



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

Team Product Owners

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Agenda

Db2 Tools

- Level Set 20.0.04
- Db2 13 Day 1 Support
- Thread Terminator: New Upper Limit for DSMAX zPARM
- Db2 Command Processor: SET LOG command support of REMOVE LOG parm

Sysview for Db2

- Import/Export of Exception Definitions in JSON format
- Additional fields supported

Db2 Admin Suite

- RC/Query Real Time Stats report enhancements
- RC/Migrator & RC/Query exploitation of Db2 12 M508
- DevOps: New Zowe DBM-DB2 CLI plugin

Please Provide Feedback...





Db2 Tools

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| Level Set 20.0.04 ([LU05995](#))

- Available May 31st
- Level Sets provide a sync point for bug fixes and new functionality
- Product Panels and Reports now include the maintenance Level Set as additional information for Support
- Level Set 20.0.04 creates a prereq chain of all PTFs published since Level Set 20.0.03
- No Activation is required for this Level Set
- For a full list of the new functionality delivered since Level Set 20.0.03 please see our [Community Post](#)
- For a step by step walk-through of how to activate your first Level Set please see our [YouTube video](#)

| Db2 13 Day 1 Support

- No need to install a new version of the Db2 Tools
- Just apply Level Set 20.0.04
- For more details on the steps needed please refer to the [blog post](#) by Chris Crone and Andrew Badgley

Thread Terminator: New DSMAX Upper Limit

- Db2 13 raises the upper limit of the DSMAX zPARM to 400,000
- You can use Thread Terminator to update this zPARM

```
20.0  ----- Thread Terminator DB2 Storage Sizes Parameters ----- 22/06/10 11:57
COMMAND ==>

DB2 SSID ==> AD18
USERID ==>

Page 1 of 2
More: +

Original      Current      Desired
Value         Value         Value
-----
Sort pool (K) . . . . . : 10000 . . . . . : 10000 . . . . . :
EDM pool (K) . . . . . : 0 . . . . . : 0 . . . . . :
Maximum open data sets . . . . . : 20000 . . . . . : 400000 . . . . . :
Max user LOB storage (K) . . . . . : 0 . . . . . : 0 . . . . . :
Max system LOB storage (M) . . . . . : 51200 . . . . . : 51200 . . . . . :
Max RID pool (in 32K blocks) : 12500 . . . . . : 12500 . . . . . :
```

Db2 Command Processor: REMOVE LOG

- Db2 13 adds a REMOVELOG parameter to the SET LOG command
- This new parameter is supported through our Db2 Command Processor (DB2C)

```
----- Set Log Syntax ----- 2022/06/10 11:48
COMMAND ==>
----- User ID:
==> DB2 Command
    -SET LOG
-----
SET LOG  SINGLE
        BOTH
LOGLOAD (integer)  CHKTIME (integer)
SUSPEND
RESUME
COPY (log-copy)   NEWLOG (data-set-name)
REMOVELOG (data-set-name)
```

Please Provide Feedback...

PTF: [LU05995](#)

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Sysview for Db2: Import and Export of Exception Definitions in JSON format (LU05995)

Rabah Beggar

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Overview.

- SYSVIEW for Db2 adds support to manage exception definitions in batch allowing users to export/edit and import definitions in a humanly readable JSON format.
- Benefits:
 - Simplify/Enhance management of exception definitions.
 - Speed up exceptions setup on new systems by importing exceptions definitions from the existing systems.
 - Easily create a backup of your exception definitions in a JSON format using the export function

Overview.

