



**Program Directory for
IBM Enterprise COBOL for z/OS**

V3.4.0

Program Number 5655-G53

FMIDs H26L340, J26L341, J26L342, J26L34H, H29N510, J29N511

for Use with
z/OS V1.4.0 or later

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GI10-8423-07

Note!

Before using this information and the product it supports, be sure to read the general information under 7.0, "Notices" on page 28.

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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 Enterprise COBOL for z/OS. This publication refers to 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 9 describes the IBM support available for Enterprise COBOL.
- 4.0, “Program and Service Level Information” on page 11 lists the APARs (program level) and PTFs (service level) incorporated into Enterprise COBOL.
- 5.0, “Installation Requirements and Considerations” on page 12 identifies the resources and considerations required for installing and using Enterprise COBOL.
- 6.0, “Installation Instructions” on page 20 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 9 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. Your CBPDO contains a softcopy preventive service planning (PSP) upgrade for this product. 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 Enterprise COBOL V3.4.0 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 V3.4.0 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.

New in Enterprise COBOL V3.4.0

- Several data-item size compiler limits have been raised to facilitate programming with large amounts of data
- Enhanced Unicode support that helps enable the internationalization of applications and the processing of international data
- Various other functional enhancements
- Includes Debug Tool for z/OS V5 in Full Function offering

1.1.1 Full Function Offering versus Alternate Function Offering

The mainframe interactive Debug Tool is offered with the Enterprise COBOL compiler in what is called the Full Function Offering. This Debug Tool is a common facility that supports:

- Enterprise COBOL for z/OS
- Enterprise PL/I for z/OS
- COBOL for OS/390 & VM
- COBOL for MVS & VM
- VisualAge PL/I for OS/390
- PL/I for MVS & VM
- z/OS C/C++ optional feature
- OS/390 C/C++ optional feature

Only one Full Function Offering is required for debugging applications written using any of these programming products. An Alternate Function Offering is available for customers who do wish to receive the Enterprise COBOL for z/OS compiler but not the Debug Tool.

The Debug Tool is also offered as a separate product, IBM Debug Tool for z/OS V5.1.0 For more information about the functionality offered in the Debug Tool, please refer to Software Announcement 204-206, dated September 21, 2004.

1.2 Enterprise COBOL FMIDs

Enterprise COBOL consists of the following FMIDs:

- H26L340
- J26L341
- J26L342
- J26L34H
- H29N510
- J29N511

Enterprise COBOL Alternate Function Offering consists of the following FMIDs:

- H26L340
- J26L341
- J26L342
- J26L34H

This program directory describes the installation procedure for H26L340, J26L341, J26L342 and J26L34H only. To install H29N510 and J29N511, see the Debug Tool program directory (GI10-8598-02).

2.0 Program Materials

An IBM program is identified by a program number and feature numbers. The program number for Enterprise COBOL is 5655-G53 and the feature numbers are 5801, 5802, 6510, 5811, 5812, 6511, 5821, 5832, 6513, 5831, 5822, and 6512.

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.

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 20 for more information about how to install the program.

Figure 1 through Figure 4 on page 5 describes the physical tape.

NOTE!

If Enterprise COBOL was shipped to you in a CBPDO, you will need to reference the CBPDO Memo To Users Extension for the physical tape layout of the Basic Machine-Readable Materials.

Figure 1. Basic Material: Program Tape Full Function Offering US English

Medium	Feature Number	Physical Volume	External Label	VOLSER
6250 tape	5801	1 of 2	Enterprise COBOL	26L340
		2 of 2	Debug Tool Base (see Note below)	29N510
3480 cartridge	5802	1 of 2	Enterprise COBOL	26L340
		2 of 2	Debug Tool Base (see Note below)	29N510
4mm cartridge	6510	1 of 2	Enterprise COBOL	26L340
		2 of 2	Debug Tool Base (see Note below)	29N510

Note: You will also receive this cartridge with your order. The Program Directory for IBM Debug Tool for z/OS contains both the Debug Tool and Debug Tool Japanese features.

