CA Datacom® Multi-user start-up options Old and New

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Abstract

- Hardware and environmental enhancements, changes in business requirements and enhancements to CA Datacom – many CA Datacom parameters are new or changed.

- It's time for a proper review.

- See the parameters we chose and why we chose them

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Biography

Owen is a technical consultant specialising in the CA Datacom and CA Ideal product families. He started working with the products in 1986 as a programmer, Database Administrator, and Systems Programmer at a VSE site. For 10 years he was a Technical Consultant at CA and became a member of the CA Datacom European Product Specialist group.

For the last 21 years he has worked with a variety of z/OS and z/VSE clients on projects ranging from OS and software upgrades/support to XML interfaces and zCloud implementations.

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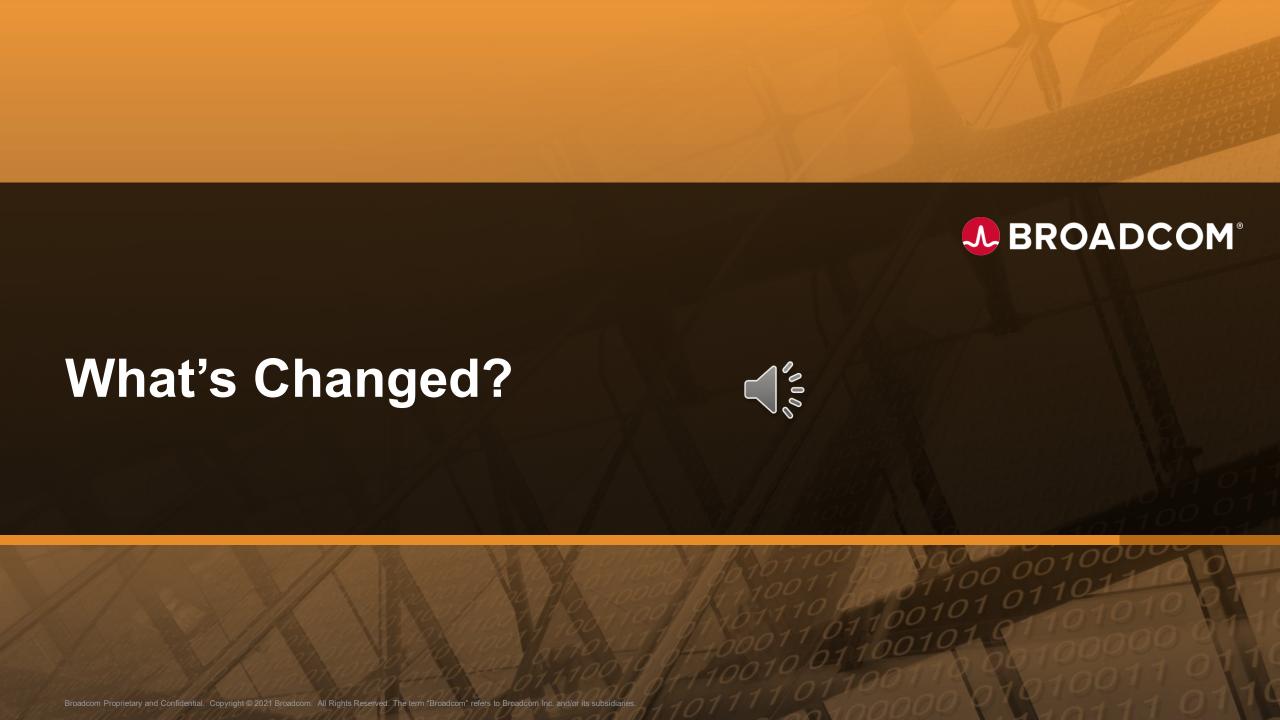
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Agenda

- What's changed?

- One site's Production MUF Start-up parameters

- Open Discussion

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What's Changed?

Hardware and environmental enhancements

The modern mainframe

- More physical storage, and LFAREA

- Faster DASD, and zHPF

- z/Architecture

- zIIP – The game changer

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Changes in business requirements

- Moving closer to 24x7 access

- Shorter maintenance windows

- Shorter batch windows

- Integration with new platforms

- Big data

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Enhancements to CA Datacom

Datacom 15.1 (and other releases since you last fully reviewed)

- Many new options

- Many new parameters

Datacom 15.1 PTF SO09683

- Simplification and Best Practice encouragement

- Some defaults have changed

- Some parameter values are now overridden

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Production MUF start-up parameters

