

Debug Tool for z/OS



API User's Guide and Reference

Version 13.1

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Version 13.1

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 31.

Fourth Edition (December 2014)

This edition applies to Debug Tool for z/OS, Version 13.1 (Program Number 5655-Q10 with the PTF for APAR PI29800), which supports the following compilers:

- AD/Cycle C/370™ Version 1 Release 2 (Program Number 5688-216)
- C/C++ for MVS/ESA Version 3 (Program Number 5655-121)
- C/C++ feature of OS/390 (Program Number 5647-A01)
- C/C++ feature of z/OS Version 1 (Program Number 5694-A01)
- C/C++ feature of z/OS Version 2 (Program Number 5650-ZOS)
- OS/VS COBOL, Version 1 Release 2.4 (5740-CB1) - with limitations
- VS COBOL II Version 1 Release 3 and Version 1 Release 4 (Program Numbers 5668-958, 5688-023) - with limitations
- COBOL/370 Version 1 Release 1 (Program Number 5688-197)
- COBOL for MVS & VM Version 1 Release 2 (Program Number 5688-197)
- COBOL for OS/390 & VM Version 2 (Program Number 5648-A25)
- Enterprise COBOL for z/OS and OS/390 Version 3 (Program Number 5655-G53)
- Enterprise COBOL for z/OS Version 4 (Program Number 5655-S71)
- Enterprise COBOL for z/OS Version 5 Release 1 (Program Number 5655-W32)
- High Level Assembler for MVS & VM & VSE Version 1 Release 4, Version 1 Release 5, Version 1 Release 6 (Program Number 5696-234)
- OS PL/I Version 2 Release 1, Version 2 Release 2, Version 2 Release 3 (Program Numbers 5668-909, 5668-910) - with limitations
- PL/I for MVS & VM Version 1 Release 1 (Program Number 5688-235)
- VisualAge® PL/I for OS/390 Version 2 Release 2 (Program Number 5655-B22)
- Enterprise PL/I for z/OS and OS/390 Version 3 (Program Number 5655-H31)
- Enterprise PL/I for z/OS Version 4.4 and earlier (Program Number 5655-W67)

This edition also applies to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters.

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About this document

This document describes how to use an application programming interface (API) to create, delete, and modify DTCN profiles.

Who might use this document

This document is intended for programmers that are developing applications that need access to the DTCN profiles stored on a z/OS[®] system. Programmers must be familiar with using APIs that use the HTTP protocol and the Representational State Transfer (REST) access method. Programmers must also be familiar with DTCN profiles.

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How this document is organized

This document is divided into areas of similar information for easy retrieval of appropriate information. The following list describes how the information is grouped:

- Chapter 1 describes, in general terms, the two parts of the API: the resources it identifies and the actions you can do on those resources.
- Chapter 2 describes, in more detail, the actions that you can do on resources, and the codes used by the z/OS system to indicate whether the actions were completed successfully.

- Chapter 3 describes the security measures you must consider when you access DTCN profiles, how to identify which version of the API you are using, and how compatability is determined between different versions of the API.
- Chapter 4 describes the changes you have to make to the z/OS system where the DTCN profiles are stored so that the API can access them.
- Chapter 5 describes the meaning of the XML tags you use to create the XML documents that contain the information required to do each action.
- Appendix A displays a sample HTTP request body and a sample HTTP response body.
- Appendix B describes the resources that are available to help you solve any problems you might encounter with Debug Tool.
- Appendix C describes the features and tools available to people with physical disabilities that help them use Debug Tool and Debug Tool documents.

The last several topics list notices, bibliography, and glossary of terms.

How to send your comments

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- Send your comments by email to comments@us.ibm.com. Be sure to include the name of the book, the part number of the book, the version of Debug Tool, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).

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Summary of changes

Changes introduced with the PTF for APAR PI29800

- Support is added for debugging subtasks initiated by the ATTACH assembler macro. Multiple subtasks might be debugged concurrently, as well as the parent task.
- Delay debug mode is enhanced to support non-LE programs in certain circumstances.

Changes introduced with the PTF for APAR PI24559

- Delay debug mode is enhanced to include C functions. In addition, a load module name can now be paired with a program name or C function in the delay debug data set.
- Terminal Interface Manager now allows the same user to log on multiple times on separate terminals. This allows multiple tasks to be debugged by the same user ID simultaneously.
- Support is added for Automonitor for C/C++.
- M/L prefix commands are enhanced to support these prefix commands for C/C++.
- The CICS DTST transaction that is used to display, scan and modify CICS storage is enhanced to support 64 bit addresses.
- Code Coverage support is added for Enterprise COBOL for z/OS Version 5.
- CALL %FA command is enhanced to support remote debug mode.
- AT GLOBAL LABEL, AT LABEL, CLEAR AT GLOBAL LABEL, CLEAR AT LABEL, LIST AT GLOBAL LABEL, LIST AT LABEL and LIST NAMES LABEL commands are enhanced to support remote debug mode.

Changes introduced with the PTF for APAR PI16543

- Support is added for CICS TS 5.2.
- The DTCN Remote Plug-in is enhanced to support the use of SYSID (the SYSIDNT of a region in a CICSplex environment) to select CICS tasks to debug.
- The DTCN Remote Plug-in is enhanced to support additional CICS "Application" resource types that are introduced in CICS TS 5.2.
You can use these new resource types to select a program to debug:
 - Platform
 - Application
 - Operation
 - Version
- Code Coverage support for interactive remote.
- Code Coverage support for z/OS XL C.
- SET LIST BY SUBSCRIPT ON support for COBOL for MFI. This includes QUERY LIST BY SUBSCRIPT support.
- The CLIENTID option is added to the EQAOPTS DLAYDBGXRF command. This option allows a remote Debug Tool user using the enhanced DTSP Plug-in to identify a specific DB/2 client ID, and to only trap DB/2 stored procedures executed using that client ID.

Changes introduced with the PTF for APAR PI06312

- The REPOSITORY option is added to the EQAOPTS DLAYDBGXRF command. This option instructs Debug Tool to communicate with the Terminal Interface Manager to determine whether a user requests to debug an IMS transaction or DB/2 stored procedure associated with a generic user ID. This is an alternative to using the cross reference table data set.
- The Swap IMS Transaction Class and Run Transaction utility is enhanced to allow the user to manipulate the TEST option that is used for the debug message region. This allows the user to supply commands or preference files, and to direct the Debug Tool session to the remote user interface or to an alternate Terminal Interface Manager user ID.
- For CICS, provide protection of storage that was GETMAINed in the current task by a program that is not the active program. This support is enabled via INITPARM=(EQA0CPLT='STG') in the CICS startup parameters and is only available during a remote debug session.
- <PROGRAMDSCOMPILEDATE> and <PROGRAMDSCOMPILETIME> tags are added to the XML tags for code coverage. These two tags specify the compile data and time of the program source that is contained in the program data set.
- Support is added for generating a client certificate to the remote debugger if it does not exist.
- A note is added to the Coverage Utility User's Guide and Messages about the accuracy of execution counts (frequency counts) for single statement Program Areas (PAs).

