



**Program Directory for
IBM Enterprise COBOL for z/OS and OS/390**

Version 3 Release 2, Modification Level 0

Program Number 5655-G53

FMIDs H26L320, J26L321, J26L322, J26L32H, H289310

for Use with:
z/OS Version 1 Release 1 or higher
OS/390 Version 2 Release 10

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Note!

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

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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".

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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 IBM Enterprise COBOL for z/OS and OS/390 V3R2. This publication refers to IBM Enterprise COBOL for z/OS and OS/390 V3R2 as Enterprise COBOL. You should read all of this program directory before installing the program and then keep it for future reference.

IBM Enterprise COBOL for z/OS and OS/390 V3R2 also consists of IBM Debug Tool for z/OS and OS/390, referred to as Debug Tool. See Debug Tool program directory (GI10-8493-00) for information concerning the material and procedures associated with the installation of IBM Debug Tool for z/OS and OS/390

The program directory contains the following sections:

- 2.0, “Program Materials” on page 5 identifies the basic and optional program materials and documentation for Enterprise COBOL.
- 3.0, “Program Support” on page 10 describes the IBM support available for Enterprise COBOL.
- 4.0, “Program and Service Level Information” on page 12 lists the APARs (program level) and PTFs (service level) incorporated into Enterprise COBOL.
- 5.0, “Installation Requirements and Considerations” on page 14 identifies the resources and considerations for installing and using Enterprise COBOL.
- 6.0, “Installation Instructions for Full Function Offering” on page 23 provides detailed installation instructions for Enterprise COBOL Full Function Offering. It also describes the procedures for activating the functions of Enterprise COBOL, or refers to appropriate publications.
- 7.0, “Installation Instructions for Alternate Function Offering” on page 29 provides detailed installation instructions for Enterprise COBOL Alternate Function Offering. It also describes the procedures for activating the functions of Enterprise COBOL, or refers to appropriate publications.

Before installing Enterprise COBOL, read 3.2, “Preventive Service Planning” on page 10. This section tells you how to find any updates to the information and procedures in this program directory.

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.

If you are installing Enterprise COBOL using the Custom-Built Product Delivery Offering (CBPDO, 5751-CS3), a softcopy program directory is provided on the CBPDO tape which is identical to the printed copy shipped 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.

1.1 Enterprise COBOL Description

1.1.1 Object-Oriented COBOL and Java Interoperability

Applications using object-oriented syntax for Java interoperability can now be executed in IMS environments. Mixed COBOL and Java applications may be executed in the new IMS Java dependent regions that are provided in IMS V8, and also in IMS V7 via a program temporary fix (PTF). These applications are supported in both Java Message Processing (JMP) and in Java Batch Processing (JBP) regions. This support provides the ability to build an application with IMS message processing in a Java class and IMS database access in a COBOL routine. It also supports an application with IMS message processing logic in a COBOL "main" method, and that invokes other Java or COBOL routines that perform IMS database access.

Object-oriented COBOL class definitions may now define a "main" method and can be directly executed using the Java command.

The OPTIMIZE compiler option is now fully supported for programs containing object-oriented syntax for Java interoperability.

A new environment variable, COBJVMINITOPTIONS, is now provided, enabling the user to specify options that will be used when COBOL initializes a Java virtual machine (JVM). In particular, this capability facilitates execution of COBOL programs that use J2EE client interfaces to invoke methods on enterprise beans running in WebSphere z/OS or 390.

1.1.2 Using Unicode in DB2 COBOL applications

The DB2-COBOL co-processor support has been enhanced so that when host variables are specified in SQL statements it is no longer necessary, in most cases, to specify the code pages for the host variables declared with USAGE NATIONAL, DISPLAY or DISPLAY-1 using the SQL DECLARE VARIABLE statements. Without the new support alphanumeric or DBCS host variables needed to be specified with the EBCDIC CCSID of the CODEPAGE compiler option in effect (as well as for the Unicode code page for Unicode host variables)

1.1.3 Support for Debug Tool

The Enterprise COBOL compiler is enhanced in V3.2 to support the new level of Debug Tool included in either the Full Function offering, or as the separate, new IBM Debug Tool for z/OS and OS/390 V3 product. Included in the compiler is support for the following new Debug Tool feature:

- Optimized code debug support:

This support provides enhanced optimized code debug capability for COBOL programs compiled with the OPT(STD) or OPT(FULL) compiler options. You can set breakpoints to suspend the execution of the program, and inspect the contents of data items. You can step through your program one statement at a time, or resume execution until the next breakpoint is encountered. Automonitoring of

variables and the playback function, which provides a "reverse review" capability, is supported for optimized programs.

