

Db2 for z/OS Utilities Developments and Best Practices

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Agenda

- REORG
- LOAD/UNLOAD
- COPY/RECOVER
- RUNSTATS
- General
- Questions

REORG

- REORG DISCARD NOCHECKPEND
 - Prevent outages from discard processing
 - PH13527
- REORG data sort performance
 - Support DFSORT use of z15 SORTL instruction
 - New zparm UTILS_USE_ZSORT
 - Default is NO
 - PH28183

REORG

- Change SORTNPSI YES to always mean yes
 - Always sort NPSI index keys to allow gathering of NPSI stats for part-level REORG
 - Includes zparm REORG_PART_SORT_NPSI
 - PH34403

REORG

- Improve handling of part-level inline image copies in REORG
 - ICLIMIT DASD n
 - Zparm REORG_ICLIMIT_DASD
 - ICLIMIT TAPE n
 - Zparm REORG_ICLIMIT_TAPE
- Removes requirement for part-level inline copies with PBR RPN
- Minimum number still required to handle separate inline copies for LOB tablespaces
- PI75518

REORG

- Improve handling of part-level inline image copies in REORG contd.
- New messages

DSNU2937I csect-name - SEQUENTIAL INLINE IMAGE COPY PROCESSING SUMMARY
MAXIMUM NUMBER OF DASD IMAGE COPIES REQUIRED IS a
MINIMUM NUMBER OF DASD IMAGE COPIES REQUIRED IS b
ACTUAL NUMBER OF DASD IMAGE COPIES ALLOCATED IS c
MAXIMUM NUMBER OF TAPE IMAGE COPIES REQUIRED IS d
MINIMUM NUMBER OF TAPE IMAGE COPIES REQUIRED IS e
ACTUAL NUMBER OF TAPE IMAGE COPIES ALLOCATED IS f

DSNU2938I csect-name - UTILITY CANNOT ALLOCATE THE MINIMUM
NUMBER OF REQUIRED IMAGE COPY DATA SETS DUE TO KEYWORD OR
SUBSYSTEM PARAMETER SPECIFICATION

REORG

- REORG LASTLOG option to minimize drain duration
 - LASTLOG YES (default)
 - Updates found during last log iteration will be applied to shadow
 - Shadow datasets will be scanned and inline copies updated
 - LASTLOG NO
 - Any log record for target pageset found during last log iteration after drain will cause REORG to release the drain and later retry based upon existing RETRY options
 - LASTLOG NO can result in increased REORG failures due to RETRY limit being reached so consider increasing RETRY value, reducing MAXRO or scheduling REORG during quiet time to minimize impact
- PH33864

REORG

- REORG INDEX performance
 - Allow parallel processing of unload and build processing for index partitions
 - NOSYSUT1 option or REORG_INDEX_NOSYSUT1 zparm
 - Up to 80% elapsed time and 60% CPU savings
 - Off by default
 - PH25217
 - V13: From M500 onwards, option and zparm are ignored and function is always enabled

LOAD/UNLOAD

- LOAD PRESORT
 - Supports both DFSORT and Db2 Sort
 - PH23105
 - PH34323 delivers up to 24% elapsed time improvement
- Improved support for row change timestamp columns
 - OVERRIDE(ROWCHANGE) option to prevent generation of new values by LOAD
 - PH25572

LOAD/UNLOAD

- LOAD FORCE option
 - FORCE NONE|READERS|ALL
 - For SHRLEVEL NONE, force will occur at the initial drain
 - For SHRLEVEL REFERENCE:
 - » FORCE READERS forces all remaining threads at SWITCH time
 - » FORCE ALL forces writers at initial drain, all remaining threads at SWITCH time
 - PH24369
- Improved UNLOAD authorization
 - AUTH_COMPATIBILITY zparm set to SELECT_FOR_UNLOAD changed to allow unload when either SELECT or UNLOAD privilege exists
 - PH20168

LOAD/UNLOAD

- LOAD DEFAULTIF improvements
 - Support not equals in addition to equals
 - COL2 POSITION(5:10) CHAR(6) DEFAULTIF(COL1<>'ABC')
 - Support substitution with default in case of conversion error
 - COL2 POSITION(5:14) DATE DEFAULTIF(CONV_ERROR)
- PH30610

