



# **Program Directory for XML Toolkit for z/OS**

V1.10.0

Program Number 5655-J51

FMID HXML1A0

for Use with  
z/OS

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**Note**

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 29.

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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 XML Toolkit for z/OS. This publication refers to XML Toolkit for z/OS as Toolkit.

As of Toolkit V1.10.0, previous Toolkit releases are no longer included in the current Toolkit package. This change is to keep the package at a reasonable size and to simplify the installation process. To acquire a copy of a previous Toolkit release, you have to order the V1.9.0 Toolkit package, which includes Toolkit V1.8.0 and V1.7.0. Toolkit is based on open source software from the Apache Software Foundation that does not provide upward compatibility.

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 3 identifies the basic and optional program materials and documentation for Toolkit.
- 3.0, “Program Support” on page 7 describes the IBM support available for Toolkit.
- 4.0, “Program and Service Level Information” on page 9 lists the APARs (program level) and PTFs (service level) incorporated into Toolkit.
- 5.0, “Installation Requirements and Considerations” on page 11 identifies the resources and considerations required for installing and using Toolkit.
- 6.0, “Installation Instructions” on page 19 provides detailed installation instructions for Toolkit. It also describes the procedures for activating the functions of Toolkit, or refers to appropriate publications.

Before installing Toolkit, 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 7 tells you how to find any updates to the information and procedures in this Program Directory.

Toolkit 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 Toolkit are included on the CBPDO tape.

Do not use this Program Directory if you are installing Toolkit 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.

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## 1.1 Toolkit Description

The Toolkit provides XML technology to assist customers in integrating vertical/industry-specific data formats, structures, schemas, and metadata to ensure industry compliance of data representation and content. Some of its key uses include categorizing and tagging data for exchange in disparate environments, as well as transforming ad hoc unstructured data to XML records, enabling you to search, cross-reference, and share records. The Toolkit also provides this support for use by other dependent IBM and vendor products.

The Toolkit includes the XML Parser, C++ Edition. The XML Parser, C++ Edition is a port of IBM's XML4C parser. The parser is tested and packaged for use on z/OS. XML4C is based on open source code from the Xerces Apache project of the Apache Software Foundation.

In addition to the parsers, the Toolkit includes the XSLT Processor, C++ Edition. The XSLT Processor, C++ Edition is a port of IBM's XSLT4C XSLT processor (formerly known as LotusXSL-C++). It is tested and packaged for use on z/OS. It is an implementation of the W3C recommendations for XSL Transformations (XSLT) Version 1.0 and XML Path Language (XPath) Version 1.0. XSLT4C is based on open source code from the Xalan Apache project of the Apache Software Foundation. It allow users to transform XML documents into other XML documents, HTML, or text, and run on multiple platforms.

**Note:** The XML Parser, Java Edition and the XSLT Processor, Java Edition, both formerly included in the XML Toolkit before Toolkit V1.7., are included in the z/OS Java SDK V1.4 or later.

The Toolkit is backed by z/OS world-class service and support.

For more information about the Toolkit product, visit the Toolkit Web site at:

<http://www.ibm.com/zseries/software/xml/>

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## 1.2 Toolkit FMID

Toolkit consists of the following FMID:

HXML1A0

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## 2.0 Program Materials

An IBM program is identified by a program number. The program number for Toolkit is 5655-J51.

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 Toolkit. Ask your IBM representative for this information if you have not already received a copy.

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### 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 19 for more information about how to install the program.

Information about the physical tape for the Basic Machine-Readable Materials for Toolkit can be found in the *CBPDO Memo To Users Extension*. Figure 1 describes the file content.

#### Notes:

1. The data set attributes in the table should be used in the JCL of jobs reading the data sets, but since the data sets are in IEBCOPY unloaded format, their actual attributes may be different.
2. You are installing the Toolkit using the Custom-Built Product Delivery Offering (CBPDO) (5751-CS3). Information about your tape may be found in the CBPDO documentation that came with your order. Additionally, some of the information in these figures may not be valid. Consult the CBPDO documentation for actual values.
3. If any RELFILEs are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

Figure 1. Program File Content

Name	ORG	RECFM	LEN	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.HXML1A0.F1	PDS	FB	80	8800
IBM.HXML1A0.F2	PDS	VB	128	6144
IBM.HXML1A0.F3	PDSE	U	0	6144

An SMP/E installable format of the Toolkit is also available through Web delivery. Once unpacked, this package is in SMP/E RELFILE format. The code for this deliverable can be downloaded from the Web site:

<http://www.ibm.com/servers/eserver/zseries/software/xml/download/>

From this site you can obtain all the deliverables and documentation required for installation. See 6.1, "Installing Toolkit" on page 19 for more information about how to install the Toolkit.