- GOTO command:

The Debug Tool GOTO command is enabled for COBOL programs that have been compiled with the NOOPTIMIZE option and any variant of the TEST option.

- Condition name and file name support:

Condition names and file names may be specified in LIST commands.

1.1.4 Support for Debug Tool utilities and advanced functions

The Enterprise COBOL compiler is enhanced in V3.2 to support the new, optional, separately-purchased IBM Debug Tool Utilities and Advanced Functions for z/OS and OS/390 V3 product, which includes the following new features:

- Playback support: This support allows you to replay and review the application execution paths and data values starting at the point where you begin recording. You can simulate the backward execution of the application and review application data values using appropriate debug tool commands.
- Automonitor support: This support automatically displays, in the Monitor window, the values of the variables referenced in the current statement. The values are displayed when Debug Tool gets control, for example, when you step to a statement or when a breakpoint is reached. Data items referenced by the current statement while the automonitor is in effect are automatically selected for monitoring and are displayed in the Debug Tool Monitor window and/or the Debug Tool log. Those explicitly selected for monitoring will also be displayed in the Monitor window.

1.1.5 Basic Unicode Support

A new national data type, national literals, intrinsic functions, and compiler option provide basic run-time support for Unicode. COBOL source programs continue to be encoded in an EBCDIC (SBCS or DBCS) code page. Unicode encodes all the characters by the world's major written languages. There are multiple encoding schemes to represent Unicode including UTF-8, UTF-16 and UTF-32. Enterprise COBOL supports Unicode using UTF-16. UTF-8 data may be converted explicitly to UTF-16 and processed in the UTF-16 representation. The data may be converted back to UTF-8 after the processing in the COBOL program.

COBOL Unicode enhancements provide basic support for the new Chinese character standard GB18030. GB18030 characters are encoded via the existing Chinese EBCDIC code page, CCSID 01388 (expanded to include GB 18030 characters not requiring UTF-16 surrogate values). This character data may be converted to Unicode, processed in Unicode, and converted back to the EBCDIC code page.

1.1.6 Full Function versus Alternate Function Offerings

The mainframe interactive debug tool is offered with Enterprise COBOL for z/OS and OS/390, called the Full Function Offering. This debug tool is a common facility that supports:

- Enterprise COBOL for z/OS and OS/390
- Enterprise PL/I for z/OS and OS/390
- 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 three programming products. An Alternate Function offering is available for customers who wish to receive the Enterprise COBOL for z/OS and OS/390 compiler but not the Debug Tool.

1.2 Enterprise COBOL FMIDs

Enterprise COBOL Full Function Offering consists of the following FMIDs:

H26L320
J26L321
J26L322
J26L32H
H289310

Enterprise COBOL Alternate Function Offering consists of the following FMIDs:

H26L320
J26L321
J26L322
J26L32H

This program directory describes the installation procedure for H26L320, J26L321, J26L322, and J26L32H only. To install H289310, see Debug Tool program directory (GI10-8493-00).

2.0 Program Materials

An IBM program is identified by a program number and a feature number. The program number for Enterprise COBOL is 5655-G53.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature code, and are required for the use of the product. Optional Machine-Readable Materials are orderable under separate feature codes, 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 for Full Function Offering" on page 23 or 7.0, "Installation Instructions for Alternate Function Offering" on page 29 for more information about how to install the program.

Figure 1 through Figure 4 on page 6 describe the physical tapes. Figure 5 on page 6 describes the file content.