- Exception definitions can now be stored in JSON format.
- New commands are introduced to the IDB2 Batch User Interface (IUIBATCH):
 - EXCMGR/**EXPORT** - Export selected exception definitions from the Data Collector Exception Definition File (KSDS) to a sequential file or a PDS utilizing the new JSON format
 - EXCMGR/**IMPORT** or **REINIT** - Import selected exception definitions from a sequential file / PDS to the Data Collector Exception Definition File
 - EXCMGR/**CHECK** - Validate the syntax of JSON exception definitions (to assist the user with making changes)

Exporting exceptions

Sample job to export:

```
//EXPORT      EXEC PGM=IUIBATCH
//STEPLIB     DD DISP=SHR,DSN=YOUR.CDBALOAD
//IUIMAPS     DD DISP=SHR,DSN=YOUR.CDBAMAPS
//DBGPRINT   DD SYSOUT=*
//EXCJSON     DD DISP=MOD,DSN=YOUR.EXCPS
//SYSPARMS   DD *
DEFAULTS
COMMAND=EXCMGR
REQUEST=EXPORT
EXCEPTION-NAME=('TESTXCP*')
DBSUB=xxxx
APPLS=(nnnnnnnn,xxxx,zzzz)
PCSSID=mmmm
TESTVER=kkkk
```

```
{
  "json_version": 1,
  "name": "TESTXCP1",
  "type": "SUBSYSTEM",
  "active": true,
  "id": "1",
  "ac": {
    "json_version": 1,
    "name": "TESTXCP2",
    "type": "SUBSYSTEM",
    "active": true,
    "id": "2",
    "ac": {
      "json_version": 1,
      "name": "TESTXCP4",
      "type": "SUBSYSTEM",
      "active": false,
      "id": "4",
      "ac": {
        "json_version": 1,
        "name": "TESTXCP4",
        "type": "SUBSYSTEM",
        "active": false,
        "id": "4",
        "ac": {
          "identification_data": {
            "subsystem_type": "BOTH",
            "ssid": "****",
            "values": {
              "type": "PERCENT",
              "v1": "EDMCAVAIL",
              "v2": "EDMCPGE",
              "check": "LOW"
            }
          }
        }
      }
    }
  }
},
"ex": {
  "ex": {
    "execution": {
      "active_info": true,
      "active_warn": true,
      "active_crit": false,
      "threshold_info": 99,
      "threshold_warn": 9,
      "threshold_crit": 0,
      "begin_time_1": "0000",
      "end_time_1": "2400",
      "begin_time_2": "0000",
      "end_time_2": "0000",
      "days_of_week": {
        "monday": true,
        "tuesday": true,
        "wednesday": true,
        "thursday": true,
        "friday": true,
        "saturday": true,
        "sunday": true
      }
    },
    "reset_time": "2400",
    "check_seconds": 5
  }
}
}
```

Output

Reinit exception dataset

You can erase all of the exceptions from the dataset and import into an empty dataset. This is called a reinit

Sample job to reinit:

```
//EXPORT      EXEC PGM=IUIBATCH
//STEPLIB     DD DISP=SHR,DSN=YOUR.CDBALOAD
//IUIMAPS     DD DISP=SHR,DSN=YOUR.CDBAMAPS
//DBGPRINT   DD SYSOUT=*
//EXCJSON    DD DISP=MOD,DSN=YOUR.EXCPS
//SYSPARMS   DD *
              DEFAULTS
              COMMAND=EXCMGR
              REQUEST=REINIT
              DBSUB=xxxx
              APPLS=(nnnnnnnn,xxxx,zzzz)
              PCSSID=mmmm
              TESTVER=kkkk
```

List of Subsystem Exception Definitions

```
Commands: ADD=Add exception, ACTALL/INACTALL=Activate/inactivate
Actions:  U=Update current and permanent, P=Update permanent defin
          C=Copy, D=Delete, A=Activate, I=Inactivate, B=Browse.  U
STA/NAME  SSN  <----- EXCEPTION TEXT ----->
_ ACTIVE  **** High number of checkpoints taken during the last
TESTXCP1  PROD hour.  Number of mins per checkpoint was &VALUEXX

_ ACTIVE  **** Average number of pages written per write I/O is
TESTXCP2  PROD low for &BPNAME  Ratio value is &VALUEXX

_ ACTIVE  **** A DB2 performance class 7 trace is running!
TESTXCP3

_ INACT   **** Low percentage of statement pool pages are free
TESTXCP4  and stealable: &VALUEXX%
```

Check exceptions

Upon editing the exception JSON a user may have made errors.