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## 2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for Toolkit.

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## 2.3 Program Publications

The following sections identify the basic and optional publications for Toolkit. The basic package includes a copy of the License Information Document (GA22-7472).

The basic publications and other information about the Toolkit are available electronically at the XML product Web site:

<http://www.ibm.com/zseries/software/xml/>

### 2.3.1 Optional Program Publications

Figure 2 identifies the optional unlicensed publications that are not available in hardcopy form, but are available through the internet or other media for Toolkit.

*Figure 2. Optional Material: Other Optional Publications*

<b>Publication Title</b>	<b>Form Number</b>	<b>How Available</b>
XML Toolkit for z/OS User's Guide	SA22-7932	<a href="http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/IXMZA290/">http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/BOOKS/IXMZA290/</a>

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## 2.4 Program Source Materials

No program source materials or viewable program listings are provided for Toolkit.



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## 2.5 Publications Useful During Installation

The publications listed in Figure 3 on page 5 may be useful during the installation of Toolkit. 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>

<i>Figure 3. Publications Useful During Installation</i>	
<b>Publication Title</b>	<b>Form Number</b>
<i>SMP/E for z/OS Messages, Codes and Diagnosis</i>	GA22-7770
<i>SMP/E for z/OS Reference</i>	SA22-7772
<i>SMP/E for z/OS Commands</i>	SA22-7771
<i>SMP/E for z/OS User's Guide</i>	SA22-7773
<i>z/OS Information Roadmap</i>	SA22-7500
<i>z/OS UNIX System Services Planning</i>	GA22-7800
<i>z/OS UNIX System Services Command Reference</i>	SA22-7802



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## 3.0 Program Support

This section describes the IBM support available for Toolkit. The service number for Toolkit is 5655-I30.

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### 3.1 Program Services

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

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### 3.2 Preventive Service Planning

Before installing Toolkit, 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.

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 Toolkit as part of a CBPDO, there is HOLDDATA included on the CBPDO.

If the CBPDO for Toolkit 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 Toolkit are:

*Figure 4. PSP Upgrade and Subset ID*

UPGRADE	SUBSET	Description
XML	HXML1A0	XML Toolkit V1.10.0 for z/OS

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### 3.3 Statement of Support Procedures

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

Figure 5 identifies the component IDs (COMPID) for Toolkit.

*Figure 5. Component IDs*

<b>FMID</b>	<b>COMPID</b>	<b>Component Name</b>	<b>RETAIN Release</b>
HXML1A0	5655D4401	XML Parser, C++ Edition	1A0
HXML1A0	5655D4403	XSLT Processor, C++ Edition	1A0

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## 4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of Toolkit. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs incorporated into the program.

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### 4.1 Program Level Information

The following APAR fixes against previous releases of Toolkit have been incorporated into this release. They are listed by FMID.

#### 4.1.1 Toolkit V1.10.0 Program Level Information

- FMID HXML1A0
  - OA19506
  - OA19592
  - OA22957

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### 4.2 Service Level Information

No PTFs against this release of Toolkit have been incorporated into the product tape.

Over time it is HIGHLY recommended that you frequently check the Toolkit PSP bucket for HIPER and SPECIAL Attention PTFs against all FMID(s) which should be installed.



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## 5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating Toolkit. The following terminology is used:

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

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

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

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

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### 5.1 Driving System Requirements

This section describes the environment of the driving system required to install Toolkit.

#### 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 6. Driving System Software Requirements*

<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>
5694-A01	z/OS V1.8 or later

The user ID under which the SMP/E installation jobs run must meet the following requirements:

- It must be defined to use z/OS UNIX System Services (z/OS UNIX).
- It must be a superuser (UID=0) or have read access to the BPX.SUPERUSER resource in the RACF facility class.

z/OS UNIX must be available in full-function mode with the shell and utilities available.

If you still cannot install the product even when your user ID has met the previous requirements, then grant your user ID access to the BPX.FILEATTR.\* class to install the product.

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## 5.2 Target System Requirements

This section describes the environment of the target system required to install and use Toolkit.

### 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.

*Figure 7. Mandatory Installation Requisites for Toolkit V1.10.0*

Program Number	Product Name and Minimum VRM/Service Level
5694-A01	z/OS V1.8 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.