Notes:

1. The data set attributes in these tables 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 you are installing Enterprise COBOL using the Custom-Built Product Delivery Offering (CBPDO) (5751-CS3), some of the information in these figures may not be valid. Consult the CBPDO documentation for actual values.
3. If any RELFILES are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

Medium	Feature Number	Physical Volume	External Label	R/M *	VOLSER
6250 tape	5801	1 of 2	COBOL Base z/OS & OS/390	N	26L320
		2 of 2	COBOL DEBUG z/OS & OS/390 (see Note below)		289310
3480 cartridge	5802	1 of 2	COBOL Base z/OS & OS/390	N	26L310
		2 of 2	COBOL DEBUG z/OS & OS/390 (see Note below)		289310

Figure 1 (Page 2 of 2). Basic Material: Program Tape Full Function Offering US English

Medium	Feature Number	Physical Volume	External Label	R/M *	VOLSER
4mm cartridge	6510	1 of 2	COBOL Base z/OS & OS/390	N	26L320
		2 of 2	COBOL DEBUG z/OS & OS/390 (see Note below)		289310

Note: You will also receive this cartridge and its program directory with your order.

Figure 2. Basic Material: Program Tape Full Function Offering Japanese

Medium	Feature Number	Physical Volume	External Label	R/M *	VOLSER
6250 tape	5811	1 of 2	COBOL Base z/OS & OS/390	N	26L320
		2 of 2	COBOL DEBUG z/OS & OS/390 (see Note below)		289310
3480 cartridge	5812	1 of 2	COBOL Base z/OS & OS/390	N	26L320
		2 of 2	COBOL DEBUG z/OS & OS/390 (see Note below)		289310
4mm cartridge	6511	1 of 2	COBOL Base z/OS & OS/390	N	26L320
		2 of 2	COBOL DEBUG z/OS & OS/390 (see Note below)		289310

Note: You will also receive this cartridge and its program directory with your order.

Figure 3. Basic Material: Program Tape Alternate Function Offering US English

Medium	Feature Number	Physical Volume	External Label	R/M *	VOLSER
6250 tape	5821	1	COBOL Base z/OS & OS/390	N	26L320
3480 cartridge	5832	1	COBOL Base z/OS & OS/390	N	26L320
4mm cartridge	6513	1	COBOL Base z/OS & OS/390	N	26L320

Figure 4. Basic Material: Program Tape Alternate Function Offering Japanese

Medium	Feature Number	Physical Volume	External Label	R/M *	VOLSER
6250 tape	5831	1	COBOL Base z/OS & OS/390	N	26L320
3480 cartridge	5822	1	COBOL Base z/OS & OS/390	N	26L320
4mm cartridge	6512	1	COBOL Base z/OS & OS/390	N	26L320

* R/M = Restricted Materials of IBM

Figure 5. Program File Content for Enterprise COBOL

Name	O R G	R E C F M	L R E C L	BLK SIZE
SMPMCS	SEQ	FB	80	6400
IBM.H26L320.F1	PDS	FB	80	8800
IBM.H26L320.F2	PDS	U	0	6144
IBM.J26L321.F1	PDS	FB	80	8800
IBM.J26L321.F2	PDS	U	0	6144
IBM.J26L322.F1	PDS	FB	80	8800
IBM.J26L322.F2	PDS	U	0	6144
IBM.J26L32H.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 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/ad/cobol/zos/library/>.

<i>Figure 7. Optional Material: Unlicensed Publications</i>	
Publication Title	Form Number
Enterprise COBOL Language Reference	SC27-1408
Enterprise COBOL Compiler and Run-Time Migration Guide	GC27-1409
Enterprise COBOL Programming Guide	GC27-1412
Enterprise COBOL Customization Guide	GC27-1410

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/ad/debugtool/library/>.

