

Db2 for z/OS zPARM Survey and Simplification Overview

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November 2019
Session G

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Abstract

Db2 recently conducted a survey of zPARMs from customers. This session will cover the results of this survey. The intent of the this survey was to enable customers to understand where they are in relation to other customers for common zPARM values, and also to enable Db2 development to simplify Db2 settings and improve default values. This session will cover the results of this effort.

Agenda

- Review Db2 12 changes to zPARMS
- Overview of Customer zPARM Usage
- Summary
- Additional Information
 - Db2 12 zPARM change detail

Review Db2 12 changes to zPARMS



Removed zPARMs

- ALCUNIT - DB2 will allocate archive log datasets in cylinders
- CACHE_DEP_TRACK_STOR_LIM – Obsolete
- CACHEDYN_FREELOCAL – Obsolete
- CATALOG – DB2 always catalogs archive log datasets
- CHECK_SETCHKP – Operates as if NO was specified
- CONTSTOR, MINSTOR – Operates as if NO was specified
- DB2SORT – Operates as if ENABLE was specified
- EDMPOOL – Obsolete
- INDEX_IO_PARALLELISM - Operates as if YES was specified
- LEMAX – Obsolete
- LOBVALS, LOBVALA, XMLVALA, XMLVALS – DB2 manages
- REORG_IGNORE_FREESPACE – Operates as if NO was specified
- RRF – BRF is deprecated
- SQWIDSC – Operates as if YES was specified (different than DB2 11)
- UTSORTAL – Operates as if YES was specified

New zPARMS

- ALTERNATE_CP – Specifies alt SMS name for backup system
- AUTH_COMPATIBILITY – Controls SELECT for UNLOAD Auth
- CACHEDYN_STABILIZATION – Controls DSC Caching
- COMPRESS_DIRLOB – Controls compression of LOBs in the directory
- COPY_FASTREPLICATION – Controls COPY utility behavior
- DDL_MATERIALIZATION – Controls ALTER (pending or immediate)
- DEFAULT_INSERT_ALGORITHM – Controls INSERT behavior
- INDEX_MEMORY_CONTROL – Controls memory amount for FTB
- PAGESET_PAGENUM – Controls PBR behavior
- PEER_RECOVERY – Controls Peer Recovery behavior
- PROFILE_AUTOSTART – Controls autostart of the profiles
- RLFENABLE, RLFERRSTC, RLFERRDSTC - Controls RLF and Static RLF
- STATFDBK_PROFILE – Controls Stats Recommendation behavior
- UTIL_DBBSG, UTIL_LGBSG – Controls BACKUP System behavior
- UTIL_HSM_MSGDS_HLQ – Controls BACKUP/RESTORE System HLQ

Modified zPARMS

- APPLCOMPAT – Default for new install is V12R1
- EDM_SKELETON_POOL – Default is now 51,200 KB (up from 10,240)
- PREVENT_NEW_IXCTRL_PART – Default is now YES
- PRIQTY – Default is now 125 CYL
- SECTY – Default is now 15 CYL
- SMFACT – Default is now 1,2,3,7,8 (instead of 1)

Overview of Customer zPARM usage



Overview of Customer zPARM usage

- [zParm Review](#)
- Full Report is available at
 - <https://ibm.biz/BdY5C5>

Summary



Summary

- Db2 12 has removed a number of older zPARMs
- Based on the 2018 Survey there are a number of zPARMs that are candidates for removal to further simplify Db2 installation and Migration

Thank You
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Additional Information



Appendix: A summary of DB2 12 zparm changes

The following have been added:

ALTERNATE_CP: Specifies the name of an alternate SMS copy pool for the DB2 BACKUP SYSTEM utility. This copy pool, if specified, will be automatically alternated with the standard copy pool when creating system level backups.

Macro: DSN6SPRM

Range:

- 1 – 14 alphanumerics: Indicates what BACKUP SYSTEM will use as the name of the alternate pool backup storage for system level backups and what RESTORE SYSTEM will use as the name of the alternate pool backup storage group for system level recoveries.
- Blank: Means that BACKUP SYSTEM will use the name specified in the ALTERNATE_CP keyword (if present) of the utility control statement as an alternate pool backup storage group when making the system level backup.

Default: blank

AUTH_COMPATIBILITY: A list of options for overriding certain default authorization checks.

