First Look at the DB2 10 Changes to DSNZPARMs
"The Good, the Bad, and the Really Ugly: DSNZPARMs" continued…

Willie Favero
System z Data Warehousing Swat Team - DB2 SME
IBM Silicon Valley Lab
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:

<table>
<thead>
<tr>
<th>Macro</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSN6ARVP</td>
<td>Archive dataset parameters</td>
</tr>
<tr>
<td>DSN6ENV</td>
<td>DB2 environment settings (removed)</td>
</tr>
<tr>
<td>DSN6FAC</td>
<td>DDF</td>
</tr>
<tr>
<td>DSN6GRP</td>
<td>Group stuff for data sharing</td>
</tr>
<tr>
<td>DSN6SYSP</td>
<td>Miscellaneous system parameters</td>
</tr>
<tr>
<td>DSN6SPRM</td>
<td>Initialization parameters for DBM1</td>
</tr>
<tr>
<td>DSN6LOGP</td>
<td>Log Stuff</td>
</tr>
</tbody>
</table>
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

DB2

-STA DB2
PARM(dsnzparm)

-SET SYSPARM
LOAD (...) RELOAD STARTUP

DSNZPARM
SDSNEXIT
NEWZPARM

startup
-SET SYSPARM

DB2

-STA DB2

DSNZPARM

SDSNEXIT

NEWZPARM

updates

startup
-SET SYSPARM

-STA DB2

DB2

startup

updates

-SET SYSPARM
LOAD (…)
RELOAD
STARTUP

DSNZPARM

SDSNEXIT

NEWZPARM
-SET SYSPARM

DB2

startup

updates

DSNZPARM

SDSNEXIT

NEWZPARM

-SET SYSPARM
LOAD (...) RELOAD STARTUP
Display DSNZPARM Settings

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

| 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 |
Display DSNZPARM Settings

DSNZPARM INFORMATION: Enter a selection letter on the top line.

- THREAD  B-TRACE  C-LOGGING  D-ARCHIVING  E-AUTH/RLF/DDF  F-IRLM
- G-STOREG  H-DATASET  I-DDCS  J-DATA SHARING  K-STORED PROC

DSNZPARM THREAD PARAMETERS

+ DSNZPARM Module = Assembly Date =
+ Initial Module = Assembly Date =
+ Previous Module = Assembly Date =

Thread Related Parameters:
+ Max Concurrent (CTHREAD) = Max Batch Connections (IDBACK) =
+ Max TSO Users (IDFORE) = Max Active DBATs (MAXDBAT) =
+ IMS/BNMTimeout (BMPTOUT) = Max Concurrent DBATs (CONDBAT) =
+ IMS/DLITimeout (DLITOUT) =

Miscellaneous Parameters:
+ Single Byte CCSID = Mixed Byte CCSID =
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

<table>
<thead>
<tr>
<th>DSNZPARM Macro Keyword</th>
<th>Old Value (V8)</th>
<th>New Value (V10)</th>
<th>Install Panel Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP8K0*</td>
<td>1000</td>
<td>2000</td>
<td>DSNTIP2</td>
</tr>
<tr>
<td>DATABASES*</td>
<td>100</td>
<td>200</td>
<td>DSNTIPE</td>
</tr>
<tr>
<td>CACHEPAC</td>
<td>100K</td>
<td>5M</td>
<td>DSNTIPP</td>
</tr>
<tr>
<td>CACHERAC</td>
<td>100K</td>
<td>5M</td>
<td>DSNTIPP</td>
</tr>
<tr>
<td>CHKFREQ</td>
<td>500,000 records</td>
<td>5 minutes</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>CONTSTOR</td>
<td>NO</td>
<td>YES</td>
<td>DSNTIPE</td>
</tr>
<tr>
<td>DB2SORT</td>
<td>DISABLE</td>
<td>ENABLE</td>
<td>DSNTIP61</td>
</tr>
<tr>
<td>DLDFFREQ</td>
<td>5</td>
<td>ON</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>DSMAX</td>
<td>9,960</td>
<td>20,000</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>EDMDBDC</td>
<td>102,396K</td>
<td>23,400K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>EDMPOOL</td>
<td>32,767K</td>
<td>0</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>EDMSTMTC</td>
<td>102,396K</td>
<td>113,386K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>FLASHCOPY_PPRC</td>
<td>Blank</td>
<td>REQUIRED</td>
<td>DSNTIP6</td>
</tr>
<tr>
<td>IRLMRWT</td>
<td>60</td>
<td>30</td>
<td>DSNTIPI</td>
</tr>
</tbody>
</table>
## Default Changes V8 to DB2 9

