Cheryl's Hot Flashes

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Technology ▪ Connections ▪ Results

Cheryl's Hot Flashes

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RMF & Sysplex

- User was running base system with default sysplex name of LOCAL; then changed to monoplex with a different sysplex id
  - RMF was unable to provide trending data across sysplex name change in RMF Monitor III
  - **Juergen Holtz** of IBM gave me a fix for this, but customer was no longer interested in testing it out since history was no longer kept online
  - If you have this problem and would like the fix, please let one of us know

Commonly Asked Questions

- **Moving to single CPU - will it hurt me?**
  - Maybe, maybe not, but high probability
    - Two potential problems:
      - Runaway jobs (e.g. loop in test CICS)
        - Need good monitor
        - Handy to have a KILLIT service class with max resource group limit of 1
      - High importance work that is now constrained and won't be on faster processor (e.g. CICS region)
        - Look for potential hitters by reviewing RMF/CMF during peak period; look for APPL% greater than 80%, especially when only one address space
  - Caution: get performance guarantee from vendor
    - Watch out for worthless penalties
    - Be sure you can return processor if your work suffers

Commonly Asked Questions

- **Is there much overhead in LPAR capping?**
  - Initially (1989) capping caused high overhead - about 10%
  - Microcode improvements to 3090J and S (3Q90) documented in WSC Flash 9115 (down to less than 0.3%)
  - Upgrade improvements were available at GA for 9021 and 9121
  - Thanks to **Gary Hall** and **Don Boos** for tracking this down
  - People are STILL hesitant to use capping on CMOS! Don't be.

  Techies have such LONG memories...

Cautions

- **Define ICFs Properly**
  - Default is to share OS CPs for ICF LPARs; be sure to specify ICF CPs or expect performance problems
  - **Norman Hollander** from Candle has seen many instances of poor definitions of these, especially with very low weights defined leading to disaster

- **Don't Assign all CPs to every LPAR**
  - Only causes overhead
  - Yes it's easier, but very inefficient
  - If dynamically changed, may make reporting more difficult
  - See my previous Hot Flashes (a year ago) for recommendations: I like to report TOTAL CPU busy instead of average CPU busy (e.g. 180% is total versus two CPs at 90% or 3 CPs at 60%)
    - ➜ **See Session #2545, WSC Performance Short Stories by Walt Caprice**

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Cautions

- Don't forget about the change in the catalog command in OS/390 R7 from:
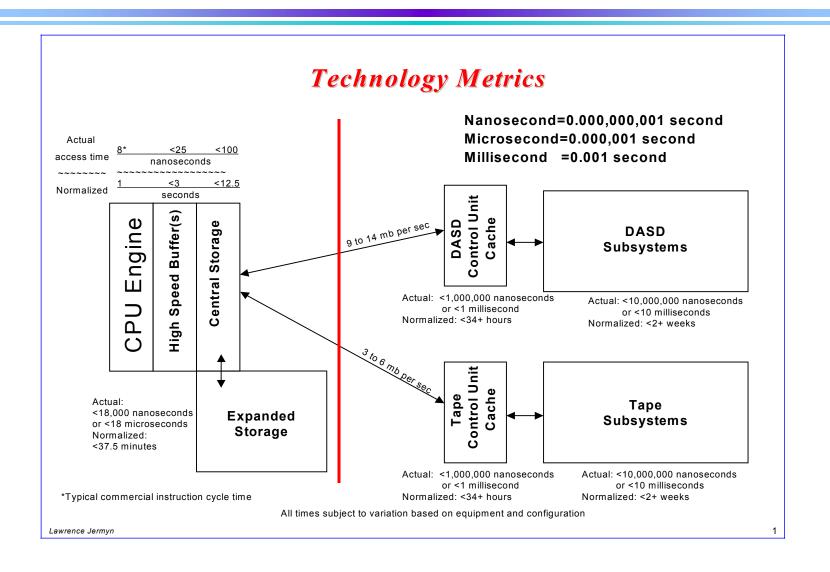
    F CATALOG,REPORT,VLF('dataset')
        to
    F CATALOG,REPORT,CACHE('dataset')

- Potential problem with VSAM Data Striping (OS/390 R10):
    - Many ISVs have front-end allocations that don't support data striping
    - Make sure you have a thorough testing phase

I/O Avoidance

- **Lawrence Jermyn** of Fidelity Investments wanted to illustrate the magnitude of the cost of doing an I/O relative to the speed of the processor.