Macro: DSN6SPRM

Range: blank or or one of more of the following:

- SELECT_FOR_UNLOAD: If this option is specified, the UNLOAD utility checks if the requester has the SELECT privilege on the target table. Otherwise, the UNLOAD utility checks if the requester has the UNLOAD privilege on the specified table.

Default: blank

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

CACHEDYN_STABILIZATION: Specifies how DB2 is to stabilize cached dynamic SQL statements. When a statement is stabilized, the current SQLID, statement text, and runtime structures are written to catalog tables. When a dynamic SQL statement is not present in the dynamic SQL statement cache, DB2 will load the runtime structures if available from the SYSIBM.SYSDYNQUERY catalog table rather than performing a full prepare.

Macro: DSN6SPRM

Range:

- **CAPTURE:** Statements may be stabilized through the -START DYNQUERY command via both MONITOR(NO) and MONITOR(YES). DB2 will not load stabilized statements from SYSDYNQUERY.
- **LOAD:** Statements may not be stabilized via any means. The -START DYNQUERY command will fail, and any MONITOR(YES) commands in progress will not stabilize statements, even if stabilization criteria are matched. During long prepare, DB2 will attempt to load stabilized statements from SYSDYNQUERY with which to run.

- **BOTH:** Statements may be stabilized through the -START DYNQUERY command via both MONITOR(NO) and MONITOR(YES). During long prepare, DB2 will attempt to load stabilized statements from SYSDYNQUERY with which to run.
- **NONE:** Statements may not be stabilized via any means. The -START DYNQUERY command will fail, and any MONITOR(YES) commands in progress will not stabilize statements, even if stabilization criteria are matched. DB2 will not load stabilized statements from SYSDYNQUERY.

Default: BOTH

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

COMPRESS_DIRLOB: Specifies whether LOB table spaces in the DB2 directory are to be compressed. In DB2 data sharing, all members should use the same setting.

Macro: DSN6SPRM

Range:

- NO: Means that LOB table spaces in the DB2 directory are not compressed.
- YES: Means LOB table spaces in the DB2 directory are compressed the next time they are reorganized.

Default: NO

COPY_FASTREPLICATION: For the COPY utility, specify whether FlashCopy fast replication is PREFERRED, REQUIRED, or NONE for the creation of the FlashCopy image copy.

Macro: DSN6SPRM

Range:

- PREFERRED
- REQUIRED
- NONE

Default: PREFERRED

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

DDL_MATERIALIZATION: Specifies when DB2 should materialize changes to the definition of an object. This option applies only for changes by ALTER TABLE ALTER COLUMN SET DATA TYPE to alter a column's data type, length, precision, or scale where the underlying table space is a universal table space (or where there is an unmaterialized pending alter to convert the table space to a universal table space) whose data sets have already been created. This option is ignored for other circumstances or for alterations that must be executed as a pending alteration or must be executed as an immediate alteration.

Macro: DSN6SPRM

Range:

- **ALWAYS_IMMEDIATE:** For applicable requests, changes are materialized at the time the request is executed and the containing table space is placed in AREO* / REBUILD pending state. If there are any existing unmaterialized pending changes, the request fails. This is the existing behavior for ALTER TABLE ALTER COLUMN SET DATA TYPE.
- **ALWAYS_PENDING:** For applicable requests, changes are not materialized at the time the request and the affected objects are available until it is convenient to implement the changes. The containing table space is placed in AREOR state. If any immediate options specified in same statement, the change request fails. If any subsequent immediate changes are executed before a pending change is materialized, those subsequent immediate changes fail.

Default: ALWAYS_IMMEDIATE

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

DEFAULT_INSERT_ALGORITHM: Specifies the default algorithm for inserting data into table spaces, influencing the insert algorithm for MEMBER CLUSTER universal table spaces for which INSERT ALGORITHM 0 has been specified.

Macro: DSN6SPRM

Range:

- 1: The basic insert algorithm is used.
- 2: The fast insert algorithm is used.

Default: 2

INDEX_MEMORY_CONTROL: Specifies the amount of memory that DB2 should allocate for fast traversing of DB2 indexes.

Macro: DSN6SPRM

Range:

- AUTO: Specifies that DB2 sets the upper limit of the storage to 20 percent of currently allocated buffer pools (as opposed to the defined buffer pool size).
- DISABLE: Specifies that DB2 returns any existing storage allocated for fast index traversal and allocates no further storage for the purpose.
- 500 to 200000: Indicates the storage limit in megabytes for fast index traversal.