<table>
<thead>
<tr>
<th>DSNZPARM Macro Keyword</th>
<th>Old Value (V8)</th>
<th>New Value (V10)</th>
<th>Install Panel Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRLMSWT</td>
<td>300</td>
<td>120</td>
<td>DSNTIP1</td>
</tr>
<tr>
<td>LRDRTHL</td>
<td>0</td>
<td>10</td>
<td>DSNTIPE</td>
</tr>
<tr>
<td>MAXRBLK</td>
<td>8,000K</td>
<td>400,000K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>MONSIZE</td>
<td>256K</td>
<td>1M</td>
<td>DSNTIPN</td>
</tr>
<tr>
<td>NUMLKTS</td>
<td>1,000</td>
<td>2,000</td>
<td>DSNTIPJ</td>
</tr>
<tr>
<td>PCLOSEN</td>
<td>5 checkpoints</td>
<td>10</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>RRULOCK</td>
<td>NO</td>
<td>YES</td>
<td>DSNTIPI</td>
</tr>
<tr>
<td>SEQCACH</td>
<td>BYPASS</td>
<td>SEQ</td>
<td>none</td>
</tr>
<tr>
<td>SEQPRES</td>
<td>NO</td>
<td>YES</td>
<td>none</td>
</tr>
<tr>
<td>SRTPOOL</td>
<td>2000K</td>
<td>10000K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>STATIME</td>
<td>5</td>
<td>1</td>
<td>DSNTIPN</td>
</tr>
<tr>
<td>STATROLL</td>
<td>NO</td>
<td>YES</td>
<td>DSNTIP61</td>
</tr>
<tr>
<td>URCHKTH</td>
<td>0</td>
<td>5</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>URLGWSTRH</td>
<td>0</td>
<td>10K</td>
<td>DSNTIPL1</td>
</tr>
</tbody>
</table>
## Default Changes DB2 9 to DB2 10

<table>
<thead>
<tr>
<th>DSNZPARM Macro Keyword</th>
<th>Old Value (V9)</th>
<th>New Value (V10)</th>
<th>Install Panel Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP8K0*</td>
<td>1000</td>
<td>2000</td>
<td>DSNTIP2</td>
</tr>
<tr>
<td>DATABASES*</td>
<td>100</td>
<td>200</td>
<td>DSNTIPE</td>
</tr>
<tr>
<td>CACHEPAC</td>
<td>100K</td>
<td>5M</td>
<td>DSNTIPP</td>
</tr>
<tr>
<td>CACHERAC</td>
<td>100K</td>
<td>5M</td>
<td>DSNTIPP</td>
</tr>
<tr>
<td>CHECK_FASTREPLICATION</td>
<td>PREferred</td>
<td>REQUIRED</td>
<td>DSNTIP6</td>
</tr>
<tr>
<td><strong>CHKFREQ</strong></td>
<td><strong>500,000 records</strong></td>
<td><strong>5 minutes</strong></td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>CONTSTOR</td>
<td>NO</td>
<td>YES</td>
<td>DSNTIPE</td>
</tr>
<tr>
<td>DB2SORT</td>
<td>DISABLE</td>
<td>ENABLE</td>
<td>DSNTIP61</td>
</tr>
<tr>
<td>DLDFREQ</td>
<td>5</td>
<td>ON</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>DSMAX</td>
<td>9,960</td>
<td>20,000</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>EDM_SKELETON_POOL</td>
<td>5,120K</td>
<td>10,240K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>EDMDBDC</td>
<td>11,700K</td>
<td>23,400K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>EDMPOOL</td>
<td>18,142</td>
<td>0</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>EDMSTMTLC</td>
<td>56,693K</td>
<td>113,386K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>FLASHCOPY_PPRC</td>
<td>Blank</td>
<td>REQUIRED</td>
<td>DSNTIP6</td>
</tr>
<tr>
<td><strong>IRLMRWT</strong></td>
<td><strong>60</strong></td>
<td><strong>30</strong></td>
<td>DSNTIPI</td>
</tr>
<tr>
<td>IRLMSWT</td>
<td>300</td>
<td>120</td>
<td>DSNTIP1</td>
</tr>
</tbody>
</table>
## Default Changes DB2 9 to DB2 10

