IBM

Program Directory for

XML Toolkit for z/OS V1.7.0

V1.7.0

Program Number 5655-J51

FMIDs HXML170, HXML160, HXML150

for Use with
z/OS and z/OS.e

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Contents

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1.0 Introduction

This Program Directory is intended for the system programmer responsible for program installation and maintenance. It contains information concerning the material and procedures associated with the installation of XML Toolkit for z/OS V1.7.0. This publication refers to XML Toolkit for z/OS V1.7.0 as Toolkit.

The program directory supports three levels of the Toolkit, the current level V1.7.0 (FMID HXML170) plus two previous levels V1.6.0 (FMID HXML160) and V1.5.0 (FMID HXML150). These three levels together are referred to as the Toolkit V1.7.0 package. The program directory supports three levels because the Toolkit is based on open source software from the Apache Software Foundation which does not provide for upward compatibility. The Toolkit V1.7.0 package is designed so that applications using Toolkit V1.6.0 or V1.5.0 may continue to run against those levels. So unless otherwise stated, the information contained within the program directory applies to all three levels of the Toolkit (V1.7.0, V1.6.0, and V1.5.0).

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. Your CBPDO contains a softcopy preventive service planning (PSP) upgrade for this product. 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 and the XML Parser, Java Edition. The XML Parser, Java Edition is an unmodified version of IBM's XML4J parser. The XML Parser, C++ Edition is a port of IBM's XML4C parser. The two parsers are tested and packaged for use on z/OS and OS/390. Both XML4C and XML4J are based on open source code from the Xerces Apache project of the Apache Software Foundation.

Note: XML Parser, Java Edition is not included in Toolkit V1.7.0. This is because the parser is provided with Java SDK 1.4 .

In addition to the parsers, the Toolkit includes the XSLT Processor, Java Edition (this processor is not supported in Toolkit V1.7.0). It also includes the XSLT Processor, C++ Edition (this processor is not supported in Toolkit V1.5.0.). The XSLT Processor, C++ Edition is a port of IBM's XSLT4C XSLT processor (formerly known as LotusXSL-C++); the XSLT Processor, Java Edition is an unmodified port of IBM's XSLT4J processor (formerly known as LotusXSL-Java). They are tested and packaged for use on z/OS and OS/390. Both are implementations of the W3C recommendations for XSL Transformations (XSLT) Version 1.0 and XML Path Language (XPath) Version 1.0. Both XSLT4C and XSLT4J are based on open source code from the Xalan Apache project of the Apache Software Foundation. They allow users to transform XML documents into other XML documents, HTML, or text, and run on multiple platforms.

Note: XSLT Processor, Java Edition is not included in Toolkit V1.7.0. This is because the processor is provided with Java SDK 1.4 .

The Toolkit is backed by OS/390 and z/OS world-class service and support.

