uses algorithms such as Blowfish and 3DES.

Xvfb is an X server that can run on machines with no display hardware and no physical input devices. It emulates a dumb framebuffer using virtual memory.

### 1.1.1 Perl for z/OS Description

The Perl for z/OS feature provides a port of the Perl (version 5.8.7) scripting language to the z/OS UNIX System Services platform. Perl (Practical Extraction and Report Language) is a very popular general-purpose programming language that is widely used on UNIX and other computing platforms. This port of Perl to the z/OS platform offers enhancements over other versions of Perl, in that it is preconfigured and precompiled, designed to address the ASCII/EBCDIC conversion, and provide Unicode support.

## 1.1.2 PHP for z/OS Description

PHP (recursive acronym for PHP: Hypertext Preprocessor) is an open-source server-side scripting language (freely downloadable from [php.net](http://php.net) and [zend.com](http://zend.com)) for creating dynamic Web pages for e-commerce and other Web applications. A dynamic Web page is a page that interacts with the user, so that each user visiting the page sees customized information. Dynamic Web applications are prevalent in commercial (e-commerce) sites, where the content displayed is generated from information accessed in a database or other external source.

PHP offers a simple and universal solution for easy-to-program dynamic Web pages. The intuitive interface allows programmers to embed PHP statements right in the HTML page. PHP's syntax is similar to that of C and Perl, making it easy to learn for anyone with basic programming skills. Its elegant design makes PHP significantly easier to maintain and update than comparable scripts in other languages.

## 1.1.3 Supplementary Toolkit for z/OS Description

The Supplementary Toolkit for z/OS contains the following applications: bzip2, cURL, and the IBM Integrated Removable Media Manager for the Enterprise on System z (IRMM) command line interface (CLI).

bzip2 is a high-quality data compressor for the z/OS Unix environment. It typically compresses files to within 10% to 15% of the best available techniques of statistical compressors, whilst being around twice as fast at compression and six times faster at decompression. bzip2 is an open source application which is available for most operating systems, so compressed files can be decompressed on most other platforms (and vice-versa).

cURL is an open source tool that can transfer data from and to servers by using one of the supported protocols (HTTP, HTTPS, FTP, FTPS, TFTP, DICT, TELNET, LDAP, or FILE). This command works without user interaction. cURL offers useful functions such as roxy support, user authentication, FTP upload, HTTP post, SSL connections, cookies, file transfer, resume, and so on. cURL is a command-line UNIX application and runs in the z/OS UNIX System Services environment. To use the cURL function, you need PTF UA40677.

With the IRMM CLI, a z/OS administrator can fully administer, control, and monitor the distributed tape infrastructure from z/OS. For more information about IRMM and usage syntax of the CLI, See *IRMM User's Guide and Reference*, SA23-2235. You can also get information and updates about IRMM from the IRMM Web site at <http://www.ibm.com/systems/z/os/linux/solutions/irrm>. To use the IRMM function, you must install the Supplementary Toolkit for z/OS with PTF UA36521 and Perl for z/OS features.

## 1.1.4 IBM HTTP Server V7.0 Description

IBM HTTP Server V7.0 is based on the open source Apache Web server ([httpd.apache.org](http://httpd.apache.org)). The Apache Web server can be built with many different capabilities and configuration options. IBM HTTP Server V7.0 includes a set of features from the available options. For information about Apache Web server features supported in IBM HTTP Server V7.0, see the information center topics about Apache modules (containing directives), programs, Apache Portable Runtime (APR) and APR-util libraries, and Multi-processing module (MPM) and addressing modes.

IBM HTTP Server V7.0 is a port of IBM HTTP Server V7.0 for the z/OS UNIX platform. This product provides the following functions:

- A general purpose Apache 2.2.x-based Web server that includes CGI, FastCGI, proxy, and compression support
- An SSL implementation that leverages SAF Keyrings, System SSL, and ICSF
- SAF-based authentication and authorization
- An easy-to-install package that is precompiled so that configuration or compilation is not required

IBM HTTP Server V7.0 is based on the Apache HTTP Server and supports 64-bit architecture and IPv6.

You can configure Lightweight Directory Access Protocol (LDAP) to authenticate and protect files on IBM HTTP Server V7.0.

You can authenticate to the IBM HTTP Server V7.0 using HTTP basic authentication or client certificates with the System Authorization Facility (SAF) security product.

---

## 1.2 IBM Ported Tools for z/OS FMIDs

IBM Ported Tools for z/OS consists of the following FMIDs:

HOS1110 - IBM Ported Tools for z/OS

HPRL110 - IBM Ported Tools for z/OS - Perl

HPHP110 - IBM Ported Tools for z/OS - PHP

HPUT110 - IBM Ported Tools for z/OS - Supplementary Toolkit

HHAP700 - IBM Ported Tools for z/OS - IBM HTTP Server V7.0

---

## 2.0 Program Materials

An IBM program is identified by a program number. The program number for IBM Ported Tools for z/OS is 5655-M23.

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

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

You will receive IBM Ported Tools for z/OS (FMID HOS1110) with any feature ordered. You will not need to reinstall FMID HOS1110 if you already have it installed. There are no changes to the original shipment. However, you may want to upgrade service for this FMID at this time.

However, if you have ordered only the IBM Ported Tools for z/OS feature (FMID HOS1110), you will not receive Perl for z/OS (FMID HPRL110), PHP for z/OS (FMID HPHP110), Supplementary Toolkit for z/OS (FMID HPUT110), or IBM HTTP Server V7.0 (FMID HHAP700). Each additional feature must be ordered independently.

Also, if you do not have FMID HOS1110 installed, there is no reason to install it unless you intend to use its functions. The other Ported Tools features do not require the functions in FMID HOS1110. See 1.1, "IBM Ported Tools for z/OS Description" on page 2 for more information on the functions in FMID HOS1110.

Note also that the IBM HTTP Server V7.0 feature (HHAP700) that is included with IBM Ported Tools for z/OS is the same as that is included with WebSphere Application Server for z/OS (WAS). Therefore, if you have installed the IBM HTTP Server V7.0 feature that is included with WAS V7.0, you do not have to install this feature again.

---

## 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 6.0, "Installation Instructions" on page 27 for more information about how to install the program FMIDs HOS1110, HPRL110, HPHP110, HPUT110, and HHAP700.

Information about the physical tape for the Basic Machine-Readable Materials for IBM Ported Tools for z/OS can be found in the *CBPDO Memo To Users Extension*.

---

## 2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for IBM Ported Tools for z/OS.

---

## 2.3 Program Publications

The following sections identify the basic and optional publications for IBM Ported Tools for z/OS.

### 2.3.1 Basic Program Publications

The basic package includes a copy of the License Information Document (GA22-7986-03).

The basic publications and other information about the IBM Ported Tools for z/OS are available electronically at the IBM Ported Tools for z/OS Web site:

[http://www.ibm.com/servers/eserver/zseries/zos/unix/port\\_tools.html](http://www.ibm.com/servers/eserver/zseries/zos/unix/port_tools.html)

### 2.3.2 Optional Program Publications

Figure 1 identifies the optional unlicensed program publications for IBM Ported Tools for z/OS. One copy of each of these publications is included when you order the optional materials for IBM Ported Tools for z/OS. For additional copies, contact your IBM representative.

