Program Directory for

IBM Enterprise COBOL for z/OS

V04.01.00

Program Number 5655-S71

FMIDs HADB400, JADB401, JADB402, JADB40H

for Use with
z/OS

Document Date: December 2007

GI11-7870-00

Note!

Before using this information and the product it supports, be sure to read the general information under 7.0, “Notices” on page 25.

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

Contents

Figures

1.0 Introduction

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

The Program Directory contains the following sections:

- 2.0, “Program Materials” on page 4 identifies the basic and optional program materials and documentation for Enterprise COBOL.
- 3.0, “Program Support” on page 7 describes the IBM support available for Enterprise COBOL.
- 4.0, “Program and Service Level Information” on page 9 lists the APARs (program level) and PTFs (service level) incorporated into Enterprise COBOL.
- 5.0, “Installation Requirements and Considerations” on page 10 identifies the resources and considerations required for installing and using Enterprise COBOL.
- 6.0, “Installation Instructions” on page 17 provides detailed installation instructions for Enterprise COBOL. It also describes the procedures for activating the functions of Enterprise COBOL, or refers to appropriate publications.

Before installing Enterprise COBOL, 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.

Enterprise COBOL 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 Enterprise COBOL are included on the CBPDO tape.

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

1.1 Enterprise COBOL Description

With IBM Enterprise COBOL for z/OS, V4.1, you can leverage more than 30 years of IBM experience in application development to facilitate your new e-business endeavors, helping you to integrate COBOL and Web-based business processes in Web services, XML, Java, and COBOL applications. This interoperability enables you to capitalize on existing IT investment while smoothly incorporating new, Web-based applications as part of your organizations infrastructure.

Enterprise COBOL is a leading-edge IBM z/OS-based compiler that helps you create and maintain mission-critical, line-of-business COBOL applications targeted to execute on your z/OS systems and provides access to IBM DB2, IBM CICS, and IBM IMS systems, as well as other data and transaction systems.

Enterprise COBOL V4.1 Compiler Enhancements:

The XML GENERATE statement has been extended with new syntax that gives the programmer more flexibility and control over the form of the XML document that is generated.

- WITH ATTRIBUTES phrase, eligible items in the XML document are generated as XML attributes instead of elements
- WITH ENCODING phrase, which allows the user to specify the encoding of the generated document
- NAMESPACE and NAMESPACE-PREFIX phrases, which allows generation of XML documents that use XML namespaces
- WITH XML-DECLARATION, which includes the version and the encoding information in the document

The XML GENERATE statement now supports generation of XML documents encoded in UTF-8 Unicode.

The XML PARSE support has been enhanced.

- The z/OS System Services XML parser is now supported as an alternative to the existing XML parser that is part of the COBOL library
- The z/OS Sysem Services XML parser provides the following benefits:
  - the latest IBM parsing technology is available to COBOL users
  - offload of COBOL XML parsing to zAAP specialty processors
  - improved support for parsing XML documents that use XML namespaces
  - direct support is provided for parsing XML documents that are encoded in UTF-8 Unicode
  - support for parsing very large XML documents, a buffer of XML at a time
- Four new special registers are introduced for namespace processing during execution of XML PARSE statements
- The XML PARSE statement has been extended with new syntax WITH ENCODING and RETURNING NATIONAL that gives the programmer control over the assumed encoding of input XML documents, to facilitate parsing in Unicode
- A new compiler option, XMLPARSE, has been created to control whether the z/OS System Services parser of the existing COBOL parser is used for XML PARSE statements. With the XMLPARSE(COMPAT) option XML parsing is fully compatible with Enterprise COBOL Version 3. With the XMLPARSE(XMLSS) options, the z/OS System Services parser is used and new XML parsing capabilities are enabled.

Performance of COBOL application programs has been enhanced by exploitation of new z/Architecture instructions. The performance of COBOL Unicode support (USAGE NATIONAL data) has been significantly improved.

