

The **C\TREK™ expert CICS performance tuner™** is a tool used by mainframe system programmers to optimize CICS system performance in a fraction of the time required when using more traditional CICS monitors.

By automating the analysis of vast amounts of CICS data, isolating performance problems and making expert recommendations for corrective action, it enables IBM data centers to save valuable staff time, delay system upgrades, and transition to a more proactive approach to CICS system performance management.

Learn More about **C\TREK** ZCubed's Premier Performance Software.

What is C\TREK?

C\TREK is a performance and problem determination tool

- It should not be confused with current performance monitors
- C\TREK does not replace any of these products

C\TREK works in a real-time online environment

- C\TREK performs an in-depth analysis of the data being displayed and highlights any fields that require attention

C\TREK performs a complete Health Check of the CICS TS system in a matter of seconds

- Over 400 items are reviewed in a CICS z/OS system
- Currently, there are currently 169 in the VSE version with another 146 being added for a total of 315
- C\TREK has over 1400 different displays in the z/OS version and around 1000 in the z/VSE version which provides a significant picture of your CICS system

C\TREK applies formulas and Rules of Thumb (ROT) in its analysis of the data within a CICS region to identify potential performance issues and provides recommendations to optimize system performance

- There are many hidden issues that traditional performance monitors do not analyze

C\TREK Main Display

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TREC CTREK CORPORATION          C\TREK ON-LINE          S=          DATE 07/22/2022
APPLID CICSTS61                DOMAINS                TIME 13:54:06
VERSION 7.4                    MAIN MENU              TERM 0203

AP APPLICATION                 EP EVENT PROCESSOR    OT OBJ TRAN SERVICE  SM STORAGE MANAGER
AS ASYNCHR SERVICES           GC GLOBAL CATALOG     PA PARAMETER         SO SOCKETS
BA BUSINESS APPL              TE ECI TCP/IP         PG PROGRAM MANAGER  ST STATISTICS
CC LOCAL CATALOG              IS ISC TCP/IP         PI PIPELINE          TA TRANSITION ASST
CO CONSOLE QUEUE              KE KERNEL             PT PARTNER MNGEMENT TI TIMER
DD DIRECTORY                  LD LOADER             RL RESOURCE LIFE TM TR TRACE
DH DOCUMENT HANDLER           LG LOGGER             RM RECOVERY MANAGER TS TEMPORARY STORGE
DM DOMAIN                     LM LOCK MANAGER       RS REGION STATUS     US USER
DP DEBUG PROFILE              ME MESSAGE            RX RESOURCE RECOVRY WB WEB
DS DISPATCHER                 ML MARK-UP LANGUAGE  RZ REQUEST STREAMS  W2 WEB 2.0
DU DUMP                        MN MONITORING         SH SCHEDULE SERVICE XM TRANS MANAGER
EJ ENTERPRISE JAVA           MP MANAGED PLATFORM  SJ SYSTEM JAVA VM   XS SECURITY
EM EVENT MANAGER              NQ QUEUE MANAGER

OS OPERATING SYSTEM          SU PERFORMANCE OPTS  XX MISCELLANEOUS    MQ MQ SERIES INFO
D2 DB2                       KU VIEW/CANCEL USERS

