



Rational Developer for System z 7.6 release notes

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IBM Rational Developer for System z Version 7.6 release notes

The following release notes provide information about new features and enhancements included in Rational® Developer for System z® Version 7.6 and lists the known limitations in the release.

This information is for developers using Rational Developer for System z Version 7.6.

Hardware Requirements

For hardware and software requirements, see the following documents:

- **z/OS® host requirements:** Rational Developer for System z Host Configuration Guide
- **AIX® and Linux® requirements:** Rational Developer for System z RSE Server Installation Guide: AIX and Linux
- **Linux on System z requirements:** Rational Developer for System z RSE Server Installation Guide: Linux on System z
- **Client requirements:** Rational Developer for System z Installation Guide

Installation and Configuration

For information on installing and configuring Rational Developer for System z, see the following documents:

- **z/OS host installation:** Program Directory for Rational Developer for System z
- **z/OS host configuration:** Rational Developer for System z Host Configuration Quick Start Guide
- **z/OS host configuration:** Rational Developer for System z Host Configuration Guide
- **AIX and Linux installation:** Rational Developer for System z RSE Server Installation Guide: AIX and Linux
- **Linux on System z installation:** Rational Developer for System z RSE Server Installation Guide: Linux on System z
- **Client installation:** Rational Developer for System z Installation Guide

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Advanced COBOL Editor

- Enhanced content assist to include data items declared in EXEC SQL INCLUDE statements (for example, SQLCA) and implicitly linked CICS data structures (for example, DFHEIBLK).
- Improved support for the COBOL LPEX Editor IMS™ snippets have been introduced to aid in the development of COBOL IMS applications.
- Enabled open declarations, hover help, and other features for data items referenced in EXEC SQL and EXEC CICS statements.
- Added support for real-time syntax checking of CICS and SQL code embedded in COBOL programs
- Enhanced the navigation in the COBOL LPEX Editor to use the F3 key and hyperlinking
- Enhanced content assist to include information about variable declarations
- Limitation: The grammar used for parsing embedded SQL in COBOL programs is not a complete DB2® for z/OS grammar and can show incorrect warning annotations. Parsing embedded SQL using this limited grammar is optional and can be enabled on the preferences page LPEX Editor>System z LPEX Editor>COBOL Parser>COBOL Annotations and Tools.
- Limitation: Refactor operations are not atomic and cannot be undone.
- Limitation: The Open Perform Hierarchy operation will not be in sync if the source file is modified or closed.

Application Deployment Manager

- Added functions to create an empty Application Deployment Manager manifest in Eclipse projects and z/OS projects.
- Enhanced Application Deployment Manager to handle a subset of new functions supported by CICS Explorer.
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 - “Generating WSBind with the new WSBind parameters introduced in CICS TS 4.1” on page 39
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z/OS Integrated Development Environment

CICS 4.1 support for Content Assist

CICS 4.1 support for Content Assist provides syntax completion in an edit session for COBOL and PL/I programs using CICS Transaction Server for z/OS 4.1 on the host.

Content assist for commands in the LPEX command line

Content assist for commands in the LPEX command line now provides the ability to invoke LPEX commands easily. Users can invoke content assist (**CTRL + Space**) on the LPEX command line to quickly and easily get to the LPEX commands. System z LPEX command-line content assist displays Developer for System z developed user commands and base LPEX commands (plus ISPF primary commands when the ISPF mode is in effect).

Enhanced support for non-round-trip characters

The Enhanced support for non-round-trip characters identifies the location of characters which cannot be transferred correctly between the remote and local character sets.

Obtain up-to-date output for active jobs

The JES Subsystem displays the most current job output, even output that is in active buffers and has not yet been written to SPOOL. This up-to-date output applies to both JES2 and JES3.

Performance enhancements on file transfer and content assist

Performance improvements have been made in the areas of file download, file upload, opening of files in the editor, and fetching copybook/include files during the content assist operation.

Remote Resource Access API

The Remote Resource Access API component of IBM® Rational Developer for System z provides a formal API for customers and third party vendors to extend the functionality of the product by programmatically accessing and manipulating remote resources.

PL/I enhanced editing support

PL/I Enhanced Editing Support provides real-time syntax checking for PL/I programs, like the real-time syntax checking for COBOL programs.

Property Group editor

The Property Group editor provides an Eclipse editor for editing and creating property groups as well as editing property group overrides. The editor provides validation and assistance to users when specifying properties with data set names as values.

Support for multiple local preprocessors

Support for multiple local preprocessors provides a way for users to call multiple local preprocessors before a COBOL or PL/I compilation for syntax checking and build.

IBM Rational Developer for System z Version 7.6 - IBM Rational Team Concert for System z Version 2.0 Integration

IBM Rational Team Concert for System z Version 2.0 and IBM Rational Developer for System z Version 7.6 not only provide shell sharing but also a more powerful integration to enable clients to take advantage of the IDE capabilities and team based development features for the z based artifacts.

Limitation: PL/I syntax is incorrectly marked with warnings

Problem: There are many situations where legitimate PL/I syntax is incorrectly marked with warnings by the real-time syntax checking feature..

Workaround: To turn off the real-time syntax checking, open the preferences (**Windows --> Preferences>LPEX Editor>System z LPEX Editor>PL/I Parser>PL/I Annotations** and click **Disable editor annotations**).

Limitation: Getting the active job output is not supported for JES3 releases earlier than z/OS V1R10

Problem: For obtaining up-to-date output for active jobs, getting the active job output is not supported for JES3 releases earlier than z/OS V1R10. This limitation is caused by JES API limitations in the earlier releases.

Workaround: Use JES3 release z/OS V1R10 or later.

Interface for CA Endeavor Software Change Manager

Interface for CA Endeavor® Software Change Manager Release 12

The IBM Rational Developer for System z interface for CA Endeavor® Software Change Manager Release 12 RAM (Repository Access Manager) allows you to access and edit software assets stored in CA Endeavor® SCM projects. RAMs are used by a CARMA server (common access repository manager), which is part of Developer for System z. If the CARMA RAM is available and configured on your host system, then you can connect to a CA Endeavor® SCM project using the CARMA plug-in of the Rational Developer for System z client.

Service Component Architecture

Support for the Service Component Architecture

Support for the Service Component Architecture (SCA) is new in this release. Developer for System z Service Component Architecture development tools for CICS is a powerful, integrated extension to Developer for System z for the assembly of service-oriented application components based on the open Service Component Architecture and the deployment of SCA assets to CICS Transaction Server for z/OS 4.1. For more information see “Developing Service Component Architecture (SCA) applications”

Developing Service Component Architecture (SCA) applications

SCA Development Tools is a powerful, integrated extension to IBM Rational Developer for System z for the assembly of service-oriented application components based on the open Service Component Architecture and the deployment of SCA assets to CICS Transaction Server for z/OS 4.1.

For information about SCA and Open Service Oriented Architecture (OSOA), see the “Related information” section at the end of this topic.

SCA Development Tools includes a concise set of tools for developing SCA service components implemented with CICS application programs, for graphically wiring components together to form new composite services, for associating protocol bindings to SCA components, and for packaging up SCA assets and deploying them to CICS Transaction Server for z/OS.

Limitation: Editing the URI of the web service binding and saving the resource does not update the WSDL file

After deploying an SCA Composite as a CICS bundle, editing the URI of the web service binding and saving the resource does not update the WSDL file used for

the promoted service. If the composite is redeployed after saving the modified URI, the web service will not work using the unmodified WSDL.

CICS

Error messages that you can ignore

Some of the keywords associated with CICS command have changed over the years, but have been retained for compatibility reasons. A few of these obsolete keywords are incorrectly flagged as invalid by the syntax checker. These are listed in Table 1, together with an explanation of the problem, and the action that you should take if you encounter it.

Table 1. Keywords incorrectly flagged as invalid by the syntax checker

Command	Description	Action
ALLOCATE	The NOSUSPEND keyword is an alternative to the NOQUEUE keyword for this command. If you specify NOSUSPEND, the syntax checker returns: Invalid command option 'NOSUSPEND'	You can ignore this error because the syntax is correct.
ASSIGN	The OPSECURITY and OPERKEYS keywords are supported for compatibility reasons. If you specify either of these keywords, the syntax checker returns: Invalid command option 'OPSECURITY'Invalid command option 'OPERKEYS'	You can ignore these errors because the syntax is correct.
CSD GETNEXTRSRCE	If using a resource name (For example: PROGRAM) instead of the RESTYPE keyword the syntax checker will return: Invalid command option 'PROGRAM'.	You can ignore this error because the syntax is correct
DELETE	You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.) If you do this, the syntax checker returns: Invalid command option 'DATASET' This might cause other options to be flagged as invalid.	You can ignore this error because DATASET is accepted as an alternative to FILE. If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.