Changes introduced with Debug Tool for z/OS Version 13.1

- A method for gathering code coverage is added for the generation, viewing, and reporting of code coverage by using the Debug Tool mainframe interface (MFI) as the engine. This support is provided for applications written in Enterprise COBOL and Enterprise PL/I that are compiled with the TEST compiler option and its suboption SEPARATE. This is enabled via the new EQAOPTS CCPROGSELECTDSN, CCOUTPUTDSN, and CCOUTPUTDSNALLOC commands.
- Debug Tool is enhanced to provide the automatic start of IMS™ message processing program (MPP) regions and dynamic routing of transactions. This allows a developer to dynamically start an MPP region, route a transaction to that MPP region, and at the end of the transaction shutdown the MPP region created for the developer thus reducing system resources.
- To help with the ease of use of the MFI mode of Debug Tool for some users, an option is added that enables breakpoints, the current line, and the line with found text to be identified by a character indicator. This feature is enabled via a new EQAOPTS ALTDISP command.
- Debug Tool is enhanced to support the following languages and platforms:
 - Enterprise COBOL for z/OS V5.1
 - Enterprise PL/I for z/OS V4.4
 - CICS® TS V5.1
 - DB2® V11
 - IMS V13
 - z/OS, V2.1
 - C/C++ V2.1

- Debug Tool is enhanced to support JCL for Batch Debugging in the DTSP plug-in. This facility is used to instrument JCL to initiate a debug session from the DTSP plug-in.
- Support is added for an IMS transaction that is associated with a generic ID. A new feature is added to the consolidated Language Environment® user exit (EQAD3CXT) to search a new cross-reference table for the user ID of a user who wants to debug a IMS transaction that is started from the web and is associated with a generic ID. This enables Debug Tool to debug these transactions that use a generic ID. The user ID from the cross-reference table is used to find the user's Debug Tool user exit data set (userid.DBGTOOL.EQAUOPTS), which specifies the TEST runtime parameters and the display device address. An option is added to the Debug Tool Utilities ISPF panel, "C IMS Transaction and User ID Cross Reference Table", to allow each user to update the new cross reference table.
- Support is added for tracing load modules loaded by an application. Commands TRACE LOAD and LIST TRACE LOAD are added for Debug Tool's MFI mode. This set of commands allows the user to get a trace of load modules loaded by the application. Start the trace by issuing TRACE LOAD START. Use LIST TRACE LOAD to display the trace. The trace includes load modules known to Debug Tool at the time the TRACE LOAD START command is entered and all that are loaded while the trace is active. End the trace by issuing TRACE LOAD END. Note that when the trace is ended, all trace information is deleted.
- Support is added for terminating an idle Debug Tool session that uses the Terminal Interface Manager. Debug Tool supports a timeout option via the EQAOPTS SESSIONTIMEOUT command. This command allows the system programmer to establish a maximum wait time for debug sessions that use a dedicated terminal or the Terminal Interface Manager. If the debug session exceeds the specified time limit without any user interaction, the session will be terminated with either a QUIT or QUIT DEBUG.
- Debug Tool Coverage Utility "Create HTML Targeted Coverage Report" is enhanced to allow the user to select from a list of COBOL Program-IDs, ignore changes to non-executable code, and produce a summary of the targeted lines with selectable HTML links.
- Adds IMS information to start and stop messages generated by the EQAOPTS STARTSTOPMSG command.
- Adds EQAOPTS STARTSTOPMSGDSN command and a Debug Tool Utilities option "Non-CICS Debug Session Start and Stop Message Viewer" to collect and view Debug Tool debugger session start and stop information.
- Delay debug mode is enhanced with an EQAOPTS DLAYDBGEND command to control CONDITION trapping. In addition, an EQAOPTS DLAYDBGXRF command is added so that delay debug mode can use the "IMS Transaction and User ID Cross Reference Table". Further, NOTEST is now handled in delay debug mode.
- A confirmation message is added to Debug Tool Utilities Option 6 "Debug Tool User Exit Data Set" to indicate that the updates have been saved into the EQAUOPTS data set.
- The ON and AT OCCURRENCE commands are enhanced for Enterprise PL/I to support qualifying data.
- LIST LDD and CLEAR LDD commands are added to display and remove LDD commands known to Debug Tool. LIST CC, CC START, and CC STOP commands are added to gather and display code coverage data.
- Two EQAOPTS commands are added for remote debug mode. The EQAOPTS HOSTPORTS command specifies the specific host port number or range of host

port numbers on the host for a TCP/IP connection from the host to a workstation. The EQAOPTS TCPIPDATA command provides the data set name for TCPIP.DATA via the SYSTCPD DD NAME when no GLOBALTCPIPDATA statement is configured.

- A timestamp is added to the EQAY999* messages that the Terminal Interface Manager issues if the +T trace flag is on.
- Debug Tool is enhanced to allow for using GOTO or JUMPTO command for programs that are compiled with OPT and NOEJPD suboptions of the Enterprise COBOL TEST compile option when SET WARNING setting is OFF.
- An updated DTST transaction is included to write messages to the operator log when a user changes storage. These messages are intended to provide an audit trail of DTST storage changes.
- Support is added for remote Playback through the Playback Toolbar in the Debug View.
- The EQALANGP and EQALANGX modules are moved from Debug Tool's EQAW.SEQAMOD library to Common Component's IPV.SIPVMODA library. They are now aliases of IPVLANGP and IPVLANGX respectively. This removes duplication between the two tools.
- Appendix "Quick start guide for compiling and assembling programs for use with IBM Problem Determination Tools products" in the *Debug Tool User's Guide* is removed because this has been placed in the *IBM Problem Determination Tools for z/OS Common Component: Customization Guide and User Guide* instead.

Chapter 1. Introduction to the API resources and actions

Debug Tool provides an API that communicates with the DTCN profile manager so that you can create, retrieve, update, or delete profiles in the DTCN profile repository. This API uses the HTTP protocol and provides a RESTful (Representational State Transfer) access method. The API describes (abstracts) resources and actions you can do on the resources.

Resource description

The resources are a DTCN profile and a DTCN profile repository. The following list describes how Debug Tool abstracts a DTCN profile and a DTCN profile repository as a Uniform Resource Identifier (URI):

DTCN profile

`http://ip/dtcn/profileID`

DTCN profile repository

`http://ip/dtcn`

The following table describes each symbol in the URI:

Table 1. Description of each symbol in the URI

Symbol	Description
<i>ip</i>	The IP address and port number of the CICS HTTP server.
dtcn	Name of the profile collection, which must be dtcn .
<i>profileID</i>	A key which identifies a specific profile. This is the TSO user ID of the owner of the DTCN profile.