<b>Publication Title</b>	<b>Form Number</b>	<b>How Available</b>
IBM Ported Tools for z/OS User's Guide	SA22-7985	<a href="http://www.ibm.com/servers/eserver/zseries/zos/unix/port_tools.html">http://www.ibm.com/servers/eserver/zseries/zos/unix/port_tools.html</a>
IBM Ported Tools for z/OS: Perl for z/OS Feature User's Guide and Reference	SA23-1347	<a href="http://www.ibm.com/servers/eserver/zseries/zos/unix/perl/">http://www.ibm.com/servers/eserver/zseries/zos/unix/perl/</a>
IBM Ported Tools for z/OS: PHP for z/OS Feature User's Guide and Reference	SA23-2210	<a href="http://www.ibm.com/servers/eserver/zseries/zos/unix/php/">http://www.ibm.com/servers/eserver/zseries/zos/unix/php/</a>
IBM Ported Tools for z/OS: Supplementary Toolkit for z/OS Feature User's Guide and Reference	SA23-2234	<a href="http://www.ibm.com/servers/eserver/zseries/zos/unix/suptlk/">http://www.ibm.com/servers/eserver/zseries/zos/unix/suptlk/</a>
IBM Ported Tools for z/OS: IBM HTTP Server 7.0 Feature Information	NA	<a href="http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.ihs.doc/info/welcome_ihs.html">http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/index.jsp?topic=/com.ibm.websphere.ihs.doc/info/welcome_ihs.html</a>

---

## 2.4 Program Source Materials

No program source materials or viewable program listings are provided for IBM Ported Tools for z/OS.

---

## 2.5 Publications Useful During Installation

The publications listed in Figure 2 may be useful during the installation of IBM Ported Tools for z/OS. To order copies, contact your IBM representative or visit the IBM Publications Center at <http://www.ibm.com/shop/publications/order>.

<b>Publication Title</b>	<b>Form Number</b>
<i>IBM SMP/E for z/OS User's Guide</i>	SA22-7773
<i>IBM SMP/E for z/OS Commands</i>	SA22-7771
<i>IBM SMP/E for z/OS Reference</i>	SA22-7772
<i>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</i>	GA22-7770
<i>z/OS Information Roadmap</i>	SA22-7500
<i>z/OS MVS Initialization and Tuning Reference</i>	SA22-7592
<i>z/OS UNIX System Services Planning</i>	GA22-7800
<i>z/OS UNIX System Services Command Reference</i>	SA22-7802
<i>z/OS UNIX System Services User's Guide</i>	SA22-7801
<i>IBM Software Delivery Standard Packaging Rules for z/OS-Based Products</i>	SC23-3695
<i>z/OS MVS JCL Reference</i>	SA22-7597
<i>z/OS System Codes</i>	SA22-7626



---

## 3.0 Program Support

This section describes the IBM support available for IBM Ported Tools for z/OS. The service number for IBM Ported Tools for z/OS is 5655-M29.

---

### 3.1 Program Services

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

---

### 3.2 Preventive Service Planning

Before installing these FMIDs, 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, and/or required PTFs against the base release.

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 IBM Ported Tools for z/OS as part of a CBPDO, HOLDDATA and PSP information are included in the CBPDO.

If the CBPDO for IBM Ported Tools for z/OS is more than two weeks old when you install it, you should contact the IBM Support Center, use S/390 SoftwareXcel to obtain the current "PSP Bucket" or obtain the current PSP from the Web at <https://techsupport.services.ibm.com/server/390.psp390>

For program support, access the Software Support Web site at <http://www-3.ibm.com/software/support/>

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 IBM Ported Tools for z/OS are:

*Figure 3. PSP Upgrade and Subset ID*

UPGRADE	SUBSET	Description
PORTED4ZOS	HOS1110	IBM Ported Tools for z/OS
PORTED4ZOS	HPRL110	IBM Ported Tools for z/OS - Perl
PORTED4ZOS	HPHP110	IBM Ported Tools for z/OS - PHP
PORTED4ZOS	HPUT110	IBM Ported Tools for z/OS - Supplementary Toolkit
WASAS700	HHAP700	IBM HTTP Server V7.0

---

### 3.3 Statement of Support Procedures

Report any difficulties you have using this program to your IBM Support Center. If an APAR is required, the Support Center will advise how you should submit any needed information or documentation.

Figure 4 identifies the component IDs (COMPID) for IBM Ported Tools for z/OS and its features.

<i>Figure 4. Component IDs</i>			
<b>FMID</b>	<b>COMPID</b>	<b>Component Name</b>	<b>RETAIN Release</b>
HOS1110	5655M2301	Ported Tools	110
HPRL110	5655M2303	Perl for z/OS	110
HPHP110	5655M2304	PHP for z/OS	110
HPUT110	5655M2305	Supplementary Toolkit for z/OS	110
HHAP700	5655I3510	IBM HTTP Server V7.0	700

---

## **4.0 Program and Service Level Information**

This section identifies the program and any relevant service levels of IBM Ported Tools for z/OS. 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**

No APARs have been incorporated into IBM Ported Tools for z/OS or its features.

---

### **4.2 Service Level Information**

No PTFs have been incorporated into IBM Ported Tools for z/OS or its features.

Over time it is HIGHLY recommended that you frequently check the PSP buckets 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 IBM Ported Tools for z/OS, Perl for z/OS, PHP for z/OS and Supplementary Toolkit for z/OS. The following terminology is used:

- *Driving system*: the system used to install the program.

The program may have specific operating system or product level requirements for utilizing processes such as binder or assembly utilities during the install.

- *Target system*: the system on which the program is intended to run.

The program may have specific product level requirements such as needing access to another product's library for link-edits that may directly affect the elements during the install or for its basic or enhanced operation. These requirements may be mandatory or optional.

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

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

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

---

### 5.1 Driving System Requirements

This section describes the environment of the driving system required to install IBM Ported Tools for z/OS and its features.

#### 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 5. Driving System Software Requirements (excluding IBM HTTP Server V7.0)

Program Number	Product Name and Minimum VRM/Service Level
5694-A01	z/OS V1.7.0 or later

Figure 6. Driving System Software Requirements for IBM HTTP Server V7.0

Program Number	Product Name and Minimum VRM/Service Level
5694-A01	z/OS V1.7 with PTFs 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 UA28150, UA28305, UA29009, UA29652, UA34283, UA39406,UA39536, UA39616, UA41076, UA41252, UA41937, or later  z/OS V1.9 with PTFs UA39407, UA39537, UA39617, UA41077, UA41253, UA41938, or later  z/OS V1.10 with PTF UA41254, or later
5655-G44	IBM SMP/E for z/OS V3.3 with PTFs to satisfy APARs IO00462 and IR54653, or later
5655-I56	IBM SDK for z/OS Java 2 Technology Edition V1.4, or later

IBM Ported Tools for z/OS installs in the z/OS Z038 SREL.