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

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http://www.ibm.com/zseries/software/xml/
```

1.2 Toolkit FMIDs

Toolkit consists of the following FMIDs:

    HXML170
    HXML160
    HXML150

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.

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 (Page 1 of 2). Program File Content				
Name	**ORG**	**RECFM**	**LRECL**	**BLK SIZE**
SMPMCS	SEQ	FB	80	6400
IBM.HXML150.F1	PDS	FB	80	8800
IBM.HXML150.F2	PDS	FB	80	8800
IBM.HXML150.F3	PDS	VB	256	6144
IBM.HXML150.F4	PDS	FB	80	8800

Name	ORG	RECFM	LRECL	BLK SIZE
Figure 1 (Page 2 of 2). Program File Content				
IBM.HXML150.F5	PDS	U	0	6144
IBM.HXML160.F1	PDS	FB	80	8800
IBM.HXML160.F2	PDS	VB	256	6144
IBM.HXML160.F3	PDSE	U	0	6144
IBM.HXML170.F1	PDS	FB	80	8800
IBM.HXML170.F2	PDS	VB	128	6144
IBM.HXML170.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.

2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for Toolkit.

2.3 Program Publications

The following sections identify the basic and optional publications for Toolkit.

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 or licensed 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		
Publication Title	**Form Number**	**How Available**
XML Toolkit for z/OS User's Guide	SA22-7932	http://www.ibm.com/zseries/software/xml/
z/OS Support for Unicode: Using Conversion Services	SA22-7649	http://publibz.boulder.ibm.com/epubs/pdf/iea2un20.pdf

2.4 Program Source Materials

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

2.5 Publications Useful During Installation

The publications listed in Figure 3 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

Figure 3. Publications Useful During Installation	
Publication Title	**Form Number**
SMP/E for z/OS and OS/390 Messages, Codes and Diagnosis	GA22-7770
SMP/E for z/OS and OS/390 Reference	SA22-7772
SMP/E for z/OS and OS/390 Commands	SA22-7771
SMP/E for z/OS and OS/390 User's Guide	SA22-7773
z/OS Information Roadmap	SA22-7500
z/OS UNIX System Services Planning	GA22-7800
z/OS UNIX System Services Command Reference	SA22-7802

3.0 Program Support

This section describes the IBM support available for Toolkit.

3.1 Program Services

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

3.2 Preventive Service Planning

Before installing Toolkit, you should review the current Preventive Service Planning (PSP) information. If you obtained Toolkit as part of a CBPDO, there is HOLDDATA and PSP information 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 or use S/390 SoftwareXcel to obtain the current "PSP Bucket".

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	HXML170	XML Toolkit V1.7.0 for z/OS
XML	HXML160	XML Toolkit V1.6.0 for z/OS
XML	HXML150	XML Toolkit V1.5.0 for z/OS

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.

			RETAIN
Figure 5. Component IDs			
FMID	**COMPID**	**Component Name**	**Release**
HXML170	5655D4401	XML Parser, C++ Edition	170
HXML170	5655D4403	XSLT Processor, C++ Edition	170
HXML160	5655D4401	XML Parser, C++ Edition	160
HXML160	5655D4402	XML Parser, Java Edition	160
HXML160	5655D4403	XSLT Processor, C++ Edition	160
HXML160	5655D4404	XSLT Processor, Java Edition	160
HXML150	5655D4401	XML Parser, C++ Edition	150
HXML150	5655D4402	XML Parser, Java Edition	150
HXML150	5655D4404	XSLT Processor, Java Edition	150

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.

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 V1.7.0 Program Level Information

- FMID HXML170

OA05680	OA05570
OA05571	OA05313

4.1.2 Toolkit V1.6.0 Program Level Information

- FMID HXML160

OA03241
OA03895

4.1.3 Toolkit V1.5.0 Program Level Information

- FMID HXML150

OW56816

4.2 Service Level Information

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

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.

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 (Page 1 of 2). Driving System Software Requirements	
Program Number	**Product Name and Minimum VRM/Service Level**
Any **one** of the following:	
5647-A01	OS/390 Version 2 Release 10, with IBM SMP/E Version 3 Release 1 (5655-G44) and PTF UR53536 or IBM SMP/E Version 3 Release 2 (5655-G44)
5694-A01	z/OS Version 1 Release 1 or higher, with IBM SMP/E Version 3 Release 1 (5655-G44) and PTF UR53536 or IBM SMP/E Version 3 Release 2 (5655-G44)

Figure 6 (Page 2 of 2). Driving System Software Requirements	
Program Number	**Product Name and Minimum VRM/Service Level**
5655-G52	z/OS.e Version 1 Release 3 or higher, with IBM SMP/E Version 3 Release 1 (5655-G44) and PTF UR53536 or IBM SMP/E Version 3 Release 2 (5655-G44)

The user ID under which the SMP/E installation jobs execute must have the following characteristics:

- defined to use z/OS UNIX System Services (z/OS UNIX) or OS/390 UNIX System Services (OS/390 UNIX)

- a superuser (UID=0) or have read access to the BPX.SUPERUSER resource in the RACF facility class.

z/OS UNIX or OS/390 UNIX must be available in "full-function mode" with the shell and utilities available.

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 V1R7	
Program Number	**Product Name and Minimum VRM/Service Level**
Any **one** of the following:	
5694-A01	z/OS Version 1 Release 4 or higher
5655-G52	z/OS.e Version 1 Release 4 or higher

Figure 8. Mandatory Installation Requisites for Toolkit V1R6	
Program Number	**Product Name and Minimum VRM/Service Level**
Any **one** of the following:	
5694-A01	z/OS Version 1 Release 2 or higher
5655-G52	z/OS.e Version 1 Release 3 or higher

Figure 9. Mandatory Installation Requisites for Toolkit V1R5	
Program Number	**Product Name and Minimum VRM/Service Level**
Any **one** of the following:	
5694-A01	z/OS Version 1 Release 2 or higher
5655-G52	z/OS.e Version 1 Release 3 or higher

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.

Toolkit has no mandatory operational requisites.

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

Figure 10. Conditional Operational Requisites		
Program Number	**Product Name and Minimum VRM/Service Level**	**Function**
5688-197	z/OS Version 1 Release 3 Language Environment, with support for Non-XPLINK Standard C++ Library on z/OS with PTF for APAR PQ75251, or higher release, required for HXML160	XSLT Processor, C++ Edition
5655-I56	IBM SDK for z/OS Java2 Technology Edition, Version 1.4 with PTF UQ77468, or higher release required for HXML160 **OR**	XML Parser, Java Edition and XSLT Processor, Java Edition
5655-D35	IBM Developer Kit for OS/390, Java(TM) 2 Technology Edition Version 1 Release 1 with PTF UQ77055, or higher release required for HXML160	XML Parser, Java Edition and XSLT Processor, Java Edition
5655-I56	IBM SDK for z/OS Java2 Technology Edition, Version 1.4 with PTF UQ77468, or higher release required for HXML150 **OR**	XML Parser, Java Edition and XSLT Processor, Java Edition
5655-D35	IBM Developer Kit for OS/390, Java(TM) 2 Technology Edition Version 1 Release 1 with PTF UQ77055, or higher release required for HXML150	XML Parser, Java Edition and XSLT Processor, Java Edition

5.2.2.3 Toleration/Coexistence Requisites

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

The Toolkit has no toleration/coexistence requisites. Upwards compatibility for the Toolkit V1.5.0, V1.6.0, and V1.7.0 is provided by shipping the code for the Toolkit V1.5.0 and V1.6.0. In addition, V1.5.0, V1.6.0, and V1.7.0 can all coexist together within in the same SMP/E zones, target and distribution libraries, and in the same HFS file system.

5.2.2.4 Incompatibility (Negative) Requisites

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

Toolkit V1.7.0 is **NOT** upward compatible to Toolkit V1.1.0, Toolkit V1.2.0, Toolkit V1.3.0, or Toolkit V1.4.0.

Therefore, Toolkit V1.1.0, Toolkit V1.2.0, Toolkit V1.3.0, and Toolkit V1.4.0 users must either preserve their version of the Toolkit or migrate applications to use a newer version (V1.5.0, V1.6.0, or V1.7.0).

5.2.3 DASD Storage Requirements

Toolkit libraries can reside on all supported DASD types.

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

Figure 11. Total DASD Space Required by Toolkit	
Library Type	**Total Space Required**
Target	5511 3390 Trks
Distribution	14682 3390 Trks
HFS	21218 3390 Trks

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 6.1.7, "Allocate SMP/E Target and Distribution Libraries" on page 22.

3. Abbreviations used for the HFS 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 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 12 (Page 1 of 2). 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	23	2