<i>Figure 2. Basic Material: Program Tape Full Function Offering Japanese</i>				
Medium	Feature Number	Physical Volume	External Label	VOLSER
6250 tape	5811	1 of 3	Enterprise COBOL	26L340
		2 of 3	Debug Tool Base (see Note below)	29N510
		3 of 3	Debug Tool Japanese (see Note below)	29N511
3480 cartridge	5812	1 of 3	Enterprise COBOL	26L340
		2 of 3	Debug Tool Base (see Note below)	29N510
		3 of 3	Debug Tool Japanese (see Note below)	29N511
4mm cartridge	6511	1 of 3	Enterprise COBOL	26L340
		2 of 3	Debug Tool Base (see Note below)	29N510
		3 of 3	Debug Tool Japanese (see Note below)	29N511

Note: You will also receive this cartridge with your order. The Program Directory for IBM Debug Tool for z/OS contains both the Debug Tool and Debug Tool Japanese features.

<i>Figure 3. Basic Material: Program Tape Alternate Function Offering US English</i>				
Medium	Feature Number	Physical Volume	External Label	VOLSER
6250 tape	5821	1 of 1	Enterprise COBOL	26L340
3480 cartridge	5832	1 of 1	Enterprise COBOL	26L340
4mm cartridge	6513	1 of 1	Enterprise COBOL	26L340

<i>Figure 4. Basic Material: Program Tape Alternate Function Offering Japanese</i>				
Medium	Feature Number	Physical Volume	External Label	VOLSER
6250 tape	5831	1 of 1	Enterprise COBOL	26L340
3480 cartridge	5822	1 of 1	Enterprise COBOL	26L340
4mm cartridge	6512	1 of 1	Enterprise COBOL	26L340

Figure 5 on page 6 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 5. Program File Content

Name	O R G	R E C F M	L R E C L	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.H26L340.F1	PDS	FB	80	8800
IBM.H26L340.F2	PDS	U	0	6144
IBM.J26L341.F1	PDS	FB	80	8800
IBM.J26L341.F2	PDS	U	0	6144
IBM.J26L342.F1	PDS	FB	80	8800
IBM.J26L342.F2	PDS	U	0	6144
IBM.J26L34H.F1	PDS	VB	255	27998

2.2 Optional Machine-Readable Material

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

2.3 Program Publications

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

2.3.1 Basic Program Publications

Figure 6 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 6. Basic Material: Unlicensed Publications

Publication Title	Form Number
Licensed Program Specifications	GC27-1411

2.3.2 Optional Program Publications

Figure 7 on page 7 identifies the 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/zos/library/>.

<i>Figure 7. Optional Material: Licensed Publications</i>	
Publication Title	Form Number
Enterprise COBOL Language Reference	SC27-1408
Enterprise COBOL Migration Guide	GC27-1409
Enterprise COBOL Programming Guide	SC27-1412
Enterprise COBOL Customization Guide	GC27-1410
Enterprise COBOL Data Sheet	G224-7283

Figure 8 identifies optional licensed program publications for Debug Tool. These publications are available free of charge in displayable softcopy format (BookManager and PDF) from the Debug Tool Web site at <http://www.ibm.com/software/awdtools/debugtool/library/>.

<i>Figure 8. Optional Material: Other Optional Publications</i>	
Publication Title	Form Number
Debug Tool Summary of Commands and Built-in Functions	SC18-9305
Debug Tool User's Guide	SC18-9302
Debug Tool Reference and Messages	SC18-9304
Debug Tool Customization Guide	SC18-9306
Debug Tool Fact Sheet	G325-2408-01

2.4 Program Source Materials

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

2.5 Publications Useful During Installation

The publications listed in Figure 9 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>.

<i>Figure 9 (Page 1 of 2). Publications Useful During Installation</i>	
Publication Title	Form Number
<i>IBM SMP/E for z/OS User's Guide</i>	SA22-7773
<i>IBM SMP/E for z/OS Commands</i>	SA22-7771

Figure 9 (Page 2 of 2). Publications Useful During Installation

Publication Title	Form Number
<i>IBM SMP/E for z/OS Reference</i>	SA22-7772
<i>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</i>	GA22-7770
<i>z/OS UNIX System Services Planning</i>	GA22-7800
<i>z/OS UNIX System Services Messages and Codes</i>	SA22-7807
<i>z/OS Support for Unicode: Using Conversion Services.</i>	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, you should review the current Preventive Service Planning (PSP) information. If you obtained Enterprise COBOL as part of a CBPDO, there is HOLDDATA and PSP information included on the CBPDO.

