Note

Before using this information and the product it supports, be sure to read the general information under Appendix C, "Notices" on page 218.

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1.0 Introduction

This program directory is intended for system programmers who are responsible for program installation and maintenance. It contains information about the material and procedures associated with the installation of DB2™ 10 for z/OS. This publication refers to DB2 10 for z/OS Value Unit Edition as DB2 10 VUE.

The Program Directory contains the following sections:

- **2.0, “Program Materials” on page 3** identifies the basic and optional program materials and documentation for DB2 10 VUE.
- **3.0, “Program Support” on page 9** describes the IBM support available for DB2 10 VUE.
- **4.0, “Program and Service Level Information” on page 13** lists the APARs (program level) and PTFs (service level) that have been incorporated into DB2 10 VUE.
- **5.0, “Installation Requirements and Considerations” on page 14** identifies the resources and considerations that are required for installing and using DB2 10 VUE.
- **6.0, “Installation Instructions” on page 32** provides detailed installation instructions for DB2 10 VUE. It also describes the procedures for activating the functions of DB2 10 VUE, or refers to appropriate publications.

Before installing DB2 10 VUE, read the *CBPDO Memo To Users* and the *CBPDO Memo To Users Extension* that are supplied with this program in softcopy format and this Program Directory; then keep them for future reference. Section **3.2, “Preventive Service Planning” on page 9** tells you how to find any updates to the information and procedures in this Program Directory.

DB2 10 VUE is supplied in a Custom-Built Product Delivery Offering (CBPDO, 5751-CS3). The Program Directory that is provided in softcopy format on the CBPDO tape is identical to the hardcopy format that is provided with your order. All service and HOLDDATA for DB2 10 VUE are included on the CBPDO tape.

Do not use this program directory if you install DB2 10 VUE with a SystemPac or ServerPac. When you use these offerings, use the jobs and documentation supplied with the offering. This program directory can point you to specific sections of it as required.

1.1 DB2 10 VUE Description

- **DB2 Base**

  Unique for this release, existing DB2 UDB for z/OS Version 8 and DB2 9 for z/OS customers have the option to migrate directly to DB2 10 for z/OS.

  DB2 is a relational database management system for z/OS. In a relational database, data is perceived to exist in one or more tables, each containing a specific number of columns and a number of unordered rows. Each column in a row is related in some way to the other columns. Thinking of
the data as a collection of tables gives you an easy way to visualize the stored data and enables you to explain your needs in easy-to-understand terms.

DB2 operates as a formal subsystem of z/OS. DB2 utilities run in the batch environment, and applications that access DB2 resources can run in the batch, TSO, IMS, WebSphere™ or CICS™ environments. Utilities can also run via stored procedure. IBM provides attachment facilities to connect DB2 to each of these environments and for distributed connections.

- IRLM V02.03.00

The Internal Resource Lock Manager (IRLM) is distributed with and is required by DB2 10 VUE. IRLM is responsible for managing all requests for locks and for controlling access to both DB2 and IMS databases.

1.2 DB2 10 VUE FMIDs

DB2 10 VUE consists of the following FMIDs:

1. **Required FMIDs:**
   - HDBAA10 (contains DB2 Base, REXX, MQSeries, MQListener)
   - HIYAA10 (IMS Attach - must be installed even if you do not have IMS)
   - HIZAA10 (Subsystem Initialization)
   - HIR2230 (IRLM V02.03.00)
   - HDREA10 (DB2 RACF Authorization Exit)
   - JDBAA14 (DB2 English Panels)
   - JDBAA1Z (DB2 Value Unit Edition, exclusive to 5697-P31, DB2 10 for z/OS VUE)

2. **Optional FMIDs:**
   - JDBAA12 (DB2 JDBC/SQLJ)
   - JDBAA17 (DB2 ODBC)
   - JDBAA11 (DB2 Kanji Panels)
2.0 Program Materials

An IBM program is identified by a program number. The program number for DB2 10 VUE is 5697-P31.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature numbers, and are required for the use of the product. Optional Machine-Readable Materials are orderable under separate feature numbers, and are not required for the product to function.

The program announcement material describes the features supported by DB2 10 VUE. Ask your IBM representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

The distribution medium for this program is magnetic tape or downloadable files. This program is in SMP/E RELFILE format and is installed by using SMP/E. See Chapter 6, "Installation Instructions" on page 32 for more information about how to install the program.

You can find information about the physical tape for the basic machine-readable materials for DB2 10 VUE in the CBPDO Memo To Users Extension.

NOTE

If DB2 10 VUE was shipped to you in a CBPDO, you need to refer to the CBPDO Memo To Users Extension for the physical tape layout of the basic machine-readable materials.

Figure 1 describes the program file content for DB2 10 VUE. You can refer to the CBPDO Memo To Users Extension to see where the files reside on the tape.

Notes:

1. The data set attributes in this table must be used in the JCL of jobs that read the data sets. However, because the data sets are in IEBCOPY unloaded format, their actual attributes might be different.

2. If any RELFILEs are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

<table>
<thead>
<tr>
<th>Name</th>
<th>RE</th>
<th>LR</th>
<th>OR</th>
<th>CR</th>
<th>FB</th>
<th>BLK SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMPMCS</td>
<td></td>
<td></td>
<td>SEQ</td>
<td></td>
<td>FB</td>
<td>80</td>
</tr>
<tr>
<td>IBM.HDBAA10.F1</td>
<td></td>
<td></td>
<td>PDS</td>
<td></td>
<td>FB</td>
<td>80</td>
</tr>
</tbody>
</table>

© Copyright IBM Corp. 1982, 2012
## Figure 1. Program File Content: DB2 Base

<table>
<thead>
<tr>
<th>Name</th>
<th>ORG</th>
<th>RECFL</th>
<th>BLK SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.HDBAA10.F2</td>
<td>PDSE U 0</td>
<td>6144</td>
<td></td>
</tr>
<tr>
<td>IBM.HDBAA10.F3</td>
<td>PDS FB 80</td>
<td>8800</td>
<td></td>
</tr>
<tr>
<td>IBM.HDBAA10.F4</td>
<td>PDSE U 0</td>
<td>6144</td>
<td></td>
</tr>
<tr>
<td>IBM.HDBAA10.F5</td>
<td>PDS FB 80</td>
<td>8800</td>
<td></td>
</tr>
<tr>
<td>IBM.HDBAA10.F6</td>
<td>PDS VB 8188</td>
<td>27998</td>
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</tr>
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<td>IBM.HDBAA10.F7</td>
<td>PDS VB 255</td>
<td>6475</td>
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<tr>
<td>IBM.HIYAA10.F1</td>
<td>PDS FB 80</td>
<td>8800</td>
<td></td>
</tr>
<tr>
<td>IBM.HIYAA10.F2</td>
<td>PDS FB 80</td>
<td>8800</td>
<td></td>
</tr>
<tr>
<td>IBM.HIYAA10.F3</td>
<td>PDSE U 0</td>
<td>6144</td>
<td></td>
</tr>
<tr>
<td>IBM.HIZAA10.F1</td>
<td>PDS FB 80</td>
<td>8800</td>
<td></td>
</tr>
<tr>
<td>IBM.HIZAA10.F2</td>
<td>PDSE U 0</td>
<td>6144</td>
<td></td>
</tr>
<tr>
<td>IBM.JDBAA14.F1</td>
<td>PDS FB 80</td>
<td>8800</td>
<td></td>
</tr>
<tr>
<td>IBM.HDREA10.F1</td>
<td>PDS FB 80</td>
<td>8800</td>
<td></td>
</tr>
</tbody>
</table>

## Figure 2. Program File Content: IRLM V02.03.00

<table>
<thead>
<tr>
<th>Name</th>
<th>ORG</th>
<th>RECFL</th>
<th>BLK SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMPMCS</td>
<td>SEQ</td>
<td>FB 80</td>
<td>6400</td>
</tr>
<tr>
<td>IBM.HIR2230.F1</td>
<td>PDS</td>
<td>FB 80</td>
<td>8800</td>
</tr>
<tr>
<td>IBM.HIR2230.F2</td>
<td>PDS</td>
<td>U 0</td>
<td>6144</td>
</tr>
<tr>
<td>IBM.HIR2230.F3</td>
<td>PDS</td>
<td>FB 80</td>
<td>8800</td>
</tr>
</tbody>
</table>

## Figure 3. Program File Content: DB2 10 Value Unit Edition

<table>
<thead>
<tr>
<th>Name</th>
<th>ORG</th>
<th>RECFL</th>
<th>BLK SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMPMCS</td>
<td>SEQ</td>
<td>FB 80</td>
<td>8800</td>
</tr>
</tbody>
</table>
2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for DB2 10 VUE.
2.3 Program Publications

The following sections identify the basic and optional publications for DB2 10 VUE.

**Note**

The BookManager™ format for publications is being discontinued.

IBM is discontinuing the BookManager format as part of an ongoing effort to deliver the best possible information experience to our customers. IBM is optimizing the DB2 for z/OS information for viewing in the information center.

The BookManager books will continue to be provided for DB2 Version 9.1 for z/OS; IBM is not delivering BookManager books with DB2 10 for z/OS. Instead, the Information Management Software for z/OS Solutions Information Center includes all of the information that you are used to seeing in BookManager and PDF, plus many improved features for finding and viewing the information that you need to do your job.