<i>Figure 8. Optional Material: Other Optional Publications</i>	
Publication Title	Form Number
Debug Tool Commands Summary	SC18-7187
Debug Tool User's Guide	SC18-7171
Debug Tool Customization Guide	SC18-7174
Debug Tool Fact Sheet	GC18-7176

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.elink.ibmink.ibm.com/applications/public/applications/publications/cgibin/pbi.cgi>

<i>Figure 9 (Page 1 of 2). Publications Useful During Installation</i>	
Publication Title	Form Number
<i>IBM SMP/E for z/OS and OS/390 User's Guide</i>	SA22-7773
<i>IBM SMP/E for z/OS and OS/390 Commands</i>	SA22-7771
<i>IBM SMP/E for z/OS and OS/390 Reference</i>	SA22-7772
<i>IBM SMP/E for z/OS and OS/390 Messages, Codes, and Diagnosis</i>	GA22-7770

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

Publication Title	Form Number
<i>OS/390 SMP/E User's Guide</i>	SC28-1740
<i>OS/390 SMP/E Commands</i>	SC28-1805
<i>OS/390 SMP/E Reference</i>	SC28-1806
<i>OS/390 SMP/E Messages and Codes</i>	SC28-1738
<i>z/OS UNIX System Services Planning</i>	GA22-7800
<i>z/OS UNIX System Services Messages and Codes</i>	SA22-7807
<i>OS/390 UNIX System Services Planning</i>	SC28-1890
<i>OS/390 UNIX System Services Messages and Codes</i>	SC28-1908
<i>z/OS Support for Unicode: Using Conversion Services.</i>	SA22-7649
<i>OS/390 R8/R9/R10 Support for Unicode: Using Conversion Services</i>	SC33-7050

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 you obtained Enterprise COBOL on a product tape, or if the CBPDO 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 access to RETAIN, visit <http://www.ibm.link.ibm.com/> on the Internet.

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 10. PSP Upgrade and Subset ID

UPGRADE	SUBSET	Description
COBOLZOS320	H26L320	Enterprise COBOL Base
	J26L321	Enterprise COBOL US English
	J26L322	Enterprise COBOL Japanese
	J26L32H	Enterprise COBOL HFS
DEBUG310	H289310	Debug Tool Base

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 identifies the component IDs (COMPID) for Enterprise COBOL.

Figure 11. Component IDs

F MID	COMPID	Component Name	RETAIN Release
H26L320	5655G5300	Enterprise COBOL Base	320
J26L321	5655G5300	Enterprise COBOL US English	321
J26L322	5655G5300	Enterprise COBOL Japanese	322
J26L32H	5655G5300	Enterprise COBOL HFS	32H
H289310	5655H3200	Debug Tool Base	310

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 integrated.

4.1 Program Level Information

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

- FMID H26L320

PQ07976	PQ15931	PQ24782	PQ36963
PQ09794	PQ16388	PQ24937	PQ37055
PQ10626	PQ16389	PQ25085	PQ37057
PQ11857	PQ16390	PQ25194	PQ38788
PQ11965	PQ16463	PQ25697	PQ39668
PQ11966	PQ16582	PQ25815	PQ39873
PQ11967	PQ16583	PQ26280	PQ40298
PQ12087	PQ16767	PQ27121	PQ42615
PQ12088	PQ16881	PQ27375	PQ44688
PQ12089	PQ17773	PQ27608	PQ44689
PQ12093	PQ18163	PQ27810	PQ44933
PQ12210	PQ18760	PQ27883	PQ45046
PQ12211	PQ18974	PQ29210	PQ45462
PQ12212	PQ18975	PQ29715	PQ45718
PQ12314	PQ20140	PQ31002	PQ47058
PQ12315	PQ20314	PQ31095	PQ47349
PQ12316	PQ21448	PQ31096	PQ48490
PQ12441	PQ22216	PQ31149	PQ49650
PQ12442	PQ22333	PQ32015	PQ49790
PQ13237	PQ22460	PQ32287	PQ49999
PQ13306	PQ22721	PQ32292	PQ50115
PQ13982	PQ22909	PQ32389	PQ50815
PQ14262	PQ22989	PQ34296	PQ52227
PQ14460	PQ23348	PQ34346	PQ53850
PQ14622	PQ23729	PQ34539	PQ55290
PQ14783	PQ23839	PQ36217	PQ56011
PQ15339	PQ23940	PQ36227	PQ56856
PQ15340	PQ24211	PQ36349	PQ57130
PQ15341	PQ24261	PQ36453	PQ61862
PQ15930	PQ24629	PQ36740	

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:	
5647-A01	OS/390 SMP/E Version 2 Release 10
5694-A01	z/OS Version 1 Release 1 or higher
5655-G44	IBM SMP/E for z/OS and OS/390 Version 3 Release 1 or higher

If you plan on installing the Japanese FMID J26L322 then ensure you have codepage 939 which is the Latin-based Japanese codepage that displays both upper and lower case character correctly. Mixed case character usage is required for the sample IGYWDEF 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 MVS (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 Mandatory Requisites: A mandatory requisite is defined as a product that is required without exception; this product either **will not install** or **will not function** unless this requisite is met. This includes products that are specified as REQs or PREs.