Options to specify first in the MUF start-up deck

```
ECHO          NO                    ECHO CONSOLE MESSAGES

MESSAGE_TYPE_OVERRIDE W,01904   OPTION IS OBSOLETE AND IGNORED     OW-31

MUFMSG        YES,NO,NO             JOBNAME,SVC,SUBID PRECEDE MUF MSGS

*********************************************************************

*                      A M E N D M E N T   L O G                  *

* USERID | DATE          | REF    | DETAILS                        *

* -------+---------------+--------+--------------------------------*

* DBA007 | 13 NOV 2019 | OW-31 | RCERROR MINIMAL,NO,51001 (NEW)   *

*        |               |        | ACCT 5,64K->5,128K             *

*        |               |        | MESSAGE_TYPE_OVERRIDE W,01904 (NEW)  *

*********************************************************************
```

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Access

ACCESS   DF_DS_OP,21-999

- Defer Dataset Open until first real use
- Even if tables are present in application or CICS URTs
- Useful to identify data areas that are no longer in use
- Beware of using if HSM could archive the datasets
- In all other respects it acts like ACCESS OPTIMIZE

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Accounting

```
ACCT         0,32K,CLOSED,0K        ACCOUNTING TBL#,BFR,STAT,THRESHLD

ACCT         1,20K,CLOSED,0K        ACCOUNTING TBL#,BFR,STAT,THRESHLD

ACCT         2,128K,OPEN,0K         ACCOUNTING TBL#,BFR,STAT,THRESHLD    OW-31

ACCTPRM      004,005,NO             ACCTNG PRM DBID,ACCTNG DATA DBID,CPUTIME
```

- Keep unused tables closed until needed

- Tune buffer size using shutdown stats – ENTRY UNAVAILABLE should be zero

- Threshold should always be zero – use ACCT SPILL Ann if needed.

- ACCTPRM CPUTIME should always be NO

```
TABLE NAME: A02                  DATA BASE: 5

REQUESTS PROCESSED: 1,358,328,002 EXCPS: 21,334

LOCATES: 445,436                 ADDS: 439,913               UPDATES: 17,469

ENTRY UNAVAILABLE:  72           EXCLUSIVE CONTROL CONFLICTS: 0   SKIPPED DUE TO EXCLUSIVE: 0

CORE SIZE: 131,072               NUMBER OF ENTRIES: 995      ENTRIES RECLAIMED: 11,946

LOCATES INITIATED: 675           SPILLS INITIATED AXXTHLD: 0  INTERNALLY INITIATED SPILLS: 465
```

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Block Size Alter 24x7 feature preparation

```
AREA_BLOCK_SIZE_ALTER YES        ALLOW BA24
BLOCK_SIZE_ALTER_DATA2 90,174   Move DBIDs to DATA2 buffers
```

- Useful if you cannot afford an outage to convert to ½ track blocking
- Requires MUF recycle to implement the start-up parameters
- The DATAPOOL DATA2 buffer pool parameter may also need some adjustment
- Proper DBUTLTY tuning may be a valid alternative

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Static Buffer pools

`DATAPOOL 4096,10000,27998,20000    DATA and DATA2 pools`

- All user databases have been converted to ½ track blocking
- No need for DATAnn user buffer pools.

`SYSPOOL 99,36500,99999,,64,534M  CXX,IXX,DXX,bufsz,bit,LFAREA`

- CXXNO 99
- IXXNO calculated from sum of global DEFRAG report IXX blocks – all IXX blocks cached
- DXXNO maxed at 99999
- Unless you need 8K, allow bufsz to default to 4K
- Calculate LFAREA large enough to hold all IXX+DXX buffers
- We do not code LFAREA for Shadow MUF

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DEFRAG report – Use to calculate IXXNO for whole infobase

`DEFRAG DBID=115,PRTY=2`

<pre>
                                      DEFRAG REPORT

              BLOCKS   BLOCKS   BLOCKS   BLOCKS   PERCENT   INDEX   HIGH LEVEL
  KEY ID   BEFORE   COMBINED   DELETED   AFTER   DELETED   NOTES   AREA   INDEX BLOCKS

       1   22,254   0   0   22,254   0.00   IXX   59
       2   813   0   0   813   0.00   IXX   4
       3   812   0   0   812   0.00   IXX   3
       4   22,225   0   0   22,225   0.00   IXX   61
       5   364   3   3   361   0.82   IXX   2
   39321   1   0   0   1   0.00   INDEX FREE SPACE   IXX   0
  TOTALS   46,469   3   3   46,466   0.00   129
</pre>

- Sum the TOTALS value for all databases

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User-defined Buffer Pools

```
BUFFER_POOL_DEF DXX01,4K,10        Most-critical databases
BUFFER_POOL_DEF DXX02,4K,10        CA SYSTEM DATABASES
BUFFER_POOL_DEF DATA17,4K,10       CA DATAQUERY + SQL TTM
BUFFER_POOL_CONTENT DXX01,117,415,543 Most-critical databases
BUFFER_POOL_CONTENT DXX02,1-6,10,16,1000,1006,1007,1018-1020
BUFFER_POOL_CONTENT DATA17,3,17    CA DATAQUERY + SQL TTM
```

