



IBM Language Environment for z/VSE

CEETRACE Version 1 Release 1.1a

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## CEETRACE Feature Installation and Users Guide

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Revision : Tue, 3 August 2010

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## Disclaimer

Use of the CEETRACE feature is solely at the users discretion and responsibility. IBM Corporation has no warranty, implied or otherwise, nor liability for this feature. Service and updates will be provided as a complete replacement. No APARs will be accepted nor any PTFs provided for this feature.

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## CEETRACE Feature System Requirements

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The following z/VSE system requirements are needed to successfully use the LE z/VSE CEETRACE feature tool and any of the other documented utilities included :

- Language Environment for z/VSE 1.4.6 and z/VSE 4.2 or above
- Correctly installed and activated LE/VSE Attention Routine – refer to the LE/VSE Debugging Guide and Run-Time Messages for further information.
- The default supplied CEEBXTAN and CEECXTAN modules or a modified version including CEL4RPRT as a pre-dump exit. See the LE z/VSE supplied samples CEEBXTAN.A and CEEXCTAN.A
- Applications using the CEETRACE feature tool will require approximately a further 50K for the tracing and reporting tool programs, approximately a further 32K of stack anywhere storage and 8K Heap anywhere storage (up to ~4K of this will be required for the trace table itself). SYSDEBUG file support will require further HEAP storage depending upon COBOL program source size. These requirements are subject to change at any time due to service or development requirements.
- APARs (or their superseded versions) PQ74143 and supporting language APARs (PQ74144 – English or PQ74145 – Japanese) if you wish to use the CEETRACE or utilities support for the COBOL/VSE compilers SYSDEBUG (side-file) file.

### ***CEETRACE Feature Overview***

CEETRACE is not intended to replace the LE z/VSE dump information or the Debug Tool for VSE/ESA. Instead it is designed to complement the already available LE z/VSE dump information to aid in application problem analysis by providing an execution statement history prior to any subsequent application failure similar to the previously available READY TRACE facility of DOS/VS COBOL. Applications that do notabend will not *automatically* produce an execution statement report.

### ***CEETRACE Feature Performance Impact***

Activating the CEETRACE feature will have a negative impact on application performance. The significance of this impact can be controlled by some of the available CEETRACE feature options. In general there will be a minimum of approximately 10% CPU (estimated) overhead with this increasing relative to the CEETRACE feature options active.

CEETRACE options such as the environment validation can substantially increase CPU consumption and should only be used in a non-production environment.

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## CEETRACE Feature Installation Instructions

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Thank you for trying the CEETRACE feature. There is nothing further to download. Everything you require is already included in the base installation of your z/VSE 4.2 system. There are just a few simple steps to follow and jobs to submit.

- Ensure CEL4CMDR is loaded in the SVA if not already.
- Ensure the LE z/VSE Attention Routine Interface is activated – see the LE z/VSE Debugging and Run-Time Messages Guide for more information.
- Punch out and then tailor member CEETRACE.Z supplied in your LE z/VSE installation library
  1. Set LELIB to your LE z/VSE installation sublibrary
  2. Set INSTALL parameter to Y if this the first run of this job, use N if you have already installed the feature.
  3. Review and modify any of the options included in the job that fit your requirements. Be sure to read carefully all the performance notes for any applicable options.
  4. Continuing from this point on in the installation process will override any previously installed dynamic LE/VSE High Level Language user exits you may have developed or installed. Only one dynamic LE/VSE HLL exit (CEEBINT) should be used on a system at a time.
  5. Ensure you have a PRD2.SAVE sublibrary defined. The installation job will use this as a temporary storage area.
  6. Submit the tailored job to your VSE system. This will create a CEETRACE.INI librarian member containing all your specified option values in the LE z/VSE installation library and install the feature. Verify message CEL4052I is issued. Review the console status report and ensure the CEETRACE feature is set to your specified state.
- Punch out member CEEWTRCE.Z from the LE z/VSE installation library. Tailor this JCL as required for your system and then submit to a class that can be used at any time and that is of at least 3MB in size. **This job is not intended to run now but only remain resident on the VSE/POWER RDR queue.**
- Ensure the class that contains CEEWARC has a partition allocated to it that is at least 3MB in size.
- If the CEETRACE status is ON you can issue console command D CEE,CEETRACE and review the options report produced matches the options you set in the CEETRACE member previously.

The CEETRACE feature is now installed and if set to ON will now produce a program execution report at the defined destination whenever a severity 2 or greater condition occurs and goes unhandled within an appropriately compiled LE z/VSE HLL application.

Refer to the "Preparing a Application for use with the CEETRACE feature" section on pg 8 for information on using the CEETRACE feature with your LE z/VSE applications.

Execution of the supplied installation verification program(s) (IVP) can now be performed. For COBOL users, job CELTCIVP.Z is supplied and for PL/1 VSE users job CELTPIVP.Z in your LE z/VSE installation library.

## ***Uninstalling the CEETRACE Feature***

To remove the CEETRACE feature from your system execute the following JCL on the system you wish to uninstall the feature from :

```
* $$ JOB JNM=UNINSTAL,CLASS=0,DISP=D
* $$ LST DEST=*
* $$ PUN DEST=*
// JOB UNINSTAL – Deactivate and Uninstall the CEETRACE Feature
// EXEC DTRIATTN,PARM='S CEE,CEETRACE=OFF'
// EXEC LIBR,SIZE=256K,PARM='MSHP'
ACC S=PRD2.SCEEBASE
DELETE CEEBINT.PHASE
RENAME CEEBINT.DEFAULT:CEEBINT.PHASE
/*
// UPSI 01000000
// LIBDEF *,SEARCH=PRD2.SCEEBASE
// EXEC CEL4VNDR,SIZE=CEL4VNDR
/*
// PWR R RDR,CEEWARC
/&
* $$ EOJ
```

The CEETRACE feature has now been deactivated and removed from the system.

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## CEETRACE Feature Usage Information

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### ***CEETRACE Feature AR operator commands***

- D CEE,CEETRACE                      Display a console report of the active CEETRACE options.
- S CEE,CEETRACE=RELOAD      Reload the CEETRACE options from the CEETRACE.INI file.
- S CEE,CEETRACE=OFF              Immediately de-activate the CEETRACE feature
- S CEE,CEETRACE=ON              Immediately activate the CEETRACE feature
- S CEE,CEETRACE=(option=new value)      Over-ride specified CEETRACE option (see pg 14).

Note – Setting an over-ride value for a CEETRACE option is only temporary. Any RELOAD commands, execution of the CEEWARC job (usually performed automatically during IPL) or system IPL's will reset the CEETRACE options back to the installation default values contained in the CEETRACE.INI member.

### ***CEETRACE Feature Customization after installation***

After installation you can optionally customize the CEETRACE options to your requirements. To do this follow these simple steps :

- Edit the created (from the previous installation procedure) CEETRACE.INI member in your LE/VSE installation library using your preferred editor. DITTO/ESA for VSE's online "Library Member Edit" option is available with your z/VSE base installation.
- Carefully read the "NOTES" section at the start of the member before making any changes.
- Make any desired changes to the member. Always remember that the CEETRACE feature will be used in any appropriately compiled LE z/VSE application in both CICS and BATCH environments and for any partition(s) not explicitly excluded. Pay careful attention to all the performance notes and warnings associated with any of the CEETRACE feature options.
- Save the modified CEETRACE.INI member.
- Issue the reload command (S CEE,CEETRACE=RELOAD) on the console. Confirm the message "CEETRACE options reload complete" is issued.
- Issue the command "D CEE,CEETRACE" and confirm the report correctly reflects your CEETRACE feature options.