  - He normalized the typical instruction cycle of 8 nanoseconds to 1 real second and provided the following diagram:

I/O Avoidance

Technology Metrics

Nanosecond=0.000,000,001 second
Microsecond=0.000,001 second
Millisecond   =0.001 second

Actual access time
| 8* | <25 | <100 |

nanoseconds

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Normalized
| 1 | <3 | <12.5 |

seconds

CPU Engine | **High Speed Buffer(s)** | **Central Storage**

9 to 14 mb per sec

DASD Control Unit Cache

DASD Subsystems

Actual: <1,000,000 nanoseconds
or <1 millisecond
Normalized: <34+ hours

Actual: <10,000,000 nanoseconds
or <10 milliseconds
Normalized: <2+ weeks

Actual:
<18,000 nanoseconds
or <18 microseconds
Normalized:
<37.5 minutes

Expanded Storage

3 to 6 mb per sec

Tape Control Unit Cache

Tape Subsystems

Actual: <1,000,000 nanoseconds
or <1 millisecond
Normalized: <34+ hours

Actual: <10,000,000 nanoseconds
or <10 milliseconds
Normalized: <2+ weeks

*Typical commercial instruction cycle time

All times subject to variation based on equipment and configuration

Lawrence Jermyn

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APARs

● APAR OW44517 (Hiper) - After OW39132, IEAVEOR (IOC003) may not decrement ASCBTCBS (closed 00/07/17, and applicable to OS/390 R5-7 with APAR and base R8-R9)

■ Performance degradation and/or high LPAR management time (33 MIPS to 69 MIPS in uncaptured time for one site)

■ **Bob Kemper** of Alltel saw a 20% increase in their batch window after implementing R8 with high priority production jobs swapped out with reason "Unilateral" while low priority jobs were swapped in with high reported velocities. (Bob points out that there a number of REQs for the PTFs.)

■ **Steve Schwaller** of KeyBank saw a decrease in unilateral swaps from 5000 to 150 during prime shift after applying the correcting PTFs. The impact of this problem seems more pronounced in goal mode.

More APARs

- APAR OW45192 - Invalid RCAECPU (CPU Service Units) for enclaves (open, applicable to OS/390 R6 - R8 when OW40548 applied)
  - Negative or invalid (huge!) service units values may show up for performance groups or service classes that contain enclaves. One site running heavy DDF work was especially affected by this. **Barry Merrill** has a good description of it in his MXG Newsletter Thirty Seven at **www.mxg.com**.

- APAR PQ26630 - Documents newly created TCP/IP abends and provides PTFs to implement the abends (99/06/03) - preferable to TCP/IP not starting!

WLM Notes

- Compat mode disappears in 1Q02 - yeah!
  - If concerned about how WLM will handle your loved ones, wait for R10 enhancements (see **John Arwe's** session from this SHARE, #2515)
  - See my article on why you should go to goal mode: **www.watsonwalker.com/articles.html**

- Concerned about your modeling tool not handling report classes in goal mode?
  - A solution is coming...
    - BMC's Mainview Predict (used to be Best/1) will provide support to do CPU sizing based on report classes - look for GA in 10/00
    - ISM's Perfman will provide support for report classes - no announced date yet

WLM Notes

- Use PERFORM= on JCL to change service class assignments dynamically
  - Great tool for operations (available in OS/390 R3; you must assign service class using classification rule of PF)

- Downloadable starting policies:
  - My Quickstart policy - be sure to read accompanying paper: **www.watsonwalker.com/articles.html**
  - WSC sample policy - be sure to not use ALL of the 50 service class periods - they're for a sample; you shouldn't use all of them! See **www.ibm.com/support/techdocs**, then click on Hints & Tips - TD100318

WLM Notes

- **Goal Mode Migration Aid Tool**

  - Helps convert large ICSes and IPSes to goal mode classification rules and service classes

  - Download for free at **www.s390.ibm.com/rmf**; select Tools

- **Keep Current With WLM Web Site**

  - **www.s390.ibm.com/wlm**

WLM APARs

- APAR OW43378 - Goal mode resource group minimum not being honored (open 00/07/11)
  - There are situations where the resource minimum may not be met even when the service classes in the resource group are missing their goals.

