

Enterprise COBOL for z/OS  
6.3

*Messages and Codes*



**Note**

Before using this information and the product it supports, be sure to read the general information under [“Notices” on page 27](#).

**Second edition (29 November 2021 update)**

This edition applies to Version 6 Release 3 of IBM® Enterprise COBOL for z/OS® (program number 5655-EC6) and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure that you are using the correct edition for the level of the product.

You can view or download softcopy publications free of charge in the [Enterprise COBOL for z/OS library](#). Because Enterprise COBOL for z/OS supports the continuous delivery (CD) model and publications are updated to document the features delivered under the CD model, it is a good idea to check for updates once every two months.

It is our intention to update the product documentation for this release periodically, without updating the order number. If you need to uniquely refer to the version of your product documentation, refer to the order number with the date of update.

© **Copyright International Business Machines Corporation 2019.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

---

# Contents

<b>Preface.....</b>	<b>V</b>
About this information.....	v
Message format and return codes.....	v
Compiler phase identifiers.....	vi
Summary of changes.....	viii
Version 6 Release 3 with PTFs installed.....	ix
Version 6 Release 3.....	ix
How to send your comments.....	ix
 <b>Chapter 1. IGYPP5000 and IGYPP7000 series messages.....</b>	 <b>1</b>
<b>Chapter 2. IGYCB messages.....</b>	<b>5</b>
<b>Chapter 3. IGYDS messages.....</b>	<b>11</b>
<b>Chapter 4. IGYGR messages.....</b>	<b>13</b>
<b>Chapter 5. IGYOS messages.....</b>	<b>15</b>
<b>Chapter 6. IGYPA messages.....</b>	<b>17</b>
<b>Chapter 7. IGYPG messages.....</b>	<b>19</b>
<b>Chapter 8. IGYPs messages.....</b>	<b>21</b>
<b>Chapter 9. IGYSI messages.....</b>	<b>23</b>
<b>Accessibility features for Enterprise COBOL for z/OS.....</b>	<b>25</b>
 <b>Notices.....</b>	 <b>27</b>
Trademarks.....	29
<b>List of resources.....</b>	<b>31</b>
Enterprise COBOL for z/OS.....	31
Related publications.....	31
 <b>Index.....</b>	 <b>35</b>



# Preface

---

## About this information

---

This information is for IBM Enterprise COBOL for z/OS programmers and system programmers. It helps you understand certain COBOL compiler messages and return codes to diagnose problems.

### Notes:

- This information is developed progressively to provide reference information. However, it will not include all the individual COBOL messages and their explanations. For most messages, there is no further detail other than what you see in the actual messages. This is because the messages are considered to be self-explanatory when used together with the *Enterprise COBOL Language Reference*. If you do not think a message is self-explanatory, please [send us comments](#). Specify the messages that you think need further explanation and why.
- For all the COBOL runtime messages, see [COBOL runtime messages](#) in the *z/OS Language Environment Runtime Messages*.

## Message format and return codes

---

This guide lists the compiler messages generated by the IBM Enterprise COBOL for z/OS compiler in numerical order. These messages are also listed in numerical order in the output following the source program and in any other listings produced by the compiler.

The format of a message generated during compilation is as follows:

```
nnnnnn IGYPPmmm-Z message-text
```

where:

- nnnnnn is the number of the source line to which the message refers.
- IGYPPmmm-z is the message header:
  - IGY is the IBM Enterprise COBOL for z/OS product code.
  - PP identifies the phase that issued the message. For details, see [“Compiler phase identifiers” on page vi](#).
  - mmmm is the message number.
  - Z indicates the compiler message severity level or FIPS message category.

Compiler messages can have 1 of 5 levels of severity:

### **I (informational - return code 0)**

An informational-level message (RC=0) is an aid to the user. No action is required from the user and the program will execute correctly as it stands.

### **W (warning - return code 4)**

A warning-level message (RC=4) calls attention to a possible error. It is probable that the program will execute correctly as written.

### **E (error - return code 8)**

An error-level message (RC=8) indicates a condition that is definitely an error. The compiler has attempted to correct the error but the results of program execution may not be what the user expects. The user should correct the error.

**S (severe - return code 12)**

A severe-level message (RC=12) indicates a condition that is a serious error. The compiler was unable to correct the error. The program will not execute correctly, and execution should not be attempted.

**U (unrecoverable - return code 16)**

An unrecoverable-level message (RC=16) indicates an error condition of such magnitude that the compilation was terminated.

**Notes:**

- Some messages numbered 0000-3999 and any messages numbered 8000-8999 may be suppressed by using a MSGEXIT user exit. If a message is suppressed, this listing will show the severity as XX:

**XX (suppressed - return code of original message)**

Informational and warning messages may be suppressed.

For details, see Processing of MSGEXIT in the *Enterprise COBOL Programming Guide*.

- Messages numbered 5000-5999 are for compiler maintenance and are not translated for national language support.
- Messages numbered 8000-8999 are FIPS messages. These messages can have 1 of 8 categories:

**I**

ANS intermediate level, not in minimum level.

**H**

ANS high level, not in intermediate level.

**D**

ANS debug module level 1.

**N**

ANS segmentation module level 1.

**S**

ANS segmentation module level 2.

**E**

Nonstandard extension.

**O**

Obsolete language element.

**Q**

ANS high level and obsolete language element.

The FLAG compiler option suppresses the listing of messages in the compiler listing. For details, see FLAG in the *Enterprise COBOL Programming Guide*.

## Compiler phase identifiers

In messages, the two characters following IGYC are compiler phase identifiers, which identify the compiler phase that issued the message.

**AS**

Code Generator Phase Control Module Phase (IGYCASMB).

This phase loads and controls the code generator phase IGYCCBE.

**CB**

Code Generation and Optimization Phase (IGYCCBE).

This phase (optionally) optimizes the program, and then generates machine instructions and allocates and manages register usage. This phase also puts out the LIST output to the listing and (optionally) generates debugging information if the DWARF suboption of TEST | NOTEST was in effect.

**DI**

Diagnostic Phase (IGYCDIAG).

This phase processes E-text and generates compiler diagnostics for source program errors.

#### **DM**

DMAP Phase (IGYCDMAP).

