First Look at the DB2 10 Changes to DSNZPARMs

"The Good, the Bad, and the Really Ugly: DSNZPARMs" continued…

Tuesday, March 9, 2011: 3:00 PM-4:00 PM
Session 9817

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Agenda

- What is DSNZPARM
- The Macros
- How do you change DSNZPARM
- Dynamically reloading DSNZPARM
- What's meant by hidden, opaque and visible?
- Some DSNZPARM keywords

So, What's With The Name

DSN Z PARM

Yup, they're DB2's parameters or parms

The fourth character of DB2 CSECT names & message identifiers is an identifying character called the *subcomponent identifier.* -- *Z* --

DB2 CSECT names and message identifiers always begin with "**DSN**"

DB2 CSECT names and message identifiers use 21 of the 26 letters and 6 of the 10 numbers

What are DSNZPARMs

- Data only, subsystem parameter load module containing the DB2 execution-time parameters
- Initially set at install time through the installation ISPF panels
- Includes macros:

DSN6ARVP	Archive dataset parameters
DSN6ENV	DB2 environment settings (removed)
DSN6FAC	DDF
DSN6GRP	Group stuff for data sharing
DSN6SYSP	Miscellaneous system parameters
DSN6SPRM	Initialization parameters for DBM1
DSN6LOGP	Log Stuff

Install ≠ DSNZPARM

- Some DSNZPARMs are set outside the install panels
  - Hidden – discussed later
  - Opaque – discussed later
- Some install panels do not update DSNZPARMs
  - IRLM start procedure
  - DSNHDECP
    - i.e. – data and time formats
  - Etc…

What's Meant By…

- Hidden
  - Just what the word implies, they are buried within the macros and not intended to be modified by the general public
- Opaque
  - Are not available for change using the panels, but……
- Visible
  - Changed using the install panels
  - Documented in the manuals

What's Meant By…

- Hidden
  - Just what the word implies, they are buried within the macros and not intended to be modified by the general public
- Opaque
  - Are not available for change using the panels, but……
- Visible
  - OK, Changed using an editor (but you should use the panels)
  - Documented in the manuals

Opaque DSNZPARMs

- Opaque ZPARS have been around forever
  - They usually arrive via APAR
  - The only documentation about the new ZPARM is usually in the APAR
- What's improved in DB2 9 and DB2 10?
- A new section in the manuals (PDF and Web)

"*Subsystem parameters that are not on installation panels*"

Changing Your DSNZPARMs

Edit parameter list, assemble, link and restart DB2

Change your DSNZPARMs online

Change some of your DSNZPARMs online

Change DSNZPARM parameters and dynamically load LOAD module into storage

-SET SYSPARM

- Dynamically change selected DSNZPARM values
  - Prior to Version 7, required recycle of DB2
  - Still requires the first steps of DSNTIJUZ to be executed
    - Change macro parameters
    - Assemble macros
    - Link
  - Now you should use the
    - –SET SYSPARM command

Note: There are still a few ZPARMs that require DB2 to be recycled. Refer to “Directory of subsystem parameters” in Chapter 4 of the DB2 10 Installation and Planning Guide (GC19-2974) for a complete list.

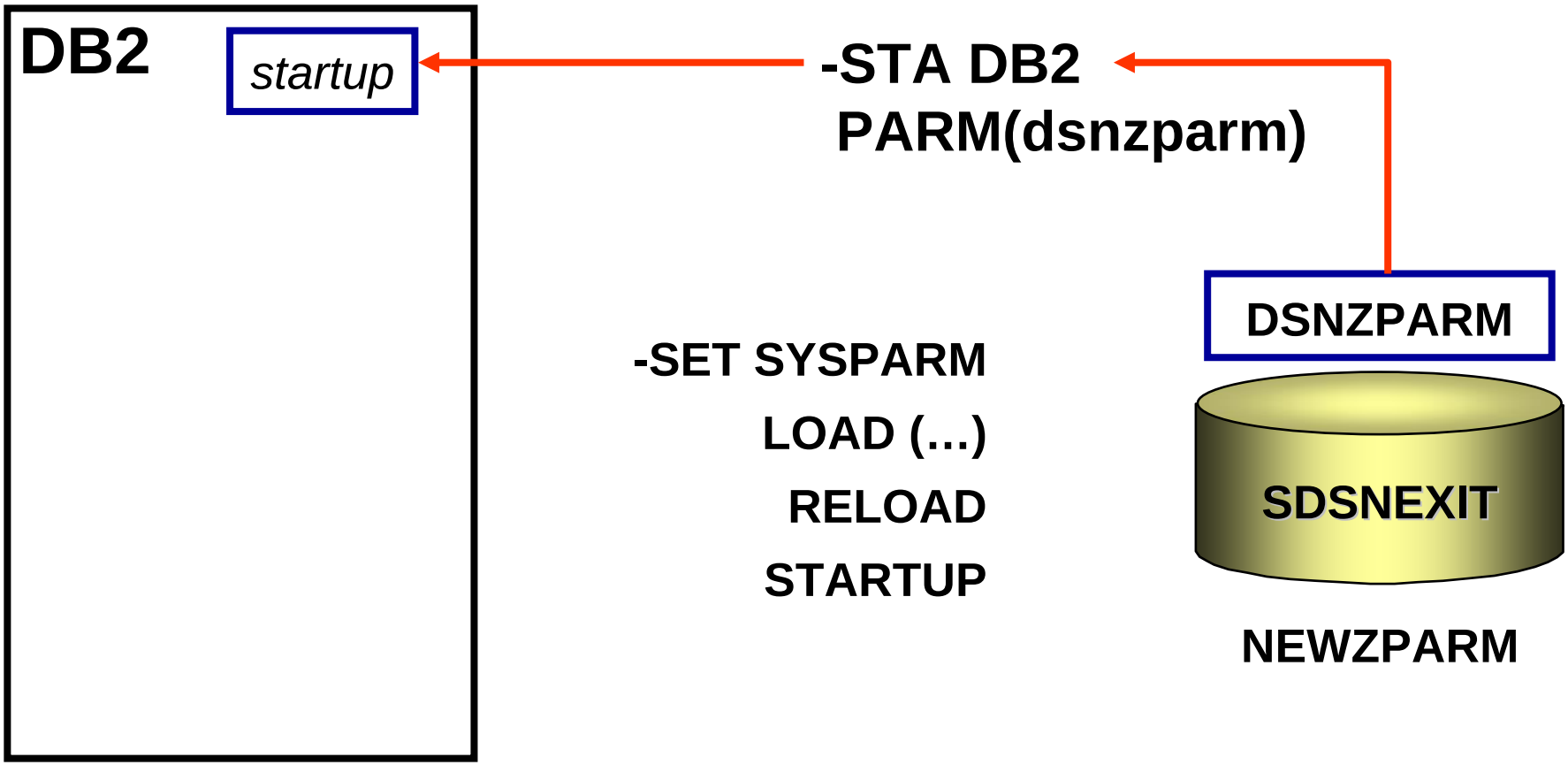
-SET SYSPARM

- Load/Reload new DSNZPARM member
  - Either SYSOPR, SYSCTRL or SYSADM must be in privilege set of auth-id issuing command
- Works only at data sharing member level
  - Each member has its own DSNZPARM load module
- Cannot change individual parameters
- Not all parameters are eligible for change
- Not all changes are immediate

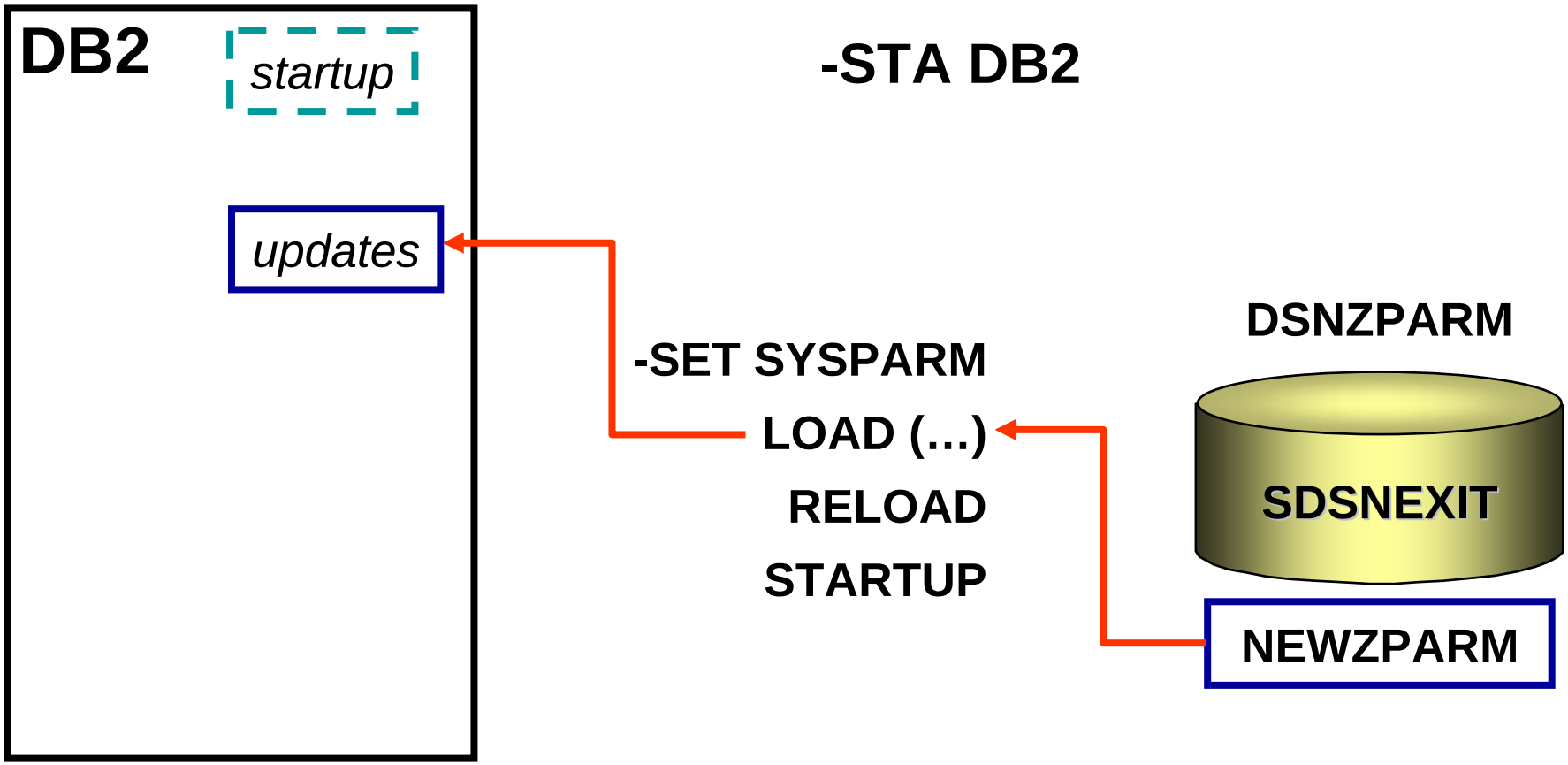
-SET SYSPARM

```
-SET SYSPARM
    LOAD
       (
          DSNZPARM
          Module name
       )
  -or-
    RELOAD
  -or-
    STARTUP
```