SMPMTS	E	PDS	FB	80	2	2
SMPPTS	E	PDS	FB	80	6624	2

Figure 12 (Page 2 of 2). 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
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 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 13. 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	U	PDS	FB	80	87	2
SIXMLOD1	LMOD	TVOL1	U	PDSE	U	0	4600	-
SIXMMOD1	LMOD	TVOL1	U	PDS	U	0	824	2

Figure 14. Toolkit HFS Paths		
DDNAME	T Y P E	Path Name
SIXMHFS	X	/usr/lpp/ixm/IBM

Figure 15. Storage Requirements for Toolkit Distribution Libraries						
Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
AIXMEXP	U	PDS	FB	80	171	2
AIXMHFS	U	PDS	VB	256	9136	2
AIXMLOD1	U	PDSE	U	0	4575	-
AIXMMOD1	U	PDS	U	0	800	2
ASAMPLIB	E	PDS	FB	80	4	2

5.3 FMIDs Deleted

Toolkit V1.7.0 (HXML170) will not delete Toolkit V1.6.0 (HXML160) or Toolkit V1.5.0 (HXML150) if either was installed. Toolkit V1.6.0 (HXML160) will not delete Toolkit V1.5.0 (HXML150) if it was installed.

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 tape or Web site, make sure to review sections 6.1.7, "Allocate SMP/E Target and Distribution Libraries" on page 22 and 6.1.9, "Create DDDEF Entries" on page 22, which discuss how data set sizes are allocated for Toolkit V1.7.0, Toolkit V1.6.0., and Toolkit V1.5.0.

Toolkit V1.5.0 and later releases can receive performance enhancements through z/OS support for Unicode. These services are not mandatory for installation of the Toolkit but will be utilized if z/OS support for Unicode is configured correctly. For more information on configuring these services, see page 34.

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 SMPCSI 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.

- **As of V1.6.0, once the installation of the Toolkit is complete, 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.**

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 V3R1. 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 directory on the z/OS or OS/390 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/`

There are two parts of the package:

- xml170.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 or OS/390 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.

- xml170.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 or OS/390 system. Transfer the file to the host using binary format.

4. Run the sample job in xml170.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 6.1.7, "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 16. 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 16. SMP/E Options Subentry Values		
SUB-ENTRY	**Value**	**Comment**
DSSPACE	800,500,100	
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.4 SMP/E CALLLIBS Processing

The Toolkit uses the CALLLIBS function provided in SMP/E to resolve external references during installation. When the Toolkit is installed, ensure that the DDDEF entry exists for the libraries SCEELKED and CSSLIB.

Notes:

1. Toolkit V1R7 and Toolkit V1R6 do not use the CALLLIBS function.

2. The SCEELKED and CSSLIB DDDEFs are used only to resolve the link-edit for the Toolkit using CALLLIBS. These data sets are not updated during the installation of the Toolkit.

6.1.5 Sample Jobs

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

Figure 17. Sample Installation Jobs			
Job Name	**Job Type**	**Description**	**RELFILE**
IXMALLOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HXML170.F1
IXMISMKD	MKDIR	Sample job to invoke the supplied IXMMKDIR EXEC to allocate HFS paths	IBM.HXML170.F1
IXMDDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HXML170.F1
IXMAPPLY	APPLY	Sample APPLY job	IBM.HXML170.F1
IXMACCEP	ACCEPT	Sample ACCEPT job	IBM.HXML170.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 17 to find the appropriate relfile data set.

6.1.6 Perform SMP/E RECEIVE

This step loads SYSMOD information for FMID HXML170, HXML160, and HXML150 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 HXML170, 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.

6.1.7 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job IXMALLOC to allocate the SMP/E target and distribution libraries for the Toolkit. IXMALLOC must be run from the Toolkit V1.7.0 relfiles. Consult the instructions in the sample job for more information.

If you already have HXML150 or HXML160 installed, you still need to run IXMALLOC from the Toolkit V1.7.0 relfile. That will give you the larger data sets in order for you to copy Toolkit V1.5.0 or V1.6.0 data sets into the larger data sets allocated by the Toolkit V1.7.0 IXMALLOC job. After you have allocated the data sets to the correct size, the DDDEFs must reflect the new names, if you used new names of the data sets.

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

6.1.8 Allocate HFS Paths

The IXMISMKD job invokes IXMMKDIR exec to create the ixm directory under -PathPrefix-/usr/lpp where -PathPrefix- is the high level directory name. Insure the directory path -PathPrefix-/usr/lpp exists prior to running this job.

Edit and submit sample job IXMISMKD to allocate the HFS paths for the Toolkit. IXMISMKD must be run from the Toolkit V1.7.0 relfiles. Consult the instructions in the sample job for more information.

If you plan to create a new HFS 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.

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

6.1.9 Create DDDEF Entries

Edit and submit sample job IXMDDDEF to create DDDEF entries for the SMP/E target and distribution libraries for the Toolkit. IXMDDDEF must be run from the Toolkit V1.7.0 relfiles.

SMP/E APPLY and ACCEPT processing for the Toolkit requires DDDEFs for SAMPLIB and ASAMPLIB since elements will be installed in these libraries. These libraries and DDDEFs are created during z/OS or OS/390 installation. DDDEFs are also required for SCEELKED and CSSLIB for CALLLIBS processing. These DDDEFs are created during z/OS or OS/390 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.

6.1.10 Perform SMP/E APPLY

Notes:

1. If Toolkit V1.5.0 or V1.6.0 were not previously installed, and you want them installed, the SMP/E APPLY step must be performed for levels V1.5.0, V1.6.0, and V1.7.0, since they are shipped together. If Toolkit V1.5.0 or V1.6.0 were previously installed, or you do not want them installed, V1.5.0 (HXML150) or V1.6.0 (HXML160) should be removed from the APPLY job.

2. If Toolkit V1.6.0 is removed and subsequently reinstalled, the following PTFs will need to be reapplied:

   - PTF UA07114 for APARs OA05313, OA05570, OA05571

   - PTF UA07422 for APAR OA05680

   - PTF UA09310 for APAR OA06617

   If Toolkit V1.6.0 is being installed for the first time, the same PTFs will need to be applied.

3. If Toolkit V1.5.0 is removed and subsequently reinstalled, the following PTFs will need to be reapplied:

   - PTF UA09309 for APAR OA06617

   - PTF UA08772 for APAR OA06457

   - PTF UA07113 for APAR OA05313

   - PTF UA04099 for APARS OA03241 and OA03895

   If Toolkit V1.5.0 is being installed for the first time, the same PTFs will need to be applied.

Edit and submit sample job IXMAPPLY to perform an SMP/E APPLY CHECK for the Toolkit. IXMAPPLY must be run from Toolkit V1.7.0 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 this job references the Toolkit HFS path `/usr/lpp/ixm/IBM/` , it must run on a system that has z/OS UNIX or OS/390 UNIX in full-function mode (with the shell and utilities available) and have access to the file system containing the path. Superuser status is required to preserve access permission bits. In addition, the user ID under which the job executes must be defined to use z/OS UNIX or OS/390 UNIX (in other words, must contain an OMVS segment).

Note: As of V1.6.0, once the installation of the Toolkit is complete, 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.

Note: When APPLYing HXML170, HXML160 and HXML150 together, you will receive NOT SELs for parts that are in those levels. The part will be selected for HXML170 and not selected for any lower levels the part was in. This is expected and acceptable. A similar situation will occur when APPLYing service to these parts.

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: For FMIDs HXML170, HXML160 and HXML150, which use SMP/E CALLLIBS, you will receive warning messages IEW2454W when the load modules are link edited into the SMPLTS data set. For example:

