



DOSR – DB2 OBJECTS SPACE REPORTER

Allocation reporting tool for DB2 in z/OS Environment

CC 2016 - Freeware open project <http://github.com/Tarfiz/-DOSR>

AGENDA

- BASIC IDEA & GOALS
- SOFTWARE STRUCTURE
- BATCH REPORTER AND EXAMPLE
- SOFTWARE PACKAGING

BASIC IDEA & GOALS

The basic idea was to have an useful tool to get an allocation report of DB2 Objects to control the growth of all DB2 Objects and signal critical situation to have a proactive approach avoiding disruption in a Customer service.

DOSR (DB2 Objects Space Reporting) access to DB2 Real Time Statistic (RTS) and Catalog Tables to get data “UP TO THE MINUTES”.

DDTA is a batch tool to get time based report about allocations of DB2 Objects setting user limits of reporting like percentage of allocation or extent number for each DB2 subsystem you select.

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BASIC TECHNICAL STRUCTURE

DDTA is a BATCH application that was developed in REXX language.

The main function are in compiled REXX and stored in a LOAD executable format to protect and hide the processes and algorithms used. REXX runtime alternate library legally shipped together.

Only few rexx sources need in runtime to start application and to able the user to customize the tool defining a user state for specific objects.

BASIC LIBRARY STRUCTURE

DDTA is structured in following PDS/PDSE Library:

- JCL** – Example JCL to run batch reporting
- LOAD** – REXX Alternate LOAD Library & programs
- EXEC** – REXX needed to customize tool
- EXEC SRC** – REXX program sources of main functions

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Customize User State

```
/* REXX */
/* Routine to set user state for specific TABLESPACES */
EX$TSHIS:
parse arg tsname

tstext = ' '

if pos('.VRRS',tsname) <> 0
then tstext = 'Hystorical batch access only; '

RETURN tstext
```

```
/* REXX */
/* Routine to set user state for specific INDEXES */
EX$ISHIS:
parse arg isname

istext = ' '

if pos('.VRRS',isname) <> 0
then istext = 'Hystorical batch access only; '

RETURN istext
```

BATCH REPORTER

The Customer can use two exit point to set a user state for specific object or groups.

The exit points are a light rexx code than can be easy modified by user to set the user state for tablespaces and indexes:

- **EX\$TSHIS** used for tablespaces
- **EX\$ISHIS** used for indexes

To set a user state code one or more "POS" rexx statement as you can see in the examples.

The rexx code is stored in the EXEC Library.

JOB to Run

```
//JBDOSRPT JOB (12345000000000),CLASS=E,MSGCLASS=X,NOTIFY=&SYSUID
//
//-----*
//* CHANGE DATASET NAME OF FILES AND PRODUCT LIBRARIES
//* TO REFLECT YOUR OWN STANDARD CONVENTION NAME
//*-----*
//*
//*****
//* DELETE WORK DATASET TO REEXECUTE JOB FREELY
//*****
//P00      EXEC PGM=IDCAMS,COND=EVEN
//SYSPRINT DD  SYSOUT=*
//*
//SYSIN    DD  *
DELETE R1.DBSTATS.DB7.LISTAEXT.#WORK1      NONVSAM PURGE
DELETE R1.DBSTATS.DB7.SUMMARY.#WORK1      NONVSAM PURGE
DELETE R1.DBSTATS.DB7.LISTACRI.#WORK1      NONVSAM PURGE
SET MAXCC = 0
//*
//*-----*
//S01      EXEC PGM=RX$DOSPR,
//          PARM='SYSTEM=DB7,EXTTS=0,EXTIX=0',
//          REGION=OM
//STEPLIB DD  DISP=SHR,DSN=CR10229.TSOCL.DOSR.LOAD
//SYSEXEC DD  DISP=SHR,DSN=CR10229.TSOCL.DOSR.EXEC
//SYSUDUMP DD  SYSOUT=*
//SYSTSIN DD  DUMMY
//SYSTSPRT DD  DSN=R1.DBSTATS.DB7.LISTAEXT.#WORK1,
//             DCB=(BLKSIZE=0,LRECL=250,RECFM=FB),
//             DISP=(,CATLG),
//             SPACE=(CYL,(50,50),RLSE),
//             UNIT=SYSDA
//*-----*
//S02      EXEC PGM=RX$DOLIM,COND=(0,NE),
//          PARM='SYSTEM=DB7,PCTLM=70,NUMEXT=200',
//          REGION=OM
//STEPLIB DD  DISP=SHR,DSN=CR10229.TSOCL.DOSR.LOAD
//SYSEXEC DD  DISP=SHR,DSN=CR10229.TSOCL.DOSR.EXEC
//SYSUDUMP DD  SYSOUT=*
//SYSTSIN DD  DUMMY
//SYSTSPRT DD  DSN=R1.DBSTATS.DB7.SUMMARY.#WORK1,
//             DCB=(BLKSIZE=0,LRECL=250,RECFM=FB),
//             DISP=(,CATLG),
//             SPACE=(CYL,(5,1),RLSE),
//             UNIT=SYSDA
//DDIN     DD  DSN=R1.DBSTATS.DB7.LISTAEXT.#WORK1,
//             DISP=OLD
//DDOUT    DD  DSN=R1.DBSTATS.DB7.LISTACRI.#WORK1,
//             DCB=(BLKSIZE=0,LRECL=300,RECFM=FB),
//             DISP=(,CATLG),
//             SPACE=(CYL,(50,50),RLSE),
//             UNIT=SYSDA
//
```