Table 1. Keywords incorrectly flagged as invalid by the syntax checker (continued)

Command	Description	Action
DELETEQ TS	<p>The keyword TS is optional for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do not specify the TS option, the syntax checker assumes that the command is DELETEQ TD, and returns: Command is ambiguous, 'TD' has been assumed</p> <p>This causes other options to be flagged as invalid.</p>	<p>You can ignore this error because the syntax is correct.</p> <p>However, if you want to check the other options that were flagged as invalid you must specify TS to check that there are no other errors.</p>
DEQ	<p>A CVDA value of LUW is supported as an alternative to UOW for compatibility reasons.</p> <p>If you specify LUW, the syntax checker returns: Invalid command option 'LUW'</p>	<p>You can ignore this error because the syntax is correct.</p>
DOCUMENT RETRIEVE	<p>The CLNTCODEPAGE keyword is an alternative to the CHARACTERSET keyword for this command.</p> <p>If you specify CLNTCODEPAGE, the syntax checker returns: Invalid command option 'CLNTCODEPAGE'</p>	<p>You can ignore this error because the syntax is correct.</p>
ENDBR	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
ENQ	<p>A CVDA value of LUW is supported as an alternative to UOW for compatibility reasons.</p> <p>If you specify LUW, the syntax checker returns: Invalid command option 'LUW'</p>	<p>You can ignore this error because the syntax is correct.</p>
INQUIRE DSNAME	<p>The BKOUTSTATUS option is obsolete on this command, but has been retained for compatibility with earlier releases.</p> <p>If you specify BKOUTSTATUS, the syntax checker returns: Invalid command option 'BKOUTSTATUS'</p>	<p>You can ignore this error because the syntax is correct.</p> <p>However, CICS will accept the keyword and issue an informational message</p>

Table 1. Keywords incorrectly flagged as invalid by the syntax checker (continued)

Command	Description	Action
INQUIRE JOURNALNUM	<p>This command is obsolete and is retained only for compatibility reasons.</p> <p>If you specify this command, the syntax checker returns: Invalid command option 'JOURNALNUM'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore these errors because the syntax is correct.</p> <p>However, CICS will accept the command and issue an informational message</p>
INQUIRE NETNAME	<p>The SCREENWIDTH and SCREENHEIGHT keywords have been replaced by SCRNHT and SCRNWD on this command, but are supported for compatibility reasons.</p> <p>If you specify either of these keywords, the syntax checker returns: Invalid command option 'SCREENWIDTH'Invalid command option 'SCREENHEIGHT'</p>	<p>You can ignore these errors because the syntax is correct.</p>
INQUIRE PROGRAM	<p>The JVMDEBUG option is obsolete on this command, but has been retained for compatibility with earlier releases.</p> <p>If you specify JVMDEBUG, the syntax checker returns: Invalid command option 'JVMDEBUG'</p>	<p>You can ignore this error because the syntax is correct.</p> <p>CICS returns NODEBUG as the CVDA value.</p>
INQUIRE TASK	<p>The DTB option is obsolete and was replaced by INDOUBT on this command. However, it has been retained for compatibility with earlier releases.</p> <p>If you specify DTB, the syntax checker returns: Invalid command option 'DTB'</p>	<p>You can ignore this error because the syntax is correct.</p> <p>CICS returns NOTSUPPORTED as the CVDA value.</p>
INQUIRE TERMINAL	<p>The SCREENWIDTH and SCREENHEIGHT keywords have been replaced by SCRNHT and SCRNWD on this command, but are supported for compatibility reasons.</p> <p>If you specify either of these keywords, the syntax checker returns: Invalid command option 'SCREENWIDTH'Invalid command option 'SCREENHEIGHT'</p>	<p>You can ignore these errors because the syntax is correct.</p>

Table 1. Keywords incorrectly flagged as invalid by the syntax checker (continued)

Command	Description	Action
INQUIRE VOLUME	<p>This command is obsolete and is retained only for compatibility reasons.</p> <p>If you specify this command, the syntax checker returns: Invalid command option 'VOLUME'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore these errors because the syntax is correct.</p> <p>However, CICS will accept the command and issue an informational message</p>
READ	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
READNEXT	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
READPREV	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>

Table 1. Keywords incorrectly flagged as invalid by the syntax checker (continued)

Command	Description	Action
READQ TS	<p>The keyword TS is optional for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do not specify the TS option, the syntax checker assumes that the command is READQ TD, and returns: Command is ambiguous, 'TD' has been assumed</p> <p>This causes other options to be flagged as invalid.</p>	<p>You can ignore this error because the syntax is correct.</p> <p>However, if you want to check the other options that were flagged as invalid you must specify TS to check that there are no other errors.</p>
RESETBR	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
REWRITE	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
SET DSNAME	<p>The FAILEDBKOUT, NORMALBKOUT and BKOUTSTATUS options are obsolete on this command, but have been retained for compatibility with earlier releases.</p> <p>If you specify any of these keywords, the syntax checker returns: Invalid command option 'FAILEDBKOUT'Invalid command option 'NORMALBKOUT'Invalid command option 'BKOUTSTATUS'</p>	<p>You can ignore these errors because the syntax is correct.</p> <p>However, CICS will accept the keywords and issue informational messages</p>

Table 1. Keywords incorrectly flagged as invalid by the syntax checker (continued)

Command	Description	Action
SET JOURNALNUM	<p>This command is obsolete and is retained only for compatibility reasons.</p> <p>If you specify this command, the syntax checker returns: Invalid command option 'JOURNALNUM'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore these errors because the syntax is correct.</p> <p>However, CICS will accept the command and issue an informational message</p>
SET VOLUME	<p>This command is obsolete and is retained only for compatibility reasons.</p> <p>If you specify this command, the syntax checker returns: Invalid command option 'VOLUME'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore these errors because the syntax is correct.</p> <p>However, CICS will accept the command and issue an informational message</p>
STARTBR	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
UNLOCK	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
WEB READ	<p>The CLNTCODEPAGE keyword is an alternative to the CHARACTERSET keyword for this command.</p> <p>If you specify CLNTCODEPAGE, the syntax checker returns: Invalid command option 'CLNTCODEPAGE'</p>	<p>You can ignore this error because the syntax is correct.</p>

Table 1. Keywords incorrectly flagged as invalid by the syntax checker (continued)

Command	Description	Action
WEB RECEIVE	<p>The CLNTCODEPAGE keyword is an alternative to the CHARACTERSET keyword for this command.</p> <p>If you specify CLNTCODEPAGE, the syntax checker returns: Invalid command option 'CLNTCODEPAGE'</p>	<p>You can ignore this error because the syntax is correct.</p>
WEB SEND	<p>The CLNTCODEPAGE keyword is an alternative to the CHARACTERSET keyword for this command.</p> <p>If you specify CLNTCODEPAGE, the syntax checker returns: Invalid command option 'CLNTCODEPAGE'</p>	<p>You can ignore this error because the syntax is correct.</p>
WEB STARTBROWSE	<p>The CLNTCODEPAGE keyword is an alternative to the CHARACTERSET keyword for this command.</p> <p>If you specify CLNTCODEPAGE, the syntax checker returns: Invalid command option 'CLNTCODEPAGE'</p>	<p>You can ignore this error because the syntax is correct.</p>
WRITE	<p>You can use the keyword DATASET as an alternative to FILE for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do this, the syntax checker returns: Invalid command option 'DATASET'</p> <p>This might cause other options to be flagged as invalid.</p>	<p>You can ignore this error because DATASET is accepted as an alternative to FILE.</p> <p>If this problem has caused other options to be flagged as invalid, you might want to change DATASET to FILE to check that there are no other errors.</p>
WRITEQ TS	<p>The keyword TS is optional for this command. (This is for compatibility with earlier releases, and is not documented.)</p> <p>If you do not specify the TS option, the syntax checker assumes that the command is WRITEQ TD, and returns: Command is ambiguous, 'TD' has been assumed</p> <p>This causes other options to be flagged as invalid.</p>	<p>You can ignore this error because the syntax is correct.</p> <p>However, if you want to check the other options that were flagged as invalid you must specify TS to check that there are no other errors.</p>
WEB ENDBROWSE	<p>If using the HTTPHEADER keyword the SESSTOKEN keyword is optional, however if you omit it then the syntax check returns: Command requires the option '<Expression>'</p>	<p>You can ignore this error because the syntax is correct.</p>

Table 1. Keywords incorrectly flagged as invalid by the syntax checker (continued)

Command	Description	Action
WEB READ	If using the HTTPHEADER keyword the SESSTOKEN keyword is optional, however if you omit it then the syntax check returns: Command requires the option '<Expression>'	You can ignore this error because the syntax is correct.
WEB STARTBROWSE	If using the HTTPHEADER keyword the SESSTOKEN keyword is optional, however if you omit it then the syntax check returns: Command requires the option '<Expression>'	You can ignore this error because the syntax is correct.

Errors that do not cause a message

Some coding errors do not cause the syntax checker to issue a message. These errors are listed in Table 1. If your program contains one of these errors, it will not be flagged by the syntax checker, but it will be flagged when you translate the program using the CICS translator.

Table 2. Errors that do not cause the syntax checker to issue a message

Command	Error
All INQUIRE and FEPI INQUIRE commands that support browsing	You cannot use any other keywords if you use the START, AT [®] , or END keywords to start or finish browsing. You cannot provide a resource name if you use the START, AT, or END keywords to start or finish browsing.
ALLOCATE	You cannot use the PARTNER and PROFILE keywords together.
COLLECT STATISTICS	If you specify the NODE keyword, you must also specify the TARGET keyword.
CONNECT PROCESS	You must specify either SESSION or PARTNER. If you specify the PARTNER keyword, you must also specify the CONVID keyword.
CONVERSE	You cannot use the ATTACHID keyword with the CTLCHAR, DEST, ERASE, DEFAULT, ALTERNATE, LDC, LINEADDR, PSEUDOBIN, or STRFIELD keywords You cannot use the FMH and LDC keywords together. If you specify the SET keyword you must also specify either the TOLENGTH or TOFLLENGTH keyword.
CSD DELETE	You must only specify one resource type keyword.
CSD GETNEXTGROUP	You must specify the GROUP keyword.
CSD GETNEXTLIST	You must specify the LIST keyword.
CSD GETNEXTRSRCE	You must specify the RESTYPE, RESID and GROUP keywords.

Table 2. Errors that do not cause the syntax checker to issue a message (continued)

Command	Error
CSD INQUIREGROUP	You must specify the GROUP keyword.
CSD INQUIRELIST	You must specify the LIST keyword.
CSD INQUIRERSRCE	You must only specify one resource name keyword.
DEFINE TIMER	You cannot use the AT and DAYS keywords together. You cannot use the AFTER keyword with the ON, YEAR, MONTH, DAYOFMONTH, or DAYOFYEAR keywords.
DELETE CONTAINER	You cannot use the CHANNEL keyword with the ACTIVITY, ACQACTIVITY, PROCESS, or ACQPROCESS keywords.
DELETE FILE	You cannot use the RBA, XRBA or RRN keywords with the KEYLENGTH, GENERIC, or NUMREC keywords.
DISABLE PROGRAM	You cannot use the EXIT keyword with the FORMATEDE, PURGEABLE, SHUTDOWN, SPI or TASKSTART keywords.
ENABLE PROGRAM	You cannot use the EXIT keyword with the FORMATEDE, INDOUBTWAIT, LINKEDITMODE, OPENAPI, PURGEABLE, QUASIRENT, SHUTDOWN, SPI, TALENGTH, TASKSTART, or THREADSAFE keywords.
EXTRACT ATTACH	You cannot use the SESSION or CONVID keywords with the ATTACHID keyword.
EXTRACT WEB	You cannot use the SESSTOKEN keyword with the REQUESTTYPE keyword.
EXTRACT TCPIP	No errors are returned by the syntax checker for this command.
EXTRACT WEB	If you use EXTRACT WEB for CICS as an HTTP server you must not specify the SESSTOKEN keyword. If you use EXTRACT WEB for CICS as an HTTP client you must specify the SESSTOKEN keyword. If you specify the HOST, HTTPVERSION, PATH, PORTNUMBER, REALM or QUERYSTRING keywords, you must specify their corresponding length keywords.
FEPI CONVERSE DATASTREAM	You cannot use the CHAIN or RU keywords with the POOL keyword. You can use the POOL keyword only if you also use the UNTILCDEB keyword.
FEPI CONVERSE FORMATTED	You cannot use the AID or FROMCURSOR keywords with the POOL keyword.