DB2 support has been enhanced in this release, including DB2 V9 exploitation and improvements in coprocessor integration and usability:

- Support for new SQL data types and new SQL syntax provided by DB2 V9
- DB2 options are shown in the compiler listing (DB2 V9 only)
- SQLCA and SQLDA control blocks are expanded in the compiler listing (all DB2 releases)
- A new compiler option SQLCCSID is provided to coordinate the coded character set id (CCSID) between COBOL and DB2

Additional function is also included in COBOL V4.1:

- Compiler options can now be specified in a data set
- When the XREF compiler option is used, the compiler listing includes cross references of COPY statements, libraries, and data sets
- Debug Tool V8 is supported
- A new suboption of the TEST compiler option enables support for the Debug Tool GOTO and JUMPTO commands when debugging optimized production programs
- DFSMS large-format data sets are now supported
- Internal compiler limits have been increase to that compilation of very large and complex COBOL source programs is now available

1.2 Enterprise COBOL FMIDs

Enterprise COBOL consists of the following FMIDs:

HADB400
JADB401
JADB402
JADB40H

2.0 Program Materials

An IBM program is identified by a program number and feature numbers. The program number for Enterprise COBOL is 5655-S71 and the feature numbers are 5802 and 5812.

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

Figure 1 describes the program file content for Enterprise COBOL. You can refer to the *CBPDO Memo To Users Extension* to see where the files reside on the tape.

Notes:

1. The data set attributes in this 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. If any RELFILEs are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

Figure 1. Program File Content

Name	ORG	RECFM	LRECL	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.HADB400.F1	PDS	FB	80	8800
IBM.HADB400.F2	PDS	U	0	6144
IBM.JADB401.F1	PDS	FB	80	8800
IBM.JADB401.F2	PDS	U	0	6144
IBM.JADB402.F1	PDS	FB	80	8800
IBM.JADB402.F2	PDS	U	0	6144
IBM.JADB40H.F1	PDS	VB	255	27998

2.1 Optional Machine-Readable Material

No optional machine-readable materials are provided for Enterprise COBOL.

2.2 Program Publications

The following sections identify the basic and optional publications for Enterprise COBOL.

2.2.1 Basic Program Publications

Figure 2 identifies the basic unlicensed program publications for Enterprise COBOL. One copy of each of these publications is included when you order the basic materials for Enterprise COBOL. For additional copies, contact your IBM representative.

Figure 2. Basic Material: Unlicensed Publications

Publication Title	Form Number
Enterprise COBOL Licensed Program Specifications	GI11-7871

2.2.2 Optional Program Publications

Figure 3 identifies optional licensed program publications for Enterprise COBOL. These publications are available free of charge in displayable softcopy format (BookManager and PDF) from the Enterprise COBOL Web site at http://www.ibm.com/software/awdtools/cobol/

Figure 3. Optional Material: Licensed Publications

Publication Title	Form Number
Enterprise COBOL Customization Guide	SC23-8526
Enterprise COBOL Language Reference	SC23-8528
Enterprise COBOL Migration Guide	GC23-8527
Enterprise COBOL Programming Guide	SC23-8529

2.3 Program Source Materials

No program source materials or viewable program listings are provided for Enterprise COBOL.

2.4 Publications Useful During Installation

The publications listed in Figure 4 may be useful during the installation of Enterprise COBOL. 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 4. Publications Useful During Installation

Publication Title	Form Number
IBM SMP/E for z/OS User's Guide	SA22-7773
IBM SMP/E for z/OS Commands	SA22-7771
IBM SMP/E for z/OS Reference	SA22-7772
IBM SMP/E for z/OS Messages, Codes, and Diagnosis	GA22-7770
z/OS UNIX System Services Planning	GA22-7800
z/OS UNIX System Services Messages and Codes	SA22-7807
z/OS Support for Unicode: Using Conversion Services	SA22-7649

3.0 Program Support

This section describes the IBM support available for Enterprise COBOL.

