



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, "CICS Tuning 101", and was presented by Eugene S Hudders, president of C\TREK Corporation.

Gene is president of C\TREK Corporation, a company that developed C\TREK, a performance and problem determination tool for CICS. He has worked on IBM mainframe computers for over 30 years. He has made presentations related to CICS and VSAM at technical conferences such as SHARE, CMG, and WAVV. In addition, Gene has written several books on CICS and VSAM in the areas of problem determination and tuning as well as many articles for technical magazines on the same

topics. In his current position, Gene continues to develop new performance functions for C\TREK software and provides consulting and educational services for clients in the USA and Latin America.

Gene started his presentation by introducing

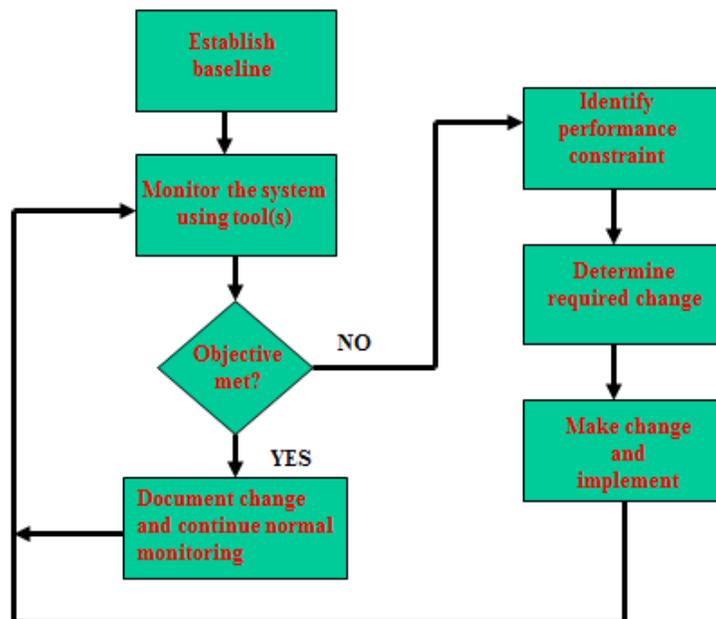
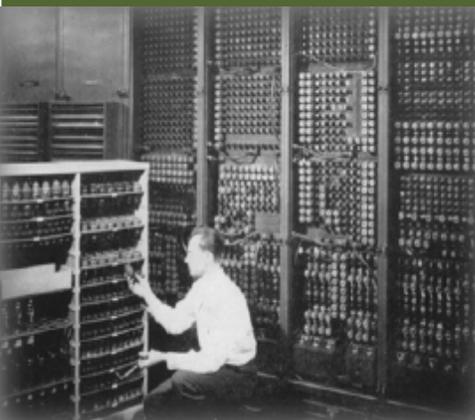


Figure 1: Methodology

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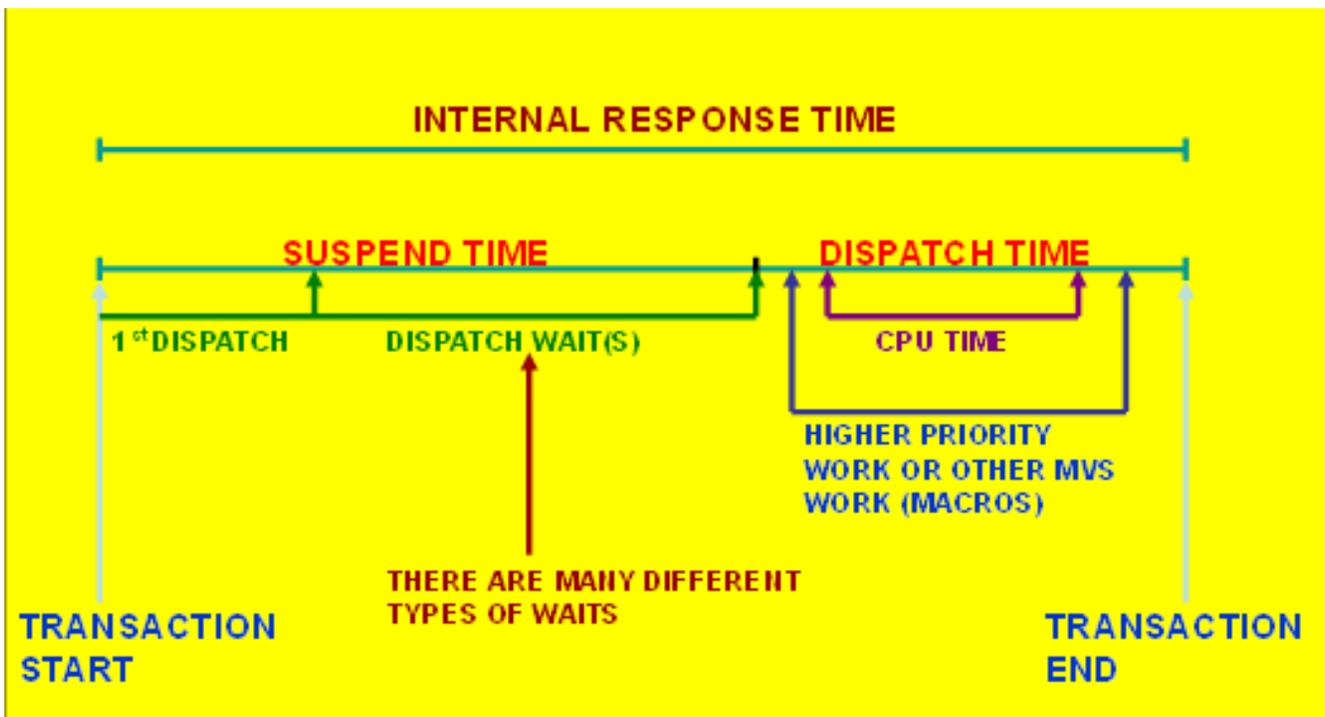


