# Program Directory for

# IBM Enterprise COBOL for z/OS and OS/390

Version 3 Release 1, Modification Level 0

Program Number 5655-G53

FMIDs H26L310, J26L311, J26L312, J26L31H, HCKVC00, JCKVC05

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

Document Date: May 2002

GI10-8423-03

**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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# Notices

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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 V3R1. This publication refers to IBM Enterprise COBOL for z/OS and OS/390 V3R1 as Enterprise COBOL. You should read all of this program directory before installing the program and then keep it for future reference.

The program directory contains the following sections:

- 2.0, “Program Materials” on page 6 identifies the basic and optional program materials and documentation for Enterprise COBOL.
- 3.0, “Program Support” on page 11 describes the IBM support available for Enterprise COBOL.
- 4.0, “Program and Service Level Information” on page 13 lists the APARs (program level) and PTFs (service level) incorporated into Enterprise COBOL.
- 5.0, “Installation Requirements and Considerations” on page 15 identifies the resources and considerations for installing and using Enterprise COBOL.
- 6.0, “Installation Instructions for Full Function Offering” on page 25 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 34 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 11. 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 Syntax for Java Interoperability

Enterprise COBOL provides object-oriented syntax to facilitate the interoperation of COBOL and Java programs. The support is based upon the facilities of the Java Native Interface, which is the primary means provided by Java for interoperation with non-Java programs. However the Java Native Interface is designed for use with C and C++, and is difficult to use directly from COBOL.

The object-oriented COBOL syntax is designed to enable COBOL programmers to easily write COBOL code that:

- Creates object instances of classes that are written in Java or COBOL
- Invokes methods on Java or COBOL objects
- Defines classes, with methods written in COBOL

Object instances of COBOL classes may be created from Java or COBOL. Methods of these classes can be invoked from Java or COBOL. COBOL classes may inherit from Java classes or other COBOL classes; Java classes may extend COBOL classes. COBOL may define and invoke overloaded methods. COBOL methods may use COBOL CALL statements to interface with procedural COBOL programs. Thus COBOL class definition syntax may be especially useful for writing "wrapper" classes for legacy COBOL logic, enabling existing COBOL code to be accessed from Java.

Basic Java-oriented object capabilities are available directly through the COBOL language. Additional Java-oriented capabilities are available to the COBOL programmer by using calls to the services provided by the Java Native Interface. The Java interoperability capabilities of IBM COBOL leverage other new support introduced in this release:

- Java programs can be multithreaded and Java interoperation requires toleration of asynchronous signals. To mix COBOL with these Java programs requires the thread enablement provided with the THREAD compiler option.
- Java String data is represented at run time in Unicode. The Unicode support provided with the new COBOL national data type enables COBOL programs to exchange string data with Java programs. Object-oriented COBOL programs and Java programs are developed and executed under the Unix System Services environment.

### 1.1.2 WebSphere Interoperation

The Java interoperability capabilities of COBOL may be used to access Enterprise Java Beans (EJB) running in a J2EE compliant EJB server, such as the WebSphere Application Server. To do this, the client environment must support a Java-based Object Request Broker (ORB). The client COBOL application may use COBOL INVOKE statements to access the programming interfaces of:

- The Java Naming and Directory Interface (JNDI) to locate EJB services and components
- The Java ORB to invoke methods on enterprise beans

### 1.1.3 XML Support

This version is designed to introduce basic XML capability to COBOL. The support includes a high-speed XML parser, which allows programs to:

- Consume inbound XML messages
- Check them for being well-formed
- Transform their contents to COBOL data structures

The XML support in this release does not provide XML generation. It must instead be accomplished by COBOL program logic. The XML support has no special environmental requirements. It executes in all the principal run-time environments, including CICS, IMS, and MQ Series.

The XML support can be used to enhance your existing high performance IMS transactions written in COBOL in a B2B environment by receiving and sending XML documents. IMS supports the transmission of XML documents in the data portion of the IMS message. The messages can be placed and retrieved for the IMS messages queue for all messages regions including MPP, IFP, and BMP.

### 1.1.4 Integrated CICS Translator

With this release, compilation of COBOL programs containing CICS statements no longer requires a separate translation step with the CICS translator. An integrated translator approach is an alternative to using the separate translator. With the integrated translator approach, the COBOL compiler handles both native COBOL and imbedded CICS statements in the source program.

When the CICS statements are encountered, and at other significant points in the source program, the compiler interfaces with the integrated CICS translator. The integrated CICS translator takes appropriate actions and then returns to the compiler typically indicating which native language statement to generate at that point.