3.1 Program Services

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

3.2 Preventive Service Planning

Before installing Enterprise COBOL, it is VERY IMPORTANT that you review the current Preventive Service Planning (PSP) information. The PSP buckets maintain current lists (which have been identified since the package was created) of any recommended or required service for this package's installation. This includes software PSP information that contains HIPER, and/or required PTFs against the base release.

While there can be overlap between software, hardware 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 Enterprise COBOL as part of a CBPDO, there is HOLDDATA included on the PDO.

If the CBPDO for Enterprise COBOL 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 Enterprise COBOL are:

Figure 5. PSP Upgrade and Subset ID

UPGRADE	SUBSET	Description
COBOLZOS400	HADB400	Enterprise COBOL Base
	JADB401	Enterprise COBOL US English
	JADB402	Enterprise COBOL Japanese
	JADB40H	Enterprise COBOL HFS

3.3 Statement of Support Procedures

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

Figure 6 on page 8 identifies the component IDs (COMPID) for Enterprise COBOL.

Figure 6. Component IDs

FMID	COMPID	Component Name	RETAIN Release
HADB400	5655S7100	Enterprise COBOL Base	400
JADB401	5655S7100	Enterprise COBOL US English	401
JADB402	5655S7100	Enterprise COBOL Japanese	402
JADB40H	5655S7100	Enterprise COBOL HFS	40H

4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of Enterprise COBOL. 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 Enterprise COBOL have been incorporated into this release. They are listed by FMID.

- FMID H26L340

PK04061	PK16334	PK31053
PK07018	PK16350	PK31411
PK07314	PK16497	PK31625
PK07899	PK16765	PK32321
PK07977	PK17257	PK32472
PK08387	PK18047	PK32818
PK08985	PK19309	PK33048
PK08986	PK20068	PK33205
PK09422	PK22792	PK35071
PK09956	PK23406	PK37384
PK10004	PK24222	PK38535
PK10212	PK24241	PK38714
PK10665	PK24388	PK41433
PK11544	PK24695	PK41586
PK11568	PK25206	PK42094
PK13668	PK25310	PK44658
PK13728	PK25487	PK45701
PK13829	PK25507	PK46341
PK14574	PK27765	PK47634
PK15441	PK30798	PK50726

4.2 Service Level Information

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

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

5.0 Installation Requirements and Considerations

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

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

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

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

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

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

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

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

5.1 Driving System Requirements

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

5.1.1 Machine Requirements

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

5.1.2 Programming Requirements

Figure 7 (Page 1 of 2). Driving System Software Requirements	
Program Number	**Product Name and Minimum VRM/Service Level**
Any **one** of the following:	

Figure 7 (Page 2 of 2). Driving System Software Requirements	
Program Number	**Product Name and Minimum VRM/Service Level**
5694-A01	z/OS V01.07.00 or later
5655-G44	IBM SMP/E for z/OS V3.03.00 or later

If you plan on installing the Japanese FMID JADB402 then ensure you have codepage 939 which is the Latin-based Japanese codepage that displayes both upper and lower case characters correctly. Mixed case character usage is required for the sample IGYWDDEF and IGYMKDIR jobs; therefore, codepage 939 is required to run these jobs from the driving system.

5.2 Target System Requirements

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

Enterprise COBOL installs in the z/OS (Z038) SREL.

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 8. Mandatory Installation Requisites	
Program Number	**Product Name and Minimum VRM/Service Level**
5694-A01	z/OS V01.07.00 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.

Enterprise COBOL 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.