Unlicensed Publications are viewable from the Information Management Software for z/OS Solutions Information Center at:

http://publib.boulder.ibm.com/infocenter/imzic

The information center also explains how to order the licensed diagnosis information.

2.3.1 Basic Program Publications

Figure 6 identifies the basic unlicensed program publications for DB2 10 VUE. One copy of each of these publications is included when you order the basic materials for DB2 10 VUE. For additional copies, contact your IBM representative.

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 10 for z/OS VUE License Information</td>
<td>GC19-3047</td>
</tr>
</tbody>
</table>

Figure 7 identifies the basic unlicensed or licensed publications that are not available in hardcopy format, but are available through the internet or other media for DB2 10 VUE.
2.3.2 Optional Program Publications

Figure 8 identifies the optional unlicensed program publications for DB2 10 VUE. Each of these publications is included in the Licensed Library Kit CD-ROM (LK5T-7390) delivered with DB2 10 VUE.

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 10 for z/OS Licensed Library Collection Kit</td>
<td>LK5T-7390</td>
</tr>
<tr>
<td>CD/Rom</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 8. Optional Material: Unlicensed Publications**

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 10 for z/OS Administration Guide</td>
<td>SC19-2968</td>
</tr>
<tr>
<td>DB2 10 for z/OS Application Programming and SQL Guide</td>
<td>SC19-2969</td>
</tr>
<tr>
<td>DB2 10 for z/OS Application Programming Guide and Reference for JAVA</td>
<td>SC19-2970</td>
</tr>
<tr>
<td>DB2 10 for z/OS Codes</td>
<td>GC19-2971</td>
</tr>
<tr>
<td>DB2 10 for z/OS Command Reference</td>
<td>SC19-2972</td>
</tr>
<tr>
<td>DB2 10 for z/OS Data Sharing: Planning and Administration</td>
<td>SC19-2973</td>
</tr>
<tr>
<td>DB2 10 for z/OS Installation and Migration Guide</td>
<td>GC19-2974</td>
</tr>
<tr>
<td>DB2 10 for z/OS Internationalization Guide (Unicode)</td>
<td>SC19-2975</td>
</tr>
<tr>
<td>DB2 10 for z/OS Introduction to DB2</td>
<td>SC19-2976</td>
</tr>
<tr>
<td>IRLM Messages and Codes for IMS and DB2 for z/OS</td>
<td>GC19-2666</td>
</tr>
<tr>
<td>DB2 10 for z/OS Managing Performance</td>
<td>SC19-2978</td>
</tr>
<tr>
<td>DB2 10 for z/OS Managing Security</td>
<td>SC19-3496</td>
</tr>
<tr>
<td>DB2 10 for z/OS Messages</td>
<td>GC19-2979</td>
</tr>
<tr>
<td>DB2 10 for z/OS ODBC Guide and Reference</td>
<td>GC19-2980</td>
</tr>
<tr>
<td>DB2 10 for z/OS pureXML</td>
<td>SC19-2981</td>
</tr>
<tr>
<td>RACF Access Control Module Guide and Reference</td>
<td>SC19-2982</td>
</tr>
<tr>
<td>DB2 10 for z/OS SQL Reference</td>
<td>SC19-2983</td>
</tr>
<tr>
<td>DB2 10 for z/OS Utility Guide and Reference</td>
<td>SC19-2984</td>
</tr>
<tr>
<td>DB2 10 for z/OS What's New?</td>
<td>GC19-2985</td>
</tr>
</tbody>
</table>

Figure 9 identifies the optional licensed program publications for DB2 10 VUE. An asterisk (*) beside the Form Number indicates it contains “Restricted Materials of IBM.”
2.4 Program Source Materials

No program source materials are provided for DB2 10 VUE. Users with access to View Program Listings (VPL), such as through S/390 SoftwareXcel, can use the VPL facility for online viewing of available program listings. Users without access to VPL can contact their IBM representative for available program listings.

2.5 Publications Useful During Installation

You might want to use the publications listed in Figure 10 during the installation of DB2 10 VUE. To order copies, contact your IBM representative or visit the IBM Publications Center at:


<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
<th>How Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM SMP/E for z/OS User's Guide</td>
<td>SA22-7773</td>
<td></td>
</tr>
<tr>
<td>IBM SMP/E for z/OS Commands</td>
<td>SA22-7771</td>
<td></td>
</tr>
<tr>
<td>IBM SMP/E for z/OS Reference</td>
<td>SA22-7772</td>
<td></td>
</tr>
<tr>
<td>IBM SMP/E for z/OS Messages, Codes, and Diagnosis</td>
<td>GA22-7770</td>
<td></td>
</tr>
</tbody>
</table>
3.0 Program Support

This section describes the IBM support available for DB2 10 VUE.

3.1 Program Services

Contact your IBM representative for specific information about available program services.

The product levels documented in both the Program Directory and the Preventive Service Planning bucket are the levels with which DB2 10 VUE was tested. IBM may be unable to document or provide service for lower levels. If you are using a downlevel release or version of a product and experience problems, it is likely IBM will require that maintenance be brought up to the recommended levels before problem resolution will continue.

3.2 Preventive Service Planning

Before you install DB2 10 VUE, make sure that you have reviewed the current Preventive Service Planning (PSP) information. Review the PSP Bucket for General Information, Installation Documentation, and the Cross Product Dependencies sections. For the Recommended Service section, instead of reviewing the PSP Bucket, it is recommended you use the IBM.ProductInstall-RequiredService fix category in SMP/E to ensure you have all the recommended service installed. Use the FIXCAT(IBM.ProductInstall-RequiredService) operand on the APPLY CHECK command. See 6.1.10, "Perform SMP/E APPLY" on page 37 for a sample APPLY command

Note

The service level in which the PTF/APAR fixes were incorporated into the product tape is PDO 1148 (PDO 1239 for IRLM 2.3). There are several HOLD items associated with the incorporated DB2 and IRLM 2.3 fixes that you must be aware of and take necessary action as part of the installation of DB2 and IRLM 2.3. The HOLDs are provided in chronological order in the appendix of this document. These HOLDs are also provided in the below technote:


If you obtained DB2 10 VUE as part of a CBPDO, HOLDDATA is included.

If the CBPDO for DB2 10 VUE is older than two weeks old by the time you install the product materials, you should contact the IBM Support Center or use S/390 SoftwareXcel to obtain the latest PSP Bucket information. You can also obtain the latest PSP Bucket information by going to the following website:


© Copyright IBM Corp. 1982, 2012
For program support, access the Software Support website at

http://www-01.ibm.com/software/support

PSP Buckets are identified by UPGRADEs, which specify product levels; and SUBSETs, which specify the
FMIDs for a product level. The UPGRADE and SUBSET values for DB2 10 VUE are shown as follows:

The PSP SUBSET name reflects the Function Module Identifier (FMID) that was updated and the
corresponding CBPDO weekly service offering used to supply the integrated PTFs.

Example: FMID/YYWW where 'YY' is the year and 'WW' is the week number the CBPDO was created.

The CBPDO weekly Service tape is the Service Level Indicator for any products updated by the Software
Delivery Center (SDC) processes. If you wish to determine the latest level of PDO (Product Delivery
Offering) maintenance installed in this product, please refer to the 4.0, "Program and Service Level
Information" on page 13 section of this program directory.

Additionally, these upgrades contain HIPER (High Impact PERvasive) APARs and should be reviewed on
a monthly basis.

Note: When pulling PTFs from IBMLink, you need to include your Service Type/Level:

Example: Service Type PDO
Service Level 1031

Authorized Program Analysis Report (APAR) fixes will be distributed as PTFs containing either object
module or macro replacements with control statements used by the System Modification
Program/Extended (SMP/E).

The normal process for applying maintenance to DB2 10 VUE includes the following steps:
- Check for prerequisites and corequisites as well as additional steps that may be needed as noted in the following sections.
- Use SMP/E to receive and apply the fix.
- Perform any needed special procedures.
- Stop and start DB2 to make the fix active, as required.
- Test the fix.
- Accept the fix (after testing is complete).

Fixes to some parts of the subsystem or subsystem data may involve special procedures. For example, a BIND may be required for some changes. CLISTs and jobs that are customized during the installation process often require some additional work. When applicable, the install CLIST can be used for customizing. If the DSN6xxxx macros are changed, the DSNZPxxx subsystem parameters load module must be reassembled and link edited. For information on assembling and link editing DSNZPxxx, refer to the description of job DSNTIJUZ in the DB2 10 for z/OS Value Unit Edition Installation and Migration.

Notification of these required special procedures will be via the SMP/E EXCLUDE list, PTF prologues, and RETAIN information. The SMP/E control statement ++HOLD will be used when there is additional work necessary to incorporate the fix into the DB2 system.

### 3.3 Statement of Support Procedures

Report any problems which you feel might be an error in the product materials to your IBM Support Center. You may be asked to gather and submit additional diagnostics to assist the IBM Support Center in their analysis.

Figure 12 identifies the component IDs (COMPID) for DB2 10 VUE.