While the separate translator approach is still supported, the integrated CICS translator approach is the preferred and recommended solution. It provides improved usability and the highest level of function. In particular:

- Interactive debugging of COBOL applications with the debug tool is enhanced since the application can be debugged at the original source level, instead of at the level of the expanded source produced by the CICS translator.
- EXEC CICS or EXEC DLI statements can be in copybooks without the need to separately translate them before compilation.
- There is no need for an intermediate data set to hold the translated but not compiled version of the source program.
- There is only one output listing instead of two.
- Using nested programs that contain EXEC CICS statements is simplified.
- Nested programs that contain EXEC CICS statements can be held in separate files and included through a COPY statement.
- REPLACE statements can now affect EXEC CICS statements.

- Binary fields in CICS control blocks are generated with USAGE COMP-5 instead of BINARY. Thus there is no longer a dependency on the setting of the TRUNC compiler option.

### 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 Thread and Asynchronous Signal Toleration Support

IBM Enterprise COBOL for z/OS and OS/390 V3R1 introduces a toleration level of support for POSIX threads and signals. Prior versions of IBM COBOL host products limited COBOL to execution on only one POSIX thread. The support added in this release is designed so that an application can contain COBOL programs running on multiple threads within a process. No explicit COBOL language or features are added for initiating threads or for thread serialization in this release. Typically, these capabilities will be handled outside COBOL by C programs, or by calling POSIX APIs directly from COBOL. The level of support is analogous to the level of support for threads provided by IBM VisualAge COBOL for Windows NT and COBOL Set for AIX.

### 1.1.7 Other Usability Enhancements

- Large VALUE clauses on COMP-5 items or BINARY items with TRUNC(BIN)
- Function-pointer datatype
- Arguments specifying ADDRESS OF WORKING-STORAGE item

### 1.1.8 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
- 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 do 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:

H26L310
J26L311
J26L312
J26L31H
HCKVC00
JCKVC05

Enterprise COBOL Alternate Function Offering consists of the following FMIDs:

H26L310
J26L311
J26L312
J26L31H

# 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 25 or 7.0, “Installation Instructions for Alternate Function Offering” on page 34 for more information about how to install the program.

Figure 1 through Figure 4 on page 7 describe the physical tapes. Figure 5 on page 7 through Figure 7 on page 8 describe 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.

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

| Medium | Feature Number | Physical Volume | External Label | R/M * | VOLSER |
|---|---|---|---|---|---|
| 6250 tape | 5801 | 1 of 2<br>2 of 2 | COBOL Base z/OS & OS/390<br>COBOL DEBUG z/OS & OS/390 | N | 26L310<br>CKVC00 |
| 3480 cartridge | 5802 | 1 of 2<br>2 of 2 | COBOL Base z/OS & OS/390<br>COBOL DEBUG z/OS & OS/390 | N | 26L310<br>CKVC00 |
| 4mm cartridge | 6510 | 1 of 2<br>2 of 2 | COBOL Base z/OS & OS/390<br>COBOL DEBUG z/OS & OS/390 | N | 26L310<br>CKVC00 |

*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 3<br>2 of 3<br>3 of 3 | COBOL Base z/OS & OS/390<br>COBOL DEBUG z/OS & OS/390<br>COBOL DEBUG JPN z/OS & OS/390 | N | 26L310<br>CKVC00<br>CKVC05 |
| 3480 cartridge | 5812 | 1 of 3<br>2 of 3<br>3 of 3 | COBOL Base z/OS & OS/390<br>COBOL DEBUG z/OS & OS/390<br>COBOL DEBUG JPN z/OS & OS/390 | N | 26L310<br>CKVC00<br>CKVC05 |
| 4mm cartridge | 6511 | 1 of 3<br>2 of 3<br>3 of 3 | COBOL Base z/OS & OS/390<br>COBOL DEBUG z/OS & OS/390<br>COBOL DEBUG JPN z/OS & OS/390 | N | 26L310<br>CKVC00<br>CKVC05 |

*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 | 26L310 |
| 3480 cartridge | 5832 | 1 | COBOL Base z/OS & OS/390 | N | 26L310 |
| 4mm cartridge | 6513 | 1 | COBOL Base z/OS & OS/390 | N | 26L310 |

*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 | 26L310 |
| 3480 cartridge | 5822 | 1 | COBOL Base z/OS & OS/390 | N | 26L310 |
| 4mm cartridge | 6512 | 1 | COBOL Base z/OS & OS/390 | N | 26L310 |