Figure 2: Response times

his basic performance tuning rules, which were: no two CICS systems are alike; to concentrate on 'big hitters' first (you must know CICS and the applications that run in that particular CICS to properly determine performance); don't be afraid to ask; and RTFM – there are many excellent presentations, technical articles, and books that can be of use.

Gene's general performance tuning guidelines are:

- Observe – understand the start-up procedure; understand your workload; set realistic objectives; and develop a baseline to which you can compare CPU utilization (overall and CICS), number of tasks/day or

hour (peak/average), response times.

- Measure – identify area(s) to tune, determine measurement timeline, and select tools to be used, either IBM-supplied (DFH0STAT, EOD Statistics, CICS tables/RDO information, LISTCAT etc) or third-party monitors/tools.

You need to:

- Analyze – review outputs; and identify tuning opportunities.
- React – make appropriate changes. Use test/quality environments first. Make major changes one at a time and follow installation change management standards. And ensure a

back-up/fallback plan is ready.

- Verify – review the results from changes and make appropriate changes, as required (some tuning may require several iterations, eg LSR pool tuning). Go back to the 'Measure' step until the change(s) are meeting your objectives.
- Implement – move to production and go back to observe.

The methodology is shown in Figure 1.

Next Gene took a look at constraints. There are CICS constraints such as MXT, SOS (VS limits EDSA/DSA), paging (real), TCLASS limits, DASD