BATCH REPORTER

This job produces three files:

- **LISTAEXT** is a work file that lists all objects
- **LISTACRI** is detailed report file filtered by user limits.
- **SUMMARY** is an info summary file

Schedule job early in the morning after application batch window daily, weekly or monthly as well you think.

LISTACRI & SUMMARY can be emailed to have a friendly report in the mailbox of user group who must do the appropriate actions to resolve critical issues.

The job **JBDOSPRT** in JCL library shows how you can send an email using XMITIIP too.



Report examples in the next slides

BATCH REPORTER: SUMMARY FILE REPORT

DB2 Subsystem DB7

DB2 objects analysis near allocation physical limits
Selected limits 70% of KB/Max allocation allowed
or EXTENTS numbers greater than 200

```
-----  
Records Read                      :      58297  
Comments                          :          12  
Tablespaces found                  :     27484  
Tablespaces autopartitioned       :       172  
Tablespace candidate autopartitioning :    10871  
Tablespace LOB                    :        165  
Indexes found                     :     30801  
Indexes autopartitioned           :        141  
Indexes candidate autopartitioning :    14323  
-----  
Tablespaces over limits           :         33  
Indexes over limits               :          5  
-----
```

BATCH REPORTER: LISTACRI FILE REPORT

SYSTEM DB7 - DB2 objects analysis near allocation physical limits. Selected limits : 70% of allocated KB/Maximum allocation allowed or EXTENTS numbers greater than 200

TABLESPACE	DSNALIAS	PART	NUMD	PQTY_KB	SQTY_KB	EXT	TRKALLOC	TRKUSED	KB ALLOC	KB USED
BI00DB10.BI00TS09	DSNDB07	0	26	1000080	100080	4	1123635	1123348	53934480	53920704
CP00DB70.CP00TS73	DSNDB07	1	1	1000080	100080	10	85470	83679	4102560	4016592
CP00DB70.CP00TS73	DSNDB07	2	2	1000080	100080	4	64620	64172	3101760	3080256
CP00DB70.CP00TS73	DSNDB07	3	3	1000080	100080	16				
CP00DB70.CP00TS73	DSNDB07	4	4	1000080	100080	31				
CP00DB70.CP00TS73	DSNDB07	5	5	1000080	100080	32				
CP00DB70.CP00TS73	DSNDB07	6	6	1000080	100080	17				

KB LIMIT	PCTCOMP	DESCRIPTION-NOTES
67108864	85	Reached allocation of 80%;
4194304	43	Reached allocation of 97%;
4194304	48	Reached allocation of 73%;
4194304	46	Reached allocation of 78%;
4194304	48	Reached allocation of 97%;
4194304	44	Reached allocation of 99%;
4194304	48	Reached allocation of 83%;