Note – if using the supplied CEETRACE.Z sample member to re-catalog your default CEETRACE options it is recommended that you set INSTALL=N unless you require re-installation of the CEETRACE feature. Re-installation is not required if you are only tailoring the CEETRACE options.

## ***CEETRACE and Debug Tool for VSE Users***

Those users that have Debug Tool for VSE installed on the same system as CEETRACE will need to ensure that any applications being debugged using the Debug Tool for VSE/ESA product do not use CEETRACE. To do this you can exclude certain partitions from CEETRACE using the CEETRACE.INI file and use Debug Tool in the excluded partitions. For system-wide exclusion you can issue the CEETRACE=OFF command (shown previously) which will completely deactivate CEETRACE from the entire system. If for some reason an application is run using Debug Tool for VSE/ESA and the CEETRACE feature at the same time, CEETRACE will detect this and automatically deactivate itself.

## ***CEETRACE After z/VSE System FSU or Upgrade***

After installing a new z/VSE system or performing an FSU you should re-run the installation job CEETRACE.Z with the INSTALL=Y parameter set. This will then re-instate the CEETRACE exit routine as a system-wide default and re-catalog your CEETRACE options. Verify message CEL4052I is issued. Review the console status report and ensure the CEETRACE feature is set to your specified state.



## Preparing an application for use with the CEETRACE Feature

Compile all the modules in the application with the compilers appropriate TEST compile option specifying ALL,SYM as the sub-options. For COBOL/VSE applications that you wish to use the SYSDEBUG file with CEETRACE use the SEP suboption also. C/VSE and PL/I for VSE/ESA compilers and run-times do not support the SYSDEBUG side file and so are currently limited to a statement number trace report only.

When the appropriately compiled applications are executed in a partition that is not excluded on a system that has the CEETRACE feature installed and activated any severity 2 or greater unhandled conditions experienced will result in a program execution report at the CEETRACE options specified destination.

A report similar to the following COBOL sample will be produced at the specified destination :

CEETRACE Program Execution Trace Report Begins

Date	Time	Program_Name	Entry_Name	Stmt#	Stmt Offs	Stmt_Lang	Statement Source Code
30/06/2008	10:43:59.62	CELTICVP	Ent/Ext/Par	N/A.	+000005E8	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.62	CELTICVP	CELTICVP	677	+000005EC	COBOL	DISPLAY 'CELTICVP Begins '.
30/06/2008	10:43:59.64	CELTICVP	CELTICVP	681	+000005FE	COBOL	Call 'CELTVLIB'.
30/06/2008	10:43:59.64		celtvlib	31	+0000006E	C	This Language does not support the SYSDEBUG file
30/06/2008	10:43:59.79		celtvlib	32	+0000008A	C	This Language does not support the SYSDEBUG file
30/06/2008	10:43:59.79		celtvlib	33	+000000A2	C	This Language does not support the SYSDEBUG file
30/06/2008	10:43:59.79		celtvlib	40	+0000012C	C	This Language does not support the SYSDEBUG file
30/06/2008	10:43:59.79		celtvlib	43	+00000152	C	This Language does not support the SYSDEBUG file
30/06/2008	10:43:59.79		celtvlib	44	+00000172	C	This Language does not support the SYSDEBUG file
30/06/2008	10:43:59.79	CELTICVP	Ent/Ext/Par	N/A.	+00000634	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.79	CELTICVP	CELTICVP	683	+00000638	COBOL	Display 'Call the CEETRACE feature reporting tool to
30/06/2008	10:43:59.79	CELTICVP	CELTICVP	684	+0000064A	COBOL	Display 'produce a report of where execution has been
30/06/2008	10:43:59.79	CELTICVP	CELTICVP	685	+0000065C	COBOL	Display 'at this point.'.
30/06/2008	10:43:59.79	CELTICVP	CELTICVP	687	+0000066E	COBOL	Call 'CEL4RPRT'.
30/06/2008	10:43:59.88	CELTICVP	Ent/Ext/Par	N/A.	+000006A4	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.88	CELTICVP	Ent/Ext/Par	N/A.	+000006A8	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.88	CELTICVP	CELTICVP	694	+000006AC	COBOL	MOVE 8 TO Vstring-length of IN-DATE.
30/06/2008	10:43:59.88	CELTICVP	CELTICVP	695	+000006B6	COBOL	MOVE '19/11/08' TO Vstring-text of IN-DATE 1:8
30/06/2008	10:43:59.88	CELTICVP	CELTICVP	696	+000006E4	COBOL	MOVE 8 TO Vstring-length of PICSTR.
30/06/2008	10:43:59.88	CELTICVP	CELTICVP	697	+000006EE	COBOL	MOVE 'DD/MM/YY' TO Vstring-text of PICSTR(1:8
30/06/2008	10:43:59.88	CELTICVP	CELTICVP	698	+0000071C	COBOL	CALL 'CEEDAYS' USING IN-DATE, PICSTR,
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+00000778	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	702	+0000077C	COBOL	IF CEE000 of FC THEN
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+0000078E	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	703	+00000792	COBOL	DISPLAY Vstring-text of IN-DATE
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+00000816	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	715	+0000081A	COBOL	CALL 'CEEDYWK' USING LILIAN, DAYNUM, FC.
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+0000086E	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	717	+00000872	COBOL	IF CEE000 of FC THEN
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+00000884	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	720	+00000888	COBOL	EVALUATE DAYNUM
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+00000902	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	728	+00000906	COBOL	Move 'Wednesday.' to DOW
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+00000976	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	736	+0000097A	COBOL	DISPLAY 'Lilian day ' LILIAN
30/06/2008	10:43:59.89	CELTICVP	Ent/Ext/Par	N/A.	+000009DA	COBOL	External Entry/Exit point, End clause or Paragraph
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	744	+000009DE	COBOL	DISPLAY ' '.
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	745	+000009F0	COBOL	DISPLAY 'CELTICVP is now complete.'.
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	746	+00000A02	COBOL	DISPLAY 'CELTICVP will now force a Data Exception to
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	747	+00000A14	COBOL	DISPLAY ' the CEETRACE program execution repo
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	748	+00000A26	COBOL	DISPLAY ' '.
30/06/2008	10:43:59.89	CELTICVP	CELTICVP	752	+00000A38	COBOL	ADD 1 TO REPLY-RED.

CEETRACE Total CPU time consumed for this job step : 42.592 Milliseconds.

CEETRACE Message associated with current condition is :

CEE3207S The system detected a data exception

CEETRACE Program Execution Trace Report Complete

The active condition message and CPU consumption information is only displayed if the report is produced in response to an unhandled LE/VSE condition and the CEETRACE option TIMER=ON is set. When the reporting feature is called from an application program no condition message or CPU consumption information is included even if TIMER=ON is set.

Source code lines displayed from a COBOL/VSE SYSDEBUG file may be truncated in comparison to the compiler produced listing. This is simply due to reporting space limitations and does not indicate that only part of the source code line was actually executed.

## ***Understanding the CEETRACE Program Execution Report***

The CEETRACE execution report is divided into columns. Starting from the left-most side the first two columns indicate the date and time (to tenths of a second) that the shown program statement was executed. Statements with longer than a 1 second elapsed time will be indicated by an astericks (\*).

