DB2 Tablespaces – What's new with V9 NFM

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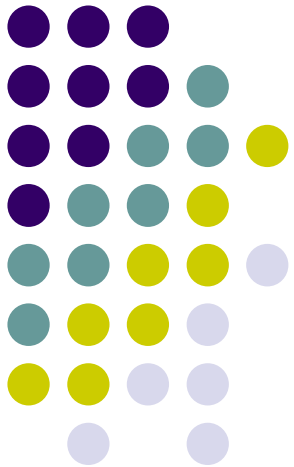
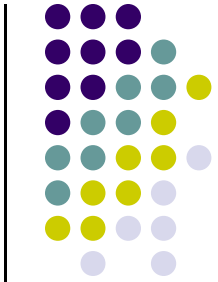
Federal Reserve Board

September 15th, 2010

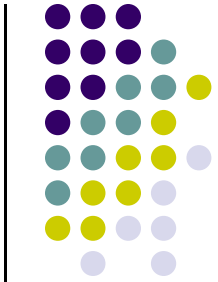


Agenda for today



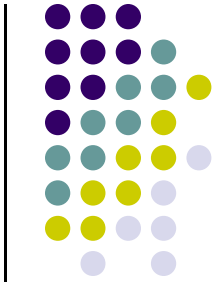
- Review of the types of tablespaces
- Universal tablespaces (PBG and PBR)
- How to implement
- Q & A

Background information



- Simple tablespaces
  - multiple tables, could occupy same page…
  - can’t create any new ones in V9
- Segmented tablespaces
  - performed better, space map pages, etc…
- Partitioned tablespaces
  - one table, partitioned by column(s), etc…
  - V8 introduced table based partitioning

Background information (continued)



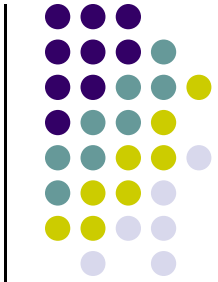
- Chose type of tablespace based on

  - Size of tables

  - Type of processing required

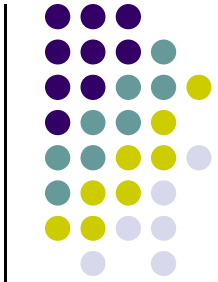
  - Performance

Universal tablespaces



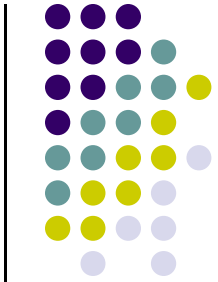
- Combines features of segmented and partitioned.
- The best of both worlds. Has the advantages of both segmented and partitioned.
- Two types of UTS
  - PBG (partitioned by growth)
  - PBR (partitioned by range)
- Can be really big… (128 TB)
- They support lots of new features… (eg. cloning, truncating, …)

Partitioned by Growth



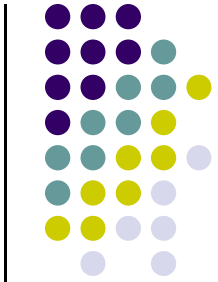
- There is no partitioning key, good for tables with no obvious partitioning key.
- Starts off with one partition. Partitions as added as needed due to space (until MAXPARTIONS value is reached).
- MAXPARTITIONS can be ALTER'ed (default is 256), but DSSIZE and SEGSIZE can't.

Partitioned by Growth



- CREATE TABLESPACE TS1 IN DB1
  MAXPARTITIONS 10
  SEGSIZE 64
  DSSIZE 2GLOCKSIZE ANY;
- Implicitly created tablespaces are PBG…
  CREATE table test1 (...)
- Can specify PBG options during table create
  CREATE table test3 (...)
  partition by size every 2 g
  in database dsndb04

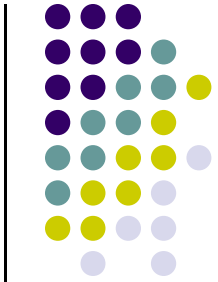
Partitioned by Growth



- Need to look at SYSTABLESPACE to determine type.
- Column
  "TYPE" … G- partitioned by growth
  "Partitions" … Number of parts the table has grown to