Enterprise COBOL 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 9 (Page 1 of 2). Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5694-A01	z/OS V01.07.00 or later with PTFs for APAR OA22777	XML processing with the XMLPARSE(XMLSS) option
5655-I56	SDK for z/OS, Java 2 Technology Edition V01.04	Support for object-oriented COBOL syntax (Java interoperability). COBOL requires a 31-bit Java SDK, 64-bit Java technology is not currently supported. Java 2 Technology Edition V5 is not currently supported.
5798-DYR, 5798-DZX	COBOL Report Writer R4	COBOL Report Writer source programs
5668-806, 5688-087	VS FORTRAN V02.01.00	FORTRAN source programs (for interlanguage communication)
5694-A01	DFSORT element of z/OS	COBOL applications using SORT/MERGE
5696-234	High Level Assembler for MVS & VM & VSE	Assembler source programs (for interlanguage communication) or customization of the compiler
Any **one** of the following:		
5688-235	PL/I for MVS & VM V01.01.00	PL/I source programs (for interlanguage communication)
5655-H31	Enterprise PL/I for z/OS V3	PL/I source programs (for interlanguage communication)
Any **one** of the following:		
5655-S17	Debug Tool for z/OS V08.01.00	Debugging capabilities

Figure 9 (Page 2 of 2). Conditional Operational Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-R44	Debug Tool for z/OS V07.01.00	Debugging capabilities
5655-S16	Debug Tool Utilities and Advanced Functions for z/OS V07.01.00	Debugging capabilities
5655-R45	Debug Tool Utilities and Advanced Functions for z/OS V08.01.00	Debugging capabilities
Any **one** of the following:		
5675-DB2	DB2 UDB for z/OS and OS/390 V07.01.00	COBOL applications with DB2 and is also required for DB2 coprocessor support. Use of Unicode in DB2 COBOL applications requires DB2 APAR PQ61320.
5625-DB2	DB2 UDB for z/OS V08.01.00	COBOL applications with DB2 and is also required for DB2 coprocessor support. Support for use of national decimal host variables in EXEC SQL statements requires APAR PQ93857. Support for use of alternate DDNAME for DBRMLIB requires PTFs for DB2 APAR PK55937
5635-DB2	DB2 UDB for z/OS V09.01.00	COBOL applications with DB2 and is also required for DB2 coprocessor support. Support for use of alternate DDNAME for DBRMLIB requires PTFs for DB2 APAR PK55937
Any **one** of the following:		
5697-E93	CICS Transaction Server for z/OS V02.01.00	COBOL applications for CICS, and for integrated CICS Translator support
5655-M15	CICS Transaction Server for z/OS V03.01.00	COBOL applications for CICS, and for integrated CICS Translator support
Any **one** of the following:		
5655-C56	IMS V08.01.00	COBOL applications with IMS
5655-J38	IMS V09.01.00	COBOL applications with IMS
5635-A01	IMS V10.01.00	COBOL applications with IMS

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.

Enterprise COBOL 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.

Enterprise COBOL has no negative requisites.

5.2.3 DASD Storage Requirements

Enterprise COBOL 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 Enterprise COBOL

Library Type	Total Space Required in 3390 Trks
Target	141 Tracks
Distribution	203 Tracks
HFS or zFS	440 (512-byte units)

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 20.

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

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

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

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

5. All target libraries listed have the following attributes:

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

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

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

The following figures describe the target and distribution libraries and HFS or zFS paths required to install Enterprise COBOL. The storage requirements of Enterprise COBOL 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 11. Storage Requirements for Enterprise COBOL Target Libraries

Library DDNAME	Member Type	Target Volume	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
SIGYCOMP	LMOD	ANY	U	PDS	U	0	101	20
SIGYMAC	Macro	ANY	U	PDS	FB	80	7	5
SIGYPROC	PROC	ANY	U	PDS	FB	80	2	5
SIGYSAMP	SAMP	ANY	U	PDS	FB	80	31	10

Figure 12. Enterprise COBOL HFS or zFS Paths

DDNAME	TYPE	Path Name
SIGYHFS	X	/usr/lpp/cobol/bin/IBM

Figure 13. Storage Requirements for Enterprise COBOL Distribution Libraries

Library DDNAME	TYPE	ORG	RECFM	LRECL	No. of 3390 Trks	No. of DIR Blks
AIGYHFS	U	PDS	VB	255	6	5
AIGYMOD1	U	PDS	U	0	140	70
AIGYSRC1	U	PDS	FB	80	57	12

5.3 FMIDs Deleted

Installing Enterprise COBOL may result in the deletion of other FMIDs. To see what FMIDs will be deleted, examine the ++VER statement in the product's SMPMCS.