* R/M = Restricted Materials of IBM

*Figure 5 (Page 1 of 2). Program File Content for Enterprise COBOL*

| Name | ORG | RECFM | LRECL | BLK SIZE |
|---|---|---|---|---|
| SMPMCS | SEQ | FB | 80 | 6400 |
| IBM.H26L310.F1 | PDS | FB | 80 | 8800 |
| IBM.H26L310.F2 | PDS | U | 0 | 6144 |
| IBM.J26L311.F1 | PDS | FB | 80 | 8800 |

*Figure 5 (Page 2 of 2). Program File Content for Enterprise COBOL*

| Name | ORG | RECFM | LRECL | BLK SIZE |
|---|---|---|---|---|
| IBM.J26L311.F2 | PDS | U | 0 | 6144 |
| IBM.J26L312.F1 | PDS | FB | 80 | 8800 |
| IBM.J26L312.F2 | PDS | U | 0 | 6144 |
| IBM.J26L31H.F1 | PDS | VB | 255 | 27998 |

*Figure 6. Program File Content for Debug Tool*

| Name | ORG | RECFM | LRECL | BLK SIZE |
|---|---|---|---|---|
| SMPMCS | SEQ | FB | 80 | 6400 |
| IBM.HCKVC00.F1 | PDS | FB | 80 | 8800 |
| IBM.HCKVC00.F2 | PDS | FB | 80 | 8800 |
| IBM.HCKVC00.F3 | PDS | U | 0 | 6144 |
| IBM.HCKVC00.F4 | PDS | FB | 80 | 8800 |
| IBM.HCKVC00.F5 | PDS | FB | 80 | 8800 |
| IBM.HCKVC00.F6 | PDS | FB | 80 | 8800 |
| IBM.HCKVC00.F7 | PDS | FB | 80 | 8800 |

*Figure 7. Program File Content for Debug Tool Japanese*

| Name | ORG | RECFM | LRECL | BLK SIZE |
|---|---|---|---|---|
| SMPMCS | SEQ | FB | 80 | 6400 |
| IBM.JCKVC05.F1 | PDS | U | 0 | 6144 |
| IBM.JCKVC05.F2 | PDS | FB | 80 | 8800 |

## 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 8 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 8. Basic Material: Unlicensed Publications*

| Publication Title | Form Number |
|---|---|
| Enterprise COBOL Customization | GC27-1410 |
| Debug Tool Customization Guide | GC27-1571 |
| Debug Tool Japanese Customization Guide | GC88-9210 |

The Debug Tool Customization Guide is also available in displayable softcopy format (BookManager, PDF) through the internet at http://www-3.ibm.com/software/ad/debugtool/library/

### 2.3.2 Optional Program Publications

Figure 9 identifies the optional unlicensed program publications for Enterprise COBOL. One copy of each of these publications is included when you order the optional materials for Enterprise COBOL. For additional copies, contact your IBM representative.

*Figure 9 (Page 1 of 2). Optional Material: Unlicensed Publications*

| Publication Title | Form Number | Feature Number |
|---|---|---|
| Enterprise COBOL Language Reference | SC27-1408 | Any |
| Enterprise COBOL Compiler and Run-Time Migration Guide | GC27-1409 | Any |
| Enterprise COBOL Licensed Program Specifications | GC27-1411 | Any |
| Enterprise COBOL Programming Guide | GC27-1412 | Any |
| Debug Tool User's Guide | SC27-1573 | * |

| *Figure 9 (Page 2 of 2). Optional Material: Unlicensed Publications* | | |
|---|---|---|
| **Publication Title** | **Form Number** | **Feature Number** |
| Debug Tool Reference Manual and Messages | SC27-1575 | * |
| Debug Tool JPN User's Guide | SC88-9211 | * |
| Debug Tool JPN Reference Manual and Messages | SC88-9212 | * |

* This publication is only available in the Full Function Offering features. It is also available in displayable softcopy format (BookManager, PDF) through the internet at http://www-3.ibm.com/software/ad/debugtool/library/

## 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 10 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.ibmlink.ibm.com/applications/public/applications/publications/cgibin/pbi.cgi

| *Figure 10. Publications Useful During Installation* | |
|---|---|
| **Publication Title** | **Form Number** |
| *IBM SMP/E for z/OS and OS/390 User's Guide* | SA22-7773 |
| *IBM SMP/E for z/OS and OS/390 Commands* | SA22-7771 |
| *IBM SMP/E for z/OS and OS/390 Reference* | SA22-7772 |
| *IBM SMP/E for z/OS and OS/390 Messages, Codes, and Diagnosis* | GA22-7770 |
| *OS/390 SMP/E User's Guide* | SC28-1740 |
| *OS/390 SMP/E Commands* | SC28-1805 |
| *OS/390 SMP/E Reference* | SC28-1806 |
| *OS/390 SMP/E Messages and Codes* | SC28-1738 |
| *z/OS UNIX System Services Planning* | GA22-7800 |
| *z/OS UNIX System Services Messages and Codes* | SA22-7807 |
| *OS/390 UNIX System Services Planning* | SC28-1890 |
| *OS/390 UNIX System Services Messages and Codes* | SC28-1908 |