<table>
<thead>
<tr>
<th>DSNZPARM Macro Keyword</th>
<th>Old Value (V9)</th>
<th>New Value (V10)</th>
<th>Install Panel Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRDRTHLD</td>
<td>0</td>
<td>10</td>
<td>DSNTIPE</td>
</tr>
<tr>
<td>MAXRBLK</td>
<td>8,000K</td>
<td>400,000K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>MINSTOR</td>
<td>YES</td>
<td>NO</td>
<td>DSNTIPE</td>
</tr>
<tr>
<td>MONSIZE</td>
<td>256K</td>
<td>1M</td>
<td>DSNTIPN</td>
</tr>
<tr>
<td>NUMLKTS</td>
<td>1,000</td>
<td>2,000</td>
<td>DSNTIPJ</td>
</tr>
<tr>
<td>PARA_EFF</td>
<td>100</td>
<td>50</td>
<td>DSNTIP8</td>
</tr>
<tr>
<td>PCLOSEN</td>
<td>5</td>
<td>10</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>PLANMGMT</td>
<td>OFF</td>
<td>EXTENDED</td>
<td>DSNTIP8</td>
</tr>
<tr>
<td>RRULEOCK</td>
<td>NO</td>
<td>YES</td>
<td>DSNTIPI</td>
</tr>
<tr>
<td>SEQCACH</td>
<td>BYPASS</td>
<td>SEQ</td>
<td>none</td>
</tr>
<tr>
<td>SEQPRES</td>
<td>NO</td>
<td>YES</td>
<td>none</td>
</tr>
<tr>
<td>SRTPOOL</td>
<td>2000K</td>
<td>10000K</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>STATIME</td>
<td>5</td>
<td>1</td>
<td>DSNTIPN</td>
</tr>
<tr>
<td>STATROLL</td>
<td>NO</td>
<td>YES</td>
<td>DSNTIP61</td>
</tr>
<tr>
<td>UARCHKTH</td>
<td>0</td>
<td>5</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>URLGWTH</td>
<td>0</td>
<td>10K</td>
<td>DSNTIPL1</td>
</tr>
<tr>
<td>UTSORTAL</td>
<td>NO</td>
<td>YES</td>
<td>DSNTIP61</td>
</tr>
</tbody>
</table>
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
  – PLANMGMTCOPE on DSN6SPRM macro
    • Only value is STATIC
    – Determines scope when not specified in the BIND
### A Few Changed Maximums

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

* CTHREAD + MAXDBAT ≤ 20,000  
*RMF sync point
What About Minimums?

<table>
<thead>
<tr>
<th>DSNZPARM</th>
<th>DB2 9</th>
<th>DB2 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTBUFF</td>
<td>40K</td>
<td>400K Check region size</td>
</tr>
<tr>
<td>(400K – 400000K)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DLDFREQ</td>
<td>0, 1-32767</td>
<td>ON, OFF</td>
</tr>
<tr>
<td>PARAMDEG*</td>
<td>0, 10 x CPs</td>
<td>0, 2 X CPs</td>
</tr>
<tr>
<td>(0-254)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARA EFF</td>
<td>Opaque</td>
<td>Externalized on DSNTIP8</td>
</tr>
<tr>
<td>(0-100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*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 EDBMFIT and increase the EDM pool size to reduce latch class 24. This decreased the need to use EDBMFIT = 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_THRESHOLD**, 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 ALLOCATE 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
    • CATXDAACL – 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:

<table>
<thead>
<tr>
<th>Setting</th>
<th>CHAR(000.1)</th>
<th>CHAR(1000.)</th>
<th>CHAR(1.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURRENT</td>
<td>‘1’</td>
<td>‘1000’</td>
<td>‘1.1’</td>
</tr>
<tr>
<td>V9</td>
<td>‘000.1’</td>
<td>‘1000.’</td>
<td>‘1.1’</td>
</tr>
</tbody>
</table>