<table>
<thead>
<tr>
<th>FMID</th>
<th>COMPID</th>
<th>Component Name</th>
<th>RETAIN Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDBAA10</td>
<td>5740XYR00</td>
<td>DB2 BASE/TSO</td>
<td>A10</td>
</tr>
<tr>
<td>HIYAA10</td>
<td>5740IY100</td>
<td>IMS ATTACH</td>
<td>A10</td>
</tr>
<tr>
<td>HIZAA10</td>
<td>5740XYR01</td>
<td>DB2 SUBSYSTEM INITIALIZATION</td>
<td>A10</td>
</tr>
<tr>
<td>HIR2230</td>
<td>569516401</td>
<td>IRLM V02.03.00</td>
<td>230</td>
</tr>
<tr>
<td>HDREA10</td>
<td>5740DRE00</td>
<td>RACF AUTHORIZATION EXIT</td>
<td>A10</td>
</tr>
<tr>
<td>JDBAA14</td>
<td>5740XYR00</td>
<td>DB2 ENGLISH PANELS</td>
<td>A14</td>
</tr>
<tr>
<td>JDBAA1Z</td>
<td>5740XYR00</td>
<td>DB2 10 VALUE UNIT EDITION</td>
<td>A1Z</td>
</tr>
<tr>
<td>JDBAA12</td>
<td>5740XYR02</td>
<td>DB2 JDBC/SQLJ</td>
<td>A12</td>
</tr>
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<td>JDBAA17</td>
<td>5740XYR02</td>
<td>DB2 ODBC</td>
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</tr>
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<td>JDBAA11</td>
<td>5740XYR06</td>
<td>DB2 KANJI PANELS</td>
<td>A11</td>
</tr>
</tbody>
</table>
Note: For detailed instructions on how to use FTP to transmit documentation to/from IBM (DB2), please see APAR II11945. Additional information is also available in publication z/OS MVS Diagnosis Tools and Service Aids (GA22-7589).

For information about the operating system availability and withdrawal-of-service dates, see http://www-01.ibm.com/software/support/systemsz/lifecycle/

and

http://www-01.ibm.com/software/data/support/lifecycle/

For DB2 10 for z/OS specifics, please see the DB2 z/OS main website:

http://www-01.ibm.com/software/data/db2/zos/
4.0 Program and Service Level Information

This section identifies the program and relevant service levels of DB2 10 VUE. The program level refers to the APAR fixes that have been incorporated into the program. The service level refers to the PTFs that have been incorporated into the program.

4.1 Program Level Information

No APARs have been incorporated into DB2 10 VUE.

4.2 Service Level Information

PTFs containing APAR fixes against this release of DB2 10 VUE and IRLM 2.3 have been incorporated into this product tape. For a list of included PTFs, examine the +++VER statement in the product's SMPMCS.

Frequently check the DB2 10 VUE PSP Bucket for HIPER and SPECIAL attention PTFs against all FMIDs that you must install. You can also receive the latest HOLDDATA, then add the FIXCAT(IBM.PRODUCTINSTALL-REQUIREDSERVICE) operand on your APPLY CHECK command. This will allow you to review the recommended and critical service that should be installed with your FMIDs.
5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating DB2 10 VUE. The following terminology is used:

- **Driving system**: the system used to install the program; where SMP/E executes.
  
  The program might have specific operating system or product level requirements for using processes, such as binder or assembly utilities during the installation.

- **Target system**: the system on which the program is configured and run.
  
  The program might have specific product level requirements, such as needing access to the library of another product for link-edits. These requirements, either mandatory or optional, might directly affect the element during the installation or in its basic or enhanced operation.

In many cases, you can use a system as both a driving system and a target system. However, you can make a separate IPL-able clone of the running system to use as a target system. The clone must include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Use separate driving and target systems in the following situations:

- When you install a new level of a product that is already installed, the new level of the product will replace the old one. By installing the new level onto a separate target system, you can test the new level and keep the old one in production at the same time.

- When you install a product that shares libraries or load modules with other products, the installation can disrupt the other products. By installing the product onto a separate target system, you can access these impacts without disrupting your production system.

- For example, if you install DB2 10 VUE with IRLM V02.03.00 into the same SMP/e zone as any version of IMS currently running with IRLM V02.02.00, **IRLM V02.02.00 will be deleted** by the installation of IRLM V02.03.00.

  **Note**: IBM recommends that levels of DB2 and IMS without a note of IRLM V02.03.00 support in their program directory, continue to run with IRLM V02.02.00.

5.1 Driving System Requirements

This section describes the environment of the driving system that is required to install DB2 10 VUE.

5.1.1 Machine Requirements

The driving system can run in any hardware environment that supports the required software.

5.1.2 Programming Requirements
Note: Installation may require migration to new z/OS releases to be service supported. For more information, see:

http://www-01.ibm.com/software/support/systemsz/lifecycle/

5.2 Target System Requirements

This section describes the environment of the target system that is required to install and use DB2 10 VUE.

DB2 10 VUE installs in the DBS (P115) SREL.

5.2.1 Machine Requirements

DB2 10 VUE operates on System z or equivalent processors that are running in 64-bit mode with z/OS V1.10.00, or later. These processors include zEnterprise 196 (z196), z10, z9, z990, z890, and later processors that are supported by z/OS V1.10.00. The processor must have enough real storage to satisfy the combined requirements of the following items:

- DB2 10 for z/OS
- z/OS
- The appropriate DFSMS storage management subsystem components, access methods, telecommunications, batch requirements, and other customer required applications.

In addition, DB2's 64-bit virtual addressing support is likely to require increased real storage for a workload as compared to DB2 9 for z/OS or DB2 UDB for z/OS Version 8.

The configuration must include sufficient I/O devices to support the requirements for system output, system residence, and system data sets. Sufficient disk storage must be available to satisfy your information storage requirements. Disk storage can consist of any direct-access facility supported by the system configuration and programming system.
In addition to listing auxiliary storage and data communication devices, this section identifies function-dependent hardware requirements and virtual storage requirements.

5.2.1.1 Auxiliary Storage: DB2 for z/OS is independent of both disk and tape device type. You can use any magnetic, optical or tape device that is supported by the data facilities component of DFSMS or by the DB2 data sets. Tape products are not supported for databases but can be used for the DB2 archive log and utility functions.

The following DB2 data sets are supported by the following device types:

- Active recovery log data sets: disk
- Archive recovery log data sets: disk, tape
- Image copy data sets: disk, tape
- Bootstrap data sets: disk
- User data sets: disk, tape (if migrated by HSM)
- DB2 catalog data sets: disk
- Work data sets (for utilities): disk, tape

If these data sets are on a disk device that is shared with other z/OS systems, use global resource serialization to prevent concurrent access by more than one z/OS system.

The minimum disk space requirement, based on installing DB2 10 VUE with the panel default values, is approximately 1 GB. You need additional disk space for your data. For subsystems that use dual logging and tape for the log archiving device, at least two tape drives are needed.

5.2.1.2 Data Communications Devices: DB2 operations can be controlled from the following devices:

- The system console
- Authorized IMS Transaction Manager terminals
- Authorized CICS terminals
- TSO terminals (by authorized users)

For information about the data communications devices that are supported by IMS Transaction Manager, CICS, and z/OS, refer to the documentation for these products.

5.2.1.3 Function-Dependent Hardware Requirements: Certain functions of DB2 10 for z/OS have associated hardware requirements, as specified in the following list. If you do not use these DB2 functions, the hardware requirements do not apply.

Data Sharing: Data Sharing requires the Coupling Facility. See the latest See the Coupling Facility (CF) level that is recommended for your processor at:

www.ibm.com/systems/z/advantages/pso/cftable.html

DRDA Data Stream Encryption: DRDA Data Stream Encryption requires cryptographic hardware, but can optionally use a cryptographic coprocessor, cryptographic accelerator, or set of cryptographic instructions.
Encryption and decryption functions: Built-in functions for encryption and decryption require cryptographic hardware in the form of a cryptographic coprocessor, cryptographic accelerator, or set of cryptographic instructions.

5.2.2 Programming Requirements

5.2.2.1 Installation Requisites: Installation requisites identify products that are required by and must be present on the system or products that are not required by but should be present on the system for the successful installation of this product.

Mandatory installation requisites identify products that are required on the system for the successful installation of this product. These products are specified as PREs or REqs.

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name</th>
<th>Minimum VRM</th>
<th>Minimum Service Level will satisfy these APARs</th>
<th>Included in this product's shipment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5694-A01</td>
<td>z/OS</td>
<td>V01.10.00 or higher, on ZNALC</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS (DFSM)</td>
<td>V01.10.00 or higher</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS (LE Base Services)</td>
<td>V01.10.00 or higher</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS (Security Server/RACF)</td>
<td>V01.10.00 or higher</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>5697-P31</td>
<td>DB2 10 for z/OS</td>
<td>V10.01.00</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>5605-DB2</td>
<td>DB2 10 for z/OS, (IRLM 2.3.0)</td>
<td>V10.01.00</td>
<td>N/A</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: IRLM V02.03.00 FMID HIR2230 has been included in this shipment for your convenience.