# 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.ibmlink.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 11. PSP Upgrade and Subset ID*

| UPGRADE | SUBSET | Description |
|---|---|---|
| COBOLZOS310 | H26L310 | Enterprise COBOL Base |
| | J26L311 | Enterprise COBOL US English |
| | J26L312 | Enterprise COBOL Japanese |
| | J26L31H | Enterprise COBOL HFS |
| DEBUG130 | HCKVC00 | Debug Tool Base |
| | JCKVC05 | 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 12 identifies the component IDs (COMPID) for Enterprise COBOL.

*Figure 12. Component IDs*

| FMID | COMPID | Component Name | RETAIN Release |
|---|---|---|---|
| H26L310 | 5655G5300 | Enterprise COBOL Base | 310 |
| J26L311 | 5655G5300 | Enterprise COBOL US English | 311 |
| J26L312 | 5655G5300 | Enterprise COBOL Japanese | 312 |
| J26L31H | 5655G5300 | Enterprise COBOL HFS | 31H |
| HCKVC00 | 568819421 | Debug Tool Base | C00 |
| JCKVC05 | 568819421 | Debug Tool JPN | C05 |

# 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 H26L310

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

- FMID HCKVC00

| | | | |
|---|---|---|---|
| PN65602 | PN88706 | PQ14291 | PQ30470 |
| PN65603 | PN88707 | PQ14612 | PQ31829 |
| PN66733 | PN88762 | PQ18735 | PQ33668 |
| PN69045 | PN89070 | PQ18736 | PQ37039 |
| PN69895 | PQ01218 | PQ20342 | PQ41451 |
| PN70447 | PQ01220 | PQ20561 | PQ42373 |
| PN74855 | PQ03224 | PQ24033 | PQ43111 |
| PN74858 | PQ03226 | PQ24271 | PQ43112 |
| PN77047 | PQ04955 | PQ24276 | PQ48578 |
| PN77957 | PQ06206 | PQ24651 | PQ48732 |
| PN78462 | PQ06208 | PQ25905 | PQ49058 |
| PN80668 | PQ06440 | PQ27247 | PQ49084 |
| PN86092 | PQ08277 | PQ29348 | PQ49642 |
| PN88015 | PQ09353 | | |

## 4.2 Service Level Information

No PTFs against this release of Enterprise COBOL have been incorporated into the product tape. UQ63277 for Enterprise COBOL will contain fixes that we were not able to include into the base tape. PTFs UQ64688 and UQ66516 for Debug Tool will contain fixes that we were not able to include into the base 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 13. 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 J26L312 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 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 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.

*Figure 14. Mandatory Requisites*

| Program Number | Product Name and Minimum VRM/Service Level |
|---|---|
| Any **one** of the following: | |
| 5647-A01 | OS/390 Version 2 Release 10<br>You must install APAR PQ56581 if you want to run Debug Tool with COBOL applications. If you debug COBOL under CICS then you will need APAR PQ57312 as well.<br>You must install APAR PQ53321 if you want the IBM Communication Server's TN3270 Telnet Server to provide a terminal LU for use by the 'full-screen mode using VTAM facility'. |
| 5694-A01 | z/OS Version 1 Release 1 or higher<br>You must install APAR PQ56581 if you want to run Debug Tool with COBOL applications. If you debug COBOL under CICS then you will need APAR PQ57312 as well.<br>You must install APAR PQ53321 if you want the IBM Communication Server's TN3270 Telnet Server to provide a terminal LU for use by the 'full-screen mode using VTAM facility'. |

**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 15 (Page 1 of 2). Functional Requisites*

| Program Number | Product Name and Minimum VRM/Service Level | Function |
|---|---|---|
| 5647-A01, 5694-A01 | OS/390 Support for Unicode<br>z/OS Support for Unicode | COBOL programs that use either Unicode features or object-oriented syntax for Java interoperability |
| 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<br>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<br>Version 7 of DB2 UDB is required for DB2 coprocessor support | COBOL applications with DB2 |
| Any **one** of the following: | | |
| 5655-158 | IMS/ESA V6 | COBOL applications with IMS |
| 5655-B01 | IMS/ESA V7 | COBOL applications with IMS |
| Any **one** of the following: | | |
| 5668-909, 5668-910, 5668-911 | OS PL/I V2R3 | PL/I source programs (for interlanguage communication) |

| Figure 15 (Page 2 of 2). Functional Requisites | | |
|---|---|---|
| **Program Number** | **Product Name and Minimum VRM/Service Level** | **Function** |
| 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 V3R1 | PL/I source programs (for interlanguage communication) |