The next two columns titled "Program\_Name" and "Entry\_Name" show the currently executing program name and when available, the currently executing entry name. The Entry Name is most relevant to PL/1 VSE and C/VSE applications. In some situations the "Program\_Name" field may be blank. This usually indicates an ILC (cross language) static-type call has been made and the new language is not currently aware of the PHASE name. Since the call is most likely to be static the PHASE name would actually be the same as the preceding language statement.

After these two columns is the "STMT#" column. When available from the application program and language run-time, it will show the currently executing statement number. When the statement number is not available, the characters "N/A" (not available or not applicable) will be displayed. With C/VSE applications the "Line Number" in the compiler listing will more accurately represent the CEETRACE reported statement number.

The next column is titled "Stmt Offs" which is short for "Statement Offset". This is the calculated program statement offset from the currently executing entry point. It may be one of a number of possible offsets for this statement number if reviewed using the applications compiler listing.

The following column displays the current statements number or offsets programming language.

The final column titled "Statement Source Code" is only applicable to COBOL/VSE programs that have been compiled with the SEP option and have an available SYSDEBUG file. If available, this column will display the source code executed at the displayed statement number. When no statement number or source code line information is available then information may be displayed in the column to indicate some possible explanation for this result. In the situation where there is a problem with the SYSDEBUG file or with accessing it, an error message will be displayed in this column with the return code received from the language run-time. This return code can then be used with the information in message CELR008W to determine what was the nature of the failure.

On processors that support the BEAR (breaking-event address register) feature that have CEETRACE activated, when a failure occurs any information available in BEAR, is extracted and then displayed in a supplementary message :

```
CEETRACE    Message associated with current condition is :  
CEE3201S The system detected an operation exception
```

```
CEETRACE    Breaking Event Address : 00500468  
CEETRACE    Program Execution Trace Report Complete
```

The reported address can then be used to assist with the diagnosis of the reported failure. See the "z/Architecture Principles of Operation" book (SA22-7832-05) for more information on BEAR.

## ***CEETRACE Trace Table***

The CEETRACE feature keeps an application execution table up to a maximum of 63 entries in a wrap-around format in LE managed HEAP storage. Each application statement executed is stored in a table entry immediately after the proceeding statement along with information such as the programming language of the statement, its offset relative to the program entry point and date/time information.

If a call is made to the report generator and then a subsequent severity 2 or greater condition occurs trace table entries reported in the first report may appear again in the abend report. This is because no deletion of entries occurs until the table is full.

Statement time information can also be used to indicate statements that may be taking an excessive amount of time to execute. Statements with longer than a 1 second elapsed time will be indicated by an astericks (\*) in the "Time" column.

## ***COBOL/VSE Application Source Code Notes***

For COBOL/VSE applications, if a few simple source code rules are followed, the CEETRACE feature's accuracy may be enhanced. To ensure correct statement number reporting and source line extraction the following COBOL source coding techniques should be followed :

- The "PROGRAM-ID" field should name both the program and the SYSDEBUG member. Do not enclose the name in quotes or speech marks or use any special characters that are not valid for librarian member names (ending period excluded). The LE/COBOL run-time must validate the program name in the SYSDEBUG member (taken from the PROGRAM-ID field) matches the one executing when trying to extract the source code for a particular statement number.
- Program ending verbs such as "GOBACK" or "STOP RUN" should be followed by an "Exit Program" statement if they are the last source code statement in the program. Paragraphs that are at the end of the program source should end with a closing paragraph statement only. These recommendations will improve the statement number lookup from program execution offsets and reduce the possibility of trace table reports showing a statement number "0" where a valid source code statement number should be.
- C/VSE applications need to be compiled with the OPT(0) compiler option as well as the other requirements (see Pg 8) for CEETRACE to be able to produce a statement execution report.

The above recommendations are optional only to improve the CEETRACE features accuracy. The feature will still function without the above COBOL source code changes.

## **CEETTRACE Application Programming Interface**

Programmers can call the reporting feature during program execution from their own LE/VSE applications to get an execution report up to the calling statement in the program. The report feature can be called either dynamically or statically.

Following are some examples in each LE/VSE HLL showing how to do this :

### **COBOL**

```
Statically      Call "CEL4RPRT".
Dynamically     01      Trace-Rprt          Pic X(8).
                  .....
                  Move "CEL4RPRT" to Trace-Rprt.
                  Call Trace-Rprt.
```

### **PL1**

```
Dcl      cel4rprt external entry options(assembler);
.....
Call cel4rprt;
```

The use of PL/1's FETCH is also supported.

### **C/VSE**

```
#pragma linkage (cel4rprt,os)
#pragma map (exec_report,"CEL4RPRT")
int main() {
    .....
    exec_report();
}
```

The use of C's fetch() function is also supported.

The reporting feature can also be called from an LE/VSE conforming Assembler program but only to report on any entries in the trace table for previously executed HLL programs. Be aware that if the HLL programs are no longer active or loaded that features such as the COBOL source code extraction may not be available. The reporting feature can be called statically or via the CEEFETCH/CEERELES macros. It cannot be called from non-LE conforming assembler programs or non-LE High level languages.

## **CEETTRACE LE z/VSE Run-Time Option Requirements**

For the CEETTRACE feature to function correctly, the following LE/VSE run-time options need to be set :

- Trap                ON,MAX                (ON,MIN is accepted but not recommended)
- Abtermenc        ABEND                (RETCODE is accepted but not recommended)
- Storage           00,NONE,CLEAR,32K        (BATCH recommendation)
- 00,NONE,CLEAR,0K        (CICS recommendation)

## ***CEETRACE Feature Restrictions***

- There is **NO NATIONAL LANGUAGE SUPPORT** for this feature. All CEETRACE feature messages both printed and console are available in English only.
- Both BATCH and CICS environments are supported with the following restrictions -
  1. DOS/VS COBOL or VS/COBOL II compiled subroutines link edit with LE/VSE are not supported but will be tolerated. Main programs will cause CEETRACE to be deactivated.
  2. DOS/VS COBOL or VS/COBOL II sub or main programs link edited with a non-LE/VSE runtime are not supported nor tolerated.
  3. LE-enabled Assembler is not supported but is tolerated. LE HLLs invoked via the CEEFETCH macro from LE-enabled assembler that conform to the CEETRACE requirements on Pg 8 are supported.
  4. DOS/PL1, RPG, C/370 and System Programmer /C are not supported nor tolerated.
  5. Non-LE enabled assembler is not supported but will be tolerated so long as standard S/390 linkage conventions are followed.
  6. When using PL/1 VSE or C/VSE as a “main” program the C/VSE or PL/1 VSE program must be compiled with at least TEST(ALL,SYM). Subroutines can be a mix of TEST and NOTEST.
  7. CEETRACE and Debug Tool for VSE/ESA cannot be used at the same time nor on the same application.
  8. Use of the LE/VSE run-time option TRAP(OFF) is not supported.
  9. CEETRACE feature output reports and messages are NOT supported as programming interfaces and may be changed at any time.
  10. The CEETRACE feature uses an installation-wide LE z/VSE High Level Language exit (CEEBINT) to perform its functions. If your environment already makes use of this exit point (or a statically linked version) then it cannot be used in conjunction with the CEETRACE feature.
  11. Calling CEE5ABD with timing = 0 (no cleanup processing) will cause the CEETRACE feature exit not to be called. Resulting in no CEETRACE report.
  12. Using a registered condition handler, or language provided handlers, will result in no CEETRACE report when any conditions handled by the user handler are “resumed”. However, the user condition handler can call the CEETRACE reporting tool (CEL4RPRT) to generate a CEETRACE report.