If you do not wish to delete these FMIDs at this time, you must install Enterprise COBOL into separate SMP/E target and distribution zones.

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

5.4 Special Considerations

Enterprise COBOL has no special considerations for the target system.

6.0 Installation Instructions

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

Please note the following:

- If you want to install Enterprise COBOL 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.

6.1 Installing Enterprise COBOL

6.1.1 SMP/E Considerations for Installing Enterprise COBOL

This release of Enterprise COBOL is installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. The SMP/E dialogs may be used to accomplish the SMP/E installation steps.

6.1.2 SMP/E Options Subentry Values

The recommended values for some SMP/E CSI subentries are shown in Figure 14. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

Figure 14. SMP/E Options Subentry Values

SUB-ENTRY	Value	Comment
DSSPACE	(200,200,500)	3390 DASD tracks
PEMAX	SMP/E Default	IBM recommends using the SMP/E default for PEMAX.

6.1.3 Sample Jobs

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

Figure 15. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
IGYWEDIT	MACRO	ISPF Editor macro to aid users in making changes to the sample jobs. **(Optional)**	IBM.HADB400.F1
IGYWSMPE	SMP/E	Sample job to define and prime a new SMP/E CSI **(Optional)**	IBM.HADB400.F1
IGYWRECV	RECEIVE	Sample RECEIVE job	IBM.HADB400.F1
IGYWALOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.HADB400.F1
IGYISMKD	MKDIR	Sample job to invoke the supplied IGYMKDIR EXEC to allocate HFS paths	IBM.HADB400.F1
IGYWDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.HADB400.F1
IGYWAPLY	APPLY	Sample APPLY job	IBM.HADB400.F1
IGYWACPT	ACCEPT	Sample ACCEPT job	IBM.HADB400.F1
IGYWIVP1	IVP	Sample job to verify installation has been successful	IBM.HADB400.F1
IGYWIVP2	IVP	Sample job to verify installation has been successful	IBM.HADB400.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 15 on page 17 to find the appropriate relfile data set.

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

```
//STEP1    EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//*************************************************************
//* Make the //TAPEIN DD statement below active if you install*
//* from a CBPDO tape by uncommenting the DD statement below. *
//*************************************************************
//*TAPEIN   DD DSN=IBM.HADB400.F1,UNIT=tunit,
//*         VOL=SER=volser,LABEL=(x,SL),
//*         DISP=(OLD,KEEP)
//*************************************************************
//* Make the //FILEIN DD statement below active for           *
//* downloaded DASD files.                                    *
//*************************************************************
//*FILEIN   DD DSN=IBM.HADB400.F1,UNIT=SYSALLDA,DISP=SHR,
//*         VOL=SER=filevol
//OUT      DD DSNAME=jcl-library-name,
```

```
//         DISP=(NEW,CATLG,DELETE),
//         VOL=SER=dasdvol,UNIT=SYSALLDA,
//         SPACE=(TRK,(20,10,5))
//SYSUT3   DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN    DD *
    COPY INDD=xxxxIN,OUTDD=OUT
  SELECT MEMBER=(IGYWEDIT,IGYWSMPE,IGYWALOC,IGYWDDEF)
  SELECT MEMBER=(IGYWRECV,IGYISMKD,IGYWAPLY,IGYWIVP1)
  SELECT MEMBER=(IGYWIVP2,IGYWACPT)
/*
```

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

If using TAPEIN:
- **tunit** is the unit address where the product tape is mounted
- **volser** is the volume serial matching the product tape
- **x** is the tape file number where the data set name is on the tape
- Refer to the documentation provided by CBPDO to see where IBM.HADB400.F1 is on the tape.

If using FILEIN
- **filevol** is the volume serial of the DASD device where the downloaded files reside.