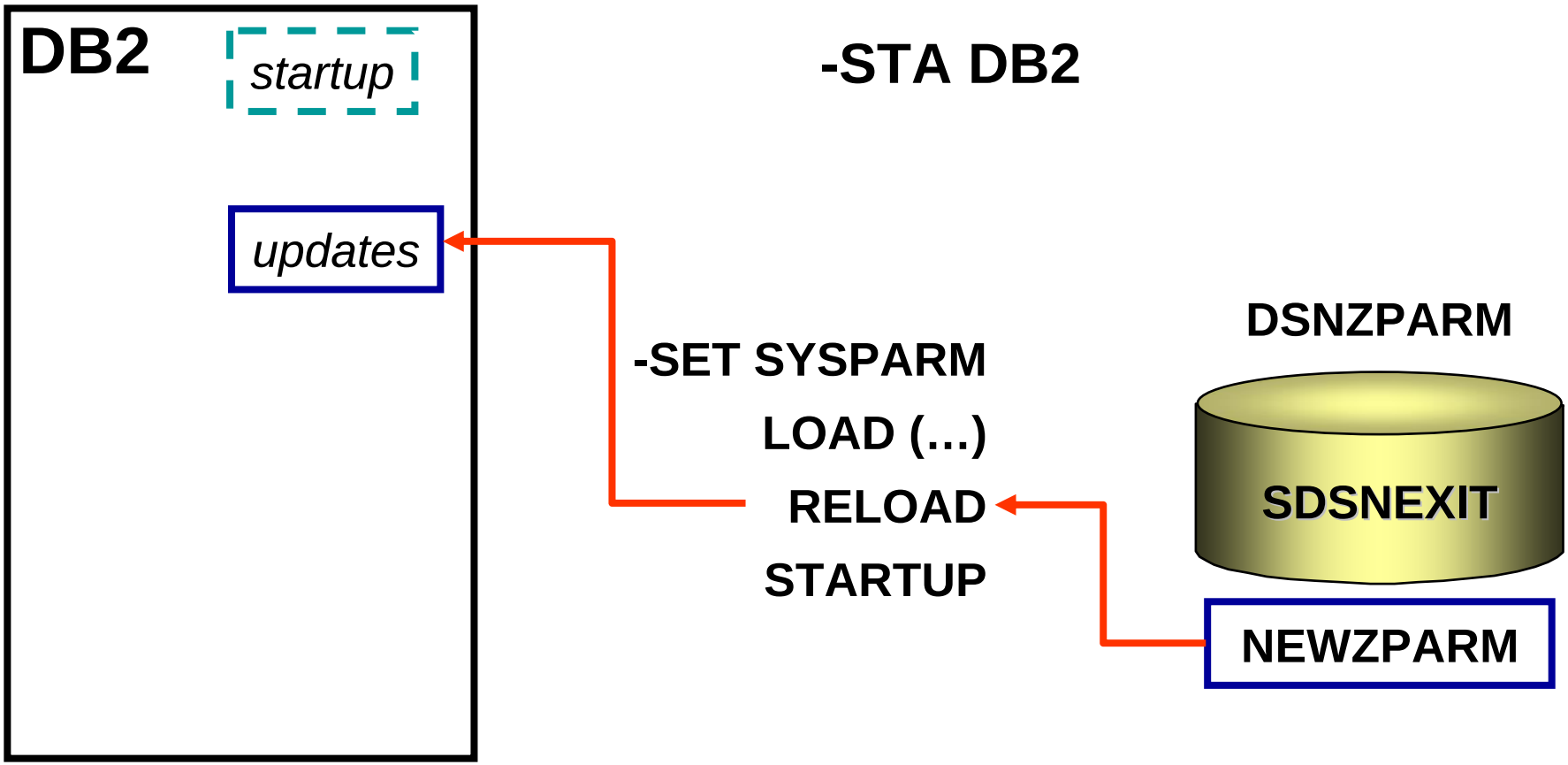
-SET SYSPARM



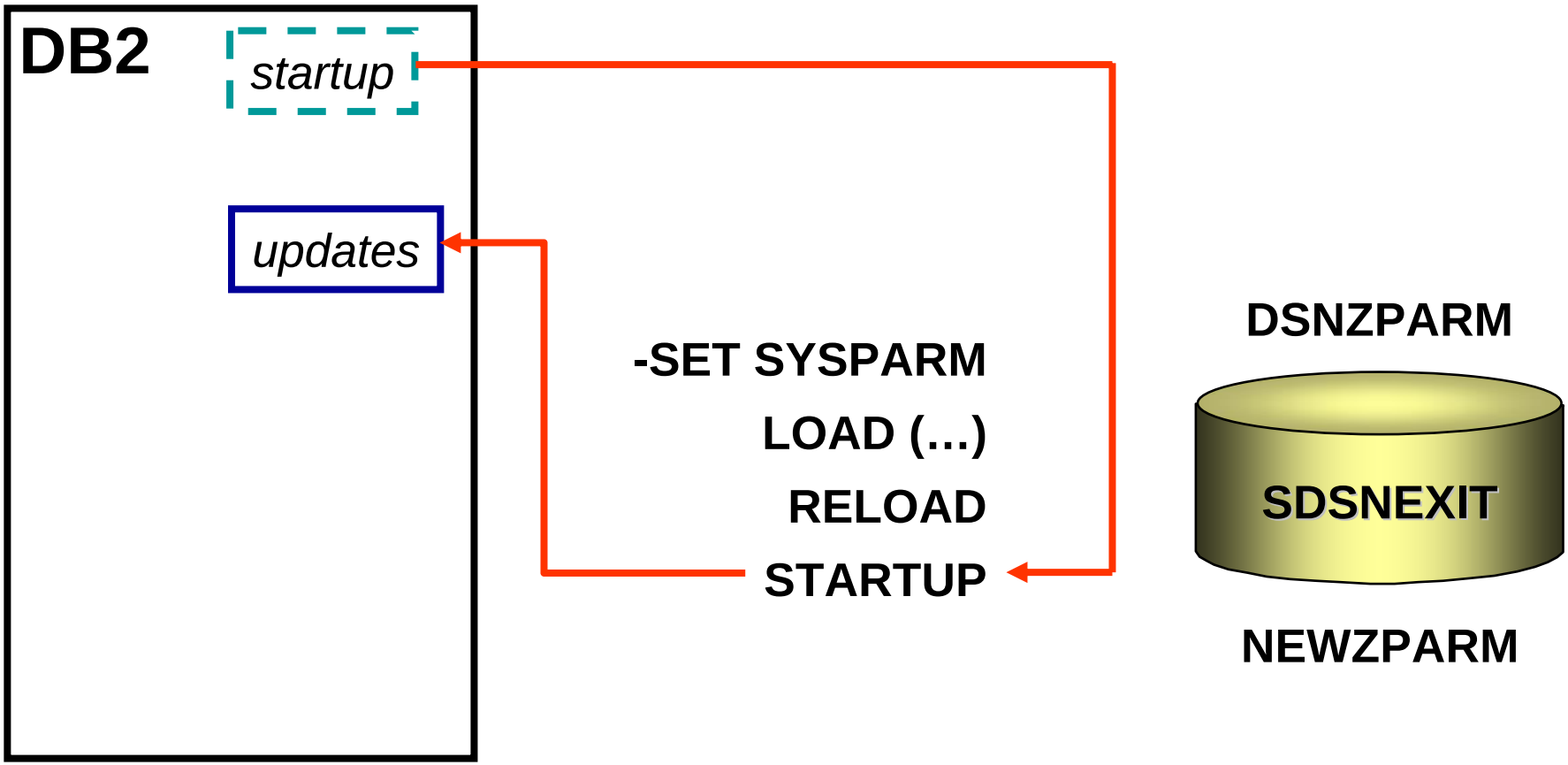
-SET SYSPARM



-SET SYSPARM



-SET SYSPARM



Display DSNZPARM Settings

- Sample program DSN8ED7
  - Generates list of current DB2 parameters settings

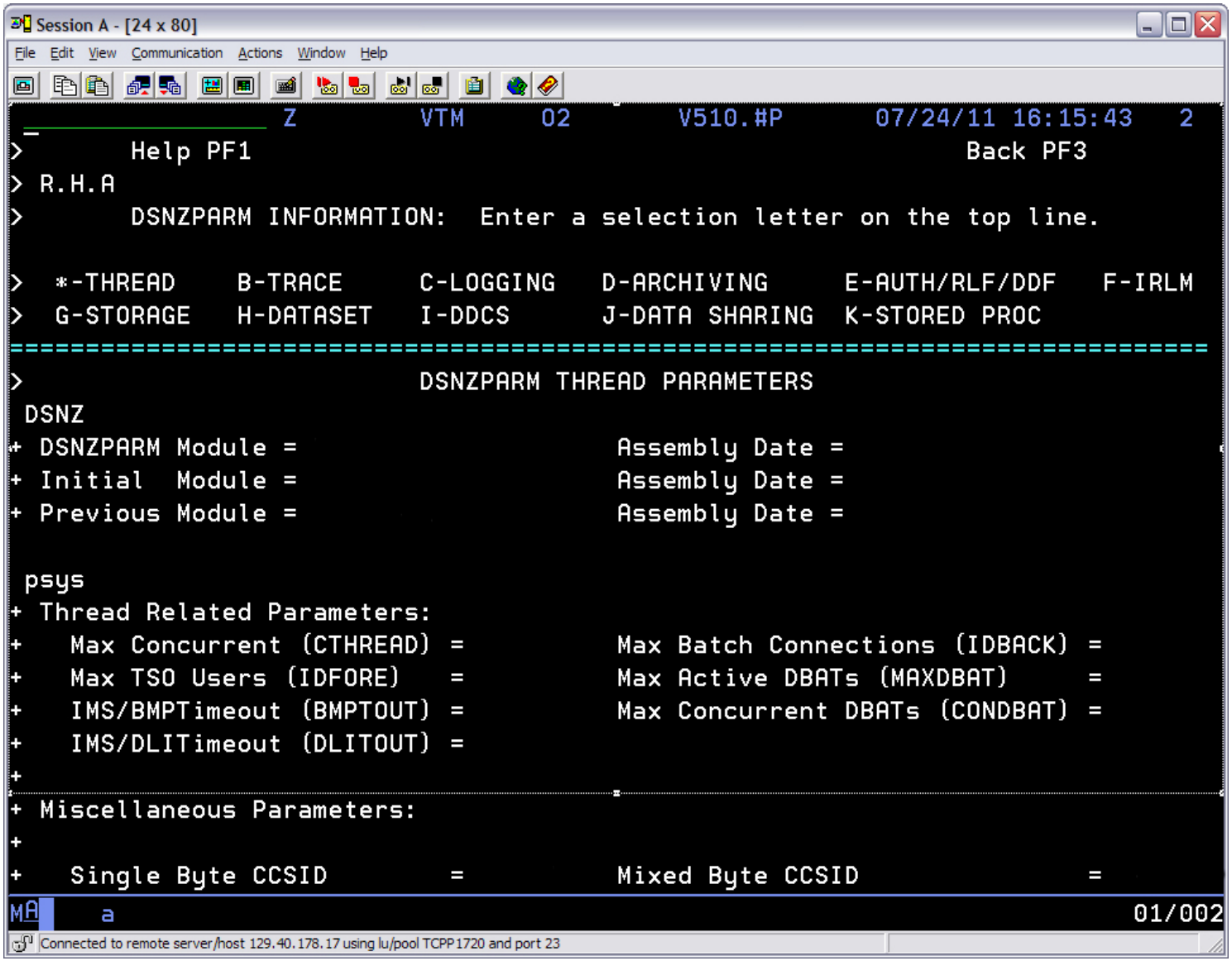
```
DSN6SYSP  AUDITST  0000000000  AUDIT TRACE           DSNTIPN 1
DSN6SYSP  CONDBAT  0000000064  MAX REMOTE CONNECTED  DSNTIPE 4
DSN6SYSP  CTHREAD  00030       MAX USERS             DSNTIPE 2
DSN6SYSP  DLDFREQ  00005       LEVELID UPDATE FREQ   DSNTIPL 14
DSN6SYSP  PCLOSEN  00005       SWITCH CHKPTS         DSNTIPL 12
```

Report Sample Only

  - Calls stored procedure DSNWZP
    - Provided with DB2
    - Also used by Control Center and Visual Explain,
- Sample job DSNTEJ6Z prepares and executes DSN8ED7
- Before running DSN8ED7 you must create the stored procedure DSNWZP (installation job DSNTIJSG).
- Don’t forget your other resources that display your ZPARMs

Display DSNZPARM Settings

OMEGAMON XE for DB2 PE V5.1.0



DSNTXAZP tool

- Updates member DSNTIDxx, input to the installation CLIST
  - Will update buffer pool settings
  - Will update DSNZPARM values
  - Will update both
  - Provides report of all DSNZPARMs
- Fully documented in the InfoCenter
  - Search on DSNTXAZP
- And in the DB2 10 Installation and Migration Guide (GC19-2974), Chapter 4
- Program was introduced by APAR PM10726

Default Changes V8 to DB2 9

DSNZPARM Macro Keyword	Old Value (V8)	New Value (V10)	Install Panel Name
BP8K0*	1000	2000	DSNTIP2
DATABASES*	100	200	DSNTIPE
CACHEPAC	100K	5M	DSNTIPP
CACHERAC	100K	5M	DSNTIPP
CHKFREQ	500,000 records	5 minutes	DSNTIPL1
CONTSTOR	**NO**	**YES**	DSNTIPE
DB2SORT	DISABLE	**ENABLE**	DSNTIP61
DLDFREQ	5	ON	DSNTIPL1
DSMAX	9,960	**20,000**	DSNTIPC
EDMDBDC	102,396K	23,400K	DSNTIPC
EDMPOOL	32,767K	**0**	DSNTIPC
EDMSTMTC	102,396K	113,386K	DSNTIPC
FLASHCOPY_PPRC	Blank	REQUIRED	DSNTIP6
IRLMRWT	**60**	**30**	DSNTIPI

Default Changes V8 to DB2 9

DSNZPARM Macro Keyword	Old Value (V8)	New Value (V10)	Install Panel Name
IRLMSWT	300	120	DSNTIP1
LRDRTHLD	0	10	DSNTIPE
MAXRBLK	8,000K	**400,000K**	DSNTIPC
MONSIZE	256K	1M	DSNTIPN
NUMLKTS	1,000	2,000	DSNTIPJ
PCLOSEN	5 checkpoints	10	DSNTIPL1
RRULOCK	NO	YES	DSNTIPI
SEQCACH	BYPASS	SEQ	none
SEQPRES	NO	YES	none
SRTPOOL	2000K	**10000K**	DSNTIPC
STATIME	5	1	DSNTIPN
STATROLL	NO	**YES**	DSNTIP61
URCHKTH	0	5	DSNTIPL1
URLGWTH	0	10K	DSNTIPL1

Default Changes DB2 9 to DB2 10

DSNZPARM Macro Keyword	Old Value (V9)	New Value (V10)	Install Panel Name
BP8K0*	1000	2000	DSNTIP2
DATABASES*	100	200	DSNTIPE
CACHEPAC	100K	5M	DSNTIPP
CACHERAC	100K	5M	DSNTIPP
CHECK_FASTREPLICATION	PREFERRED	REQUIRED	DSNTIP6
CHKFREQ	**500,000 records**	**5 minutes**	DSNTIPL1
CONTSTOR	NO	YES	DSNTIPE
DB2SORT	DISABLE	ENABLE	DSNTIP61