- APAR OW45117 - Higher importance server address space may be delayed by lower importance work (open 00/06/27)
  - One more APAR relating to this condition with CICS or IMS transactions in goal mode being delayed by lower importance work on CPU constrained systems.

- APAR OW42395 - Server address space swapped out and not swapping back in (closed 00/05/22, OS/390 R3 - R8)

Survey

- I took a survey of goal mode and parallel sysplex last November. Results can be found at www.watsonwalker.com/clist33.html:
  - 1. Are you running any system, even test, in goal mode?
    - 190 responses; 57% are in goal mode
  - 2. If not in goal mode, what is the PRIMARY reason?
    - 45% - not enough staff or time
    - 21% - waiting until after Y2K
    - 18% - concerned about potential problems with goal mode
    - 18% - see no apparent benefit
    - 16% - other
  - (Note: This was a VERY interesting response since in question 3a, 47% of the sites implemented goal mode within two weeks and 18% took less than a week!)

Survey

- 3a. How long did it take to convert your first (test) system?
  - 18% - less than a week; some said hours or one day (especially when using my Quickstart Policy!)
  - 13% - one week
  - 16% - >1 to 2 weeks
  - 26% - >2 to 4 weeks
  - 11% - >4 to 8 weeks
  - 17% - >2 months to 12 months
- 3b. How long did it take to convert the next system?
  - 45% - less than one week; most were hours, not days
  - 28% - 1 to 2 weeks
  - 11% - >2 to 4 weeks
  - 15% - over 4 weeks

Survey

- 3c. What is the largest benefit that goal mode gives you?

  – Increased throughput, better control, better reporting, operators like it better, better management

- 3d. What was the largest problem in going to goal mode?

  – Understanding WLM, waiting for PTFs, getting management approval

Good Reading

- SG24-5748 - A Performance Study of Web Access to CICS

- SG24-5597 - OS/390 and S/390 - ABCs of System Programming Volume 1 (4/00) - first of 5-volume set for sysprogs new to OS/390

- **Bob Yelavich** provides several excellent CICS articles at **www.yelavich.com**

Good Reading

- Great source for DB2:
  www.multimania.com/db2usa/eliendb2.htm

- Another DB2 site (pretty new): **www.db2link.com**

- Neat white papers at **www.ibm.com/support/techdocs**:
  - WP100185 - WSC WLM Migration Guide and Checklist
  - WP100109 - Measuring End-to-End Availability
  - WP100165 - Understanding Availability Management

Neat Things at This SHARE

- Great handout (recommended by **Bernie Domanski**): Session 5361/2/3 - AIX Kernel Internals by **Ken Rozendal** - 133 page handout; also find doc at **www.rs6000.ibm.com/doc_link/en_US/a_doc_lib/aixgen/**

- **Alice Cramer** of IBM was passing out notes in the Technology Exchange that said: The End is Near for IBM VS COBOL II…
    - Service support will end on March 31, 2001
    - VS COBOL II was the last COBOL product that contains both the compiler and the run-time library
    - Either migrate to Language Environment for migrate to IBM COBOL for OS/390 & VM

Neat Things at This SHARE

- Two excellent handouts on VTS:
  - 2599 - **Ned Diehl** - Analysis of Virtual Tape Systems - includes samples of reports from ISM's Perfman using SMF type 94 and 74 records
  - 2573 - **Linnea Nichols** - IBM VTS Implementation and Performance: User Experience - lots of report samples

- Don't miss **Kathy Walsh's** session 2500 - OS/390 Performance "HOT" Topics; **Also see her JES2 Performance Topics, #2657**

- One of my favorite sessions each SHARE: 2881 - **Sam Knutson** - Fully Wired Programmer's Free Software Tool Chest

Neat Things at This SHARE

- Availability suggestion from Mary Astley of WSC (after SOME people forgot which side to pick up their drinks from at volunteer luncheon where table settings for 10 people around a circular table were crammed pretty tight):

  - Left = fork = food (like bread and salad) = all are 4 characters
  - Right = knife/spoon = drink = all are 5 characters

  So next time, take the drink from your right and the bread from your left!

Questions

- **Email: cheryl@watsonwalker.com**

- **Web site: http://www.watsonwalker.com**

- **CD-ROM: http://www.watsonwalker.com/TUNING.html**