INDEXNAME	INDEXSPACE	DSNALIAS	PART	NUMD	PQTY_KB	SQTY_KB	EXT	TRKALLOC	TRKUSED
SYSADM1.VREWI101	VR00DB01.VREWI101	DSNDB07	85	85	1000080	100032	28	79215	78985
SYSADM1.VRRII14K	VR00DB01.VRRII14K	DSNDB07	85	85	1000080	100080	7	62535	62459
SYSADM1.VRRSI1NA									
SYSADM1.VRRSI1NP									
SYSADM1.VRRSI1NT									

KB ALLOC	KB USED	KB LIMIT	DESCRIPTION-NOTES
3802320	3791280	4194304	Reached allocation of 90%;
3001680	2998032	4194304	Reached allocation of 71%;
3402000	3368064	4194304	Hystorical batch access only; Reached allocation of 81%;
3101760	3051216	4194304	Hystorical batch access only; Reached allocation of 73%;
3201840	3171120	4194304	Hystorical batch access only; Reached allocation of 76%;

LEGENDA OF DESCRIPTIONS	/ ACTIONS
Tablespace non compressed	/ Make ALTER TABLESPACE db.ts COMPRESS YES and REORG
Reached nn extents (Max 251)	/ Make ALTER TABLESPACE/INDEX with greater PRIQTY/SECQTY and REORG
Reached allocation of nn%	/ REMOVE old rows or change PARTITIONING as soon as possible
Autopartitioned nn times (Max 32)	/ REMOVE old rows as soon as possible if nn >= 28
Last autopartition available	/ REMOVE old rows NOW possible disruption

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SOFTWARE DISTRIBUTION

DOSR can be distributed in ZIP file format in two different distribution forms for vendor and end user containing the with needed library in xmit format.

DOSR.LIBRARY.VENDOR

JCL
LOAD
EXEC
EXEC SRC

DOSR.LIBRARY.USER

JCL
LOAD
EXEC

SIMPLE INSTALLATION PROCEDURE

DOSR has a simple and friendly installation procedure that doesn't require depth technical skill.

DOSR - DB2 Objects Space Reporter Tool Version 1.0.0 for z/OS Readme

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INSTALLATION NOTES

CONTENTS

1.0 ABOUT THIS README FILE

1.1 Who should read this readme file

2.0 INSTALLING THE LIBRARY PACKAGE

3.0 REQUIREMENTS

1.0 ABOUT THIS README FILE

This file contains the latest information about installing the
DOSR - DB2 Objects Space Reporter Tool Version 1.0.0 for z/OS

1.1 Who should read this readme file

Users who want to install the DDTA - Deadlock/Timeout Analysis Tools for DB2
for z/OS.

2.0 INSTALLING THE LIBRARY PACKAGE

DOSR is a Library package shipped in XMIT Library file format.

The following steps are required to install IFIT Library:

- (1.) Download and unzip DDTA.ZIP in a temporary directory on a PC. Unpack and obtain the following files in XMIT Format:

- * EXEC.xmi
- * JCL.xmi
- * LOAD.xmi
- * This README file with the latest installation information

- (2.) Transfer in z/OS server all xmi files in binary mode in a preallocated sequential (RECFM=FB LRECL=80 BLKSIZE=3120) using FTP or other transfer program (IND\$FILE, etc.)

- (3.) In z/OS TSO session restore PDS/PDSE Library using command:

* RECEIVE INDA(-- each one XMI Files --)

using your own library prefix to restore each one

- (4.) Customize JBDOSRPT in your own library prefix JCL restored library.

- (5.) Submit JBDOSRPT. Control output files produced "LISTACRI" and "SUMMARY". Send files using an email if you want and enjoy for application.

3.0 Final Notes

Job JBDOSRPT can be scheduled daily, weekly or monthly for each DB2 System you need control.

Job JBDOSRPT shows how send an email using XMIITP free client for z/OS. Customize this steps if you want use it.

In each case a user may need security authorization to use the application.