DLDFREQ	5	ON	DSNTIPL1
DSMAX	9,960	20,000	DSNTIPC
EDM_SKELETON_POOL	5,120K	10,240K	DSNTIPC
EDMDBDC	11,700K	23,400K	DSNTIPC
EDMPOOL	18,142	0	DSNTIPC
EDMSTMTC	56,693K	113,386K	DSNTIPC
FLASHCOPY_PPRC	Blank	REQUIRED	DSNTIP6
IRLMRWT	**60**	**30**	DSNTIPI
IRLMSWT	300	120	DSNTIP1

Default Changes DB2 9 to DB2 10

DSNZPARM Macro Keyword	Old Value (V9)	New Value (V10)	Install Panel Name
LRDRTHLD	0	10	DSNTIPE
MAXRBLK	**8,000K**	**400,000K**	DSNTIPC
MINSTOR	**YES**	**NO**	DSNTIPE
MONSIZE	256K	1M	DSNTIPN
NUMLKTS	1,000	2,000	DSNTIPJ
PARA_EFF	100	50	DSNTIP8
PCLOSEN	5	10	DSNTIPL1
* **PLANMGMT**	**OFF**	**EXTENDED**	DSNTIP8
RRULOCK	NO	YES	DSNTIPI
SEQCACH	BYPASS	SEQ	none
SEQPRES	NO	YES	none
SRTPOOL	**2000K**	**10000K**	DSNTIPC
STATIME	5	1	DSNTIPN
STATROLL	NO	YES	DSNTIP61
URCHKTH	0	5	DSNTIPL1
URLGWTH	0	10K	DSNTIPL1
UTSORTAL	**NO**	**YES**	DSNTIP61

PLAN MANAGEMENT

- PLAN MANAGEMENT on DSNTIP8
  - PLANMGMT on DSN6SPRM macro
    - DB2 10 default is EXTENDED
      - DB2 9 default was OFF
    - ON is no longer a valid value
      - APAR PM28217
    - Valid values are OFF, BASIC, and EXTENDED

Careful: REBIND PACKAGE in DB2 10 will now save old packages

- PLAN MANAGEMENT SCOPE
  - PLANMGMTSCOPE on DSN6SPRM macro
    - Only value is STATIC
  - Determines scope when not specified in the BIND

A Few Changed Maximums

DSNZPARM Keyword	DB2 9	DB2 10
STATIME, SYNCVAL*		Applies only to IFICDs 0105, 0106, and 0199 in DB2 10
STATIME, SYNCVAL		For IFICDs 0001, 0002, 0202, 0217, 0225, and 0230 always one minute
CTHREAD*	2,000	**20,000**
IDFORE	2,000	20,000
IDBACK	2,000	20,000
MAXDBAT*	1,999	**19,999**
MAXOFILR	2,000	20,000
DSSTIME	1440	60
CACHEPAC, CACHERAC	5 MB	10 MB
STATIME	1 - 1440	1 - 60 (Default now 1)
MONSIZE	16MB	64MB

* CTHREAD + MAXDBAT ≤ 20,000

*RMF sync point

What About Minimums?

DSNZPARM	DB2 9	DB2 10
OUTBUFF (400K – 400000K)	40K	400K Check region size
DLDFREQ	0, 1-32767	ON, OFF
PARAMDEG* (0-254)	0, 10 x CPs	0, 2 X CPs
PARA_EFF (0-100) 1 less affect 99 more affect	Opaque	Externalized on DSNTIP8

*PARAMDEG has no effect on the degree of parallelism if the degree is determined by OPTHINTS.

ZPARMs Removed DB2 9 to 10

- **PARTKEYU** provides the ability to update the partitioning key; this functionality is incorporated into DB2 10.
- **PREVALKEEP** was removed in DB2 10 to allow thread re-signon by a different user after COMMIT when NEXTVAL or PREVAL are used.
- **REORG_IGNORE** was set to YES to used 0 (zero) for PCTFREE and FREEPAGE when data was reloaded into a table space.
- **SJMISSKY** enabled a star join performance enhancement in previous versions; it's included in DB2 10.
- **XMLTABJPD** is for an XML optimization enhancement delivered in DB2 9 by APAR PM05664; it's incorporated in DB2 10; see the APAR to learn more.

