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CA Database Management for Db2 for z/OS 20.0 (Db2 Tools) Customer Community Update

**TEAM PRODUCT OWNERS
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Agenda

- Db2 Tools Suite:
 - DB2L Command via Batch
- RC/Migrator, RC/Compare, and RC/Update:
 - Supporting INSERT ALGORITHM (Db2 12)

Please Provide Feedback...



Db2 Tools Suite: DB2L Command in Batch to display Db2 Continuous Delivery Levels

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DB2L command in online

- Primary command to display continuous delivery runtime values.
- It also displays values from SETUPxx member which needs to be in sync with runtime values.

```
20.0.00 CA Database Management Solutions for DB2 for z/OS 2021/01/05 08:40
OPTION ==> Db2L SCROLL ==> CSR
DB2 SSID ==> AD02 LOCATION ==> LOCAL DB2 VERSION: V12R1M503*
ACM ==> OFF ACMID ==> MANJA16 SQLID ==> MANJA16
```

DB2L output panel:

```
PTPDB2L ----- DB2 Continuous Delivery Levels -----
DB2 SSID ==> AD02
Catalog Level      : DB2 V12R1M505 SSIDVERC : SETUP00 V12R1M505
Function Level     : V12R1M503* SSIDVERF : V12R1M503*
Previous Highest   : V12R1M506
PF1 = Help        PF3 = Exit
```

DB2L command through batch processor interface

- The DB2L command can now be executed in batch using the .CALL Batch Processor command.
- Syntax : **.CALL DB2L**
- Two ways to execute the DB2L command in batch
 - To display continuous delivery values of the currently connected Db2 subsystem through `.CONNECT ssid`
 - To display continuous delivery values of multiple Db2 subsystems between `.DATA` and `.ENDDATA` block

Method 1: Display values of the currently connected subsystem

```
//BPIOPT DD *,SYMBOLS=(JCLONLY,SUBSTLOG)
.LIST SYSOUT(A)
.CONNECT AD01
.CALL DB2L
/*
/**
```

DB2L output :

```
.CALL DB2L
----- DB2 CONTINUOUS DELIVERY LEVELS -----
          DB2 SSID ==> AD01
          DB2
CATALOG LEVEL      : V12R1M500                SSIDVERC : V12R1M500
FUNCTION LEVEL     : V12R1M500                SSIDVERF : V12R1M500
PREVIOUS HIGHEST  : V12R1M500
-----
RETCODE =      0
```

Method 2: Display Values for multiple subsystems

```
//BPIOPT DD *,SYMBOLS=(JCLONLY, SUBSTLOG)
.LIST SYSOUT(A)
.CALL DB2L
.DATA
AD01
AD02
.ENDDATA
/*
```

DB2L output :

```
----- DB2 CONTINUOUS DELIVERY LEVELS -----
      DB2 SSID ==> AD01
                DB2                SETUP00
CATALOG LEVEL   : V12R1M500          SSIDVERC   : V12R1M500
FUNCTION LEVEL  : V12R1M500          SSIDVERF   : V12R1M500
PREVIOUS HIGHEST : V12R1M500
-----
----- DB2 CONTINUOUS DELIVERY LEVELS -----
      DB2 SSID ==> AD02
                DB2                SETUP00
CATALOG LEVEL   : V12R1M505          SSIDVERC   : V12R1M505
FUNCTION LEVEL  : V12R1M503*        SSIDVERF   : V12R1M503*
PREVIOUS HIGHEST : V12R1M506
-----
RETCODE =      0
```

References

PTF details:

DB2L Online : [SO10173](#)
DB2L Batch : [SO15980](#)

Documentation:

<https://techdocs.broadcom.com/us/en/ca-mainframe-software/database-management/ca-database-management-solutions-for-db2-for-z-os/20/using/use-the-batch-processor/batch-processor-commands/call-command-call-the-execution-program.html>

Community article:

<https://community.broadcom.com/mainframesoftware/communities/community-home/digestviewer/viewthread?MessageKey=d0c65cc9-b25e-4597-8d58-3ed693aabf6a&CommunityKey=45ba021d-aa18-4825-ace0-21b4c0d451ee>

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RC/Migrator, RC/Compare, and RC/Update: Supporting INSERT ALGORITHM (Db2 12)

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Problem statement: INSERT ALGORITHM

- INSERT ALGORITHM is not currently supported
- Generated DDL through RC/Migrator, RC/Update or RC/Compare does not have this

Problem:

- Difficulty as we are losing the current value of INSERT ALGORITHM for tablespace

Solution: Supporting INSERT ALGORITHM

Highlights:

- INSERT ALGORITHM clause is tolerated

Enhanced areas of product(s):

1. Syntax Checker
2. RC/Migrator (Migrate Strategy)
4. RC/Update or Alter strategy
5. RC/Compare (or compare strategy)
6. ICL

Syntax Checker

- CREATE TABLESPACE... INSERT ALGORITHM clause is tolerated
- INSERT ALGORITHM can have 0, 1 or 2
- Error for any invalid values (Ex: INSERT ALGORITHM 5)