**Notes:**

- The user ID under which the SMP/E installation jobs run must have the following characteristics:
  - Defined to use z/OS UNIX System Services (z/OS UNIX).
  - A superuser (UID=0) or have read access to the BPX.SUPERUSER resource in the RACF® facility class
  - Have READ access to the BPX.FILEATTR.PROGCTL, BPX.FILEATTR.APF, and BPX.SHARELIB facility classes (or READ access to the BPX.FILEATTR.\* generic facility class).
- z/OS UNIX must be available in full-function mode with the shell and utilities available.
- Before you install IBM Ported Tools for z/OS, ensure that the HFS or zFS of the target system is available (OMVS is active and the target file systems are mounted) for processing.
- Additional requirements for IBM HTTP Server V7.0 are as follows:
  - Because IBM HTTP Server V7.0 uses SDK as part of the SMP/E processing, configure the driving system to have SDK 1.4 or later. You can download a free copy of Java SDK 1.4 from [www-03.ibm.com/servers/eserver/zseries/software/java/j142pcont.html](http://www-03.ibm.com/servers/eserver/zseries/software/java/j142pcont.html).
  - Ensure that the user ID that runs the HAPISMKD installation job has the authority to mount file systems if you chose this option.

---

## 5.2 Target System Requirements

This section describes the environment of the target system required to install and use IBM Ported Tools for z/OS and its features.

### 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. This includes products specified as PREs or REQs.

**Note:** When Perl for z/OS, PHP for z/OS, Supplementary Toolkit for z/OS, or IBM HTTP Server V7.0 is ordered, IBM Ported Tools for z/OS is also included in the order.

<i>Figure 7. Mandatory Installation Requisites</i>	
<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>
5694-A01	z/OS V1.7.0 or later

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.

IBM Ported Tools for z/OS has no conditional installation requisites. The conditional installation requisites for Perl for z/OS, PHP for z/OS, Supplementary Toolkit for z/OS, and IBM HTTP Server V7.0 are shown as follows.

<i>Figure 8. Conditional Installation Requisites for Perl for z/OS</i>		
<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>	<b>Function</b>
5655-M23	IBM Ported Tools for z/OS PTF UA90262	Ported_Tools_License.readme update for Perl for z/OS

Figure 9. Conditional Installation Requisites for PHP for z/OS

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-M23	IBM Ported Tools for z/OS PTF UA33479	Ported_Tools_License.readme update for PHP for z/OS
5655-M23	IBM Ported Tools for z/OS: Perl for z/OS PTF UA33585	Ported_Tools_License.readme update for PHP for z/OS

Figure 10. Conditional Installation Requisites for Supplementary Toolkit for z/OS

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-M23	IBM Ported Tools for z/OS PTF UA90379	Ported_Tools_License.readme update for Supplementary Toolkit for z/OS
5655-M23	IBM Ported Tools for z/OS: Perl for z/OS PTF UA35643	Ported_Tools_License.readme update for Supplementary Toolkit for z/OS
5655-M23	IBM Ported Tools for z/OS: PHP for z/OS PTF UA35644	Ported_Tools_License.readme update for Supplementary Toolkit for z/OS

Figure 11. Conditional Installation Requisites for IBM HTTP Server V7.0

Program Number	Product Name and Minimum VRM/Service Level	Function
5694-A01	<p>z/OS V1.7 with PTFs UA19027, UA20075, UA20094, UA21373, UA21556, UA22890,UA23082, UA23129, UA23197, UA28149, UA29651, UA34282,UA39535, UA31615, UA41075, UA41251, UA41936, or later</p> <p>z/OS V1.8 with PTFs UA28150, UA28305, UA29009, UA29652, UA34283, UA39406,UA39536, UA39616, UA41076, UA41252, UA41937, or later</p> <p>z/OS V1.9 with PTFs UA39407, UA39537, UA39617, UA41077, UA41253, UA41938, or later</p> <p>z/OS V1.10 with PTF UA41254, or later</p>	Preventative Service

**5.2.2.2 Operational Requisites:** An operational requisite is defined 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.

<i>Figure 12. Mandatory Operational Requisites (excluding IBM HTTP Server V7.0)</i>	
<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>
5694-A01	z/OS V1.7.0 or later

<i>Figure 13. Mandatory Operational Requisites for IBM HTTP Server V7.0</i>	
<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>
5694-A01	z/OS V1.7 with PTFs 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 UA28150, UA28305, UA29009, UA29652, UA34283, UA39406,UA39536, UA39616, UA41076, UA41252, UA41937, or later  z/OS V1.9 with PTFs UA39407, UA39537, UA39617, UA41077, UA41253, UA41938, or later  z/OS V1.10 with PTF UA41254, or later

The following z/OS elements, features, and components must be installed, enabled, and configured for IBM HTTP Server V7.0:

- z/OS Unix System Services and the hierarchical file system (HFS) or the zSeries File System (zFS)
- eNetwork Communications Server (TCP/IP) or equivalent
- 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.

<i>Figure 14 (Page 1 of 2). Conditional Operational Requisites for PHP for z/OS</i>		
<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>	<b>Function</b>
Any one of the following products:		
5625-DB2	DB2 UDB for z/OS Version 8 with PTFs UQ86844, UK20888, and UK25079 or later	APAR PQ85495 LOB locator-based support APAR PK31468 SQL EXTENDED FETCH fix APAR PK41730 BLOB data over 2G fix

Figure 14 (Page 2 of 2). Conditional Operational Requisites for PHP for z/OS

Program Number	Product Name and Minimum VRM/Service Level	Function
5697-N29	DB2 VUE for z/OS V8.1 with PTFs UQ86844, UK20888, and UK25079 or later	APAR PQ85495 LOB locator-based support APAR PK31468 SQL EXTENDED FETCH fix APAR PK41730 BLOB data over 2G fix
5635-DB2	DB2 V9 for z/OS with PTF UK25080 or later	APAR PK41730 BLOB data over 2G fix
5697-P12	DB2 VUE for z/OS V9.1 with PTF UK25080 or later	APAR PK41730 BLOB data over 2G fix

**5.2.2.3 Toleration/Coexistence Requisites:** A toleration/coexistence requisite is defined as a product that 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.

IBM Ported Tools for z/OS and its features have no toleration/coexistence requisites.

**5.2.2.4 Incompatibility (Negative) Requisites:** A negative requisite identifies products that must *not* be installed on the same system as this product.

IBM Ported Tools for z/OS and its features have no negative requisites.

## 5.2.3 DASD Storage Requirements

IBM Ported Tools for z/OS and its features' libraries can reside on all supported DASD types.

Figure 15 to Figure 18 lists the total space required for each type of library.

Figure 15. Total DASD Space Required by IBM Ported Tools for z/OS

Library Type	Total Space Required in 3390 Trks
Target	4
Distribution	474
HFS or zFS	470

Figure 16. Total DASD Space Required by Perl for z/OS

Library Type	Total Space Required in 3390 Trks
Target	4
Distribution	2400
HFS or zFS	2400

Figure 17. Total DASD Space Required by PHP for z/OS

Library Type	Total Space Required in 3390 Trks
Target	4
Distribution	316
HFS or zFS	320

Figure 18. Total DASD Space Required by Supplementary Toolkit for z/OS

Library Type	Total Space Required in 3390 Trks
Target	6
Distribution	831
HFS or zFS	825

Figure 19. Total DASD Space Required by IBM HTTP Server V7.0

Library Type	Total Space Required (3390 Tracks)	Component
Target	20	IBM HTTP Server V7.0
Distribution	140	IBM HTTP Server V7.0
HFS or zFS	600	IBM HTTP Server V7.0

**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, please refer to 6.1.6, "Allocate SMP/E Target and Distribution Libraries" on page 30.