OUT
- **jcl-library-name** is the name of the output data set where the sample jobs will be stored
- **dasdvol** is the volume serial of the DASD device where the output data set will reside

SYSIN
- **xxxxIN** is either TAPEIN or FILEIN depending on your input DD statement.

6.1.4 Set up ISPF Editor Macro (Optional)

To aid you in making changes to the SMP/E installation jobs (IGYISMKD, IGYWACPT, IGYWALOC, IGYWAPLY, IGYWDDEF, IGYWIVP1, IGYWIVP2, IGYWRECV and IGYWSMPE), an ISPF editor macro, called IGYWEDIT, is supplied and is copied to your output data set **jcl-library-name** above. (See Figure 15 on page 17).

This macro lets you substitute proper values for all of the required variables in those jobs instead of making the changes repeatedly by hand.

Edit macro IGYWEDIT and provide the proper values. Then copy it to any data set in your TSO logon procedure SYSEXEC concatenation. Consult the instructions in the macro for more information.

6.1.5 Allocate and Initialize the SMP/E Data Sets (Optional)

You can install Enterprise COBOL in the same SMP/E zone as z/OS V01.07.00 (or later), or in a different zone.

- If you install into existing SMP/E data sets, make sure that you have enough space.
- If you plan to install into an existing zone, the cluster should have already been allocated and primed. You can go on to the next step to perform an SMP/E RECEIVE.

- To install into a new zone, use the IGYWSMPE sample job to allocate and prime the SMPCSI cluster. Consult the instructions in the sample job for more information.

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

6.1.6 Perform SMP/E RECEIVE

Having obtained Enterprise COBOL as part of a CBPDO, use the RCVPDO job found in the CBPDO RIMLIB data set to RECEIVE the Enterprise COBOL FMIDs as well as any service, HOLDDATA, included on the CBPDO tape. For more information, refer to the documentation included with the CBPDO.

You can also choose to edit and submit sample job IGYWRECV to perform the SMP/E RECEIVE for Enterprise COBOL. Consult the instructions in the sample job for more information.

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

6.1.7 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job IGYWALOC to allocate the SMP/E target and distribution libraries for Enterprise COBOL. Consult the instructions in the sample job for more information.

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

6.1.8 Allocate HFS or zFS Paths

Before allocating the HFS or zFS paths and creating the DDDEF entries for Enterprise COBOL, you must decide where to install the product. You can install into either the root file system or a new HFS or zFS. If required, you also have the option of running more than one release of COBOL concurrently.

- To install into the root file system:
  - Clone your root file system.
  - Mount it under /SERVICE, or a similar mountpoint.
  - Run the IGYISMKD job to create the subdirectories, using /SERVICE as the <PathPrefix> variable in the sample jobs IGYWDDEF and IGYISMKD.
  - You must submit this job from a userid that is either UID=0 or is permitted to the BPX.SUPERUSER facility class.
  - Proceed with the SMP/E install into this newly cloned HFS.

  See the UNIX System Services Planning guide for more information.
- To install into a new file system (optional):
  - Create a new HFS or zFS data set.
  - Make sure that your <PathPrefix> exists, or create if necessary.

  - Mount the new HFS on that directory.
  - Edit and submit the IGYISMKD job to create the directory, <PathPrefix>/usr/lpp/cobol, and subdirectories. Consult the instructions in the sample job for more information.
  - You must submit this job from a userid that is either UID=0 or is permitted to the BPX.SUPERUSER facility class.
  - Proceed with the SMP/E install.

  See the UNIX System Services Planning guide for more information.