- 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
Willie Favero

Senior Certified Consulting IT Software Specialist

Data Warehousing for System z Swat Team

IBM Silicon Valley Laboratory

IBM Academic Initiative Ambassador for System z
IBM Certified Database Administrator - DB2 Universal Database V8.1 for z/OS
IBM Certified Database Administrator – DB2 9 for z/OS
IBM Certified Database Administrator – DB2 10 for z/OS
IBM Certified DB2 9 System Administrator for z/OS
IBM Certified DB2 10 System Administrator for z/OS
IBM zChampion

http://www.WillieFavero.com

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

- **DSN6ARVP**
  - All parameters are changeable

- **DSN6FAC**
  - RLFERRD, RESYNC,

- **DSN6LOGP**
  - ARC2FRST, DEALLCT, MAXRTU

- **DSN6GRP**

**Notes!**
What Can You Change

- **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

• 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, URCHECKTH, URLGWTH, WLMENV

Notes!
What Can You Change

• 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, URCHECKTH,
  URLGWH, WLMENV
What Can You Change

- **DSN6SYSP**
  - ACCUMACC, ACCUMUID, CHKFREQ, CONDBAT, CTHREAD, DBPROTCL, DLDFREQ, DSSTIME, DSCVI, EXTRAREQ, EXTRASRV, EXTSEC, IDBACK, IDFORE, IDXBPOOL, IXQTY, LOBVALA, LOBVALS, MAXDBAT, MGEXITTSZ, PCLOSEN, PCLOSET, PTASKROL, RLFAUTH, RLFERR, RLFTBL, STATIME, STORMXAB, STORTIME, SYNCVAL, TBSBPOOL, TSQTY, UIFCIDS, URCHKTH, URLGWT, 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, VOLTDEVT, XLKUPDLT.
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, EDBFIT, EDMDBDC, EDMPOOL, EDMSTMTC, EDPROP, EVALUNC, IRLMSWT, LRDRTLD, 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, VOLTDENV, XLKUPDLT

Notes!
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
<table>
<thead>
<tr>
<th>Variable</th>
<th>Dataset</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONDBAT</td>
<td>DSN6SYSP</td>
<td>DSNTIPE</td>
<td>Max remote connected</td>
</tr>
<tr>
<td>CTHREAD</td>
<td>DSN6SYSP</td>
<td>DSNTIPE</td>
<td>Max Users Macro</td>
</tr>
<tr>
<td>IDBACK</td>
<td>DSN6SYSP</td>
<td>DSNTIPE</td>
<td>Max batch connect</td>
</tr>
<tr>
<td>IDFORE</td>
<td>DSN6SYSP</td>
<td>DSNTIPE</td>
<td>Max TSO connect</td>
</tr>
<tr>
<td>MAXDBAT</td>
<td>DSN6SYSP</td>
<td>DSNTIPE</td>
<td>Max remote active</td>
</tr>
</tbody>
</table>
## Storage

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDMBFIT</td>
<td>Free space utilization for large pools</td>
</tr>
<tr>
<td>EDMDSPAC</td>
<td>EDM Pool data space size</td>
</tr>
<tr>
<td>EDMPOOL</td>
<td>Environmental descriptor manager pool</td>
</tr>
<tr>
<td>SEQCACH</td>
<td>Sequential cache</td>
</tr>
<tr>
<td>SEQPRES</td>
<td>Utility Cache Option</td>
</tr>
<tr>
<td>MAXRBLK</td>
<td>Storage for RID Blocks</td>
</tr>
<tr>
<td>MAXKEEPD</td>
<td>Number of dynamic SQL statements that can be keep past a commit point when binding with KEEPDYNAMIC(YES)</td>
</tr>
<tr>
<td>SRTPOOL</td>
<td>Storage for sort pool</td>
</tr>
<tr>
<td>All Threads</td>
<td>See previous foil for list of thread parms</td>
</tr>
</tbody>
</table>
## Logging

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

**SET LOG LOGLOAD/CHKTIME**
<table>
<thead>
<tr>
<th>Programming</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>DSN6SPRM</th>
<th>DSNTIP8</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CACHEDYN</td>
<td></td>
<td></td>
<td>Dynamic SQL cache</td>
</tr>
<tr>
<td>CDSSRDEF</td>
<td>DSN6SPRM</td>
<td>DSNTIP8</td>
<td>Current degree</td>
</tr>
<tr>
<td>DECDIV3</td>
<td>DSN6SPRM</td>
<td>DSNTIP4</td>
<td>Minimum divide scale</td>
</tr>
<tr>
<td>DESCSTAT</td>
<td>DSN6SPRM</td>
<td>DSNTIP4</td>
<td>Static describe</td>
</tr>
<tr>
<td>OPPTHINTS</td>
<td>DSN6SPRM</td>
<td>DSNTIP8</td>
<td>Optimization hints</td>
</tr>
</tbody>
</table>
### Locking