<i>Figure 13 (Page 1 of 2). Mandatory Requisites</i>	
Program Number	Product Name and Minimum VRM/Service Level
Any one of the following:	
5647-A01	OS/390 Version 2 Release 10 (see Note below) OS/390 Language Environment element plus PTFs for APAR PQ62947 and PQ52626

Figure 13 (Page 2 of 2). Mandatory Requisites

Program Number	Product Name and Minimum VRM/Service Level
5694-A01	<p>z/OS Version 1 Release 1 or higher z/OS Version 1 Release 1: (see Note below) z/OS Language Environment element plus PTFs for APAR PQ62947 and PQ52626</p> <p>z/OS Version 1 Release 2: (see Note below) z/OS Language Environment element plus PTFs for APAR PQ65174 and PQ52626</p> <p>z/OS Version 1 Release 3: (see Note below) z/OS Language Environment element plus PTFs for APAR PQ65175</p> <p>z/OS Version 1 Release 4: (see Note below) z/OS Language Environment element plus PTFs for APAR PQ65176</p>

Note: Language Environment provides the execution environment and library of COBOL run-time services, required to compile and run COBOL applications using Enterprise COBOL.

5.2.2.2 Functional Requisites: A functional requisite is defined as a product that is **not** required for the successful installation of this product or for the basic function of the product, but **is** needed at run time for a specific function of this product to work. This includes products that are specified as IF REQs.

Figure 14 (Page 1 of 3). Functional Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-J18	Debug Tool Utilities and Advanced Functions	Additional debugging capabilities, such as playback and automonitor support.
5647-A01, 5694-A01	OS/390 Support for Unicode z/OS Support for Unicode	COBOL programs that use either Unicode features or object-oriented syntax for Java interoperability
5655-D35	IBM Developer Kit for OS/390, Java 2 Technology Edition, SDK 1.3.1, or later	COBOL programs that use object-oriented syntax for Java interoperability in IMS Java environments

Figure 14 (Page 2 of 3). Functional Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-D35	IBM Developer Kit for OS/390, Java 2 Technology Edition, SDK 1.3.0, or later	COBOL programs that use object-oriented syntax for Java interoperability in environments other than IMS
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)
5740-SM1	DFSORT R13	COBOL applications using SORT/MERGE
Any one of the following:		
5694-A01	z/OS High Level Assembler element	Assembler source programs (for interlanguage communication) or customization of the compiler
5645-001, 5647-A01	OS/390 High Level Assembler element	Assembler source programs (for interlanguage communication) or customization of the compiler
5696-234	High Level Assembler/MVS & VM & VSE	Assembler source programs (for interlanguage communication) or customization of the compiler
Any one of the following:		
5655-147	CICS Transaction Server for OS/390 V1	COBOL applications for CICS
5697-E93	CICS Transaction Server for z/OS V2 Version 2 of CICS Transaction Server is required to use the Integrated CICS Translator support	COBOL applications for CICS
Any one of the following:		
5645-DB2	DB2 UDB for OS/390 V6	COBOL applications with DB2
5675-DB2	DB2 UDB for z/OS and OS/390 V7 Version 7 of DB2 UDB is required for DB2 coprocessor support. Use of Unicode in DB2 COBOL applications requires DB2 APAR PQ61320.	COBOL applications with DB2
Any one of the following:		
5655-158	IMS/ESA V6	COBOL applications with IMS
5655-B01	IMS V7	COBOL applications with IMS (see Note below)

Figure 14 (Page 3 of 3). Functional Requisites

Program Number	Product Name and Minimum VRM/Service Level	Function
5655-C56	IMS V8	COBOL applications with IMS (see Note below)
Any one of the following:		
5668-909, 5668-910, 5668-911	OS PL/I V2R3	PL/I source programs (for interlanguage communication)
5688-235	PL/I for MVS and VM R1.1	PL/I source programs (for interlanguage communication)
5655-B22	VisualAge PL/I for OS/390 V2R2	PL/I source programs (for interlanguage communication)
5655-H31	Enterprise PL/I for z/OS and OS/390 Version 3	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).

