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Db2 z/OS PUG Meeting

PeopleTools 8.58 Support for Db2 z/OS Universal Tablespaces

Dave Altendorf
Sr. Principal Software Engineer
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Program Agenda

1. Why Should PeopleTools 8.58 Support Universal Tablespaces?
2. PeopleTools Support for Universal Tablespaces
3. PeopleTools Only Upgrade vs. New Demo DB Installation
4. Important Concepts
5. Questions

Program Agenda

1. **Why Should PeopleTools 8.58 Support Universal Tablespaces?**
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Why Should PeopleTools 8.58 Support Universal Tablespaces?

- IBM Has Deprecated the Tablespace Type Currently Used by PeopleTools (Shared Segmented Tablespaces)

- It Will Become Difficult to Install or Upgrade PeopleSoft Apps or PeopleTools Itself in Db2 Subsystems Running Releases Beyond v12 if IBM Ever Completely Disables The Capability to Create Segmented Tablespaces

Why Should PeopleTools 8.58 Support Universal Tablespaces?

- **As of Db2 v12 FL-504 (Generally Available), 'Easy Creation' Of Segmented Tablespaces Is No Longer Allowed***
  - You Can Continue To Create Segmented Tablespaces By Using the Application Compatibility Special Register

    SET CURRENT APPLICATION COMPATIBILITY = 'V12R1M503';

    - *Potentially* Supported For The Life Of v12 (No EOS Announced Yet) But No Official Statement Has Been Made By IBM Regarding How Long This Will Be Available

    - *Not Guaranteed To Work In Db2 Releases Beyond v12*

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PeopleTools Support for Universal Tablespaces

- **Universal Tablespaces Can Contain Only *One* Table**
  - Tens Of Thousands of Tablespaces Depending On The PeopleSoft App
    - PeopleTools Will Create All Universal Tablespaces and Db2 Databases *Dynamically*
      - Database and Tablespace Names Derived By PeopleTools
      - *xx*DDL Scripts No Longer Used
  - **PeopleTools UTS Support Enabled Only for *Db2 v12 and Beyond***
  - **UTS Support Can be Disabled if You Choose Not to Implement Universal Tablespaces**
    - Note: Once You Have Chosen to Use Universal Tablespaces, You *Cannot* Subsequently Disable PeopleTools UTS Support

PeopleTools Support for Universal Tablespaces

PeopleTools Will *Not* Convert Existing Segmented Tablespaces to Universal Tablespaces

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PeopleTools Only Upgrade vs. New Demo DB Installation

- **PeopleTools Only Upgrade**
- **When Connected to Existing Database in V12 Subsystem:**

  When Creating a New Record Definition, Underlying Table is Created in UTS

  When Executing *Alter By Table Rename*, Table Will be Recreated in New Universal Tablespace; New Database May Be Created

  Alter In Place Will *Not* Impact the Tablespace

  A Table That Resides in a Segmented Tablespace Will Continue to Reside in The Same Segmented Tablespace Until It Is *Altered By Table Rename*

  PeopleTools Will *Never* Drop Existing Segmented Tablespaces

- **New Demo DB Installation**
- **When Connected to V12 Subsystem and Creating New Demo Database:**

  All Tables Will Be Created in Universal Tablespaces

  When Executing *Alter By Table Rename*, Table Will be Recreated in New Universal Tablespace; New Database May Be Created

  Alter In Place Will *Not* Impact the Tablespace

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Important Concepts

- **Db2 v12 FL-504**
  - Activating FL-504 Alone Will *NOT* Prevent Creation of Segmented Tablespaces
  - Binding Packages with APPL COMPAT(V12R1M504) Or Later *WILL* Prevent DDL Issued by Them From Creating Segmented Tablespaces When FL-504 Has Been Activated
    - "nullid" Packages (Db2 Connect), SPUFI, DSNTEP2 etc.
  - PeopleTools 8.58 Is "FL-504 Aware"
    - Determines Whether nullid Packages (Connect) Have Been Bound with APPL COMPAT(V12R1M504) Or Later
    - Dynamically Issues *SET CURRENT APPLICATION COMPATIBILITY = 'V12R1M503'* *IF* UTS Support Has Been Disabled