<table>
<thead>
<tr>
<th>Parameter</th>
<th>DSN6SPRM</th>
<th>DSNTIPI</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IRLMRWT</strong></td>
<td></td>
<td></td>
<td>Resource timeout</td>
</tr>
<tr>
<td><strong>NUMLKTS</strong></td>
<td></td>
<td></td>
<td>Locks per table (space)</td>
</tr>
<tr>
<td><strong>NUMLKUS</strong></td>
<td></td>
<td></td>
<td>Locks per user</td>
</tr>
<tr>
<td><strong>SKIPUNCI (V8)</strong></td>
<td></td>
<td></td>
<td>Skip Uncomm Inserts</td>
</tr>
<tr>
<td><strong>EVALUNC</strong></td>
<td></td>
<td></td>
<td>Evaluate Uncommitted</td>
</tr>
<tr>
<td><strong>RRULOCK</strong></td>
<td></td>
<td></td>
<td>U LOCK FOR RR/RS</td>
</tr>
<tr>
<td><strong>XLKUPDLT</strong></td>
<td></td>
<td></td>
<td>X Lock for searched U/D</td>
</tr>
<tr>
<td><strong>RELCURHL</strong></td>
<td></td>
<td></td>
<td>RELEASE LOCKS</td>
</tr>
<tr>
<td><strong>RETLWAIT</strong></td>
<td></td>
<td></td>
<td>Retained lock timeout</td>
</tr>
</tbody>
</table>
Database Access Threads

<table>
<thead>
<tr>
<th></th>
<th>DSN6FAC</th>
<th>DSNTIPR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMSTAT</td>
<td>DSN6FAC</td>
<td>DSNTIPR</td>
<td>DDF threads</td>
</tr>
<tr>
<td>CONDBAT</td>
<td>DSN6SYSP</td>
<td>DSNTIPE</td>
<td>Max remote connected</td>
</tr>
<tr>
<td>CONTSTOR</td>
<td>DSN6SPRM</td>
<td>DSNTIPE</td>
<td>Contract thread storage</td>
</tr>
<tr>
<td>IDTHTOIN</td>
<td>DSN6FAC</td>
<td>DSNTIPR</td>
<td>Idle thread timeout</td>
</tr>
<tr>
<td>MAXDBAT</td>
<td>DSN6SYSP</td>
<td>DSNTIPE</td>
<td>Max remote active</td>
</tr>
<tr>
<td>POOLINAC</td>
<td>DSN6FAC</td>
<td>DSNTIP5</td>
<td>Pool thread timeout</td>
</tr>
</tbody>
</table>
## DSMAX

<table>
<thead>
<tr>
<th>DSMAX</th>
<th>DSN6SPRM</th>
<th>DSNTIPC</th>
<th>Max number of open data sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx Storage used: DSMAX * 1.8K</td>
<td>Default is calculated</td>
<td>Calculated default does not take into account partitioning</td>
<td>Acceptable values: 1 – 100,000 (V8)</td>
</tr>
</tbody>
</table>
Deferred Close

Affects CLOSE YES and CLOSE NO page sets

1. DSMAX Max number of open data sets

2. Close CLOSE=YES data sets

3. Open data sets reach 99% of DSMAX

4. Drain Queue 3% or 300 data sets physically closed (and deallocated)

5. If min to close not on queue, close CLOSE=NO page sets

Copyright © 2011 IBM Corporation
All rights reserved
Read Only Switch

- **RO SWITCH CHKPTS**
  - DSN6SYSP PCLOSEN
  - Number of consecutive checkpoints since last update
  - Default is 5 checkpoints

- **RO SWITCH TIME**
  - DSN6SYSP PCLOSESET
  - Number of minutes since last update
  - Default is 10 minutes
Read Only Switch

For CLOSE YES and CLOSE NO page sets

If NO change activity for...