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 a 3390 DASD.

Figure 15 and Figure 16 on page 19 list the total space required for each type of library.

Figure 15. Total DASD Space Required by Enterprise COBOL Full Function Offering

Library Type	Total Space Required
Target	679 Tracks
Distribution	756 Tracks
HFS	8 Tracks

Figure 16. Total DASD Space Required by Enterprise COBOL Alternate Function Offering

Library Type	Total Space Required
Target	151 Tracks
Distribution	192 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 6.1.6, "Allocate SMP/E Target and Distribution Libraries and Paths" on page 25.

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 LNKLIST
- 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.

Figure 17. 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
SIGYCOMP	LMOD	ANY	U	PDS	U	0	68	9
SIGYSAMP	Sample	ANY	U	PDS	FB	80	43	4
SIGYPROC	Procedure	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	81	7
AIGYMOD1	U	PDS	U	0	103	59

5.3 FMIDs Deleted

Installing Enterprise COBOL may result in the deletion of FMIDs for other COBOL compilers. To see what FMIDs will be deleted, examine the ++VER statement in this 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 basic 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.

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.

The Support for Unicode software that you need depends on your operating system. If your operating system is z/OS Version 1 Release 2 or later, 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 and OS/390 V3R2 Customization Guide (GC27-1410) at <http://www.ibm.com/software/ad/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://publibfp.boulder.ibm.com/epubs/pdf/iea2un20.pdf>.

If your operating system is earlier than z/OS Version 1 Release 2, download for free the OS/390 V2 R8/R9/R10 Support for Unicode (FMID HUNI2A0) software from the Web as follows:

1. Open a Web browser to the Enterprise COBOL support page at <http://www.ibm.com/software/ad/cobol/zos/support/>.
2. Click **OS/390 Support for Unicode** under Support downloads.

For instructions about how to install OS/390 V2 R8/R9/R10 Support for Unicode, refer to the program directory (GI10-9760) at:

- <http://publib.boulder.ibm.com/pubs/pdfs/os390/cunpde00.pdf> (for PDF format)
- <http://publib.boulder.ibm.com/cgi-bin/bookmgr/BOOKS/cunpde00/> (for BookManager format)

See Enterprise COBOL for z/OS and OS/390 V3R2 Customization Guide (GC27-1410) at <http://www.ibm.com/software/ad/cobol/zos/library/> for COBOL-specific issues that you need to consider when you configure OS/390 Support for Unicode. For detailed configuration instructions, refer to OS/390 Support for Unicode: Using Conversion Services (SC33-7050) at <http://publib.boulder.ibm.com/pubs/pdfs/os390/cunuge00.pdf>.

6.0 Installation Instructions for Full Function Offering

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 with Debug Tool

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. 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.

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:

6.1.3.1 Sample Jobs for Enterprise COBOL

Figure 21. Sample Installation Jobs for Enterprise COBOL

Job Name	Job Type	Description	RELFIL
IGYWSMPA	SMP/E	Sample job to define and prime a new SMP/E CSI (optional)	IBM.H26L320.F1
IGYWSMPI	SMP/E	Sample job to allocate SMP/E data sets (optional)	IBM.H26L320.F1
IGYWRECV	RECEIVE	Sample RECEIVE job	IBM.H26L320.F1
IGYWALOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.H26L320.F1
IGYISMKD	MKDIR	Sample job to invoke the supplied IGYMKDIR EXEC to allocate HFS paths	IBM.H26L320.F1
IGYWDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.H26L320.F1
IGYWAPLY	APPLY	Sample APPLY job	IBM.H26L320.F1
IGYWACPT	ACCEPT	Sample ACCEPT job	IBM.H26L320.F1
IGYWIVP1	IVP	Sample job to verify installation has been successful	IBM.H26L320.F1
IGYWIVP2	IVP	Sample job to verify installation has been successful	IBM.H26L320.F1

