



Welcome to the Virtual CICS user group newsletter. The Virtual CICS user group at www.fundi.com/virtualcics is an independently-operated vendor-neutral site run by and for the CICS user community.

Virtual CICS user group presentation

The latest webinar from the Virtual CICS user group was entitled, "C\Prof – visualizing CICS applications using only the CICS internal trace", and was presented by Ezriel Gross, CEO of Circle Software Inc.

Ezriel is quite a regular presenter here. He's also CEO at Circle Software Inc, an IBM Business Partner that specializes in hands-on classes in CICS, DB2, and MQSeries. Ezriel has been a 'Gold Consultant' for many years, and attends the annual Gold Briefing to keep current. Besides consulting, he teaches and develops CICS courses for both IBM and Circle. His specialties include: CICS Web services, CICS Web support, CICS performance/tuning, CICS internals, and CICSplex SM.

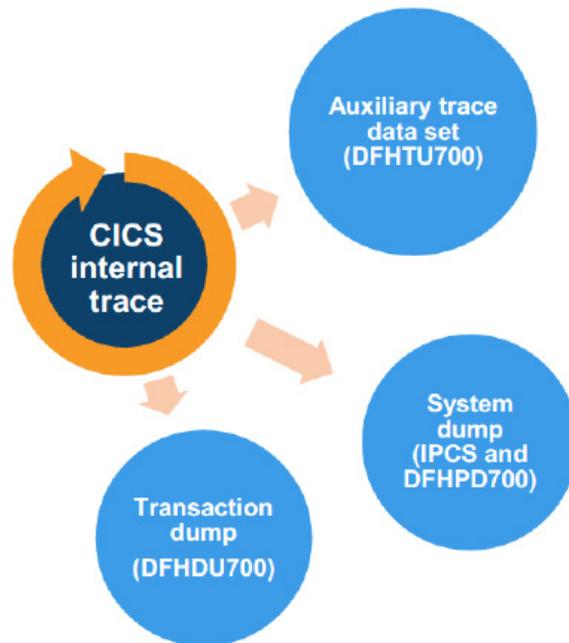
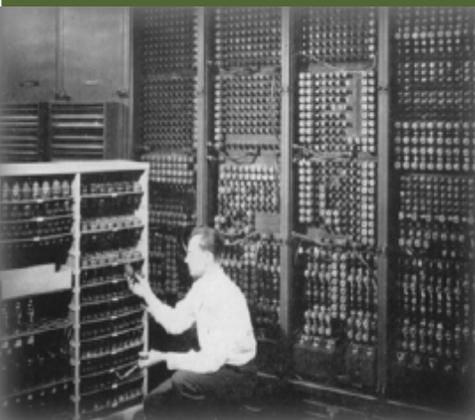


Figure 1: Tapping into the trace...

Ezriel started his presentation by looking at the CICS internal trace table. He explained it was 64-bit (above-the-bar) storage held inside the CICS region. It's allocated during CICS initialization – you control the size (16KB to 1GB). It contains trace entries

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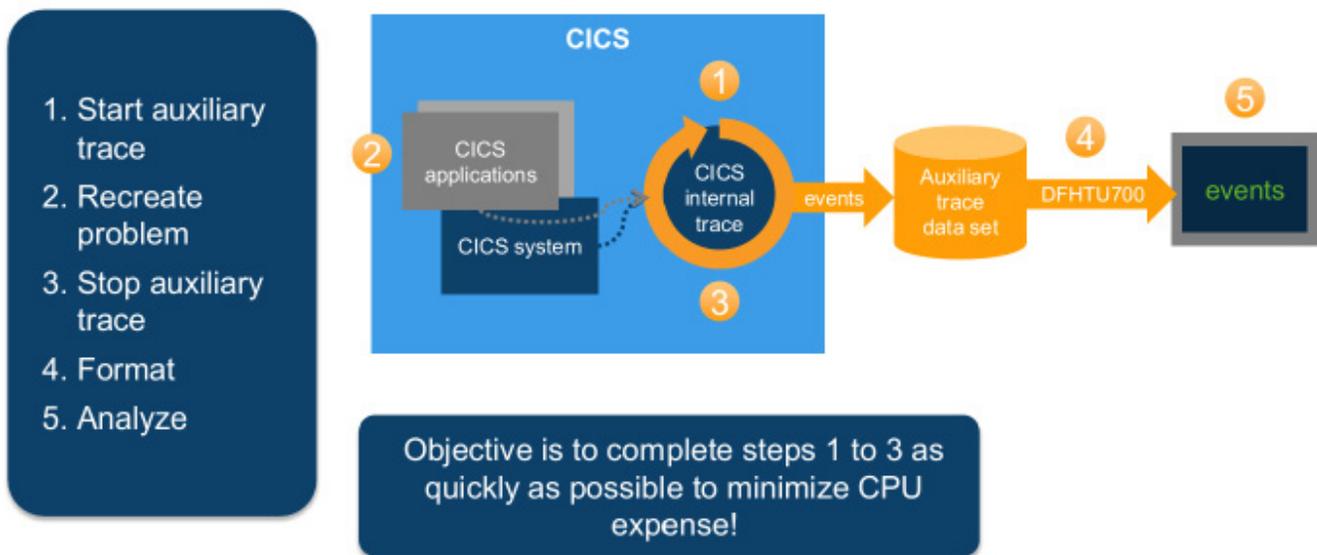