This phase processes the MAP option to generate the DATA DIVISION storage map. It uses data contained in the dictionary to produce the storage map.

#### **DS**

Data Scan Sub-Phase (IGYCDSCN).

This phase translates input source statements in the IDENTIFICATION DIVISION, ENVIRONMENT DIVISION, and DATA DIVISION into compiler internal text. It also identifies and classifies statements, and performs syntactical analysis on statements and statement elements. An entry is made in the symbol table for each unique user name identified in this scan.

This phase creates attribute table entries for data definition elements (for example, data-names or file-names), processes data description entry clauses, and checks clauses within an entry for compatibility.

General information table entries are also created for edited PICTURE masks and user-defined collating sequences associated with an alphabet name.

#### **FG**

File Generation Phase (IGYCFGEN).

This phase is a conditional phase executed only if the COBOL program contains an FD (I/O file) and/or an SD (sort file).

#### **GR**

Group Process Sub-Phase (IGYCGROU).

The Group Process sub-phase of the Scan Phase processes references to data names in the ENVIRONMENT DIVISION and DATA DIVISION. This phase resolves all the forward data references encountered by DSCN (and for which I-text was produced), completing Attribute Table and GIT entries for these references. This phase is also responsible for processing VALUE clause literals and creating the required procedure form I-text (for format-1 VALUE) or GIT entries (for format-2 VALUE) for these literals.

#### **IN**

Initialization Phase (IGYCINIT).

This phase performs the housekeeping functions required to prepare the operating environment for the processing of source programs. It is also invoked at the end of compilation to perform the housekeeping involved in normal program termination.

Because these functions are performed only once for each compilation, the code is contained in the initialization phase rather than in the resident control phase. This phase is not resident during compilation.

#### **LI**

Copy Phase (IGYCLIBR).

This phase scans the user's COBOL source for COPY, BASIS, and REPLACE statements. It is invoked only if the LIB option has been specified. Original and library source texts are processed, and lexical and syntactic analysis of the COPY, BASIS, and REPLACE statements is performed. The phase updates the library text and creates C-form (COPY) text.

#### **LS**

Lister Phase (IGYCLSTR).

This phase manages the construction of the program's source listing. This phase processes L-text (listing text), and, if the appropriate compiler options are selected, imbeds diagnostic messages, map information and cross-reference information in the source listing. It also indicates statement or program nesting levels for every source line.

**OS**

Options Scan Phase (IGYCOSCN).

This phase determines which compilation options are to be in effect by merging options and resolving conflicts from the following:

- Default options table
- CBL statements
- JCL PARM statement
- JCL OPTION statement (VSE Only)

**PA**

Procedure Analysis Sub-Phase (IGYCPANA).

This phase does semantic analysis of PROCEDURE DIVISION source statements, transforms I-text into M-text, and resolves procedure-name references.

**PG**

Procedure Generation Phase (IGYCPGEN).

This phase processes those verbs coded in the PROCEDURE DIVISION of the COBOL program or generated by the procedure analysis phase.

In addition, certain information about the source program needed by the assembly phases is collected in this phase. If the NOCOMPILE option is in effect, this phase is not executed.

**PS**

Procedure Scan Sub-Phase (IGYCPSCN).

The Procedure Scan sub-phase of the Scan Phase performs syntax analysis and a part of the semantic analysis on the PROCEDURE DIVISION source statements. It translates each data name appearing as an operand in a statement into an Attribute Table offset and collects the attribute information for the operand. It also validates each operand. Based on the language definition, it diagnoses invalid operands.

**RC**

Resident Control Phase (IGYCRCTL).

This phase establishes the compilation environment and controls the loading and deleting of all compiler phases. IGYCRCTL is loaded by the host operating system or by the CMS Interface Phase, COBOL2, under CMS. This phase remains in memory throughout the compilation process.

**SC**

Scan Phase (IGYCSCAN).

This phase manages the Data Scan, Group Process, Procedure Scan, and Procedure Analysis sub-phases.

**SI**

System Interface Phase (IGYCSIMD).

This phase obtains and initializes dynamic storage for compiler processing. It is invoked by all phases through the common service macros to perform system dependent functions. This phase is always loaded within the first 16 megabytes of storage and is resident in storage throughout the compilation. IGYCSIMD is loaded by IGYCRCTL, the resident control phase.

**XR**

Cross-Reference Phase (IGYCXREF).

This phase produces cross-references requested by the XREF option.

## Summary of changes

This section lists the major changes that have been made to this document since Enterprise COBOL for z/OS V6.3. The changes that are described in this information have an associated cross-reference for your



convenience. The latest technical changes are marked within >| and |< in the HTML version, or marked by vertical bars (|) in the left margin in the PDF version.

## Version 6 Release 3 with PTFs installed

- PH42280: The following messages are updated to report additional information and return codes:
  - [“IGYSI5305-U” on page 23](#)
  - [“IGYSI5306-U” on page 23](#)

## Version 6 Release 3

- Warning messages of IGYCB7315-W and IGYCB7316-W are removed because regardless of whether NUMCHECK(MSG) or NUMCHECK(ABD) is in effect, invalid data found at compile time will produce a compile-time error message.
- The following messages are new:
  - [“IGYCB7315-W” on page 8](#)
  - [“IGYCB7316-W” on page 8](#)
  - [“IGYCB7317-W” on page 9](#)
  - [“IGYCB7318-W” on page 9](#)
- The IGYPS0212-S message is removed.

## How to send your comments

---

Your feedback is important in helping us to provide accurate, high-quality information. If you have comments about this information or any other Enterprise COBOL documentation, send your comments to: [compinfo@cn.ibm.com](mailto:compinfo@cn.ibm.com).

Be sure to include the name of the document, the publication number, the version of Enterprise COBOL, and, if applicable, the specific location (for example, the page number or section heading) of the text that you are commenting on.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way that IBM believes appropriate without incurring any obligation to you.



---

# Chapter 1. IGYPP5000 and IGYPP7000 series messages

Most 5000 series messages (messages numbered 5000-5999) and 7000 series messages (messages numbered 7000-7999) are for compiler internal errors and require the user to contact IBM support to report the problem. There are some 5000 series and 7000 series messages that can result from user controllable circumstances, such as JCL errors, and can be corrected by the user. These messages are described below.