Default: AUTO

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

PAGESET_PAGENUM: Specifies whether table spaces range-partitioned table spaces will be created to use absolute page numbers across partitions or relative page numbers.

Macro: DSN6SPRM

Range:

- ABSOLUTE: Means that PBR table spaces and associated indexes are created with the same format and use of page number as DB2 11.
- RELATIVE: Means that PBR table spaces will be created so that PGNUM in the page header has no partition number, and the partition number is only contained in the header page for the partition.

Default: ABSOLUTE

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

PEER_RECOVERY: Specifies whether a data sharing member is to participate in data sharing peer recovery.

Macro: DSN6GRP

Range:

- **NONE:** This member is not to participate in peer recovery. Use this option if you have configured the z/OS Automatic Recovery Manager (ARM) to restart failed DB2 members.
- **RECOVER:** This member should be recovered by a peer member in case it fails.
- **ASSIST:** This member should attempt to initiate peer recovery for other failed members. When this member detects a failure, it will attempt to initiate a LIGHT(YES) restart for the failed member if it hasn't already been initiated to recover the retained locks.
- **BOTH:** Both RECOVER and ASSIST options are to be activated for this member.

Default: NONE

PROFILE_AUTOSTART: Specifies whether START PROFILE command processing is to be automatically initiated as part of DB2 startup processing.

Macro: DSN6SYSP

Range:

- **NO:** Indicates no automatic start behavior.
- **YES:** Specifies that START PROFILE command processing is to be automatically initiated when DB2 is started. This option is ignored if DB2 is started with an ACCESS(MAINT) or LIGHT(YES) specification. Note: This option can impose a delay of DB2 availability when DB2 is started.

Default: NO

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

RLFENABLE: Specifies the level of RLF governing when the Resource Limit Facility (RLF) is started.

Macro: DSN6SYSP

Range:

- DYNAMIC: Govern only dynamic SQL statements.
- STATIC: Govern only static SQL statements.
- ALL: Govern both dynamic SQL and static SQL statements.

Default: DYNAMIC

RLFERRSTC: Specifies what action DB2 is to take for static SQL statements when the Resource Limit Specification governor encounters a condition that prevents it from accessing the Resource Limit Specification table. This setting also applies if DB2 cannot find an applicable row in the resource limit specification table.

Macro: DSN6SYSP

Range:

- NOLIMIT: Allows all static SQL statements to run without limit.
- NORUN: Terminates all static SQL statements immediately with an SQL error code.
- 1 - 5000000: Specifies the number of service units to use as the default resource limit for all static SQL statements. If the limit is exceeded, the SQL statement is terminated.

Default: NOLIMIT

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

RLFERRDSTC: Specifies what action DB2 is to take for a static SQL query from a remote location when the Resource Limit Specification governor encounters a condition that prevents it from accessing the Resource Limit Specification table. This setting also applies if DB2 cannot find an applicable row or cannot find the column for the query user's location in the resource limit specification table.

Macro: DSN6FAC

Range:

- **NOLIMIT:** Allows the remote static query to run without limit.
- **NORUN:** Terminates the remote static query immediately with an SQL error code.
- **1 - 5000000:** Specifies the number of service units to use as the default resource limit for a remote static query. If the limit is exceeded, the query is terminated.

Default: NOLIMIT

STATFDBK_PROFILE: Specifies whether statistics recommendations identified during query optimization should result in modifications to statistics profiles.

Macro: DSN6SPRM

Range:

- **YES:** Means that DB2 will modify statistics profiles based on statistics recommendations during query optimization.
- **NO:** Means that DB2 will not modify statistics profiles based on statistics recommendations during query optimization. DB2 may still write the recommendations to catalog table SYSIBM.SYSSTATFEEDBACK depending on the value of subsystem parameter STATFDBK_SCOPE.

Default: YES

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

UTIL_DBBSG: Specifies the name of a backup SMS storage group to be used by the DB2 BACKUP SYSTEM utility for the DB copy pool.