**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 16 and Figure 17 list the total space required for each type of library.

| Figure 16. Total DASD Space Required by Enterprise COBOL Full Function Offering | |
|---|---|
| **Library Type** | **Total Space Required** |
| Target | 439 Tracks |
| Distribution | 533 Tracks |
| HFS | 6 Tracks |

| Figure 17 (Page 1 of 2). Total DASD Space Required by Enterprise COBOL Alternate Function Offering | |
|---|---|
| **Library Type** | **Total Space Required** |
| Target | 129 Tracks |

*Figure 17 (Page 2 of 2). Total DASD Space Required by Enterprise COBOL Alternate Function Offering*

| Library Type | Total Space Required |
|---|---|
| Distribution | 175 Tracks |
| HFS | 6 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 and Paths” on page 29.

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.

*Figure 18. Storage Requirements for Enterprise COBOL Target Libraries*

| Library DDNAME | Member Type | Target Volume | TYPE | ORG | RECFM | LRECL | No. of 3390 Trks | No. of DIR Blks |
|---|---|---|---|---|---|---|---|---|
| SIGYCOMP | LMOD | ANY | U | PDS | U | 0 | 80 | 9 |
| SIGYSAMP | Sample | ANY | U | PDS | FB | 80 | 26 | 4 |
| SIGYPROC | Procedure | ANY | U | PDS | FB | 80 | 1 | 1 |
| SIGYMAC | Macro | ANY | U | PDS | FB | 80 | 6 | 1 |
| SIGYCLST | CLIST | ANY | U | PDS | FB | 80 | 16 | 3 |

*Figure 19 (Page 1 of 2). Storage Requirements for Debug Tool and Debug Tool JPN Target Libraries*

| Library DDNAME | Member Type | Target Volume | TYPE | ORG | RECFM | LRECL | No. of 3390 Trks | No. of DIR Blks |
|---|---|---|---|---|---|---|---|---|
| LPALIB | LMOD | ANY | E | PDS | U | 0 | 1 | 1 |
| SEQAAUTH | LMOD | ANY | U | PDS | U | 0 | 2 | 1 |
| SEQAMOD | LMOD | ANY | U | PDS | U | 0 | 264 | 21 |

*Figure 19 (Page 2 of 2). Storage Requirements for Debug Tool and Debug Tool JPN Target Libraries*

| Library DDNAME | Member Type | Target Volume | TYPE | ORG | RECFM | LRECL | No. of 3390 Trks | No. of DIR Blks |
|---|---|---|---|---|---|---|---|---|
| SEQASAMP | Sample | ANY | U | PDS | FB | 80 | 13 | 2 |
| SEQAEXEC | EXEC | ANY | U | PDS | FB | 80 | 10 | 1 |
| SEQAMLIB | Message | ANY | U | PDS | FB | 80 | 2 | 1 |
| SEQAPLIB | Panel | ANY | U | PDS | FB | 80 | 14 | 8 |
| SEQASLIB | Skeleton | ANY | U | PDS | FB | 80 | 2 | 1 |
| SEQATLIB | Table | ANY | U | PDS | FB | 80 | 2 | 1 |

*Figure 20. Enterprise COBOL HFS Paths*

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

*Figure 21. Storage Requirements for Enterprise COBOL Distribution Libraries*

| Library DDNAME | TYPE | ORG | RECFM | LRECL | No. of 3390 Trks | No. of DIR Blks |
|---|---|---|---|---|---|---|
| AIGYHFS | U | PDS | VB | 255 | 5 | 1 |
| AIGYSRC1 | U | PDS | FB | 80 | 49 | 7 |
| AIGYMOD1 | U | PDS | U | 0 | 121 | 59 |

*Figure 22 (Page 1 of 2). Storage Requirements for Debug Tool and Debug Tool JPN Distribution Libraries*

| Library DDNAME | TYPE | ORG | RECFM | LRECL | No. of 3390 Trks | No. of DIR Blks |
|---|---|---|---|---|---|---|
| AEQAMOD | U | PDS | U | 0 | 315 | 73 |
| AEQASAMP | U | PDS | FB | 80 | 13 | 2 |
| AEQAEXEC | U | PDS | FB | 80 | 10 | 1 |