```
IEW2454W SYMBOL xxxxxxxx UNRESOLVED. NO AUTOCALL(NCAL) SPECIFIED
```

These warning messages are expected and are acceptable.

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

6.1.11 Archive Files for Toolkit V1.7.0, V1.6.0, and V1.5.0

Upon successful completion of the SMP/E apply step, archive files are placed into the XML HFS path `/usr/lpp/ixm/IBM/`. For each release installed, reference the following table for the name of the archive files.

Figure 18. Archive Files Associated with each Toolkit Release

Toolkit Release	Archive File Names
Toolkit V1.7.0	IXMC540B, IXMCX17B
Toolkit V1.6.0	IXMC520B, IXMJ420B, IXMCX15B, IXMJX25B
Toolkit V1.5.0	IXMC500B, IXMJ410B, IXMJX24B

6.1.12 Directories for Toolkit V1.7.0, V1.6.0 and V1.5.0

The following tables show the directories that are created after a successful job, for each of the Toolkit parsers and XSLT processors:

Figure 19. Directory Paths for the Toolkit V1.7.0 Parsers and XSLT Processors	
Component	**Directory Path**
XML Parser, C++ Edition	/usr/lpp/ixm/IBM/xml4c-5_4
XSLT Processor, C++ Edition	/usr/lpp/ixm/IBM/xslt4c-1_7

Figure 20. Directory Paths for the Toolkit V1.6.0 Parsers and XSLT Processors	
Component	**Directory Path**
XML Parser, C++ Edition	/usr/lpp/ixm/IBM/xml4c-5_2
XML Parser, Java Edition	/usr/lpp/ixm/IBM/xml4j-4_2
XSLT Processor, C++ Edition	/usr/lpp/ixm/IBM/xslt4c-1_5
XSLT Processor, Java Edition	/usr/lpp/ixm/IBM/xslt4j-2_5

Figure 21. Directory Paths for the Toolkit V1.5.0 Parsers and XSLT Processors	
Component	**Directory Path**
XML Parser, C++ Edition	/usr/lpp/ixm/IBM/xml4c-5_0
XML Parser, Java Edition	/usr/lpp/ixm/IBM/xml4j-4_1
XSLT Processor, Java Edition	/usr/lpp/ixm/IBM/LotusXSL-J_2_4

6.1.13 Verify Installation of Toolkit FMID HXML170

To verify that FMID HXML170 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 XERCESCROOT=/usr/lpp/ixm/IBM/xml4c-5_4
   ```