PP identifies the phases that issued the message. These messages can be issued by different phases, like most messages.

---

**IGYPP5000-U      The compilation was terminated due to an uncorrectable error condition.**

**Explanation:**

This is a generic message that might be issued with all the other compiler terminating messages (5000 series).

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Look at the other 5000 series messages that are issued and refer to the user response for those messages.

---

**IGYPP5158-U      The object program exceeded 16 megabytes. Restructure the program into smaller programs and recompile.**

**Explanation:**

The program exceeds an internal compiler limitation.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Restructure the program into smaller programs and recompile.

---

**IGYPP5159-U      Procedure plus constant area exceeded 4 megabytes. "PGT" capacity was exceeded. Restructure the program into smaller programs and recompile.**

**Explanation**

The program exceeds an internal compiler limitation.

Most likely you were compiling with the following compiler options:

- NOOPTIMIZE.

- TEST (NOSEPARATE), which causes the DWARF debugging information to be included in the object program and greatly increases its size.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response**

- Recompile the program with OPTIMIZE or TEST (SEPARATE) compiler options.

**Note:** Depending on the program content, this bypass may or may not always work. If a smaller program produces either message, try changing the OPTIMIZE and TEST options individually to see if that helps.

- The SSRANGE and XREF compile options also produce a larger object program, so using NOSSRANGE and NOXREF could help with some programs.
- Restructure the program into smaller programs and recompile.

**Related references**

OPTIMIZE (*Enterprise COBOL Programming Guide*)  
SSRANGE (*Enterprise COBOL Programming Guide*)  
TEST (*Enterprise COBOL Programming Guide*)  
XREF (*Enterprise COBOL Programming Guide*)  
Performance-related compiler options  
(*Enterprise COBOL Programming Guide*)

---

**IGYPP5177-U      The object program exceeded 16 megabytes. Recompile the program with "TEST(SEPARATE)" or "NOTEST" compiler options, or restructure the program into smaller programs and recompile.**

**Explanation:**

The program exceeds an internal compiler limitation. When trying to compile a very large Enterprise COBOL program with TEST (NOSEPARATE), it causes the

DWARF debugging information to be included in the object program and greatly increases its size.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Recompile the program with TEST (SEPARATE) or NOTEST compiler options, or restructure the program into smaller programs and recompile.

**Related references**

TEST (*Enterprise COBOL Programming Guide*)  
Performance-related compiler options  
(*Enterprise COBOL Programming Guide*)

---

**IGYPP5178-U    The object program exceeded 16 megabytes. Recompile the program with the "RENT" compiler option or restructure the program into smaller programs and recompile.**

---

**Explanation:**

Usually, this problem is caused by defining a very large WORKING-STORAGE SECTION. The NORENT compiler option causes the WORKING-STORAGE area to be included in the load module.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Recompile the program with the RENT compiler option, which causes WORKING-STORAGE to be acquired separately. Or restructure the program into smaller programs and recompile.

**Related references**

RENT (*Enterprise COBOL Programming Guide*)  
Performance-related compiler options  
(*Enterprise COBOL Programming Guide*)

---

**IGYPP5179-U    The object program exceeded 16 megabytes. Recompile the program with the "RENT", "TEST(SEPARATE)", or "NOTEST" compiler options, or restructure the program into smaller programs and recompile.**

---

**Explanation**

The program exceeds an internal compiler limitation.

The NORENT compiler option causes the WORKING-STORAGE area to be included in the load module.

The TEST (NOSEPARATE) compiler option causes the DWARF debugging information to be included in the object program and greatly increases its size.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response**

- Recompile the program with the RENT compiler option.
- Recompile the program with the TEST (SEPARATE) or NOTEST compiler option.
- Restructure the program into smaller programs and recompile.

**Related references**

RENT (*Enterprise COBOL Programming Guide*)  
TEST (*Enterprise COBOL Programming Guide*)  
Performance-related compiler options  
(*Enterprise COBOL Programming Guide*)

---

**IGYPP5180-U    An error occurred while attempting to open file "?". File "?" was specified as a multi-volume dataset, but must be a single-volume dataset.**

---

**Explanation:**

The compiler cannot open multi-volume data sets, and utility data sets must be single-volume.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Specify utility data sets as single-volume.

---

**IGYPP5216-U    "?" is not a valid alternate reserved word table name.**

---

**Explanation**

The alternate reserved word table name "?" is not accepted. Enterprise COBOL V3.1.0 and later come with only two IBM supplied alternate reserved word tables:

- IGYCRWT - the IBM-supplied default reserved word table.
- IGZCCICS - the IBM-supplied CICS® reserved word table

You can create additional reserved word tables, but each of them must have a unique 1- to 4-character identifier. For a list of character strings that cannot be used, see WORD in the *Enterprise COBOL Customization Guide*.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Use a valid reserved word table name.

#### Related references

Changing reserved words  
(*Enterprise COBOL Customization Guide*)

---

**IGYPP5273-U**    **Buffer size was too small for Wcode workfile. Increase the value of the BUFSIZE compiler option.**

#### Explanation:

The compiler was writing a table for EXTERNAL data items in a single WRITE, but when there were too many, data management could not manage records of that size.

#### System action:

The compilation is terminated with an ABORT and RC=16.

#### User response

Increase the value of the BUFSIZE compiler option.

**Note:** BUFSIZE cannot exceed the track capacity for the device used, nor can it exceed the maximum allowed by data management services.

#### Related references

BUFSIZE (*Enterprise COBOL Programming Guide*)  
Performance-related compiler options  
(*Enterprise COBOL Programming Guide*)

---

**IGYPP5288-U**    **The 90 day trial period has expired. Contact your IBM Representative or local software dealer to order your copy.**

#### Explanation:

The installed copy of the Enterprise COBOL compiler is a trial version. The trial version is fully functional and allows for non-production use, but for an evaluation period of 90 days.

#### System action:

The compilation is terminated with an ABORT and RC=16.

#### User response

To resolve the issue, you need to uninstall the trial version and install the official version of Enterprise COBOL. Contact your IBM Representative or local software dealer to order your copy.

To find the most appropriate edition of Enterprise COBOL for your needs, see <https://www.ibm.com/products/cobol-compiler-zos/pricing>.