*Figure 22 (Page 2 of 2). Storage Requirements for Debug Tool and Debug Tool JPN Distribution Libraries*

| Library DDNAME | TYPE | ORG | RECFM | LRECL | No. of 3390 Trks | No. of DIR Blks |
|---|---|---|---|---|---|---|
| AEQAMLIB | U | PDS | FB | 80 | 2 | 1 |
| AEQAPLIB | U | PDS | FB | 80 | 14 | 8 |
| AEQASLIB | U | PDS | FB | 80 | 2 | 1 |
| AEQATLIB | U | PDS | FB | 80 | 2 | 1 |

## 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 Special Considerations

1. If you want to take advantage of the new Unicode support or the object-oriented syntax for Java interoperability, and your system is not a z/OS Version 1 Release 2 or higher, ensure that you have the product *OS/390 Support for Unicode*, FMID HUNI2A0, installed on your target system and all production systems where the COBOL applications will be executed. This product can be downloaded from the web site **http://www.ibm.com/downloads**.

   Under Software downloads, click on Operating systems, then select OS/390 from a pull-down list, and 'OS/390 V2 R8/R9/R10 Support for Unicode' is in the list of free software products.

   Refer to the Program Directory number GI10-9760, or contact your IBM representative for more information.

   For z/OS Version 1 Release 2 or higher, the *z/OS Support for Unicode* component is included with the operating system. For either OS/390 or z/OS, the Unicode conversion services provided by these products must be configured after installation to meet COBOL requirements, as discussed in 5.5, “Configuring Unicode Support for Enterprise COBOL” on page 23.

2. Target libraries for Debug Tool that contain load modules have the following special considerations:
   - LPALIB must be in the LPA

- A portion of SEQAMOD may be placed in the LPA. See sample job EQAWMLP2 in hlq.SEQASAMP for more information.
- SEQAMOD may be in the LNKLST
- SEQAAUTH must be APF authorized. The other load module data sets may be APF authorized, but it is not required.
- To prevent unauthorized execution of the SVC install program, ensure the APF authorized data set hlq.SEQAAUTH, which contains the dynamic install program EQAINSVC, is access controlled.

3. If your order contains the Japanese feature (FMID JCKVC05), ensure you have the base PTFs UQ64688 and UQ66516 installed prior to or at the same time you install this Japanese feature.

## 5.5 Configuring Unicode Support for Enterprise COBOL

A new national data type, national literals, intrinsic functions, and compiler options provide basic run-time support for Unicode in COBOL. Also, new object-oriented syntax for Java interoperability uses Unicode capabilities implicitly. COBOL source programs continue to be encoded in an EBCDIC (SBCS or DBCS) code page.

The COBOL Unicode support uses the product *OS/390 Support for Unicode* (HUNI2A0), or the *z/OS Support for Unicode* component of z/OS. This product must be installed (in the OS/390 case), and an appropriate conversion image must be configured (in either case), before COBOL programs that use the Unicode capabilities can be compiled or run. If the required conversion support with an image that includes the required conversion tables is not available, a severity 3 Language Environment condition is raised at run time, or a compiler diagnostic message is issued.

A data conversion performed by COBOL is always between Unicode (CCSID 1200 or 1208) and another code page. Unicode conversion services must be configured with support for:

- CCSIDs that are specified as values of the CODEPAGE compiler option or as argument-2 of the DISPLAY-OF or NATIONAL-OF functions: to and from CCSID 1200 (UTF-16)
- If application programs will use object-oriented syntax for Java interoperability, also configure the following:
  - CCSIDs that are specified as values of the CODEPAGE compiler option, to CCSID 1208 (UTF-8)
  - CCSID 1200 to CCSID 1208

For example, consider an installation with applications that use object-oriented syntax for Java interoperation, that use only the default value of the CODEPAGE compiler option (which is CCSID 1140), and that do not specify CCSID values explicitly on DISPLAY-OF or NATIONAL-OF functions. In this case, configure the Unicode conversion services with (at least) the following set of conversions:

```
1140 to 1200
1200 to 1140
1140 to 1208
1200 to 1208
```

Note that the Unicode conversion services might be used by other IBM products (such as DB2) that are installed on the system, as well as by Enterprise COBOL. In this case, configure the conversion services incorporating the requirements of all such products.

Unicode conversion services must be configured on both development systems and deployment (production) systems. For more information on configuring Unicode conversion services, see *OS/390 Support for Unicode: Using Conversion Services* (SC33-7050) or *z/OS Support for Unicode: Using Conversion Services* (SA22-7649).