Table 2. Errors that do not cause the syntax checker to issue a message (continued)

Command	Error
FEPI INQUIRE CONNECTION	You cannot use the other keywords apart from NODE or TARGET if you use the START or END keywords to start or finish browsing all FEPI connections
FORMATTIME	You cannot use the TIMESEP keyword without specifying the TIME keyword.
GET CONTAINER	You cannot use the INTOCCSID, INTOCODEPAGE, CONVERTST, CCSID keyword with the ACTIVITY, ACQACTIVITY, PROCESS, or ACQPROCESS keywords.
INQUIRE ASSOCIATION LIST	You cannot use any INQUIRE ASSOCIATION LIST options with any of the INQUIRE ASSOCIATION options. You must specify the LISTSIZE keyword.
INQUIRE CORBASERVER	If you specify the NUMCIPHERS keyword you must also specify the CIPHERS keyword.
INQUIRE MODENAME	If you use the NEXT keyword, you must also use the CONNECTION keyword.
INQUIRE MONITOR	You must specify all of FREQUENCYHRS, FREQUENCYMIN and FREQUENCYSEC if you use any of them. You cannot use the FREQUENCY keyword with the FREQUENCYHRS, FREQUENCYMIN or FREQUENCYSEC keywords.
INQUIRE TASK	You cannot use any INQUIRE TASK LIST options with any of the INQUIRE TASK options.
INQUIRE TCPIP SERVICE	If you specify the NUMCIPHERS keyword you must also specify the CIPHERS keyword.
INQUIRE URIMAP	If you specify the NUMCIPHERS keyword you must also specify the CIPHERS keyword.
INQUIRE VTAM®	You must specify all of PSDINTHRS, PSDINTMIN and PSDINTSEC if you use any of them. You cannot use the PSDINT keyword with the PSDINTHRS, PSDINTMIN or PSDINTSEC keywords.
INVOKE SERVICE	You cannot use the SCOPELEN keyword without specifying the SCOPE keyword.
MOVE CONTAINER	You cannot use the CHANNEL keyword with the TOPROCESS or TOACTIVITY keywords. You cannot use the TOCHANNEL keyword with the FROMPROCESS or FROMACTIVITY keywords.

Table 2. Errors that do not cause the syntax checker to issue a message (continued)

Command	Error
PERFORM JVMPOOL	If you use the START or INITIALIZE keyword, you must also use the JVMPROFILE, JVMCOUNT and one of: (EXECKEY, CICSEXECKEY, USEREXECKEY) keyword.
PUT CONTAINER	You cannot use the FROMCCSID or DATATYPE keywords with the ACTIVITY, ACQACTIVITY, PROCESS, or ACQPROCESS keywords.
READ	You cannot use the KEYLENGTH keyword with the RBA, XRBA or RRN keywords. You cannot use the GENERIC or GTEQ keywords with the RBA, XRBA, DEBREC, or DEBKEY keywords. You must use the EQUAL keyword if you use the RBA, XRBA, DEBREC or DEBKEY keywords. You cannot use the RRN keyword with the GENERIC keyword.
READNEXT	You cannot use the KEYLENGTH keyword with the RBA, RRN or XRBA keywords. You must use the UPDATE keyword if you use the TOKEN keywords
READPREV	You cannot use the KEYLENGTH keyword with the RBA, RRN or XRBA keywords. You must use the UPDATE keyword if you use the TOKEN keywords
READQ TS	If you use the SET keyword, you must also use the LENGTH keyword.
RECEIVE	If you use the SET keyword, you must also use the LENGTH or FLENGTH keyword.
RESETBR	You cannot use the KEYLENGTH keyword with the RBA, XRBA or RRN keywords. You cannot use the GENERIC keyword with the RBA, XRBA or RRN keywords. You must use the EQUAL keyword if you use the RBA or XRBA keywords. You cannot use the RBA or XRBA keywords with the GTEQ keyword.
RETURN	You cannot use any other keywords with the ENDACTIVITY keyword. You cannot use the CHANNEL keyword with the COMMAREA or LENGTH keywords.

Table 2. Errors that do not cause the syntax checker to issue a message (continued)

Command	Error
SEND	<p>You cannot use the ATTACHID keyword with the CBUFF, CNOTCOMPL, CTLCHAR, DEST, ERASE, DEFAULT, ALTERNATE, LDC, LEAVEKB, LINEADDR, PASSBK, PSEUDOBIN, or STRFIELD keywords.</p> <p>You cannot use the CNOTCOMPL keyword with the CONFIRM or INVITE keywords.</p> <p>You cannot use the ERASE, DEFAULT or ALTERNATE keywords with the STRFIELD keyword.</p> <p>You cannot use the LAST keyword with the PASSBK or CBUFF keywords.</p> <p>You cannot use the LDC keyword with the FMH keyword.</p> <p>Must use WAIT if PASSBK or CBUFF is used.</p>
SEND MAP	<p>You cannot use the MAPPINGDEV keyword with the NLEOM, MSR, FMHPARM, LDC, OUTPARTN, ACTPARTN, ACCUM, REQID, or NOFLUSH keywords.</p>
SET CONNECTION	<p>You cannot use the ACQUIRED keyword with the OUTSERVICE keyword.</p>
SET JOURNALNAME	<p>You cannot use the STATUS, ENABLED, or DISABLED keywords with the ACTION, FLUSH, or RESET keywords.</p>
SET MONITOR	<p>When using some, but not all, of the FREQUENCYHRS, FREQUENCYMIN, FREQUENCYSEC keywords (which can be used together or separately) syntax errors may not be reported.</p>
SET TRANSACTION	<p>You cannot use the RUNAWAY keyword with the SYSTEM keyword.</p>
SIGNAL EVENT	<p>You cannot use the FROM keyword with the FROMCHANNEL keyword.</p>
STARTBR	<p>You cannot use the KEYLENGTH keyword with the RBA, XRBA or RRN keywords.</p> <p>You cannot use the GENERIC or GTEQ keywords with the RBA, XRBA, DEBREC, or DEBKEY keywords.</p> <p>You must use the EQUAL keyword if you use the RBA, XRBA, DEBREC or DEBKEY keywords.</p> <p>You cannot use the RRN keyword with the GENERIC keyword.</p>
TRANSFORM DATATOXML	<p>If you use any of the ELEMNAMELEN, ELEMNSLEN, TYPENAMELEN and TYPENSLEN keywords you must use the corresponding ELEMNAME, ELEMNS, TYPENAME and TYPENS keywords. More than one of this type of error will not be detected. If more than one of this type of error is present then any subsequent errors will also not be detected.</p>

Table 2. Errors that do not cause the syntax checker to issue a message (continued)

Command	Error
TRANSFORM XMLTODATA	If you use any of the ELEMNAMELEN, ELEMNSLEN, TYPENAMELEN and TYPENSLEN keywords you must use the corresponding ELEMNAME, ELEMNS, TYPENAME and TYPENS keywords. More than one of this type of error will not be detected. If more than one of this type of error is present then any subsequent errors will also not be detected.
WEB EXTRACT	If you use EXTRACT WEB for CICS as an HTTP server you must not specify the SESSTOKEN keyword. If you use EXTRACT WEB for CICS as an HTTP client you must specify the SESSTOKEN keyword. You cannot use the SESSTOKEN keyword with the REQUESTTYPE keyword. If you specify the HOST, HTTPVERSION, PATH, PORTNUMBER, REALM or QUERYSTRING keywords, you must specify their corresponding length keywords.
WEB EXTRACT	You cannot use the SESSTOKEN keyword with the REQUESTTYPE keyword.
WEB OPEN	If you must specify the HOST keyword, you must specify the HOSTLENGTH and PORTNUMBER keywords. If you must specify the CIPHERS keyword, you must specify the NUMCIPHERS keyword. If you must specify the HTTPVNUM keyword, you must specify the HTTPRNUM keyword.
WEB PARSE	You must specify the URL keyword.
WEB READ	If you use the HTTPHEADER keyword, you must also use the NAMELENGTH, VALUE and VALUELENGTH keywords. You can also optionally use the SESSTOKEN keyword. No other keywords must be used with HTTPHEADER.
WEB RECEIVE	You cannot use the SESSTOKEN, MEDIATYPE, STATUSCODE, STATUSTEXT, STATUSLEN, CLIENTCONV, CLICONVERT, or NOCLICONVERT keywords with the TYPE, CLNTCODEPAGE, or HOSTCODEPAGE keywords. If you use the CLIENTCONV, CLICONVERT, or NOCLICONVERT keywords, you must also use the SESSTOKEN keyword. You cannot use the SESSTOKEN keyword with the SERVERCONV, SRVCONVERT, or NOSRVCONVERT keywords.