Syntax Checker

- Added support to CREATE TABLESPACE ... INSERT ALGORITHM

Sample INPUT:

```
000002      CREATE TABLESPACE MYTS001
000003      IN SRIDB12
000004      USING STOGROUP SRISG12
000005          PRIQTY -1
000006          SECQTY -1
000007          ERASE NO
000008      BUFFERPOOL BP0
000009      CLOSE YES
000010      LOCKMAX SYSTEM
000011      SEGSIZE 4
000012      INSERT ALGORITHM 0
000013      FREEPAGE 0
000014      PCTFREE 5 FOR UPDATE 0
000015      GBPCACHE CHANGED
000016      DEFINE YES
000017      LOGGED
000018      TRACKMOD YES
000019      COMPRESS NO
000020      LOCKSIZE ANY
000021      MAXROWS 255
000022      CCSID EBCDIC;
000023
```

Value can be 0, 1 or 2

Syntax Checker

- Added support to CREATE TABLESPACE ... INSERT ALGORITHM

Sample OUTPUT:

```
RMSYNO 20.0      ----- RC/M Syntax Checker Report ----- 20/12/16 13:19
COMMAND ==>                                           SCROLL ==> CSR
RM222I: No syntax errors were found.
-----
20/12/16      DDL Syntax Checker      13:19:14
              Syntax Error Report
              RD200 PRD ENVIRONMENT

              Syntax check completed.  No errors found.

*****
***** BOTTOM OF DATA *****
```

Syntax Checker

- Added support to CREATE TABLESPACE ... INSERT ALGORITHM

Sample INPUT (Error):

```
000002      CREATE TABLESPACE MYTS001
000003      IN SRIDB12
000004      USING STOGROUP SRISG12
000005          PRIQTY -1
000006          SECQTY -1
000007          ERASE NO
000008      BUFFERPOOL BPO
000009      CLOSE YES
000010      LOCKMAX SYSTEM
000011      SEGSIZE 4
000012      INSERT ALGORITHM 5
000013      FREEPAGE 0
000014      PCTFREE 5 FOR UPDATE 0
000015      GBPCACHE CHANGED
000016      DEFINE YES
000017      LOGGED
000018      TRACKMOD YES
000019      COMPRESS NO
000020      LOCKSIZE ANY
000021      MAXROWS 255
000022      CCSID EBCDIC;
000023
```

Syntax Checker

- Added support to CREATE TABLESPACE ... INSERT ALGORITHM

Sample Error OUTPUT:

```
RMSYNO 20.0      ----- RC/M Syntax Checker Report ----- 20/12/16 13:20
COMMAND ==>                                           SCROLL ==> CSR
RM221I: Syntax errors were found in your dataset.
-----
20/12/16      DDL Syntax Checker      13:20:21
              Syntax Error Report
              RD200 PRD ENVIRONMENT

              Syntax Error in statement beginning on line number 2
              of the input DDL file.

CREATE TABLESPACE MYTS001 IN SRIDB12 USING STOGROUP SRISG12 PRIQTY -1
SECQTY -1 ERASE NO BUFFERPOOL BP0 CLOSE YES LOCKMAX SYSTEM SEGSIZE 4
INSERT ALGORITHM 5 FREEPAGE 0 PCTFREE 5 FOR UPDATE 0 GBPCACHE CHANGED
DEFINE YES LOGGED TRACKMOD YES COMPRESS NO LOCKSIZE ANY MAXROWS 255
CCSID EBCDIC

*****
DDL00002: Invalid token 5.  Valid tokens are:
          0  1  2
*****
***** BOTTOM OF DATA *****
```

Migrate Strategy or RC/Migrate

While migrating a TS:

- From Db2 12 to Db2 12 subsystems
Source TS's INSERT ALGORITHM clause will be generated
- From Db2 11 to Db2 12 subsystems
INSERT ALGORITHM clause will NOT be generated from Source TS by default
(as value 0 is applied by default)
However, generating DDL in OFS path can generate this clause
- From Db2 12 to Db2 11 subsystems
INSERT ALGORITHM clause will NOT be generated from Source TS
(as its invalid)

Alter Strategy or RC/Update

While altering a TS:

- In Db2 12 subsystems
 - TS's INSERT ALGORITHM value will be preserved and generated if CREATE TABLESPACE is generated because of alter
- In Db2 11 subsystems
 - No change – as INSERT ALGORITHM clause is invalid.

Compare Strategy or RC/Compare

While comparing 2 TS's:

Sno	Source SSID	Target SSID	Behavior
1	Db2 12	Db2 12	Target TS's INSERT ALGORITHM is preserved and will be generated if CREATE TABLESPACE gets generated because of compare
2	Db2 11	Db2 12	Target TS's INSERT ALGORITHM is preserved and will be generated if CREATE TABLESPACE gets generated because of compare
3	Db2 12	Db2 11	INSERT ALGORITHM will NOT be generated as invalid
4	Db2 11	Db2 11	INSERT ALGORITHM will NOT be generated as invalid (Current behavior)

ICL

While generating ICL:

- In Db2 12 subsystems
 - CREATE TABLESPACE with INSERT ALGORITHM is supported
 - Converting ALTER TABLESPACE ICL to DDL:
 - If CREATE TABLESPACE needs to be generated, then TS's INSERT ALGORITHM value will be preserved and generated if CREATE TABLESPACE is generated because of alter
 - No change if ALTER TABLESPACE is going to be generated
- In Db2 11 subsystems
 - No change – as INSERT ALGORITHM clause is invalid.

What is the PTF number?

PTF # SO15804, SO15805, SO15806, SO15807

Please Provide Feedback...



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In Closing...

When is the next Community Update call?

- The 2nd Monday of each month
- Our next call will be Monday February 8th, 2021

When is the next Db2 Tools Suite Product Roadmap Webcast?

- [Wednesday March 24th, 2021](#)



Thank You