Note: Installation may require migration to new z/OS releases to be service supported. For more information, see:

http://www-01.ibm.com/software/support/systemsz/lifecycle/
5.2.2.2 Virtual Storage Requirements: Most DB2 data resides in shared memory of the DB2 address spaces which is above the bar. DB2 10 for z/OS requires 128 GB of 64-bit shared private storage for each DB2 subsystem that is above the 2 GB bar. This storage is virtual and is controlled by the z/OS parameters HVSHARE and HVCOMMON in IEASYSxx. This storage is not physically assigned (or "backed") as it is allocated; it is backed only as it is used. Most control blocks and buffers reside in the extended private area above 2 GB bar, while modules and some data resides above the 16 MB line, but below the 2 GB bar.

The amount of space that is needed for the common services area (CSA) below the 16 MB line is less than 40 KB for each DB2 subsystem. High concurrent activity, parallelism, or high contention can require more CSA. IRLM does not have any CSA usage (below the 16-GB line). Only in some exceptional conditions and when ECSA is not available IRLM may get storage from below the 16M line CSA.

DB2 10 for z/OS requires that data sets for the catalog and directory reside on SMS-managed storage. These data sets must belong to an SMS data class that is defined with the extended addressability (EA) attribute. See prefix.SDSNSAMP(DSNTIJSS) for a sample SMS environment.

Conditional installation requisites identify products that are not required for successful installation of this product but can resolve such things as certain warning messages at installation time. These products are specified as IF REQs.

DB2 10 VUE has no conditional installation requisites.

5.2.2.3 Operational Requisites: Operational requisites are products that are required by and must be present on the system or products that are not required by but should be present on the system for this product to operate all or part of its functions.

Mandatory operational requisites identify products that are required for this product to operate its basic functions. These products are specified as PREs or REQs.

![Figure 15. Target System Mandatory Operational Requisites](image)

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name and Minimum VRM/Service Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>5694-A01</td>
<td>z/OS V01.10.00, or later, plus the following APARs: OA24441, OA25169, OA25485, OA27799, OA28324, OA31889, OA32001, OA32668, OA33106</td>
</tr>
<tr>
<td></td>
<td>Any one of the following:</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS V01.11.00, plus APARs OA32001, OA32668, OA31889, OA33106</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS V01.12.00, plus APARs OA32001, OA32668, OA33106</td>
</tr>
</tbody>
</table>

New functions are available only in new-function mode (NFM) unless explicitly stated otherwise in the product documentation. A general exception exists for optimization and virtual storage. In prior versions, most utility functions were available in conversion mode or compatibility mode (CM), but for DB2 10 VUE, most new utility enhancements work only in new-function mode.
Either DB2 Utilities Suite for z/OS V10 (5655-V41), or an equivalent alternative function that provides some of the basic operation of a DBMS (including backup, recovery, reorganization, loading, and unloading of data, gathering of statistics, and checking of data, indexes and large objects).

z/OS Unicode Services and appropriate conversion definitions are required. For Unicode data storage and manipulation capabilities in a 64 bit environment, DB2 10 VUE requires the z/OS Unicode Services and appropriate conversion definitions to perform most Unicode conversions.

For additional information on Unicode conversions, please see the *DB2 10 for z/OS Value Unit Edition Installation and Migration, GC19-2974* and also *Support for Unicode: Using Conversion Services, SA22-7649*. For additional information on setup, read Information APARs II13048, and II13049, and go to:

www.ibm.com/downloads

www.s390.ibm.com/os390/bkserv/v2r10books.html

Conditional operational requisites identify products that are *not* required for this product to operate its basic functions but are required at run time for this product to operate specific functions. These products are specified as IF REQs.

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name and Minimum VRM/Service Level</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>5694-A01</td>
<td>z/OS V01.10.00, or later, - DFSMSShsm - DFSMSdss - FlashCopy V01.00.00 - FlashCopy V02 (required for object-level recovery from system-level backup and FlashCopy backups)</td>
<td>System level point-in-time backup and recovery function.</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS V01.11.00</td>
<td>Remove RECOVER utility restriction for object recovery from a system-level backup. For more information see Note 1 following this figure.</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS V01.10.00, DFSMSdss, FlashCopy V02.00.00 is highly recommended (although not technically required) for performance reasons, DFSMSdxx SPE OA24811 is required</td>
<td>Exploitation of FlashCopy image copies by COPY, REORG, LOAD, REBUILD INDEX, RECOVER utilities. For more information see Note 2 following this figure.</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS V01.10.00, - DFSMSdss - FlashCopy V02.00.00, DFSMSdss SPE OA24811 is required</td>
<td>CHECK INDEX, CHECK DATA, CHECK LOB utilities with SHRLEVEL(CHANGE). For more information see Note 2 following this figure.</td>
</tr>
<tr>
<td>Program Number</td>
<td>Product Name and Minimum VRM/Service Level</td>
<td>Function</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS V01.10.00, or later (LE in Base Services)</td>
<td>Application Execution: Applications written in high-level programming languages, such as applications or stored procedures written in the C language and using the ODBC or CLI interfaces to DB2</td>
</tr>
<tr>
<td>5655-I56</td>
<td>IBM SDK for z/OS, Java 2 Technology Edition, V1.4 (SDK1.4.2), or higher</td>
<td>Application Execution: Applications or stored procedures written in Java, such as those using the JDBC or SQLJ interfaces to DB2</td>
</tr>
<tr>
<td>5655-N98</td>
<td>IBM SDK for z/OS, Java 2 Technology Edition, V5 or later</td>
<td>Decimal Float data type usage in Java (in a 31-bit environment)</td>
</tr>
<tr>
<td>5655-N99</td>
<td>IBM SDK for z/OS, Java 2 Technology Edition, V5 or later</td>
<td>Decimal Float data type usage in Java (in a 64-bit environment)</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS Cryptographic Services Integrated Cryptographics Service Facility (ICSF). To use Encryption you must have <strong>SCSFMOD0 in LNKLST</strong></td>
<td>Built-in functions for Encryption and Decryption</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS Cryptographic Services Integrated Cryptographics Service Facility (ICSF). To use Encryption you must have <strong>SCSFMOD0 in LNKLST</strong></td>
<td>DRDA Data Stream Encryption</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS V01.11.00</td>
<td>Extended Address Volumes (EAV) for large sequential datasets</td>
</tr>
<tr>
<td>5655-L82</td>
<td>IBM WebSphere MQ V06.00.00, or later</td>
<td>MQListener</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS</td>
<td>Offload queries that run with CP query parallelism to zIIP requires WLM APAR OA26104.</td>
</tr>
<tr>
<td>5655-N98</td>
<td>z/OS XML System Services requires IBM 31-bit SDK for z/OS, Java 2 Technology Edition, V5 (SDK 5)</td>
<td>XML schemas</td>
</tr>
<tr>
<td>5724-B56</td>
<td>DB2 Connect V09.01.00 Fix pack 1 for ODBC Support of MERGE. <strong>Note:</strong> There is no support for embedded static SQL support.</td>
<td>Web Connectivity using ODBC MERGE and SELECT from MERGE</td>
</tr>
<tr>
<td></td>
<td>Any <strong>one</strong> of the following:</td>
<td></td>
</tr>
<tr>
<td>5635-A02</td>
<td>Information Management System (IMS) V11.01.00</td>
<td>Transaction Management</td>
</tr>
<tr>
<td>5635-A01</td>
<td>Information Management System (IMS) V10.01.00</td>
<td>Transaction Management</td>
</tr>
<tr>
<td>5655-S97</td>
<td>Customer Information Control System (CICS) Transaction Server for z/OS V04.01.00</td>
<td>Transaction Management</td>
</tr>
</tbody>
</table>
Note 1: RECOVER uses HSM to restore objects from a system-level backup recovery database. Prior to z/OS v01.11.00, HSM had a restriction that any data set that is restored must reside on the same volume on which it resided when the system-level backup was created. As a result, RECOVER restricted the use of a system-level backup as a recovery base if a subsequent utility might have moved the data set. HSM removed this restriction in z/OS V01.11.00. Therefore, the RECOVER restriction is also being removed.

Note 2: The application of the PTF for DFSMSdss SPE OA24811 is required, and the Remote Pair FlashCopy function does have to be enabled.

5.2.2.4 Optional Program Requirements: This section describes which versions of these associated products are tolerated by DB2 10.

Connectivity:

For DB2 database applications running on Linux, UNIX, or Windows operating systems, customers can use DB2 Connect and then perform one of the following actions:

- deploy the DB2 Connect gateway server for access to DB2 10
- use non-gateway DB2 Connect direct access from the database client machine to DB2 10

Especially for application servers such as WebSphere, the direct access approach provides excellent performance and scalability for all DB2 applications.

Both of these approaches, direct access or access through the gateway, provide runtime support to access DB2 by applications that use ODBC, CLI, .NET, OLE DB, PHP, Ruby, JDBC, pureQuery, JPA, SQLJ, Python, Perl and so on. These approaches can be used alone or in combination, as needed.

For more information about DB2 Connect deployment choices, see the documentation for the DB2 Connect product.