---

**IGYPP5294-U**    **There was insufficient storage for compiler processing. The region**

**size or "MEMLIMIT" value should be increased.**

#### Explanation:

The compiler has run out of memory while still processing the program, and you can either increase the region size or change the z/OS MEMLIMIT parameter value.

#### System action:

The compilation is terminated with an ABORT and RC=16.

#### User response

Make sure that your region size is at least 200 MB and the z/OS MEMLIMIT setting is at least 2 GB. Ask your system programmer what your region size and MEMLIMIT settings are.

For details, see z/OS MEMLIMIT changes in the *Enterprise COBOL Migration Guide*.

---

**IGYPP7153-S**    **Converting source file to UTF-8 has failed during the CDA phase. Please recompile with the correct CODEPAGE(CCSID) option.**

#### Explanation:

When compiling programs that have invalid characters in comments and using the TEST compiler option, the compiler cannot convert the invalid character to UTF-8 and fails to recover from the code page conversion when saving the source to DWARF data in UTF-8.

#### System action:

The compilation is terminated with an ABORT and RC=12.

#### User response:

Recompile with the correct CODEPAGE(CCSID) option when compiling with the TEST option and there are invalid characters in the source.

---

**IGYPP7154-U**    **The DCB attributes of DD:SYSLIN are not correct. Please ensure that the format type is FB and the record size is 80.**

#### Explanation:

The DCB parameters in SYSLIN DD statements are not correct.

#### System action:

The compilation is terminated with an ABORT and RC=16.

#### User response:

Ensure that the record format (RECFM) is FB and the logical record length (LRECL) is 80.

---

**IGYPP7305-U**    **The COBOL-specific run time library was not available at compile time. Please add**

**SCEERUN to the concatenation for the compile step.**

**Explanation:**

Enterprise COBOL Version 5 and later require Language Environment® at compilation time. If the Language Environment data set SCEERUN is not installed in the MVS™ LNKST or LPALST, it must be included in the STEPLIB or JOBLIB concatenation for the compilation.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Include SCEERUN in the STEPLIB or JOBLIB concatenation for the compilation.

---

## Chapter 2. IGYCB messages

IGYCB messages are issued during code generation and optimization phases.

---

**IGYCB7031-S     An error occurred while attempting to open "&1".****Explanation:**

The compiler was unable to open the file specified by &1.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7032-S     An error occurred while attempting to read from "&1".****Explanation:**

The compiler was unable to read from the file specified by &1.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7033-S     An error occurred while attempting to write to "&1".****Explanation:**

The compiler was unable to write to the file specified by &1.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7104-S     Internal error while compiling function &1. &2. Compilation terminated.****Explanation:**

The compiler found some of its internal data to be in an unexpected and incorrect state, choosing to terminate rather than continue in error.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7109-W     Infinite loop detected in function &1. Program may not stop.****Explanation:**

The compiler detected an infinite loop in the program.

**System action:**

The compilation continues. RC=4 is returned.

**User response:**

Check the program to determine why an infinite loop might occur, and correct the program as necessary.

---

**IGYCB7145-U     Insufficient memory in the compiler to continue compilation.****Explanation:**

The optimizer and code generator don't have enough memory to compile the program.

**System action:**

The compilation is terminated with a failure and RC=16.

**User response**

Either increase the region size available to your compilation job, or increase the MEMLIMIT setting for your system. If you are already using 1 GB or more and it is still not enough, then it might be that your program is so large as to require the "above the BAR" storage. This would mean that the system MEMLIMIT setting must be 2 GB or more. Ask your system programmer what your MEMLIMIT setting is. For very large programs, MEMLIMIT might need to be set to 3 GB or 4 GB or more.

For details, see z/OS MEMLIMIT changes in the *Enterprise COBOL Migration Guide*.

---

**IGYCB7146-U     The GOFF section limit exceeded. Reduce program size.****Explanation:**

The program exceeds an internal compiler limitation. The size of the program object produced for the program is larger than the maximum size for a program object.

**System action:**

The compilation is terminated with a failure and RC=16.

**User response:**

Refactor the program into two or more smaller programs with smaller PROCEDURE DIVISIONs, and recompile them separately.

---

**IGYCB7147-U     Internal error detected in "CDA" phase at &1.****Explanation:**

The compiler encountered an error when trying to produce DWARF debug information.

**System action:**

The compilation is terminated with a failure and RC=16.

**User response:**

Contact IBM support.

---

**IGYCB7148-S**    **An I/O on "&1" was detected in "CDA" phase at &2.**

**Explanation:**

The compiler encountered an error when reading or writing file "&1" while trying to produce DWARF debug information.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7149-S**    **An error opening "&1" was detected in "CDA" phase at &2.**

**Explanation:**

The compiler encountered an error when opening file "&1" while trying to produce DWARF debug information.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7150-S**    **An error reading from "&1" was detected in "CDA" phase at &2.**

**Explanation:**

The compiler encountered an error when reading from file "&1" while trying to produce DWARF debug information.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7151-S**    **An error writing to "&1" was detected in "CDA" phase at &2.**

**Explanation:**

The compiler encountered an error when writing to file "&1" while trying to produce DWARF debug information.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7152-S**    **An error seeking within "&1" was detected in "CDA" phase at &2.**

**Explanation:**

The compiler encountered an error when reading from file "&1" while trying to produce DWARF debug information.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Contact IBM support.

---

**IGYCB7153-S**    **Converting source file to UTF-8 has failed during the CDA phase. Please recompile with the correct CODEPAGE(CCSID) option.**

**Explanation:**

When compiling programs that have invalid characters in comments and using the TEST compiler option, the compiler cannot convert the invalid character to UTF-8 and fails to recover from the code page conversion when saving the source to DWARF data in UTF-8.

**System action:**

The compilation is terminated with an ABORT and RC=12.

**User response:**

Recompile with the correct CODEPAGE(CCSID) option when compiling with the TEST option and there are invalid characters in the source.

---

**IGYCB7154-U**    **The DCB attributes of DD:SYSLIN are not correct. Please ensure that the format type is FB and the record size is 80.**

**Explanation:**

The DCB parameters in SYSLIN DD statements are not correct.