If the CBPDO for Enterprise COBOL 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 Enterprise COBOL are:

<i>Figure 10. PSP Upgrade and Subset ID</i>		
UPGRADE	SUBSET	Description
COBOLZOS340	H26L340	Enterprise COBOL Base
	J26L341	Enterprise COBOL US English
	J26L342	Enterprise COBOL Japanese
	J26L34H	Enterprise COBOL HFS
DEBUG510	H29N510	Debug Tool Base
	J29N511	Debug Tool Japanese

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 11 on page 10 identifies the component IDs (COMPID) for Enterprise COBOL.

Figure 11. Component IDs

F MID	COMPID	Component Name	RETAIN Release
H26L340	5655G5300	Enterprise COBOL Base	340
J26L341	5655G5300	Enterprise COBOL US English	341
J26L342	5655G5300	Enterprise COBOL Japanese	342
J26L34H	5655G5300	Enterprise COBOL HFS	34H
H29N510	5655M1800	Debug Tool Base	510
J29N511	5655M1800	Debug Tool JPN	511

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 H26L330

PK00293	PK03861	PQ91345	PQ94768
PK00399	PQ75904	PQ91710	PQ95553
PK00465	PQ79116	PQ92791	PQ95555
PK01602	PQ83744	PQ92795	PQ95694
PK02198	PQ89176	PQ93433	PQ98781
PK02770	PQ90122	PQ93523	PQ98968
PK02775	PQ91202	PQ94127	PQ99531

4.2 Service Level Information

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

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.
- *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 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 12. Driving System Software Requirements

Program Number	Product Name and Minimum VRM/Service Level
Any one of the following:	
5694-A01	z/OS V1.4.0 or later
5655-G44	IBM SMP/E for z/OS and OS/390 V3.2.0 or later

If you plan on installing the Japanese FMID J26L342 then ensure you have codepage 939 which is the Latin-based Japanese codepage that displays 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 13. Mandatory Requisites

Program Number	Product Name and Minimum VRM/Service Level
5694-A01	z/OS V1.4.0 or later z/OS V1.4.0: (see Note below) z/OS Language Environment element plus PTFs for APAR PQ95214 z/OS V1.5.0: (see Note below) z/OS Language Environment element plus PTFs for APAR PQ95214 z/OS V1.6.0: (see Note below) z/OS Language Environment element plus PTFs for APAR PQ95214

Note: Language Environment provides the execution environment and library of COBOL run-time services, required to run COBOL applications that were compiled with Enterprise COBOL.

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.

Figure 14 (Page 1 of 2). Functional Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-H32	Debug Tool for z/OS V3.1.0	Debugging capabilities
5655-L24	Debug Tool for z/OS V4.1.0	Debugging capabilities
5655-L23	Debug Tool Utilities and Advanced Functions for z/OS V4.1.0	Additional debugging capabilities, such as playback and automonitor support.
5655-M18	Debug Tool for z/OS V5.1.0	Debugging capabilities
5655-M19	Debug Tool Utilities and Advanced Functions for z/OS V5.1.0	Additional debugging capabilities, such as playback and automonitor support.
5798-DYR, 5798-DZX	COBOL Report Writer R4	COBOL Report Writer source programs
5668-806, 5688-087	VS FORTRAN V2	FORTRAN source programs (for interlanguage communication)
5694-A01 or 5647-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
5655-147	CICS Transaction Server for OS/390 V1	COBOL applications for CICS
5697-E93	CICS Transaction Server for z/OS V2	COBOL applications for CICS. V2 or V3 of Transaction Server is also required to use the integrated CICS Translator support
5697-M15	CICS Transaction Server for z/OS V3	COBOL applications for CICS. V2 or V3 of Transaction Server is also required to use the integrated CICS Translator support
5645-DB2	DB2 UDB for OS/390 V6	COBOL applications with DB2
5675-DB2	DB2 UDB for z/OS and OS/390 V7	COBOL applications with DB2 and is also required for DB2 coprocessor support

Figure 14 (Page 2 of 2). Functional Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5625-DB2	DB2 UDB for z/OS V8	COBOL applications with DB2 and is also required for DB2 coprocessor support
5655-B01	IMS V7	COBOL applications with IMS (see Note below)
5655-C56	IMS V8	COBOL applications with IMS (see Note below)
5655-J38	IMS V9	COBOL applications with IMS (see Note below)
5688-235	PL/I for MVS & VM V1.1.1	PL/I source programs (for interlanguage communication)
5655-H31	Enterprise PL/I for z/OS V3	PL/I source programs (for interlanguage communication)

Note:

Support for the execution of mixed Java and COBOL applications execution in IMS Java dependent regions requires one of the following:

1. IMS, Version 7 (5655-B01) with PTFs for APARs PQ53944 and PQ54039.
2. IMS, Version 8 (5655-C56).
3. IMS, Version 9 (5655-J38).