DB2 10 supports the following relational database products:

- IBM DB2 9 for Linux, UNIX, Windows (5765-F41), or later
  - DB2 Enterprise Server (ESE) for Linux, UNIX and Windows V9.1 (5765-F41)
  - DB2 Express Edition for Linux, UNIX and Windows, V9.1 (5724-E49)
  - Database Enterprise Developer Edition V9.1 (5724-N76)
  - DB2 Personal Edition for Linux, UNIX and Windows V9 (5724-B55)
- IBM DB2 for i, V6.1 (5761-SS1), or later
- DB2 Server for VSE & VM V7.3 (5697-F42), or later
- Any other DRDA-compliant client or relational DBMS server

**Web Connectivity:**

The following products provide connectivity to DB2 10 for z/OS from the web:

- WebSphere Application Server V6 (5724-J08), or later
- WebSphere Application Server for z/OS V6R1 (5655-N01), or later
- DB2 Connect V9R1 (Fixpack 1), or later
  - DB2 Connect Enterprise Edition (CEE) V9R1 (5765-F30), or later
  - DB2 Connect Unlimited Edition (CUE) V9R1 (5724-B62), or later
  - DB2 Connect Application Server Edition (CASE) V9R1 (Fixpack 1 or later) (5724-D54), or later
  - DB2 Connect Unlimited Edition for iSeries V9R1 (5724-M15), or later

**Note:** DB2 Connect 9.7 (Fixpack 3a) supports new functions in DB2 10

For more information about DB2 Connect support services, refer to:

www.ibm.com/support/entry/portal

**Development Tools:**

The following application development tools can be used to build applications for DB2 10 VUE:

- Optim Development Studio, V2R2 (5724-X83) or later
- IBM Optim pureQuery Runtime for Linux, UNIX, and Windows, V2R2M1 (5724-X84) or later
- IBM Optim pureQuery Runtime for z/OS, V2R2M1 (5655-V80) or later
- IBM InfoSphere Data Architect, V7R5 (5724-V15), or later
- IBM Data Studio V2R2, or later, available from the web at:
  

**Note:** The recommended no-charge query optimization and service tool for DB2 10 VUE is Data Studio. With Data Studio, DB2 for z/OS customers have a no-charge query serviceability tool for DB2 for z/OS. This tool is based and built on the foundation of the IBM Optimization Service Center for DB2 for z/OS.

**Programming Languages:**

The following application development programming languages can be used to build applications for DB2 10 VUE:

- Building applications by using the **DB2 precompiler**:
  
  - **Assembler** High Level Assembler, part of the System Services element of z/OS
  - **C/C++** C/C++ (without Debug Tool), which is an optional priced feature of z/OS
  - **COBOL** Enterprise COBOL for z/OS V3.4 (5655-G53), or Enterprise COBOL for z/OS V4.1 (5655-S71), or later
Fortran  VS Fortran V2.6 (5668-806, 5688-087, 5668-805) Note: data types and SQL functions that are new as of DB2 9 for z/OS are not supported.

PL/I  Enterprise PL/I for z/OS V4.1 (5655-W67), or later, or Enterprise PL/I for z/OS V3.7 (5655-H31), or later

Building applications using unsupported compilers:

For some COBOL and PL/I compilers that are no longer supported by Version 10, you can use a DSNHPC7 version of the precompiler that allows you to precompile applications that have dependencies on these unsupported compilers, but only use DB2 Version 7 SQL.

Building applications by using the DB2 coprocessor:

C/C++  C/C++ (without Debug Tool), which is an optional priced feature of z/OS

COBOL  Enterprise COBOL for z/OS V3.4 (5655-G53), or Enterprise COBOL V4.1 (5655-S71), or later

PL/I  Enterprise PL/I for z/OS V4.1 (5655-W67), or Enterprise PL/I for z/OS V3.7 (5655-H31), or later

Building applications that are supported with processes other than the precompiler or coprocessor:

Java  Applications or stored procedures that are written in Java, such as those that use the JDBC or SQLJ interfaces to DB2 for z/OS have certain requirements. They require the IBM SDK for z/OS, Java 2 Technology Edition V1.4 (SDK1.4.2, 5655-I56), or later, at run time. Optionally, for Java applications other than stored procedures, you can instead use IBM 64-Bit SDK for z/OS Java 2 Technology Edition, Version 5 (SDK5, 5655-N99), or later, at run time. 5655-I56 and 5655-N99 are independent products and can co-exist on the same z/OS system.

Sharing class objects between Java virtual machine (JVM) processes that run in the same address space requires IBM SDK for z/OS, Java 2 Technology Edition V1.4 (SDK1.4.2). Two editions are available: 31-bit edition (5655-I56) and the 64-bit edition (5655-M30); these are independent products that can coexist on the same z/OS system.

REXX  IBM TSO Extensions for MVS REXX, which is part of z/OS

SQL Procedure Language

External SQL Procedure Language

A C language compiler is required on z/OS to develop stored procedures using the external SQL procedural language. Specific C compiler to use is C/C++ (with or without Debug Tool), which are optional features of z/OS.

Native SQL Procedure Language does not require a C compiler

APL2  Mainframe APL2 V2.2 (5688-228) (full APL2) or APL2 Application Environment V2.2 (5688-229)

Data Warehouse Support:

InfoSphere Warehouse on System z V9R5M2 (5724-E34)
Operational Support:

The following programs provide operational support for DB2 10 VUE:

- DFSMS features, part of the Systems Management optional feature of z/OS, specifically:
  - DFSMShsm for archiving
  - DFSMSdss for concurrent copy in Utilities

Query Support:

The following query programs work with DB2 10 for z/OS VUE:

- Query Management Facility (QMF) Version 10 Value Unit Edition (VUE)
- DataQuant for z/OS V1R2 (5697-N64)

Tools Support:

Refer to the IBM Data Management Tools website for the complete list of IBM products:
www.ibm.com/software/data/db2imstools

IBM Tools for Database Administration and System Management Support, including the following tools:

- DB2 Administration Tool for z/OS, V10.1 (5655-W34)
- DB2 Audit Management Expert, V2.1 (5655-T57)
- DB2 Object Comparison Tool for z/OS, V10.1 (5655-W36)

IBM Tools for Database Application Management, including the following tools:

- IBM DB2 Table Editor for z/OS, V4.3 (5697-G65)

IBM Tools for Database Performance Management, including the following tools:

- Optim Query Tuner for DB2 for z/OS V2.2.1 (5655-V91)
- Optim Query Workload Tuner for DB2 for z/OS V2.2 (5655-V81)
- DB2 Buffer Pool Analyzer for z/OS V5.1 (5655-W35)
- Tivoli OMEGAMON XE for DB2 Performance Expert V5.1 (5655-W37)
- Tivoli OMEGAMON XE for DB2 Performance Monitor V5.1 (5655-W38)

IBM Tools for Database Recovery, including the following tools:

- IBM DB2 Change Accumulation Tool for z/OS, V2.1 (5655-F55), or higher
- IBM DB2 Object Restore for z/OS, V2.1 (5697-I20)
- IBM DB2 Log Analysis Tools for z/OS, V3.2 (5697-T56)
- IBM DB2 Recovery Expert for z/OS, V2.2 (5697-N92)

IBM Tools for Replication Management, including the following tools:

- IBM WebSphere Replication Server V9.1 (5655-R55)
- IBM WebSphere Data Event Publisher V9.1 (5655-R56)
IBM Tools for Utilities Management, including the following tools:

- DB2 Automation Tool for z/OS, V3.1 (5655-T59)
- DB2 Cloning Tool for z/OS V2.2 (5655-S91)
- DB2 Utilities Suite for z/OS, V10.1 (5655-V41)
- DB2 Utilities Enhancement Tools, V2.1 (5655-T58)
- DB2 High Performance Unload for z/OS V4.1 (5655-AA1)

5.2.2.5 Toleration/Coexistence Requisites: Toleration/coexistence requisites identify products that must be present on sharing systems. These systems can be other systems in a multisystem environment (not necessarily sysplex), a shared DASD environment (such as test and production), or systems that reuse the same DASD environment at different time intervals.

DB2 10 VUE has no toleration/coexistence requisites.

5.2.2.6 Incompatibility (Negative) Requisites: Negative requisites identify products that must not be installed on the same system as this product.

DB2 10 VUE has no negative requisites.

5.2.3 DASD Storage Requirements

DB2 10 VUE libraries can reside on all supported DASD types.

Figure 17 lists the total space that is required for each type of library.

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Total Space Required in 3390 Trks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>12113 (3390 tracks)</td>
</tr>
<tr>
<td>Distribution</td>
<td>11294 (3390 tracks)</td>
</tr>
<tr>
<td>File System</td>
<td></td>
</tr>
<tr>
<td></td>
<td>usr/lpp/db2a10/base/ (7984 512 byte blocks)</td>
</tr>
<tr>
<td></td>
<td>usr/lpp/db2a10/jdbc/ (20240 512 byte blocks)</td>
</tr>
<tr>
<td></td>
<td>usr/lpp/db2a10/mql/ (3144 512 byte blocks)</td>
</tr>
<tr>
<td></td>
<td>usr/lpp/db2a10/worf/ (2456 512 byte blocks)</td>
</tr>
</tbody>
</table>

Notes:

1. For non-RECFM U data sets, IBM recommends using system-determined block sizes for efficient DASD utilization. For RECFM U data sets, IBM recommends using a block size of 32760, which is most efficient from the performance and DASD utilization perspective.