**System action:**

The compilation is terminated with an ABORT and RC=16.

**User response:**

Ensure that the record format (RECFM) is FB and the logical record length (LRECL) is 80.

---

**IGYCB7300-W**    **The code from lines &1 in program '&2' can never be executed and was therefore discarded.**

**Explanation:**

The compiler has determined that based on the construction of the program, code on lines "&1" cannot be reached, so the compiler removed it. The compiler makes this determination in several ways.



**System action:**

The compilation continues, with the unreachable code being ignored for the remainder of the compilation. RC=4 is returned.

**User response:**

The unreachable code has been removed, so it has no effect on the program. You can clean up your program to remove the unreachable code from the source. If the code should be reachable, you need to determine what is leading the compiler to determine it is not.

---

**IGYCB7303-S     An exception "&1" occurred while processing numeric literals. The result of the operation was set to zero.**

---

**Explanation:**

The compiler determined at compile-time that performing a computation would always contain a division by zero.

**System action:**

The compilation is terminated with a failure and RC=12.

**User response:**

Correct the code so a division by zero does not happen.

---

**IGYCB7304-W     An exception "&1" occurred while processing numeric literals. The result of the operation was set to zero.**

---

**Explanation:**

The compiler determined at compile-time that performing a computation would always result in a floating-point underflow.

**System action:**

The compilation continues. RC=4 is returned.

**User response:**

Correct the code so that a floating-point underflow does not occur.

---

**IGYCB7306-W     Unable to open SYSMDECK ("&1") for reading. Source interspersions has been disabled in the compiler listings.**

---

**Explanation:**

When compiling with LIST, the compiler was unable to open the file specified by &1 when attempting to read the COBOL source and include it in the compiler listing.

**System action:**

The compilation is terminated with a failure and RC=4.

**User response:**

Contact IBM support.

---

**IGYCB7307-W     This statement may cause a program exception at execution time.**

---

**Explanation:**

The compiler has detected that the source statement may execute a division by zero.

**System action:**

The compilation continues. RC=4 is returned.

**User response:**

If desired, correct the program to ensure that a division by zero is not possible, or ensure that is handled by the program.

---

**IGYCB7308-U     Stack space exceeded.**

---

**Explanation:**

The program has too many data items that the compiler must place on the stack. This includes all data items in the LOCAL-STORAGE SECTION, as well as compiler-created temporaries for things like passing data items BY CONTENT.

**System action:**

The compilation is terminated with a failure and RC=16.

**User response:**

Refactor the program to place fewer items in LOCAL-STORAGE and/or pass fewer or smaller data items when passing BY CONTENT.

---

**IGYCB7309-W     There may be a loop from the "PERFORM" statement at "PERFORM (line &1)" to itself.**

---

**Explanation:**

The compiler has determined that there is a loop from the PERFORM statement on line "&1" to itself. The program may enter an endless loop, unless the program contains other code to terminate the loop.

**System action:**

The compilation continues. RC=4 is returned.

**User response:**

Ensure that the program can terminate the loop successfully.

---

**IGYCB7310-W     The "PERFORM" statement at "PERFORM (line &1)" cannot reach its exit.**

---

**Explanation:**

The compiler has determined that for a PERFORM statement, the sections or paragraphs being performed either terminate or enter an endless loop, so control never returns to the line following the PERFORM statement.

**System action:**

The compilation continues. RC=4 is returned.

**User response:**

Investigate whether the termination or endless loop in the performed sections or paragraphs is expected.

**IGYCB7311-W    The data item '&1' may be used at this statement before it is set.**

**Explanation:**

When compiling with the INITCHECK option, the compiler detects that a data item is used as a sender but may not have been assigned a value.

**System action:**

The compilation continues. RC=4 is returned.

**User response:**

Assign a value to the data item by using an INITIALIZE statement, MOVE statement, or VALUE clause.

**IGYCB7312-I    Procedure starting at '&1' (line &2) was copied one or more times to be inlined for PERFORM statements. &3 total bytes were generated from copying that procedure.**

**Explanation:**

With OPT(1|2), the compiler may choose to inline PERFORMs - to replace a PERFORM statement with the paragraphs or sections that are PERFORMed. This allows the compiler to better optimize the program, but may increase the size of the generated code. The INLINE, NOINLINE compiler options and >>INLINE, >>NOINLINE compiler directives allow you to restrict the compiler's choice of which PERFORMs to inline. This message is given for each procedure inlined by the compiler, to indicate how much of an increase in the size of the generated code is caused by inlining that particular program.

**System action:**

The compilation continues. RC=0 is returned.

**User response:**

Consider the storage increase due to the inlining of a given paragraph and decide whether that use of space is justified in the application.

**IGYCB7313-E    The value of data item '&1' at the time of reference by statement number &2 on line &3 failed the NUMERIC class test or contained a value larger than the PICTURE clause as detected by the NUMCHECK compiler option.**

**Explanation:**

The compiler has detected that a PACKED-DECIMAL or USAGE-DISPLAY data item has an invalid value at the specified line of code while compiling with NUMCHECK(PAC|ZON,MSG|ABD) specified.

**System action:**

The compilation is terminated with a failure and RC=8.

**User response:**

Correct the program so that the data item referred to in the message doesn't have an invalid value, and then recompile the program.

**IGYCB7314-E    The value of data item '&1' at the time of reference by statement number &2 on line &3 was invalid. The value exceeded the number of digits in the data definition, and failed the SIZE ERROR test generated by the NUMCHECK(BIN) compiler option.**

**Explanation:**

The compiler has detected that a BINARY/COMP/COMP-4 data item has a value that exceeds its picture clause, at the specified line of code while compiling with NUMCHECK(BIN,MSG|ABD) specified.

**System action:**

The compilation is terminated with a failure and RC=8.

**User response:**

Correct the program so that the data item referred to in the message doesn't have a value that exceeds its picture clause, and then recompile the program.

**IGYCB7315-W    A reference modifier with a non-positive value was found.**

**Explanation:**

The compiler has detected that a reference modification has a negative or zero starting position.

**System action:**

The compilation continues, with the compiler generating code for the reference modification. RC=4 is returned.

**User response:**

Correct the program so that the reference modification starts at position 1 or greater.