Table 2. Errors that do not cause the syntax checker to issue a message (continued)

Command	Error
WEB SEND	<p>You cannot use the SESSTOKEN keyword with the CLNTCODEPAGE, HOSTCODEPAGE, STATUSCODE, STATUSTEXT, STATUSLEN, LENGTH, SERVERCONV, SRVCONVERT, or NOSRVCONVERT keywords.</p> <p>If you use the CLIENTCONV, CLICONVERT, or NOCLICONVERT keywords, you must also use the SESSTOKEN keyword.</p>
WEB STARTBROWSE	<p>If you use the HTTPHEADER keyword, you may optionally use the SESSTOKEN keyword. No other keywords must be used with HTTPHEADER.</p>
WRITE	<p>You cannot use the RBA, XRBA or RRN keywords with the KEYLENGTH keyword.</p>
WSACONTEXT BUILD	<p>You must use at one or more of the ACTION, MESSAGEID, RELATESURI or ERTYPE keywords.</p> <p>If you use the RELATESTYPE keyword, you must specify the RELATESURI keyword.</p> <p>You must either specify all of the EPRTYPE, EPRFIELD, EPRFORM and EPRLLENGTH keywords, or specify none of them.</p>
WSACONTEXT GET	<p>You must use one of the CONTEXTTYPE, REQCONTEXT or RESPCONTEXT keywords.</p> <p>You must use at one or more of the ACTION, MESSAGEID, RELATESURI or ERTYPE keywords.</p> <p>You must either specify all of the EPRTYPE, EPRFIELD, (EPRINTO or EPRSET) and EPRLLENGTH keywords, or specify none of them.</p>
WSAEPR CREATE	<p>You must use one of the ADDRESS, METADATA or REFPARMS keywords.</p> <p>If you specify METADATALEN you must specify METADATA</p>
XCTL	<p>You cannot use the CHANNEL keyword with the COMMAREA or LENGTH keywords.</p>

COBOL for Windows

Local syntax-checking support, and the level of Enterprise COBOL for z/OS

The COBOL for Windows compiler that is included in Rational Developer for System z Version 7.6 supports host COBOL syntax at the level of Enterprise COBOL for z/OS, Version 3 Release 4. Newer syntax that is supported by Enterprise COBOL for z/OS, Version 4 Release 1 and Release 2 is not supported in COBOL for Windows.

Object-oriented syntax, and Java 5 or Java 6 SDKs

The *COBOL for Windows Programming Guide, Version 7.5* states in the section entitled "Running OO applications" that the releases of Java™ that are supported for running object-oriented COBOL applications are the "IBM 32-bit SDK for Windows, Java 2 Technology Edition, Version 1.3.1 or later."

In Rational Developer for System z Version 7.6, however, COBOL applications that use object-oriented syntax for Java interoperability are supported with Java SDK 1.4.2 and above.

To run these existing applications using Java 5 or Java 6, customers can do these steps:

1. Recompile and relink the applications using the current version of COBOL for Windows.
2. Recompile the generated Java class that is associated with each object-oriented COBOL class using the `javac` command from Java 5 or Java 6.

The *COBOL for Windows Programming Guide* content will be replaced at a future release to indicate these changes.

Runtime message traceback information

In Rational Developer for System z Version 7.6, COBOL for Windows is enhanced to provide traceback information for some runtime messages. If traceback information is available for a given message, additional lines of information appear after the message text.

To include the source-file name and line number in the traceback information, you must compile a COBOL program with the `-g` flag. For example:

```
cob2 -g FNREM01.CBL
```

results in the source-file name `FNREM01.CBL` and a line number 1839 from the source file appearing in the traceback information for message `IWZ036W`:

```
IWZ036W Truncation of high order digit positions occurred in program FNREM01
        on line number 1967.
        iwzr1ib.dll : 0
        FNREM01.CBL : 1839
        iwzr1ib.dll : 0
        iwzrwin1.obj : 0
        kerne132.dll : 0
```

Note: The line number in the traceback information (1839) references the relevant line from the source file (`FNREM01.CBL`), and the line number specified in the message text (1967) references the `LineID` from the source listing (`FNREM01.lst`).

If you compile a COBOL program without the `-g` flag, you will see an executable-file name and zero for the line number. For example:

```
cob2 FNREM01.CBL
```

results in the executable-file name `FNREM01.exe` and a line number 0 appearing in the traceback information for message `IWZ036W`:

```
IWZ036W Truncation of high order digit positions occurred in program FNREM01
        on line number 1967.
        iwzr1ib.dll : 0
```

```
FNREM01.exe : 0
iwzr1ib.dll : 0
iwzrwin1.obj : 0
kernel32.dll : 0
```

Traceback information is directed to stderr.

COBOL for Windows Programming Guide content will be updated at a future release to indicate these changes.

PL/I Enhanced Editing

Limitation: Syntax checking incorrectly identifies errors

The PL/I enhanced editing functionality consists of real-time syntax checking. Some legal PL/I syntax is marked as errors, and some illegal PL/I syntax is not marked as an error.

The following legal PL/I syntax is marked as an error:

- Macros
- Entry constants and entry variables
- Type functions
- Reserved attribute
- Parameter attribute
- limited attribute/option
- Generic attributes
- Factoring of attributes when declaring structures
- isub option with defined attribute
- cdecl, optlink, stdcall attributes of the linkage rule for procedure options
- norescan attribute of activate directive
- tstack attribute of the attach statement
- Implicit variable declarations
- Some legal expressions are marked as errors
- Builtin functions and preprocessor functions

The following illegal PL/I syntax is not marked as an error:

- Condition prefixes for do statements
- Label prefixes for declare, default, when, otherwise, and on statements
- Scaling factors for float or fixed
- Duplicate attributes for declaration statements

The following statements are ignored, so illegal syntax in them is not marked as errors:

- Process statements
- EXEC SQL statements
- EXEC CICS statements

Debug Tool for z/OS

Documentation updates for Debug Tool for z/OS Version 10

The Debug Tool for z/OS, Version 10, *Reference and Messages* contains an updated list of Debug Tool commands that work with the compiled language debugger. This list is more recent than the one in the information center. The Debug Tool for z/OS, Version 10, *User's Guide* contains some additional tips on how Debug Tool for z/OS and the compiled language debugger work together. You can find the Debug Tool for z/OS, Version 10, books at <http://www.ibm.com/software/awdtools/debugtool/library/>.

File Manager Integration

File Manager Integration has renamed some of the views found within the Formatted Data Editor

File Manager Integration has renamed some of the views found within the Formatted Data Editor.

The following views are equivalent despite the difference in name:

- Formatted page / Formatted mode
- Character page / Character mode
- Table format / Table mode
- Single format / Single mode
- Hex format / Hex mode

Limitation: File Manager Integration requires File Manager Server Version 10.1

Problem: File Manager Integration requires File Manager Server Version 10.1. If you are not using File Manager Server Version 10.1, File Manager Integration does not work.

Workaround: Use File Manager Server Version 10.1.

Limitation: Certain complex criteria created in the Build Criteria editor are not supported

Problem: Certain complex criteria created in the Build Criteria editor are not supported by File Manager. These criteria report an error of "FMNBB310 Unbalanced parenthesis" when leaving the Build Criteria editor.

Workaround: Rearrange the criteria to have AND and OR branches that are less nested.

Limitation: Data is lost when saving a dataset and the RSE connection is lost

Problem: If you are editing a dataset in the FMI Formatted Data Editor and the RSE connection to the host is lost, any changes made to the data set in the edit session since the last save, are lost.

Workaround: Save your changes frequently.

Limitation: Creating templates with COBOL copybooks containing a COPY command with a REPLACING clause

When you create a template from a COBOL copybook, File Manager must compile the copybook as one step in the process of creating the template. When your COBOL copybook has a COPY command with a REPLACING clause, you might see a compile failure when attempting to create the template.

This compile failure is caused by, in most cases, File Manager inserting your COBOL copybook into a simple COBOL program using a COPY statement. The COPY command with a REPLACING clause in your copybook becomes nested in another COPY statement. Nested COPY commands with REPLACING clauses are illegal in COBOL, and the compile error results. However, when you specify a range in advanced copybook selection, the selected portion of the copybook is copied inline into the simple COBOL program, rather than being inserted using a COPY statement. Therefore, the COPY command with the REPLACING clause would not be nested and the compile would complete successfully.

To successfully create a template with a COBOL copybook containing a COPY command with a REPLACING clause:

1. Be sure to place the copybook and nested copybooks into the same PDS.
2. Choose "Advanced copybook template" in the Create Template" wizard.
3. Edit the copybook selection to specify a range (specifying a "From statement" of 1 and leaving the "To statement" blank selects the entire contents of the copybook).

MFS Editor

Copybook generation support for MFS files

This feature enables users to generate COBOL copybooks for MFS message files using a contextual menu option on the MFS file. The copybook generation feature is available for both local and remote MFS files.

C/C++ Language Support

Enhanced makefile editing support

A new Remote Makefile Editor has been added to support editing of makefiles. The Remote Makefile Editor provides syntax highlighting, content assist, and an outline view to easily create and understand makefiles. You can customize the Remote Makefile Editor features using the new editor preference page.

The Make with target action has been added to z/OS Unix subprojects and files

The **Make with target** action has been added to z/OS Unix subprojects and files. Using **Make with target**, you can specify a target when building applications.

Predefined LPEX command support

Use the new preference field in the Target Environments Editor Options preferences to specify a set of LPEX commands to run when a z/OS UNIX® C/C++ file is opened within the System z LPEX editor.

Use the new preference field to specify a set of LPEX commands to run when a z/OS UNIX C/C++ file is opened within the System z LPEX editor. You can use commands to customize LPEX as files are opened for editing.

Macro support for assembly language

Assembler MVS™ macro definitions have been added to the System z LPEX editor. These definitions provide additional information when parsing, generating the outline view, hovering, or invoking content assist when editing assembly (*.s, *.asm) files in the editor.

F1 help support for assembly language

New context-sensitive help support has been added to the System z LPEX editor for assembler instructions when editing assembly (*.s, *.asm) files in the editor.