You can use a query string to provide additional information, the client version, and a profile record number to the DTCN profile manager. You specify a query string by adding a delimiter (the question mark, ?) after the resource name. The following table describes the symbols you can use in the query string:

Table 2. Description of each symbol in the query string

Symbol	Description
clientversion=nnnn	A four digit decimal number that identifies the version of the API that you are using in your application. To learn how to identify version numbers and determine compatibility, see "Compatibility of different versions" on page 7.
s=number	A decimal number that identifies a profile in the profile repository. The DTCN profile manager numbers profile records in the repository in sequence beginning with 1.

The following examples describe how you might write an URI with a query string:

http://yourhost.yourcompany.com:30000/dtcn/userjoe?clientversion=0102

Identifies a DTCN profile stored in the host yourhost and owned by user userjoe.

http://anotherhost.yourcompany.com:30000/dtcn?clientversion=0102&s=1

Use this URI with the GET method to retrieve up to the first 10 profiles starting with profile record 1 in the DTCN profile repository on the host anotherhost.

Action descriptions

The following table describes the actions you can do on a resource:

Table 3. HTTP methods and their corresponding actions

HTTP method	Corresponding action
GET	READ (retrieve a specific profile)
GET	LIST (retrieve a collection of profiles)
POST	UPDATE
PUT	CREATE
DELETE	DELETE

For each action, you provide any data needed to do an action in the HTTP request body. The host returns any data in the HTTP response body and the response status code and reason phrase in the HTTP response header. The HTTP request and response bodies are XML documents. To learn about the tags in the XML document, see Chapter 5, "Definition of XML tags," on page 11. You can see an example of an XML document in Appendix A, "Examples: HTTP request body and HTTP response body," on page 19. To learn more about the specific information you must provide for each action, and the information you receive from the host after it completes an action, see Chapter 2, "HTTP methods, response status codes, and reason phrases," on page 3.

Chapter 2. HTTP methods, response status codes, and reason phrases

This topic describes the HTTP methods (the actions you can do on a resource), response status codes, and reason phrases. The response status codes and reason phrases are stored in the HTTP response body and HTTP request body.

HTTP methods

The following list describes the HTTP methods you can use on an URI.

GET method (READ)

Retrieve a specific DTCN profile from the DTCN profile repository. You must provide the repository name, the profile ID, and the client version in the URI. The HTTP request body must not contain any data. In the HTTP response body, the DTCN profile manager returns an XML document that contains control information (for example, a message and the server version) and the contents of the specified profile.

GET method (LIST)

Retrieve a list of the DTCN profiles from the DTCN profile repository, up to ten at a time. In the URI, you must provide the repository name, a number that identifies a profile in the profile repository, and the client version. The HTTP request body must not contain any data. In the HTTP response body, the DTCN profile manager returns an XML document that contains control information (for example, a message and the server version) and a set of ten or fewer profiles.

The DTCN profile manager can return up to 10 profiles, starting with the number you specified in the *s=number* symbol of the query string.

You can retrieve the entire repository by repeating the GET request. In the first request, specify "1" as the number in the *s=number* symbol. Repeat the request, each time adding the number of profiles returned from the previous request, until the DTCN profile manager returns no more profiles.

POST method (UPDATE)

Modify a specific profile with the information in the HTTP request body. In the URI, you must provide the profile ID and the client version. In the HTTP request body, you must provide all the profile information in a well-formed XML document. In the HTTP response body, the DTCN profile manager returns an XML document that contains control information (for example, a message and the server version).

PUT method (CREATE)

Create a new profile with the information in the HTTP request body. In the URI, you must provide the profile ID and the client version. In the HTTP request body, you must provide all the profile information in a well-formed XML document. In the HTTP response body, the DTCN profile manager returns an XML document that contains control information (for example, a message and the server version).

DELETE method (DELETE)

Delete the specified profile. In the URI, you must provide the profile ID and the client version. The HTTP request body must be empty. In the HTTP

response body, the DTCN profile manager returns an XML document that contains control information (for example, a message and the server version).

HTTP response status codes and reason phrases

The following table shows the status codes and reason phrases the DTCN profile manager might send to your application:

Table 4. Explanation of reason phrases

Status code	Reason phrase	Explanation
200	OK	The DTCN profile manager completed the method (action) successfully.
200	Profile_Already_Exists_With_Identical_Resources	A PUT request was sent specifying resources that are already used by another profile in the DTCN profile repository. The DTCN profile manager did not create a new profile.
200	Profile_Already_Exists_With_Same_Owner	A PUT request was sent specifying a profile ID that is already used by another profile in the DTCN profile repository. The DTCN profile manager did not create a new profile.
201	Profile_Created_OK	The DTCN profile manager successfully created a new profile.
400	Unsupported_Client_Version	A client version that is 2 or more levels higher or lower than the server version was specified.
400	Invalid_Client_Version	The syntax of the <code>clientversion</code> symbol is incorrect. For the correct syntax, see “Compatibility of different versions” on page 7.
400	Invalid_Profile_Record_Number	Starting profile record number is incorrect.
400	No_Resource_Specified	No resources were specified in the HTTP request body.
400	Site_Rules_Require_Terminal_ID_Specified	The HTTP request body does not specify a terminal ID. The DTCN profile manager requires that you specify a terminal ID. ¹
400	Site_Rules_Require_Transaction_ID_Specified	The HTTP request body does not specify a transaction ID. The DTCN profile manager requires that you specify a transaction ID. ¹
400	Site_Rules_Require_At_Least_One_Load_Mod_Name_Specified	The HTTP request body does not specify the name of a load module. The DTCN profile manager requires that you specify the name of at least one load module. ¹
400	Site_Rules_Require_At_Least_One_Program_Name_Specified	The HTTP request body does not specify the name of a compile unit. The DTCN profile manager requires that you specify the name of at least one compile unit. ¹

Table 4. Explanation of reason phrases (continued)