ZPARMs Removed DB2 9 to 10

- **EDMBFIT** is no longer needed. Since DB2 V7, the single Environmental Descriptor Manager (EDM) pool was divided into four separate pools. You should use the default, NO, for EDMBFIT and increase the EDM pool size to reduce latch class 24. This decreased the need to use EDMBFIT = YES, eliminating the need for this DSNZPARM.
- **LOGAPSTG** is the log apply buffer.
- **MAX_UTIL_PARTS** was introduced to DB2 V8 and DB2 9 by APAR PK51853 to control the number of compressed partitions LOAD or REORG can process. This subsystem parameter is removed in DB2 10 because the limit restriction was removed.
- **OPTHYBCST** (PK90334), **OPTIXOPREF** (PK68986), and **OPTOIRCPF** (PK89637) introduced optimization enhancements to DB2 V8 and DB2 9; the enhancements were incorporated into DB2 10. The APAR numbers provide details of what each parameter does.

ZPARMs Removed V8 to DB2 10

- **DBPROTCL** is no longer supported; the DBPROTOCOL bind option is DRDA by default.
- **MAX_OPT_ELAP** specifies the maximum amount of elapsed time the DB2 optimizer can consume.
- **MORE_UNION_DISTRIBUTION** when set ON, can improve performance of queries using views defined with UNION ALL.
- **RELCURHL** is an option to hold a lock over a commit.
- **STORPROC** is the parameter for creating stored procedures.
- **SUPPRESS_TS_CONV_WARNING**, the option to turn off messages when DB2 converts a table space from index-controlled to table-controlled partitioning.
- **TABLES_JOINED_THRESHOL**D, setting a limit (16) on table joins.

Deprecated ZPARMs

- DISABSCL - DSN6SPRM macro
- OJPERFEH - DSN6SPRM macro
- OPTIOWGT - DSN6SPRM macro
- OPTIXIO - DSN6SPRM macro
- PTCDIO - DSN6SPRM macro
- RETVLCFK - DSN6SPRM macro
- SEQCACH - DSN6SPRM macro
- SEQPRES - DSN6SPRM macro
- SMSDCFL and SMSDCIX parameters DSN6SPRM macro
- STATCLUS - DSN6SPRM macro

Deprecated ZPARMs

- **DISABSCL** on DSN6SPRM macro
  - Default is NO
  - Updatable using SET SYSPARM command
  - Sets SQLWARN1 and SQLWARN5 for non-scrollable cursors on OPEN and ALLOCTE CURSOR.
  - Introduced in DB2 Version 7 by APAR PQ65622 as an opaque DSNZPARM.

- **OJPERFEH** on DSN6SPRM macro
  - Default is YES
  - NOT SET SYSPARM updatable
  - Enables several performance enhancements in outer joins. Overriding the default by specifying NO disables the enhancements.
  - Almost always, this value should be set to YES.
  - This opaque parameter was introduced using a hidden DSNZPARM in DB2 V5 and later updated to an opaque DSNZPARM. APARs PQ29780 and PQ48485 have additional details.

Deprecated ZPARMs

- **OPTIOWGT** on DSN6SPRM macro
  - Default is ENABLE
  - Updatable using SET SYSPARM command
  - Enables support for an improved formula for balancing the costs of I/O and CPU speeds.
  - This support was added in DB2 9 via APAR PK61277. ENABLE is the default as of APAR PK75643.
- **OPTIXIO** on DSN6SPRM macro
  - Default is ON
  - Updatable using SET SYSPARM command
  - This opaque parameter can improve I/O with significantly less sensitivity to buffer pool and object size when the current default (ON) is used.
  - This function was delivered in DB2 V8 via APAR PK12803
    - Default was changed to **ON** with APAR PK26613.

Deprecated ZPARMs

- **PTCDIO** on DSN6SPRM macro
  - Default is off
  - This opaque parameter is a switch to turn off a change made to determine the cost of using an index by APAR PQ86763 in DB2 V7.
    - The actual DSNZPARM parameter was added via APAR PQ97866 with a default of OFF.
  - This ZPARM should not be enable without guidance from IBM support
  - Not something carried forward

Deprecated ZPARMs

- **RETVLCFK** on DSN6SPRM macro
  - Default is NO
  - Updatable using SET SYSPARM command
  - If this parameter is set to its default no
  - This opaque parameter specifies whether a VARCHAR column data can be retrieved from a padded index.
  - This parameter was introduced in DB2 V5 by APAR PQ10465.

Deprecated ZPARMs

- **SEQCACH** on DSN6SPRM macro
  - Default is SEQ
  - controls whether DB2 prefetch uses sequential access for reading the cache on a 3990 controller. The default in DB2 10, SEQ, prompts use of sequential access. BYPASS tells DB2 prefetch to bypass the cache

- **SEQPRES** on DSN6SPRM macro
  - Default is YES
  - Updatable using SET SYSPARM command
  - affects how long a utility scan leaves the data in the cache. The default value in DB2 10 is YES; this setting leaves DB2 utility prefetch reads in cache longer.

Deprecated ZPARMs

- **SMSDCFL** and **SMSDCIX** parameters on macro DSN6SPRM support specifying a DFSMS data class for a table space and indexes. The default is a blank string. These parameters were introduced in DB2 V7 by APAR PQ32414. As of DB2 9 NFM, DATACLAS, MGMTCLAS, and STORCLAS are included as syntax on the SQL statements CREATE/ALTER STOGROUP, and should be used rather than the DSNZPARM parameter.

Deprecated ZPARMs

- The **STATCLUS** parameter, also on macro DSN6SPRM, specifies the type of clustering statistics RUNSTATS collects. The default is ENHANCED clustering statistics, which should result in an improved CLUSTERRATION formula. STATCLUS was added to DB2 9 on installation panel DSNTIP6 and removed from the install panel, making this an opaque parameter in DB2 10.

Fast Replication (Not new to DB2 10)

- FAST REPLICATION on DSNTIP6
- CHECK_FASTREPLICATION on DSN6SPRM macro
  - Valid values: REQUIRED and DEFERRED
  - REQUIRED forces the CHECK utility to use DSS COPY. If Flash Copy cannot be used, the CHECK utility fails.
    - This is the default setting in DB2 10
  - PREFERRED simply directs the CHECK utility to use fast replication only if Flash Copy is available.
    - This is the default setting for DB2 9
  - Can change using –SET SYSPARM command

Delete Coupling Facility Structures

- DEL_CFSTRUCTS_ON_RESTART
  - Data sharing only ZPARM
    - Help avoid using corrupted coupling facility structures after restart
  - On the DSN6SYSP macro
  - Valid values: YES or NO
    - NO- No attempts are made to delete structures
    - YES - attempt to delete the structures in the coupling facility at restart. If deletion is successful, the deleted structures will be recovered during group restart. Deletion is only attempted when there are NO DB2 members connected to the structures.
- Cannot be changed online

This function delivered via APARs PM28295 and PM31807

Use FLASHCOPY Technology

- 5 DSNZPARMS available to enable DB2 10 support of FLASHCOPY if DB2 data sets are on FlashCopy Version 2 disk.
  - FLASHCOPY_COPY=
  - FLASHCOPY_LOAD=
  - FLASHCOPY_REORG_TS=
  - FLASHCOPY_REBUILD_INDEX=
  - FLASHCOPY_REORG_INDEX=
    - Valid values: YES or NO
      - YES – the corresponding utility can use FlashCopy
      - NO – Flash Copy is not used
  - Default – NO
  - This feature is new function mode (NFM) only
    - "DB2 10 Installation and Migration Guide (GC19-2974)" states that these keywords are ignored in conversion mode (CM) and enabling new function mode (ENFM) when migrating from both DB2 V8 and DB2 9. However, not quite true.
    - Good news: APAR PM33104 fixes issue comes into play. .

Can change using –SET SYSPARM command

DDL/DCL Timeout Control

- DDLTOX
  - DSN6SPRM macro, Valid values: 1 to 254
  - Default – 1
    - 1 – use IRLM resource timeout value
    - 2-254 is a factor time the resource timeout value.
  - Can change using –SET SYSPARM command

- Requires APAR PM32921, PM37660, and PM36177

MAX TEMP RID

- MAX TEMP RID on DSNTIP9
- MAXTEMPS_RID
  - On DSN8SPRM macro
    - Default is NOLIMIT
    - Values: NONE, NOLIMIT, or 1 – 329166
  - Amount of temp storage can be used for RID blocks that overflow RID pool
  - Not for pair-wise join RID processing
  - Can change using –SET SYSPARM command

INDEX_IO_PARALLELISM

- INDEX_IO_PARALLELISM
  - I/O parallelism for concurrent insert operations on multiple indexes
  - DSN6SPRM macro
    - Opaque
    - Default is YES
    - Valid values are NO and YES
  - Can change using –SET SYSPARM command

Catalog, Directory SMS names

- For catalog and directory
  - On DSN6SPRM macro
    - CATDDACL– Data Class
    - CATDMGCL – Management Class
    - CATDSTCL – Storage Class
- For catalog and directory indexes
  - On DSN6SPRM macro
    - CATXDACL – Data Class
    - CATXMGCL – Storage Class
    - CATXSTCL – Storage Class
- Acceptable values – blank or appropriate SMS class name
- Default – blank
  - Can change ALL using –SET SYSPARM command

CHAR Built-in Function Issue

- DB2 10 CHAR built-in function no longer returns
  - Leading zeros
  - Trailing decimal point character
  - Leading blanks for positive decimal value
  - Example:

Setting	CHAR(000.1)	CHAR(1000.)	CHAR(1.1)
CURRENT	'.1'	'1000'	'1.1'
V9	'000.1'	'1000.'	'1.1'

  - BIF_COMPATIBILITY
    - DSN6SPRM macro
    - Valid values – V9, CURRENT
    - Defaults:
      - If an installation then CURRENT
      - If migration to DB2 10 then V9
  - Can change using –SET SYSPARM command

SET CHECK PENDING

- CHECK_SETCHKP
- DSN6SPRM macro
  - Valid values: YES or NO
    - For YES, no restrictive state set for SHRLEVEL CHANGE
  - Default: NO
  - Can change using –SET SYSPARM command

DISALLOW_DEFAULT_COLLID

- DISALLOW_DEFAULT_COLLID
  - Should default collection ID, DSN_DEFAULT_COLLID_*planname*, be used for implicitly generated packages during automatic DBRM to package conversion
  - DSN6SPRM macro
  - Valid values: YES or NO
    - YES
      - BIND PLAN cannot be used with MEMBER option
      - REBIND PLAN cannot be used without COLLID
      - Automatic rebinds do not convert existing plans that were last bound form DBRMs
    - NO
      - BIND PLAN contains MEMBER option, bind DBRM into package and package into plan using DSN_DEFAULT_COLLID_planname
      - REBIND the same
      - Auto rebinds the same
  - Can change using –SET SYSPARM command