Figure 2: The CICS auxiliary trace

produced by CICS, and it wraps around when full (a “circular buffer”). All CICS regions have one – even when internal tracing isn’t started. It always contains exception entries (even if no trace destinations are started).

The standard tools (see Figure 1) use the CICS internal trace to capture trace information. It is a rich source of information, but the tools have their limitations.

How to use CICS auxiliary trace is shown in Figure 2. The system and transaction dumps available are:

- DFHPD700 and IPCS: format system dump
- DFHDU700: format transaction dump.

They are only useful when

CICS creates a dump in the first place (ABEND). They need other tools to uncover problems not caused by an ABEND.

Figure 3 illustrates using monitoring and exits and how they may require program changes in order to work.

Ezriel Gross assured the group that CICS auxiliary trace, system or transaction dumps, and monitors using agents and exits all had a higher CPU overhead than using C\Prof.

With C\Prof, the CICS trace becomes inexpensive to capture and simple to interpret. C\Prof unlocks the hidden value of the trace. Its low CPU usage means you can run it in production, and it’s ideal for permanent activation in development

environments. How C\Prof works is illustrated in Figure 4.

It works like this. The collector runs in a separate address space. It peeks inside CICS to look at CICS internal trace. CICS is unaware that this is happening! The CICS internal trace is collecting all the time. C\Prof collector pulls the data into archive data sets (GDG or dynamic) or to auxiliary trace data sets. The level of detail is only limited to what is stored in the trace. It can collect all the time, in a short burst, or take a quick snapshot! It can collect one region or multiple with same collector. You can use C\Prof to filter and sort transactions, view application events, and dive into the trace events themselves. It supports regions using MRO.

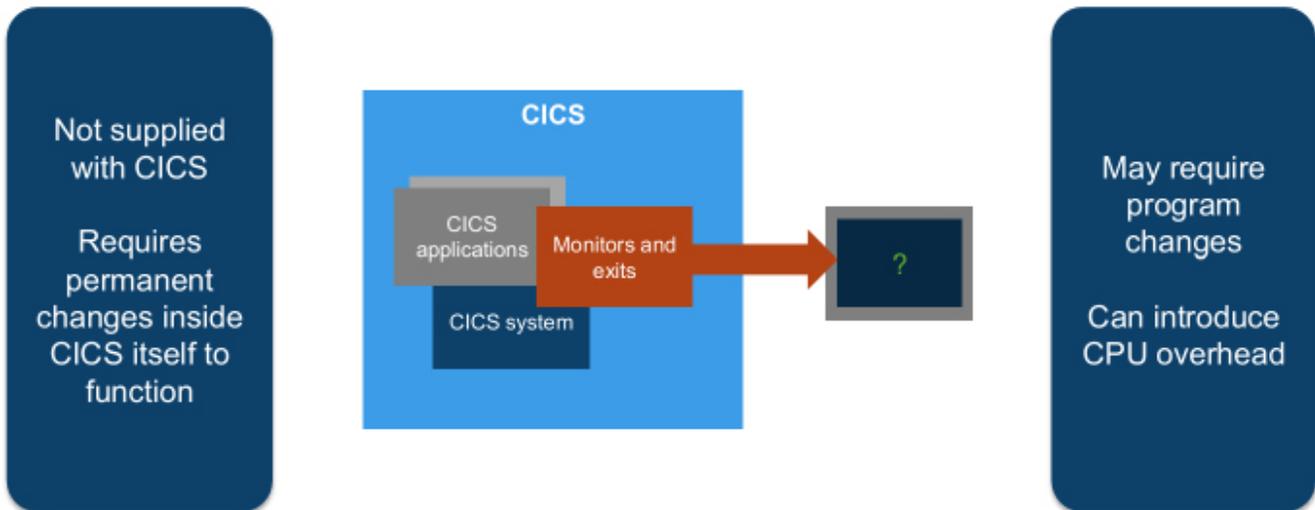


Figure 3: Interfering with CICS: monitors and exits

C\Prof completely replaces the CICS Auxiliary Trace.