Status code	Reason phrase	Explanation
400	Site_Rules_Require_User_ID_Specified	The HTTP request body does not specify a user ID. The DTCN profile manager requires that you specify a user ID. ¹
400	Site_Rules_Require_NetName_Specified	The HTTP request body does not specify a netname. The DTCN profile manager requires that you specify a netname. ¹
400	Site_Rules_Require_Client_IP_Specified	The HTTP request body does not specify the IP address of the client. The DTCN profile manager requires that you specify the IP address of the client. ¹
400	Invalid_Session_Address	For a PUT or POST request, the HTTP request body is missing the <sessaddr> tag or a value in the <sessaddr> tag, which is required if you specify TCP in the <sessiontype> tag.
400	Invalid_Session_Type	The HTTP request body specifies a value for the <sesstype> tag that is invalid. MFI or TCP are the only valid values for the <sesstype> tag.
400	Invalid_Session_Port	The HTTP request body specifies a value for the <sessport> tag that is not numeric or specifies a port number when the session type is MFI. A port number is used only when the session type is TCP.
400	Invalid_UrmDeb_Flag	The HTTP request body specifies a value for <urmdebug> tag that is invalid. Y or N are the only valid values for the <urmdebug> tag.
400	Invalid_Activation_Flag	The HTTP request body specifies a value for the <activation> tag that is invalid. A or I are the only valid values for the <activation> tag.
400	Invalid_Trigger	The HTTP request body specifies a value for the <trigger> tag that is invalid. TEST or NOTEST are the only valid values for the <trigger> tag.
400	Invalid_Test_Level	The HTTP request body specifies a value for the <level> tag that is invalid. The only valid values for the <level> tag are ALL, ERROR, or NONE.
400	Error_Parsing_XML_Doc	z/OS XML parser failed to parse the HTTP request.
400	Bad Request	The URI is invalid. ²
401	No_Write_Access_For_Unauthorized_User	The user ID specified in the <userid> tag is not authorized (through RACF [®]) to update or delete another user's profile.

Table 4. Explanation of reason phrases (continued)

Status code	Reason phrase	Explanation
401	CICS_Default_Userid_Not_Allowed	The CICS default user ID can not be used to access profiles.
401	Create_Not_Allowed_By_Non_Owner	Only the owner of a profile can create a profile with the same user ID.
404	Profile_Not_Found	For the GET, POST, or DELETE request, the DTCN profile manager did not find a profile with the specified profile (user) ID.
500	CICS_Error	There was an error in the CICS region.
500	Dtcn_Manager_Received_Invalid_Function	The DTCN profile manager had internal error.
500	Unknown_Return_Code_Error	The DTCN profile manager had internal error.

Note:

1. When Debug Tool was installed, it was customized so that when a user created a DTCN profile, Debug Tool verifies that the user specifies a specific resource or resources. If you receive this message, it means that your site requires that you specify the indicated resource when you create a DTCN profile.
2. A DFHWB0723 message appears in the CICS region job output that shows a response code of 8 and one of the following reason codes:

- 5 Profile collection name is missing
- 6 Profile collection name is invalid
- 7 Profile ID is missing
- 8 Profile ID is too long
- 9 Profile ID is invalid
- 10 Query string is missing
- 11 Client version is invalid
- 12 Query string is invalid
- 13 Starting profile record is invalid

The following example shows how the message appears in the CICS region job output:

```
DFHWB0723 04/29/2009 19:30:10 S07CICP8 CWXN The CICS Web analyzer program
returned an error response. Program name: EQADCAN0.
RESPONSE: 8. REASON: rsnCode. Host IP address: 9.26.177.141. Client IP
address: 9.30.247.101. TCPIPSERVICE: EQAHTTP8
```

Chapter 3. Authentication, access control, and version compatibility

You must authenticate any user that wants to create, delete, or modify DTCN profiles. The DTCN profile manager then determines if the user has the correct access to create, delete, or modify DTCN profiles. The DTCN profile manager also determines if the version of the API running in your application is compatible with the version of the API running on the z/OS system.

How to authenticate a user

Authenticating a user involves the following tasks:

1. You must obtain the user's CICS user ID and password.
2. Encrypt their user ID and password with a base64 encoding scheme and place it in the header area of the HTTP request. For additional protection during transmission, you might want to use the HTTPS protocol with SSL encryption.
3. Transmit your HTTP request. The CICS HTTP server authenticates the user ID and password by using the RACF facility or other equivalent security facility.

How DTCN profile manager determines access to DTCN profiles

After the CICS HTTP server authenticates a user, it determines whether the user is authorized to do the HTTP request.

An authenticated user can read any profile (GET, where corresponding action is READ) or obtain a list of profiles in the repository (GET, where corresponding action is LIST). However, only the profile owner can create (PUT), update (POST), or delete (DELETE) his profile. You can give a user the ability to update or delete a profile owned by any user by adding that user's ID to the EQADTOOL.DTCNCHNGEANY resource profile of the FACILITY class, as described in the topic "Defining who can create, modify, or delete DTCN profiles" in the *Debug Tool Customization Guide*.

Compatibility of different versions

When Debug Tool releases an update to the API, it assigns each release a version number. The following table describes the version numbers:

Table 5. API version number and its corresponding Debug Tool for z/OS version number

Debug Tool for z/OS version number	Corresponding API version number
Version 10	0102

When you write your application, you identify the version of the API that you are using with the `clientversion` symbol in the URI. When the DTCN profile manager responds, it sends you the version of the API that it is using with the `<serverversion>` XML tag in the HTTP response body.

The following table describes how the DTCN profile manager and your application respond when the version numbers differ:

Table 6. How the DTCN profile manager and your application respond to differences in version numbers

Version difference	What the DTCN profile manager does	What your application does
<clientversion> = <serverversion>	The DTCN profile manager processes the request and responds with results from the request.	Your application accepts the DTCN profile manager's response and continues running.
<clientversion> > <serverversion>	If <clientversion> is more than two levels higher than the <serverversion>, the DTCN profile manager responds with the HTTP response status code of 400, and the reason phrase "Unsupported_Client_Version". Otherwise, the DTCN profile manager processes the request and sends an HTTP response body that uses the XML tags for the version of the API that the DTCN profile manager is using.	If your application can use the information provided at the <serverversion> and <profileversion> level, continue running. Otherwise, display a message that says the DTCN profile manager is running a version of the API that is too old.
<clientversion> < <serverversion>	If the <clientversion> is more than two levels lower than the <serverversion>, the DTCN profile manager responds with the HTTP response status code of 400 and the reason phrase "Unsupported_Client_Version". Otherwise, the DTCN profile manager processes the request and sends an HTTP response body that uses the XML tags for the version of the API that your application is using.	If the DTCN profile manager responds with a <profileversion> level that your application can use, continue running. Otherwise, display a message that say the DTCN profile manager is running a version of the API that is too recent.

Chapter 4. Customizing your z/OS system to give the API access to DTCN profiles

Before you begin using the API, you must do the following tasks:

- Verify that the application you are developing provides the proper authentication and security measures, as described in Chapter 3, “Authentication, access control, and version compatibility,” on page 7.
- Enable TCP/IP communication between your application and the z/OS system, as described in the topic “Defining the CICS TCPIP SERVICE resource” in the *Debug Tool Customization Guide*.
- If you want users other than the profile owners to modify or delete DTCN profiles, see the topic “Defining who can create, modify, or delete DTCN profiles” in the *Debug Tool Customization Guide*.