- To install, so that two versions of COBOL can run concurrently (optional):
  - Create a new HFS data set.
  - Make sure that your <PathPrefix> exists, or create if necessary.
  - Mount the new HFS or zFS on that directory.
  - Edit and submit the IGYISMKD job to create the directory, <PathPrefix>/usr/lpp/cobol/<Subdirectory>, and subdirectories. Change <Subdirectory> to an appropriate name that meets your installation requirements (like ecobol41). This will create a new path structure of <PathPrefix>/usr/lpp/cobol/ecobol41. Consult the instructions in the sample job for more information.
  - Ensure that the DDDEF for SIGYHFS in the IGYWDDEF job points to the correct HFS or zFS directories. In this example it would be <PathPrefix>/usr/lpp/cobol/ecobol41/bin/IBM. Consult the instructions in the sample job for more information.
  - You must submit this job from a userid that is either UID=0 or is permitted to the BPX.SUPERUSER facility class.
  - Proceed with the SMP/E install.

  See the UNIX System Services Planning guide 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 file system at IPL time. This may be helpful if an IPL occurs before the installation is complete.

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

Consult the instructions in the sample jobs for the expected output.

6.1.9 Create DDDEF Entries

Edit and submit sample job IGYWDDEF to create DDDEF entries for the SMP/E target and distribution libraries for Enterprise COBOL. Consult the instructions in the sample job for more information.

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

6.1.10 Perform SMP/E APPLY

1. Ensure you have the latest Enhanced HOLDDATA, then edit and submit sample job IGYWAPLY to perform an SMP/E APPLY CHECK for Enterprise COBOL. Consult the instructions in the sample job for more information.

   Enhanced HOLDDATA introduces ERROR HOLDs against FMIDs for HIPER APARs. Prior to installing, you should ensure you have the latest Enhanced HOLDDATA (available at url http://service.software.ibm.com/holdata/390holddata.html). The FMID(s) should be installed regardless of the status of unresolved HIPERs, however, the software should not be deployed until the unresolved HIPERs have been analyzed to determine applicability.

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

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

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

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

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

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

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

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

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

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

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

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

   Expected Return Codes and Messages from APPLY: You will get a return code of 4, or less, if the job runs correctly. IEW2454W messages are expected and can be ignored.

6.1.11 Perform SMP/E ACCEPT

Edit and submit sample job IGYWACPT to perform an SMP/E ACCEPT CHECK for Enterprise COBOL. 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.

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

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

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

6.1.12 Run the Installation Verification Programs

Edit and submit sample jobs IGYWIVP1 and IGYWIVP2 to verify that you have installed Enterprise COBOL correctly. Consult the instructions in the sample jobs for more information.

Expected Return Codes and Messages: You will get a return code of 0 from both jobs.

6.2 Activating Enterprise COBOL

6.2.1 HFS or zFS Execution

If you choose to have the HFS or zFS in which you have installed Enterprise COBOL mounted in read-only mode during execution, then no further tasks are required to accomplish this.

7.0 Notices

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

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

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

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

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

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

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

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

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

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

7.1 Trademarks

The following terms are trademarks of the IBM Corporation in the United States or other countries or both:

CBPDO	IMS	MVS
IBM®	FORTRAN	OS/390
BookManager	PL/i	RETAIN
C++/MVS	Debug Tool	SQL/DS
C/MVS	COBOL Report Writer	SystemPac
CICS	HLASM	VisualAge
DB2	IMS/ESA	z/OS
DFSORT	Language Environment	

Reader's Comments

Program Directory for IBM Enterprise COBOL for z/OS, December 2007

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

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

RATING SCALE

```
  very                                very          not
satisfied  <====================>  dissatisfied  applicable
    1        2        3        4        5            N
```

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

How did you order this product?

___ CBPDO
___ CustomPac
___ ServerPac
___ Independent
___ Other

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

___ Yes
___ No

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

___ Yes

__ No

If yes, how many years? __

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

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Please provide the following contact information:

_____
Name and Job Title

_____
Organization

_____

_____
Address

_____
Telephone

Thank you for your participation.

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

IBM Corporation
555 Bailey Avenue
San Jose, CA. 95141
Attn: Dept. M49/F342

FAX Number: (800) 426-7773

E-Mail: comments@us.ibm.com

Printed in U.S.A.

GI11-7870-00