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.

Enterprise COBOL has no conditional operational requisites.

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.

Enterprise COBOL has no toleration/coexistence requisites.

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

Enterprise COBOL has no negative requisites.

5.2.3 DASD Storage Requirements

Enterprise COBOL libraries can reside on all supported DASD types. The values below are for 3390 DASD.

Figure 15 on page 16 and Figure 16 on page 16 list the total space required for each type of library.

<i>Figure 15. Total DASD Space Required by Enterprise COBOL Full Function Offering</i>	
Library Type	Total Space Required
Target	654 Tracks
Distribution	695 Tracks
HFS	8 Tracks

<i>Figure 16. Total DASD Space Required by Enterprise COBOL Alternate Function Offering</i>	
Library Type	Total Space Required
Target	155 Tracks
Distribution	183 Tracks
HFS	8 Tracks

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 23.

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 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 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.

<i>Figure 17 (Page 1 of 2). Storage Requirements for Enterprise COBOL Target Libraries</i>									
Library DDNAME	Member Type	Target Volume	T Y P E	O R G	R E C M	L R E C L	No. of 3390 Trks	No. of DIR Blks	
SIGYCOMP	LMOD	ANY	U	PDS	U	0	71	9	

Figure 17 (Page 2 of 2). Storage Requirements for Enterprise COBOL 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
SIGYSAMP	SAMP	ANY	U	PDS	FB	80	44	4
SIGYPROC	PROC	ANY	U	PDS	FB	80	2	1
SIGYMAC	Macro	ANY	U	PDS	FB	80	10	1
SIGYCLST	CLIST	ANY	U	PDS	FB	80	28	3

Figure 18. Enterprise COBOL HFS Paths

DDNAME	T Y P E	Path Name
SIGYHFS	X	/usr/lpp/cobol/bin/IBM/

Figure 19. Storage Requirements for Enterprise COBOL Distribution Libraries

Library DDNAME	T Y P E	O R G	R E C F M	L R E C L	No. of 3390 Trks	No. of DIR Blks
AIGYHFS	U	PDS	VB	255	8	1
AIGYSRC1	U	PDS	FB	80	84	7
AIGYMOD1	U	PDS	U	0	99	61

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 Installing Unicode Support for Enterprise COBOL

Enterprise COBOL provides run-time support for Unicode, a universal standard for encoding plain text in programs that work with various national languages. The Support for Unicode software is required if your site has the following types of programs:

- COBOL programs that use object-oriented syntax to interoperate with Java.
- COBOL programs that contain national data types, literals, or intrinsic functions.
- COBOL programs that contain XML GENERATE statements.

The Support for Unicode software (provided separately with the operating system) must be installed and configured on your target system and all production systems before COBOL programs that use this function can be compiled or run. If you do not install and configure the appropriate Support for Unicode software, a severity-3 Language Environment condition is raised at run time, or the compiler abends.

Configure the z/OS Support for Unicode software that is included with the operating system and should have been installed with it. See Enterprise COBOL for z/OS V3.4.0 Customization Guide (GC27-1410) at <http://www.ibm.com/software/awdtools/cobol/zos/library/> for COBOL-specific issues that you need to consider when you configure z/OS Support for Unicode. For detailed configuration instructions, refer to z/OS Support for Unicode: Using Conversion Services (SA22-7649) at <http://publibz.boulder.ibm.com/epubs/pdf/iea2un41.pdf>.