The highlights of C\Prof are:

- Simple to get started (< 30 minutes).
- Transaction data supplied in near-real time
- An “application” view of your trace events. It collects event data from the CICS internal trace. You can find your transaction and drill down to application events, performance information, transaction breakdown by program, trace event ‘deep dive’.
- Adjustable trace levels – you can add additional trace points for more detail.
- It has all the features of the CICS auxiliary trace plus much more.

It has multiple trace capture modes. Snap takes a point in time snapshot of the CICS internal trace and looks ‘backward’ to see what recently occurred in CICS. It can capture recent events, even if the collector was not running at the time!

Record will record the future contents of the CICS internal trace to an auxiliary trace data set. This is like the CICS auxiliary trace, but it doesn’t involve CICS.

Profile captures the future contents of the CICS internal trace C\Prof archive data sets. It constructs an application perspective of the trace events.

To run C\Prof, you will need:

- CICS Transaction Server Version 4.2, 5.1, 5.2, or 5.3. A single C\Prof collector can support any mix of versions simultaneously.

- The CICS internal trace turned ON with sufficient trace table size. 32MB is sufficient for moderately busy systems. The trace table resides in 64-bit storage – a slight increase should not impact CICS.
- z10 hardware equivalent or higher. Better performance is gained by utilizing the newer instructions. z9 hardware with upgrades is acceptable.
- A small amount of additional CPU capacity. It’s required on the LPAR where CICS is running. Collection needs to keep up with the speed at which CICS is writing trace entries.
- Sufficient DASD space to save trace data for profiling – particularly if using dynamic data set allocation instead of GDG.



low overhead cross-memory collection that runs from a separate MVS address space

Figure 4: How C\Prof works

To set up the collector:

- 1 Install the C\Prof libraries using the instructions supplied in the C\Prof readme file.
- 2 Start the CICS internal trace in each region you wish to monitor.
- 3 Configure C\Prof for use in your environment using the C\Prof User's Guide and by completing each step outlined on the Administer ISPF dialog panel.

You can activate the CICS internal trace at any time using the CICS transaction CETR. Set Internal Trace Status to STARTED. Set Internal Trace Table Size to minimum of 32768 (32MB). And set Master System Trace Flag to ON. Alternatively, activate at CICS start-up using the SIT

parameters:

- SYSTR=ON
- INTTR=ON
- TRTABSZ=32768

Once you start the CICS internal trace for each region that you wish to monitor, you then:

- 1 Allocate the configuration and JCL library. This is used to store the configuration file and reusable JCL generated by the ISPF dialog.
- 2 Allocate the checkpoint data set. A VSAM KSDS is used to register the archive data sets created during collection. It acts as an index for the ISPF dialog.
- 3 Discover your CICS regions (and create a configuration file). It searches your LPAR for active CICS regions

and creates a default configuration file. You can choose between GDG archive data sets or dynamically allocated archive data sets

- 4 Edit the configuration file (optional). You can review collection settings and make changes as required (region grouping, data set naming, collection time limit, transaction filtering, trace levels, etc).
- 5 Define the archive data set GDG base entries (GDG only).
- 6 Generate JCL to run the collector (and then submit it!).

Using the profiler, you can drill down into the details of a transaction using one of the following views:

- Application Events (line action S) – EXEC CICS, JCICS, DB2 SQL, IMS DLI, MQ, etc; response codes; performance; program links; and resource involvement.
- Application Commands (line action C) – significant events in the life of the transaction
- Program Analysis (line action P) – graphical breakdown of transaction processing time by program and components
- Transaction Overview (line action O) – transaction statistics summary
- Trace Entries (line action T) – two sub-views: Short and Full.

The C\Prof archive data sets are used by the C\Prof collector to store data captured from the CICS internal trace. The configuration file specifies the checkpoint data set to use (use CHKPT= to configure). The checkpoint data set (VSAM KSDS) acts as an index into the archive data sets. It's used by ISPF dialog to find data, and it's used by the housekeeping task to clean-up expired data sets. There are two types: summary with high-level information; and detail with call/trace events (deep dive).

Ezriel then spent some time running through practical aspects of C\Prof in more detail.

A copy of Ezriel Gross's presentation is available for download from the Virtual CICS user group Web site at www.fundi.com/virtualcics/presentations/CPROFMar17.pdf.