Important Concepts

- **Db2 v12 FL-504**
  - What Happens If You Attempt to Create a Segmented Tablespace Without Setting APPL Compat to V12R1M503?
    - Db2 Dynamically Creates UTS Instead

```
SELECT CURRENT APPLICATION COMPATIBILITY FROM SYSIBM.SYSDUMMY1;
---------+---------+---------+---------+---------+---------+---------+----
V12R1M504

CREATE TABLESPACE PTTBL    IN  PT858TST
USING STOGROUP PSRTD1SG PRIQTY 100800   SECQTY  7200
FREEPAGE  0 PCTFREE 20
SEGSIZE   32 BUFFERPOOL BP1   LOCKSIZE ANY  CLOSE NO  ;
 ---------+---------+---------+---------+---------+---------+---------+----
 DSNE616I STATEMENT EXECUTION WAS SUCCESSFUL, SQLCODE IS 0

SELECT TYPE, MAXPARTITIONS FROM SYSIBM.SYSTABLESPACE WHERE NAME = 'PTTBL' AND  DBNAME = 'PT858TST';
 ---------+---------+---------+---------+---------+--
 TYPE   MAXPARTITIONS
  ---------+---------+---------+---------+---------+--
  G            256
```

Important Concepts

- **Db2 v12 FL-504**
  - What Happens If You Attempt to Create a New Table In an Existing Segmented Tablespace Without Setting APPL Compat to V12R1M503?

DSNT408I SQLCODE = -20008, ERROR: ATTEMPT TO USE UNSUPPORTED FEATURE 'CREATE IN NON-UTS'. REASON CODE: 8

Important Concepts

- **Dynamic Naming Convention Used for Db2 Databases**
  - One Sequence Object Per Application Database Is Required

```
CREATE SEQUENCE #seqname
 AS SMALLINT
 START WITH 1
 INCREMENT BY 1
 MAXVALUE 5000
 CYCLE;
```

    - To Derive a Database Name, PeopleTools Obtains the Next Value from the Sequence Object and Concatenates that Value to the First Three Characters of the Logical Application Database Name
      - PeopleTools Will Continue to Obtain the Next Sequence Value and Create New Databases Using This Convention as Long as No Database Already Exists with the ‘Next' Name
      - If the ‘Next’ Database Already Exists, PeopleTools Will ‘Reuse‘ the Database
    - MAXVALUE = Maximum Number of Databases Created
      - MAXVALUE Can Be Modified; Use Caution Not to Exceed Subsystem Maximum (65,217 DBIDs)

Important Concepts

- **Dynamic Naming Convention Used for Db2 Databases**

```
CREATE SEQUENCE HC192DEV
 AS SMALLINT
 START WITH 10000
  INCREMENT BY 1
  MAXVALUE 15000
  CYCLE;
```

Derived database names:
HC110000 – HC115000

```
CREATE SEQUENCE HC292QAT
 AS SMALLINT
 START WITH 20000
  INCREMENT BY 1
  MAXVALUE 25000
  CYCLE;
```

Derived database names:
HC220000 – HC225000

```
CREATE SEQUENCE HC392UA1
 AS SMALLINT
 START WITH 30000
  INCREMENT BY 1
  MAXVALUE 35000
  CYCLE;
```

Derived database names:
HC330000 – HC335000

Important Concepts

- **Dynamic Naming Convention Used for Universal Tablespaces**
  - PeopleTools Concatenates a Numeric Sequence to 5 Characters of The Record Definition (Table) Name

```
CREATE DATABASE P5804356 STOGROUP PSRTD1SG;

CREATE TABLESPACE PSREC001  IN P5804356 USING STOGROUP PSRTD1SG
DSSIZE 1G MAXPARTITIONS 256 LOCKSIZE ANY SEGSIZE 32 BUFFERPOOL
BP32K CCSID  EBCDIC CLOSE NO DEFINE  NO COMPRESS YES;

CREATE TABLE P58OWNER.PSRECDEFN (RECNAME CHAR(15) NOT NULL,
FIELDCOUNT SMALLINT NOT NULL,
INDEXCOUNT SMALLINT NOT NULL,
DDLCOUNT SMALLINT NOT NULL,

    ...etc...

IN P5804356.PSREC001;
```

Important Concepts

- **PeopleTools Universal Tablespace DDL Model**

  CREATE TABLESPACE [TBSPCNAME] IN [DBNAME] USING STOGROUP **STOGROUP** DSSIZE **DSGB** MAXPARTITIONS **MAXPART** LOCKSIZE **LOCKSZ** SEGSIZE **SEGSIZE** BUFFERPOOL **BUFFERPL** CCSID **ENCODING** CLOSE **CLOSE** DEFINE **DEFINE** COMPRESS **COMPRESS**;