## ***CEETRACE and Pre-Initialised Run-Time Environments***

- CEETRACE can be used with any supported LE/VSE applications invoked via CEEPIPL.
- The LE z/VSE supplied ILBDSET0 is supported when correctly compiled (see pg 8) COBOL/VSE programs are executed in the environment. Mixed non-LE assembler and/or other HLLs with COBOL, are not supported by CEETRACE in this environment.
- IGZERRE is supported for correctly compiled (see pg 8-9) COBOL/VSE programs if using the LE z/VSE 1.4.6 (or above) supplied IGZERRE module. Previous versions of IGZERRE are not supported and may cause CEETRACE to be deactivated if used. Mixed non-LE assembler and/or other HLLs are also not supported by CEETRACE in this environment.

## ***CEETRACE and CICS Considerations***

CEETRACE and EXEC CICS LINK calls to correctly compiled applications are supported. When COBOL/VSE applications are the target of EXEC CICS LINK calls and the execution report is produced after an EXEC CICS RETURN (or GOBACK) from the LINK'ed to program the side-file and source code information may no longer be available. An appropriate message will be displayed in the execution trace report.

Even if the TIMER option is set to "ON", no CPU time information will be reported for CICS CEETRACE abend reports.

## ***CEETRACE Initialization Options***

Details for each of the CEETRACE feature options are available in the supplied CEETRACE.Z member or, if after installation, the created CEETRACE.INI librarian member in the LE/VSE installation library.

The following CEETRACE feature options are listed for reference purposes only.

CEETRACE Feature Option	Option Information
ceetrace= <u>on</u>   off	Set status of the CEETRACE feature at LE/VSE attention routine initialization time.
report= <u>LE</u>   JOB*	What destination is to be used for the CEETRACE Program Execution report. <ul style="list-style-type: none"> <li>• LE = Use the LE TERMTHDACT runtime option setting</li> <li>• JOB = The execution report will be directed to LE's MSGFILE current setting.</li> </ul>
source_code= <u>yes</u>   no*	Applicable to COBOL/VSE only. Include the display of source code lines in the Program Execution report if a correct SYSDEBUG file is available.
trace_tabsz= <u>52</u>	Number of program statement execution entries to be saved in the wrapping trace table. Can be any value between 10 to 63. WARNING – forcing this value to anything less than 10 or greater than 63 will result in unpredictable errors.
warn_msgs= <u>on</u>   off*	Display or disable any warning messages during CEETRACE execution. Severe or error level messages are always displayed as are all levels of output report messages.
env_validation= <u>off</u>   min   heap   full*	What level, if any, of LE z/VSE environment checking is to be performed at each statement executed. <ul style="list-style-type: none"> <li>• off = No validation</li> <li>• min = Minimal environment checking</li> <li>• heap = Heap storage validation</li> <li>• full = Perform all environment checking</li> </ul> Activating this option will have a negative performance impact.
exclude_part= <u>f1,f3,f7,y1,y2,y3,r1</u>	What partitions to exclude from the CEETRACE feature. Can be up to 32 (or to column 78) partitions that are to be excluded. Wild cards are not permitted.
timer=on   <u>off</u> *	Include CPU consumption time in the CEETRACE Program Execution report? Will only be displayed if the execution report is in response to a LE/VSE condition occurring. Not reported under CICS.

**Table 1: CEETRACE Feature Initialization file Options**

\*Option can be over ridden using the CEETRACE Attention Routine commands.

## ***CEETRACE Update Procedure***

Before applying any updates to CEETRACE, please review the accompanying README file for any special information.

### **UPDATE APPLY PROCEDURE**

This job can be sent via:

1. FTP to the VSE reader (FIX BIN 80) , or
2. IND\$file (File Transfer) to the reader of the VSE system .... or
3. Over VM.

#### **In case IND\$file is used:**

a.) IUI dialog "PC FILE TRANSFER" should be entered (fastpath: 386)

- 3 Operations
- 8 Personal Computer Move Utilities
- 6 PC File Transfer

The screen displayed here says:

"Please switch to PC mode to initiate a file transfer or press PF3 to quit."

b.) Then following command should be submitted in the PC command box:

```
send ceetrace.update a:ceetrace (file=rdr binary lrecl=80 nouc
a: is the session id (VSE)
```

#### **In case VM is used:**

The fixtest job should be sent via:

```
send ceetrace.update a:ceetrace update f (lrecl 80
a: is session id (VM)
```

The following commands will then suit for transfer to the VSE machine:

```
SP00L PUN TO vse_machine
PUN / (NOH
```

On the VSE-side the reader must be started via: S RDR, 00C, A



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## CEETRACE Utilities

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### **COBOL/VSE Source Code Extraction Utility**

Supplied with the CEETRACE feature is a COBOL/VSE source code extraction utility. The utility can produce original source code from a COBOL/VSE load module (BATCH or CICS) *that had originally been compiled with the SEPARATE suboption of the COBOL/VSE compiler TEST option which has a valid and available SYSDEBUG member.*

This COBOL/VSE compiler option combination will produce a SYSDEBUG (side file) member that contains both the symbol table information (for use during run-time dump production) and the compressed source code used to produce the final object code. It is this source code that the extraction utility can reproduce.

Use of the extraction utility is by a VSE BATCH job. A single parameter is required that contains the name of the COBOL/VSE load module you wish to extract the source code for using the associated SYSDEBUG member.

Input for the BATCH job requires // LIBDEF PHASE JCL statement for both the load module and the SYSDEBUG member. Alternatively you can specify a // LIBDEF \* to allow searching and loading of both members. The LE/COBOL runtime will perform standard verification on the load module and associated SYSDEBUG member so as to ensure they were created together by the COBOL/VSE compiler.

Output from the utility is in two formats. The extracted source code will be included in the job print output along with the compile options used to produce the specified load module. The source code will also be punched to SYSPCH in 80 byte records. A 2520B2 punch output device is recommended. COBOL copy statements will be expanded.

Following is some sample JCL to use the utility.

```
* $$ JOB JNM=COBSRCE,CLASS=0,DISP=D
* $$ LST CLASS=A,DISP=D,DEST=*
* $$ PUN CLASS=A,DISP=D,DEST=*
// JOB COBSRCE - Extract COBOL source code from SYSDEBUG Member
// LIBDEF *,SEARCH=(PRD2,SCEEBASE,TEST.LIB)
// EXEC CEL4PLST,SIZE=CEL4PLST,PARM='/COBPROG'
/*
/&
$$ EOJ
```

Note : If you have a BATCH SYSDEBUG exit it will be called.

**TEST.LIB** = library containing both the COBOL/VSE load module and the associated SYSDEBUG member. You can add more sublibraries to the search chain if your SYSDEBUG members and load modules are kept separate.

**COBPROG** = The COBOL/VSE program load module to extract the source code for.

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## CEETRACE Feature Messages

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### ***CELP – COBOL/VSE Source Code Extraction Utility Messages***

**CELP002E                    Load module compiled with NOTEST.**

Explanation:                The load module being requested for source code extraction has not been compiled with the TEST COBOL/VSE compiler option. This is required to produce a corresponding SYSDEBUG member where the programs source code can be extracted from.

System Action:             Processing continues

Programmer Response :    No source code is extracted.

Operator Response:        None

**CELP003E                    Load module compiled with NOSEP.**

Explanation:                The requested COBOL/VSE load module has been compiled with the TEST option but the SEP sub-option was not specified. Resulting in no corresponding SYSDEBUG member being available.