You may 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.H26L320.F1,UNIT=tunit,VOL=SER=26L320,
// LABEL=(2,SL),DISP=(OLD,KEEP)
//FILEIN DD DSN=IBM.H26L320.F1,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol
//OUT DD DSN=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=(IGYWSMPA,IGYWSMPI,IGYWALOC,IGYWDDEF)
SELECT MEMBER=(IGYWRECV,IGYISMKD,IGYWAPLY,IGYWIVP1)
SELECT MEMBER=(IGYWIVP2,IGYWACPT)
/*
```

where **tunit** is the unit value matching the product tape, **filevol** is the volume serial of the DASD device where the downloaded files reside, **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 and **xxxxIN** on the SYSIN DD to 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 SMPTLIBs to a work data set for editing and submission. See Figure 21 on page 23 to find the appropriate SMPTLIB data set.

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

You can install Enterprise COBOL in the same SMP/E zone as z/OS Version 1 Release 1 (or higher), OS/390 Version 2 Release 10, 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 IGYWSMPA and IGYWSMPI sample jobs to allocate and prime the SMPCSI cluster.

Edit and submit sample job IGYWSMPA to define and prime a new SMP/E CSI 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.

Edit and submit sample job IGYWSMPI. This job allocates SMP/E data sets, initializes SMP/E CSI zones and adds DDDEF entries to the new zones. 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.

6.1.5 Perform SMP/E RECEIVE

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.

NOTE: If you obtained Enterprise COBOL as part of a CBPDO, you can use the RCVPDO 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.

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

6.1.6 Allocate SMP/E Target and Distribution Libraries and Paths

6.1.6.1 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 run correctly.

6.1.6.2 Allocate Paths: Before allocating the HFS paths and creating the DDDEF entries for Enterprise COBOL, you should decide where to install the product. You can install into either the root file system or a separate HFS.

- 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 sub-directories, using /SERVICE as the -PathPrefix- variable in the sample jobs IGYWDDEF and IGYISMKD
 - 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 separate file system (optional):
 - Create a new HFS
 - Create directory /usr/lpp/cobol
 - Mount the new HFS on that directory
 - Run the IGYISMKD job to create the sub-directories, using " (null) as the -PathPrefix- variable in the sample jobs IGYWDDEF and IGYISMKD
 - Proceed with the SMP/E install

See the UNIX System Services Planning guide for more information.

After you have mounted the HFS where you want to install Enterprise COBOL, edit and submit sample job IGYISMKD to allocate the HFS paths. You must submit this job from a userid that is either UID=0 or is permitted to the BPX.SUPERUSER facility class. Consult the instructions in the sample job for more information.

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

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

6.1.7 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 run correctly.

6.1.8 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 run correctly.

Expected Return Codes and Messages from APPLY: You will get a return code of 0 if the job run correctly. IEW2454W messages are expected and can be ignored.

6.1.9 Enable/Register the Debug Tool feature of Enterprise COBOL

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 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, Debug Tool will be enabled in the OS/390 or z/OS environment.

6.1.10 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.

6.1.11 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 jobs 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 run correctly.

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

This concludes the installation for Enterprise COBOL. See the Debug Tool program directory (GI10-8493-00) for further instructions on how to install and activate IBM Debug Tool for z/OS and OS/390.

7.0 Installation Instructions for Alternate Function Offering

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.

7.1 Installing Enterprise COBOL

7.1.1 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.

7.1.2 SMP/E Options Subentry Values

The recommended values for some SMP/E CSI subentries are shown in Figure 22. 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.

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.

7.1.3 Sample Jobs

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

Figure 23. Sample Installation Jobs

Job Name	Job Type	Description	RELFILE
IGYWSMPA	SMP/E	Sample job to define and prime a new SMP/E CSI (optional)	IBM.H26L320.F1
IGYWSMPI	SMP/E	Sample job to allocate SMP/E data sets (optional)	IBM.H26L320.F1
IGYWRECV	RECEIVE	Sample RECEIVE job	IBM.H26L320.F1
IGYWALOC	ALLOCATE	Sample job to allocate target and distribution libraries	IBM.H26L320.F1
IGYISMKD	MKDIR	Sample job to invoke the supplied IGYMKDIR EXEC to allocate HFS paths	IBM.H26L320.F1
IGYWDDEF	DDDEF	Sample job to define SMP/E DDDEFs	IBM.H26L320.F1
IGYWAPLY	APPLY	Sample APPLY job	IBM.H26L320.F1
IGYWACPT	ACCEPT	Sample ACCEPT job	IBM.H26L320.F1
IGYWIVP1	IVP	Sample job to verify installation has been successful	IBM.H26L320.F1
IGYWIVP2	IVP	Sample job to verify installation has been successful	IBM.H26L320.F1

You may 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.H26L320.F1,UNIT=tunit,VOL=SER=26L320,
// LABEL=(2,SL),DISP=(OLD,KEEP)
//FILEIN DD DSN=IBM.H26L320.F1,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol
//OUT DD DSN=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=(IGYWSMPA,IGYWSMPI,IGYWALOC,IGYWDDEF)
SELECT MEMBER=(IGYWRECV,IGYISMKD,IGYWAPLY,IGYWIVP1)
SELECT MEMBER=(IGYWIVP2,IGYWACPT)
/*
```