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:

- You can install Enterprise COBOL into existing SMP/E zones or, optionally, into its own unique SMP/E zones. If you want to install Enterprise COBOL into its own SMP/E environment, a sample job, IGYWSMPE, is provided. This job creates and initializes the SMP/CSI and the SMP/E control data sets. See Figure 21 on page 21 for more information.
- 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 20 on page 21. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

<i>Figure 20. SMP/E Options Subentry Values</i>		
SUB-ENTRY	Value	Comment
DSSPACE	300,150,250	Space allocation for SMPTLIB data sets
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:

<i>Figure 21. Sample Installation Jobs</i>			
Job Name	Job Type	Description	RELFILE
IGYWEDIT	MACRO	ISPF Editor macro to aid users in making changes to the sample jobs (optional)	IBM.H26L340.F1
IGYWSMPE	SMP/E	Sample job to define and prime a new SMP/E CSI (optional)	IBM.H26L340.F1
IGYWRECV	RECEIVE	Sample RECEIVE job	IBM.H26L340.F1
IGYWALOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.H26L340.F1
IGYISMKD	MKDIR	Sample job to invoke the supplied IGYMKDIR EXEC to allocate HFS paths	IBM.H26L340.F1
IGYWDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.H26L340.F1
IGYWAPLY	APPLY	Sample APPLY job	IBM.H26L340.F1
IGYWACPT	ACCEPT	Sample ACCEPT job	IBM.H26L340.F1
IGYWIVP1	IVP	Sample job to verify installation has been successful	IBM.H26L340.F1
IGYWIVP2	IVP	Sample job to verify installation has been successful	IBM.H26L340.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 21 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=*
//TAPEIN DD DSN=IBM.H26L340.F1,UNIT=tunit,
// VOL=SER=volser,LABEL=(x,SL),
// DISP=(OLD,KEEP)
//FILEIN DD DSN=IBM.H26L340.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,(10,2,5))
//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 value matching the product tape.

volser is the volume serial matching the product tape.

x is the tape file number where the data set name is on the tape.

Refer to the documentation provided by CBPDO to see where IBM.H26L340.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.

You can also access the sample installation jobs by performing an SMP/E RECEIVE and then copying the jobs from the refiles to a work data set for editing and submission. See Figure 21 on page 21 to find the appropriate refile data set.

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 21 on page 21).

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 V1.4.0 (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 RCPDO job found in the CBPDO RIMLIB data set to RECEIVE the Enterprise COBOL FMIDs as well as any service, HOLDDATA, or preventive service planning (PSP) information 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 get a return code of 0 if the 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 get a return code of 0 if the job runs correctly.

6.1.8 Allocate HFS Paths

Before allocating the HFS 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. 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 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 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 ecobol34). This will create a new path structure of <PathPrefix>/usr/lpp/cobol/ecobol34. 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 directories. In this example it would be <PathPrefix>/usr/lpp/cobol/ecobol34/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 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: You will get a return code of 0 if the job runs correctly.

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 get a return code of 0 if the job runs correctly.

6.1.10 Perform SMP/E APPLY

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.

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

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

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

Expected Return Codes and Messages from APPLY CHECK: You will get a return code of 0 if the 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 Enable/Register the Debug Tool feature of Enterprise COBOL (Full Function Offering only)

Before running any applications with Debug Tool or any of the Installation Verification Programs required by Debug Tool, ensure that you enable/register the Debug Tool feature of Enterprise COBOL. To do this, include an entry for the Debug Tool feature of Enterprise COBOL in the IFAPRDxx parmlib member as follows:

```
PRODUCT OWNER('IBM CORP')
NAME('IBM ENT COBOL')
ID(5655-G53)
VERSION(*) RELEASE(*) MOD(*)
FEATURENAME('COBOL-DEBUG')
STATE(ENABLED)
```

Once you have updated IFAPRDxx, issue the SET PROD=xx operator command. Debug Tool will then be enabled in the z/OS environment.

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.

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

6.1.13 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 get a return code of 0 if the job runs correctly.

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

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

6.1.14 Installation of IBM Debug Tool for z/OS.

See the Debug Tool program directory (GI10-8598-02) for further instructions on how to install and activate IBM Debug Tool for z/OS. The installation of Debug Tool is only applicable to the Full Function Offering.

This concludes the installation for Enterprise COBOL.

7.0 Notices

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Program Directory for Enterprise COBOL for z/OS, JULY 2005

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	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
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How did you order this product?

- CBPDO
- CustomPac
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- Independent
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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

IBM Corporation
555 Bailey Avenue
San Jose, CA. 95141
USA
Attn: Dept. M80/F230

FAX Number: (800) 426-7773 in the United States of America

E-Mail: comments@us.ibm.com



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