2. Abbreviations used for data set types are shown as follows.
Unique data set, allocated by this product and used by only this product. This table provides all the required information to determine the correct storage for this data set. You do not need to refer to other tables or program directories for the data set size.

Shared data set, allocated by this product and used by this product and other products. To determine the correct storage needed for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the dataset already exists, it must have enough free space to accommodate the storage size given in this table.

Existing shared data set, used by this product and other products. This data set is not allocated by this product. To determine the correct storage for this data set, add the storage size given in this table to those given in other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

If you currently have a previous release of this product installed in these libraries, the installation of this release will delete the old release and reclaim the space that was used by the old release and any service had been installed. You can determine whether these libraries have enough space by deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

For more information about the names and sizes of the required data sets, see 6.1.7, “Allocate SMP/E Target and Distribution Libraries” on page 36.

3. Abbreviations used for the file system path type are as follows.

- **N** New path, created by this product.
- **X** Path created by this product, but may already exist from a previous release.
- **P** Previously existing path, created by another product.

4. All target and distribution libraries listed have the following attributes:
   - The default name of the data set may be changed.
   - The default block size of the data set may be changed.
   - The data set may be merged with another data set that has equivalent characteristics.
   - The data set may be either a PDS or a PDSE.

5. All target libraries listed have the following attributes:
   - These data sets can be SMS-managed, but they are not required to be SMS-managed.
   - These data sets are not required to reside on the IPL volume.
   - The values in the "Member Type" column are not necessarily the actual SMP/E element types that are identified in the SPMCS.

6. All target libraries that are listed and contain load modules have the following attributes:
   - These data sets can be in the LPA, but they are not required to be in the LPA.
   - These data sets can be in the LNKLST.
   - Some of these data sets may be required to be APF-authorized. For additional information, see the DB2 10 for z/OS Installation and Migration Guide.
The following table provides an estimate of the storage needed in the SMP/E data sets for DB2 10 VUE. You must add the estimates to those of any other programs and service that you install to determine the total additional storage requirements.

If the table indicates that the SMPLTS data set must be a PDSE and your existing SMPLTS is a PDS, you must allocate a new PDSE and copy your SMPLTS into it; then change the SMPLTS DDDEF entry to indicate the new PDSE data set.

### Figure 18. Storage Requirements for SMP/E Data Sets

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>T</th>
<th>Y</th>
<th>O</th>
<th>R</th>
<th>E</th>
<th>L</th>
<th>No. of Trks</th>
<th>No. of Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMPLTS U PDSE U</td>
<td>0</td>
<td>1560</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMPMTS E PDS FB</td>
<td>80</td>
<td>15</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMPPTS E PDS FB</td>
<td>80</td>
<td>3765</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMPSCDS E PDS FB</td>
<td>80</td>
<td>975</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMPSTES E PDS FB</td>
<td>80</td>
<td>75</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following figures describe the target and distribution libraries and file system paths required to install DB2 10 VUE. The storage requirements of DB2 10 VUE must be added to the storage required by other programs having data in the same library or path.

**Note:** The data in these tables should be used when determining which libraries can be merged into common data sets. In addition, since some ALIAS names may not be unique, ensure that no naming conflicts will be introduced before merging libraries.

### Figure 19 (Page 1 of 2). Storage Requirements for DB2 10 VUE Target Libraries

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Member Type</th>
<th>Target Volume</th>
<th>T</th>
<th>Y</th>
<th>O</th>
<th>R</th>
<th>E</th>
<th>L</th>
<th>No. of Trks</th>
<th>No. of Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDSNBASE Sample</td>
<td>Any S PDS FB</td>
<td>80</td>
<td>13</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNCHDR Data</td>
<td>Any S PDS FB</td>
<td>80</td>
<td>18</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNCLST CLIST</td>
<td>Any S PDS FB</td>
<td>80</td>
<td>155</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNDBRM Macro</td>
<td>Any S PDS FB</td>
<td>80</td>
<td>96</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNEXIT Data</td>
<td>Any S PDS U</td>
<td>0</td>
<td>6</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNIVPD Data</td>
<td>Any S PDS VB</td>
<td>8188</td>
<td>413</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNLINK LMOD</td>
<td>Any S PDS U</td>
<td>0</td>
<td>10</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following types of data sets are created during the DB2 10 VUE installation process. The sizes are based upon user preferences:

- CATALOG
- DIRECTORY
- LOG

### Figure 19 (Page 2 of 2). Storage Requirements for DB2 10 VUE Target Libraries

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Member Type</th>
<th>Target Volume</th>
<th>TR</th>
<th>ORG</th>
<th>REE</th>
<th>RC</th>
<th>LRE</th>
<th>No. of 3390 Trks</th>
<th>No. of DIR Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDSNLOAD</td>
<td>LMOD</td>
<td>Any S</td>
<td>PDSE</td>
<td>U</td>
<td>0</td>
<td></td>
<td></td>
<td>6399</td>
<td>N/A</td>
</tr>
<tr>
<td>SDSNLOAD2</td>
<td>LMOD</td>
<td>Any S</td>
<td>PDSE</td>
<td>U</td>
<td>0</td>
<td></td>
<td></td>
<td>488</td>
<td>N/A</td>
</tr>
<tr>
<td>SDSNMACS</td>
<td>Macro</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>257</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNPFFE</td>
<td>Panel</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>16</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNPFPK</td>
<td>Panel</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>16</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNSAMP</td>
<td>Sample</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>3846</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNSPFM</td>
<td>Message</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNSPFP</td>
<td>Panel</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>26</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNSPSFS</td>
<td>SKEL</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDSNSPFT</td>
<td>Table</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDXRRESL</td>
<td>LMOD</td>
<td>Any S</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>176</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDXRSAMP</td>
<td>Sample</td>
<td>Any S</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>40</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Figure 20 (Page 1 of 2). DB2 10 VUE File System Paths

<table>
<thead>
<tr>
<th>DDNAME</th>
<th>TYPE</th>
<th>Path Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDSNAHFS</td>
<td>N</td>
<td>/usr/lpp/db2a10/base/IBM/</td>
</tr>
<tr>
<td>SDSNABIN</td>
<td>N</td>
<td>/usr/lpp/db2a10/base/bin/IBM/</td>
</tr>
<tr>
<td>SDSNACLSS</td>
<td>N</td>
<td>/usr/lpp/db2a10/base/classes/IBM/</td>
</tr>
<tr>
<td>SDSNALIB</td>
<td>N</td>
<td>/usr/lpp/db2a10/base/lib/IBM/</td>
</tr>
<tr>
<td>SDSNASMP</td>
<td>N</td>
<td>/usr/lpp/db2a10/base/samples/IBM/</td>
</tr>
<tr>
<td>SDSNJBIN</td>
<td>N</td>
<td>/usr/lpp/db2a10/jdbc/bin/IBM/</td>
</tr>
<tr>
<td>SDSNJCLS</td>
<td>N</td>
<td>/usr/lpp/db2a10/jdbc/classes/IBM/</td>
</tr>
<tr>
<td>SDSNJCC</td>
<td>N</td>
<td>/usr/lpp/db2a10/jdbc/IBM/</td>
</tr>
<tr>
<td>SDSNJLIB</td>
<td>N</td>
<td>/usr/lpp/db2a10/jdbc/lib/IBM/</td>
</tr>
</tbody>
</table>
5.3 FMIDs Deleted

Installing DB2 10 VUE might result in the deletion of other FMIDs. To see which FMIDs will be deleted, examine the ++VER statement in the SMPMCS of the product.

If you do not want to delete these FMIDs at this time, install DB2 10 VUE into separate SMP/E target and distribution zones.

**Note:** These FMIDs are not automatically deleted from the Global Zone. If you want to delete these FMIDs from the Global Zone, see the SMP/E manuals for instructions.
5.4 Special Considerations

DB2 10 VUE has special considerations for the target system.

Note

The service level in which the PTF/APAR fixes were incorporated into the product tape is PDO 1148 (PDO 1239 for IRLM 2.3). There are several HOLD items associated with the incorporated DB2 and IRLM 2.3 fixes that you must be aware of and take necessary action as part of the installation of DB2 and IRLM 2.3. The HOLDs are provided in chronological order in the appendix of this document. These HOLDs are also provided in the below technote:


5.5 Migration, Fallback, and Remigration

Migration with full fallback protection is available for customers running in new-function mode (NFM). Existing customers should ensure they are successfully running on DB2 9 for z/OS (NFM) or on DB2 UDB for z/OS Version 8 (NFM) before migrating to DB2 10.

To prepare for migration to DB2 10 VUE, you must apply Migration/Fallback APAR PK56922 and the additional APARs listed below, and start DB2 prior to migrating.