3. Type in the following command statements:

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

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

   ```
   DOMPrint -v=always -wenc=IBM-1047-s390 -wfpp=on $XERCESCROOT/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 HXML170 was installed correctly:

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

<?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 five.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>
```

6.1.14 Verify Installation of Toolkit FMID HXML160

To verify that FMID HXML160 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 XERCESCROOT=/usr/lpp/ixm/IBM/xml4c-5_2
   ```

3. Type in the following command statements:

   ```
   export LIBPATH=$XERCESCROOT/lib:$LIBPATH
   export ICU_DATA=$XERCESCROOT/lib
   export PATH=$XERCESCROOT/bin:$PATH
   ```

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

   ```
   DOMPrint -v=always -wenc=IBM-1047-s390 -wfpp=on $XERCESCROOT/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 HXML160 was installed correctly:

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

<?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 five.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>
```

6.1.15 Verify Installation of Toolkit FMID HXML150

To verify that FMID HXML150 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 XERCESCROOT=/usr/lpp/ixm/IBM/xml4c-5_0
   ```

3. Type in the following command statements:

   ```
   export LIBPATH=$XERCESCROOT/lib:$LIBPATH
   export ICU_DATA=$XERCESCROOT/lib
   export PATH=$XERCESCROOT/bin:$PATH
   ```

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

   ```
   DOMPrint -v=always -wenc=IBM-1047-s390 -wfpp=on $XERCESCROOT/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 HXML150 was installed correctly:

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

<?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 five.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>
```

6.1.16 Perform SMP/E ACCEPT

Note: If Toolkit V1.5.0 or V1.6.0 were not previously installed, and you want them installed, the SMP/E ACCEPT step must be performed for levels V1.5.0, V1.6.0 and V1.7.0, since they are shipped together. If Toolkit V1.5.0 or V1.6.0 were previously installed, or you do not want them installed, V1.5.0 (HXML150) or V1.6.0 (HXML160) should be removed from the ACCEPT job.

Edit and submit sample job IXMACCEP to perform an SMP/E ACCEPT CHECK for the Toolkit. IXMACCEP must be run from the Toolkit V1.7.0 relfiles. 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.

Note: When ACCEPTing HXML170, HXML160 and HXML150 together, you will receive NOT SELs for parts that are in those levels. The part will be selected for HXML170 and not selected for any lower levels the part was in. This is expected and acceptable. A similar situation will occur when ACCEPTing service to these parts.

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.

6.1.17 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

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 V1.7.0 package. Symbols in the tables have the following meaning:

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

Figure 22. Interfaces and Specifications for the Toolkit Parsers						
Interfaces and Specifications	**C++ Edition parser**			**Java Edition parser**		
	V1.7.0	**V1.6.0**	**V1.5.0**	**V1.7.0**	**V1.6.0**	**V1.5.0**
DOM 1.0	S	S	S	N/A	S	S
DOM 2.0	S	S	S	N/A	S	S
DOM 3.0	P, X	P, X	P, X	N/A	P, X	P, X
SAX 1.0	S	S	S	N/A	S	S
SAX 2.0	S	S	S	N/A	S	S
XML 1.0	S	S	S	N/A	S	S
XML 1.1	X	P, X	-	N/A	P, X	-
XML Namespaces 1.0	S	S	S	N/A	S	S
XML Namespaces 1.1	X	-	-	N/A	P, X	-
Schema	S	S	S	N/A	S	S
JAXP 1.0	-	-	-	N/A	S	S
JAXP 1.1	-	-	-	N/A	S	S
JAXP 1.2	-	-	-	N/A	S	S

Figure 23. Interfaces and Specifications for the Toolkit XSLT Processors						
Interfaces and Specifications	C++ Edition processor			Java Edition processor		
	V1.7.0	V1.6.0	V1.5.0	V1.7.0	V1.6.0	V1.5.0
XSL Transformations	S	S	N/A	N/A	S	S
XPATH 1.0	S	S	N/A	N/A	S	S
TRaX	-	-	N/A	N/A	S	S
XSLTC	N/A	N/A	N/A	N/A	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, OS/390, z/OS UNIX and OS/390 UNIX environments are described in the *XML Toolkit for z/OS User's Guide*.

6.2.1 Toolkit Activation Procedure Updates

This section provides a brief summary of the changes and updates to the Toolkit activation procedures for releases V1.7.0, V1.6.0, V1.5.0. Note that the changes are effective in the release they were implemented, as well as all subsequent releases. However, these changes are not effective for releases prior to the changed release. For example, changes implemented in V1.6.0 **DO NOT** apply to V1.5.0, but are applicable to V1.7.0. The following is a list of activation changes for each release of the Toolkit. For detailed descriptions of the activation procedures, see the *XML Toolkit for z/OS User's Guide*.

- V1.7.0

  - This release runs only on z/OS V1.4.0 or higher.

  - The `ICU_DATA` environment variable is no longer needed when running XML Parser, C++ Edition or XSLT Processor, C++ Edition.