Advanced COBOL Editor

Advanced COBOL Editor

- Added support for parsing embedded SQL code
- Enhanced content assist to include data items declared in EXEC SQL INCLUDE statements (for example, SQLCA) and implicitly linked CICS data structures (for example, DFHEIBLK).
- Added support for parsing embedded CICS code
- Added six IMS categories to the Snippets view
- Enabled open declarations, hover help, and other features for data items referenced in EXEC SQL and EXEC CICS statements.
- Added support for real-time syntax checking of CICS and SQL code embedded in COBOL programs
- Enhanced the navigation in the COBOL LPEX Editor to use the F3 key and hyperlinking
- Enhanced content assist to include information about variable declarations
- Limitation: Refactor operations are not atomic and cannot be undone.
- Limitation: The Open Perform Hierarchy operation will not be in sync if the source file is modified or closed.
- The grammar used for parsing embedded SQL in COBOL programs is not a complete DB2 for z/OS grammar. Parsing embedded SQL using this limited grammar is optional and can be enabled on the preferences page LPEX Editor > System z LPEX Editor > COBOL Parser > COBOL Annotations and Tools.

Application Delopyment Manager

Application Deployment Manager

- Added functions to create an empty Application Deployment Manager manifest in Eclipse projects and z/OS projects.
- Enhanced Application Deployment Manager to handle a subset of new functions supported by CICS Explorer.
- Created a connection type for REST to let you use of both REST and SOAP protocols CICS Resource Definition server connections.
- Limitation: Filtering resources within CICS Explorer views when connected to a CICS Resource Definition server is limited to the name of the resource.

- **Limitation:** Connections to a CICS Resource Definition server using the Web services connection type do not support new CICS resource types such as bundles, XML transforms, and event bindings.
- **Limitation:** Only regions that host a CICS Resource Definition server (connection regions) are listed in dialogs that generate code or CICS resources such as EST and SCA.

Regions connected to those connection regions are not listed in the generation dialogs. Therefore generated artifacts can be deployed only to the region that runs the CICS Resource Definition server. CICS resources can be in defined, installed, and discarded from other regions through the Application Deployment Manifest Editor by selecting a different target region while editing a manifest. The New ADM Manifest dialogs available from the File menu and z/OS project pop-up menu support creating ADM manifests that are on not in the same region as the CICS Resource Definition server.

- **Limitation:** To change the password of an existing connection to a CICS Resource Definition (CRD) server, you may need to alter the user ID to a nonexistent ID, click the **Apply** button, change the user ID back, and then click the **Connect** button. This action causes the connection dialog to prompt for a new password.

Limitation: Connections to a CICS Resource Definition server using the Web services connection type do not support new CICS resource types

Connections to a CICS Resource Definition server using the Web services connection type do not support new CICS resource types such as bundles, XML transforms, and event bindings.

Limitation: Only regions that host a CICS Resource Definition server are listed in dialogs that generate code or CICS resources

Only regions that host a CICS Resource Definition server (connection regions) are listed in dialogs that generate code or CICS resources such as EST and SCA.

Regions connected to those connection regions are not listed in the generation dialogs. Therefore generated artifacts can be deployed only to the region that runs the CICS Resource Definition server. CICS resources can be in defined, installed, and discarded from other regions through the Application Deployment Manifest Editor by selecting a different target region while editing a manifest. The New ADM Manifest dialogs available from the File menu and z/OS project pop-up menu support creating ADM manifests that are not in the same region as the CICS Resource Definition server.

Limitation: Changing the password of an existing connection to a CICS Resource Definition (CRD) server

To change the password of an existing connection to a CICS Resource Definition (CRD) server, you may need to alter the user ID to a nonexistent ID, click the **Apply** button, change the user ID back, and then click the **Connect** button. This action causes the connection dialog to prompt for a new password.

Software Configuration Library Manager (SCLM) Developer Toolkit

Limitation: 'SCLM Search' and 'SCLM member security' are not supported for z/OS 1.8

SCLM Search and SCLM member security are not supported in base SCLM for z/OS 1.8 and are therefore unavailable through SCLM Developer Toolkit for z/OS 1.8.

For SCLM Search support, one of the following levels must be installed on the host:

Program Number	Product Name	PTFs or Service Levels Required
5694-A01	z/OS v 1.10 or higher	
5694-A01	z/OS v 1.9	APAR OA27379 - all applicable PTFs

For SCLM member security support, one of the following levels must be installed on the host:

Program Number	Product Name	PTFs or Service Levels Required
5694-A01	z/OS v 1.11	APAR OA26997 - all applicable PTFs
5694-A01	z/OS v 1.10	APAR OA26997 - all applicable PTFs
5694-A01	z/OS v 1.9	APAR OA26997 - all applicable PTFs APAR OA27379 - all applicable PTFs

Host Integration

A version of Perl must be installed to start the IBM Rational Developer for System z Remote Systems Explorer (RSE) server.

A version of Perl must be installed to start the Rational Developer for System z Remote Systems Explorer (RSE) server. The Host Connect emulator requires a Telnet server. The Telnet server must be installed and running on the server that you connect to using Host Connect.

UNIX Server

Update: AIX, Linux, and Linux on System z installation

Silent install

If X Windows is not available, you can run a silent install from the directory that contains the untarred Rational Developer for System z installation files:

```
./install --launcher.ini ./silent-install.ini
```

Silent uninstall

For a silent uninstall go to the /opt/IBM/InstallationManager/eclipse directory and run:

```
./IBMIM --launcher.ini silent-install.ini -input <RSE install dir>/uninstall/uninstall.xml
```

A version of Perl must be installed to start the IBM Rational Developer for System z Remote Systems Explorer (RSE) server.

A version of Perl must be installed to start the Rational Developer for System z Remote Systems Explorer (RSE) server. The Host Connect emulator requires a Telnet server. The Telnet server must be installed and running on the server that you connect to using Host Connect.

Linux on System z host prerequisites

Linux on System z

One of the following levels must be installed:

Table 3.

Product Name
Red Hat Linux Enterprise Server 5 (s390x)
Red Hat Linux Enterprise Server 4 (s390x)
SUSE Linux Enterprise Server 10 (s390x)
SUSE Linux Enterprise Server 9 (s390x)

The related product Web site is:

<http://www-03.ibm.com/systems/z/os/linux/>

SDK for Linux on System z, Java 2 Technology Edition

To use Remote Systems Explorer (RSE) on Linux on System z, one of the following levels must be installed:

Table 4.

Program Number	Product Name
6207-001	IBM 64 bit Runtime Environment for Linux on System z, Java 2 Technology Edition, Version 6
6205-001	IBM 64 bit Runtime Environment for Linux on System z, Java 2 Technology Edition, Version 5

The related product Web site is:

<http://www.ibm.com/developerworks/java/jdk/linux/>

Attention: The 64 bit version is supported.

Linux on System z RSE server prompts the user for twice to log in into the system

Connections to the Linux on System z RSE server prompts the user twice for the user ID and password to log in to the system, once for the Files subsystem and then again for the OS Shell.

Limitation: Run Installation Manager as the root user

Installation Manager on Linux on System z SuSE will not work correctly unless the root user is running the program.

Help Updates

Screen operation

A screen operation contains information for managing a particular application screen.

This information can be accumulated during screen operations recording or flow recording or can be created manually using the screen operations editor.

A screen operation contains three types of information:

- **A reference to a screen description:**

A screen operation contains a reference to a screen description that describes a particular application screen (see *Screen message, screen description, descriptor* in the Developer for System z information center). During flow recording and in a few other situations, when the host editor has recognized the screen description that matches the currently displayed application screen, then the host editor searches for screen operations that reference the recognized screen description (see *Recognized screen description* and *Finding screen interactions for the current application screen* in the Developer for System z information center).

- **Screen interactions:**

A screen interaction is a sequence of actions that are applied to the application screen described by the referenced screen description. The actions can include Input actions, an AID key action, Insert actions, and Extract action (see *Recognized screen description* and *Finding screen interactions for the current application screen* in the Developer for System z information center)

A screen operation can contain multiple screen interactions. When you record a flow, the host editor provides each new flow node with not only a reference to a particular screen operation but also with a notation of which screen interaction in that screen operation is to be performed when the flow node is played back.

Note: Although each screen interaction is assigned a default name when it is created, such as "Screen Interaction 1", you should assign a more meaningful and memorable name to each screen interaction that you intend to use in a flow recording. Then, when you are doing the flow recording and the host editor allows you to select from a list of screen interactions a single screen interaction that is going to be used to process the current application screen, you can look at the name of each screen interaction in the list and hopefully remember from the name what actions the screen interaction performs.

- **A list of next screens:**

A *next screen* is the name of a screen description that matches one of the application screens that can validly occur after the currently displayed application screen. The list of next screens contains one next screen for each application screen that can validly occur.

At runtime, after the specified AID key is generated and the next application screen is displayed, the runtime environment compares each screen in the list of next screens with the new application screen until a match is found. *Only* screen descriptions screens in the current list of valid next screens are compared.

Implementation of Extract actions and Insert actions

This topic describes how Extract actions and Insert actions are implemented in a recorded flow.

Recall that an Invoke screen operation node specifies the information required to manage the transition from one application screen to the next. The input actions (Input actions, AID key actions, and Insert actions) apply to the currently displayed application screen. The output actions (Extract actions) apply to the next application screen displayed. (See *Screen operation* in the Developer for System z information center.)

When an Invoke screen operation node is performed the runtime environment processes the information in the associated screen operation in the following order:

1. It performs the input actions on the currently displayed screen:
 - a. It performs the Insert actions (if any).
 - b. It performs the Input actions (if any).
 - c. It performs the AID key.
2. It waits for the host to send the next application screen.
3. It does screen recognition by comparing each screen in the next screen list to the next application screen until it finds a match.
4. It selects the output terminal associated with the recognized screen description.
5. It performs the output actions on the newly displayed application screen:
 - a. It performs the Extract actions (if any).

The flow of control then passes to the next node in the flow.

The input actions (Input actions, AID key action, and Insert action) are implemented as mappings in the mapping routine associated with the input terminal of the Invoke screen operation node (see *How actions are implemented in mappings: AID key, Input, Extract, and Insert* in the Developer for System z information center).

The output actions (Extract actions) are implemented as mappings in the mapping routine associated with selected output terminal (see *How actions are implemented in mappings: AID key, Input, Extract, and Insert* in the Developer for System z information center).

Web Delivery Help (Remote Help)

Web-based help content

The Developer for System z help system is configured to use remote help so that you can pull in content from the Web dynamically. With remote help, you always have the latest content available from within Developer for System z. Some help systems are not configured to access help content on the Web; in such cases, help content is included with the installation.