                                PF12 PFKEY OPTIONS   WORKING WITH CAPS ON
                                @ :00.1              ^                      01/55
  
```

This is the main display that presents the different CICS domains in the CICS Transaction Server. You can get more detailed information about each individual domain by selecting it. At the bottom of the display, you will find several additional options to help you analyze your CICS TS system.

- **D2** – Obtain information about the DB2 connection to CICS TS
- **SU** – Submenu that is important in optimizing your CICS TS system
- **MQ** – Information about your MQ connection to CICS TS
- **OS** – Information about certain important areas that can affect your CICS TS performance
- **XX** – Additional information that is of use when analyzing your CICS TS system such as the abend handler information

Why should you use C\TREK?

C\TREK has a proven record of being able to recover resources in CICS TS systems

Clients who have used C\TREK have been able to recover CPU utilization by up to 20%

Clients have not only been able to recover CPU cycles but have also improved transaction response times, provided better look-aside hit ratios for files, improved disk utilization, recovered disk space, and improved virtual/real storage utilization

As a secondary benefit, system programmers have learned how to perform performance tuning and problem determination

C\TREK was developed by a series of professionals that performed CICS performance tuning and problem determination for over 30 years

You have limited CICS system programming resources and in many cases only perform tuning when a problem occurs

- Using C\TREK you can be proactive to conditions that can affect the performance of the CICS system

You can recover resources such as up to 20% in CPU cycles as experienced by other users

- Recover disk space
- Recover virtual/real storage
- Improve the transaction response times

As a result of using C\TREK, clients have been able to extend the life of their system deferring costly hardware and software upgrades

C\TREK Performance Optimization Menu

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SUSM CTREK CORPORATION          C\TREK ON-LINE          ----   DATE 07/22/2022
APPLID CICSTS61                 C\TREK PERFORMANCE AND TUNING  TIME 14:02:45
VERSION 7.4                     SUB-MENU                  TERM 0203

ACTX ..... ACTIVE TRANSACTIONS   STAT ..... TOP 100...
ADA ..... DATA BASE INFORMATION  STRG ..... CICS STORAGE OVERVIEW
EXST ..... EXCEPTION STATISTICS   SV ..... STORAGE VIOLATIONS
FILE ..... FILE SUMMARY           SYST ..... GLOBAL SYSTEM OVERVIEW
GRPH ..... GRAPHS                TCL ..... TRANSACTION CLASS
HLTH ..... SYSTEM HEALTH CHECK    TD ..... DCT TRANSIENT DATA
KNOB ..... CICS KNOBS AND BUTTONS  TERM ..... TERMINAL SUMMARY
OUTS 1C7AE570 IN PROCESS TRANSACTIONS TESC ..... TERMINAL SESSIONS
PROG ..... LIST OF ALL PROGRAMS    TS ..... TEMPORARY STORAGE
RATE 00FD7100 I/O ACTIVITY BY RATE   TSWI ..... TCB SWITCH INFORMATION
RSCR ..... RESOURCE SUMMARY TOTALS TTWA ..... TRANSACTIONS WITH TWA
SESS ..... SESSIONS SUMMARY       VTAM ..... VTAM BUFFER UTILIZATION
SHRD 41D072F8 SHARED GETMAIN INFO  WAIT ..... FILE WAITS
SIT ..... SIT CROSS REFERENCE

ENTER+CURSOR DISPLAY SELECTION PF1 HELP PF3 PREV PAGE PF5 MEMORY CLR MAIN MENU
  
```

An important internal CICS TS resources can be analyzed using the optimization options. Probably the initial point to tuning the system lies in executing the **Health (HLTH)** option where C\TREK checks for over **400 possible errors or problems**. This gives you an idea of the areas that must be reviewed in detail. Resources such as Programs, Temporary Storage, Storage Manager, Transient Data, System Initialization Table parameters, and File information can be analyzed in more detail.

C\TREK File Submenu

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OPFL CTREK CORPORATION          C\TREK ON-LINE          DATE 07/22/2022
APPLID CICSTS61                C\TREK PERFORMANCE AND TUNING  TIME 16:02:32
VERSION 7.4                    SUB-MENU                TERM 0203

----- PLEASE ENTER THE OPTION TO BE PROCESSED -----
A Buffers/Strings waits      N NSR Files              0 I/O Cost in MIPS
B Sorted By Type            O Over Allocated         1 All RLS Files Defined
C No Records in File        P Not Updated over 30 Days 2 All Remote Files Defined
D LSR Pool Analysis         Q No Free Space/Inserts   3 FCT Statistics
E I/O Activity              R Review Dataset Allocated 4 RLS Look-Aside Summary
F All Files Defined         S Suggested for Reorg     5 VSAM File EXCP/Second
G Files EXCP Analysis       T Track CISZ Utilization  6 Data Table Candidates
H Free Space/No Inserts     U Under Allocated        7 String Analysis
I Index CISZ Analysis       V Sorted by Volume ID
J Index Distribution        W VSAM Define Exceptions
K Key Compression Issue     X Excessive Extents
L LSR Files                 Y Data Tables
M Connect Time Details      Z Best CISZ