  - There no support in this release for XML Parser, Java Edition and XSLT Processor, Java Edition.

- V1.6.0

  - This release runs only on z/OS V1.2.0 or higher.

  - The XML Parser, C++ Edition now supports access to DTDs or schemas on a remote system via `http://` protocols. To enable this support, you must be able to make URL connections through your proxy server (make sure you do not have strict firewall settings which prevent URL connections).

  - The XML Parser, C++ Edition is now built with C++ Namespace support enabled. Therefore, your applications that link with the distributed binary packages must namespace qualify all the XML4C classes/data/variables with `xercesc::` or add the `using namespace xercesc` clause. For more information on utilizing C++ Namespace Support, see the Programming Guide section of the html documentation that comes with the Toolkit package.

  - The XSLT Processor, C++ Edition is now built with C++ Namespace support enabled. Therefore, your applications that link with the distributed binary packages must namespace qualify all the XSLT4C classes/data/variables with `xalanc::` or add the `using namespace xalanc` clause. For

more information on utilizing C++ Namespace Support, see the Programming Guide section of the html documentation that comes with the Toolkit package.

- The V1.6.0 XML4J Parser's xmlParserAPIs.jar file, even though it still exists, has been deprecated. It is replaced by the xml-apis.jar file. Eventually, xmlParserAPIs will be removed in a future release, so you should start using xml-apis.jar instead.

- Load modules now use PDSEs instead of PDSs; the JCLIN is removed as a result.

- Once the Toolkit installation is complete, 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.

- V1.5.0

  - This release runs only on z/OS V1.2.0 or higher.

  - Unicode Services activation instructions provided for XML Parser, C++ Edition.

  - Export statement changed in build instructions for XML Parser, C++ Edition z/OS UNIX and OS/390 UNIX environments.

6.2.2 z/OS Support for Unicode

Toolkits V1.7.0, V1.6.0, and V1.5.0 can receive performance enhancements through z/OS support for Unicode. These services are not mandatory for installation of the Toolkit but will be utilized if z/OS support for Unicode is configured correctly. You will need to read and understand the instructions from *z/OS Support for Unicode: Using Conversion Services*, SA22-7649, available for download at:

`http://publibz.boulder.ibm.com/epubs/pdf/iea2un20.pdf`

If you are not currently using z/OS Support for Unicode, install the component as described in *z/OS Support for Unicode: Using Conversion Services*. When you get to chapter 3, "Creating the conversion environment", use the sample job provided with the XML Toolkit to create the conversion environment. Then follow the directions to activate the conversion environment. The Toolkit will now be able to take advantage of the services.

If you are currently using z/OS support for Unicode, you may have to make changes to your existing conversion environment. You will need to:

1. Locate the job you used to create your existing conversion environment.

2. Compare your existing job to the sample job provided with the Toolkit

3. Add any new control statements which do not exist in your current job.

4. If the the ccsid parameters are the same on any entry, but the techniques are different, then you must add the control statement with the different technique.

5. Create the new conversion environment.

6. Refer to chapter 4, "Changing the conversion environment" for instructions on how to activate the new conversion environment.