You can obtain help three ways. One of these options is best for you, depending on your needs and situation:

- The help content can be accessed on the Web so that you can have the smallest installation footprint and the most up-to-date information.
- The help content can be downloaded and accessed on your computer so that you can work disconnected from the Internet with periodic updates.

- The help content can be deployed on an intranet server so that you can work behind a firewall with administrative updates.

You can change your access decision at any time. If you install multiple products together, you can use different locations for the help for each product, depending on installation footprint, frequency of use, and internet policies. If internet speed is an issue, a longer one-time download and local access might be preferable. Later help updates include only differences.

If you are an administrator and you want users to access help content from an intranet server, see the Installation Manager information center for instructions on how to install the help WAR file on a server. In the Installation Manager information center, select **Enterprise installation articles -> Delivering help content from an intranet server**.

Accessing Web-based help

Help for Developer for System z is available on a product information center on the Internet. You can view this help from within Developer for System z.

Before you begin

During installation, the option to access help from a remote information center was selected. This option is the default selection.

About this task

The Developer for System z help system can retrieve content installed with the product, as well as content from a remote server running an information center. The information center for Developer for System z has the most current help content and when Developer for System z is configured to retrieve content from a remote information center, the contents of the information center can be accessed by selecting **Help** → **Help Contents** to open your help system.

During installation, Developer for System z was configured to access the help from the product information center.

The information center for Developer for System z is available from the following Web address:

<http://publib.boulder.ibm.com/infocenter/ratdevz/v7r6/index.jsp>

Follow these steps to check your connection to the information center:

1. Open the Preferences dialog
2. Select **Help** → **Content**
3. Ensure that **Include help content from a remote infocenter** is selected.
4. Ensure that the URL for the Developer for System z information center is in the list of available information centers. If your information center is not listed, complete the following steps:
 - a. Click **Add**
 - b. In the **Name** field, enter a name for the connection.
 - c. In the **Host** field, enter `publib.boulder.ibm.com`
 - d. In the **Path** field, enter `/infocenter/ratdevz/v7r6`
 - e. Select **Use default port**
 - f. Click **OK**

5. Select the entry for the Developer for System z information center.
6. Click **Test Connection**.

Downloading help content with the Local Help System Updater site

This topic explains how to download, remove, and update help content from the Local Help System Updater site. Most help content is not installed when you install Developer for System z with web delivery enabled. To access all help content locally, you need to download it from the IBM Local Help System Updater Web site.

Before you begin

During installation, the help access option, **Download help and access the content locally**, was selected.

About this task

Before using the help for the product, you have to download the help to your local system.

To download the help content from the Local Help System Updater site, complete the following steps:

1. With Developer for System z open, click **Help** → **Local Help Updater**. The Updater site opens.
2. In the x pane, select the location of the help you want to download. For IBM Rational Developer for System z, select Developer for System z. If Developer for System z is not in the list, you need to add the location.
 - a. Select the **Internal Sites** tab.
 - b. Select the + icon to add a location.
 - c. Select **Remote**.
 - d. Type a name for the site.
 - e. Type `http://publib.boulder.ibm.com/infocenter/ratdevz/v7r6/site/site.xml` for the URL.
3. The Available Features list is populated with a list of the help that is available for download. Depending on your network connection speed, this operation might take a few minutes. Select the help content that you need.
4. Click **Install**. The help content is downloaded and installed. A progress bar opens and tracks the status of the download.
5. When the download is completed, open the help in the product by selecting **Help** → **Help Contents**.

Results

The help that you selected is installed on your system. The files are updated automatically when an Internet connection is available.

Installing help content locally using the Local Help Updater and the RDz7.6_updateSite.zip file

If you are not going to use remote help to access the help content from the Web, you must install the help content locally. This topic explains how to install the help content using the Local Help System Updater and the RDz7.6_updateSite.zip file provided in the install image.

Before you begin

During installation, the help access option, **Download help and access the content locally**, was selected.

About this task

Before using the help for the product, you have to install the help to your local system.

To install the help content on the workstation using the Local Help System Updater, complete the following steps:

1. Extract the contents of the file `RDz7.6_updateSite.zip` to a temporary location on your system. This file is available on the Developer for System z documentation CD. Remember this location.
2. Open Developer for System z, click **Help** → **Local Help Updater**. The Local Help Updater opens.
3. Specify the location of the extracted `RDz7.6_updateSite.zip` file.
 - a. Select the **Internal Sites** tab.
 - b. Select the + icon to add a location.
 - c. Select **Local**.
 - d. Type a name for the site.
 - e. Click **Browse** and browse to the location where you extracted the contents of `RDz7.6_updateSite.zip`.
 - f. Click **OK**. A progress bar opens and tracks the status as the Local Help Updater searches for the available features included in the `RDz7.6_updateSite.zip` file.
4. The **Available Features** list is populated with a list of the help that is available for download. select **IBM Rational Developer for System z Documentation**.
5. Click **Install**. A progress bar opens and tracks the status of the install.
6. When the installation is complete, open the help in the product by selecting **Help** → **Help Contents**.

Results

The help that you selected is installed on your system.

Updating help content

Use the Local Help System updater to ensure that you have the latest help content.

Before you begin

You have installed help features from the Local Help System Updater Web site.

About this task

Updates are automatically installed each time you start the product, if you have an Internet connection.

To update the help without restarting the product, complete the following steps:

1. Close the product help system window.
2. Open the Local Help System Updater by selecting **Help** → **Local Help Updater**. The Updater site opens.

3. Click the **Installed Features** tab.
4. Click **Search for Updates**. If updates to the content you have installed are available, they are installed to your system. A progress bar indicates the status of the request.
5. When the update is completed, open the help in the product by selecting **Help** → **Help Contents**.

Removing help content

You can use the Local Help System Updater to remove installed help content.

Before you begin

You have downloaded help features using the Local Help System Updater.

About this task

To remove installed help content, complete the following steps:

1. Close the product help system window.
2. Open the Local Help System Updater by clicking **Help** → **Local Help Updater**. The Updater site opens.
3. Click the **Installed Features** tab.
4. Select the features that you want to remove, then click **Remove**. The help features you selected are removed from your system. A progress bar indicates the status of the request.
5. When the removal is completed, open the help in the product by selecting **Help** → **Help Contents**.

Setting up an intranet server for help content

You can set up an intranet server behind a firewall to provide help content to users. With this method, users do not have to download and save help content to their computers.

Before you begin

You have a server available that can be accessed by users behind a firewall.

About this task

See the Installation Manager information center for the instructions for setting up an intranet server for help content. In the Installation Manager information center, select **Enterprise installation articles** -> **Delivering help content from an intranet server**.

Changing the way that you access help content

You can change the way that you access help content. You can choose from the following methods: access help from the Web; download help and access content locally; or access help from a server on your intranet.

Close the help browser before you change the way that you access help content.

During the installation process, you selected one of the following methods for accessing help content:

- Access help from the Web.
- Download help and access content locally.

- Access help from a server on your intranet.

To change the way that you access help content, complete the following steps:

1. Click **Windows** → **Preferences**. The Preferences window opens.
2. Expand the **Help** entry, and then click **Content**. A list displaying the currently configured information center or centers opens. Depending on the access method that was chosen, complete one of the following procedures.
 - To change from accessing help content from an information center on an IBM Web site to accessing help content on an intranet server, follow these steps:
 - a. Disable the link to the internet site by selecting the Web address in the Contents list, and then clicking **Disable**.
 - b. Click **Add**; then name the intranet connection, specify the intranet Web address for the server that contains the help content, and then click **OK**.
 - c. Click **OK** to close Preferences.
 - d. Click **Help** → **Help Contents**, to open your help.
 - To change from accessing help content from an information center on an IBM Web site to downloading and accessing help content locally, follow these steps:
 - a. Ensure that **Include help content from a remote information center** is selected.
 - b. Disable the link to the product Information Center by selecting that connection in the Contents list, and then clicking **Disable**.
 - c. Click **Add**; then enter a name for the local help connection. Specify the localhost Host IP address 127.0.0.1 and path /help. Select any unused port number, and then click **OK**.
 - d. Save any work and close and restart the product.
 - e. Follow the instructions in “Downloading help content with the Local Help System Updater site” on page 34 to download help content.
 - To change from accessing help content locally to accessing help content from an IBM Web site, follow these steps:
 - a. Ensure that **Include help content from a remote information center** is selected.
 - b. Disable the link to localhost by selecting that connection in the Contents list, and then clicking **Disable**.
 - c. Click **Add**; then name the connection, specify the Web address for the IBM Web site that contains the help content, and then click **OK**. This Web address might already be available in the list of connections. If it is listed, select the connection and click **Enable**.
 - d. Click **OK** to close Preferences.
 - e. Click **Help** → **Help Contents**, to open your help.
 - To change from accessing help content locally to accessing help content from an intranet server, follow these steps:
 - a. Ensure that **Include help content from a remote information center** is selected.
 - b. Disable the link to localhost by selecting that connection in the Contents list, and then clicking **Disable**.
 - c. Click **Add**; then name the connection, specify the intranet Web address for the server that contains the help content, and then click **OK**.
 - d. Click **OK** to close Preferences.
 - e. Click **Help** → **Help Contents**, to open your help.

- To change from accessing help content from an intranet server to downloading and accessing help content locally, follow these steps:
 - a. Ensure that **Include help content from a remote information center** is selected.
 - b. Disable the link to the intranet server by selecting that connection in the Contents list, and then clicking **Disable**.
 - c. Click **Add**; then enter a name for the local help connection. Specify the localhost Host address 127.0.0.1 and path /help. Enter any unused port number, and then click **OK**.
 - d. Save any work and close and restart the product.
 - e. Follow the instructions in “Downloading help content with the Local Help System Updater site” on page 34 to download help content.
- To change from accessing help content from an intranet server to accessing help from an IBM Web site, follow these steps:
 - a. Disable the link to your intranet site by selecting the intranet Web address in the Contents list, and then clicking **Disable**.
 - b. Click **Add**; then name the connection, specify the Web address for the IBM Web site that contains the help content, and then click **OK**.
 - c. Click **OK** to close Preferences.
 - d. Click **Help** → **Help Contents**, to open your help.