                                OPTION = E
  
```

The file submenu provides a complete analysis of all **VSAM activities**. Other performance monitors when analyzing VSAM files would take time since they usually perform their functions on one file at a time. C\TREK on the other hand will analyze all of the files at one time and provide a display with the results. C\TREK can also provide information regarding **LSR buffer usage** by identifying how many buffers each file is using out of the pool. This makes it easy to see if any file is monopolizing the buffer in the pool. Some of the new features include being able to identify which files are doing physical I/O operations and at what rate. Also, the information provided by C\TREK for RLS files is more complete than many other performance monitors. In C\TREK, another display demonstrates the look-aside hit ratio for each file including NSR files which are not provided by CICS TS or many other monitors. C\TREK will calculate the look-aside hit ratio for the LSR files as the percent provided by VSAM which is an average of all the files that use that buffer.

What are the advantages of using C\TREK?

Using C\TREK you can identify the areas that require the attention of even the most complex systems in a matter of an hour or two

- C\TREK identifies potential areas where resources such as the CPU can be recovered
- C\TREK identifies potential problem areas that can have a negative effect on your system's performance
- C\TREK highlights fields that require attention in yellow or red making it easy for the system programmer to spot areas requiring attention
- C\TREK provides recommendations on how to improve the system

C\TREK serves as an educational tool for new and experienced CICS system programmers on learning CICS internals, performance tuning, and problem determination

DB2 Submenu

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D2SM CTREK CORPORATION          C\TREK ON-LINE          DATE 07/22/2022
APPLID CICSTS61                DB2                     TIME 14:55:56
VERSION 7.4                    SUB-MENU                TERM 0203

D2CN ..... DB2 CONN SETTINGS      POOL/COMMAND THREADS, STATISTICS
D2CS 1C7B1660 DB2 SUBTASKS ENTRIES          ACTIVE TCBS AND TRACE ENTRIES
D2EL ..... DB2 ENTRY SUMMARY LIST  THREADS, AUTH, SETTINGS AND STATISTICS
D2LT ..... DB2 LIFE OF TASKS (LOTS) DB2 RUNNING TRANSACTIONS
D2SS ..... DB2 STATIC STORAGE AREA  STATIC AND GLOBAL INFORMATION ABOUT DB2
D2TN 1C7B1100 DB2 TRANS BY TRAN NAME        DB2 DEFINED TRANSACTIONS
D2TT 1C7B1100 DB2 TRANS BY TRAN ID         DB2 DEFINED TRANSACTIONS
D2TX ..... DB2 TRANSACTIONS ANALYSI DB2 TRANSACTIONS RECOMMENDATIONS
HIST ..... TCB HISTORY INFO OPTIONS (TCB = L, J, S, T, X)
THRD ..... DB2 THREAD ANALYSIS      DB2 THREAD RECOMMENDATIONS

ENTER+CURSOR DISPLAY SELECTION PF1 HELP PF3 PREV PAGE PF5 MEMORY CLR MAIN MENU
  
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Information regarding how well the DB2 connection is working within CICS TS is available. An analysis of the DB2ENTRY definitions is made and includes a recommendation if the number of threads should be increased. One can view how the L8 TCBS are working and whether they are currently connected to DB2.

Temporary Storage Summary

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TSSU CTREK CORPORATION          C\TREK ON-LINE          DATE 07/22/2022
APPLID CICSTS61                SUMMARY SCREENS        TIME 14:59:06
VERSION 7.4                    TEMPORARY STORAGE SUMMARY TERM 0203

PUT/PUTQ Main                   1 # TS Buffers          50 CIS Size             4,096
GET/GETQ Main                   1,026 # Buffer waits     0 CIS Allocated        359
PUT/PUTQ Aux                     1 Users w/ Buffrs      0 Peak CIS Used        2,50
GET/GETQ Aux                     5 Peak w/ Buffrs       0 % CIS Used (Peak)    8
Format Writes                    0 Buffer writes         0 Current CIS          8
Write > CISize                   0 Buffer Reads          0 % CIS Used (Curr)    2,22
Forced writes                     0 Max write Buffr      25 # AVI Byte/CI       4,032
I/O Errors                        0 cur write Buffr      7 Max CI Format        359
TS compress                       0                      Segms Per CI          63
Enter Lngst Q                     1 Buffer Locks          0 Bytes Per Seg       64
Lngst Aux RLEN                   80 % Buffer Reads       .00 String Locks      0
TS Qs In Use                      5 % Buffer writes       .00 # TS Strings       3
Peak TS Names                     6 % TS Buffer I/O       .00 Peak Strings      0
Times Q crted                     2 Recom Buffers        50 String waits       0