You can see and hear the whole user group meeting by downloading the WMV file from www.fundi.com/virtualcics/presentations/2017-03-07meeting.wmv.

Meeting dates

The following meeting dates have been arranged for the Virtual CICS user group:

- 9 May 2017, when Ishai Biran, Product architect, AlgoriNet, Inc will be discussing "Recording CICS tasks".
- The following meeting is on 11 July 2017, when GT Software will be presenting.

We will be using Citrix GoToMeeting for the user group meetings.

Recent CICS articles

Now, you can use CICS TG V9.2 for Multiplatforms

documentation OFFLINE, as a PDF! by Janaki Sundar on CICS DevCenter (31 March 2017). You can find the article at: <https://developer.ibm.com/cics/2017/03/31/now-can-use-cics-tg-v9-2-multiplatforms-documentation-offline-pdf/>

Link to Liberty in CICS TS V5.3 – what's the performance cost? by Graham Rawson on CICS DevCenter (31 March 2017). You can find the article at: <https://developer.ibm.com/cics/2017/03/31/link-to-liberty-in-cics-ts-v5-3-whats-the-performance-cost/>

CICS – speaking new languages by Mark Hollands on CICS DevCenter (3 March 2017). You can find the article at: <https://developer.ibm.com/cics/2017/03/03/cics-speaking-new-languages/>

DFHDPLOY support for PROGRAM and PIPELINE by Alasdair Hunter on CICS DevCenter (1 March 2017). You can find the article at: <https://developer.ibm.com/cics/2017/03/01/dfhdploysupport-program-pipeline/>

CICS: The Gift That Just Keeps on Giving by Nick Garrod and Amy Reeve in *Enterprise Tech Journal* (2017 Issue 1). http://ourdigitalmags.com/publication/?i=391775#%22issue_id%22:391775,%22

numpages%22:1,%22page%22:10}

CICS: Threatening the Coffee Break!-How quickly can you provision your next CICS environment by Nick Garrod and Amy Reeve in *Enterprise Tech Journal* (2017 Issue 1).http://ourdigitalmags.com/publication/?i=391775#issue_id%22:391775,%22numpages%22:1,%22page%22:32

Using Microservices on z Systems With CICS Improves Flexibility and Reliability by Chris Poole in *IBM Systems Magazine* (March 2017). You can find the article at: <http://www.ibmssystemsmag.com/mainframe/administrator/cics/microservices-DevOps/>

Getting to grips with JCICS by Phil Wakelin on CICS DevCenter (27 February 2017). You can find the article at: <https://developer.ibm.com/cics/2017/02/27/jcics-the-java-api-for-cics/>

Using TRANCLASS with the CICS asynchronous API by Jenny He on CICS DevCenter (7 February 2017). You can find the article at: <https://developer.ibm.com/cics/2017/02/07/using-tranclass-with-the-cics-asynchronous-api/>

Using Java Transactions in CICS Liberty to coordinate JDBC updates by Alexander

D Brown on CICS DevCenter (1 February 2017). You can find the article at: <https://developer.ibm.com/cics/2017/02/01/using-java-transactions-in-cics-liberty-to-coordinate-jdbc-updates/>.

CICS news

Circle Software has announced C\Prof, a product that uses a new approach for gaining business and operational value from the CICS internal trace. C\Prof peeks inside CICS, but doesn't interfere with its execution. It is not a monitor and does not require changes to CICS. Unlike traditional approaches, C\Prof makes the CICS trace inexpensive to capture and simple to interpret. More information can be found at: <http://cprof.com>

Arcati Mainframe Yearbook 2017

The brand new Arcati Mainframe Yearbook is available now. You can access the download page at <http://www.arcati.com/newyearbook17/>. The Yearbook is available in PDF format and is completely FREE.

Sponsorship opportunity

The Virtual CICS user group is now offering software vendors the opportunity to advertise their products in a number of ways. E-mail trevor@itech-ed.com for full information about marketing opportunities with the Virtual CICS user group.

About the Virtual CICS user group

The Virtual CICS user group was established as a way for individuals using IBM's CICS TS systems to exchange information, learn new techniques, and advance their skills with the product.

The Web site at www.fundi.com/virtualcics provides a central point for coordinating periodic meetings (which contain technically-oriented topics presented in a webinar format), and provides articles, discussions, links, and other resources of interest to IBM CICS practitioners. Anyone with an interest in CICS is welcome to join the Virtual CICS user group and share in the knowledge exchange.

To share ideas, and for further information, contact trevor@itech-ed.com.

The Virtual CICS user group is free to its members.