Enterprise Service Tools

Single-service projects

XML TRANSFORM resources in the CICS TS 4.1 runtime

Enterprise Service Tools Single service projects integrate the new XML Assistant feature of the CICS Transaction Server V4.1

A new set of projects, wizards, and batch processor options provides the ability to generate artifacts that enable XMLTRANSFORM resources in CICS TS 4.1 runtime. For COBOL and PL/I interpretive scenarios, the functionality is the same as with the CICS XML Assistants tool that was introduced in the CICS TS V4.1. For compiled (Vendor) conversion in a bottom-up scenario, this new feature generates the appropriate COBOL converters. The resources generated by this feature can then be used in the new CICS EXEC TRANSFORM XMLTODATA and DATATOXML.

Generating PL/I language data structures and runtime-specific XML message processing

Support has been added to allow you to generate PL/I language structures and runtime-specific XML message processing from a Web service description.

Note: This feature is supported only for Web Services for CICS.

The user can start with a WSDL document that defines an existing Web service, They can create an application from it that implements some or all the functionality described in the Web service definition. To assist the user in writing the new PL/I application, the tool generates a template PL/I program coded for either a new Web service provider or a new Web service consumer. This new program uses language structures that correspond to the message elements for each operation (**operation** -> **input** -> **message** -> **part** -> **element**), where the element is an XML Schema type) to process requests and issue replies.

Generating WSBind with the new WSBind parameters introduced in CICS TS 4.1

Enterprise Service Tools Single service projects provide support for the new CICS Web Services WSBind parameters (REQUEST-CHANNEL, RESPONSE-CHANNEL, DATETIME & DATA-TRUNCATION) in CICS TS 4.1.

This feature adds a graphical user interface and batch processor options that allows users to generate WSBind with the new WSBind parameters introduced in CICS TS 4.1. In previous versions, it was possible to create a Web service provider from a language structure with one container only, typically DFHWS-DATA. CICS Transaction Server V 4.1 introduced the capability to create a Web service provider from an application that uses many containers on a channel. Also, it added support on how the XML elements of the `xsd:dateTime` type are mapped into the CICS ASKTIME format and how truncated data is treated by the CICS native conversion mechanism.

Mapping XML attributes to language structure members

Enterprise Service Tools Single service projects provide Support for mapping XML attributes to COBOL language structure members and generating corresponding COBOL Compiled XML Conversion artifacts.

The Enterprise Service Tools Single-service Projects Mapping Editor and COBOL XML converter code generators now support the mapping of XML attributes to language structure members. Using this support, it is now possible to parse and generate XML documents that contain both XML elements and XML attributes. The ability to convert XML attributes is important because of the common practice for XML Schema authors to define XML documents that employ a mixture of XML elements and XML attributes to hold instance data. To indicate that both XML elements and XML attributes are supported, the Mapping Editor now decorates elements and attributes with appropriate icons.

Creating MTOM/XOP-based Web service providers

Enterprise Service Tools Single service projects provide support for creating MTOM/XOP-based Web service providers from both CICS commarea and channel-based applications.

MTOM (Message Transformation Optimization Mechanism) is an abstract specification that describes, among other things, a technique to optimize SOAP messages where binary objects are used to carry data instead of the typical XML payload. XOP (XML-binary Optimization Package) describes how those binary objects, which were attached using MTOM, can be represented in binary octets instead of base64. Using MTOM/XOP, a Web service requester and provider can exchange request and response language structures in binary format without having to use an intermediate XML representation. While SOAP messages are still used in this configuration, the body of the messages are brief, essentially containing a single XML element that references a binary attachment. To enable a CICS application as an MTOM/XOP Web service, specify the scenario "Create New MTOM/XOP Service Interface" when creating Web services for CICS Single service projects.

XML and Web Services batch processor: Specifying directory for input language file location

The location of the COBOL input files can be specified in the `importDirectory` attribute as an absolute path, starting with the drive specification (for example, `C:\mypath\test`).

If, instead, a relative path is desired (for example, so that the configuration files and Cobol source code can be relocated without changing any file locations in the xsebatch configuration files), try doing the following:

Table 5.

Directory:	Description:
C:\workspace\account_details	Main project
C:\workspace\account_details\cobol_src	Subdirectory with COBOL source files to import
C:\workspace\account_details\xsebatch_config	Subdirectory with XML configuration files for xsebatch

Then you could use the following InputOutputMessage element for a COBOL source file called DFH0ACTD.cbl in the cobol_src directory:

```
<InputOutputMessage importFile="../cobol_src/DFH0ACTD.cbl"></InputOutputMessage>
```

Alternatively, you may place the COBOL source files in the same directory from which xsebatch is invoked

XML and Web Services batch processor: Specifying data names in mixed case

Even though the COBOL data names are not case sensitive, you need to specify the exact case in the specification xml files. For example, if in the COBOL data source, the data name is called MY-Data, in the Service specification xml the nativeTypeName attribute must be set to nativeTypeid="MY-Data". If you don't specify the exact case, the data name will not be found and the first available level 01 data name will be used by default.

Compiled XML Conversion issues the message IRZ9999S

Problem: Enterprise Service Tools Compiled XML Conversion issues the message "IRZ9999S Failed to retrieve the text of a Language Environment® runtime message. Check that the Language Environment runtime message module for facility IRZ is installed in DFHRPL or STEPLIB."

Workaround: Compiled XML Conversion now requires access to runtime data set SFEKLOAD that contains the messages for the Language Environment facility id "IRZ". This data set is available on the IBM Rational Developer for System z installation media. For convenience, install the SFEKLOAD data set into linklist.

Limitation: 01 level scalar element is not supported

In the Enterprise Service Tools Single service projects that enable PL/I application as Web services, the 01 level scalar element (Example: DCL 01 CHARARRAY char(255);) is not supported. Only *composed types* are supported.

Limitation: PL/I Compiled XML Conversion does not honor the optional "aligned" or "unaligned" attributes

Problem: Enterprise Service Tools PL/I Compiled XML conversion does not honor the optional "aligned" or "unaligned" attributes on PL/I language structures or language structure members.

Workaround: None; This condition is a limitation of PL/I Compiled XML Conversion.

Limitation: Meet-In-Middle import source files

Problem: In the meet-in-middle development scenario, in the **Import source files** wizard, importing with the **File System** option is not supported.

Workaround: Copy all the required files into a general project and then import them by selecting **Workspace** in **Import source files** wizard.

Limitation: Bottom-Up conflict with old WSDL/XSD files and new WSDL files and XSD files

Problem: In the bottom-up development scenario, using an older version of generated WSDL files and XSD files with newly generated converters can cause errors at runtime. For example, the following runtime error message can occur:

```
IGZ0282S XML to data structure conversion could not complete in program PGMNAME because no element
```

Solution: WSDL/XSDs generated with a converter should always be coupled with the converters.

Limitation: COBOL conversion routines generated by single-service wizards run in z/OS only

Even though the workstation COBOL compiler supports XML PARSE statements at both compile time and runtime, the COBOL programs generated by the single-service wizards are designed to run in the z/OS environment only

Limitation: The Top-down and Meet-in-middle scenarios with importing remote (z/OS UNIX) WSDL file which includes, imports, or redefines a schema is not supported

Problem: In an Enterprise Service Tools project, if you are running Create New Service Implementation (top-down) scenario or Map to an Existing Service Interface (meet-in-middle) scenario, with the WSDL file (that was originally imported from a remote location) that includes, imports, or redefines a schema, it would fail with an error.

Workaround: Copy all the required files to the workstation or to a general project in the workspace and import the local WSDL file into the "Web Services for CICS Project" using **RMB>Import>Source files** and try the top-down scenario.

Limitation: XML Element nesting depth

Problem: The XML to language structure converter returns the following exception message:

```
IGZ0291S XML to data structure conversion could not complete  
in program program-name because the maximum XML element  
nesting depth was exceeded. The error occurred at element  
element-name with character content character-content.
```

Workaround: The XML to language structure converter could not handle the nesting depth of a particular XML element. Though there is an allowance for nesting levels beyond that of the original COBOL structure, it can be exceeded. If an element exists in the request XML document that is not in the schema, the element will cause this condition if its nesting level is too deep.

Limitation: OPT compiler option conflict

Problem: The OPT compiler option in the generated PROCESS statement in driver and converter programs will conflict with the TEST option if you specify it as a compile option in your JCL.

Workaround: If you want to debug the generated XML converter programs, deselect the "Optimization" check box in the "Specify compiler-related preferences" group on the "Generation options" page in the Web service wizard.

Limitation: Case sensitivity of certain text entry fields in XML Enablement wizards

Problem: Folder and file name entries are case sensitive in Eclipse on Windows.

Workaround: Make sure that you enter folder and file names consistently. For example, if your folder name shows as MyFolder in the Workbench, you must type MyFolder in an entry field requesting a folder name. If you enter myfolder, for example, the tools may flag this as an invalid or nonexistent folder name.

Limitation: Invalid pointers cause infinite loop

Problem: Providing non-null invalid pointers to XML converters or drivers causes an infinite loop.

Workaround: The XML converters attempt to detect and report null pointers passed by the caller. For non-null invalid pointers, the XML Converters will likely encounter and return, a protection exception (SOC4).

Limitation: FILLER items in COBOL data structures

Problem: Unnamed groups and their elementary items are not available for selection on the data structure selection page or the mapping session editor because the parent item is filtered out along with its elementary items.

Workaround: Edit the COBOL data structure and give names to the groups and/or elementary data items that require conversion. Giving a name to the COBOL group makes its non-filler elementary items available for selection.

Limitation: Automatic Match Mapping of COBOL groups containing OCCURS DEPENDING ON items

Problem: If a COBOL data item is, or contains, an ODO item, you cannot perform a "Match mapping" action with a compatible XML structure unless you manually map the ODO object before attempting the Match mapping action.

Workaround: Prior to attempting the Match mapping action, manually map the ODO object according to the mapping rules. (In the XML document, the element mapped to the COBOL ODO object item must appear before the XML element that is mapped to the corresponding COBOL ODO subject.)