10 Minutes or 5 Checkpoints

Then

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

State Switched Internally

Defaults

DSN6SYSP
Macro
PCLOSEN
PCLOSET

TABLESPACE
R/W

TABLESPACE
R/O
<table>
<thead>
<tr>
<th><strong>DSNZPARMs Added in Version 8</strong> (1 of 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACCUMACC</strong></td>
</tr>
<tr>
<td><strong>ACCUMUID</strong></td>
</tr>
<tr>
<td><strong>AEXITLIM</strong></td>
</tr>
<tr>
<td><strong>DSVCI</strong></td>
</tr>
<tr>
<td><strong>EDMDBDC</strong></td>
</tr>
<tr>
<td><strong>EDMSTMTC</strong></td>
</tr>
<tr>
<td><strong>LRDRTTHLD</strong></td>
</tr>
<tr>
<td><strong>MAINTYPE</strong></td>
</tr>
<tr>
<td><strong>MAX_NUM_CUR</strong></td>
</tr>
</tbody>
</table>

**Notes!**
### DSNZPARMs Added in Version 8 (2 of 2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX_ST_PROC</td>
<td>DSN6SPRM, DSNTIPX</td>
<td>Maximum number of stored procedures per thread</td>
</tr>
<tr>
<td>MGEXTSZ</td>
<td>DSN6SYSP, DSNTIP7</td>
<td>OPTIMIZE EXTENT SIZING</td>
</tr>
<tr>
<td>PADIX</td>
<td>DSN6SPRM, DSNTIPE</td>
<td>Pad new indexes by default</td>
</tr>
<tr>
<td>REFSHAGE</td>
<td>DSN6SPRM, DSNTIP8</td>
<td>Default value for the CURRENT REFRESH AGE special register</td>
</tr>
<tr>
<td>SJMXPOOL</td>
<td>DSN6SPRM, DSNTIP8</td>
<td>Maximum size of the virtual memory pool for star join queries in MB</td>
</tr>
<tr>
<td>SMF89</td>
<td>DSN6SYSP, all</td>
<td>USAGE PRICING</td>
</tr>
<tr>
<td>UIFCIDS</td>
<td>DSN6SYSP, DSNTIPN</td>
<td>Output from IFC records should include Unicode information</td>
</tr>
<tr>
<td>VOLTDEVT</td>
<td>DSN6SPRM, DSNTIAPA2</td>
<td>Device type or unit name for allocating temporary data sets</td>
</tr>
<tr>
<td></td>
<td>Pre-V8</td>
<td>Version 8</td>
</tr>
<tr>
<td>----------------</td>
<td>--------</td>
<td>-----------</td>
</tr>
<tr>
<td>CACHEDYN</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>CHGDC</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>EDMBFIT</td>
<td>Opaque/No</td>
<td>Yes</td>
</tr>
<tr>
<td>EDPROP</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>EXTRAREQ</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>EXTRASRV</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>IDTHTOIN</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>IMMEDWRI</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>MAXKEEPD</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>MAXTYPE1</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Changed Online Change Option (2 of 2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pre-V8</th>
<th>Version 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPGTHRSH</td>
<td>DSN6SPRM</td>
<td>---</td>
</tr>
<tr>
<td>OJPERFEH</td>
<td>DSN6SPRM</td>
<td>---</td>
</tr>
<tr>
<td>PARTKEYU</td>
<td>DSN6SPRM</td>
<td>DSNTIP8</td>
</tr>
<tr>
<td>POOLINAC</td>
<td>DSN6FAC</td>
<td>DSNTIP5</td>
</tr>
<tr>
<td>RETVLCFK</td>
<td>DSN6SPRM</td>
<td>DSNTIP8</td>
</tr>
<tr>
<td>SRTPOOL</td>
<td>DSN6SPRM</td>
<td>DSNTIPC</td>
</tr>
<tr>
<td>STATHIST</td>
<td>DSN6SPRM</td>
<td>DSNTIPO</td>
</tr>
<tr>
<td>TCPALVER</td>
<td>DSN6FAC</td>
<td>DSNTIP5</td>
</tr>
<tr>
<td>TCPKPALV</td>
<td>DSN6FAC</td>
<td>DSNTIP5</td>
</tr>
<tr>
<td>XLKUPDLT</td>
<td>DSN6SPRM</td>
<td>DSNTIPI</td>
</tr>
</tbody>
</table>

- **Pre-V8** column indicates the default behavior in Pre-V8 version.
- **Version 8** column indicates the default behavior in Version 8.
- **Opaque/No** indicates the parameter's default status.
- **Yes** indicates the default status is enabled.
- **Now consider non-padded** indicates a change from the previous version.
DSNZPARMs Externalized in Version 8...