Compress SMF Records

- COMPRESS SMF RECS on DSNTIPN
- SMFCOMP on DSN6SYSP macro
  - Valid values – OFF or ON
  - Default – OFF
  - Can change using –SET SYSPARM command

SIGNON Module Name

- SIGNON on DSNTIPO3
- SIGNON_MODULE on DSN6SYSP macro
  - Valid values
    - Installation: 1 to 8 characters
    - Migration: DSN3@SGN
  - Default – DSN3@SGN
- Requires NFM – If not NFM will fail
- Requires DB2 10 ERLY code – If not, will fail
- This parameter cannot be changed online

Default Partition Size

- DEFAULT PARTITION SIZE on DSNTIP7
- DPSEGSZ on DSN6SYSP
  - Valid values: 0, 4, 8, 12, … 60, 64
  - Default: 32
- Lots of combinations of what this can do
  - 0 and NUMPARTS: classic partitioning
  - >0 and NUMPARTS: range-partitioned
  - More; see Install Guide
- Used if SEGSIZE is not specified
- Deprecated in DB2 10
- Can change using –SET SYSPARM command

Even More…

- REALSTORAGE_MANAGEMENT
- REALSTORAGE_MAX
- REVOKE_DEP_PRIVILEGES
- SECADM1
- SECADM1_INPUT_STYLE
- SECADM2
- SECADM2_INPUT_STYLE
- SECADM2_TYPE
- SEPARATE_SECURITY
- SIMULATED_CPU_COUNT
- SIMULATED_CPU_SPEED
- SPT01_INLINE_LENGTH
- ACCESS_CNTL_MODULE
- CHKLOGR
- CHKMINS
- CHKTYPE

And Still More…

References

- A First Look: DB2 10 DSNZPARM Changes
- The Good, the Bad and the Really Ugly: DB2's DSNZPARM Module
- Just the Good This Time: More DB2 DSNZPARM Keywords

- DB2 10 Installation and Migration Guide (CG19-2974)

Thank You for Attending!

Willie

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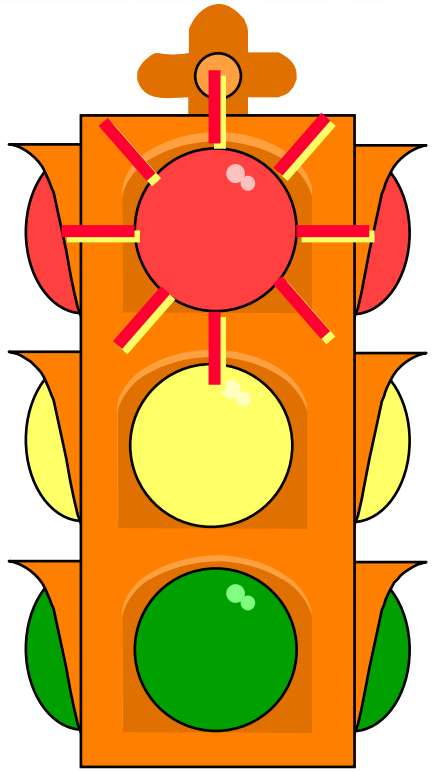
My DB2 Blog
www.it.toolbox.com/blogs/db2zos/

my TWITTER | my LINKEDIN | My slideshare profile | my FACEBOOK

Stop!!
The End



What follows are the slides from the original
"*The Good, the Bad, and the Really Ugly: DSNZPARM*" presentation.
They are NOT part of this presentation.

What Can You Change

Notes!

- **DSN6ARVP**
  - All parameters are changeable
- **DSN6FAC**
  - RLFERRD, , RESYNC,
- **DSN6LOGP**
  - ARC2FRST, DEALLCT, MAXRTU
- **DSN6GRP**

What Can You Change

Notes!

- **DSN6ARVP**
  - All parameters are changeable
- **DSN6FAC**
  - RLFERRD, **IDTHTOIN**, RESYNC, **TCPALVER**, **MAXTYPE1**, **TCPKPALV**, **POOLINAC**
- **DSN6LOGP**
  - ARC2FRST, DEALLCT, MAXRTU
- **DSN6GRP**
  - **IMMEDWRI**

Underlined parms are changeable as of Version 8

What Can You Change

Notes!

- **DSN6SYSP**
  - , CHKFREQ, CONDBAT, CTHREAD, DBPROTCL, DLDFREQ, DSSTIME, , EXTSEC, IDBACK, IDFORE, IDXBPOOL, IXQTY, LOBVALA, LOBVALS, MAXDBAT, PCLOSEN, PCLOSET, PTASKROL, RLFAUTH, RLFERR, RLFTBL, STATIME,STORMXAB, STORTIME, SYNCVAL, TBSBPOOL, TSQTY, , URCHKTH, URLGWTH, WLMENV

What Can You Change

Notes!

- **DSN6SYSP**
  - , CHKFREQ, CONDBAT, CTHREAD, DBPROTCL, DLDFREQ, DSSTIME, **EXTRAREQ**, **EXTRASRV**, EXTSEC, IDBACK, IDFORE, IDXBPOOL, IXQTY, LOBVALA, LOBVALS, MAXDBAT, PCLOSEN, PCLOSET, PTASKROL, RLFAUTH, RLFERR, RLFTBL, STATIME,STORMXAB, STORTIME, SYNCVAL, TBSBPOOL, TSQTY, URCHKTH, URLGWTH, WLMENV

What Can You Change

Notes!

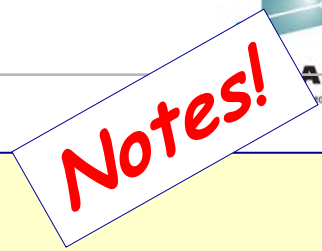
- **DSN6SYSP**
  - **ACCUMACC**, **ACCUMUID**, CHKFREQ, CONDBAT, CTHREAD, DBPROTCL, DLDFREQ, DSSTIME, **DSVCI**, EXTRAREQ, EXTRASRV, EXTSEC, IDBACK, IDFORE, IDXBPOOL, IXQTY, LOBVALA, LOBVALS, MAXDBAT, **MGEXTSZ**, PCLOSEN, PCLOSET, PTASKROL, RLFAUTH, RLFERR, RLFTBL, STATIME,STORMXAB, STORTIME, SYNCVAL, TBSBPOOL, TSQTY, **UIFCIDS**, URCHKTH, URLGWTH, WLMENV

Parms in RED are new keywords as of Version 8

What Can You Change

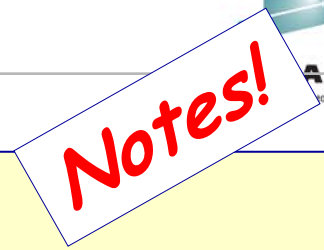
- **DSN6SPRM**
  - ABEXP, ABIND, AUTHCACH, BINDNV, BMPTOUT, CDSSRDEF, CONTSTOR, DBACRVW, DESCSTAT, DLITOUT, DSMAX, EDMPOOL, , EVALUNC, IRLMSWT, MAXRBLK, MINRBLK, MINSTOR, , NUMLKTS, NUMLKUS, OPTHINTS, PARAMDEG, RECALLD, , RELCURHL, RETLWAIT, RRULOCK, SEQCACH, SEQPRES, SJTABLES, SKIPUNCI, SMSDCFL, SMSDCIX, STARJOIN, STATROLL, STATSINT, SUPERRS, SYSADM, SYSADM2, SYSOPR, SYSOPR2, UTIMOUT,

What Can You Change



- **DSN6SPRM**
  - ABEXP, ABIND, AUTHCACH, BINDNV, BMPTOUT, **CACHEDYN**, CDSSRDEF, **CHGDC**, CONTSTOR, DBACRVW, DESCSTAT, DLITOUT, DSMAX, **EDMBFIT**, EDMPOOL, **EDPROP**, EVALUNC, IRLMSWT, **MAXKEEPD**, MAXRBLK, MINRBLK, MINSTOR, **NPGTHRSH**, NUMLKTS, NUMLKUS, **OJPERFEH**, OPTHINTS, PARAMDEG, **PARTKEYU**, RECALLD, RELCURHL, RETLWAIT, **RETVLCFK**, RRULOCK, SEQCACH, SEQPRES, SJTABLES, SKIPUNCI, SMSDCFL, SMSDCIX, **SRTPOOL**, STARJOIN, **STATHIST**, STATROLL, STATSINT, SUPERRS, SYSADM, SYSADM2, SYSOPR, SYSOPR2, UTIMOUT, **XLKUPDLT**

What Can You Change



- **DSN6SPRM**
  - ABEXP, ABIND, **AEXITLIM**, AUTHCACH, BINDNV, BMPTOUT, CACHEDYN, CDSSRDEF, CHGDC, CONTSTOR, DBACRVW, DESCSTAT, DLITOUT, DSMAX, EDMBFIT, **EDMDBDC**, EDMPOOL, **EDMSTMTC**, EDPROP, EVALUNC, IRLMSWT, **LRDRTHLD**, **MAINTYPE**, MAXKEEPD, **MAX_NUM_CUR**, MAXRBLK, **MAX_ST_PROC**, MINRBLK, MINSTOR, NPGTHRSH, NUMLKTS, NUMLKUS, OJPERFEH, OPTHINTS, **PADIX**, PARAMDEG, PARTKEYU, RECALLD, **REFSHAGE**, RELCURHL, RETLWAIT, RETVLCFK, RRULOCK, SEQCACH, SEQPRES, **SJMXPOOL**, SJTABLES, SKIPUNCI, SMSDCFL, SMSDCIX, SRTPOOL, STARJOIN, STATHIST, STATROLL, STATSINT, SUPERRS, SYSADM, SYSADM2, SYSOPR, SYSOPR2, UTIMOUT, **VOLTDEVT**, XLKUPDLT

Not Everything Takes Effect Immediately

- AUTHCACH
- LOBVALA
- LOBVALS
- MAXRBLK
- NUMLKTS
- EDMPOOL
- EDMBFIT
- EDMDSPAC (not in V8)
- RLFERRD, RLFAUTH
- RLFTBL, RLFERR
- IDBACK, IDFORE
- BMPTOUT, DLITOUT
- CHKFREQ (was LOGLOAD)
- DEALLCT, MAXRTU
- DSSTIME, STATIME, PCLOSET
- PTASKROL
- MAXDBAT