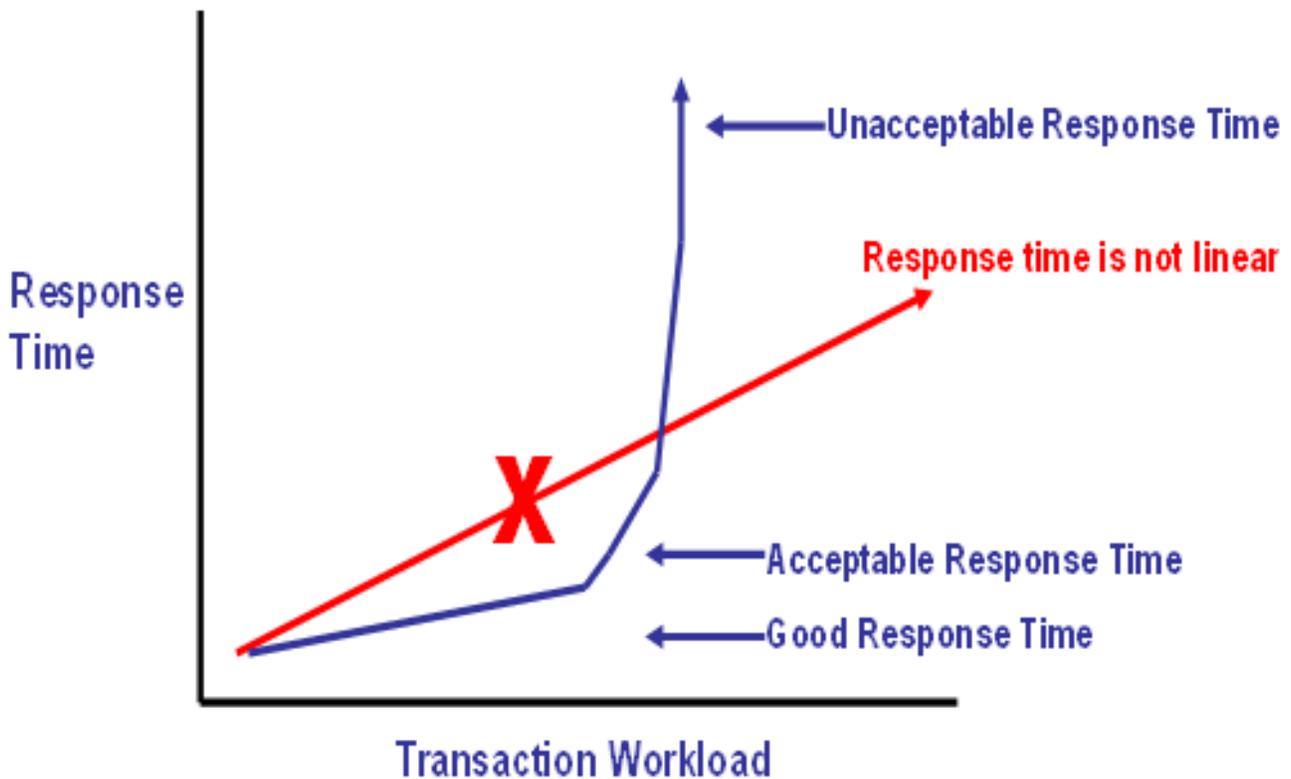


Figure 3: Anatomy of response time

problems (strings/buffers). Response times – internal, external. There are hardware constraints, eg processor cycles, real storage, I/O, network. And there are software constraints, such as database design and network design. Figure 2 shows the anatomy of response times.

Response time comprises two elements: suspend time (the time the task is not executing, ie waiting) and dispatch time (the time that CICS thinks the task is executing. This time can be divided into CPU time (the time the task is executing using the CPU) and wait time (the time the CPU has

been taken away from the task without the knowledge of CICS). This can be when higher priority work is ready to execute. It can also be caused by the task issuing operating system macros that may entail a wait (eg TD extra-partition request); or WLM decides that since CICS is exceeding its goal objectives (eg 90% of transactions response in less than 100ms), the CPU should be given to an address space that is not meeting its objectives; or the resolution of a page fault .

There are two types of 'CPU' time – Dispatch Time (the amount of time that CICS

thinks that your task is using the CPU) and CPU Time (the actual CPU time your task is using the CPU).

There are many different types of wait within a CICS system that are attributed to Suspend Time. Some wait type examples are: File I/O Wait, Terminal Wait, TS/TD Wait, Journaling Wait, Logger Wait, Inter-Region Wait, and other Wait types (ENQ Wait, Interval Control Wait, Lock Manager Wait, External Wait, CICS Waits (SOS/MXT, and String Waits). Figure 3 illustrates the anatomy of response times.