LOAD/UNLOAD

- LOAD FORMAT DELIMITED correction for DECIMAL data
- Inconsistent behaviour for LOAD FORMAT DELIMITED of DECIMAL EXTERNAL data
 - LOAD FORMAT DELIMITED ... (DEC1 POSITION(*) DECIMAL EXTERNAL(10,2))
 - Input: 123456
 - LOAD without FORMAT DELIMITED loads 1234.56 (right)
 - LOAD with FORMAT DELIMITED loads 123456.00 (wrong)
- Fixed by PH36908 in 12 with new zparm LOAD_DEL_IMPLICIT_SCALE
 - Default is NO (keep existing behaviour) – this is unchanged in V13
- QW0025IM flag added to IFCID 25 to identify this situation
- Recommendation: Run IFCID 25 over time and correct

LOAD/UNLOAD

- Consistent inline copy for LOAD
 - LOAD REPLACE will now handle inline copy in INDEXVAL and ENFORCE phases so image copy can be used by RECOVER
 - New TTYPE value of “V” in SYSCOPY indicates ic can be used for recovery
 - PH39300
- Improved inline copy handling by LOAD
 - Before PH40709 there are 2 choices
 - Single COPYDDN at tablespace level, but this serialises at ts level
 - COPYDDN at part level, but this means separate ic per part
 - With PH40709 a single COPYDDN at tablespace level will only serialise on parts to be loaded

COPY/RECOVER

- Redirected recovery
 - RECOVER object to a different target with no impact on source
 - Recovery testing, recovery time estimation, forensic data analysis, ...
 - Recover to point in time or current
 - Current implies point at which RECOVER utility executed
 - Target will always be made transactionally consistent
 - UTS tablespaces, indexes, LOB, XML all supported
 - Simple syntax: RECOVER TABLESPACE *testdb.testts* FROM *proddb.prodts*
 - PH27043 – data support
 - PH35266 – index support

COPY/RECOVER

- Redirected recovery contd.
- New messages – available for all RECOVERs:
 - DSNU1569I RECOVERY LOGPOINT IS X' rba-or-lrsn'
 - DSNU1568I log-phase – n LOG RECORDS READ, m LOG RECORDS APPLIED
- New TRANSLAT phase to translate OBIDs at target
- Target placed in copy-pending after RECOVER
- Recommended actions on target after RECOVER completion
 - REPAIR CATALOG; Run COPY to create new recovery base; REBUILD any indexes; CHECK DATA if in CHKP
- RECOVER at space level from part-level image copies
 - V13R1M100 and above

RUNSTATS

- Simplify sampling
 - PH07220
 - New zparm STATPGSAMP
 - NO
 - » Keep existing behaviour
 - YES
 - » Override row sampling to use page sampling with auto sampling rate
 - SYSTEM
 - » <V12R1M505 = NO
 - » >=V12R1M505 = YES

RUNSTATS

- Page sampling support in inline stats
 - V13R1M500 and above
- Dynamic profile support
 - USE PROFILE will delete from the catalog statistics that are not part of the profile to prevent problems with stale statistics
 - FL507

DSNU1390I csect-name THE UTILITY DELETED ALL EXISTING STATISTICS FOR THE TARGET OBJECT AND COLLECTED NEW STATISTICS WITH THE SPECIFIED PROFILE

RUNSTATS

- Improve performance and reduce memory consumption for COLGROUP/FREQVAL processing
 - If BOTH or HISTOGRAM specified then cap COUNT at 100 parts
 - If FREQVAL COUNT BOTH or LEAST and sampling <50% then override to MOST
 - PH25277

DSNU1393I csect-name VALUE SPECIFIED FOR COUNT IS OVERRIDDEN BY DB2

DSNU1394I csect-name KEYWORD keyword IS OVERRIDDEN WITH MOST

General

- CHECK SHRLEVEL CHANGE will now reset CHKP/ACHKP
 - PH25593
- TEMPLATE support for large block interface
 - New BLKSZLIM parameter
 - PH30093

General

- Utility history catalog table
 - Central oversight over utility executions
 - V13R1M501 and above
 - Zparm UTILITY_HISTORY = NONE|UTILITY
 - SYSIBM.SYSUTILITIES
 - Who, what, when, etc
 - New EVENTID column added to SYSCOPY to support correlation
 - Also reported in job output
 - Object and phase level detail to follow later

Summary

- New improvements delivered in utilities through maintenance even in 2021/22 - with much more planned
- Refer to information in IBM documentation and Db2 News from the Lab blog to keep up to date with new utility enhancements in V12 and now V13

Thank you