**IGYCB7316-W    A reference-modification length with a non-positive value was found.**

**Explanation:**

The compiler has detected that a reference modification has a negative or zero length.

**System action:**

The compilation continues, with the compiler generating code for the reference modification. RC=4 is returned.

**User response:**

Correct the program so that the reference modification length is 1 or greater.

**IGYCB7317-W**    **A reference-modification length value caused reference to be made beyond the rightmost character of &1.**

**Explanation:**

The compiler has detected that a reference modification's length plus starting position will exceed the bounds of the data item being reference modified.

**System action:**

The compilation continues, with the compiler generating code for the reference modification. RC=4 is returned.

**User response:**

Correct the program so that the reference modification length plus starting position fits within the bounds of the data item.

**IGYCB7318-W**    **A reference-modifier start value exceeded the number of characters in &1.**

**Explanation:**

The compiler has detected that a reference modification's starting position exceeds the bounds of the data item being reference modified.

**System action:**

The compilation continues, with the compiler generating code for the reference modification. RC=4 is returned.

**User response:**

Correct the program so that the reference modification's starting position is less than the bounds of the data item.



---

## Chapter 3. IGYDS messages

For IGYDS messages, get the compiler listing, find the line number referenced by the error message, and then read the *Enterprise COBOL Language Reference* on how to specify DATA DIVISION statements.

### **Related references**

Getting listings (*Enterprise COBOL Programming Guide*)

DATA DIVISION overview (*Enterprise COBOL Language Reference*)



---

## Chapter 4. IGYGR messages

For IGYGR messages, get the compiler listing, find the line number referenced by the error message, and then read the *Enterprise COBOL Language Reference* on how to specify DATA DIVISION statements.

### **Related references**

Getting listings (*Enterprise COBOL Programming Guide*)

DATA DIVISION overview (*Enterprise COBOL Language Reference*)





---

## Chapter 5. IGYOS messages

For IGYOS messages, read the *Enterprise COBOL Programming Guide* on how to specify compiler options and compiler option conflicts.

### **Related references**

Compiler options (*Enterprise COBOL Programming Guide*)

Conflicting compiler options (*Enterprise COBOL Programming Guide*)



---

## Chapter 6. IGYPA messages

For IGYPA messages, get the compiler listing, find the line number referenced by the error message, and then read the *Enterprise COBOL Language Reference* on how to specify PROCEDURE DIVISION statements. For these messages, you might also need to look at the *Enterprise COBOL Programming Guide*.

### **Related references**

Getting listings (*Enterprise COBOL Programming Guide*)

Procedure division structure (*Enterprise COBOL Language Reference*)



---

## Chapter 7. IGYPG messages

For IGYPG messages, get the compiler listing, find the line number reference by the error message, and then read the *Enterprise COBOL Language Reference* on how to specify PROCEDURE DIVISION statements. For these messages, you might also need to look at the *Enterprise COBOL Programming Guide*.

### **Related references**

Getting listings (*Enterprise COBOL Programming Guide*)

Procedure division structure (*Enterprise COBOL Language Reference*)



---

## Chapter 8. IGYPS messages

For IGYPS messages, get the compiler listing, find the line number referenced by the error message, and then read the *Enterprise COBOL Language Reference* on how to specify PROCEDURE DIVISION statements.

### **Related references**

Getting listings (*Enterprise COBOL Programming Guide*)

Procedure division structure (*Enterprise COBOL Language Reference*)





---

## Chapter 9. IGYSI messages

---

### **IGYSI5305-U      SMF registration failure for COBOL VUE license, rc=XXXX.**

**Explanation:**

When attempting to register the usage of the Enterprise COBOL compiler with the VUE (Value Unit Edition) license for SMF 89 type 1 record logging, a non-zero return code is received from the SMF registration routine IFAUSAGE.

**System action:**

Return code=XXXX is received from the SMF registration routine IFAUSAGE.

**User response:**

Extract the return code information from the message and contact the SMF support team for assistance in tracing and diagnosing the cause of the issue.

---

### **IGYSI5306-U      SMF registration failure for COBOL MLC license, rc=XXXX.**

**Explanation:**

When attempting to register the usage of the Enterprise COBOL compiler with the MLC (Monthly License Charge Edition) license for SMF 89 type 2 record logging, a non-zero return code is received from the SMF registration routine IFAEDREG.

**System action:**

Return code=XXXX is received from the SMF registration routine IFAEDREG.

**User response:**

Extract the return code information from the message and contact the SMF support team for assistance in tracing and diagnosing the cause of the issue.



# Accessibility features for Enterprise COBOL for z/OS

---

Accessibility features assist users who have a disability, such as restricted mobility or limited vision, to use information technology content successfully. The accessibility features in z/OS provide accessibility for Enterprise COBOL for z/OS.

## Accessibility features

z/OS includes the following major accessibility features:

- Interfaces that are commonly used by screen readers and screen-magnifier software
- Keyboard-only navigation
- Ability to customize display attributes such as color, contrast, and font size

z/OS uses the latest W3C Standard, WAI-ARIA 1.0 (<http://www.w3.org/TR/wai-aria/>), to ensure compliance to US Section 508 (<https://www.access-board.gov/ict/>) and Web Content Accessibility Guidelines (WCAG) 2.0 (<http://www.w3.org/TR/WCAG20/>). To take advantage of accessibility features, use the latest release of your screen reader in combination with the latest web browser that is supported by this product.

The Enterprise COBOL for z/OS online product documentation in IBM Knowledge Center is enabled for accessibility. The accessibility features of IBM Knowledge Center are described at <http://www.ibm.com/support/knowledgecenter/en/about/releasenotes.html>.

## Keyboard navigation

Users can access z/OS user interfaces by using TSO/E or ISPF.

Users can also access z/OS services by using IBM Developer for z Systems®.