Toolkit has no conditional installation requisites.

**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 8. Mandatory Operational Requisites</i>	
<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>
5694-A01	z/OS V1.8 or later

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 9. Conditional Operational Requisites</i>		
<b>Program Number</b>	<b>Product Name and Minimum VRM/Service Level</b>	<b>Function</b>
5694-A01	z/OS V1.8 with PTF UA38682	Using z/OS specific parser classes for nonvalidating parse support
5694-A01	z/OS V1.9 with PTF UA38762	Using z/OS specific parser classes for nonvalidating parse support
5694-A01	z/OS V1.10.0 or later	Using z/OS specific parser classes for nonvalidating parse support and validating parse support, and source offsets support

**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.

The Toolkit has 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.

Toolkit V1.10.0 is not downward compatible with Toolkit V1.9.0 or earlier. Toolkit V1.9.0 remains orderable for users who are required to run on earlier releases.

## 5.2.3 DASD Storage Requirements

Toolkit libraries can reside on all supported DASD types.

Figure 10 lists the total space required for each type of library.

Figure 10. Total DASD Space Required by Toolkit

Library Type	Total Space Required in 3390 Trks
Target	5400
Distribution	9600
HFS or zFS	12000

**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.

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 22.

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.

- 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 LNKLST.
- It is not required for the data set to be APF-authorized.

The following table provides an estimate of the storage needed in the SMP/E data sets for Toolkit. The estimates must be added to those of any other programs and service being installed to determine the total additional storage requirements.

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 you existing SMPLTS into it and then change the SMPLTS DDDEF entry to indicate the new PDSE data set.

*Figure 11. Storage Requirements for SMP/E Data Sets*

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
SMPLTS	E	PDS	U	0	2	2
SMPMTS	E	PDS	FB	80	2	2
SMPPTS	E	PDS	FB	80	7648	2
SMPSCDS	E	PDS	FB	80	2	2
SMPSTS	E	PDS	FB	80	2	2

The following figures describe the target and distribution libraries and HFS or zFS paths required to install Toolkit. The storage requirements of Toolkit 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 12 (Page 1 of 2). Storage Requirements for Toolkit 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
SAMPLIB	Sample	TVOL2	E	PDS	FB	80	4	2
SIXMEXP	Data	TVOL2	S	PDS	FB	80	150	2

Figure 12 (Page 2 of 2). Storage Requirements for Toolkit 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
SIXMLOD1	LMOD	TVOL1	S	PDSE	U	0	5200	-

Figure 13. Toolkit HFS or zFS Paths

DDNAME	T Y P E	Path Name
SIXMHFS	X	/usr/lpp/ixm/IBM

Figure 14. Storage Requirements for Toolkit 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
AIXMEXP	S	PDS	FB	80	150	2
AIXMHFS	S	PDS	VB	256	4200	2
AIXMLOD1	S	PDSE	U	0	5200	-
ASAMPLIB	E	PDS	FB	80	4	2

## 5.3 FMIDs Deleted

Toolkit V1.10.0 (HXML1A0) does not delete an existing earlier version.

## 5.4 Special Considerations

The Toolkit product can be obtained in the following ways:

- Customized Offerings distribution
- Download from the Toolkit Web site at:

<http://www.ibm.com/zseries/software/xml/>

If you are installing from the Customized Offerings, continue with the installation process described in section 6.0, "Installation Instructions" on page 19. If you are installing from the Toolkit Web site, use the instructions available on the Web site and make sure to review section 6.1.1, "Considerations for Using the SMP/E Web Download for the Toolkit" on page 19.

Whether you are installing from the media or Web site, make sure to review section 6.1.8, "Create DDDEF Entries" on page 22.

Toolkit users that are running an XPLINK application can receive a performance enhancement by using the XPLINK versions of the XML Parser, C++ Edition, and XSLT Processor, C++ Edition that are new as of the Toolkit V1.8.0 release. The non-XPLINK versions are still provided.



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## 6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of Toolkit.

Please note the following:

- If you want to install Toolkit into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMP/CSI and the SMP/E control data sets.
- 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.
- After the installation of the Toolkit is completed, within the UNIX file system the owning userid of the Toolkit files and directories will be UID 0, and the owning group ID will be the GID of the installer.