System behavior change

- The following DSNZPARMs may cause a behavioral change when modified.
- PARTKEYU
  - (Restriction to update partitioning key lifted in V5 with APAR PQ16946 and ZPARM added by APAR PQ22653)
  - Changes in Version 8
- SYSADM/SYSADM2
  - (requires Install SYSADM or Install SYSADM2 privilege)
- CACHEDYN & MAXKEEPD
- XLKUPDLT
  - Introduced by APAR PQ18915

Let's Look at the Visible Parameters First

Thread Stuff

CONDBAT	DSN6SYSP	DSNTIPE	Max remote connected
CTHREAD	DSN6SYSP	DSNTIPE	Max Users Macro
IDBACK	DSN6SYSP	DSNTIPE	Max batch connect
IDFORE	DSN6SYSP	DSNTIPE	Max TSO connect
MAXDBAT	DSN6SYSP	DSNTIPE	Max remote active

Storage

EDMBFIT	DSN6SPRM	DSNTIP8	Free space utilization for large pools
EDMDSPAC (removed in V8)	DSN6SPRM	DSNTIPC	EDM Pool data space size
EDMPOOL	DSN6SPRM	DSNTIPC	environmental descriptor manager pool
SEQCACH	DSN6SPRM	DSNTIPE	Sequential cache
SEQPRES	DSN6SPRM	DSNTIPE	Utility Cache Option
MAXRBLK	DSN6SPRM	DSNTIPC	Storage for RID Blocks
MAXKEEPD	DSN6SPRM	DSNTIPE	Number of dynamic SQL statements that can be keep past a commit point when binding with KEEPDYNAMIC(YES)
SRTPOOL	DSN6SPRM	DSNTIPC	Storage for sort pool
All Threads			See previous foil for list of thread parms

Logging

BACKODUR	DSN6SYSP	DSNTIPL	How much back out processing when LBACKOUT
DLDFREQ	DSN6SYSP	DSNTIPL	How often level id is updated in checkpoints
CHKFREQ	DSN6SYSP	DSNTIPL	System checkpoint frequency in minutes or logs
LBACKOUT	DSN6SYSP	DSNTIPL	Should back out log processing be postponed
LOGAPSTG	DSN6SYSP	DSNTIPL	Storage for fast log apply
OUTBUFF	DSN6LOGP	DSNTIPL	Output buffer size used writing the active log
PCLOSEN	DSN6SYSP	DSNTIPL	Duration in checkpoints or minutes between updates before page set is switched to RO
PCLOSET	DSN6SYSP	DSNTIPL	
URCHKTH	DSN6SYSP	DSNTIPL	Number of checkpoint cycles for uncommitted units of recovery (UR)
URLGWTH	DSN6SYSP	DSNTIPL	Number of log records in uncommitted UR

SET LOG LOGLOAD/CHKTIME

Programming

CACHEDYN	DSN6SPRM	DSNTIP8	Dynamic SQL cache
CDSSRDEF	DSN6SPRM	DSNTIP8	Current degree
DECDIV3	DSN6SPRM	DSNTIP4	Minimum divide scale
DESCSTAT	DSN6SPRM	DSNTIP4	Static describe
OPTHINTS	DSN6SPRM	DSNTIP8	Optimization hints

Locking

IRLMRWT	DSN6SPRM	DSNTIPI	Resource timeout
NUMLKTS	DSN6SPRM	DSNTIPJ	Locks per table (space)
NUMLKUS	DSN6SPRM	DSNTIPJ	Locks per user
SKIPUNCI (V8)	DSN6SPRM	DSNTIP8	Skip Uncomm Inserts
EVALUNC	DSN6SPRM	DSNTIP4 (V7) DSNTIP8 (V8)	Evaluate Uncommitted
RRULOCK	DSN6SPRM	DSNTIPI	U LOCK FOR RR/RS
XLKUPDLT	DSN6SPRM	DSNTIPI	X Lock for searched U/D
RELCURHL	DSN6SPRM	DSNTIP4 (V7) DSNTIP8 (V8)	RELEASE LOCKS
RETLWAIT	DSN6SPRM	DSNTIPI	Retained lock timeout

Database Access Threads

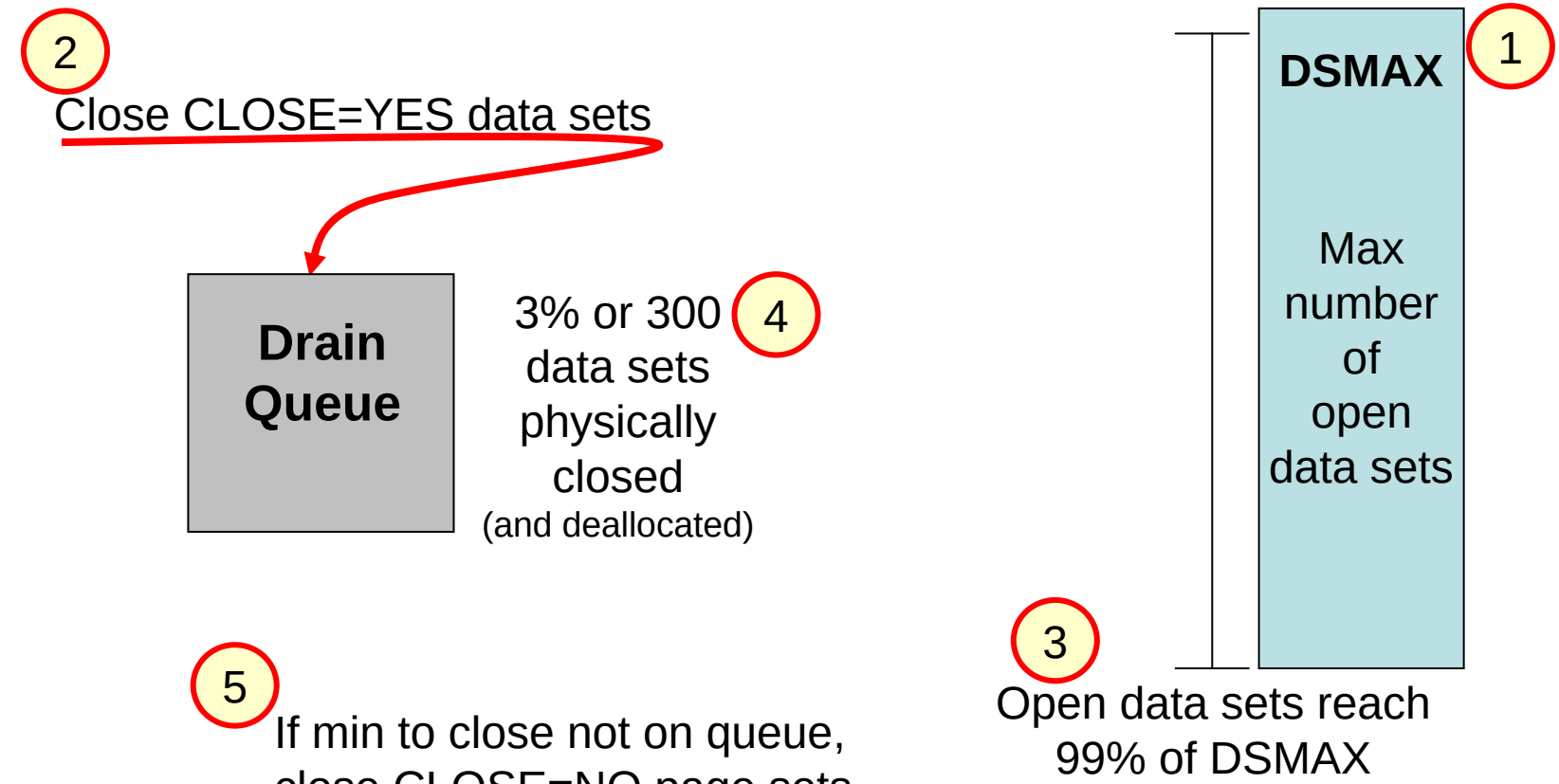
CMSTAT	DSN6FAC	DSNTIPR	DDF threads
CONDBAT	DSN6SYSP	DSNTIPE	Max remote connected
CONTSTOR	DSN6SPRM	DSNTIPE	Contract thread storage
IDTHTOIN	DSN6FAC	DSNTIPR	Idle thread timeout
MAXDBAT	DSN6SYSP	DSNTIPE	Max remote active
POOLINAC	DSN6FAC	DSNTIP5	Pool thread timeout

DSMAX

DSMAX	DSN6SPRM	DSNTIPC	Max number of open data sets
Approx Storage used: DSMAX * 1.8K	Default is calculated	Calculated default does not take into account partitioning	Acceptable values: 1 – 100,000 (V8)

Deferred Close

Affects CLOSE YES and CLOSE NO page sets

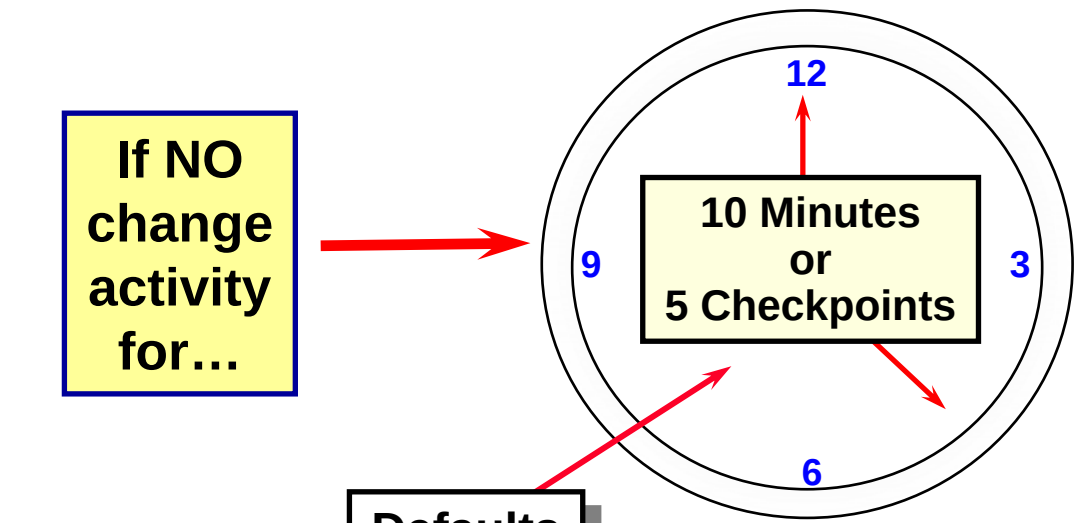


Read Only Switch

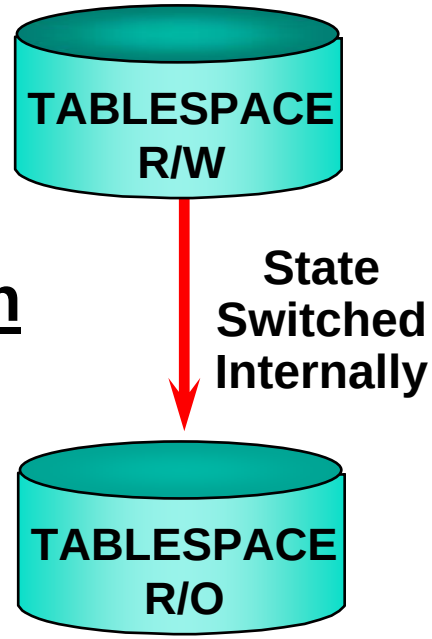
- RO SWITCH CHKPTS
  - DSN6SYSP PCLOSEN
  - Number of consecutive checkpoints since last update
  - Default is 5 checkpoints
- RO SWITCH TIME
  - DSN6SYSP PCLOSET
  - Number of minutes since last update
  - Default is 10 minutes