Sample job to check the exceptions:

```
//CHECK      EXEC PGM=IUIBATCH
//STEPLIB    DD DISP=SHR,DSN=YOUR.CDBALOAD
//IUIMAPS    DD DISP=SHR,DSN=YOUR.CDBAMAPS
//DBGPRINT   DD SYSOUT=*
//EXCJSON    DD DISP=MOD,DSN=YOUR.EXCPS
//SYSPARMS   DD *
DEFAULTS
COMMAND=EXCMGR
REQUEST=CHECK
DBSUB=xxxx
APPLS=(nnnnnnnn,xxxx,zzzz)
PCSSID=mmmm
TESTVER=kkkk
```

```
DBG55170E JSON syntax error encountered at line 24, column 19
DBG55170E 24:      "end_time_1": "2400",
DBG55170E                               *~~~
DBG55170E Invalid time format. Time value in format HHMM is expected.
DBG55170E HH must be 0-23 and MM must be 0-59. Value "2400" is also allowed.
```

```
DBG55175I Valid definition of exception "TESTXCP4" encountered.
DBG55175I Valid definition of exception "TESTXCP3" encountered.
DBG55175I Valid definition of exception "TESTXCP2" encountered.
DBG55175I Valid definition of exception "TESTXCP1" encountered.
DBG55177W Exception "TESTXCP4" is already defined for a different field
```

```
DBG55175I Valid definition of exception "TESTXCP4" encountered.
DBG55175I Valid definition of exception "TESTXCP3" encountered.
DBG55175I Valid definition of exception "TESTXCP2" encountered.
DBG55175I Valid definition of exception "TESTXCP1" encountered.
DBG55176I Exception definition "TESTXCP4" can be updated.
DBG55176I Exception definition "TESTXCP3" can be updated.
DBG55176I Exception definition "TESTXCP2" can be updated.
DBG55176I Exception definition "TESTXCP1" can be updated.
DBG076I   DBG55076I EXCMGR  CHECK  1 was successful
```

Import exceptions

Now you can import updated exceptions back to the exception dataset

Sample job to import:

```
//IMPORT      EXEC PGM=IUIBATCH
//STEPLIB     DD DISP=SHR,DSN=YOUR.CDBALOAD
//IUIMAPS     DD DISP=SHR,DSN=YOUR.CDBAMAPS
//DBGPRINT   DD SYSOUT=*
//EXCJSON    DD DISP=MOD,DSN=YOUR.EXCPS
//SYSPARMS   DD *
DEFAULTS
COMMAND=EXCMGR
REQUEST=IMPORT
EXCEPTION-NAME=('TESTXCP*')
DBSUB=xxxx
APPLS=(nnnnnnnn,xxxx,zzzz)
PCSSID=mmmm
TESTVER=kkkk
```

```
DBG55175I Valid definition of exception "TESTXCP4" encountered.
DBG55176I Exception definition "TESTXCP4" has been updated.
DBG076I   DBG55076I EXCMGR   IMPORT   I was successful
```

You can immediately browse the changes in the exception system online, however do not forget to restart the exception system for all the changes to take effect!

The sample job **IDB2BUJ5** shows the expected sequence:

backup -> check -> import -> restart

Please Provide Feedback...

PTF: LU05995

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Sysview for Db2 supports additional Db2 fields (LU05995 and LU06188)

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| Support for Physically Closed Data Sets Fields (LU04374)

Many concurrently open data sets by Db2 utilities could trigger the DSMAX limit and impact performance of other applications. Db2 12 has improved the process of closing data sets accessed only by utilities. SYSVIEW for Db2 adds support for new fields to the (002) STATS2 and (1002) CURR-STATS2 trace records to count data sets that are physically closed by Db2.

The following reports were updated to include the new metrics: SYSDRAIN, HSDRAIN, HSUDRAIN, DSQHIST, DSQSTATS, BTSTATR1, and BTSTASM2.

| Support for Secondary Roles in IFCID 269 (LU05224)

DB2 code has been changed to support secondary roles when EXTERNAL SECURITY PROFILE is defined to switch users in a trusted connection. SYSVIEW for Db2 added support for the new fields to the (269) TRUSTED-CONTEXT record to allow users to better tune and monitor secondary roles in this scenario.