Limitation: Generate>XML File menu item does not honor XSD schema restrictions

Problem: The Generate -> XML File menu item does not honor restrictions in an XSD schema. Using the Generate XML File action on an XSD created by Enterprise Service Tools could lead to the generation of invalid XML files.

Workaround: Edit the generated XML file so that the tag contents conform to the restrictions specified in the XSD schema.

Limitation: XML and Web Services batch processor: Invalid entries in configuration XML may cause null pointer exceptions during the batch process

Problem: Invalid entries in the options XML files (Container.xml, PlatformProperties.xml, ServicesSpecification.xml) may cause null pointer exceptions during the execution of the batch processor.

Workaround: Follow the format for correctly specifying entries in the options XML files.

Limitation: Restriction on figurative constants LOW-VALUES and HIGH-VALUES

Figurative constants LOW-VALUE(S) and HIGH-VALUE(S) can be present in COBOL data structures used in the single-service wizards, but their semantic meaning is ignored by the single-service wizards and is not carried into the artifacts generated by these Enterprise Service Tools single-service wizards

Limitation: GB18030 characters in an Enterprise Service Tools single-service project name

Problem: Using characters from the GB18030 code page in an Enterprise Service Tools single-service project name causes errors to occur when you run an Enterprise Service Tools single-service wizard on files in the project.

Workaround: Do not use GB18030 characters when naming an Enterprise Service Tools single-service project.

Limitation: Temporary files not always cleaned up

Problem: After running an Enterprise Service Tools single-service wizard, you may sometimes notice that temporary files (for example, ~DF45B.tmp) are left in the Enterprise Service Tools single-service project folder.

Workaround: If you see similarly named files in your Enterprise Service Tools single-service project after running an Enterprise Service Tools single-service wizard, you can safely delete such files

Limitation: Temporary project not always cleaned up

Problem: The migration process for the old mapping files requires that the referenced mapped source files be in the same folder as the mapping file. If this requirement is not met, the Mapping migration tool will fail with the following error message: "Resource [filename].mapping is not local".

Workaround: If you see similarly named projects in your workspace after running an Enterprise Service Tools single-service wizard, you can safely delete those projects.

Limitation: When migrating version 6.0 mapping files (.cmx files) source files referenced by the .cmx file must be in the same folder

Problem: The migration process for the old mapping files requires that the referenced mapped source files be in the same folder as the mapping file. If this requirement is not met, the Mapping migration tool will fail with the following error message: "Resource [filename].mapping is not local".

Workaround: Move the referenced source files into the same folder as the mapping file that is being migrated.

Limitation: Support for DBCS data members with SOAP for CICS and Web Services for CICS

Support for DBCS data items in Enterprise Service Tools single-service projects requires that the request and response XML documents are encoded in UTF-16 or UTF-8. If the target runtime of the Web service is SOAP for CICS, configure the feature to exchange XML in UTF-8 or UTF-16 with the XML Converter Driver. The Web Services for CICS runtime will exchange XML in UTF-8 with a client by

default while the XML Converter Driver exchanges XML with CICS in UTF-16; when UNICODE is needed, UTF-16 is the most efficient choice currently for the XML Converters. For either runtime, it might be necessary to configure z/OS support for UNICODE with a conversion image that supports conversion between UNICODE and the DBCS host codepage.

Limitation: DBCS characters are not allowed in the name of the generated XML converter files

Problem: DBCS characters are not allowed in the names of Partitioned Data Set members on z/OS.

Workaround: Omit DBCS characters when specifying the name of the XML converter files. Also, check that the default file names suggested by the Wizard do not contain DBCS characters.

Limitation: Global element names in generated XML schemas are not consistent between Interpretive and Compiled XML conversion types

Problem: The web service message root element names in the XML schemas generated by default generation of Interpretive and Compiled XML conversion do not match. You may need to change the generation default of the Compiled XML conversion to match the Interpretive conversion case as described below in the Workaround section. This will let you change the conversion type from interpretive to compiled if needed later without having to republish the WSDL file and without changing code in clients of the web service.

Workaround: When generating the artifacts for Compiled XML conversion you can use the wizard to change the root element name to match the Interpretive XML conversion. This new option called "Root element name" is located in the **Generation Options** page, on the **WSDL and XSD options** tab, in the **request and response XML Schema properties** group.

For example, the COBOL group named A-B-C will cause the Interpretive conversion artifacts to have the message root element name "a_b_c". The default Compiled conversion artifacts will have the root element name "ABC". As described earlier you can change "ABC" in the wizard to "a_b_c" to match with the WSDL generated for the interpretive conversion.

Limitation: Enterprise COBOL issues message IGYOP3094 when compiling COBOL XML Converters using the OPTIMIZE (OPT) option.

Problem: The Enterprise COBOL optimizer flags several PERFORM statements in the Compiled XML Conversion code generated by RD/z Enterprise Service Tools Wizards when using the COBOL optimizer. The format message of the message is "IGYOP3094-W There may be a loop from the "PERFORM" statement at "PERFORM (line n)" to itself. "PERFORM" statement optimization was not attempted."

Workaround: The control flow of the XML2LS converter is too complex for the COBOL optimizer to process. The algorithm used by the COBOL optimizer is currently unable to recognize that a GO TO statement in the XML2LS converter that leads to a previous point in the program is not unconditional; therefore, in this case, the message IGYOP3094 represents an optimizer limitation, not a problem with the correctness of the generated code. For additional information, see Enterprise COBOL APAR PQ74496.

Service flow projects

Expanded runtime support for CICS Transaction Server for z/OS

- CICS Service Flow Runtime: Level 2.0 supports CICS Transaction Server for z/OS V4.1, V3.2, and V3.1 with APAR PK83534.
- CICS Service Flow Runtime: Level 1.0 supports CICS Transaction Server for z/OS V3.1 without APAR PK83534.

Improvements for Extract actions, Insert Actions, and loop variables

- Extract actions can store separate data for each iteration of a loop.
- Selection of variables for Extract actions, Insert actions, and loop variables:
 - The Select Variable window filters out variables that are inappropriate for the current action, displays the characteristics of eligible variables, and does not allow the user to select a variable having the wrong characteristics.

Limitation: A Web service generated from a service flow project cannot call itself (recursive call)

A Web service generated from a service flow project cannot call itself, either directly or indirectly. In general, the service flow project tools do not allow you to create a recursive invocation of a flow, that is, a flow invoking itself, either directly or through intermediate calls.

However, the service flow project tools currently do not detect the following type of recursion:

- You generate a Web service (for example, WS01) from a service flow project.
- The generated Web service (WS01) invokes some other Web service (for example, WS02). (By the way, in the Enterprise Service Tools, WS02 is termed an "outbound Web service", because it is external to the Web service that invokes it.)
- The invoked Web service (WS02) in turn invokes the original Web service (WS01).

In this situation: The flow editor does not detect the recursion when you create it and does not display an error message. You can successfully generate runtime code for the CICS Service Flow Runtime and deploy the Web service (WS01). When you run the Web service (WS01), the invocation to the second Web service (WS02) is successful. However, the recursive invocation (from WS02 back to WS01) fails.

Limitation: A limitation on a flow with a connection wired back onto itself

Problem: The flow editor does not prevent you from adding connections that wire the execution path of a flow back onto itself (at an earlier point in the flow's execution path). This situation may not cause errors when you generate runtime code. However it is very likely to lead to errors during runtime processing.

Workaround: When you want part of a flow to be iterated multiple times so long as a certain condition is true, use a While node (see the topic "Creating a loop" in the Enterprise Service Tools documentation).

Limitation: Importing a COBOL copy book file fails when the path or file name contains non-English characters

Problem: If you attempt to import a COBOL copy book file, and the file path or the file name contains non-English characters, then the import fails.

Workaround: Rename the PL/I include file so that the name contains only English characters. Locate the file in a directory whose path contains only English characters.

Limitation: Conflicting message and field names cause compile error

Problem: When you model a flow, and a field of one message has the same name as another message, the generated COBOL code may not compile, reporting a IGYPS0037 error, due to the naming conflict. For example, if the flow references (1) a message called 'X' with a field called 'Y' and (2) a message called 'Y', when the generated code refers to item 'Y' the COBOL compiler will not know whether the reference is to the message 'Y' or the field 'Y OF X'.

Workaround: Refactor either the message or the field to resolve the name conflict. In the EST Project Explorer, select one of the items with the duplicate names. Open the context menu and choose Rename.

Limitation: A limitation on imported source code with a usage clause of POINTER

Problem: Importing COBOL or PL/I source code data structures containing fields with a usage type of POINTER will create a message with a corresponding field of type hexBinary. This will cause the Generate Runtime Code wizard to fail.

Workaround: Edit the message in the Message Editor. On the Advanced tab of the editor, change the field's type from hexBinary to int. This change enables the generation to complete successfully.

Limitation: Screen messages are not easily replaced

Problem: If you accidentally delete screen message files and attempt to re-import or re-capture screens to replace them, references to the messages in those files may remain broken. This is because for each screen message, a unique identifier is generated, and this unique identifier is used to identify the screen messages in other files.

Workaround: Back up your projects often. If you accidentally delete screen message files and do not wish to re-model your flows, bring screen messages back by importing the backed up versions of the files rather than re-importing or re-capturing your screens.

Limitation: Importing a COBOL program for use as a LINK with Channel node and opening the operation in the operations editor prevents modifying the generation properties

Problem: After importing a COBOL program for use as a LINK with Channel node, and opening the operation in the operations editor, you cannot modify the generation properties to select Service Flow runtime: level 1.0 is not listed as a choice for selection.

Workaround: Change the program type to commarea or MQ, press **OK**, save your changes, then reopen the generation properties editor. Then the choice for runtime level 1.0 is available.

Limitation: Flow plays back incorrectly if it contains a while loop that exits from a node other than the last node

Problem: When recording a while loop, you can choose multiple flow nodes as potential exit nodes. Flow playback assumes that the last node of the inner flow of the loop is always the exit node for the loop. This assumption can cause the flow

playback to result in a "Macro timed out" error if your loop exits from a node other than the last node. This limitation does not affect generation for the service flow runtime.

Workaround: Exit while loops from the last node in the loop.

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