# 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 23. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

*Figure 23. SMP/E Options Subentry Values*

| 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 SMP/E CALLLIBS Processing

Debug Tool uses the CALLLIBS function provided in SMP/E to resolve external references during installation. When Debug Tool is installed, ensure that DDDEFs exist for the following libraries:

- SCEELKED
- CSSLIB
- SEZATCP

**Note:** The DDDEFs above are used only to resolve the link-edit for Debug Tool using CALLLIBS. These data sets are not updated during the installation of Debug Tool.

## 6.1.4 Sample Jobs

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

### 6.1.4.1 Sample Jobs for Enterprise COBOL

*Figure 24. Sample Installation Jobs for Enterprise COBOL*

| Job Name | Job Type | Description | RELFILE |
|---|---|---|---|
| IGYWSMPA | SMP/E | Sample job to define and prime a new SMP/E CSI **(optional)** | IBM.H26L310.F1 |
| IGYWSMPI | SMP/E | Sample job to allocate SMP/E data sets **(optional)** | IBM.H26L310.F1 |
| IGYWRECV | RECEIVE | Sample RECEIVE job | IBM.H26L310.F1 |
| IGYWALOC | ALLOCATE | Sample job to allocate target and distribution libraries | IBM.H26L310.F1 |
| IGYISMKD | MKDIR | Sample job to invoke the supplied IGYMKDIR EXEC to allocate HFS paths | IBM.H26L310.F1 |
| IGYWDDEF | DDDEF | Sample job to define SMP/E DDDEFs | IBM.H26L310.F1 |
| IGYWAPLY | APPLY | Sample APPLY job | IBM.H26L310.F1 |
| IGYWACPT | ACCEPT | Sample ACCEPT job | IBM.H26L310.F1 |
| IGYWIVP1 | IVP | Sample job to verify installation has been successful | IBM.H26L310.F1 |
| IGYWIVP2 | IVP | Sample job to verify installation has been successful | IBM.H26L310.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.H26L310.F1,UNIT=tunit,VOL=SER=26L310,
//         LABEL=(2,SL),DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.H26L310.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=(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 24 on page 26 to find the appropriate SMPTLIB data set.

### 6.1.4.2 Sample Jobs for Debug Tool

*Figure 25. Sample Installation Jobs for Debug Tool*

| Job Name | Job Type | Description | RELFILE |
|---|---|---|---|
| EQAWRECV | RECEIVE | Sample RECEIVE job | IBM.HCKVC00.F5 |
| EQAWRECJ | RECEIVE | Sample RECEIVE job for the Japanese FMID | IBM.HCKVC00.F5 |
| EQAWALLO | ALLOCATE | Sample job to allocate target and distribution libraries | IBM.HCKVC00.F5 |
| EQAWDDEF | DDDEF | Sample job to define SMP/E DDDEFs | IBM.HCKVC00.F5 |
| EQAWAPLY | APPLY | Sample APPLY job | IBM.HCKVC00.F5 |
| EQAWAPLJ | APPLY | Sample APPLY job for the Japanese FMID | IBM.HCKVC00.F5 |
| EQAWACPT | ACCEPT | Sample ACCEPT job | IBM.HCKVC00.F5 |
| EQAWACPJ | ACCEPT | Sample ACCEPT job for the Japanese FMID | IBM.HCKVC00.F5 |
| EQAWIVP1 | IVP | Sample COBOL job to verify installation has been successful | IBM.HCKVC00.F5 |