Macro: DSN6SPRM

Range:

- Blank: Means that BACKUP SYSTEM will have HSM use the COPY POOL BACKUP storage group that is associated with each storage group specified for the copy pool.
- Valid SMS storage group name: Permitted only when ALTERNATE_CP is non-blank. This storage group must have been defined with the COPY POOL BACKUP attribute.

Default: blank

UTIL_LGBSG: Specifies the name of a backup SMS storage group to be used by the DB2 BACKUP SYSTEM utility for the LOG copy pool.

Macro: DSN6SPRM

Range:

- Blank: Means that BACKUP SYSTEM will have HSM use the COPY POOL BACKUP storage group that is associated with each storage group specified for the copy pool.
- Valid SMS storage group name: Permitted only when ALTERNATE_CP is non-blank. This storage group must have been defined with the COPY POOL BACKUP attribute.

Default: blank

Appendix: A summary of DB2 12 zparm changes

The following have been added (continued):

UTILS_HSM_MSGDS_HLQ: Specifies the high-level qualifier for data sets to be allocated by the DB2 BACKUP SYSTEM and RESTORE SYSTEM utilities in order to receive messages from IBM Hierarchical Storage Management (HSM) and IBM Data Facility Data Set Services (DFDSS). These messages will be included for diagnostic purposes in DB2 utility SYSPRINT DD output.

Macro: DSN6SPRM

Range:

- Blank: Means that utilities do not receive these messages from HSM and DFDSS and do not include them in diagnostics.
- A valid data set qualifier of 1 to 6 characters: A high-level qualifier that must also be registered in HSM via a SETSYS command. Data sets that use this high-level qualifier will be defined and populated by HSM and DFDSS during BACKUP SYSTEM and RECOVER SYSTEM processing, then allocated by DB2 and the content written to the utility's SYSPRINT DD. DB2 will then delete the data set. These data sets will not include messages from DUMP processing because control is returned to DB2 before dump processing is complete.

Default: Blank

Appendix: A summary of DB2 12 zparm changes

The following have been modified:

APPLCOMPAT: Specifies the DB2 level for downward compatibility with applications.

Macro: DSN6SPRM

Change: The default setting is now V12R1 instead of V11R1.

Reason: Release maintenance

EDM_SKELETON_POOL: Specifies the size in KB of the EDM skeleton pool.

Macro: DSN6SPRM

Change: The default is now 51,200 KB instead of 10,240.

Reason: Exploit DB2 12 storage management changes to improve performance

PREVENT_NEW_IXCTRL_PART: Whether DB2 disallows the creation of new index-controlled partitioned tables.

Macro: DSN6SPRM

Change: The default is now YES instead of NO

Reason: Good practice to avoid creating new index controlled partitioned tables

PRIQTY: Specifies the amount of primary space that is to be allocated for archive log data sets

Macro: DSN6ARVP

Change: The default is now 125 cylinders instead of 4320 blocks

Reason: Performance. Modern DB2 log archiving demands are not well suited for allocation in blocks.

SECQTY: Specifies the amount of secondary space that is to be allocated for archive log data sets

Macro: DSN6ARVP

Change: The default is now 15 cylinders instead of 540 blocks

Reason: Performance. Modern DB2 log archiving demands are not well suited for allocation in blocks.

SMFACCT: Specifies which DB2 accounting traces are to be sent automatically to SMF

Macro: DSN6SYSP

Change: The default is now '1,2,3,7,8' instead of '1'

Reason: Provide additional data for tuning

Appendix: A summary of DB2 12 zparm changes

The following have been removed:

ALCUNIT: The units (blocks, tracks, or cylinders) for primary and secondary space allocations for archive log data sets.

Macro: DSN6ARVP

Reason: Performance. Modern DB2 log archiving demands are not well suited for allocation in tracks or blocks.

→ DB2 12 allocates archive log data sets only in cylinders

CACHE_DEP_TRACK_STOR_LIM: The amount of storage in gigabytes that DB2 will allocate for hashing entries in the dynamic statement cache.

Macro: DSN6SPRM

Reason: Storage management changes in DB2 12 have made this parameter obsolete.

→ DB2 12 allocates this storage by a different means

CACHEDYN_FREELocal: Whether DB2 can free cached dynamic statements to relieve DBM1 below-the-bar storage.

Macro: DSN6SPRM

Reason: Storage management changes in DB2 12 have made this parameter obsolete.