Read Only Switch

For CLOSE YES and CLOSE NO page sets



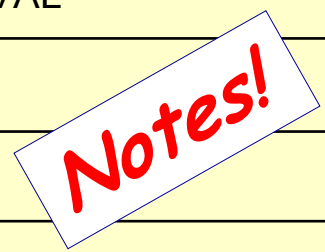
Then



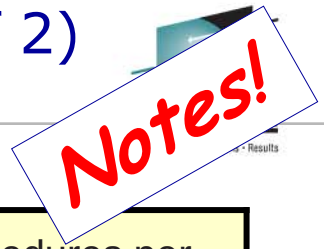
Flush Database Buffers
Update End RBA
Update RB_RBA
RO Page Sets not Logged

DSNZPARMs Added in Version 8 (1 of 2)

ACCUMACC	DSN6SYSP	DSNTIPN	Specifies whether DB2 accounting data should be accumulated by the user for DDF and RRSAF threads.
ACCUMUID	DSN6SYSP	DSNTIPN	Aggregation fields to be used for DDF and RRSAF accounting rollup
AEXITLIM	DSN6SPRM	DSNTIPP	AUTH EXIT LIMIT
DSVCI	DSN6SYSP	DSNTIP7	VARY DS CONTROL INTEVAL
EDMDBDC	DSN6SPRM	DSNTIPC	EDM DBD cache size
EDMSTMTC	DSN6SPRM	DSNTIPC	EDM Statement Cache size
LRDRTHLD	DSN6SPRM	DSNTIPE	LONG-RUNNING READER
MAINTYPE	DSN6SPRM	DSNTIP8	Default value for CURRENT MAINTAINED TABLE TYPES FOR OPTIMIZATION special register
MAX_NUM_CUR	DSN6SPRM	DSNTIPX	Maximum number of open cursors

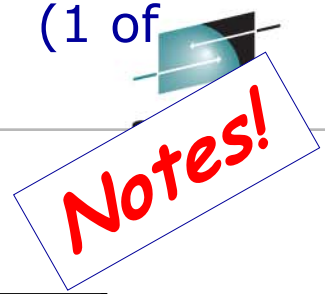


DSNZPARMs Added in Version 8 (2 of 2)



MAX_ST_PROC	DSN6SPRM	DSNTIPX	Maximum number of stored procedures per thread
MGEXTSZ	DSN6SYSP	DSNTIP7	OPTIMIZE EXTENT SIZING
PADIX	DSN6SPRM	DSNTIPE	Pad new indexes by default
REFSHAGE	DSN6SPRM	DSNTIP8	Default value for the CURRENT REFRESH AGE special register
SJMXPOOL	DSN6SPRM	DSNTIP8	Maximum size of the virtual memory pool for star join queries in MB
SMF89	DSN6SYSP	----------	USAGE PRICING
UIFCIDS	DSN6SYSP	DSNTIPN	Output from IFC records should include Unicode information
VOLTDEVT	DSN6SPRM	DSNTIPA2	Device type or unit name for allocating temporary data sets

Changed Online Change Option (1 of 2)



			Pre-V8	Version 8
* **CACHEDYN**	DSN6SPRM	DSNTIP8	No	Yes
CHGDC	DSN6SPRM	DSNTIPO	No	Yes
EDMBFIT	DSN6SPRM	DSNTIP8	Opaque/No	Yes
EDPROP	DSN6SPRM	DSNTIPO	No	Yes
EXTRAREQ	DSN6SYSP	DSNTIP5	No	Yes
EXTRASRV	DSN6SYSP	DSNTIP5	No	Yes
IDTHTOIN	DSN6FAC	DSNTIPR	No	Yes
IMMEDWRI	DSN6GRP	DSNTIP8	No	Yes
MAXKEEPD	DSN6SPRM	DSNTIPE	No	Yes
MAXTYPE1	DSN6FAC	DSNTIPR	No	Yes

Changed Online Change Option (2 of 2)

			Pre-V8	Version 8
NPGTHRSH	DSN6SPRM	---	Opaque/No	Yes
OJPERFEH	DSN6SPRM	---	Opaque/No	Yes
PARTKEYU	DSN6SPRM	DSNTIP8	Opaque/No	Yes
POOLINAC	DSN6FAC	DSNTIP5	No	Yes
RETVLCFK	DSN6SPRM	DSNTIP8	Yes	Now consider non-padded
SRTPOOL	DSN6SPRM	DSNTIPC	No	Yes
STATHIST	DSN6SPRM	DSNTIPO	No	Yes
TCPALVER	DSN6FAC	DSNTIP5	No	Yes
TCPKPALV	DSN6FAC	DSNTIP5	No	Yes
XLKUPDLT	DSN6SPRM	DSNTIPI	No	Yes

DSNZPARMs Externalized in Version 8...

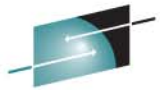
IXQTY [1]	DSN6SYSP	DSNTIP7	Index space default size
SKIPUNCI [2]	DSN6SPRM	DSNTIPS	Skip Uncommitted INSERTs
STARJOIN	DSN6SPRM	DSNTIP8	Enable star join processing
SVOLARC	DSN6ARVP	DSNTIPA	Single volume allocation
TSQTY [1]	DSN6SYSP	DSNTIP7	Table space default size

1 – Available in Version 6 & 7 via APAR PQ53067

2 – Available in Version 7 via APAR PQ79789

The above opaque DSNZPARMs have eternized through the installation panels in DB2 Version 8.

DSNZPARMs Removed in Version 8…

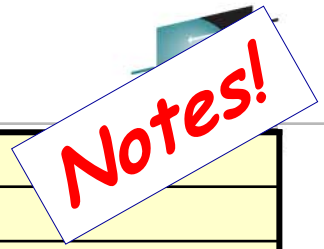


COMPAT	DSNHDECP	Serviceability option
EDMDSPAC	DSN6SPRM	EDM Pool Data Space Size
EDMDSMAX	DSN6SPRM	EDM Pool Data Space Maximum
PKGLDTOL[1]	DSN6SPRM	Turn off package requirement for certain SQL statements
SARGSWRP[2]	DSN6SPRM	Allow index access for certain nested correlated table access
OPTSUBQ1[3]	DSN6SPRM	Non-correlated subquery costs
OPTCCOS1[4]	DSN6SPRM	List prefetch picked as the access path while regular index access could perform better
OPTCCOS2[5]	DSN6SPRM	Inefficient access path or inefficient index is picked for correlated subquery

1 - APAR PQ59207
2 - APAR PQ61024 & PQ66365
3 - APAR PQ50462 & PQ81790

4 - APAR PQ84158
5 - APAR PQ03849 & PQ66335

New Version 8 Defaults



LOBVALA	USER LOB VALUE STORAGE	2048	10240
CTHREAD	MAX USERS	70	**200**
MAXDBAT	MAX REMOTE ACTIVE	64	**200**
CONDBAT	MAX REMOTE CONNECTED	64	**10000**
IDFORE	MAX TSO CONNECT	40	50
IDBACK	MAX BATCH CONNECT	20	50
ACCUMACC	DDF/RRSAF ACCUM	NO	10
CACHEDYN	CACHE DYNAMIC SQL	NO	**YES**
AUTHCACH	PLAN AUTH CACHE	1024	3072
LOGAPSTG	LOG APPLY STORAGE	0	**100**
CHKFREQ	CHECKPOINT FREQ	50000	**500000**
BLKSIZE	BLOCK SIZE	28672	24576
CMTSTAT	DDF THREADS	ACTIVE	**INACTIVE**
IDTHTOIN	IDLE THREAD TIMEOUT	0	120
EXTSEC	EXTENDED SECURITY	NO	YES
TCPKPALV	TCP/IP KEEPALIVE	ENABLE	120
DSMAX	MAXIMUM OPEN DATA SETS	3000	**10000**
EDMPOOL	EDMPOOL STORAGE SIZE	7312	327681

Added in Version 7

- STATROLL - Statistics Rollup for partitions
- STATSINT – Turn on collecting real time statistics
- MINSTOR - Manage Thread Storage
- OJPERFEH - Disables performance enhancements for outer join operations
- OPTOPSE - Parallelism: Type of sort operations for parallel queries that involve join
- STARJOIN - Fact table cardinality:
  - -1 disabled, 1 fact largest,
  - 0 (25) / n: x largest dimension
- STATHIST - STATISTICS HISTORY, SPACE, NONE, ALL, ACCESSPATH.
  - Default=No

Added in Version 7

- CHKFREQ - Checkpoint Freq
  - 200 – 16,000,000 (log records),
  - or 1- 60 (minutes)
  - Default 50,000
- URLGWTH - UR log write check, # of log records written by an uncommitted unit
  - 0 – 1,000K
  - Default 0
  - URCHKTH - UR Checkpoint Frequency can still be used
- SYNCVAL - Monitoring
  - NO / 0-59 - Synchronize among Data Sharing members / Stats & RMF
  - Default NO