System Action:             Processing continues

Programmer Response :    No source code is extracted.

Operator Response:        None

**CELP004E                    Load module not identifiable as COBOL/VSE.**

Explanation:                The requested load module has not been compiled with a supported COBOL/VSE compiler.

System Action:             Processing continues

Programmer Response :    No source code is extracted. Ensure the requested load module is a valid COBOL/VSE compiled module. The entry point of the load module must point to a COBOL/VSE program.

Operator Response:        None

**CELP005E                    Unable to continue. No parameter supplied.**

Explanation:                This execution of CEL4PLST does not include a valid JCL PARM card specifying the COBOL/VSE load module to extract the source code from.

System Action:             Processing continues

Programmer Response :    No source code is extracted.

Operator Response:        None

**CELP006E                    Load for requested module failed.**

Explanation:                The requested COBOL/VSE load module could not be loaded. Ensure the load module is available in the // LIBDEF search chain active, that the partition being used is sufficient in size to load the module and that the appropriate authority has been granted.

System Action:             Processing continues

Programmer Response :    No source code is extracted.

Operator Response:        None

<b>CELP007E</b>	<b>Parameter Load module name too long.</b>
Explanation:	The requested COBOL/VSE load module name is greater than the allowed 8 characters.
System Action:	Processing continues with no source code produced.
Programmer Response :	Correct the COBOL/VSE program load module name and re-run.
Operator Response:	None
<b>CELP009E</b>	<b>Invalid TGT returned from COBOL program.</b>
Explanation:	The requested COBOL/VSE load module may have been compiled with a prior version of COBOL/VSE that does not support the SYSDEBUG file.
System Action:	Processing continues with no source code produced.
Programmer Response :	No source code is extracted.
Operator Response:	None
<b>CELP010E</b>	<b>COBOL Event Handler return code =</b>
Explanation:	The LE/COBOL runtime has returned an error when extracting the source code from the available SYSDEBUG member.
System Action:	Processing continues with no source code produced.
Programmer Response :	Note the return code returned and contact IBM support for assistance. No source code is extracted.
Operator Response:	None
<b>CELP011S</b>	<b>SYSPCH open has failed. Terminating.</b>
Explanation:	The open request for the SYSPCH device has failed.
System Action:	Execution is terminated.
Programmer Response :	Ensure SYSPCH is assigned to a valid device – preferably a 2520B2. If device assignment is correct then contact your IBM service center for assistance. No source code is extracted.
Operator Response:	None

## Messages that appear in the output report.

<b>CELP110E</b>	<b>Compiler options unavailable. Load request for service failed.</b>
Explanation:	When attempting to produce the compiler options report the required service module could not be loaded.
System Action:	Processing continues with no compiler options report produced.
Programmer Response :	Ensure you have a current LE/COBOL run-time release and that the job executing has sufficient authority to load modules from the LE z/VSE installation sub-library.
Operator Response:	None

## **CELR – CEETRACE table reporting module messages**

### **CELR003W No entries in Trace Table. Check compile options used.**

Explanation: The CEETRACE table is empty. No trace information can be produced.

System Action: Processing continues

Programmer Response : Check that the application in question has been compiled with the required TEST options and that the CEETRACE facility is active.

Operator Response: None

### **CELR004S Trace Table Corrupt. Report failed.**

Explanation : The trace table used for reporting on program execution flow as been overlaid or corrupted in some way.

Programmer Response : Contact your systems programmer or IBM service representative. Follow the recommendations on pg 29 "how to report a problem" when reporting this problem.

System Action : A SDUMP is taken of the active partition. Please keep this dump for analysis.

Operator Response: None

### **CELR008W A Side-File Request has failed. Source code extraction unavailable. <pgmname>**

Explanation : When requesting access to the required SYSDEBUG file a failure occurred.

Response codes :

4	SYSDEBUG file could not be located
8	Storage allocation failure
12 (C)	Storage freeing failure
16 (10)	SYSDEBUG member open failure
20 (14)	SYSDEBUG member close failure
24 (18)	SYSDEBUG member read failure
28 (1C)	Decompression failure
32 (20)	Storage request failed
44 (2C)	SYSDEBUG member verification failed.
48 (30)	Unexpected EOF reached while reading SYSDEBUG
52 (34)	Program no longer available in storage.

Programmer Response: Review the produced CEETRACE report. Displayed at the end of the "STMT SRC" column may be the return code received in hex to match the above response codes. Information relating to the problem may also be displayed in the "STMT SRC" column. You may find "Side File or Program is no longer available", "Side File request failed. Insufficient storage." or "Side File unavailable. Verification failed". Ensure the side-file used and load module match. Consider recreating the side-file and load module for <pgmname>.

System Action : Processing continues without the use of the SYSDEBUG file. This may result in statement numbers and source code information missing from the CEETRACE report.

Operator Response: None

<b>CELR009W</b>	<b>Unable to locate statement number in SYSDEBUG member.</b>
Explanation :	When attempting to locate the source code line for a particular statement number there was no corresponding source code line found.
Programmer Response:	Ensure the correct SYSDEBUG member is being used. Re-create the SYSDEBUG member using the compiler TEST(ALL,SYM,SEP) option. Review the produced CEETRACE report and look for any statement numbers missing source code line text. Compare the statement number reported with the compiler output listing to verify valid source code is at the indicated statement number. If not, a possible mismatch between the SYSDEBUG member and load module may exist. This message may also be included in the program execution report with the return code received from the LE/COBOL run-time in response to the statement number search. Ensure the PROGRAM-ID name matches the created SYSDEBUG member name. If this message persists after verification that the SYSDEBUG member and COBOL load module are consistent then contact your IBM support center for assistance.
System Action:	The report continues to be produced without the source code for the missing statement number.
Operator Response:	None
<b>CELR013W</b>	<b>Unable to determine LE TERMTHD option. Using job log default.</b>
Explanation :	When attempting to extract the active LE z/VSE enclave's TERMTHDACT run-time option settings, an invalid or indeterminable value was found.
Programmer Response:	Ensure a valid TERMTHDACT destination sub-option is set.
System Action:	The report is produced to the currently default output destination set by MSGFILE.
<b>CELR014E</b>	<b>Request for LSTQ member open has failed with <i>retcode rc</i> and <i>reasoncode rsncode</i>.</b>
Explanation :	When attempting to communicate with VSE/POWER and open a LSTQ member to receive the CEETRACE output report, the open failed with the inserted return code and reason code.
Programmer Response:	Use the displayed return code and reason code information in conjunction with the XPCC return code and reason codes from LE/VSE to determine the failure reported.
System Action:	The creation of the LSTQ member is aborted and the CEETRACE report is written to the LE MSGFILE destination.
Operator Response:	None
<b>CELR015E</b>	<b>Request for LSTQ member put has failed with <i>retcode rc</i> and <i>reasoncode rsncode</i>.</b>
Explanation:	When attempting to communicate with VSE/POWER and write to a LSTQ member with the CEETRACE output report, the write request failed with the inserted return code and reason code.
Programmer Response:	Use the displayed return code and reason code information in conjunction with the XPCC return code and reason codes from LE/VSE to determine the failure reported.
System Action:	The LSTQ member is not created and the report is terminated.
Operator Response:	None