→ DB2 12 allocates this storage only ATB

CATALOG: Whether archive log data sets on tape are to be cataloged

Macro: DSN6ARVP

Reason: Modern systems use automated tape management

→ DB2 12 operates as if CATALOG=YES, even for writing archive log data sets to tape.

CHECK_SETCHKP: Whether the CHECK DATA and CHECK LOB utilities are to place inconsistent objects in CHECK PENDING status.

Macro: DSN6SPRM

Reason: Availability

→ DB2 12 operates as if CHECK_SETCHKP=NO, which is also the default in DB2 11.

CONTSTOR: Whether DB2 is to periodically contract each thread's working storage area.

Macro: DSN6SPRM

Reason: Performance

→ DB2 12 operates as if CONTSTOR=NO. The default in DB2 11 is YES.

Appendix: A summary of DB2 12 zparm changes

The following have been removed:

DB2SORT: Whether DB2 utilities are to use DB2 Sort instead of DFSORT for utility sort processing when DB2 Sort is installed.

Macro: DSN6SPRM

Reason: Performance.

→ DB2 12 operates as if DB2SORT=ENABLE, which is also the default in DB2 11.

EDMPOOL: Specifies the maximum KB of space BTB that can be consumed by the EDM. EDM consumes space BTB only for packages last bound or rebound prior to DB2 10.

Macro: DSN6SPRM

Reason: Such packages are unsupported in DB2 12 and invalidated when used. Therefore, this parameter is no longer meaningful.

→ DB2 12 allocates no EDM space BTB

INDEX_IO_PARALLELISM: Whether I/O parallelism is enabled for index insertion.

Macro: DSN6SPRM

Reason: Performance

→ DB2 12 operates as if INDEX_IO_PARALLELISM=YES, which is also the default in DB2 11.

LEMAX: The maximum number of Language Environment® tokens that are to be active at any time for use by certain DB2 built-in functions.

Macro: DSN6SPRM

Reason: Unused since DB2 10

→ DB2 12 operates the same as DB2 11

LOBVALA: Specifies the maximum KB of storage per agent for storing LOB values.

Macro: DSN6SYSP

Reason: Usability

→ DB2 12 determines this setting automatically.

LOBVALS: Specifies the maximum MB of storage per system for storing LOB values.

Macro: DSN6SYSP

Reason: Usability

→ DB2 12 determines this setting automatically.

Appendix: A summary of DB2 12 zparm changes

The following have been removed (continued):

MINSTOR: Whether DB2 is to use storage management algorithms that minimize the amount of working storage that is consumed by individual threads.

Macro: DSN6SPRM

Reason: Performance.

→ DB2 12 operates as if MINSTOR=NO, which is also the default in DB2 11.

REORG_IGNORE_FREESPACE: Whether REORG TABLESPACE DB2 should ignore the PCTFREE and FREEPAGE values when reloading a PBG.

Macro: DSN6SPRM

Reason: Usability.

→ DB2 12 operates as if REORG_IGNORE_FREESPACE = NO, which is the default in DB2 11

RRF: Whether most newly created table spaces are to store data in reordered row format (RRF) or basic row format (BRF) by default.

Macro: DSN6SPRM

Reason: Basic Row Format is deprecated.

→ DB2 12 operates as if RRF=ENABLE, which is the default in DB2 11

SQWIDSC: Specifies whether DB2 is to skip quiescing when invalidating the Dynamic Statement Cache for RENAME TABLE and DROP ALIAS.

Macro: DSN6SPRM

Reason: Improved concurrency

→ DB2 operates as if SQWIDSC=YES. The default in DB2 11 is NO.

UTSORTAL: Whether sort work data sets used by DB2 utilities are to be allocated by the utility (YES) or by the sort program (NO).

Reason: Usability

→ DB2 operates as if UTSORTAL=YES, which is the default in DB2 11.

Macro: DSN6SPRM

Appendix: A summary of DB2 12 zparm changes

The following have been removed (continued):

XMLVALA: Specifies the maximum KB of storage per agent for storing XML values. In DB2 12, this setting is determined by DB2.

Macro: DSN6SYSP

Reason: Usability

→ DB2 12 determines this setting automatically.

XMLVALS: Specifies the maximum MB of storage per system for storing XML values. In DB2 12, this setting is determined by DB2.

Macro: DSN6SYSP

Reason: Usability

→ DB2 12 determines this setting automatically.