  CREATE TABLESPACE PSREC001 IN P5804356 USING STOGROUP PSRTD1SG DSSIZE 1G MAXPARTITIONS 256 LOCKSIZE ANY SEGSIZE 32 BUFFERPOOL BP32K CCSID EBCDIC CLOSE NO DEFINE NO COMPRESS YES;

- **Modify Default Values Using the DDLDB2.DMS Script**

Important Concepts

- Enabling Universal Tablespace Support

PeopleTools Only Upgrade

Execute Delivered *enableuts.sql* Script

Create Mandatory Sequence Object

New Demo DB Installation

Data Mover Database Setup Option Adds The Following Set and Update Statements to Import Scripts:

REM uncomment the following line to enable UTS ;

REM SET ENABLE_DB2UTS;

REM uncomment the following line to enable DB2 UTS ;

REM UPDATE PSSTATUS SET DATABASE_OPTIONS = 64;

Uncomment Both Statements to Enable Support for Universal Tablespaces

Important Concepts

- Extracting UTS DDL from Demo DB File for New Demo Installation

Use Data Mover to Extract DDL to Script:

```
SET LOG C:\TEMP\ddlEXTRACT.log;
SET INPUT C:\temp\ptengs.db;
SET OUTPUT C:\TEMP\UTSddlEXTRACT.txt;
SET EXECUTE_SQL SET CURRENT SQLID = 'HCM2OWN1';
SET DDL TABLE SPACE * INPUT STOGROUP AS PSRTD1SG;
SET DDL DATABASE * INPUT STOGROUP AS PSRTD1SG;
SET DDL INDEX * INPUT STOGROUP AS PSRTX1SG;
SET DDL UNIQUE INDEX * INPUT STOGROUP AS PSRTX1SG;
SET DDL RECORD * INPUT OWNER AS HCM2OWN1;
SET DDL INDEX * INPUT OWNER AS HCM2OWN1;
SET ENABLE_DB2UTS;
SET EXTRACT DDL;
IMPORT *;
```

Execute DDL Outside of PeopleTools :

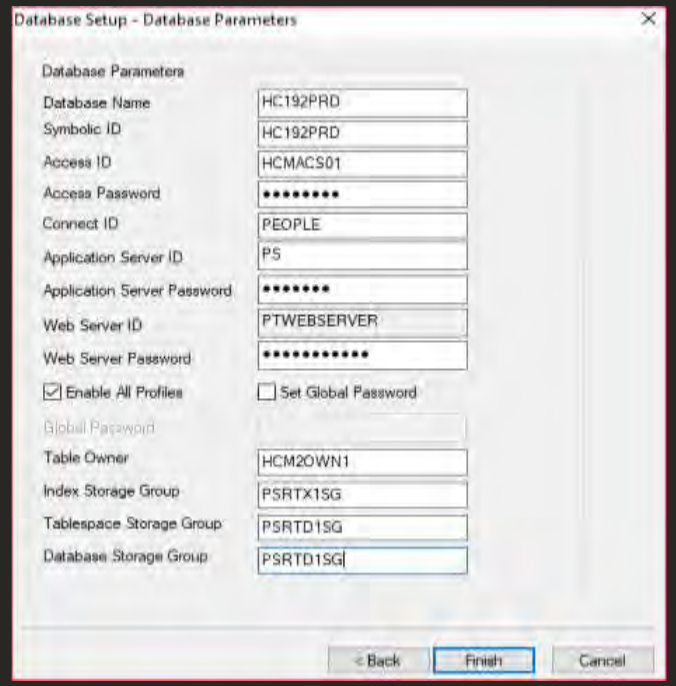
```
CREATE DATABASE P5804356 STOGROUP PSRTD1SG;

CREATE TABLESPACE PSREC001  IN P5804356 USING STOGROUP
PSRTD1SG DSSIZE 1G MAXPARTITIONS 256 LOCKSIZE ANY
SEGSIZE 32 BUFFERPOOL BP32K CCSID  EBCDIC CLOSE NO DEFINE
NO COMPRESS YES;

CREATE TABLE P58OWNER.PSRECDEFN (RECNAME CHAR(15)
NOT NULL,
FIELDCOUNT SMALLINT NOT NULL,
INDEXCOUNT SMALLINT NOT NULL,
DDLCOUNT SMALLINT NOT NULL,

    ...etc...

IN P5804356.PSREC001;

COMMIT;
```