Chapter 5. Definition of XML tags

This topic describes the XML tags used to create the XML document that contains the data required in HTTP request and response bodies.

<ACTIVATION>

A flag to activate or deactivate the profile or indicate the status of a profile.

Maximum length	1 byte
Valid values	A, I
Usage	Optional
Default	I

<CICSREGIONNAME>

The name of a CICS region that end user wants to access.

Maximum length	8 bytes
Sample value	S07CICPH
Usage	Output only
Default	Not applicable

<CLIENTIP>

The IP name or address that starts the CICS application that the end user wants to debug.

Maximum length	60 bytes
Sample value	9.30.60.1.1
Usage	Optional
Default	Null

<CLIENTVERSION>

The version of the API you are using in your application. For a description of the version numbers, see "Compatibility of different versions" on page 7.

Maximum length	4 bytes
Sample value	0102
Usage	Output only
Default	Not applicable

<COMMANDFILE>

The name of a file that contains a set of Debug Tool commands to control the debug session.

Maximum length	80 bytes
Sample value	ELIN.TEST.COMMANDS
Usage	Optional
Default	*

<COMMAREADATA>

A data pattern, in character string or hexadecimal format, compared against a commarea passed to the program the end user wants to debug when that program is invoked. If the data pattern in the commarea and other specified resources match, that program is debugged.

Maximum length	60 bytes
Sample value	X'C1C2C3'
Usage	Optional
Default	Null

<COMMAREAOFFSET>

A numeric, in character string or hexadecimal format, that represents an offset of data in a commarea passed to the program the end user wants to debug when that program is invoked.

Maximum length	8 bytes
Sample value	X'AC'
Usage	Optional
Default	Null

<CONTAINERDATA>

A data pattern, in character string or hexadecimal format, compared to a container within the current channel passed to the program the end user wants to debug when that program is invoked. If the data pattern in the container and other specified resources match, that program is debugged.

Maximum length	60 bytes
Sample value	X'C1C2C3'
Usage	Optional
Default	Null

<CONTAINERNAME>

Name of the container within the current channel passed to the program the end user wants to debug when that program is invoked.

Maximum length	16 bytes
Sample value	INPUTCNT
Usage	Optional
Default	Null

<CONTAINEROFFSET>

A numeric, in character string or hexadecimal format, that represents an offset of data in the named container within the current channel passed to the program the end user wants to debug when that program is invoked.

Maximum length	8 bytes
Sample value	X'12C'
Usage	Optional
Default	Null

<EQAOPSTFILE>

Name of a file containing a set of EQAOPTS commands to set the initial environment for the debug session.

Maximum length	54 bytes
Sample value	USER1.EQAOPST.DATA
Usage	Optional
Default	(blank)

<LEVEL>

Conditions required for Debug Tool to gain control.

Maximum length	8 bytes
Valid values	ALL, ERROR, NONE
Usage	Optional
Default	ALL

<LOADNAME>

The name of the load module that the user wants to debug, which is part of a program specification. Use this tag with the <PGMNAME> tag to identify a specific compile unit.

Maximum length	8 bytes
Sample value	APP1LMD1
Usage	Optional
Default	Null

<MESSAGE>

An informational or error message returned by the server.

Maximum length	60 bytes
Sample value	Invalid_Client_Version
Usage	Output only
Default	Not applicable

<NETNAME>

The name of a logical unit in the VTAM[®] network.

Maximum length	8 bytes
Sample value	CICSNET1
Usage	Optional
Default	Null

<OTHEROPTS>

Additional Language Environment run time options needed to run the application that the end user wants to debug.

Maximum length	80 bytes
Sample value	STORAGE(00,00,00)

Usage	Optional
Default	Null

<PGMNAME>

The name of the compile unit the user wants to debug, which is part of a program specification. Use with the <LOADNAME> tag to identify a specific compile unit.

Maximum length	8 bytes
Sample value	APP1PGM1
Usage	Optional
Default	Null

<PREFERENCEFILE>

Name of a file containing a set of Debug Tool commands to control the debug session.

Maximum length	80 bytes
Sample value	ELIN.TEST.PREFFILE
Usage	Optional
Default	*

<PROFILE>

Tag that encapsulates all information.

<PROFILECOUNT>

Number of profiles to send to your application. The maximum value number of profiles that can be sent to your application is 10.

Maximum length	2 bytes
Sample value	5
Usage	Output only
Default	Not applicable

<PROFILEID>

ID for a profile whose data is in the HTTP response body.

Maximum length	8 bytes
Sample value	ELIN
Usage	Output only
Default	Not applicable

<PROFILERECORD>

Tag that encapsulates all the tags needed for a profile.

<PROFILEVERSION>

Version and release of the profile.

Maximum length	4 bytes
Sample value	0102

Usage	Output only
Default	Not applicable

<PROGRAM>

Tag that encapsulates a pair of <LOADNAME> and <PGMNAME> tags. A profile can have up to eight <PROGRAM> tags.

<PROMPTLEVEL>

A prompt level that indicates whether Debug Tool is invoked at Language Environment initialization. It can also contain commands.

Maximum length	80 bytes
Sample value	PROMPT
Usage	Optional
Default	PROMPT

<SERVERVERSION>

Version of the API that the DTCN profile manager is running. For a description of the version numbers, see “Compatibility of different versions” on page 7.

Maximum length	4 bytes
Sample value	0102
Usage	Output only
Default	Not applicable

<SERVICEID>

ID of the Service Oriented Architecture (SOA) service.

Maximum length	8 bytes
Sample value	DBGTSRV1
Usage	Output only
Default	Not applicable

<SESSADDR>

The terminal ID or IP address of the device running your application.

Maximum length	60 bytes
Sample value	9.30.60.200
Usage	Required if the value of the <SESSTYPE> tag is TCP.
Default	Not applicable

<SESSPORT>

Number of the TCP/IP port of the device running your application.

Maximum length	8 bytes
Sample value	8005
Usage	Optional
Default	8001

<SESSTYPE>

The method the end user wants to use to interact with Debug Tool.

Maximum length	4 bytes
Valid values	TCP, MFI
Usage	Optional
Default	TCP

<STARTPROFILERECORD>

The number you specified in the s symbol of the URI.

Maximum length	4 bytes
Sample value	5
Usage	Output only
Default	Not applicable

<TERMINALID>

The ID of the CICS terminal running the application that the end user wants to debug.

Maximum length	4 bytes
Sample value	TRM1
Usage	Optional
Default	Null

<TRANSACTIONID>

ID of the CICS transactions that starts the application that the end user wants to debug.