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### 6.1 Installing Toolkit

#### 6.1.1 Considerations for Using the SMP/E Web Download for the Toolkit

The SMP/E Web download package for the Toolkit is packaged using the SMP/E GIMZIP function, which was introduced in SMP/E for z/OS V3.1. Although GIMZIP and GIMUNZIP are used for the packaging, the full SMP/E RECEIVE FROMNETWORK function is not available with this package. The SMP/E GIMUNZIP function is required to process the downloaded package. Refer to z/OS SMP/E Reference for information about using GIMZIP and GIMUNZIP. You need to ensure that you have met the driving system requirements as documented in 5.1.2, "Programming Requirements" on page 11.

You will need to perform the following tasks:

1. For a description of the GIMZIP and GIMUNZIP function, refer to the SMP/E Web page at:

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

Ensure that configuration requirements for using GIMUNZIP have been completed.

2. Allocate a R/W HFS or zFS directory on the z/OS system where the package will be staged. This is the repository for the download package.
3. Download the Toolkit package.

The package is available from the following Web site:

<http://www.ibm.com/servers/eserver/zseries/software/xml/>

The package consists of the following parts:

- xml1a0.README.txt

This file contains a sample job that performs the following tasks. It must be updated to reflect your environment.

- Executes the z/OS UNIX System Services pax command to extract the GIMZIP archives from the downloaded package.
- Executes the GIMUNZIP program to expand the GIMZIP archives and places their contents in data sets that can be processed by SMP/E.
- Executes the SMP/E RECEIVE from DASD function to receive the FMID.

- xml1a0.pax.Z

This pax archive file consists of the base function. The file contains the SMP/E MCS and the associated RELFILES. This must be downloaded to a node that has connectivity to the target z/OS system. Transfer the file to the host using binary format.

- HOLDDATA

This file, which is updated daily, contains the current enhanced HOLDDATA.

PTF service and PSP documentation are not included in the Web download. You must obtain them separately.

4. Run the sample job in xml1a0.README.txt

This job will perform the required tasks up to and including the SMP/E RECEIVE from DASD step.

5. Complete the installation using the instructions in this program directory, beginning with 6.1.6, “Allocate SMP/E Target and Distribution Libraries” on page 22.

## 6.1.2 SMP/E Considerations for Installing Toolkit

The SMP/E dialogs may be used to accomplish the SMP/E installation steps.

## 6.1.3 SMP/E Options Subentry Values

The recommended minimum values for some SMP/E CSI subentries are shown in Figure 15. An SMP/E UTILITY entry for the binder is required in the global zone. You can specify any of these program names in the UTILITY entry: IEWBLINK, HEWL, IEWL, LINKEDIT, or HEWLH096. The linkage editor, which uses the names HEWLKED, HEWLF064, IEWLF440, IEWLF880, and IEWLF128, cannot be used. 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.

Figure 15 (Page 1 of 2). SMP/E Options Subentry Values

SUB-ENTRY	Value	Comment
DSSPACE	800,500,100	



Figure 15 (Page 2 of 2). SMP/E Options Subentry Values

SUB-ENTRY	Value	Comment
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

## 6.1.4 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install Toolkit:

Figure 16. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
IXMAALLC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HXML1A0.F1
IXMAISMD	MKDIR	Sample job to invoke the supplied IXMAMKDR EXEC to allocate HFS or zFS paths	IBM.HXML1A0.F1
IXMADDDF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HXML1A0.F1
IXMAAPPY	APPLY	Sample APPLY job	IBM.HXML1A0.F1
IXMAACCP	ACCEPT	Sample ACCEPT job	IBM.HXML1A0.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 16 to find the appropriate relfile data set.

## 6.1.5 Perform SMP/E RECEIVE

This step loads SYSMOD information for FMID HXML1A0 from the program tape into the SMPPTS data set and the global zone, and places the associated data records into temporary SMPTLIB data sets for subsequent processing.

**Note:** If you obtained the Toolkit as part of a CBPDO, you can use the RCVPDO job found in the CBPDO RIMLIB data set to RECEIVE the Toolkit FMID HXML1A0, as well as information on each of the following (also included on the CBPDO tape):

1. service
2. HOLDATA
3. preventive service planning (PSP)

For more information, refer to the documentation included with the CBPDO.

## 6.1.6 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job IXMAALLC to allocate the SMP/E target and distribution libraries for Toolkit. You must copy the IXMAALLC job from the Toolkit V1.10.0 relfiles. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** The job is considered successful if return code zero is received.

## 6.1.7 Allocate HFS or zFS Paths

Before you run sample job IXMAISMD to create the paths in the file system, ensure that OMVS is active on the driving system and that the HFS or zFS file system of the target system is mounted to the driving system. If you install Toolkit into a zFS file system, zFS must be active on the driving system.