The following sample job is provided with the Toolkit to create the conversion environment.

```
//IMGJOB JOB <job parameters>
//********************************************************************
//*    Licensed Materials - Property of IBM                         *
//*    5655-J51                                                      *
//*    (C) Copyright IBM Corp. 2000, 2004                           *
//*                                                                  *
//*                                                                  *
//* This is a sample job which illustrates how to configure z/OS    *
//* Unicode Services for use with the XML Parser, C++ edition. If you *
//* already are using Unicode Services with other applications, then *
//* merge these entries with your existing configuration.           *
//*                                                                  *
//* See "z/OS Support for Unicode: Using Conversion Services" for   *
//* information on how to configure Unicode Services. You will need  *
//* to change the TABIN and SYSIMG DD statements for your own       *
//* installation.                                                    *
//*                                                                  *
//* It is important that the "technique-search-order" parameters    *
//* be defined as shown in this job or the XML Parser will not      *
//* operate correctly.                                              *
//*                                                                  *
/*********************************************************************
//CUNMIUTL EXEC PGM=CUNMIUTL
//SYSPRINT DD    SYSOUT=*
//TABIN    DD    DISP=SHR,DSN=SYS1.UNC.SCUNTBL
//SYSIMG   DD    DSN=SYS1.PARMLIB(CUNIMG01),DISP=SHR
//SYSIN    DD    *
    CASE NORMAL;                /* ENABLE TOUPPER AND TOLOWER */
    CONVERSION 37,1200;
    CONVERSION 1200,37;
    CONVERSION 37,1200,L; /* THIS SWAPS NL AND LF */
    CONVERSION 1200,37,L; /* THIS SWAPS NL AND LF */
    CONVERSION 273,1200;
    CONVERSION 1200,273;
    CONVERSION 277,1200;
    CONVERSION 1200,277;
    CONVERSION 278,1200;
    CONVERSION 1200,278;
    CONVERSION 280,1200;
    CONVERSION 1200,280;
    CONVERSION 284,1200;
    CONVERSION 1200,284;
    CONVERSION 285,1200;
    CONVERSION 1200,285;
    CONVERSION 297,1200;
    CONVERSION 1200,297;
    CONVERSION 367,1200;
```

```
CONVERSION 1200,367;
CONVERSION 420,1200;
CONVERSION 1200,420;
CONVERSION 424,1200;
CONVERSION 1200,424;
CONVERSION 437,1200;
CONVERSION 1200,437;
CONVERSION 500,1200;
CONVERSION 1200,500;
CONVERSION 806,1200;
CONVERSION 1200,806;
CONVERSION 808,1200;
CONVERSION 1200,808;
CONVERSION 813,1200;
CONVERSION 1200,813;
CONVERSION 819,1200;
CONVERSION 1200,819;
CONVERSION 848,1200;
CONVERSION 1200,848;
CONVERSION 849,1200;
CONVERSION 1200,849;
CONVERSION 850,1200;
CONVERSION 1200,850;
CONVERSION 851,1200;
CONVERSION 1200,851;
CONVERSION 852,1200;
CONVERSION 1200,852;
CONVERSION 855,1200;
CONVERSION 1200,855;
CONVERSION 856,1200;
CONVERSION 1200,856;
CONVERSION 857,1200;
CONVERSION 1200,857;
CONVERSION 858,1200;
CONVERSION 1200,858;
CONVERSION 859,1200;
CONVERSION 1200,859;
CONVERSION 860,1200;
CONVERSION 1200,860;
CONVERSION 861,1200;
CONVERSION 1200,861;
CONVERSION 862,1200;
CONVERSION 1200,862;
CONVERSION 863,1200;
CONVERSION 1200,863;
CONVERSION 864,1200;
CONVERSION 1200,864;
CONVERSION 865,1200;
CONVERSION 1200,865;
```

```
CONVERSION 866,1200;
CONVERSION 1200,866;
CONVERSION 867,1200;
CONVERSION 1200,867;
CONVERSION 868,1200;
CONVERSION 1200,868;
CONVERSION 869,1200;
CONVERSION 1200,869;
CONVERSION 870,1200;
CONVERSION 1200,870;
CONVERSION 871,1200;
CONVERSION 1200,871;
CONVERSION 872,1200;
CONVERSION 1200,872;
CONVERSION 874,1200;
CONVERSION 1200,874;
CONVERSION 875,1200;
CONVERSION 1200,875;
CONVERSION 878,1200;
CONVERSION 1200,878;
CONVERSION 901,1200;
CONVERSION 1200,901;
CONVERSION 902,1200;
CONVERSION 1200,902;
CONVERSION 912,1200;
CONVERSION 1200,912;
CONVERSION 913,1200;
CONVERSION 1200,913;
CONVERSION 914,1200;
CONVERSION 1200,914;
CONVERSION 915,1200;
CONVERSION 1200,915;
CONVERSION 916,1200;
CONVERSION 1200,916;
CONVERSION 918,1200;
CONVERSION 1200,918;
CONVERSION 920,1200;
CONVERSION 1200,920;
CONVERSION 921,1200;
CONVERSION 1200,921;
CONVERSION 922,1200;
CONVERSION 1200,922;
CONVERSION 923,1200;
CONVERSION 1200,923;
CONVERSION 933,1200;
CONVERSION 1200,933;
CONVERSION 935,1200;
CONVERSION 1200,935;
CONVERSION 937,1200;
```

```
CONVERSION 1200,937;
CONVERSION 939,1200;
CONVERSION 1200,939;
CONVERSION 942,1200;
CONVERSION 1200,942;
CONVERSION 943,1200;
CONVERSION 1200,943;
CONVERSION 949,1200;
CONVERSION 1200,949;
CONVERSION 950,1200;
CONVERSION 1200,950;
CONVERSION 970,1200;
CONVERSION 1200,970;
CONVERSION 1006,1200;
CONVERSION 1200,1006;
CONVERSION 1025,1200;
CONVERSION 1200,1025;
CONVERSION 1047,1200;
CONVERSION 1200,1047;
CONVERSION 1047,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1047,L; /* THIS SWAPS NL AND LF */
CONVERSION 1051,1200;
CONVERSION 1200,1051;
CONVERSION 1089,1200;
CONVERSION 1200,1089;
CONVERSION 1097,1200;
CONVERSION 1200,1097;