<b>CELR018I</b>	<b>The CEETRACE program execution report has been written to the requested LSTQ member.</b>
Explanation:	The LE TERMTHDACT option specifies LSTQ and the CEETRACE.INI has LE set for the "REPORT" option. This has resulted in the CEETRACE report being written to a VSE/POWER LSTQ member whose name has been constructed from the originating VSE/POWER job name and stored in the class specified in the LE/VSE LSTQ options.
Programmer Response:	None.
System Action:	None.
Operator Response:	None.
<b>CELR019E</b>	<b>Request for LSTQ member END has failed with <i>retcode rc</i> and <i>reasoncode rsncode</i></b>
Explanation:	During the creation of the LSTQ member containing the CEETRACE report, the END request sent to VSE/POWER has failed with the included return code and reason codes.
Programmer Response:	The displayed return code and reason code should be investigated using the VSE/POWER Application Programming guide and the appropriate resolution action taken.
System Action:	The LSTQ member is not created and the report is terminated.
<b>CELR020W</b>	<b>Starting Language Environment for z/VSE CEETRACE report</b>
Explanation:	The CEL4RPRT report generator module has been called due to an application failure.
Programmer Response:	None.
System Action:	A CEETRACE report is produced up to the statement that failed.
Operator Response:	None
<b>CELR021W</b>	<b>Language Environment for z/VSE CEETRACE report complete</b>
Explanation:	The CEETRACE report is complete. This message is also issued if an explicit call to the CEL4RPRT report generator module has been made and then completed.
Programmer Response:	None.
System Action:	A CEETRACE report is produced to the destination specified in the CEETRACE.INI file.
Operator Response:	None
<b>CELR022W</b>	<b>CEETRACE has not been enabled for this application or partition.</b>
Explanation:	The CEL4RPRT report generator module has been called to produce a trace report but the CEETRACE feature is not installed or activated correctly, the application does not meet the requirements for tracing or the partition being used is part of the exclusion list.
Programmer Response:	Ensure the application has been compiled with the correct options, that the CEETRACE feature has been installed correctly, initialized and activated. Also ensure the application is being executed in a partition that is not in the CEETRACE options exclusion list.
System Action:	No CEETRACE report is produced.
Operator Response:	None

<b>CELR024W</b>	<b>CEETRACE table not available. No report can be produced.</b>
Explanation:	The CEL4RPRT report generator module has been called to produce a trace report but the application does not meet the requirements for tracing, the partition used has been excluded or there has been a problem during initialization of the CEETRACE feature for this application.
Programmer Response:	Ensure the application has been compiled with the correct options, that the CEETRACE feature is installed and activated correctly and that there is sufficient available storage in the partition to support the CEETRACE feature. Ensure the partition being executed in is not in the CEETRACE exclude list. Verify LE runtime option TRAP(OFF) is not set.
<b>Note</b>	This message is issued even if WARN_MSGS=OFF is set if a call (static or dynamic) has been made to the report generator routine (CEL4RPRT) from an application program.
System Action:	No CEETRACE report is produced.
Operator Response:	None
<b>CELR025W</b>	<b>CEETRACE has not been activated. No report is produced.</b>
Explanation:	The CEL4RPRT report generator module has been called to produce a trace report but the CEETRACE feature has not been initialized or activated.
Programmer Response:	Ensure that the CEETRACE feature is installed and activated correctly. Use the D CEE,CEESTAT console command to determine the current CEETRACE feature status.
System Action:	No CEETRACE report is produced.
Operator Response:	None
<b>CELR027W</b>	<b>Message text for the current condition is unavailable.</b>
Explanation:	The CEL4RPRT report generator module has been called to produce a trace report but the LE message text associated with the current condition could not be retrieved.
Programmer Response:	Ensure all the LE message modules are available at runtime and that the job executing has sufficient authority to load them. Check the partition for sufficient available GETVIS storage to load the LE message modules.
System Action:	No condition information is included in the CEETRACE report produced.
Operator Response:	None
<b>CELR029W</b>	<b>A call to CEL4RPRT was made but the LE Attention Routine Interface is not initialized.</b>
Explanation:	An user application has called the CEETRACE reporting module, CEL4RPRT, but the LE attention routine interface has not been initialized. This is required before the CEETRACE feature can be initialized and used.
Programmer Response:	Ensure that the CEEWARC job has been run since the last IPL and that it run successfully. Use the D CEE,CEESTAT console command to determine the current LE Attention Routine Interface and CEETRACE feature status.
System Action:	No CEETRACE report is produced.
<b>Operator Response:</b>	<b>None</b>

## CEETRACE Execution Report Messages

These are the messages that may appear in the "Statement Source Code" column of the CEETRACE Execution Report when a problem related to extracting the source code has occurred.

### **Side-File or Program is no longer available.** *rc*

Explanation : The side-file or program being reported on is invalid or no longer available in storage.

Programmer Response : Possible values for "rc" are :

-4		Function ignored by language event handler
0		Function completed successfully by language event handler
16	(10)	Requested function failed.
32	(20)	Storage request failed
44	(2C)	SYSDEBUG member verification failed.
48	(30)	Unexpected EOF reached while reading SYSDEBUG
52	(34)	Program no longer available in storage.

For return code 16 check the program is still available in storage at the time of the report. If it is then consider recreating the SYSDEBUG member again.

For return codes 44 and 48 consider recreating the SYSDEBUG member again.

For return code 20, increase the available 31-bit GETVIS for the application.

Return code 52 indicates the COBOL program has been removed from storage.

System Action : No side-file information is displayed for this program.

Operator Response : None.

### **Source\_code=no set or SYSDEBUG unavailable**

Explanation : A previously issued message may explain the reason for the SYSDEBUG member being unavailable. The program being traced may not have been compiled with the SEP sub-option of the compiler TEST option.

Programmer Response : Ensure you have Source\_code=yes set in the CEETRACE.INI file if desired or a SYSDEBUG member is available for the COBOL program being traced.

System Action : No source code information is displayed for this program.

Operator Response : None.

### **Unable to locate statement number in SYSDEBUG member.** *rc*

Explanation : When attempting to locate the source code line for a particular statement number there was no corresponding source code line found.

Programmer Response: Ensure the correct SYSDEBUG member is being used. Re-create the SYSDEBUG member. Review the produced CEETRACE report and look for any statement numbers missing source code line text. Compare the statement number reported with the compiler output listing to verify valid source code is at the indicated statement number. If not, a possible mismatch between the SYSDEBUG member and load module may exist. Refer to "COBOL/VSE Application Source Code Notes" on pg 10. Also see the return codes listed for message CELR008W for further explanation.

If this message persists after verification that the SYSDEBUG member and COBOL load module are consistent then contact your IBM support center for assistance.

System Action: The report continues to be produced without the source code for the missing statement number.

Operator Response: None



## **CELT – CEETRACE Tracing module Messages**

### **CELT013S                   Anchor is corrupt or missing. Terminating.**

Explanation:               The CEETRACE anchor area allocated at initialization time has either been overlaid or failed to be created.

Programmer Response:    Collect the SDUMP produced and contact your systems programmer or IBM service representative. Refer to the chapter "How to report a problem" on Pg 29.  
Ensure the installation process completed without error.

System Action:           CEETRACE is deactivated and is not available for this application.

Operator Response:       None

### **CELT014S                   Language Environment z/VSE Run-Time option TRAP(OFF) is set. CEETRACE has been deactivated.**

Explanation:               The CEETRACE facility requires the TRAP run-time option be set to ON.

Programmer Response:    Set the TRAP run-time option to ON.

System Action:           CEETRACE is deactivated for this application.

Operator Response:       None

### **CELT018E                   Called without a function code. Unable to activate for this module.**

Explanation:               The LE z/VSE HLL exit (CEE Bint) has been called with an unknown or unexpected function code. This possibly indicates a logic error or a back-level version of CEETRACE has been installed.