Added in Version 7

- UGCCSID - Unicode CCSID, Graphics, accept default- data integrity may be compromised.
- UMCCSID - Unicode CCSID, Mixed, accept default- data integrity may be compromised.
- USCCSID - Unicode CCSID, Single, accept default- data integrity may be compromised.
- APPENSCH - Application Encoding Scheme - EBCDIC, if changed release incompatibility

And Then There Was Opaque

DISABSCL

- DISABSCL
  - Macro: DSN6SPRM
  - Online Changeable: Yes
  - Default: NO
  - Values: YES/NO
  - Description: Disable scrollable cursor warning messages. If YES is specified and non-scrollable cursors are in use, SQLWARN1 and SQLWARN5 warning messages at OPEN and ALLOCATE CURSOR will be disabled.
  - APAR PQ65622

PTASKROL

- PTASKROL
  - Macro: DSN6SYSP
  - Online Changeable: Yes
  - Default: YES
  - Values: YES/NO
  - Description: Roll up accounting trace records for parallel query task
  - APAR PQ10864

OJPERFEH

- OJPERFEH is used to disable some portion of outer join
  - Macro: DSN6SPRM
  - Online Changeable: Yes
  - Default: YES
  - Values: YES/NO
  - Description: Disable outer join performance enhancements when first release. Now selectively disables certain enhancements
  - APAR PQ18710 – added with default NO
  - APAR PQ48485 – Externalized – Should now be YES

SMSDCFL & SMSDCIX

- SMSDCFL - SMS data class name keyword for all table space data sets
- SMSDCIX - SMS data class name keyword for all index space data sets
  - Macro: DSN6SPRM
  - Online Changeable: Yes
  - Default: blank
  - Values: data class name
  - Description: SMS data class name keyword
  - APAR PQ32414

NPGTHRSH

- NPGTHRSH
  - Macro: DSN6SPRM
  - Online Changeable: Yes
  - Default: 0
  - Values:
  - Description: Favor index access when tables statistics indicate less than a given number of pages*
  - APAR PQ33429

*DB2 Version 8 CREATE/ALTER TABLE option VOLATILE has a similar affect on an access path.
May be a better choice.

UTLRSTRT

- UTLRSTRT

Careful

  - Macro: DSN6SPRM
  - Online Changeable: Yes
  - Default: OFF
  - Values: ON, OFF
  - Description: If set to ON, implicitly restart utility after failure.*
  - APAR PQ33429

* Removed in DB2 Version 8

CLAIMDTA

- CLAIMDTA
  - Macro: DSN6SPRM
  - Online Changeable: Yes
  - Default: NO
  - Values: YES, NO
  - Description: If set to YES, the data-first claiming and table space-level claim/drain process is enabled*
  - APAR PQ96628

* Removed in DB2 Version 8

UNION_COLNAME_7

- Macro: DSN6SPRM
- Online Changeable: No
- Default: NO
- Values: NO, YES
- For usability, an optional DB2 system parameter called UNION_COLNAME_7 to the DSN6SPRM macro. YES will cause DB2 Version 8 to behave as Version 7 did.
- APAR: PK03946

COMCRIT

- Macro: DSN6SPRM
- Online Changeable: Yes
- Default: NO
- Values: NO, YES
- Optional functionality that allows you to establish a Common Criteria-compliant environment in DB2 UDB for z/OS Version 8.
  - YES activates the Common Criteria environment and requires every new table that is created to have a security label column, which enables multilevel security.
- APAR: PK08344

ZPARM DB2 9 Sample

- IMPDSDEF (DSN6SYSP) – Define data sets
  - YES/NO
- IMPTSCMP (DSN6SYSP) - Use Compression
  - YES/NO
- MAXTEMPS (DSN6SPRM) - Max Temp
  - 0 to 2147483647
- REOPTEXT (DSN6SPRM) - R
  - YES/NO
- MXDTCA (DSN6SP
  - 0 - 512
- CACHEP - Free cached dynamic stat
- -INDS (DSN6SPRM) Max Concurrent
- Even more

All of these could change or even disappear before DB2 9 goes GA

And of Course, There are the **Hidden Ones!!!**

Hidden DSNZPARMs

Disclaimer #2 and Warning

- All of the following examples are intended to be used for educational purposes ONLY!
- **PROCEED WITH CAUTION!!**
- **BEWARE! WARNING!** Etc. Etc. Etc.
- Danger, danger! Injuries can happen
- Have resume up to date

Danger, Will Robinson! Danger!

Hidden DSNZPARMs

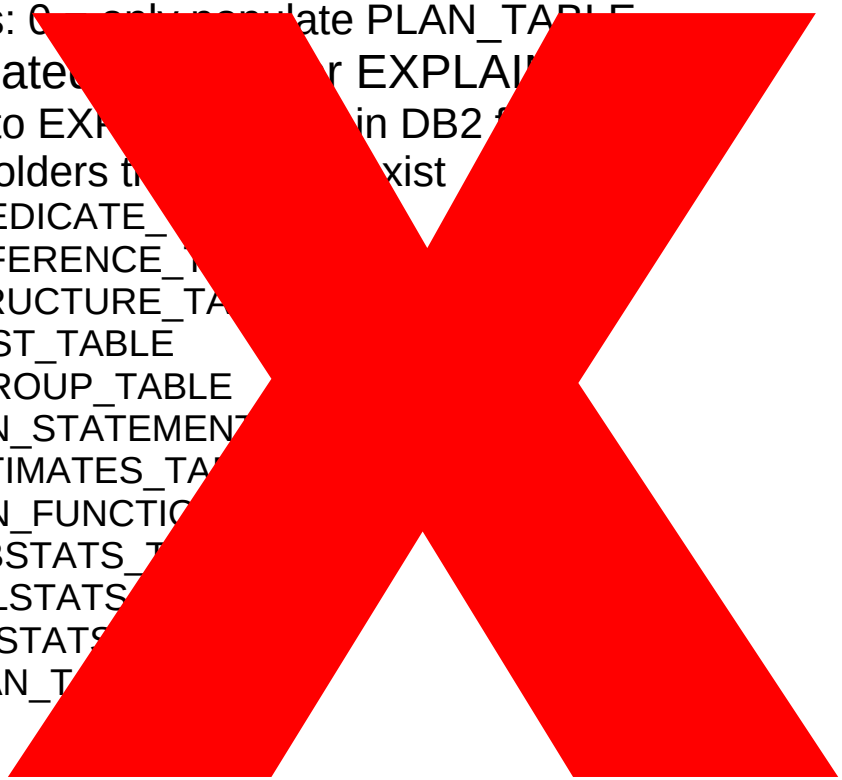
OPTNTJP		Stage 1 Null tolerant join predicate PQ39223
Was: **SPRMMXTB**	Now: **MXTBJOIN**	Max tables PQ57516
OPTOPSE		Parallelism: Type of sort operations for parallel queries that involve join
SPRMPTH		Disable parallelism for short running queries PQ45820, PQ25135
SPRMMQT		Bind cost overhead associated with MQT for short running SQL MQT rewrite threshold – serviceability Default = 120, Set to 0 to turn off rewrite

More from Version 8

MAX_OPT_STOR (SPRMMXOS)	Max amount of RDS OP POOL storage consumed by DB2 Optimizer (MB)	20 MB	0 MB – 100 MB
MAX_OPT_CPU (SPRMMXOC)	Max amount of CPU Time consumed by DB2 Optimizer (Seconds)	100 sec	0 sec – 1000 sec
MAX_OPT_ELAP (SPRMMXOE)	Max amount of elapsed time consumed by DB2 Optimizer (Seconds)	100 sec	0 sec – 1000 sec
TABLES_JOINED_THRESHOLD (SPRMTJTH)	The number of tables joined to cause DB2 to limit the amount of resources consumed by Optimizer (V7)	16	0 - 225
MXTBJOIN (SPRMMXTB)	The maximum number of tables that can be joined in a single FROM clause (V7)	225	15 - 225
MXQBCE (SPRMMXCE)	The maximum number of cost entries to be considered for a single FROM clause (V7)	32767	1 - 32767

And Yes, Those Hidden Plan Tables

- SPRMxxxx - Generates all EXPLAIN data
  - Defaults: 0 – only populate PLAN_TABLE
- Tables updated
  - Similar to EXP in DB2
  - Place-holders t xist
    - PREDICATE_
    - REFERENCE_
    - STRUCTURE_TA
    - COST_TABLE
    - PGROUP_TABLE
    - DSN_STATEMENT
    - ESTIMATES_TA
    - DSN_FUNCTIO
    - TABSTATS_T
    - COLSTATS
    - IDXSTATS
    - PLAN_T



What Tables are Accessed
(examples)

- STRUCTURE_TABLE shows execution frequency
  - 1 row per SQL section (QBLOCKNO)
- REFERENCE_TABLE shows objects, attributes
  - 1 row per referenced object (table, column, etc.)
- PREDICATE_TABLE shows predicate data
  - 1 row per predicate LHS-operator-RHS
  - Shows filter factors, Stage 1-2, indexability
- COST_TABLE shows detailed cost estimates
  - 1 row per SQL section step (PLANNO)
  - Composite cost = IFCID 22 MiniPlan cost = QMF statement cost (timerons)

You're Right, There's Not Enough

- DDL for hidden EXPLAIN tables
- How do you read tables?
- What can you do with the information?
- Do you REALLY need to know more?

- Probably not.. In fact, you are actually much further ahead just leaving them alone

Populate the PLAN_TABLE?

- Explain's output goes three places:
  - PLAN_TABLE
    - Describes access path of SQL statement
    - Help better design SQL statements
    - Can give optimization hints
  - DSN_STATEMNT_TABLE
    - Provides cost estimates
    - Cost in service units and in milliseconds
    - For dynamic and static SQL statements
  - DSN_FUNCTION_TABLE
    - How DB2 resolves functions
    - One row for each function in an SQL statement

And Last… But not least…

DSNZPARM Protection

- As a final, yet very important note, make sure…
- DB2 load libraries are RACF (or equivalent) write protected
- Secure DSNZPARM source
  - Control who is allowed to modify DSNZPARM source
- Control who can issue the SET SYSPARM command
  - Only SYSOPR, SYSCTRL, or SYSADM
    - And control who as the above privileges

Session Summary

- Now that you have completed this session, you should be able to:
  - Explain the purpose of DSNZPARM
  - Describe DB2 SET SYSPARM Command
  - Describe each of the macros and their major keywords
  - Describe the different ?type? of DSNZPARMs
  - Advise on how best to use DSNZPARMs