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 merged with another data set that has equivalent characteristics.
- The data set may be either a PDS or a PDSE.

5. All target libraries listed have the following attributes:

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

6. All target libraries listed which contain load modules have the following attributes:

- The data set may be in the LPA.
- It is not required for the data set to be in the LPA.
- The data set may be in the LNKLIST.
- It is not required for the data set to be APF-authorized.

The following figures describe the target and distribution libraries and HFS or zFS paths required to install IBM Ported Tools for z/OS, Perl for z/OS, PHP for z/OS, Supplementary Toolkit for z/OS, and IBM HTTP Server V7.0. The storage requirements of IBM Ported Tools for z/OS, Perl for z/OS, PHP for z/OS Supplementary Toolkit for z/OS, and IBM HTTP Server V7.0 must be added to the storage required by other programs having data in the same library or path.

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

*Figure 20. Storage Requirements for IBM Ported Tools for z/OS Target Libraries*

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SAMPLIB	sample	TVOL2	E	PDS	FB	80	4	2

*Figure 21. Storage Requirements for Perl for z/OS Target Libraries*

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SAMPLIB	sample	TVOL2	E	PDS	FB	80	4	2

*Figure 22. Storage Requirements for PHP for z/OS Target Libraries*

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SAMPLIB	sample	TVOL2	E	PDS	FB	80	4	2

*Figure 23. Storage Requirements for Supplementary Toolkit for z/OS Target Libraries*

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SAMPLIB	sample	TVOL2	E	PDS	FB	80	6	3

Figure 24. Storage Requirements for IBM HTTP Server V7.0 Target Libraries

Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C O R D M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SHAPEXEC	EXEC	TVOL1	U	PDS	VB	255	10	5
SHAPJCL	Sample	TVOL2	U	PDS	FB	80	10	5

Figure 25. IBM Ported Tools for z/OS HFS or zFS Paths

DDNAME	T Y P E	Path Name
SFSUMBIN	P	/bin/IBM/
SFSUSAMP	P	/samples/IBM/
SFSUSBIN	P	/usr/sbin/IBM/
SFOTSSH	N	/usr/lib/ssh/IBM/
SFOM1MNC	P	/usr/man/C/man1/IBM/
SFSUMMSC	P	/usr/lib/nls/msg/C/IBM/
SEZABIN	P	/usr/lpp/tcpip/bin/IBM/

Figure 26. Perl for z/OS HFS or zFS Paths

DDNAME	T Y P E	Path Name
SHPEHFS	N	/usr/lpp/perl/IBM/

Figure 27. PHP for z/OS HFS or zFS Paths

DDNAME	T Y P E	Path Name
SHPHPFS	N	/usr/lpp/php/IBM/

Figure 28. Supplementary Toolkit for z/OS HFS or zFS Paths

<b>DDNAME</b>	<b>T Y P E</b>	<b>Path Name</b>
SHPUTFS	N	/usr/lpp/ported/IBM/

Figure 29. IBM HTTP Server V7.0 HFS or zFS Paths

<b>DDNAME</b>	<b>T Y P E</b>	<b>Path Name</b>
SHAPBIN1	N	/usr/lpp/IHSA/V7R0/IBM/

Figure 30. Storage Requirements for IBM Ported Tools for z/OS Distribution Libraries

<b>Library DDNAME</b>	<b>T Y P E</b>	<b>O R G</b>	<b>R E C F M</b>	<b>L R E C L</b>	<b>No. of 3390 Trks</b>	<b>No. of DIR Blks</b>
ASAMPLIB	E	PDS	FB	80	4	2
AFOMHFS	E	PDS	VB	255	20	3
AFOMMOD1	E	PDS	U	6144	450	5

Figure 31. Storage Requirements for Perl for z/OS Distribution Libraries

<b>Library DDNAME</b>	<b>T Y P E</b>	<b>O R G</b>	<b>R E C F M</b>	<b>L R E C L</b>	<b>No. of 3390 Trks</b>	<b>No. of DIR Blks</b>
ASAMPLIB	E	PDS	FB	80	4	2
AHPEHFS	N	PDS	VB	255	2400	250

Figure 32 (Page 1 of 2). Storage Requirements for PHP for z/OS Distribution Libraries

<b>Library DDNAME</b>	<b>T Y P E</b>	<b>O R G</b>	<b>R E C F M</b>	<b>L R E C L</b>	<b>No. of 3390 Trks</b>	<b>No. of DIR Blks</b>
ASAMPLIB	E	PDS	FB	80	4	2

Figure 32 (Page 2 of 2). Storage Requirements for PHP for z/OS Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
AHPHPFS	N	PDS	VB	255	316	6

Figure 33. Storage Requirements for Supplementary Toolkit for z/OS Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
ASAMPLIB	E	PDS	FB	80	6	3
AHPUTFS	N	PDS	VB	255	825	100

Figure 34. Storage Requirements for IBM HTTP Server V7.0 Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
AHAPEXEC	U	PDS	VB	255	10	5
AHAPINC	U	PDS	VB	255	120	5
AHAPJCL	U	PDS	FB	80	10	5

**Note:** IBM HTTP Server V7.0 requires additional space for configuration information and run-time data. The amount of space that is required depends on the application server structure that is used, the applications that are run, and the amount of data storage that the applications require.

### 5.3 FMIDs Deleted

No FMIDs are deleted.

---

## 5.4 Special Considerations for IBM Ported Tools for z/OS

If you use an unsupported version of OpenSSH, such as the version that you can download from <http://www.ibm.com/servers/eserver/zseries/zos/unix/bpxa1toy.html>, you must migrate to the supported version. See *IBM Ported Tools for z/OS User's Guide*, SA22-7985 for the migration process. You can download this documentation from the following Web site:

[http://www.ibm.com/servers/eserver/zseries/zos/unix/port\\_tools.html](http://www.ibm.com/servers/eserver/zseries/zos/unix/port_tools.html)

---

## 5.5 Special Considerations for Perl for z/OS

If you are using an unsupported version of Perl, such as the version available from the CPAN.org Web site, or the version that can be obtained from the Tools and Toys page on the z/OS UNIX System Services (z/OS UNIX) Web site, you will need to migrate to the supported version. This process is described in *IBM Ported Tools for z/OS: Perl for z/OS Feature User's Guide and Reference*, SA23-1347, which can be downloaded from the following Web site:

<http://www.ibm.com/servers/eserver/zseries/zos/unix/perl/>

For your reference, the Tools and Toys page is at

<http://www.ibm.com/servers/eserver/zseries/zos/unix/bpxa1toy.html>

---

## 5.6 Special Considerations for PHP for z/OS

If you are using an unsupported version of PHP, such as the version available from the php.net Web site, or the version that can be obtained from the Tools and Toys page on the z/OS UNIX System Services (z/OS UNIX) Web site, you will need to migrate to the supported version. This process is described in *IBM Ported Tools for z/OS: PHP for z/OS Feature User's Guide and Reference*, SA23-2210, which can be downloaded from the following Web site:

<http://www.ibm.com/servers/eserver/zseries/zos/unix/php/>

For your reference, the Tools and Toys page is at

<http://www.ibm.com/servers/eserver/zseries/zos/unix/bpxa1toy.html>

---

## 5.7 Special Considerations for Supplementary Toolkit for z/OS

If you are using an unsupported version of bzip2, such as the version available from the bzip2.org Web site, or the version that can be obtained from the Tools and Toys page on the z/OS UNIX System Services (z/OS UNIX) Web site, you will need to migrate to the supported version. This process is described in *IBM Ported Tools for z/OS: Supplementary Toolkit for z/OS Feature User's Guide and Reference*, SA23-2234, which can be downloaded from the following Web site:

<http://www.ibm.com/servers/eserver/zseries/zos/unix/supt1k/>

For your reference, the Tools and Toys page is at

<http://www.ibm.com/servers/eserver/zseries/zos/unix/bpxa1toy.html>

---

## **5.8 Special Considerations for IBM HTTP Server V7.0**

IBM HTTP Server V7.0 has no special considerations for the target system.