Programmer Response:    Verify you are using the latest version of CEETRACE. Collect the SDUMP produced and contact your systems programmer or IBM service representative. Refer to the chapter "How to report a problem" on Pg 30.

System Action:           CEETRACE is not activated for this module.

Operator Response:       None

### **CELT019W                   CEETRACE active when Debug Tool for VSE is present. CEETRACE deactivating.**

Explanation:               Debug Tool for VSE and CEETRACE cannot be used together.

Programmer Response:    Deactivate CEETRACE via the AR S CEE,CEETRACE=OFF command or run the application in an excluded partition.

System Action:           CEETRACE is not activated for this application.

Operator Response:       None

### **CELT020S                   CEETRACE has detected an active CEEBHOOKS routine. CEETRACE is deactivating for this load module.**

Explanation:               An active hook routine (such as IBMHOOKS) has been detected. CEETRACE cannot be used in conjunction with any other hook routine exits.

Programmer Response:    Deactivate CEETRACE via the AR S CEE,CEETRACE=OFF command or run the application in an excluded partition. Alternatively remove the applications use of CEEBHOOKS.

System Action:           CEETRACE is not activated for this module.

Operator Response:       None

<b>CELT022W</b>	<b>DOS/VS COBOL module has been detected.</b>
Explanation:	A DOS/VS COBOL module has been found to be present in the active load module. CEETRACE does not supported non-LE HLL compilers.
Programmer Response:	None.
System Action:	The DOS/VS COBOL module is not traced. Tracing will resume at the next LE-conforming HLL program encountered that has been compiled with the required compiler options.
Operator Response:	None
<b>CELT023W</b>	<b>LE-assembler detected. Tracing not supported for this module type.</b>
Explanation:	An LE-enabled assembler program has been detected. CEETRACE does not support the tracing of non-HLL LE-compliant modules.
Programmer Response:	None.
System Action:	Tracing of the LE-assembler module is skipped. Tracing will resume at the next correctly compiled HLL LE-compliant module.
Operator Response:	None
<b>CELT024S</b>	<b>Unable to located a valid COBOL TGT. COBOL tracing not activated.</b>
Explanation:	When trying to locate the TGT for this active COBOL program, CEETRACE was not able to find a valid one.
Programmer Response:	Ensure the COBOL program in question has been compiled with an LE-conforming compiler with the correct options. If the problem continues contact your IBM support center for assistance. Refer to the chapter "How to report a problem" on Pg 30.
System Action:	CEETRACE for this COBOL program is not activated.
Operator Response:	None
<b>CELT025S</b>	<b>Unable to locate a valid RUNCOM for this COBOL program. COBOL tracing deactivated</b>
Explanation:	When trying to locate a RUNCOM for this active COBOL program, CEETRACE was not able to find a valid one.
Programmer Response:	Ensure the COBOL program in question has been compiled with an LE-conforming compiler with the correct options. If the problem continues contact your IBM support center for assistance. Refer to the chapter "How to report a problem" on Pg 30.
System Action:	CEETRACE for this COBOL program is not activated.
Operator Response:	None
<b>CELT026S</b>	<b>Unable to locate a valid THDCOM for this COBOL program. COBOL tracing deactivated.</b>
Explanation:	When trying to locate the THDCOM for this active COBOL program, CEETRACE was not able to find a valid one.
Programmer Response:	Ensure the COBOL program in question has been compiled with an LE-conforming compiler with the correct options. If the problem continues contact your IBM support center for assistance. Refer to the chapter "How to report a problem" on Pg 30.
System Action:	CEETRACE for this COBOL program is not activated.
Operator Response:	None

<b>CELT027W</b>	<b>CEETRACE options area corrupt. Using default values.</b>
Explanation:	The SVA storage area for the CEETRACE run-time options has failed verification.
Programmer Response:	Ensure the CEEWARC job has run successfully and that your options in the CEETRACE.INI file have been set by using the AR command D CEE,CEETRACE. Verify CEETRACE is active by using the D CEE,CEESTAT command.
System Action:	The internal default CEETRACE options are used.
Operator Response:	None
<b>CELT028W</b>	<b>This partition is excluded from CEETRACE. Tracing not activated.</b>
Explanation:	The currently used partition appears in the excluded partitions option in CEETRACE.INI.
Programmer Response:	None.
System Action:	Tracing is not activated.
Operator Response:	None
<b>CELT031S</b>	<b>Language Environment for z/VSE CEETRACE feature has not been initialized. Tracing deactivated.</b>
Explanation:	The CEEWARC job has not been run, has used an older version of LE z/VSE, or has failed to execute successfully.
Programmer Response:	Run the CEEWARC job and verify its successful execution. Ensure the z/VSE 4.2 supplied LE z/VSE run-time library is used. Use of prior version of LE z/VSE on z/VSE 4.2 is not supported. Use the D CEE,CEESTAT command to verify the state of the CEETRACE facility.
System Action:	CEETRACE is not activated for this program.
Operator Response:	None
<b>CELT032S</b>	<b>Insufficient storage to initialize CEETRACE. Tracing has not been activated.</b>
Explanation:	There was insufficient HEAP storage available to initialize the CEETRACE facility.
Programmer Response:	Increase the available HEAP storage or increase the available 31-bit GETVIS area.
System Action:	CEETRACE is not activated.
Operator Response:	None
<b>CELT036S</b>	<b>Unable to find language list. Exiting.</b>
Explanation:	The language list module present in LE-conforming load modules could not be located.
Programmer Response:	Verify the load module in question has been link edited correctly with the LE z/VSE runtime. If it is correctly link edited collect the produced SDUMP and contact your IBM support representative. Refer to the chapter "How to report a problem" on Pg 30.
System Action:	CEETRACE is not activated.
Operator Response:	None
<b>CELT038S</b>	<b>Language list header not found. Exiting.</b>
Explanation:	The language list CSECT was located but did not contain the expected information.
Programmer Response:	Ensure the load module has been correctly link edited with a supported LE z/VSE runtime. If it is correctly link edited collect the produced SDUMP and contact your IBM support representative. Refer to the chapter "How to report a problem" on Pg 30.
System Action:	CEETRACE is not activated.
Operator Response:	None

**CELT044W****Unable to initialize LE/VSE heap checker**

Explanation: The specified environment validation checking level requires the LE/VSE heap checker to be initialized. This initialization process has not completed successfully.

Programmer Response: Ensure sufficient storage is available (anywhere) to support heap checking.

System Action: Heap Checking is disabled. Any other environment checking requested is still performed.

**CELT045W****PL/I Program compiled without TEST(ALL,x) set.**

Explanation: The “main” PL/I VSE program executed was not compiled with the required CEETRACE compile options.

Programmer Response: If CEETRACE support is required then re-compile at least any “main” PL/I programs with TEST(ALL,SYM). Any fetchable PL/I routines that are to be traced using CEETRACE also need to be compiled with TEST(ALL,SYM).

System Action: CEETRACE does not trace this or any other introduced PL/I modules.

**CELT046E****A corrupt LE z/VSE Environment detected.**

Explanation: During environment validation it was found that one or more LE z/VSE internal control blocks are corrupt or overlaid.

Programmer Response: As the run-time environment is not stable the CEETRACE feature is deactivated. Check any active applications for potential overlays or turn the LE z/VSE HEAPCHK run-time option on. Consider using any compiler available validation features – such as SSRANGE(ON) for COBOL/VSE.