If you plan to install Toolkit into a new HFS or zFS file system, you must create the mountpoint and mount the new file system to the driving system. For Toolkit, the recommended mountpoint is `-PathPrefix-/usr/lpp/ixm/IBM`.

The IXMAISMD job invokes the IXMAMKDR exec to create the ixm directory under the `-PathPrefix-/usr/lpp/ixm/IBM` directory, where `-PathPrefix-` is the name of the high level directory. Before you run the IXMAISMD job, ensure that the `-PathPrefix-/usr/lpp/ixm/IBM` directory exists.

Edit and submit sample job IXMAISMD to allocate the HFS or zFS paths for the Toolkit. Consult the instructions in the sample job for more information.

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 or zFS at IPL time. This may be helpful if an IPL occurs before the installation is complete.

**Expected Return Codes and Messages:** The job is considered successful if return code zero is received.

## 6.1.8 Create DDDEF Entries

Edit and submit sample job IXMADDDF to create DDDEF entries for the SMP/E target and distribution libraries for the Toolkit.

SMP/E APPLY and ACCEPT processing for the Toolkit requires DDDEFs for the SAMPLIB and ASAMPLIB libraries because elements are installed in these libraries. These libraries and DDDEFs are created during z/OS installation. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** The job is considered successful if return code zero is received. Check the messages and ensure the DDDEFs were successfully created.

## 6.1.9 Perform SMP/E APPLY

Edit and submit sample job IXMAAPPY to perform an SMP/E APPLY CHECK for the Toolkit. You must copy IXMAAPPY from the Toolkit V1.10.0 relfiles. Run the APPLY CHECK to identify any requisite service and additional holds (for example, HOLDSYS(DOC,EC)) that might need to be resolved before APPLY processing. Resolve any holds and receive any requisite service identified by the APPLY CHECK before the next step. Consult the instructions in the sample job for more information.

Because the IXMAAPPY job references the Toolkit HFS path `/usr/lpp/ixm/IBM/`, you must run this job on a system that has z/OS UNIX in full-function mode (with the shell and utilities available) and has access to the file system that contains the path. Superuser status is required to preserve access permission bits. In addition, the user ID under which the job is run must be defined to use z/OS UNIX (in other words, must contain an OMVS segment).

**Note:** After the installation of the Toolkit is completed, within the UNIX file system the owning userid of the Toolkit files and directories will be UID 0, and the owning group id will be the GID of the installer.

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).

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

**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:** The job is considered successful if return code zero is received.

**Expected Return Codes and Messages from APPLY:** The job is considered successful if return code zero is received.

## 6.1.10 Archive Files for Toolkit

Upon successful completion of the SMP/E apply step, archive files are placed into the XML HFS or zFS path `/usr/lpp/ixm/IBM/`. The archive files for Toolkit V1.10.0 are IXMC570B and IXMCX21B.

## 6.1.11 Directories for Toolkit

The following table shows the directories that are created after a successful job for the Toolkit V1.10.0 parsers and XSLT processors:

Figure 17. Directory Paths for the Toolkit V1.10.0 Parsers and XSLT Processors

Component	Directory Path
XML Parser, C++ Edition	/usr/lpp/ixm/IBM/xml4c-5_7
XSLT Processor, C++ Edition	/usr/lpp/ixm/IBM/xslt4c-1_11

## 6.1.12 Verify Installation of Toolkit FMID HXML1A0

To verify that FMID HXML1A0 has installed correctly, run the following procedure:

1. Open the UNIX shell prompt.
2. Set up an environment variable to point to the location where the XML Parser, C++ Edition component was installed:

```
export XERCECROOT=/usr/lpp/ixm/IBM/xml4c-5_7
```

3. Type in the following command statements:

```
export LIBPATH=$XERCECROOT/lib:$LIBPATH
export PATH=$XERCECROOT/bin:$PATH
```

4. Run the DOMPrint application from the \$XERCECROOT/bin directory by typing the following command statement:

```
DOMPrint -v=always -wenc=IBM-1047-s390 -wfpp=on $XERCECROOT/samples/data/personal.xml
```

This sample application should then parse the `personal.xml` file, construct the DOM tree, and invoke `DOMWriter::writeNode()` to serialize the resultant DOM tree back to an XML stream.