<table>
<thead>
<tr>
<th>IXQTY ¹</th>
<th>DSN6SYSP</th>
<th>DSNTIP7</th>
<th>Index space default size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKIPUNCI ²</td>
<td>DSN6SPRM</td>
<td>DSNTIPS</td>
<td>Skip Uncommitted INSERTs</td>
</tr>
<tr>
<td>STARJOIN</td>
<td>DSN6SPRM</td>
<td>DSNTIP8</td>
<td>Enable star join processing</td>
</tr>
<tr>
<td>SVOLARC</td>
<td>DSN6ARVP</td>
<td>DSNTIPA</td>
<td>Single volume allocation</td>
</tr>
<tr>
<td>TSQTY ¹</td>
<td>DSN6SYSP</td>
<td>DSNTIP7</td>
<td>Table space default size</td>
</tr>
</tbody>
</table>

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...

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPAT</td>
<td>DSNHDECP Serviceability option</td>
</tr>
<tr>
<td>EDMDSPAC</td>
<td>DSN6PRM EDM Pool Data Space Size</td>
</tr>
<tr>
<td>EDMDSMAX</td>
<td>DSN6PRM EDM Pool Data Space Maximum</td>
</tr>
<tr>
<td>PKGLDPTOL¹</td>
<td>DSN6PRM Turn off package requirement for certain SQL statements</td>
</tr>
<tr>
<td>SARGSWRP²</td>
<td>DSN6PRM Allow index access for certain nested correlated table access</td>
</tr>
<tr>
<td>OPTSUBQ¹³</td>
<td>DSN6PRM Non-correlated subquery costs</td>
</tr>
<tr>
<td>OPTCCOS¹⁴</td>
<td>DSN6PRM List prefetch picked as the access path while regular index access could perform better</td>
</tr>
<tr>
<td>OPTCCOS²⁵</td>
<td>DSN6PRM Inefficient access path or inefficient index is picked for correlated subquery</td>
</tr>
</tbody>
</table>

1 - APAR PQ59207  
2 - APAR PQ61024 & PQ66365  
3 - APAR PQ50462 & PQ81790  
4 - APAR PQ84158  
5 - APAR PQ03849 & PQ66335
# New Version 8 Defaults

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOBVALA</td>
<td>USER LOB VALUE STORAGE</td>
<td>2048</td>
<td>10240</td>
</tr>
<tr>
<td>CTHREAD</td>
<td>MAX USERS</td>
<td>70</td>
<td>200</td>
</tr>
<tr>
<td>MAXDBAT</td>
<td>MAX REMOTE ACTIVE</td>
<td>64</td>
<td>200</td>
</tr>
<tr>
<td>CONDBAT</td>
<td>MAX REMOTE CONNECTED</td>
<td>64</td>
<td>10000</td>
</tr>
<tr>
<td>IDFORE</td>
<td>MAX TSO CONNECT</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>IDBACK</td>
<td>MAX BATCH CONNECT</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>ACCUMACC</td>
<td>DDF/RRSAF ACCUM</td>
<td>NO</td>
<td>10</td>
</tr>
<tr>
<td>CACHEDYN</td>
<td>CACHE DYNAMIC SQL</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>AUTHCACH</td>
<td>PLAN AUTH CACHE</td>
<td>1024</td>
<td>3072</td>
</tr>
<tr>
<td>LOGAPSTG</td>
<td>LOG APPLY STORAGE</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>CHKFREQ</td>
<td>CHECKPOINT FREQ</td>
<td>50000</td>
<td>500000</td>
</tr>
<tr>
<td>BLKSIZE</td>
<td>BLOCK SIZE</td>
<td>28672</td>
<td>24576</td>
</tr>
<tr>
<td>CMTSTAT</td>
<td>DDF THREADS</td>
<td>ACTIVE</td>
<td>INACTIVE</td>
</tr>
<tr>
<td>IDTHTOIN</td>
<td>IDLE THREAD TIMEOUT</td>
<td>0</td>
<td>120</td>
</tr>
<tr>
<td>EXTSEC</td>
<td>EXTENDED SECURITY</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>TCPKPALV</td>
<td>TCP/IP KEEPALIVE</td>
<td>ENABLE</td>
<td>120</td>
</tr>
<tr>
<td>DSMAX</td>
<td>MAXIMUM OPEN DATA SETS</td>
<td>3000</td>
<td>10000</td>
</tr>
<tr>
<td>EDMPOOL</td>
<td>EDMPOOL STORAGE SIZE</td>
<td>7312</td>
<td>327681</td>
</tr>
</tbody>
</table>
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