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.HCKVC00.F5,UNIT=tunit,VOL=SER=CKVC00,
//         LABEL=(6,SL),DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.HCKVC00.F5,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=(EQAWALLO,EQAWDDEF,EQAWRECV)
  SELECT MEMBER=(EQAWRECJ,EQAWAPLY,EQAWAPLJ)
  SELECT MEMBER=(EQAWACPT,EQAWACPJ,EQAWIVP1)
/*
```

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 25 on page 27 to find the appropriate SMPTLIB data set.

## 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 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.

## 6.1.6 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.

Edit and submit sample job EQAWRECV to perform the SMP/E RECEIVE for Debug Tool. Consult the instructions in the sample job for more information.

If your order contains the Debug Tool Japanese feature then edit and submit sample job EQAWRECJ to perform the SMP/E RECEIVE for Debug Tool Japanese feature. 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 jobs run correctly.

## 6.1.7 Allocate SMP/E Target and Distribution Libraries and Paths

**6.1.7.1 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.

Edit and submit sample job EQAWALLO to allocate the SMP/E target and distribution libraries for Debug Tool. 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 jobs run correctly.

**6.1.7.2 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.

### 6.1.8 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.

Edit and submit sample job EQAWDDEF to create DDDEF entries for the SMP/E target and distribution libraries for Debug Tool. Since library AEQASRC2 is no longer used in this new release, ensure you do not refer to it in your SYSLIB concatenation. 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 jobs run correctly.

## 6.1.9 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.

Edit and submit sample job EQAWAPLY to perform an SMP/E APPLY CHECK for Debug Tool. Consult the instructions in the sample job for more information.

If your order contains the Debug Tool Japanese feature, ensure you have the base PTFs UQ64688 and UQ66516 installed prior to or at the same time you install this Japanese feature.

Edit and submit sample job EQAWAPLJ to perform an SMP/E APPLY CHECK for Debug Tool Japanese feature. 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 jobs 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 jobs run correctly.

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

## 6.1.10 Enable/Register Debug Tool

Before running any applications with Debug Tool or any of the Installation Verification Programs below, ensure that you enable/register Enterprise COBOL. To do this, include an entry for 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.

## 6.1.11 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.

Edit and submit sample jobs EQAWIVP1 to verify that you have installed Debug Tool 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 all 3 jobs.

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

## 6.1.12 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.

Edit and submit sample job EQAWACPT to perform an SMP/E ACCEPT CHECK for Enterprise COBOL. Consult the instructions in the sample job for more information.

If your order contains the Debug Tool Japanese feature, ensure you have the base PTFs UQ64688 and UQ66516 applied prior to the time you accept this Japanese feature.

Edit and submit sample job EQAWACPJ to perform an SMP/E ACCEPT CHECK for Debug Tool Japanese feature. 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 jobs run correctly.

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

### 6.1.13 Cleaning Up Obsolete Data Sets, DDDEFs, and Post-Install Jobs

The following data sets, allocated and used by previous release of Debug Tool, are no longer used in this release. You may choose to delete these obsolete data sets after you delete the previous release from your system.

- SEQACLIS, SEQADUM, SEQAIENU, SEQALPA, SEQAOS2, SEQAPROC, SEQA2ENU
- AEQACLIS, AEQAIENU, AEQAMOD2, AEQAOS2, AEQASRC2, AEQA2ENU

The following DDDEF entries, created and used by previous release of Debug Tool, are no longer used in this release. You may choose to delete these obsolete DDDEF entries after you delete the previous release from your system.

- SEQACLIS, SEQADUM, SEQAIENU, SEQALPA, SEQAOS2, SEQAPROC, SEQA2ENU
- AEQACLIS, AEQAIENU, AEQAMOD2, AEQAOS2, AEQASRC2, AEQA2ENU

The post-install jobs EQAWLU62 and EQAWLECS are also obsolete and are no longer needed.

## 6.2 Activating Enterprise COBOL

The publication *Enterprise COBOL Customization under z/OS and OS/390, GC27-1410* contains the step-by-step procedures to activate the functions of Enterprise COBOL.

The publication *Debug Tool Customization under z/OS and OS/390, GC27-1571* or GC88-9310 contains the step-by-step procedures to activate the functions of Debug Tool.

# 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 26. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

*Figure 26. SMP/E Options Subentry Values*

| 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 27. 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.H26L310.F1 |
| IGYWSMPI | SMP/E | Sample job to allocate SMP/E data sets **(optional)** | IBM.H26L310.F1 |
| IGYWRECV | RECEIVE | Sample RECEIVE job | IBM.H26L310.F1 |
| IGYWALOC | ALLOCATE | Sample job to allocate target and distribution libraries | IBM.H26L310.F1 |
| IGYISMKD | MKDIR | Sample job to invoke the supplied IGYMKDIR EXEC to allocate HFS paths | IBM.H26L310.F1 |
| IGYWDDEF | DDDEF | Sample job to define SMP/E DDDEFs | IBM.H26L310.F1 |
| IGYWAPLY | APPLY | Sample APPLY job | IBM.H26L310.F1 |
| IGYWACPT | ACCEPT | Sample ACCEPT job | IBM.H26L310.F1 |
| IGYWIVP1 | IVP | Sample job to verify installation has been successful | IBM.H26L310.F1 |
| IGYWIVP2 | IVP | Sample job to verify installation has been successful | IBM.H26L310.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.H26L310.F1,UNIT=tunit,VOL=SER=26L310,
//         LABEL=(2,SL),DISP=(OLD,KEEP)
//FILEIN   DD DSN=IBM.H26L310.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=(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 27 on page 34 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 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.

## 7.2 Activating Enterprise COBOL

The publication *Enterprise COBOL Customization under z/OS and OS/390, GC27-1410* contains the step-by-step procedures to activate the functions of Enterprise COBOL.

# Reader's Comments

**Program Directory for IBM Enterprise COBOL for z/OS and OS/390 V3R1 May 2002**

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

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

How did you order this product?

___ CBPDO
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___ Yes
___ No

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

___ Yes

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