---

## 6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of IBM Ported Tools for z/OS and its features.

Please note the following:

- If you want to install IBM Ported Tools for z/OS and its features into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMPCSI and the SMP/E control data sets.

However, the IBM Ported Tools for z/OS FMID HOS1110 must be installed into the system target and dlib zones. FMID HOS1110 has installation requisites for the following z/OS base FMIDs: HLE7707, HOT7707, and HBB7707. Note that these requisite FMIDs can be satisfied by having these FMIDs or corresponding higher ones in the same zone as HOS1110.

- Sample jobs have been provided to help perform some or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries required for SMP/E execution have been defined in the appropriate zones.
- The SMP/E dialogs may be used instead of the sample jobs to accomplish the SMP/E installation steps.

---

### 6.1 Installing IBM Ported Tools for z/OS

IBM HTTP Server V7.0 can be installed into any set of existing SMP/E zones for SREL Z038 (for example, a set of zones for z/OS).

#### 6.1.1 SMP/E Considerations for Installing IBM Ported Tools for z/OS and its features

This release of IBM Ported Tools for z/OS and its features 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.

Installation and maintenance of IBM HTTP Server V7.0 requires the availability of a Java Software Development Kit (SDK) to provide **jar** command used to unpack product files. SMP/E will use SMPJHOME to locate the Java SDK during APPLY and RESTORE processing. You can use either the following SMPJHOME DD statement during APPLY and RESTORE:

```
//SMPJHOME DD PATH='/usr/lpp/java/J1.4'
```

(NOTE: Use the correct directory for your system)

**OR** create a DDDEF entry in the target zone.

```

SET BOUNDARY (<target zone>) .
UCLIN .
ADD DDDEF (SMPJHOME)
PATH('/usr/lpp/java/J1.4/').
ENDUCL.

```

(NOTE: Use the correct directory for your system)

See the *SMP/E for z/OS Reference* for more information about SMPJHOME.

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.

## 6.1.2 SMP/E Options Subentry Values

The recommended values for some SMP/E CSI subentries are shown in Figure 35. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

<i>Figure 35. SMP/E Options Subentry Values</i>		
<b>SUB-ENTRY</b>	<b>Value</b>	<b>Comment</b>
DSSPACE	800,500,100	No comments
PEMAX	SMP/E Default	IBM suggests using the SMP/E default for PEMAX.

## 6.1.3 SMP/E CALLLIBS Processing

IBM Ported Tools for z/OS (FMID HOS1110) uses the CALLLIBS function provided in SMP/E to resolve external references during installation. When IBM Ported Tools for z/OS is installed, ensure that DDDEFs exist for the following libraries:

- CSSLIB
- SCEELKED

**Note:** The DDDEFs above are used only to resolve the link-edit for IBM Ported Tools for z/OS (FMID HOS1110) using CALLLIBS. These data sets are not updated during the installation.

Perl for z/OS (FMID HPRL110), PHP for z/OS (FMID HPHP110), Supplementary Toolkit for z/OS (FMID HPUT110), and IBM HTTP Server V7.0 (FMID HHAP700) do not use the CALLLIBS function.

## 6.1.4 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install IBM Ported Tools for z/OS, Perl for z/OS, PHP for z/OS, Supplementary Toolkit for z/OS, and IBM HTTP Server V7.0.

Figure 36. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
FOTISMKD	MKDIR	Sample job to invoke the supplied FOTMKDIR EXEC to allocate HFS or zFS paths	IBM.HOS1110.F1
FOTISDDF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HOS1110.F1
HPEALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HPRL110.F1
HPEISMKD	MKDIR	Sample job to invoke the supplied HPEMKDIR EXEC to allocate HFS or zFS paths	IBM.HPRL110.F1
HPEDDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HPRL110.F1
HPHPALLC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HPHP110.F1
HPHPMKD	MKDIR	Sample job to invoke the supplied HPHPMKDR EXEC to allocate HFS or zFS paths	IBM.HPHP110.F1
HPHPDDDF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HPHP110.F1
HPHPAPLY	APPLY	Sample SMP/E APPLY job	IBM.HPHP110.F1
HPHPACCP	ACCEPT	Sample SMP/E ACCEPT job	IBM.HPHP110.F1
HPUTALLC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HPUT110.F1
HPUTMKD	MKDIR	Sample job to invoke the supplied HPUTMKDR EXEC to allocate HFS or zFS paths	IBM.HPUT110.F1
HPUTDDDF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HPUT110.F1
HPUTAPLY	APPLY	Sample SMP/E APPLY job	IBM.HPUT110.F1
HPUTACCP	ACCEPT	Sample SMP/E ACCEPT job	IBM.HPUT110.F1
HPUTIFA	Product Enablement	Sample PARMLIB update for IFAPRDxx	IBM.HPUT110.F1
HAPALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HHAP700.F1
HAPISMKD	MKDIR	Sample job to invoke the supplied HAPMKDIR EXEC to create HFS or zFS paths	IBM.HHAP700.F1
HAPDDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HHAP700.F1
HAPAPPLY	APPLY	Sample APPLY job	IBM.HHAP700.F1
HAPACCEP	ACCEPT	Sample ACCEPT job	IBM.HHAP700.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 36 on page 28 to find the appropriate relfile data set.

## 6.1.5 Perform SMP/E RECEIVE

Having obtained IBM Ported Tools for z/OS as part of a CBPDO, use the RCVPDO job found in the CBPDO RIMLIB data set to RECEIVE the IBM Ported Tools for z/OS FMIDs as well as any service, HOLDDATA, included on the CBPDO tape. For more information, refer to the documentation included with the CBPDO.

## 6.1.6 Allocate SMP/E Target and Distribution Libraries

All data sets used by IBM Ported Tools for z/OS (FMID HOS1110) are allocated by other products, so no new allocations are required.

Edit and submit sample job HPEALLOC to allocate the SMP/E target and distribution libraries for Perl for z/OS (FMID HURL110). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0**

Edit and submit sample job HPHPALLC to allocate the SMP/E target and distribution libraries for PHP for z/OS (FMID HPHP110). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0.**

Edit and submit sample job HPUTALLC to allocate the SMP/E target and distribution libraries for Supplementary Toolkit for z/OS (FMID HPUT110). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0.**

Edit and submit sample job HAPALLOC to allocate the SMP/E target and distribution libraries for IBM HTTP Server V7.0 (FMID HHAP700). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0.**

## 6.1.7 Allocate HFS or zFS Paths

The target system HFS or zFS data set must be mounted on the driving system when running the sample MKDIR jobs since these jobs will create paths in the HFS or zFS.