- SYSPOOL provides sufficient buffers for IXX blocks
- If using 99999 DXX blocks in SYSPOOL, then DXXnn can be useful
- Segregating TTM and DQ into its own datapool protects against inefficient queries
- Only 10 blocks allocated here, to improve MUF restart time.
- Block counts adjusted via console command after MUF start-up

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User-defined Buffer pools – post-startup commands and results

```
COMM OPTION=CONSOLE,OPTION2='BUFFER_POOL_COUNT DXX01,99999'

COMM OPTION=CONSOLE,OPTION2='BUFFER_POOL_COUNT DXX02,10000'

COMM OPTION=CONSOLE,OPTION2='BUFFER_POOL_COUNT DATA17,2000'
```

```
SYSVIEW ----------------- DCBUFP, CA Datacom MUF Buffer Usage Stats -----------------
Jobname PMUF00     ASID 00B6  Jobid STC01380  Datacom 15.1    Mode REGION

---------------------------------------------------------------------------------------
```

PoolName	BufSz	Count	Use-1	Use-1%	Use-2	Use-2%	Use-3	Use-3%	Use-4	Use-4%	Use-5+	Use-5+%
DATA	4096	10000	750k		130k		80059		78922		106m	99%
DATA_2	28000	20000	211m		170m		153m		143m		41.8g	98%
DATA17	4096	2000	3.89m	18%	86901		43952		41512		16.8m	80%
DXX	4096	99999	255m		227m		218m		213m		90.5g	99%
DXX01	4096	99999	92m		68m		66.1m		65.2m		38.6g	99%
DXX02	4096	10000	2.55m		1.64m		1.62m		1.59m		623m	98%
IXX	4096	36500	69274		67210		65943		65376		21.3g	99%

```
******************************* End of Data *******************************
```

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Memory Resident Data Facility - COVERED

COVERED IXX117,75%

COVERED A05177,80%

COVERED IXX415,40%,ACTIVE

COVERED IXX483,100%

- Use Monitor I/O stats, or use SQL to determine candidates

- Regular review and adjustment is essential

```
SYSVIEW -------------------------------- DCMRDF, CA Datacom MUF MRDF ------------------------

DBID Area Type      Open     Size Blocks MaxBlks BgnBlk HVBlock Dataspace Reads MReads AReads NReads
 177 A05   COVERED ACTIVE   939M  35200   35200                  64-BIT   23.2m  19.1m  4.14m
 117 IXX   COVERED ACTIVE   312M  80100   80100                  64-BIT   13.9m  13.8m   146k
 483 IXX   COVERED FIRST   1.15G   302k    302k                  64-BIT   11.2m  10.9m   301k  10248
 415 IXX   COVERED ACTIVE   970M   249k    249k                  64-BIT   18.4m  5.49m  12.9m

**************************************************** End of Data ****************************************************
```

Memory Resident Data Facility - VIRTUAL

```
VIRTUAL      IXX006,40M,8M,16     CBS TEMP INDEX

VIRTUAL      IXX017,120K,120K,7   TEMP WORK INDEX FOR SQL REQUESTS

VIRTUAL      TTM017,8M,8M,24      TEMP WORK AREA FOR SQL REQUESTS
```

- VIRTUAL now allows dynamic extend

- Allocate low and allow it to grow – especially for non-Production environments

- Set a cap on extends to deal with rogue queries

- Do not allocate at database level for SQL TTM

```
SYSVIEW ------------------------------- DCMRDF, CA Datacom MUF MRDF --------------
DBID Area Type      Open     Size Blocks MaxBlks HVBlock Dataspace Reads MReads VWrites
   6 IXX  VIRTUAL           40M   10240   10240    7851 64-BIT      142k   142k  9.68m
  17 TTM  VIRTUAL          15.9M   4080    4080    2606 64-BIT      6395   6395   4112
   . IXX  VIRTUAL          120K      30      30       8 64-BIT         7      7
```

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Buffer Pool By Area

```
BUFFER_POOL_DATA 177,A05,ACTIVE,100%
SUBTASK_AUTO 3600,BUFFER_POOL_RESIZE 177
```

- Size can be specified as a percentage or a literal value up to 19GB
- Can be BYTES/BLOCKS or HIGH (high-used mark) / ACTIVE (in-use blocks)
- Can be dynamically resized – even automatically!
- <u>Currently</u> limited to a maximum of 5 data areas only, no index areas
- Potentially a replacement for COVERED and BUFFER_POOL_DEF DATAnn for your absolutely constant-use heaviest hit data areas.

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Questions & Answers

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Thank You

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