The AUDCLASA report now includes new fields and updated layout. BTRECTRC and RECTRACE reports now include the numbers of secondary roles.

Support for new RDS Sort and Db2ZAI Fields (LU04803)

To help users better monitor and tune the performance of RDS sort processing, SYSVIEW for Db2 adds support for the following new fields to the (002) STATS2, (003) ACCT, 148 (THREAD-STATS), and (1002) CURR-STATS2 trace records.

- RDS-SORT-PERFORMED (QXSTSRT): Specifies the number of times that RDS Sort was performed.
- RDS-SORT-USED-ZSORT (QXSTSRTL): Specifies the number of times that RDS Sort used the IBM Integrate Accelerator for Z Sort (SORTL).
- ZAI-PREPARE-STABILIZED (QXSTMLSFND): Specifies the number of times that a PREPARE request was satisfied because Db2ZAI stabilized the statement.
- ZAI-SORT-FEEDBACK (QXSTMLSRT): Specifies the number of times that Db2ZAI sort feedback was used.

The following reports were updated to include the new RDS Sort metrics: BTACTSML, BTACTTRL, BTSTATR1, BTSTASM2, DSQHIST, DSQSTATS, DSQTHD, HSTPRLMS, HSUPRLMS, HTHDPRMS, HTUDPRMS, PRLMISC, and THRDPRMS.

Support for Connection Type Stability (LU05271)

SYSVIEW for Db2 adds a new tracing system parameter `CONN-TYPE`. This parameter specifies whether the `CONN-GROUP` field is static or dynamic for DDF and CICS connections.

Valid values are:

- **ORIGINAL**—The connection type does not change during stored procedure execution. Use this setting if your `WHERE` clause is checking the original connection type for DDF and CICS threads.
- **CURRENT**—The connection type changes to RRS during stored procedure execution. Use this setting if your `WHERE` clause is checking for DDF and CICS threads running stored procedures based on the switch of the connection type to RRS.

The new parameter ensures consistent results when you use the `CONN-GROUP` in an IQL `WHERE` clause.

Support for Stealable Pages Count in the EDM Statement Cache Pool (LU05687)

To help users in monitoring the dynamic statement cache, IDB2 added support for the number of stealable pages in the EDM statement cache pool (QISEDYLRU) to the (1002) CURR-STATS2 and (1047) IDB2STAT trace records. The following reports were updated to include new metrics:

BTRHWMSM, BTRHWMTR, BTSTATSM2, BTSTATR1, DSAISTD, DSQAPMGS, DSQHIST, DSQSTATS, HSEDM, and HSUEDM.

Two exception fields were added, QISEDYLRU and QISCEAVAIL, and a new default exception that uses QISCEAVAIL.

| Support for new Lock and CPU Time Fields (LU06188)

To help users in monitoring fails and retries for conditional locks and CPU times consumed on the accelerator, SYSVIEW for Db2 added support for new Db2 12 fields to sections Q8ST and Q1ST of the (002) STATS2 and (1002) CURR-STATS2 trace records.

The following reports were updated to include new metrics: BTSTASM2, BTSTATR1, DSAISTD, DSQHIST, DSQSTATS, HSACCDTL, HSCPU, HSLOCK, HSUACDTL, HSUCPU, HSULOCK, SYSACDTL, and SYSLOCKS.

Please Provide Feedback...

Multiple PTFs:

LU05995 and LU06188.

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RC/Query: Enhanced Real-time statistics tables to support Db2 13 (LU05995)

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Overview.