Before running the sample jobs to create the paths in the file system, you must ensure that OMVS is active on the driving system, and that the target system's HFS or zFS file system is mounted to the driving system. zFS must be active on the driving system if you are installing into a file system that is zFS.

IBM Ported Tools for z/OS (FMID HOS1110) installs into root directories and cannot reside in its own HFS or zFS.

Edit and submit sample job FOTISMKD to allocate the HFS or zFS paths for IBM Ported Tools for z/OS (FMID HOS1110). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages: RC=0.**

If you plan to install Perl for z/OS into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system. For Perl for z/OS, the recommended mountpoint is -PathPrefix-/usr/lpp/perl.

Edit and submit sample job HPEISMKD to allocate the HFS or zFS paths for Perl for z/OS (FMID HPRL110). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages: RC=0.**

If you plan to install PHP for z/OS into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system. For PHP for z/OS, the recommended mountpoint is -PathPrefix-/usr/lpp/php.

Edit and submit sample job HPHPMKD to allocate the HFS or zFS paths for PHP for z/OS (FMID HPHP110). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages: RC=0.**

If you plan to install Supplementary Toolkit for z/OS into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system. For Supplementary Toolkit for z/OS, the recommended mountpoint is -PathPrefix-/usr/lpp/ported.

Edit and submit sample job HPUTMKD to allocate the HFS or zFS paths for Supplementary Toolkit for z/OS (FMID HPUT110). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages: RC=0.**

If you plan to install IBM HTTP Server V7.0 into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system. For IBM HTTP Server V7.0, the recommended mountpoint is -PathPrefix-/usr/lpp/IHSA/V7R0.

Edit and submit the sample job HAPISMKD to allocate the HFS or zFS paths for IBM HTTP Server V7.0 (FMID HHAP700). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages: RC=0.**

If you plan to create a new HFS or zFS for this product, you should consider updating the BPXPRMxx PARMLIB member to mount the new HFS at IPL time. This may be helpful if an IPL occurs before the installation is complete.

## 6.1.8 Create DDDEF Entries

Edit and submit sample job FOTISDDF to create DDDEF entries for the SMP/E target and distribution libraries for IBM Ported Tools for z/OS (FMID HOS1110). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0**

Edit and submit sample job HPEDDDDF to create DDDEF entries for the SMP/E target and distribution libraries for Perl for z/OS (FMID HPRL110). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0**

Edit and submit sample job HPHPDDDF to create DDDEF entries for the SMP/E target and distribution libraries for PHP for z/OS (FMID HPHP110). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0**

Edit and submit sample job HPUTDDDF to create DDDEF entries for the SMP/E target and distribution libraries for Supplementary Toolkit for z/OS (FMID HPUT110). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0**

Edit and submit sample job HAPDDDF to create DDDEF entries for the SMP/E target and distribution libraries for IBM HTTP Server V7.0 (FMID HHAP700). Consult the instructions in the sample job for more information.

### **Expected Return Codes and Messages: RC=0**

## 6.1.9 Perform SMP/E APPLY

1. Ensure you have the latest Enhanced HOLDDATA, then edit and submit sample job shown in Figure 37 on page 34 to perform an SMP/E APPLY CHECK for IBM Ported Tools for z/OS and its features.

Here are the sample jobs that you can edit and submit to perform SMP/E APPLY CHECK for the features of IBM Ported Tools for z/OS:

- PHP for z/OS: HPHPAPLY
- Supplementary Toolkit for z/OS: HPUTAPLY
- IBM HTTP Server V7.0: HAPAPLY

Enhanced HOLDDATA introduces ERROR HOLDS against FMIDs for HIPER APARs. Prior to installing, you should ensure you have the latest Enhanced HOLDDATA (available at url

<http://service.software.ibm.com/holdata/390holddata.html>). The FMID(s) should be installed regardless of the status of unresolved HIPERs, however, the software should not be deployed until the unresolved HIPERs have been analyzed to determine applicability.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass 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** (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).

There are two methods to complete an FMID installation where ++HOLDS for HIPERs exist for the FMID(s) being installed:

- a. To ensure that all recommended and critical service is installed with the FMID(s), add the SOURCEIDs of PRP, HIPER, and RSU\* to the APPLY command. There may be PE or HIPER APARs that do not have resolving PTFs available yet. You need to analyze the symptom flags to determine if you want to BYPASS the specific ERROR HOLDS and continue the FMID installation.

```
APPLY S(fmid,fmid,...)
FORFMID(fmid,fmid,...)
SOURCEID(PRP,HIPER,RSU*,...)
GROUPEXTEND .
```

This method requires more initial research, but will provide resolution for all HIPERs that have fixes available and are not in a PE chain. There may still be unresolved PEs or HIPERs that will require the use of BYPASS.

- b. To install the FMID(s) as it would have been installed prior to Enhanced HOLDDATA, you can add a BYPASS(HOLDCLASS(HIPER)) operand to the APPLY command. This will allow the FMID to be installed even though there are HIPER ERROR HOLDS against it. Note that not all ERROR HOLDS were bypassed, only the HIPER ERROR HOLDS. After the FMID(s) are installed, the SMP/E REPORT ERRSYSMODS command should be run to identify any missing HIPER maintenance.

```
APPLY S(fmid,fmid,...)
FORFMID(fmid,fmid,...)
SOURCEID(RSU*)
GROUPEXTEND
BYPASS(HOLDCLASS(HIPER)) .
..any other parameters documented in the program directory
```

This method is the quicker of the two, but requires subsequent review of the REPORT ERRSYSMODS to investigate any HIPERs.

If you bypass any HOLDS during the installation of the FMID(s) because fixing PTFs were not yet available you can use the APAR Status Tracking (AST) function of ServiceLink or the APAR Tracking function of ResourceLink to be notified when the fixing PTF is available.

2. After you have taken any actions indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

```

//APPLY JOB
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//SMPCSI DD DSN=csiname,DISP=SHR
//SMPCNTL DD *
    SET BOUNDARY(targetzone) .
    APPLY CHECK
    FORFMID(HOS1110,HPRL110,HPHP110,HPUT110, HHAP700)
    SELECT(HOS1110,HPRL110,HPHP110,HPUT110, HHAP700)
    GROUPEXTEND(NOAPARS,NOUSERMODS)
    SOURCEID(PT4ZFIX,HIPER)
    BYPASS(HOLDSYSTEM,
    HOLDUSER,HOLDCLASS(UCLREL,ERREL,HIPER)) .
/*

```

Figure 37. SMP/E APPLY CHECK sample

#### Required Updates

1. Update the job parameters.
2. Replace the csiname on the SMPCSI DD statement with your CSI name.
3. Update targetzone to your target zone name.
4. Remove any FMIDs that you do not wish to install from the FORFMID and SELECT keywords.
5. Update 'PT4ZFIX' with the name of the fixes that were required, as documented in the software PSP bucket upgrade (PORTED4ZOS) subsets HOS1110, HPRL110, HPHP110, and HPUT110 and upgrade (WASAS700) subset HHAP700.