System Action: CEETRACE is not activated for this application.

## **CEL4 – CEETRACE initialization related messages**

<b>CEL4047E</b>	Unable to open CEETRACE.INI options file. Using defaults.
<b>Explanation</b>	During attention routine initialization the CEETRACE.INI file could not be opened.
<b>Programmer Response</b>	Retain the dump produced and provide to IBM support for analysis. Refer to the chapter "How to report a problem" on Pg 29
<b>Operator Response</b>	None
<b>System Action</b>	The LE z/VSE CEETRACE feature is activated but using the internal default options only. See the supplied CEETRACE.Z member in the LE z/VSE installation library for a description of the internal default options.
<b>Symbolic Feedback</b>	None
<b>CEL4052I</b>	CEETRACE options reload complete.
<b>Explanation</b>	A request has been made to reload the CEETRACE.INI file options either from initialization or by an operator command request.
<b>Programmer Response</b>	None.
<b>Operator Response</b>	None
<b>System Action</b>	The LE z/VSE CEETRACE feature options have been reloaded.
<b>Symbolic Feedback</b>	None
<b>CEL4053W</b>	Verification of CEETRACE feature failed. CEETRACE has been disabled.
<b>Explanation</b>	During initialization of the CEETRACE feature, the tracing module was not the version or level expected and failed the verification process.
<b>Programmer Response</b>	Verify the correct level of CEETRACE has been installed and that all the required installation steps have been completed successfully.
<b>Operator Response</b>	None
<b>System Action</b>	The LE z/VSE CEETRACE feature is disabled.
<b>Symbolic Feedback</b>	None
<b>CEL4054W</b>	CEL4READ has failed. Using Defaults.
<b>Explanation</b>	When reading the CEETRACE.INI file the CEL4READ module could not complete the options processing successfully.
<b>Programmer Response</b>	Ensure the CEETRACE.INI file is available and that all the options specified have valid values selected.
<b>Operator Response</b>	None
<b>System Action</b>	The CEETRACE.INI file contents are not processed but the defaults are used instead. The CEETRACE feature is activated using these defaults. Review the CEEWARC job output for any further information on the failure.
<b>Symbolic Feedback</b>	None

<b>CEL4055E</b>	Fetch of CEL4READ has failed.
<b>Explanation</b>	When attempting to fetch the CEETRACE.INI processor CEL4READ the fetch could not be completed.
<b>Programmer Response</b>	Ensure the CEL4READ module is present and available for loading by the initialization job CEEWARC. Ensure sufficient partition size to execute CEL4READ. Recommendation if LE/C is not loaded in the SVA is at least 3MB.
<b>Operator Response</b>	None
<b>System Action</b>	The CEETRACE feature is enabled and all options set to their defaults. The CEETRACE.INI file is not processed.
<b>Symbolic Feedback</b>	None
<b>CEL4063I</b>	Language Environment for z/VSE CEETRACE feature active
<b>Explanation</b>	Informational message showing the current status of the CEETRACE feature.
<b>Programmer Response</b>	None.
<b>Operator Response</b>	None.
<b>System Action</b>	None.
<b>Symbolic Feedback</b>	None.
<b>CEL4065I</b>	Language Environment for z/VSE CEETRACE feature inactive
<b>Explanation</b>	Informational message showing the current status of the CEETRACE feature.
<b>Programmer Response</b>	None.
<b>Operator Response</b>	None.
<b>System Action</b>	None.
<b>Symbolic Feedback</b>	None.
<b>CEL4067I</b>	CEETRACE Current Status is <status information>
<b>Explanation</b>	Informational message is show the current status of the CEETRACE feature.
<b>Programmer Response</b>	None.
<b>Operator Response</b>	None.
<b>System Action</b>	Possible status information is "Not Installed", "Off" and "On".
<b>Symbolic Feedback</b>	None.
<b>CEL4068I</b>	CEETRACE Over Ride Options Accepted
<b>Explanation</b>	The operator provided CEETRACE options change has been accepted and actioned.
<b>Programmer Response</b>	None.
<b>Operator Response</b>	None.
<b>System Action</b>	The entered CEETRACE option change is performed and will be actioned the next time the CEETRACE feature is used.
<b>Symbolic Feedback</b>	None.

<b>CEL4069I</b>	CEETRACE Over-Ride Keyword or Sub-option is not Supported
<b>Explanation</b>	The operator entered an invalid CEETRACE option over-ride.
<b>Programmer Response</b>	None
<b>Operator Response</b>	Verify the correct option keyword has been entered and that the sub-option supplied is valid. Ensure the CEETRACE option is one allowed to be over-ridden. See pg 14 for CEETRACE options that are eligible for being over-ridden.
<b>System Action</b>	The over ride is ignored
<b>Symbolic Feedback</b>	None.
<b>CEL4101E</b>	Executing on an Unsupported LE/VSE Run-Time.
<b>Explanation</b>	While attempting to use the CEETRACE feature, it was found that the executing LE z/VSE level is not at the level required to support the CEETRACE feature being used. A possible mismatch exists between the installed LE z/VSE level and the VSE version being used.
<b>Programmer Response</b>	Check that the correct LE z/VSE level is installed for the executing z/VSE level. The options reports generated by the D CEE,CEEDOPT AR command can be used to determine the currently-active LE z/VSE level The SIR AR command can be used to determine the currently-active z/VSE level.
<b>System Action</b>	The CEETRACE feature is not activated.
<b>Symbolic Feedback</b>	None

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## How to report a problem

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If you believe you have found a problem with the CEETRACE feature, please check the following items before contacting IBM support :

- Review the list of restrictions on Pg 12 and ensure your application does not violate any of them.
- Review the CEETRACE feature tool system requirements on Pg 3 and verify your environment complies.
- Ensure all the installation steps have been completed successfully and that the CEETRACE status is set to ON (see D CEE,CEESTAT console command report).
- Check that your application has been prepared for use with CEETRACE according to the instructions given on Pg 8.
- De-activate any non-IBM vendor software and try the application again.
- If the problem is related to the CEETRACE feature not generating a program execution report ensure you are not running the application in an excluded partition.
- Issue the console command "S CEE,CEETRACE=(WARN\_MSGS=ON)" followed by "D CEE,CEETRACE" and confirm that WARN\_MSGS=ON. Re-run the application using CEETRACE again. Review all warning messages and correct as required.
- Ensure there is no application-specific CEEBINT included in the problem application other than the default version supplied with LE z/VSE.

If you continue to experience problems with the CEETRACE feature then please collect and prepare the following documentation for analysis :

- A complete console log showing all LE z/VSE and CEETRACE messages (including warnings issued from the above instructions).
- Any CEETRACE produced system dumps or LE z/VSE formatted dumps.
- Any CEETRACE output relevant to the problem.
- A complete and current compile listing and link edit map of the application being used with CEETRACE. Optionally application source code that can be compiled and executed where possible by IBM support staff.
- The console output from the LE z/VSE AR command "D CEE,CEESTAT" and the CEETRACE AR command "D CEE,CEETRACE".
- A list of all non-IBM vendor products active on your system in both the CICS and BATCH environments.

Please then send an email to [vsupportLE@de.ibm.com](mailto:vsupportLE@de.ibm.com) describing the problem and you will be provided with instructions on how to transfer the above supporting documentation to the change team for analysis.



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## Comments and Questions

Comments or questions on this documentation are welcome. Please send your comments to: [zvse@de.ibm.com](mailto:zvse@de.ibm.com)

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