- PM14630 (DB2 8)
- PK61766 (DB2 8 and DB2 9)
- PK85956 (DB2 8 and DB2 9)
- PK87280 (DB2 8 and DB2 9)
- PK87281 (DB2 8 and DB2 9)
- PM04680 (DB2 8 and DB2 9)
- PM08102 (DB2 8 and DB2 9)
- PM10227 (DB2 8 and DB2 9)
- PM12572 (DB2 8 and DB2 9)
- PM14377 (DB2 8 and DB2 9)
- PM19523 (DB2 8 and DB2 9)
- PM09148 (DB2 8 and DB2 9)
- PK31163 (DB2 9)
- PK69411 (DB2 9)
- PM08105 (DB2 9)
- PM13631 (DB2 9)
- PM19221 (DB2 9)
- PM21557 (DB2 9)
- PM13525 (DB2 9)
Due to the possibility of prerequisite APARs, it may be necessary to acquire additional APARs not related to Fallback. For additional information you may reference the following APARs:

- II14474 (DB2 V8 migration/fallback to/from DB2 10)
- II14477 (DB2 V9 migration/fallback to/from DB2 10)

For a list of tasks to complete in preparation for migration to DB2 10, see one of the following checklists:

Premigration checklist for migration to DB2 10 from Version 8:


Premigration checklist for migration to DB2 10 from Version 9:


For DB2 10 for z/OS specifics, please see the DB2 z/OS main website:

www.ibm.com/software/data/db2/zos/

**Note:** Information on topics such as Support, Planning and Migration is available from the DB2 main website. Click on 'Support' to display the Support overview page. From the Support overview page you may select 'Planning', then click on 'Product Support Lifecycle'. For Migration, enter 'V10 migration' in the Support overview search window.
6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of DB2 10 VUE.

Please note the following:

- If you want to install DB2 10 VUE into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMPCSI and the SMP/E control data sets.

- You can use the sample jobs that are provided to perform part or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries that are required for SMP/E execution have been defined in appropriate zones.

- You can use the SMP/E dialogs instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing DB2 10 VUE

6.1.1 SMP/E Considerations for Installing DB2 10 VUE

Use the SMP/E RECEIVE, APPLY, and ACCEPT commands to install this release of DB2 10 VUE.

6.1.2 SMP/E Options Subentry Values

The recommended values for certain SMP/E CSI subentries are shown in Figure 22. Using values lower than the recommended values can result in failures in the installation. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. See the SMP/E manuals for instructions on updating the global zone.

<table>
<thead>
<tr>
<th>Subentry</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSSPACE</td>
<td>400,400,400</td>
<td>3390 DASD Tracks</td>
</tr>
<tr>
<td>PEMAX</td>
<td>SMP/E Default</td>
<td>IBM recommends using the SMP/E default for PEMAX.</td>
</tr>
<tr>
<td>UTILITY</td>
<td>IEWBLINK</td>
<td>Program Binder must be used for installation of DB2 10 JDBC/SQLJ</td>
</tr>
</tbody>
</table>
6.1.3 SMP/E CALLLIBS Processing

DB2 10 VUE uses the CALLLIBS function that is provided in SMP/E to resolve external references during installation. When DB2 10 VUE is installed, ensure that DDDEFs exist for the following libraries:

- CSSLIB
- SCEEBND2
- SCEECPP
- SCEELIB
- SCEELKED
- SCLBCPP
- SCSFMOD0

Note: CALLLIBs use the previous DDDEFs only to resolve the link-edit for DB2 10 VUE. These data sets are not updated during the installation of DB2 10 VUE.

6.1.4 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install DB2 10 VUE:

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Job Type</th>
<th>Description</th>
<th>RELFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSNTIJAA</td>
<td>SMP/E</td>
<td>Sample job to create the CSI and allocate the SMP/E control data sets (Optional)</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNRECV1</td>
<td>RECEIVE</td>
<td>Sample RECEIVE job for DB2</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNRECV2</td>
<td>RECEIVE</td>
<td>Sample RECEIVE job for IRLM</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNRECV3</td>
<td>RECEIVE</td>
<td>Sample RECEIVE job for ODBC and JDBC/SQLJ</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNRECV4</td>
<td>RECEIVE</td>
<td>Sample RECEIVE job for DB2 Kanji Panels</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSN3RECV</td>
<td>RECEIVE</td>
<td>Sample RECEIVE job for DB2 Value Unit Edition</td>
<td>IBM.JDBAA1Z.F1</td>
</tr>
<tr>
<td>DSNALLOCO</td>
<td>ALLOCATE</td>
<td>Sample job to allocate target and distribution libraries and define SMP/E DDDEFs</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNASMKD</td>
<td>MKDIR</td>
<td>Sample job to invoke the supplied DSNAMKDR EXEC to allocate HFS paths for DB2 base</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNLSMKD</td>
<td>MKDIR</td>
<td>Sample job to invoke the supplied DSNLMKDR EXEC to allocate HFS paths for MQListener</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNWSMKD</td>
<td>MKDIR</td>
<td>Sample job to invoke the supplied DSNWWMKDR EXEC to allocate HFS paths for WORF</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNISMKD</td>
<td>MKDIR</td>
<td>Sample job to invoke the supplied DSNSMKDIR EXEC to allocate HFS paths for JDBC/SQLJ</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNDDDEF1</td>
<td>DDDEF</td>
<td>Sample job to define SMP/E DDDEFs</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSNTIJUD</td>
<td>SMP/E</td>
<td>Clean up job (Optional)</td>
<td>IBM.HDBAA10.F3</td>
</tr>
</tbody>
</table>
You can access the sample installation jobs by performing an SMP/E RECEIVE and then copying the jobs from the relfiles to a work data set for editing and submission. See Figure 23 on page 33 to find the appropriate relfile data set.

You can also copy the sample installation jobs from the tape or product files by submitting the following job. Depending on your distribution medium, use either the //TAPEIN or the //FILEIN DD statement and comment out or delete the other statement. Before you submit the job, add a job card and change the lowercase parameters to uppercase values to meet the requirements of your site.