Maximum length	4 bytes
Sample value	TRN1
Usage	Optional
Default	Null

<TRIGGER>

Indicates whether to start Debug Tool when the application that the end user wants to debug is initialized.

Maximum length	8 bytes
Valid values	TEST, NOTEST
Usage	Optional
Default	TEST

<URMDEB>

A flag to indicate whether the end user wants to debug URM's during his debugging session.

Maximum length	1 byte
Valid values	Y, N

Usage	Optional
Default	N

<USERID>

The ID of the user that runs the transaction the end user wants to debug.

Maximum length	8 bytes
Sample value	ELIN1
Usage	Optional
Default	Null

Appendix A. Examples: HTTP request body and HTTP response body

The following sample XML document displays the HTTP request body of a PUT (CREATE) or POST (UPDATE) request.

```
<?xml version="1.0"?>
<profile>
  <profilerecord>
    <activation>A</activation>
    <program>
      <loadname>APP1LMD1</loadname>
      <pgmname>APP1PGM1</pgmname>
    </program>
    <program>
      <loadname>APP1LMD2</loadname>
      <pgmname>APP1PGM2</pgmname>
    </program>
    <transactionid>TRN1</transactionid>
    <terminalid>TRM1</terminalid>
    <userid>ELIN</userid>
    <netname>CICSNET1</netname>
    <clientip>9.30.60.200</clientip>
    <commareaoffset>12</commareaoffset>
    <commareadata>ABC</commareadata>
    <containername>APP1CONT</containername>
    <containeroffset>100</containeroffset>
    <containerdata>DEF</containerdata>
    <urmdeb>N</urmdeb>
    <trigger>TEST</trigger>
    <level>ALL</level>
    <sesstype>TCP</sesstype>
    <sessaddr>9.30.60.100</sessaddr>
    <sessport>8005</sessport>
    <commandfile>ELIN.TEST.COMMANDS</commandfile>
    <preferencefile>ELIN.TEST.PREFFILE</preferencefile>
    <promptlevel>PROMPT</promptlevel>
    <otheropts>STORAGE(00,00,00)</otheropts>
  </profilerecord>
</profile>
```

The following sample XML document displays the HTTP return body after the DTCN profile manager completes the GET request of the profile created or updated in the previous example.

```
<?xml version="1.0"?>
<profile>
  <profileversion>0102</profileversion>
  <serviceid>DBGTPROF</serviceid>
  <clientversion>0102</clientversion>
  <serverversion>0102</serverversion>
  <profilerecord>
    <profileid>ELIN</profileid>
    <activation>A</activation>
    <program>
      <loadname>APP1LMD1</loadname>
      <pgmname>APP1PGM1</pgmname>
    </program>
    <program>
      <loadname>APP1LMD2</loadname>
      <pgmname>APP1PGM2</pgmname>
    </program>
```

```
<transactionid>TRN1</transactionid>
<terminalid>TRM1</terminalid>
<userid>ELIN1</userid>
<netname>CICSNET1</netname>
<clientip>9.30.60.200</clientip>
<commareaoffset>12</commareaoffset>
<commareadata>ABC</commareadata>
<containername>APP1CONT</containername>
<containeroffset>100</containeroffset>
<containerdata>DEF</containerdata>
<urmdeb>N</urmdeb>
<trigger>TEST</trigger>
<level>ALL</level>
<sesstype>TCP</sesstype>
<sessaddr>9.30.60.100</sessaddr>
<sessport>8005</sessport>
<commandfile>ELIN.TEST.COMMANDS</commandfile>
<preferencefile>ELIN.TEST.PREFFILE</preferencefile>
<promptlevel>PROMPT</promptlevel>
<otheropts>STORAGE(00,00,00)</otheropts>
</profilerecord>
</profile>
```

Appendix B. Support resources and problem solving information

This section shows you how to quickly locate information to help answer your questions and solve your problems. If you have to call IBM support, this section provides information that you need to provide to the IBM service representative to help diagnose and resolve the problem.

For a comprehensive multimedia overview of IBM software support resources, see the IBM Education Assistant presentation “IBM Software Support Resources for System z® Enterprise Development Tools and Compilers products” at <http://publib.boulder.ibm.com/infocenter/ieduasst/stgv1r0/index.jsp?topic=/com.ibm.iea.debugt/debugt/6.1z/TrainingEducation/SupportInfoADTools/player.html>.

- “Searching knowledge bases”
- “Getting fixes” on page 23
- “Subscribing to support updates” on page 23
- “Contacting IBM Support” on page 24

Searching knowledge bases

You can search the available knowledge bases to determine whether your problem was already encountered and is already documented.

- Searching the information center
- Searching product support documents

Searching the information center

You can find this publication and documentation for many other products in the IBM System z Enterprise Development Tools & Compilers information center at <http://publib.boulder.ibm.com/infocenter/pdthelp/v1r1/index.jsp>. Using the information center, you can search product documentation in a variety of ways. You can search across the documentation for multiple products, search across a subset of the product documentation that you specify, or search a specific set of topics that you specify within a document. Search terms can include exact words or phrases, wild cards, and Boolean operators.

To learn more about how to use the search facility provided in the IBM System z Enterprise Development Tools & Compilers information center, you can view the multimedia presentation at <http://publib.boulder.ibm.com/infocenter/pdthelp/v1r1/index.jsp?topic=/com.ibm.help.doc/InfoCenterTour800600.htm>.

Searching product support documents

If you need to look beyond the information center to answer your question or resolve your problem, you can use one or more of the following approaches:

- Find the content that you need by using the IBM Support Portal at www.ibm.com/software/support or directly at www.ibm.com/support/entry/portal.

The IBM Support Portal is a unified, centralized view of all technical support tools and information for all IBM systems, software, and services. The IBM

Support Portal lets you access the IBM electronic support portfolio from one place. You can tailor the pages to focus on the information and resources that you need for problem prevention and faster problem resolution.

Familiarize yourself with the IBM Support Portal by viewing the demo videos at https://www.ibm.com/blogs/SPNA/entry/the_ibm_support_portal_videos?lang=en_us about this tool. These videos introduce you to the IBM Support Portal, explore troubleshooting and other resources, and demonstrate how you can tailor the page by moving, adding, and deleting portlets.