If you see the following sample output from DOMPrint, the Toolkit FMID HXML1A0 was installed correctly:

```
<?xml version="1.0" encoding="IBM-1047-s390" standalone="no" ?>
<!DOCTYPE personnel SYSTEM "personal.dtd">
<!-- @version: -->
<personnel>

  <person id="Big.Boss">
    <name>
      <family>Boss</family>
      <given>Big</given>
    </name>
    <email>chief@foo.com</email>
    <link subordinates="one.worker two.worker three.worker four.worker fiv
e.worker"/>
  </person>

  <person id="one.worker">
    <name>
```

```

    <family>Worker</family>
    <given>One</given>
  </name>
  <email>one@foo.com</email>
  <link manager="Big.Boss"/>
</person>

<person id="two.worker">
  <name>
    <family>Worker</family>
    <given>Two</given>
  </name>
  <email>two@foo.com</email>
  <link manager="Big.Boss"/>
</person>

<person id="three.worker">
  <name>
    <family>Worker</family>
    <given>Three</given>
  </name>
  <email>three@foo.com</email>
  <link manager="Big.Boss"/>
</person>

<person id="four.worker">
  <name>
    <family>Worker</family>
    <given>Four</given>
  </name>
  <email>four@foo.com</email>
  <link manager="Big.Boss"/>
</person>

<person id="five.worker">
  <name>
    <family>Worker</family>
    <given>Five</given>
  </name>
  <email>five@foo.com</email>
  <link manager="Big.Boss"/>
</person>

</personnel>

```

### 6.1.13 Perform SMP/E ACCEPT

Edit and submit sample job IXMAACCP to perform an SMP/E ACCEPT CHECK for the Toolkit. The ACCEPT CHECK processing will identify any requisite service and additional holds (for example, HOLDSYS(DOC,EC)) that may need to be resolved before ACCEPT processing. Resolve any holds, and RECEIVE and APPLY any requisite service identified by ACCEPT CHECK before the next step. Consult the instructions in the sample job for more information.

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.

**Note:** The GROUPEXTEND operand indicates that SMP/E accept all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions. If you want SMP/E processing to exclude APARs and usermods, specify 'GROUPEXTEND(NOAPARS,NOUSERMODS)' with the ACCEPT command in the job.

**Expected Return Codes and Messages from ACCEPT CHECK:** The job is considered successful if return code zero is received.

**Expected Return Codes and Messages from ACCEPT:** The job is considered successful if return code zero is received.

If PTFs containing replacement modules are being accepted, SMP/E ACCEPT processing will linkedit and 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.

### 6.1.14 Cleaning Up Obsolete Data Sets, Paths, and DDDEFs

There are no obsolete data sets, paths, or DDDEFs to delete in the Toolkit.

---

## 6.2 Activating Toolkit

## 6.2.1 HFS or zFS Execution

If you choose to have the HFS or zFS in which you have installed Toolkit mounted in read-only mode during execution, then you have to perform more tasks before your file system is read-only. See the details and publication described in the following paragraphs.

The Toolkit consists of a set of interfaces and conforms to various specifications that are necessary for activation. The following two tables presents a quick summary of the major features found in the XML Toolkit for z/OS package. Symbols in the tables have the following meaning:

- "-": feature absent;
- "S": completely supported;
- "P": subset;
- "X": experimental;
- "N/A": not applicable.

*Figure 18. Interfaces and Specifications for the Toolkit Parsers*

<b>Interfaces and Specifications</b>	<b>C++ Edition Parser V1.10.0</b>
DOM 1.0	S
DOM 2.0	S
DOM 3.0	P, X
SAX 1.0	S
SAX 2.0	S
XML 1.0	S
XML 1.1	X
XML Namespaces 1.0	S
XML Namespaces 1.1	S
Schema	S

*Figure 19. Interfaces and Specifications for the Toolkit Processors*

<b>Interfaces and Specifications</b>	<b>C++ Edition Processor V1.10.0</b>
XSL Transformations	S
XPATH 1.0	S
XML 1.1	S
XML Namespaces 1.1	S

Sample applications have also been provided to demonstrate the features of the Toolkit. The procedures required to set up and configure these sample applications for z/OS and z/OS UNIX environments are described in the *XML Toolkit for z/OS User's Guide*.

## **6.2.2 Toolkit Activation Procedure Updates**

As of V1.10.0, manually updating the Unicode Services conversion environment is no longer necessary.



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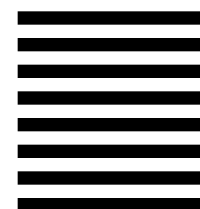
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