The objective of tuning I/O

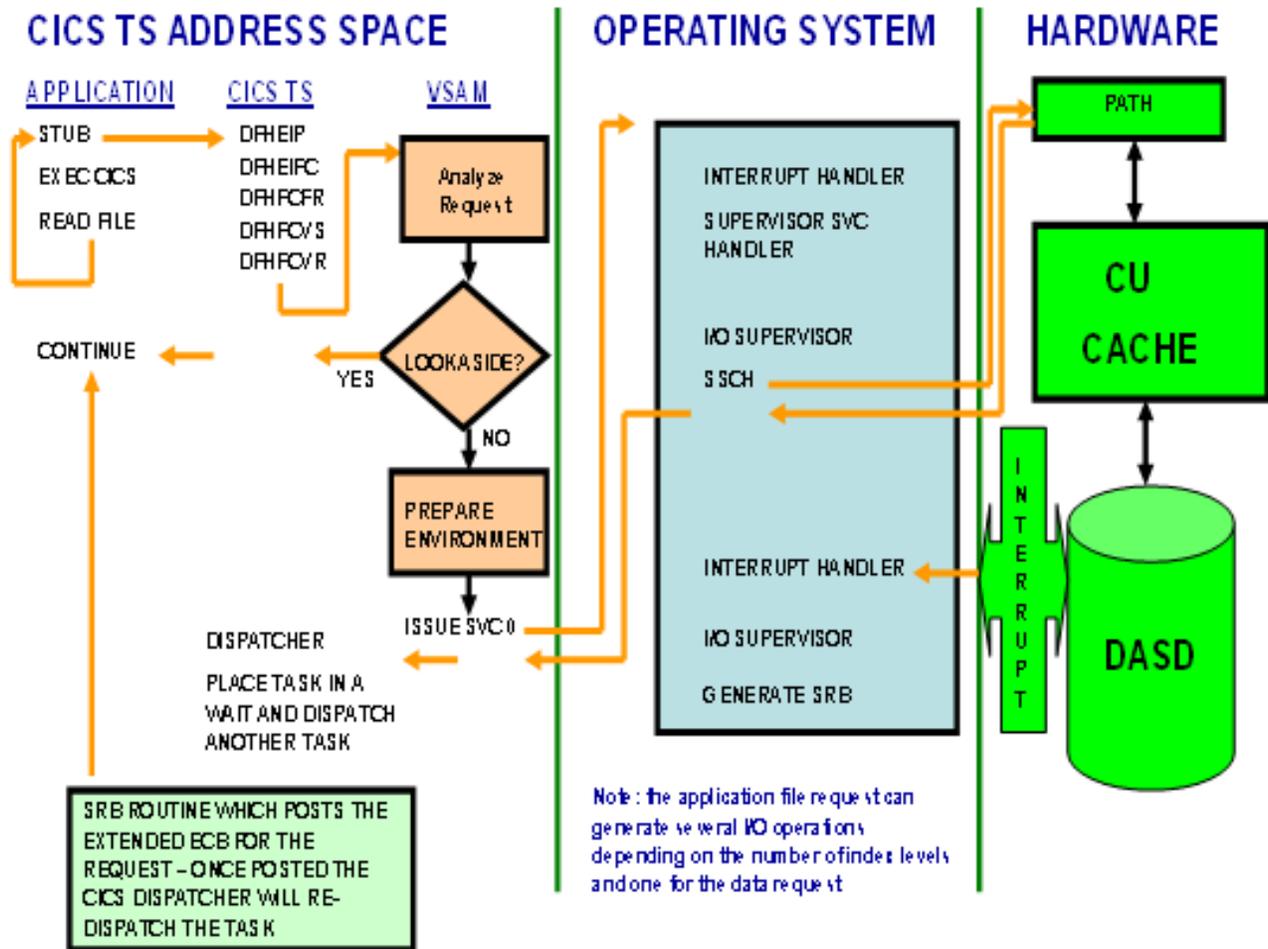


Figure 4: The very big I/O picture

is to reduce physical I/O activity to the DASD farm. Tuning entails adjusting buffers (Data and Index) so that the desired information is found in virtual storage and a physical I/O operation is avoided. There is a misconception that there's no need to tune I/O because DASD are faster and backed by cache that avoids the slow part of disk access (seek, rotational delay, and finally the transfer of the data. VSAM dataset tuning is still valid.

There is a major difference if the requested information is found in virtual storage versus if the requested information is found in the disk cache. To get to the record in the cache you still have to go through a lot of CPU instructions. This process generates more instructions than if the desired record was found in virtual storage. This process is called a "look-aside" hit. The very big I/O picture is shown in Figure 4.

Gene also looked in some detail at tuning CPU, file control tuning, real storage, and virtual storage.

He concluded by saying that to tune CICS you need the right tool that can identify areas that require attention and if possible recommendations. Start by tuning the SIT parameters because they are easy to implement and easy to monitor. And the biggest payback comes from I/O reduction.

A copy of Eugene's presentation is available for download from the Virtual CICS user group Web site at www.fundi.com/virtualcics/presentations/Tuning101May15.pdf.

You can see and hear the whole user group meeting by downloading the WMV file from www.fundi.com/virtualcics/presentations/2015-05-05meeting.wmv.

Meeting dates

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

- On 7 July, we have Mary Abdill, and her presentation is "Getting down to basics".
- On 8 September 2015, we have IBM's Keith Allen talking about "DevOps and CICS".

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

Recent CICS articles

Introduction to VSAM RLS by Roy Farren in *Cheryl Watson's tuning letter*.

You can find the article at http://assets.hwcs.com/articles/CherylWatson_IntroductiontoVSAMRLS_2015.pdf.

Delving Further Into the CICS Diagnostic Toolbox by Steve Burghard, Mark Woolley, and Andy Wright in the March/April issue of *Enterprise Tech Journal*. You can find the article at <http://ourdigitalmags.com/publication/?i=251894&p=22>.

Opening the REXX for CICS Toolbox by David Harman and Andy Wright in the March/April issue of *Enterprise Tech Journal*. You can find the article at <http://ourdigitalmags.com/publication/?i=251894&p=70>.

CICS news

H&W Computer Systems has announced the release of part 3 of their 2015 CICS report, Key CICS findings and survey demographics. Full details can be found at http://assets.hwcs.com/sysb-ii/white_papers/cics_report_2015_p3.pdf.

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.