For information about accessing these interfaces, see the following publications:

- *z/OS TSO/E Primer* (<http://publib.boulder.ibm.com/cgi-bin/bookmgr/BOOKS/ikj4p120>)
- *z/OS TSO/E User's Guide* (<http://publib.boulder.ibm.com/cgi-bin/bookmgr/BOOKS/ikj4c240/APPENDIX1.3>)
- *z/OS ISPF User's Guide Volume I* (<http://publib.boulder.ibm.com/cgi-bin/bookmgr/BOOKS/ispzug70>)
- IBM Developer for z Systems Knowledge Center ([http://www.ibm.com/support/knowledgecenter/SSQ2R2/rdz\\_welcome.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSQ2R2/rdz_welcome.html?lang=en))

These guides describe how to use TSO/E and ISPF, including the use of keyboard shortcuts or function keys (PF keys). Each guide includes the default settings for the PF keys and explains how to modify their functions.

## Interface information

The Enterprise COBOL for z/OS online product documentation is available in IBM Knowledge Center, which is viewable from a standard web browser.

PDF files have limited accessibility support. With PDF documentation, you can use optional font enlargement, high-contrast display settings, and can navigate by keyboard alone.

To enable your screen reader to accurately read syntax diagrams, source code examples, and text that contains period or comma PICTURE symbols, you must set the screen reader to speak all punctuation.

Assistive technology products work with the user interfaces that are found in z/OS. For specific guidance information, see the documentation for the assistive technology product that you use to access z/OS interfaces.

## **Related accessibility information**

In addition to standard IBM help desk and support websites, IBM has established a TTY telephone service for use by deaf or hard of hearing customers to access sales and support services:

TTY service  
800-IBM-3383 (800-426-3383)  
(within North America)

## **IBM and accessibility**

For more information about the commitment that IBM has to accessibility, see [IBM Accessibility](http://www.ibm.com/able) ([www.ibm.com/able](http://www.ibm.com/able)).

## Notices

---

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

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

IBM Director of Licensing  
IBM Corporation  
North Castle Drive, MD-NC119  
Armonk, NY 10504-1785  
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing  
Legal and Intellectual Property Law  
IBM Japan, Ltd.  
19-21, Nihonbashi-Hakozakicho, Chuo-ku  
Tokyo 103-8510, Japan

**The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:** INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who want to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

Intellectual Property Dept. for Rational Software  
IBM Corporation  
5 Technology Park Drive  
Westford, MA 01886  
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

#### **COPYRIGHT LICENSE:**

This information contains sample application programs in source language, which illustrates programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. 2019.

#### **PRIVACY POLICY CONSIDERATIONS:**

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, or to tailor interactions with the end user, or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering's use of cookies is set forth below.

This Software Offering does not use cookies or other technologies to collect personally identifiable information.

If the configurations deployed for this Software Offering provide you as customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent.

For more information about the use of various technologies, including cookies, for these purposes, see IBM's Privacy Policy at <http://www.ibm.com/privacy> and IBM's Online Privacy Statement at <http://www.ibm.com/privacy/details> in the section entitled "Cookies, Web Beacons and Other Technologies,"

and the "IBM Software Products and Software-as-a-Service Privacy Statement" at <http://www.ibm.com/software/info/product-privacy>.

## Trademarks

---

IBM, the IBM logo, and [ibm.com](http://www.ibm.com)® are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

Other company, product, or service names may be trademarks or service marks of others.





## List of resources

---

### Enterprise COBOL for z/OS

---

#### COBOL for z/OS publications

You can find the following publications in the [Enterprise COBOL for z/OS library](#):

- *What's new*
- *Customization Guide*, SC27-8712-02
- *Language Reference*, SC27-8713-02
- *Programming Guide*, SC27-8714-02
- *Migration Guide*, GC27-8715-02
- *Performance Tuning Guide*, SC27-9202-01
- *Messages and Codes*, SC27-4648-01
- *Program Directory*, GI13-4526-02
- *Licensed Program Specifications*, GI13-4532-02

#### Softcopy publications

The following collection kits contain Enterprise COBOL and other product publications. You can find them at <http://www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss>.

- *z/OS Software Products Collection*
- *z/OS and Software Products DVD Collection*

#### Support

If you have a problem using Enterprise COBOL for z/OS, see the following site that provides up-to-date support information: [https://www.ibm.com/support/home/product/B984385H82239E03/Enterprise\\_COBOL\\_for\\_z/OS](https://www.ibm.com/support/home/product/B984385H82239E03/Enterprise_COBOL_for_z/OS).

## Related publications

---

#### z/OS library publications

You can find the following publications in the [z/OS library](#).

##### Run-Time Library Extensions

- *Common Debug Architecture Library Reference*
- *Common Debug Architecture User's Guide*
- *DWARF/ELF Extensions Library Reference*

##### z/Architecture®

- *Principles of Operation*

##### z/OS DFSMS

- *Access Method Services for Catalogs*
- *Checkpoint/Restart*

- *Macro Instructions for Data Sets*
- *Using Data Sets*
- *Utilities*

#### **z/OS DFSORT**

- *Application Programming Guide*
- *Installation and Customization*

#### **z/OS ISPF**

- *Dialog Developer's Guide and Reference*
- *User's Guide Vol I*
- *User's Guide Vol II*

#### **z/OS Language Environment**

- *Concepts Guide*
- *Customization*
- *Debugging Guide*
- *Language Environment Vendor Interfaces*
- *Programming Guide*
- *Programming Reference*
- *Run-Time Messages*
- *Run-Time Application Migration Guide*
- *Writing Interlanguage Communication Applications*

#### **z/OS MVS**

- *JCL Reference*
- *JCL User's Guide*
- *Programming: Callable Services for High-Level Languages*
- *Program Management: User's Guide and Reference*
- *System Commands*
- *z/OS Unicode Services User's Guide and Reference*
- *z/OS XML System Services User's Guide and Reference*

#### **z/OS TSO/E**

- *Command Reference*
- *Primer*
- *User's Guide*

#### **z/OS UNIX System Services**

- *Command Reference*
- *Programming: Assembler Callable Services Reference*
- *User's Guide*

#### **z/OS XL C/C++**

- *Programming Guide*
- *Run-Time Library Reference*

### **CICS Transaction Server for z/OS**

You can find the following publications in the [CICS library](#):

- *Developing CICS Applications*
- *API (EXEC CICS) Reference*
- *Developing CICS System Programs*
- *Global User Exit Reference*
- *XPI Reference*
- *Using EXCI with CICS*

## **COBOL Report Writer Precompiler**

- *Programmer's Manual*, SC26-4301
- *Installation and Operation*, SC26-4302

## **Db2 for z/OS**

You can find the following publications in the [Db2® library](#):

- *Application Programming and SQL Guide*
- *Command Reference*
- *SQL Reference*

## **IBM Debug for z/OS (formerly IBM Debug for z Systems and IBM Debug Tool for z/OS)**

You can find information about IBM Debug for z/OS in the [IBM Debug for z/OS library](#).