Access a specific IBM Software Support site:

- Application Performance Analyzer for z/OS Support
 - Debug Tool for z/OS Support
 - Enterprise COBOL for z/OS Support
 - Enterprise PL/I for z/OS Support
 - Fault Analyzer for z/OS Support
 - File Export for z/OS Support
 - File Manager for z/OS Support
 - WebSphere® Studio Asset Analyzer for Multiplatforms Support
 - Workload Simulator for z/OS and OS/390® Support
- Search for content by using the IBM masthead search. You can use the IBM masthead search by typing your search string into the Search field at the top of any [ibm.com](http://www.ibm.com)® page.
 - Search for content by using any external search engine, such as Google, Yahoo, or Bing. If you use an external search engine, your results are more likely to include information that is outside the [ibm.com](http://www.ibm.com) domain. However, sometimes you can find useful problem-solving information about IBM products in newsgroups, forums, and blogs that are not on [ibm.com](http://www.ibm.com). Include "IBM" and the name of the product in your search if you are looking for information about an IBM product.
 - The IBM Support Assistant (also referred to as ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. It provides quick access to support-related information. You can use the IBM Support Assistant to help you in the following ways:
 - Search through IBM and non-IBM knowledge and information sources across multiple IBM products to answer a question or solve a problem.
 - Find additional information through product and support pages, customer news groups and forums, skills and training resources and information about troubleshooting and commonly asked questions.

In addition, you can use the built in Updater facility in IBM Support Assistant to obtain IBM Support Assistant upgrades and new features to add support for additional software products and capabilities as they become available.

For more information, and to download and start using the IBM Support Assistant for IBM System z Enterprise Development Tools & Compilers products, please visit http://www.ibm.com/support/docview.wss?rs=2300&context=SSFMHB&dc=D600&uid=swg21242707&loc=en_US&cs=UTF-8&lang=en.

General information about the IBM Support Assistant can be found on the IBM Support Assistant home page at <http://www.ibm.com/software/support/isa>.

Getting fixes

A product fix might be available to resolve your problem. To determine what fixes and other updates are available, select a link from the following list:

- Latest PTFs for Application Performance Analyzer for z/OS
- Latest PTFs for Debug Tool for z/OS
- Latest PTFs for Fault Analyzer for z/OS
- Latest PTFs for File Export for z/OS
- Latest PTFs for File Manager for z/OS
- Latest PTFs for Optim™ Move for DB2
- Latest PTFs for WebSphere Studio Asset Analyzer for Multiplatforms
- Latest PTFs for Workload Simulator for z/OS and OS/390

When you find a fix that you are interested in, click the name of the fix to read its description and to optionally download the fix.

Subscribe to receive e-mail notifications about fixes and other IBM Support information as described in [Subscribing to Support updates](#).

Subscribing to support updates

To stay informed of important information about the IBM products that you use, you can subscribe to updates. By subscribing to receive updates, you can receive important technical information and updates for specific Support tools and resources. You can subscribe to updates by using the following:

- RSS feeds and social media subscriptions
- My Notifications

RSS feeds and social media subscriptions

For general information about RSS, including steps for getting started and a list of RSS-enabled IBM web pages, visit the IBM Software Support RSS feeds site at <http://www.ibm.com/software/support/rss/other/index.html>. For information about the RSS feed for the IBM System z Enterprise Development Tools & Compilers information center, refer to the [Subscribe to information center updates](#) topic in the information center at http://publib.boulder.ibm.com/infocenter/pdthelp/v1r1/topic/com.ibm.help.doc/subscribe_info.html.

My Notifications

With My Notifications, you can subscribe to Support updates for any IBM product. You can specify that you want to receive daily or weekly email announcements. You can specify what type of information you want to receive (such as publications, hints and tips, product flashes (also known as alerts), downloads, and drivers). My Notifications enables you to customize and categorize the products about which you want to be informed and the delivery methods that best suit your needs.

To subscribe to Support updates, follow the steps below. Additional information is provided at <http://www.ibm.com/support/docview.wss?rs=615&uid=swg21172598>.

1. Go to the IBM software support site at <http://www.ibm.com/software/support>.

2. Click the **My Notifications** link in the **Notifications** portlet on the page that is displayed.
3. If you have already registered for **My notifications**, sign in and skip to the next step. If you have not registered, click **register now**. Complete the registration form using your e-mail address as your IBM ID and click **Submit**.
4. In the **My notifications** tool, click the **Subscribe** tab to specify products for which you want to receive e-mail updates.
5. To specify Problem Determination Tools products, click **Other software** and then select the products for which you want to receive e-mail updates, for example, **Debug Tool for z/OS** and **File Manager for z/OS**.
6. To specify a COBOL or PL/I compiler, click **Rational**[®] and then select the products for which you want to receive e-mail updates, for example, **Enterprise COBOL for z/OS**.
7. After selecting all products that are of interest to you, scroll to the bottom of the list and click **Continue**.
8. Determine how you want to save your subscription. You can use the default subscription name or create your own by entering a new name in the **Name** field. It is recommended that you create your own unique subscription name using something easily recognized by you. You can create a new folder by entering a folder name in the **New** field or select an existing folder from the pulldown list. A folder is a container for multiple subscriptions.
9. Specify the types of documents you want and the e-mail notification frequency.
10. Scroll to the bottom of the page and click **Submit**.

To view your current subscriptions and subscription folders, click **My subscriptions**.

If you experience problems with the **My notifications** feature, click the **Feedback** link in the left navigation panel and follow the instructions provided.

Contacting IBM Support

IBM Support provides assistance with product defects, answering FAQs, and performing rediscovery.

After trying to find your answer or solution by using other self-help options such as technotes, you can contact IBM Support. Before contacting IBM Support, your company must have an active IBM maintenance contract, and you must be authorized to submit problems to IBM. For information about the types of available support, see the information below or refer to the Support portfolio topic in the Software Support Handbook at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/offerings.html>.

- For IBM distributed software products (including, but not limited to, Tivoli[®], Lotus[®], and Rational products, as well as DB2 and WebSphere products that run on Windows, or UNIX operating systems), enroll in Passport Advantage[®] in one of the following ways:

Online

Go to the Passport Advantage Web site at http://www.lotus.com/services/passport.nsf/WebDocs/Passport_Advantage_Home and click **How to Enroll**.

By phone

For the phone number to call in your country, go to the Contacts page of

the *IBM Software Support Handbook on the Web* at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/contacts.html> and click the name of your geographic region.

- For customers with Subscription and Support (S & S) contracts, go to the Software Service Request Web site at <http://www.ibm.com/support/servicerequest>.
- For customers with IBMLink, CATIA, Linux, S/390®, iSeries®, pSeries, zSeries, and other support agreements, go to the IBM Support Line Web site at <http://www.ibm.com/services/us/index.wss/so/its/a1000030/dt006>.
- For IBM eServer™ software products (including, but not limited to, DB2 and WebSphere products that run in zSeries, pSeries, and iSeries environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web site at <http://www.ibm.com/servers/eserver/techsupport.html>.

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States. From other countries, go to the Contacts page of the *IBM Software Support Handbook on the Web* at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/contacts.html> and click the name of your geographic region for phone numbers of people who provide support for your location.