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

- APAR PQ10864
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**
  - 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
ZPARAM 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) - REOPT Automatically
  - YES/NO
- MXDTCA (DSN6SPRM)
  - 0 - 512
- CACHEDYN_FREELOCAL (DSN6SPRM) - Free cached dynamic
- MAX_CONCURRENT_AUTOBINDS (DSN6SPRM) Max Concurrent
  - 1-20
- And about a dozen 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!!
- Danger, danger! Injuries can happen
- Have resume up to date

Danger, Will Robinson! Danger!
### Hidden DSNZPARMs

<table>
<thead>
<tr>
<th><strong>OPTNTJP</strong></th>
<th>Stage 1 Null tolerant join predicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PQ39223</td>
<td></td>
</tr>
</tbody>
</table>

**Was:** SPRMMXTB  
**Now:** MXTBJOIN  

<table>
<thead>
<tr>
<th><strong>OPTOPSE</strong></th>
<th>Parallelism: Type of sort operations for parallel queries that involve join</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>SPRMPHT</strong></th>
<th>Disable parallelism for short running queries</th>
</tr>
</thead>
<tbody>
<tr>
<td>PQ45820, PQ25135</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SPRMMQT</strong></th>
<th>Bind cost overhead associated with MQT for short running SQL</th>
</tr>
</thead>
</table>
| MQT rewrite threshold – serviceability  
Default = 120, Set to 0 to turn off rewrite |
More from Version 8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAX_OPT_STOR</strong></td>
<td>Max amount of RDS OP POOL storage consumed by DB2 Optimizer (MB)</td>
<td>20 MB</td>
<td>0 MB – 100 MB</td>
</tr>
<tr>
<td><strong>MAX_OPT_CPU</strong></td>
<td>Max amount of CPU Time consumed by DB2 Optimizer (Seconds)</td>
<td>100 sec</td>
<td>0 sec – 1000 sec</td>
</tr>
<tr>
<td><strong>MAX_OPT_ELAP</strong></td>
<td>Max amount of elapsed time consumed by DB2 Optimizer (Seconds)</td>
<td>100 sec</td>
<td>0 sec – 1000 sec</td>
</tr>
<tr>
<td><strong>TABLES_JOINED_THRESHOLD</strong></td>
<td>The number of tables joined to cause DB2 to limit the amount of resources consumed by Optimizer (V7)</td>
<td>16</td>
<td>0 - 225</td>
</tr>
<tr>
<td><strong>MXTBJJOIN</strong></td>
<td>The maximum number of tables that can be joined in a single FROM clause (V7)</td>
<td>225</td>
<td>15 - 225</td>
</tr>
<tr>
<td><strong>MXQBC</strong></td>
<td>The maximum number of cost entries to be considered for a single FROM clause (V7)</td>
<td>32767</td>
<td>1 - 32767</td>
</tr>
</tbody>
</table>
And Yes, Those Hidden Plan Tables

- SPRMxxxx - Generates all EXPLAIN data
  - Defaults: 0 = only populate PLAN_TABLE
- Tables updated after or EXPLAIN
  - Similar to EXPLAIN tables in DB2 family
  - Place-holders that need to exist
    - PREDICATE_TABLE
    -REFERENCE_TABLE
    - STRUCTURE_TABLE
    - COST_TABLE
    - PGROUP_TABLE
    - DSN_STATEMENT
    - ESTIMATES_TABLE
    - DSN_FUNCTION
    - TABSTATS_TABLE
    - COLSTATS_TABLE
    - IDXSTATS_TABLE
    - PLAN_TABLE
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 has 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