- RC/Query is enhanced to support the changed datatypes (SMALLINT to INT and INT to BIGINT) in its panels to show the values up to BIGINT to support Db2 13.
- More information:
 - Changed from
 - SMALLINT to INT: EXTENTS
 - INT to BIGINT: REORGINSERTS, REORGDELETES, REORGUPDATES, STATSINSERTS, STATSUPDATES, STATSDELETES, COPYCHANGES
- Benefits:
 - RC/Query will display the data (of enhanced datatype) from Db2 13 subsystems
 - No effect to Db2 12 and lower subsystems

Screenshot:

```

RQTSRT 20.0      ----- RC/Q Table Space Real-time Statistics ----- 2022/06/10 14:22
COMMAND ==>>>                                     SCROLL ==>>> CSR

DB2 Object ==>>> TS          Option ==>>> RT      Where => N
Table Space ==>>> *          > Creator ==>>> KOTPA04      >
Data Base ==>>> *          > N/A          ==>>> *          >
Loc: LOCAL ----- SSID: AD14 -----ADUSR01 -                LINE 1 OF 3 < >
CMD      NAME      REORGINSERTS      REORGDELETES
-----
DBTEST1P  -9,223,372,036,854,775,807  9,223,372,036,854,775,807
SYSTSISS                0                0
SYSTSTSS                0                0
*****
***** BOTTOM OF DATA *****

```

```

RQISRT 20.0      ----- RC/Q Index Real-time Statistics ----- 2022/06/10 14:28
COMMAND ==>>>                                     SCROLL ==>>> CSR

DB2 Object ==>>> I          Option ==>>> RT      Where => N
Index Name ==>>> *          > Creator ==>>> KOTPA04      >
Qualifier ==>>> *          > N/A          ==>>> *          >
Loc: LOCAL ----- SSID: AD14 -----ADUSR01 -                LINE 1 OF 5 < >
CMD      INDEX NAME      REORGINSERTS
-----
DBTEST1P_PK_INDEX      9,223,372,036,854,775,807
DBTEST1P_UK_INDEX      2
DSNRITX01              0
DSNRITX02              0
DSNRITX03              0
*****
***** BOTTOM OF DATA *****

```

Please Provide Feedback...

PTF: LU05995

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RC/Migrator, RC/Update and RC/Compare: Exploitation of Db2 12 M508 (LU05995)

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Overview.

- RC/Migrator, RC/Update and RC/Compare will now generate ALTER TABLESPACE... MOVE TABLE while moving a table from multi-table tablespace to a PBG
- Generates Online REORG statements

Condition:

- PBG need to meet all the prerequisite conditions as per Db2

Benefits:

- Minimize outage to almost 0
- Supports multiple tables at a time
- Ability to create PBGs on the fly

Screenshots:

```
.AUTH AA893900
.
ALTER TABLESPACE DEM000.DEM000
MOVE TABLE AA893900.DEM000_TB1
TO TABLESPACE DEM000.DEM000A
/
.SYNC 5 'ALTER TABLESPACE DEM000.DEM000'
.
.CALL UTIL REORG PARM(M10A)
.DATA
TEMPLATE PTIUNLD DSN 'AA893900.DEM000.DEM000.U0825.S.UNLD'
SPACE CYL
TEMPLATE PTICOPY DSN 'AA893900.DEM000.DEM000.U0825.S&PA..COPY'
SPACE CYL
TEMPLATE PTIDISC DSN 'AA893900.DEM000.DEM000.U0825.S.DISC'
SPACE CYL
.
REORG TABLESPACE DEM000.DEM000
LOG NO
COPYDDN PTICOPY
UNLDDN PTIUNLD
DISCARDN PTIDISC
SHRLEVEL CHANGE
DRAIN_WAIT 20
RETRY 10
RETRY_DELAY 60
MAXRO 18
DRAIN WRITERS
LONGLOG CONTINUE
DELAY 1200
FASTSWITCH YES
```

Please Provide Feedback...

PTF:
LU05995

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DevOps: New Zowe DBM-DB2 CLI plugin

Srinivas Adupa

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Overview.