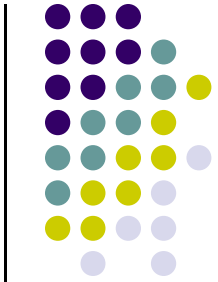
NAME	MAXPARTITIONS	PARTITIONS	TYPE	SEGSIZE	DSSIZE
TEST1	256	1	G	4	4194304
…create table test1 (...)					
TEST2	256	1	G	4	4194304
...create table test2 (...) partition by size every 4 g					
TEST3	256	1	G	4	2097152
...create table test3 (...) partition by size every 2 g					

Partitioned by Range…



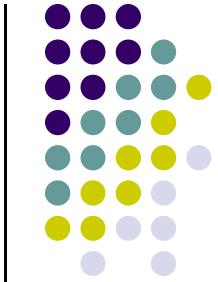
- Similar to “table controlled partitioning” in V8 (eg. PART ending at …).
- Can ROTATE partitions.
- Better DELETE processing then “regular” PARTITION’ed tablespaces.
- No index-controlled partitioning defined.
  eg.. ~~Create index … partition 1 ending at…~~

Partitioned by Range…



- CREATE TABLESPACE TS1 IN DB1
  NUMPARTS 55
  SEGSIZE 16
  LOCKSIZE ANY;
- Can specify PBR options during table create
  CREATE TABLE test4 (c1 char(4))
  partition by (c1)
  (partition 1 ending at (‘A’),
  partition 2 ending at (‘Z’))
  in database dsndb04

Partitioned by Range….

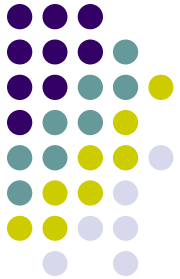


- Need to look at SYSTABLESPACE to determine type.
- Column “TYPE” …

  R- partitioned by range

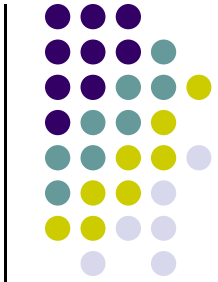
NAME	MAXPARTITIONS	PARTITIONS	TYPE	SEGSIZE	DSSIZE
TS1	0	55	R	16	4194304
…create ts1 NUMPARTS 55 SEGSIZE 16 …					
TEST4	0	2	R	4	4194304
... Create table test4 (…) partition by (c1) ….					

UTS Parm Summary



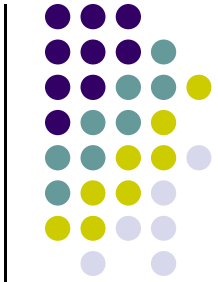
SEGSIZE clause	MAXPARTITIONS clause	NUMPARTS clause	Results in
Specified	Not Specified	Not specified	Segmented
Not specified	Not specified	Not specified	Segmented
Specified	Specified	Not specified	PBG
Not specified	Specified	Not specified	PBG
Specified	Not Specified	Specified	PBR
Not specified	Not specified	Specified	Partitioned

UTS tidbits…



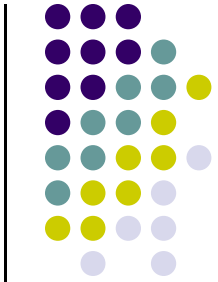
- Only 1 table per tablespace. Remember this if you want to to convert multi-table segmented tablespaces to UTS.
- No migration to UTS from older versions. Must DROP / CREATE. Maybe later…
- Beware of various vendor tools (even IBM ones), don't always show correct parms when displaying DDL. Make sure you are at latest version.

UTS more tidbits…



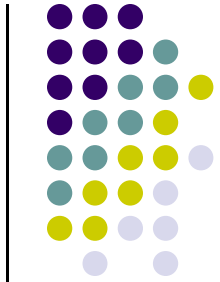
- PBG's might be good choice for tables that grow frequently (space / new partitions), space is added as needed.
- REORG's will not get rid of unused partitions at end of tablespace.
- Implictly created UTS tablespaces have a LOCKSIZE of ROW. Make sure this is what you want.

UTS more tidbits…



- Space must be DB2 managed (who want's to create VSAM datasets anyway).

- Think about having a reasonable number for MAXPARTITIONS, or else monitor it. Or you may have tables that grow very large go unnoticed.



Questions…