**Note:** The GROUPEXTEND operand indicates that SMP/E apply all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

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

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

**Note:** The following directories might be empty after the APPLY step and this is acceptable:

- /usr/lpp/ported/include
- /usr/lpp/ported/lib
- /usr/lpp/ported/local
- /usr/lpp/ported/samples
- /usr/lpp/ported/share

## 6.1.10 Perform SMP/E ACCEPT

Edit and submit the sample job, as shown in Figure 38 on page 35, to perform an SMP/E ACCEPT CHECK for IBM Ported Tools for z/OS.

Here are the sample jobs that you can edit and submit to perform SMP/E ACCEPT CHECK for the features of IBM Ported Tools for z/OS:

- PHP for z/OS: HPHPACCP
- Supplementary Toolkit for z/OS: HPUTACCP
- IBM HTTP Server V7.0: HAPACCEP

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do *not* bypass 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** (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).

Before using SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. This will cause entries produced from JCLIN to be saved in the distribution zone whenever a SYSMOD containing inline JCLIN is ACCEPTed. For more information on the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E manuals.

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

```
//ACCEPT JOB
//STEP1 EXEC PGM=GIMSMP,REGION=0M,TIME=NOLIMIT
//SMPCSI DD DSN=csiname,DISP=SHR
//SMPCNTL DD *
  SET BOUNDARY(dlibzone) .
  ACCEPT CHECK
  FORFMID(HOS1110,HPRL110,HPHP110,HPUT110, HHAP700)
  SELECT(HOS1110,HPRL110,HPHP110,HPUT110, HHAP700)
  GROUPEXTEND(NOAPARS,NOUSERMODS)
  SOURCEID(PT4ZFIX,HIPER)
  BYPASS(HOLDSYSTEM,
  HOLDUSER,HOLDCLASS(UCLREL,ERREL,HIPER)) .
/*
```

Figure 38. SMP/E ACCEPT CHECK sample

### Required Updates

1. Update the job parameters.
2. Replace the csiname on the SMPCSI DD statement with your CSI name.
3. Update dlibzone to your dlib zone name.
4. Remove any FMIDs that you do not wish to install from the FORFMID and SELECT keywords.
5. Update PT4ZFIX with the name of the fixes that were required, as documented in the software PSP bucket upgrades (PORTED4ZOS) subsets HOS1110, HPRL110, HPHP110, and HPUT110 and upgrade (WASAS700) subset HHAP700.

**Note:** The GROUPEXTEND operand indicates that SMP/E accept all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

### Expected Return Codes and Messages from ACCEPT CHECK: RC=0

If PTFs containing replacement modules are being ACCEPTed, SMP/E ACCEPT processing will link-edit/bind the modules into the distribution libraries. During this processing, the Linkage Editor or Binder may issue messages documenting unresolved external references, resulting in a return code of 4 from the ACCEPT step. These messages can be ignored, because the distribution libraries are not executable and the unresolved external references will not affect the executable system libraries.

### Expected Return Codes and Messages from ACCEPT: RC=0

## 6.1.11 Run REPORT CROSSZONE

The SMP/E REPORT CROSSZONE command will identify requisites defined for products that have been installed in separate zones. This command will also create APPLY and ACCEPT commands in the SMPPUNCH data set that you can use to install those cross-zone requisites it identifies.

After you have installed IBM Ported Tools for z/OS, Perl for z/OS and PHP for z/OS, Supplementary Toolkit for z/OS, it is suggested that you run REPORT CROSSZONE against the new or updated target and distribution zones. REPORT CROSSZONE requires a global zone with ZONEINDEX entries describing all the target and distribution libraries to be reported on.

For more information on REPORT CROSSZONE, see the SMP/E manuals.

---

## 6.2 Activating IBM Ported Tools for z/OS

## 6.2.1 HFS or zFS Execution

If you choose to have the HFS or zFS in which you have installed IBM Ported Tools for z/OS mounted in read-only mode during execution, you have to complete more tasks before you make your filesystem read-only.

The publication *IBM Ported Tools for z/OS User's Guide*, SA22-7985 contains the step-by-step procedures to activate the functions of IBM Ported Tools for z/OS. You can download this publication from the following Web site:

[http://www.ibm.com/servers/eserver/zseries/zos/unix/port\\_tools.html](http://www.ibm.com/servers/eserver/zseries/zos/unix/port_tools.html)

---

## 6.3 Activating Perl for z/OS

### 6.3.1 HFS or zFS Execution

If you choose to have the HFS or zFS in which you have installed Perl for z/OS mounted in read-only mode during execution, then more tasks are required before making your filesystem read-only. Please refer to the publication described in the next paragraph.

The publication *IBM Ported Tools for z/OS: Perl for z/OS Feature User's Guide and Reference*, SA23-1347 contains the step-by-step procedures to activate the functions of Perl for z/OS. It can be downloaded from the following Web site:

<http://www.ibm.com/servers/eserver/zseries/zos/unix/perl/>

---

## 6.4 Activating PHP for z/OS

### 6.4.1 HFS or zFS Execution

If you choose to have the HFS or zFS in which you have installed PHP for z/OS mounted in read-only mode during execution, then more tasks are required before making your filesystem read-only. Please refer to the publication described in the next paragraph.

The publication *IBM Ported Tools for z/OS: PHP for z/OS Feature User's Guide and Reference*, SA23-2210 contains the step-by-step procedures to activate the functions of PHP for z/OS. It can be downloaded from the following Web site:

<http://www.ibm.com/servers/eserver/zseries/zos/unix/php/>

---

## 6.5 Activating Supplementary Toolkit for z/OS

Enable the components of Supplementary Toolkit for z/OS before you use them. To enable a component, copy the contents of the component SAMPLIB member to a new or active IFAPRDxx member in SYS1.PARMLIB; then issue the SET PROD operator command to dynamically enable the component function. The component SAMPLIB member is not active by default.

The name of the bzip2 SAMPLIB member is HPUTIFA. The content of the HPUTIFA file is as follows:

```
PRODUCT OWNER(IBM CORP)
  NAME(Ported Tools)
  ID(5655-M23)
  VERSION(*) RELEASE(*) MOD(*)
  FEATURENAME(bzip2 for z/OS)
  STATE(ENABLED)
```

The name of the cURL SAMPLIB member is HPUTIFA. The content of the HPUTIFA file is as follows:

```
PRODUCT OWNER(IBM CORP)
  NAME(Ported Tools)
  ID(5655-M23)
  VERSION(*) RELEASE(*) MOD(*)
  FEATURENAME(cURL for z/OS)
  STATE(ENABLED)
```

To activate the IFAPRDxx member dynamically, use the following z/OS SET system command:

```
SET PROD=xx
```

If you run bzip2 before you enable it, the following error message is displayed:

```
IFA104I REGISTRATION HAS BEEN DENIED FOR
PRODUCT WITH OWNER=IBM CORP
NAME=Ported Tools
FEATURE=bzip2 for z/OS
VERSION=01.01.03 ID=5655-M23
HPU00078 bzip2 exited-- cannot be used until defined in enablement policy.
```

If you run cURL before you enable it, the following error message is displayed:

```
IFA104I REGISTRATION HAS BEEN DENIED FOR
PRODUCT WITH OWNER=IBM CORP
NAME=Ported Tools
FEATURE=cURL for z/OS
VERSION=01.01.03
ID=5655-M23
HPU00078 cURL exited-- cannot be used until defined in enablement policy.
```

For more information about IFAPRDxx, see *z/OS MVS Initialization and Tuning Reference*, SA22-7592.