IBM Debug for z/OS supersedes IBM Debug for z Systems and IBM Debug Tool for z/OS. Not all references to IBM Debug for z Systems and IBM Debug Tool for z/OS have been changed in the COBOL documentation library. It is recommended that you upgrade your debugger to the latest level in order to have the full range of debugging features available. In some cases, you must upgrade your debugger to a certain version depending on what level of Enterprise COBOL you are using to create the COBOL application:

- IBM Debug Tool V13.1 supports Enterprise COBOL V5.1 and earlier versions
- IBM Debug for z Systems V14.0 supports Enterprise COBOL V6.1 and earlier versions
- IBM Debug for z Systems V14.1 supports Enterprise COBOL V6.2 and earlier versions
- IBM Debug for z/OS V14.2 supports Enterprise COBOL V6.3 and earlier versions

To find out which IBM debug product best suits your needs, see [https://www.ibm.com/support/knowledgecenter/SSQ2R2\\_14.2.0/com.ibm.debug.cg.doc/common/dcompo.html?sc=SSQ2R2\\_latest](https://www.ibm.com/support/knowledgecenter/SSQ2R2_14.2.0/com.ibm.debug.cg.doc/common/dcompo.html?sc=SSQ2R2_latest).

## **IBM Developer for z/OS (formerly IBM Developer for z Systems)**

You can find information about IBM Developer for z Systems in the [IBM Developer for z/OS library](#).

**Note:** IBM Developer for z/OS supersedes IBM Developer for z Systems and Rational® Developer for z Systems.

You can find the following publications by searching their publication numbers in the [IBM Publications Center](#).

## **IMS**

- *Application Programming API Reference*, SC18-9699
- *Application Programming Guide*, SC18-9698

## WebSphere® Application Server for z/OS

- *Applications*, SA22-7959

## Softcopy publications for z/OS

The following collection kit contains z/OS and related product publications:

- *z/OS CD Collection Kit*, SK3T-4269

## Java™

- *IBM SDK for Java - Tools Documentation*, [publib.boulder.ibm.com/infocenter/javasdk/tools/index.jsp](http://publib.boulder.ibm.com/infocenter/javasdk/tools/index.jsp)
- *The Java 2 Enterprise Edition Developer's Guide*, [download.oracle.com/javaee/1.2.1/devguide/html/DevGuideTOC.html](http://download.oracle.com/javaee/1.2.1/devguide/html/DevGuideTOC.html)
- *Java 2 on z/OS*, [www.ibm.com/servers/eserver/zseries/software/java/](http://www.ibm.com/servers/eserver/zseries/software/java/)
- *The Java EE 5 Tutorial*, [download.oracle.com/javaee/5/tutorial/doc/](http://download.oracle.com/javaee/5/tutorial/doc/)
- *The Java Language Specification, Third Edition*, by Gosling et al., [java.sun.com/docs/books/jls/](http://java.sun.com/docs/books/jls/)
- *The Java Native Interface*, [download.oracle.com/javase/1.5.0/docs/guide/jni/](http://download.oracle.com/javase/1.5.0/docs/guide/jni/)
- *JDK 5.0 Documentation*, [download.oracle.com/javase/1.5.0/docs/](http://download.oracle.com/javase/1.5.0/docs/)

## JSON

- JavaScript Object Notation (JSON), [www.json.org](http://www.json.org)

## Unicode and character representation

- *Unicode*, [www.unicode.org/](http://www.unicode.org/)
- *Character Data Representation Architecture Reference and Registry*, SC09-2190

## XML

- *Extensible Markup Language (XML)*, [www.w3.org/XML/](http://www.w3.org/XML/)
- *Namespaces in XML 1.0*, [www.w3.org/TR/xml-names/](http://www.w3.org/TR/xml-names/)
- *Namespaces in XML 1.1*, [www.w3.org/TR/xml-names11/](http://www.w3.org/TR/xml-names11/)
- *XML specification*, [www.w3.org/TR/xml/](http://www.w3.org/TR/xml/)

---

# Index

## Numerics

5000 series messages [1](#)

7000 series messages [1](#)

## A

about this information [v](#)

accessibility

    keyboard navigation [25](#)

    of Enterprise COBOL for z/OS

    25

    of this information [25](#)

    using z/OS [25](#)

accessibility features for this product [25](#)

assistive technologies [25](#)

## B

Bibliography [31](#)

## C

comments

    sending [ix](#)

compiler messages

    compiler phase identifiers [vi](#)

    format

        compiler phase identifiers [vi](#)

    return codes [v](#)

    severity levels [v](#)

compiler phase identifiers

    AS [vi](#)

    CB [vi](#)

    DI [vi](#)

    DM [vii](#)

    DS [vii](#)

    FG [vii](#)

    GR [vii](#)

    IN [vii](#)

    LI [vii](#)

    LS [vii](#)

    OS [viii](#)

    PA [viii](#)

    PG [viii](#)

    PS [viii](#)

    RC [viii](#)

    SC [viii](#)

    SI [viii](#)

    XR [viii](#)

customer support [31](#)

## D

disability [25](#)

## F

feedback

    sending [ix](#)

FIPS messages

    categories [vi](#)

FLAG compiler option [vi](#)

format of messages [v](#)

## I

IGYCB messages [5](#)

IGYDS messages [11](#)

IGYGR messages [13](#)

IGYOS messages [15](#)

IGYPA messages [17](#)

IGYPG messages [19](#)

IGYPS messages [21](#)

## K

keyboard navigation [25](#)

## L

List of resources [31](#)

## N

notices [27](#)

## P

product support [31](#)

publications [31](#)

## R

RCFs

    sending [ix](#)

reader comments

    sending [ix](#)

return codes [v](#)

runtime messages [v](#)

## S

summary of changes [viii](#)

support [31](#)







Product Number: 5655-EC6

SC27-4648-01