CONVERSION 1098,1200;
CONVERSION 1200,1098;
CONVERSION 1112,1200;
CONVERSION 1200,1112;
CONVERSION 1122,1200;
CONVERSION 1200,1122;
CONVERSION 1123,1200;
CONVERSION 1200,1123;
CONVERSION 1124,1200;
CONVERSION 1200,1124;
CONVERSION 1125,1200;
CONVERSION 1200,1125;
CONVERSION 1129,1200;
CONVERSION 1200,1129;
CONVERSION 1130,1200;
CONVERSION 1200,1130;
CONVERSION 1131,1200;
CONVERSION 1200,1131;
CONVERSION 1132,1200;
CONVERSION 1200,1132;
CONVERSION 1133,1200;
CONVERSION 1200,1133;
```

```
CONVERSION 1137,1200;
CONVERSION 1200,1137;
CONVERSION 1140,1200;
CONVERSION 1200,1140;
CONVERSION 1140,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1140,L; /* THIS SWAPS NL AND LF */
CONVERSION 1141,1200;
CONVERSION 1200,1141;
CONVERSION 1142,1200;
CONVERSION 1200,1142;
CONVERSION 1142,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1142,L; /* THIS SWAPS NL AND LF */
CONVERSION 1143,1200;
CONVERSION 1200,1143;
CONVERSION 1143,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1143,L; /* THIS SWAPS NL AND LF */
CONVERSION 1144,1200;
CONVERSION 1200,1144;
CONVERSION 1144,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1144,L; /* THIS SWAPS NL AND LF */
CONVERSION 1145,1200;
CONVERSION 1200,1145;
CONVERSION 1145,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1145,L; /* THIS SWAPS NL AND LF */
CONVERSION 1146,1200;
CONVERSION 1200,1146;
CONVERSION 1146,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1146,L; /* THIS SWAPS NL AND LF */
CONVERSION 1147,1200;
CONVERSION 1200,1147;
CONVERSION 1147,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1147,L; /* THIS SWAPS NL AND LF */
CONVERSION 1148,1200;
CONVERSION 1200,1148;
CONVERSION 1148,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1148,L; /* THIS SWAPS NL AND LF */
CONVERSION 1149,1200;
CONVERSION 1200,1149;
CONVERSION 1149,1200,L; /* THIS SWAPS NL AND LF */
CONVERSION 1200,1149,L; /* THIS SWAPS NL AND LF */
CONVERSION 1153,1200;
CONVERSION 1200,1153;
CONVERSION 1154,1200;
CONVERSION 1200,1154;
CONVERSION 1156,1200;
CONVERSION 1200,1156;
CONVERSION 1157,1200;
CONVERSION 1200,1157;
CONVERSION 1158,1200;
```

```
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CONVERSION 1159,1200;
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CONVERSION 1160,1200;
CONVERSION 1200,1160;
CONVERSION 1164,1200;
CONVERSION 1200,1164;
CONVERSION 1208,1200;
CONVERSION 1200,1208;
CONVERSION 1250,1200;
CONVERSION 1200,1250;
CONVERSION 1251,1200;
CONVERSION 1200,1251;
CONVERSION 1252,1200;
CONVERSION 1200,1252;
CONVERSION 1253,1200;
CONVERSION 1200,1253;
CONVERSION 1254,1200;
CONVERSION 1200,1254;
CONVERSION 1255,1200;
CONVERSION 1200,1255;
CONVERSION 1256,1200;
CONVERSION 1200,1256;
CONVERSION 1257,1200;
CONVERSION 1200,1257;
CONVERSION 1258,1200;
CONVERSION 1200,1258;
CONVERSION 1275,1200;
CONVERSION 1200,1275;
CONVERSION 1276,1200;
CONVERSION 1200,1276;
CONVERSION 1277,1200;
CONVERSION 1200,1277;
CONVERSION 1280,1200;
CONVERSION 1200,1280;
CONVERSION 1281,1200;
CONVERSION 1200,1281;
CONVERSION 1282,1200;
CONVERSION 1200,1282;
CONVERSION 1283,1200;
CONVERSION 1200,1283;
CONVERSION 1363,1200;
CONVERSION 1200,1363;
CONVERSION 1364,1200;
CONVERSION 1200,1364;
CONVERSION 1370,1200;
CONVERSION 1200,1370;
CONVERSION 1371,1200;
CONVERSION 1200,1371;
```

```
CONVERSION 1381,1200;
CONVERSION 1200,1381;
CONVERSION 1383,1200;
CONVERSION 1200,1383;
CONVERSION 1386,1200;
CONVERSION 1200,1386;
CONVERSION 1388,1200;
CONVERSION 1200,1388;
CONVERSION 1399,1200;
CONVERSION 1200,1399;
CONVERSION 4909,1200;
CONVERSION 1200,4909;
CONVERSION 4971,1200;
CONVERSION 1200,4971;
CONVERSION 5104,1200;
CONVERSION 1200,5104;
CONVERSION 5123,1200;
CONVERSION 1200,5123;
CONVERSION 5346,1200;
CONVERSION 1200,5346;
CONVERSION 5347,1200;
CONVERSION 1200,5347;
CONVERSION 5348,1200;
CONVERSION 1200,5348;
CONVERSION 5349,1200;
CONVERSION 1200,5349;
CONVERSION 5350,1200;
CONVERSION 1200,5350;
CONVERSION 5351,1200;
CONVERSION 1200,5351;
CONVERSION 5352,1200;
CONVERSION 1200,5352;
CONVERSION 5353,1200;
CONVERSION 1200,5353;
CONVERSION 5354,1200;
CONVERSION 1200,5354;
CONVERSION 9030,1200;
CONVERSION 1200,9030;
CONVERSION 9044,1200;
CONVERSION 1200,9044;
CONVERSION 9049,1200;
CONVERSION 1200,9049;
CONVERSION 9061,1200;
CONVERSION 1200,9061;
CONVERSION 9066,1200;
CONVERSION 1200,9066;
CONVERSION 9238,1200;
CONVERSION 1200,9238;
CONVERSION 12712,1200;
```

```
      CONVERSION 1200,12712;
      CONVERSION 16804,1200;
      CONVERSION 1200,16804;
      CONVERSION 17248,1200;
      CONVERSION 1200,17248;
      CONVERSION 33722,1200;
      CONVERSION 1200,33722;
/*
```

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

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

How did you order this product?

___   CBPDO
___   CustomPac
___   ServerPac
___   Independent
___   Web Download
___   Other

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

___   Yes
___   No

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

___ Yes

___ No

If yes, how many years? __

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

_____

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