DevOps:

- New Zowe [DBM-DB2 CLI plugin](#), available to download from the public repository
- Requires Level set 20.0.04 maintenance (LU05995)
- Requires the configuration of the DBM Data service

Benefits:

- Integrate Db2 for z/OS schema and data provisioning
- Ability to
 - ❖ Generate DDL for 1 or more Db2 objects
 - ❖ Perform Syntax Check of provided DDL and report errors if any
 - ❖ Deploy DDL by comparing a DDL with Target Db2 subsystem and apply changes
 - ❖ Migrate a Db2 object (including DDL and Data) from 1 environment to another

- ❖ Will be covered with a detailed session as part of IDUG NA 2022

List of Zowe DBM-DB2 CLIs and their purpose:

- GENERATE DDL
Generate DDL of 1 or more Db2 objects
- CHECK DDL
Verify the Syntax of provided DDL
- DEPLOY DDL
Compare provided DDL with Db2 catalog and apply changes
- COMPARE DDL
Compare DDL with Db2 catalog and generate report for which changes are required
- EXECUTE COMPARE-SCRIPT
Execute the Compare script generated by COMPARE DDL CLI
- EXECUTE SCRIPT
Execute any Batch Processor Script
- PREPARE MIGRATION
Generate a script to migrate 1 or more Db2 objects from Db2 subsystem to another
- EXECUTE MIGRATION-SCRIPT
Execute the Migration script generated by PREPARE MIGRATION CLI

Samples: GENERATE DDL

```
c:\demo\GTM
```

```
λ zowe dbm generate ddl --object "tablespace dbmdb.dbmts include(table)" --source-db2 dp11 --output-ddl-file myddl.sql
```

```
Generate DDL completed successfully.
```

```
DDL saved to: myddl.sql
```

```
CREATE TABLESPACE DBMTS
  IN DBMDB
  USING STOGROUP SYSDEFLT
  ERASE NO
  FREEPAGE 0
  PCTFREE 5 FOR UPDATE 0
  BUFFERPOOL BP2
  LOCKSIZE ANY
  CLOSE YES
  SEGSIZE 4
  LOCKMAX SYSTEM
  CCSID EBCDIC
;
SET CURRENT SQLID = USER;
```

DDL for CREATE TABLE is
below (screenshot not covered)

Samples: CHECK DDL

```
c:\demo\GTM
λ zowe dbm check ddl myddl.sql --target-db2 dp11
Check DDL completed successfully.
No errors found.
```

- Error report will be generated if the provided DDL has any syntax related errors

Please Provide Feedback...

Link to download package:

<https://www.npmjs.com/package/@broadcom/dbm-db2-for-zowe-cli>

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In Closing...

When is the next Community Update call?

Our next is scheduled to be August 8th, 2022

Did you miss our last call (in March)?

The replay is available [here](#).

CA Db2 Tools 20.0 Validation Project

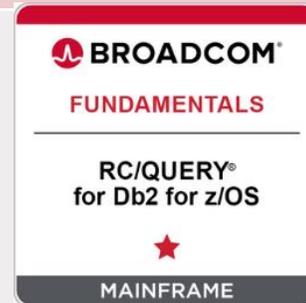
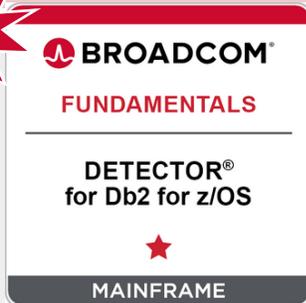
<https://validate.broadcom.com/key/DB2Tools200>

Our next call will be on June 20th, 2022

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Course Code	Title
06PDT20010	Detector® for Db2 for z/OS: Getting Started 200
06PDT20020	Detector® for Db2 for z/OS: Standard Collection 200
06PDT20030	Detector® for Db2 for z/OS: Exception and Error Collection 200
06PDT20040	Detector® for Db2 for z/OS and Subsystem Analyzer for Db2 for z/OS: Batch Reporting 200
06PSA20010	Subsystem Analyzer for Db2 for z/OS: Overview 200



Resources

- [Accessing Learning@Broadcom: Quick Reference Guide](#)
- [Course Catalog](#)

Learning Paths

- [Administration Suite for Db2](#)
- [Recovery Suite for Db2](#)
- [Performance Suite for Db2](#)
- [Utility Suite for Db2](#)



Thank You