Aux Stor Exhtd                    0                      Peak wait Str         0
Cur TS Stor                      372 % Current TS Storage Used .0005
Peak TS Stor                      372 # TS Main Limit Reached 0
TS Main Limit                    67,108,864 Users waiting on String 0
ENTER REFRESH PF1 HELP PF3 PREV PAGE PF4 TS QUEUES CLR MAIN MENU
  
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Temporary Storage can also be analyzed including how well the string and buffers assigned are working.

C\TREK Program Submenu

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SUSM CTREK CORPORATION          C\TREK ON-LINE          prog          DATE 07/22/2022
APPLID CICSTS61                C\TREK PERFORMANCE AND TUNING TIME 16:11:27
VERSION 7.4                    SUB-MENU                TERM 0203

ACTX ..... #
ADA ..... # PLEASE ENTER ONE OF THE FOLLOWING SELECTIONS # OVERVIEW
EXST ..... # S - PROGRAM SUMMARY # ATIONS
FILE ..... # B - PROGRAMS BELOW 16 MB # M OVERVIEW
GRPH ..... # A - PROGRAMS ABOVE 16 MB # T DATA
HLTH ..... # D - PROGRAMS SORTED BY DSAS # MARY
KNOB ..... # M - MAPSETS # SIONS
OUTS 1C7AE570 # C - COBOL PROGRAM DATE ANALYSIS # ORAGE
PROG ..... # V - VS PROGRAM MAP # NFORMATION
RATE 00FD7100 # E - COBOL DATA (24) # WITH TRA
RSCR ..... # O - RUWA 24/31 AND COBOL OPTIONS # UTILIZATION
SESS ..... # I - AUTOINSTALLED PROGRAMS #
SHRD 41D072F8 # L - RPL LIBRARIES LOADED PROGRAMS #
SIT ..... # T - THREADSAFE PROGRAMS #
# P - COBOL OPTIONS - CBL CONTROL CARD #
# Q - QUASI RE-ENTRANT PROGRAMS #
# OPTION - S #
ENTER+CURSOR DISPLAY SELECTION PF1 HELP PF3 PREV PAGE PF5 MEMORY CLR MAIN MENU
  
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C\TREK also provides information regarding the programs in use. One particular option would be listing all the COBOL programs in order of their last change date which is one of the features in C\TREK. One can view the CBL control card options used for each COBOL program. This can be quite important where you may be running short of virtual storage below the line because even if the program was linked above the line, it may still be acquiring its working storage below the line because of the use of the DATA(24) CBL option. Another feature of C\TREK is listings of the threadsafe programs and those still pending conversion.

C\TREK Summary

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SYST CTREK CORPORATION          C\TREK ON-LINE          DATE 07/22/2022
APPLID CICSTS61                C\TREK SUMMARY SCREENS - TIME 14:43:01
VERSION 7.4                    SYSTEM SUMMARY          TERM 0203

----- MVS SUMMARY -----
Req Region Size                 0 Total CPU 00:07:31.1 LPAR Name NO LPAR
Average CPU                     3 Total SRB 00:01:16.2 Paging Rate 0
Average UIC                      65535 Total Accum 00:08:47.3 Available Frames 75,724
----- ABOVE -- TOTAL STORAGE - CPUS & PERFORMANCE --
LSQA/SWA stor (K)               332 20,892 Current Real Storage (K) 4,194,304
User Storage (K)                6,392 691,808 Real Storage In Use (K) 3,891,408
Region Size (K)                 8,168 1,855,808 Real Storage In IPL (K) 4,194,304
Free CSA (K)                    4,708 300,288 Gen Purpose CPUS 1 Totl MIPS 1940
Percent Free CSA                100.00 100.00 zIIP Type CPUS 0 Defn MSUs 6125
Memory Limit (MB)               10,240 zAAP Type CPUS 0 4 hr MSUs 1
----- ACTIVE TCBS ----- CICS SUMMARY -----
CO 00:00:34.6 D2 00:00:00.5 Total CICS CPU 00:07:15.1 Current # Task 5
FO 00:00:00.4 L8 00:00:01.5 CICS CPU Util % .10 Peak # Task 6
OR 00:06:28.7 RO 00:00:00.9 Norm CICS CPU % .10 MAXTASK Value 100
SZ 00:00:08.5 T8 00:00:00.3 SOS BLW/ABV/BAR NO Times At MAXTASK 0
OT 00:00:03.1 Times At SOS 0 Trans Per Second .007
Stor Violations 0 DB2 Pool Max Threads NO
DSA Limit (MB) 6 EDSA Limit (MB) 600
HWM Total DSA(MB) 2 HWM Totl EDSA(MB) 466
PF1 HELP PF3 PREV PAGE PF12 DISPLAY PF KEYS CLR MAIN MENU
  
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The C\TREK system provides an overview of how CICS TS is working providing combined information not only from CICS but from the operating system. This provides the user with a quick glance at any issues such as virtual storage, max tasks, CPU utilization, real storage, SOS conditions, and DB2 maximum threads. Therefore, providing a quick overview of how the system is working. C\TREK provides additional information from this screen such as the amount of CPU used by the different address spaces.

Complimentary 30-Day Trial Available

- A consultant onsite for 2 days who will install C\TREK™
- C\TREK™ performance education for you and your staff
- Tune your CICS environment using C\TREK™
- 30 days complimentary
- **Request Your Trial**

Contact us for a trial of C\TREK 973.299.9669 info@zcubedtech.com