Complete the following steps to contact IBM Support with a problem:

1. “Define the problem and determine the severity of the problem”
2. “Gather diagnostic information” on page 26
3. “Submit the problem to IBM Support” on page 26

To contact IBM Software support, follow these steps:

Define the problem and determine the severity of the problem

Define the problem and determine severity of the problem When describing a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Support can help you solve the problem efficiently.

IBM Support needs you to supply a severity level. Therefore, you need to understand and assess the business impact of the problem that you are reporting. Use the following criteria:

Severity 1

The problem has a **critical** business impact. You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.

Severity 2

The problem has a **significant** business impact. The program is usable, but it is severely limited.

Severity 3

The problem has **some** business impact. The program is usable, but less significant features (not critical to operations) are unavailable.

Severity 4

The problem has **minimal** business impact. The problem causes little impact on operations, or a reasonable circumvention to the problem was implemented.

For more information, see the Getting IBM support topic in the Software Support Handbook at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/getsupport.html>.

Gather diagnostic information

To save time, if there is a Mustgather document available for the product, refer to the Mustgather document and gather the information specified. Mustgather documents contain specific instructions for submitting your problem to IBM and gathering information needed by the IBM support team to resolve your problem. To determine if there is a Mustgather document for this product, go to the product support page and search on the term Mustgather. At the time of this publication, the following Mustgather documents are available:

- Mustgather: Read first for problems encountered with Application Performance Analyzer for z/OS: http://www.ibm.com/support/docview.wss?rs=2300&context=SSFMHB&q1=mustgather&uid=swg21265542&loc=en_US&cs=utf-8&lang=en
- Mustgather: Read first for problems encountered with Debug Tool for z/OS: http://www.ibm.com/support/docview.wss?rs=615&context=SSGTSD&q1=mustgather&uid=swg21254711&loc=en_US&cs=utf-8&lang=en
- Mustgather: Read first for problems encountered with Fault Analyzer for z/OS: http://www.ibm.com/support/docview.wss?rs=273&context=SSXJAJ&q1=mustgather&uid=swg21255056&loc=en_US&cs=utf-8&lang=en
- Mustgather: Read first for problems encountered with File Manager for z/OS: http://www.ibm.com/support/docview.wss?rs=274&context=SSXJAV&q1=mustgather&uid=swg21255514&loc=en_US&cs=utf-8&lang=en
- Mustgather: Read first for problems encountered with Enterprise COBOL for z/OS: http://www.ibm.com/support/docview.wss?rs=2231&context=SS6SG3&q1=mustgather&uid=swg21249990&loc=en_US&cs=utf-8&lang=en
- Mustgather: Read first for problems encountered with Enterprise PL/I for z/OS: http://www.ibm.com/support/docview.wss?rs=619&context=SSY2V3&q1=mustgather&uid=swg21260496&loc=en_US&cs=utf-8&lang=en

If the product does not have a Mustgather document, please provide answers to the following questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can you re-create the problem? If so, what steps were performed to re-create the problem?
- Did you make any changes to the system? For example, did you make changes to the hardware, operating system, networking software, and so on.
- Are you currently using a workaround for the problem? If so, be prepared to explain the workaround when you report the problem.

Submit the problem to IBM Support

You can submit your problem to IBM Support in one of three ways:

Online using the IBM Support Portal

Click **Service request** on the IBM Software Support site at <http://www.ibm.com/software/support>. On the right side of the Service request page, expand the Product related links section. Click Software

support (general) and select ServiceLink/IBMLink to open an Electronic Technical Response (ETR). Enter your information into the appropriate problem submission form.

Online using the Service Request tool

The Service Request tool can be found at <http://www.ibm.com/software/support/servicerequest>.

By phone

Call 1-800-IBMSERV (1-800-426-7378) in the United States or, from other countries, go to the Contacts page of the *IBM Software Support Handbook* at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/contacts.html> and click the name of your geographic region.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM Support website daily, so that other users who experience the same problem can benefit from the same resolution.

After a Problem Management Record (PMR) is open, you can submit diagnostic MustGather data to IBM using one of the following methods:

- FTP diagnostic data to IBM. For more information, refer to <http://www.ibm.com/support/docview.wss?rs=615&tuid=swg21154524>.
- If FTP is not possible, e-mail diagnostic data to techsupport@mainz.ibm.com. You must add PMR xxxxx bbb ccc in the subject line of your e-mail. xxxxx is your PMR number, bbb is your branch office, and ccc is your IBM country code. Go to <http://itcenter.mainz.de.ibm.com/ecurep/mail/subject.html> for more details.

Always update your PMR to indicate that data has been sent. You can update your PMR online or by phone as described above.

Appendix C. Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The accessibility features in z/OS provide accessibility for Debug Tool.

The major accessibility features in z/OS enable users to:

- Use assistive technology products such as screen readers and screen magnifier software
- Operate specific or equivalent features by using only the keyboard
- Customize display attributes such as color, contrast, and font size

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Using assistive technologies

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

Keyboard navigation of the user interface

Users can access z/OS user interfaces by using TSO/E or ISPF. Refer to *z/OS TSO/E Primer*, *z/OS TSO/E User's Guide*, and *z/OS ISPF User's Guide Volume 1* for information about accessing TSO/E and ISPF interfaces. 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.

Accessibility of this document

Information in the following format of this document is accessible to visually impaired individuals who use a screen reader:

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Syntax diagrams start with the word *Format* or the word *Fragments*. Each diagram is preceded by two images. For the first image, the screen reader will say "Read syntax diagram". The associated link leads to an accessible text diagram. When you return to the document at the second image, the screen reader will say "Skip visual syntax diagram" and has a link to skip around the visible diagram.

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Using CODE/370 with VS COBOL II and OS PL/I, SC09-1862

Debug Tool for z/OS

You can access Debug Tool publications through the IBM System z Enterprise Development Tool and Compilers information center. You can receive RSS feeds about updates to the information center by following the instructions in the topic "Subscribe to information center updates", which is in the IBM System z Enterprise Development Tools and Compilers information center.

Debug Tool User's Guide, SC14-7600

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Problem Determination Tools Common Component Program Directory, GI10-8969

Problem Determination Tools for z/OS Common Component Customization Guide and User Guide, SC19-4159

Related publications

CICS

Application Programming Guide, SC34-6231

Application Programming Primer, SC34-0674

Application Programming Reference, SC34-6232

z/OS

MVS JCL Reference, SA22-7597

MVS JCL User's Guide, SA22-7598

MVS System commands, SA22-7627

Softcopy publications

Online publications are distributed on CD-ROMs and can be ordered through your IBM representative. *Debug Tool User's Guide*, *Debug Tool Customization Guide*, and *Debug Tool Reference and Messages* are distributed on the following collection kit:

SK5T-8871

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