## 6.5.1 HFS or zFS Execution

If you choose to have the HFS or zFS in which you have installed Supplementary Toolkit for z/OS mounted in read-only mode during execution, more tasks are required before making your filesystem read-only. Please refer to the publication described in the next paragraph.

The publication *IBM Ported Tools for z/OS: Supplementary Toolkit for z/OS Feature User's Guide and Reference*, SA23-2234 contains the step-by-step procedures to activate the functions of Supplementary Toolkit for z/OS. It can be downloaded from the following Web site:

<http://www.ibm.com/servers/eserver/zseries/zos/unix/suptlk/>

---

## 6.6 Activating IBM HTTP Server V7.0

### 6.6.1 HFS or zFS Execution

If you choose to have the HFS or zFS in which you installed IBM HTTP Server V7.0 mounted in read-only mode during execution, you might be required to complete more tasks before making your filesystem read-only. See the topic that is described in the next paragraph.

For procedures to activate the functions of IBM HTTP Server V7.0, see the *Administering and configuring IBM HTTP Server V7.0* topic of the IBM HTTP Server V7.0 Information Center at <http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.ihs.doc/info/ihs/ihs/welc6topconfigihs.html>.



---

## 7.0 Notices

References in this document to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe on any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

APAR numbers are provided in this document to assist in locating PTFs that may be required. Ongoing problem reporting may result in additional APARs being created. Therefore, the APAR lists in this document may not be complete. To obtain current service recommendations and to identify current product service requirements, always contact the IBM Customer Support Center or use S/390 SoftwareXcel to obtain the current "PSP Bucket".

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the

IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, New York 10504-1785  
USA

For online versions of this book, we authorize you to:

- Copy, modify, and print the documentation contained on the media, for use within your enterprise, provided you reproduce the copyright notice, all warning statements, and other required statements on each copy or partial copy.
- Transfer the original unaltered copy of the documentation when you transfer the related IBM product (which may be either machines you own, or programs, if the program's license terms permit a transfer). You must, at the same time, destroy all other copies of the documentation.

You are responsible for payment of any taxes, including personal property taxes, resulting from this authorization.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Some jurisdictions do not allow the exclusion of implied warranties, so the above exclusion may not apply to you.

Your failure to comply with the terms above terminates this authorization. Upon termination, you must destroy your machine readable documentation.

---

## 7.1 Trademarks

IBM, the IBM logo, and [ibm.com](http://ibm.com) are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml)

Other company, product, or service names may be trademarks or service marks of others.





# Reader's Comments

## Program Directory for IBM Ported Tools for z/OS, November 21, 2008

You may use this form to comment about this document, its organization, or subject matter with the understanding that IBM may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you.

For each of the topics below please indicate your satisfaction level by circling your choice from the rating scale. If a statement does not apply, please circle N.

RATING SCALE						
very satisfied	<----->				very dissatisfied	not 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:

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

Please provide the following contact information:

\_\_\_\_\_  
Name and Job Title

\_\_\_\_\_  
Organization

\_\_\_\_\_  
Address

\_\_\_\_\_  
Telephone

Thank you for your participation.

Please send the completed form to (or give to your IBM representative who will forward it to the IBM Ported Tools for z/OS Development group):

IBM Corporation  
MHVRCFS, Mail Station P181  
2455 South Road  
Poughkeepsie NY 12601-5400  
United States of America

FAX: (United States & Canada): (845) 432-9405

FAX: (Other Countries): Your International Access Code+1+845+432-9405

E-Mail: [mhvrcfs@us.ibm.com](mailto:mhvrcfs@us.ibm.com)

World Wide Web: <http://www.ibm.com/servers/eserver/zseries/zos/webqs.html>

---

# Communicating Your Comments to IBM

IBM Ported Tools for z/OS V1.1.4  
z/OS V1.7 or later

Publication No. GI10-0769-04

If you especially like or dislike anything about this book, please use one of the methods listed below to send your comments to IBM. Whichever method you choose, make sure you send your name, address, and telephone number if you would like a reply.

Feel free to comment on specific errors or omissions, accuracy, organization, subject matter, or completeness of this book. However, the comments you send should pertain to only the information in this manual and the way in which the information is presented. To request additional publications, or to ask questions or make comments about the functions of IBM products or systems, you should talk to your IBM representative or to your IBM authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

If you are mailing a reader's comment form (RCF) from a country other than the United States, you can give the RCF to the local IBM branch office or IBM representative for postage-paid mailing.

- If you prefer to send comments by mail, use the RCF at the back of this book.
- If you prefer to send comments by FAX, use this number:
  - FAX: (International Access Code)+1+845+432-9405
- If you prefer to send comments electronically, use the following e-mail address:
  - [mhvrcfs@us.ibm.com](mailto:mhvrcfs@us.ibm.com)

Make sure to include the following in your note:

- Title and publication number of this book
- Page number or topic to which your comment applies

Optionally, if you include your telephone number, we will be able to respond to your comments by phone.

---

## Reader's Comments — We'd Like to Hear from You

**IBM Ported Tools for z/OS V1.1.4  
z/OS V1.7 or later**

**Publication No. GI10-0769-04**

You may use this form to communicate your comments about this publication, its organization, or subject matter, with the understanding that IBM may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you. Your comments will be sent to the author's department for whatever review and action, if any, are deemed appropriate.

**Note:** Copies of IBM publications are not stocked at the location to which this form is addressed. Please direct any requests for copies of publications, or for assistance in using your IBM system, to your IBM representative or to the IBM branch office serving your locality.

Today's date: \_\_\_\_\_

What is your occupation?

Newsletter number of latest Technical Newsletter (if any) concerning this publication:

How did you use this publication?

- |                          |                               |                          |                        |
|--------------------------|-------------------------------|--------------------------|------------------------|
| <input type="checkbox"/> | As an introduction            | <input type="checkbox"/> | As a text (student)    |
| <input type="checkbox"/> | As a reference manual         | <input type="checkbox"/> | As a text (instructor) |
| <input type="checkbox"/> | For another purpose (explain) |                          |                        |

---

Is there anything you especially like or dislike about the organization, presentation, or writing in this manual? Helpful comments include general usefulness of the book; possible additions, deletions, and clarifications; specific errors and omissions.

Page Number:                      Comment:

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Company or Organization

\_\_\_\_\_  
Phone No.



Cut or Fold  
Along Line

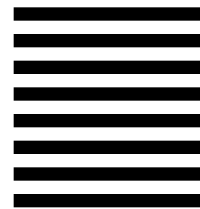
Fold and Tape

Please do not staple

Fold and Tape



NO POSTAGE  
NECESSARY  
IF MAILED IN THE  
UNITED STATES



# BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

IBM Corporation  
MHVRCFS, Mail Station P181  
2455 South Road  
Poughkeepsie, NY 12601-5400



Fold and Tape

Please do not staple

Fold and Tape

Cut or Fold  
Along Line





Printed in USA

G110-0769-04