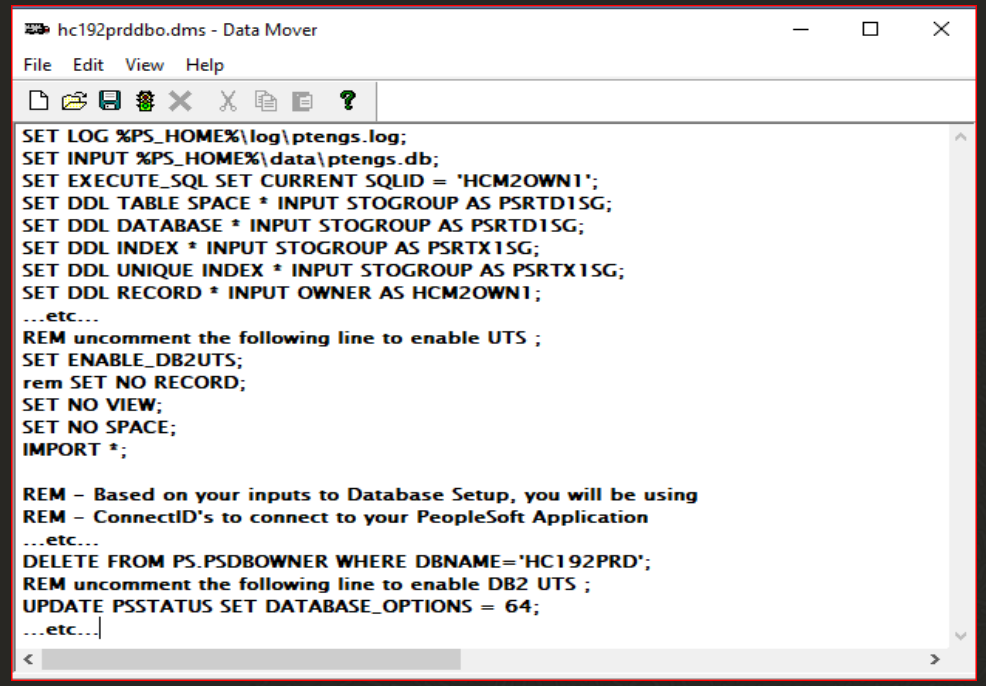
Use Data Mover to do Demo Data Only Import:

```
SET LOG C:\TEMP\HC192PRDIMP_1.log;
SET INPUT C:\TEMP\ptengs.db;
SET EXECUTE_SQL SET CURRENT SQLID = 'HCM2OWN1';
SET NO RECORD;
SET NO INDEX;
SET NO VIEW;
SET NO SPACE;
SET NO TRACE;

... etc..

IMPORT *;

REM - Final Database cleanup
REM - Based on your inputs to Database Setup, you will be
using
REM - ConnectID's to connect to your PeopleSoft Application
... etc..

REM uncomment the following line to enable DB2 UTS;
UPDATE PSSTATUS SET DATABASE_OPTIONS = 64;
```

Important Concepts

- Using PeopleTools to Create All Database Objects and Import Demo Data for New Demo Installation





Important Concepts

- ## Alter By Table Rename Syntax Example

```
CREATE DATABASE P5804370 STOGROUP PSRTD1SG;
CREATE TABLESPACE ACCES001  IN P5804370 USING STOGROUP PSRTD1SG DSSIZE
 1G MAXPARTITIONS 256 LOCKSIZE ANY SEGSIZE 32 BUFFERPOOL BP32K CCSID
 EBCDIC CLOSE NO DEFINE NO COMPRESS YES;

CREATE TABLE OVERRIDE.PSYACCESS_GRP_TBL (ACCESS_GROUP CHAR(20) NOT
 NULL,   DESCR CHAR(40) NOT NULL,   DESCRLONG LONG VARCHAR)
 IN P5804370.ACCES001;

-- Copy from source to temp table

INSERT INTO OVERRIDE.PSYACCESS_GRP_TBL ( ACCESS_GROUP,     DESCR,     DESCRLONG)
  SELECT    ACCESS_GROUP,     DESCR,     DESCRLONG    FROM OVERRIDE.PS_ACCESS_GRP_TBL ;

DROP TABLESPACE P5800002.ACCES001;
COMMIT;

-- Rename Table
RENAME TABLE OVERRIDE.PSYACCESS_GRP_TBL TO PS_ACCESS_GRP_TBL;
COMMIT;

-- Done
```

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PeopleTools 8.58 Support for Universal Tablespaces

Questions?

Thank you