where **tunit** is the unit value matching the product tape, **filevol** is the volume serial of the DASD device where the downloaded files reside, **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 and **xxxxIN** on the SYSIN DD to 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 SMPTLIBs to a work data set for editing and submission. See Figure 23 on page 29 to find the appropriate SMPTLIB data set.

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

You can install Enterprise COBOL in the same SMP/E zone as z/OS Version 1 Release 1 (or higher), OS/390 Version 2 Release 10, 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 IGYWSMPA and IGYWSMPI sample jobs to allocate and prime the SMPCSI cluster.

Edit and submit sample job IGYWSMPA to define and prime a new SMP/E CSI 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.

Edit and submit sample job IGYWSMPI. This job allocates SMP/E data sets, initializes SMP/E CSI zones and adds DDDEF entries to the new zones. 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.

7.1.5 Perform SMP/E RECEIVE

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.

NOTE: If you obtained Enterprise COBOL as part of a CBPDO, you can use the RCVPDO 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.

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

7.1.6 Allocate SMP/E Target and Distribution Libraries and Paths

7.1.6.1 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.

7.1.6.2 Allocate Paths: Before allocating the HFS paths and creating the DDDEF entries for Enterprise COBOL, you should decide where to install the product. You can install into either the root file system or a separate HFS.

- 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 sub-directories, using /SERVICE as the -PathPrefix- variable in the sample jobs IGYWDDEF and IGYISMKD
 - 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 separate file system (optional):
 - Create a new HFS
 - Create directory /usr/lpp/cobol
 - Mount the new HFS on that directory
 - Run the IGYISMKD job to create the sub-directories, using " (null) as the -PathPrefix- variable in the sample jobs IGYWDDEF and IGYISMKD
 - Proceed with the SMP/E install

See the UNIX System Services Planning guide for more information.

After you have mounted the HFS where you want to install Enterprise COBOL, edit and submit sample job IGYISMKD to allocate the HFS paths. You must submit this job from a userid that is either UID=0 or is permitted to the BPX.SUPERUSER facility class. Consult the instructions in the sample job for more information.

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

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

7.1.7 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.

7.1.8 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 0 if the job runs correctly.

7.1.9 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.

7.1.10 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.

Expected Return Codes and Messages from ACCEPT: 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.

Reader's Comments

Program Directory for IBM Enterprise COBOL for z/OS and OS/390 V3R2 September 2002

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RATING SCALE					
very satisfied	<----->			very dissatisfied	not applicable
1	2	3	4	5	N

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

How did you order this product?

- CBPDO
- CustomPac
- ServerPac
- Independent
- Other

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

- Yes
- No

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

- Yes

IBM Corporation
555 Bailey Avenue
San Jose, CA. 95141
USA
Attn: Dept. J63A/F4

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

E-Mail: Clive Nealon/Australia/IBM@IBMAU



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