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=/c5197
//TAPEIN DD DSN=IBM.HDBAA10.F3,UNIT=tunit,
// VOL=SER=volser,LABEL=(x,SL),
// DISP=(OLD,KEEP)
//FILEIN DD DSN=IBM.HDBAA10.F3,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol
//OUT DD DSNAME=jcl-library-name,
// DISP=(NEW,CATLG,DELETE),
// VOL=SER=dasdevol,UNIT=SYSALLDA,
// SPACE=(TRK,(20,10,10))
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
COPY INDD=xxxxIN,OUTDD=OUT
/*
//STEP2 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=* 
//TAPEIN DD DSN=IBM.JDBAA1Z.F1,UNIT=tunit,
// VOL=SER=volser2,LABEL=(y,SL),
// DISP=(OLD,KEEP)
//FILEIN DD DSN=IBM.JDBAA1Z.F1,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol
//OUT DD DSNAME=jcl-library-name,
// DISP=OLD
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
COPY INDD=xxxxIN,OUTDD=OUT
```

### Figure 23 (Page 2 of 2). Sample Installation Jobs

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Job Type</th>
<th>Description</th>
<th>RELFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSNAPPL1</td>
<td>APPLY</td>
<td>Sample APPLY CHECK and APPLY job</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSN3APLY</td>
<td>APPLY</td>
<td>Sample APPLY CHECK and APPLY job for DB2 Value Unit Edition</td>
<td>IBM.JDBAA1Z.F1</td>
</tr>
<tr>
<td>DSNACEP1</td>
<td>ACCEPT</td>
<td>Sample ACCEPT CHECK and ACCEPT job</td>
<td>IBM.HDBAA10.F3</td>
</tr>
<tr>
<td>DSN3ACEP</td>
<td>ACCEPT</td>
<td>Sample ACCEPT CHECK and ACCEPT job for DB2 Value Unit Edition</td>
<td>IBM.JDBAA1Z.F1</td>
</tr>
</tbody>
</table>
See the following information to update the statements in the previous sample:

**TAPEIN:**
- `tunit` is the unit value that matches the product tape.
- `volser` is the volume serial that matches the product tape.
- `x` is the tape file number that indicates the location of the data set name on the tape.
  See the documentation that is provided by CBPDO for the location of IBM.fmID.Fy on the tape.

**FILEIN:**
- `filevol` is the volume serial of the DASD device where the downloaded files reside.

**OUT**
- `jcl-library-name` is the name of the output data set where the sample jobs are stored.
- `dasdvol` is the volume serial of the DASD device where the output data set resides.

**SYSIN**
- `xxxxIN` is either TAPEIN or FILEIN depending on your input DD statement.

### 6.1.4.1 Special Considerations

- DB2 10 VUE and IRLM V02.03.00 are assumed to be installed into the same zones. If this is not the case, you will need to modify jobs DSNALLOC, DSNDEF1 and DSNAPPL1.
- Recompile your existing Validation Exit Routines to pick up the updated version of the macro DSNDRVAL. No logic change is required. Although it is optional to recompile your Validation Exit Routine, it is recommended.

### 6.1.5 Allocate CSI and SMP/E Control data sets

Edit and submit **optional** sample job DSNTIJAA to create the desired CSI for DB2 10 VUE. Please note this job allocates some data sets in **PDSE** format. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.

### 6.1.6 Perform SMP/E RECEIVE

If you have obtained DB2 10 VUE as part of a CBPDO, use the RCVPDO job in the CBPDO RIMLIB data set to receive the DB2 10 VUE FMIDs, service, and HOLDDATA that are included on the CBPDO tape. For more information, see the documentation that is included in the CBPDO.

You can also choose to edit and submit sample job DSNRECV1 to perform the SMP/E RECEIVE for the mandatory DB2 FMIDs for DB2 10 VUE. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a return code of 0 if this job runs correctly.

You can also choose to edit and submit sample job DSNRECV2 to perform the SMP/E RECEIVE for the mandatory IRLM FMID for DB2 10 VUE. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a return code of 0 if this job runs correctly.
You can also choose to edit and submit sample job DSNRECV3 to perform the SMP/E RECEIVE for the optional FMIDs for DB2 10 VUE. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a return code of 0 if this job runs correctly.

You can also choose to edit and submit sample job DSN3RECV to perform the SMP/E RECEIVE for DB2 Value Unit Edition. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** This job should complete with a condition code of 0 if the job runs correctly.

You can also choose to edit and submit sample job DSNRECV4 to perform the SMP/E RECEIVE for the DB2 Kanji FMID for DB2 10 VUE. This FMID is delivered with the DB2 Japanese feature. If you did not order the DB2 Japanese feature, then you may wish to comment out FMID JDBAA11 from the SMP/e DSNAPPL1 and DSNACEP1 jobs.

**6.1.7 Allocate SMP/E Target and Distribution Libraries**

Edit and submit sample job DSNALLOC to allocate the SMP/E target and distribution libraries for DB2 10 VUE. Consult the instructions in the sample job for more information.

APAR PM59485 provides an updated DSNALLOC sample job which decreases the allocation sizes of several DB2 target library and distribution library datasets. This APAR is available in PTF UK77691 (PDO 1214). The dataset allocations sizes in the Storage Requirements figures in this program directory reflect the recommended dataset allocation sizes as provided in the DSNALLOC job updates in PTF UK77691.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.

**6.1.8 Allocate File system Paths**

Mount the file system data set of the target system on the driving system when you run the sample DSNASMKD job because the job will create paths in the file system.

Before you run the sample job to create the paths in the file system, ensure that OMVS is active on the driving system, and that the file system of the target system is mounted to the driving system. If you install DB2 10 VUE into a zFS file system, zFS must be active on the driving system.

If you plan to install DB2 10 VUE into a new file system, create the mountpoint and mount the new file system to the driving system. For DB2 10 VUE, the recommended mountpoint is /usr/lpp/db2a10.

Edit and submit sample job DSNASMKD to allocate the file system for DB2 10 VUE. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.
Edit and submit sample job DSNLSMKD to allocate the file system for DB2 10 VUE (MQListener). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.

Edit and submit sample job DSNWSMKD to allocate the file system for DB2 10 VUE (WORF). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.

Edit and submit sample job DSNISMKD to allocate the file system for DB2 10 VUE (JDBC/SQLJ). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.

If you create a new file system for this product, consider updating the BPXPRMxx PARMLIB member to mount the new file system at IPL.time. This action can be helpful if an IPL occurs before the installation is completed.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.

### 6.1.9 Create DDDEF Entries

Edit and submit sample job DSNDDEF1 to create DDDEF entries for the SMP/E target and distribution libraries for DB2 10 VUE (hlq DSNA10 is recommended). Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages:** You will get a condition code of 0 if the job runs correctly.

### 6.1.10 Perform SMP/E APPLY

Perform an SMP/E APPLY CHECK for DB2 10 VUE.

**Note**

The service level in which the PTF/APAR fixes were incorporated into the product tape is PDO 1148 (PDO 1239 for IRLM 2.3). There are several HOLD items associated with the incorporated DB2 and IRLM 2.3 fixes that you must be aware of and take necessary action as part of the installation of DB2 and IRLM 2.3. The HOLDs are provided in chronological order in the appendix of this document. These HOLDs are also provided in the below technote:

1. Ensure that you have the latest HOLDDATA; then edit and submit sample job DSNAPPL1 to perform an SMP/E APPLY CHECK for DB2 10 VUE. Consult the instructions in the sample job for more information.

The latest HOLDDATA is available through several different portals, including http://service.software.ibm.com/holdata/390holddata.html. The latest HOLDDATA may identify HIPER and FIXCAT APARs for the FMIDs you will be installing. An APPLY CHECK will help you determine if any HIPER or FIXCAT APARs are applicable to the FMIDs you are installing. If there are any applicable HIPER or FIXCAT APARs, the APPLY CHECK will also identify fixing PTFs that will resolve the APARs, if a fixing PTF is available.

You should install the FMIDs regardless of the status of unresolved HIPER or FIXCAT APARs. However, do not deploy the software until the unresolved HIPER and FIXCAT APARs have been analyzed to determine their applicability. That is, before deploying the software either ensure fixing PTFs are applied to resolve all HIPER or FIXCAT APARs, or ensure the problems reported by all HIPER or FIXCAT APARs are not applicable to your environment.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do not bypass the PRE, ID, REQ, and IFREQ on the APPLY CHECK. The SMP/E root cause analysis identifies the cause only of errors and not of warnings (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings, instead of errors).

Here are sample APPLY commands:

a. To ensure that all recommended and critical service is installed with the FMIDs, receive the latest HOLDDATA and use the APPLY CHECK command as follows

```
APPLY S(fmid,fmid,...) CHECK
FORFMID(fmid,fmid,...)
SOURCEID(RSU/c5197)
FIXCAT(IBM.ProductInstall-RequiredService)
GROUPEXTEND .
```

Some HIPER APARs might not have PTFs available yet. You have to analyze the symptom flags to determine if you want to bypass the specific ERROR HOLDs and continue the installation of the FMIDs.

This method requires more initial research, but can provide resolution for all HIPERs that have fixes available and are not in a PE chain. Unresolved PEs or HIPERs might still exist and require the use of BYPASS.

b. To install the FMIDs without regard for unresolved HIPER APARs, you can add the BYPASS(HOLDCLASS(HIPER)) operand to the APPLY CHECK command. This will allow you to install FMIDs even though one or more unresolved HIPER APARs exist. After the FMIDs are installed, use the SMP/E REPORT ERRSYSMODS command to identify unresolved HIPER APARs and any fixing PTFs.
APPLY $\text{S}(\text{fmid}, \text{fmid}, ...)$
FORFMID($\text{fmid}, \text{fmid}, ...$)
SOURCEID($\text{RSU}^*$)
FIXCAT($\text{IBM.ProductInstall-RequiredService}$)
GROUPEXTEND
BYPASS($\text{HOLDCLASS}(\text{HIPER})$).

..any other parameters documented in the program directory

This method is the quicker of the two, but requires subsequent review of the REPORT ERRSYSMODS to investigate any HIPERs. If you have received the latest HOLDDATA, you can also choose to run REPORT MISSINGFIX for Fix Category IBM.ProductInstall-RequiredService to investigate missing recommended service.

If you bypass HOLDs during the installation of the FMIDs because PTFs are not yet available, you can make yourself notified when the PTFs are available by using the APAR Status Tracking (AST) function of ServiceLink or the APAR Tracking function of ResourceLink.

2. After you take actions that are indicated by the APPLY CHECK, remove the CHECK operand and run the job again to perform the APPLY.

**Note:** The GROUPEXTEND operand indicates that SMP/E applies all requisite SYSMODs. The requisite SYSMODs might be applicable to other functions.

**Expected Return Codes and Messages from APPLY CHECK:** You may receive a return code of 4 or less and the job may issue any of the following messages which does not affect product installation:

- GIM23903W, GIM23913W, GIM43401W, GIM61903W, GIM67301W, GIM69138W
- IEW2480W, IEW2482W, IEW2454W, IEW2609W, IEW2646W

**Note:** If you receive the following message, increase the REGION size in your APPLY job step:

IEW2971T C4/06 INSUFFICIENT ABOVE THE LINE STORAGE WAS AVAILABLE to CONTINUE BINDER PROCESSING.
IEW2008I OIAE PROCESSING COMPLETED. RETURN CODE = 16.

**Note:** All messages pertaining to members with prefix name ‘DSN’ or ‘DXR’ can be ignored. If this job fails or abends, correct the problem and rerun the job.

**Expected Return Codes and Messages from APPLY:** You may receive a return code of 4 or less and the job may issue any of the following messages which does not affect product installation:

- GIM23903W, GIM23913W, GIM43401W, GIM61903W, GIM67301W, GIM69138W
- IEW2480W, IEW2482W, IEW2454W, IEW2609W, IEW2646W

**Note:** If you receive the following message, increase the REGION size in your APPLY job step:

IEW2971T C4/06 INSUFFICIENT ABOVE THE LINE STORAGE WAS AVAILABLE to CONTINUE BINDER PROCESSING.
IEW2008I OIAE PROCESSING COMPLETED. RETURN CODE = 16.

**Note:** All messages pertaining to members with prefix name ‘DSN’ or ‘DXR’ can be ignored. If this job fails or abends, correct the problem and rerun the job.
3. Upon successful APPLY from job DSNAPPL1, edit and submit sample job DSN3APLY to perform an SMP/E APPLY CHECK for DB2 Value Unit Edition, FMID JDBAA1Z. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages from APPLY CHECK:** You will receive a return code of 0 if the job runs correctly.

4. After you have taken any actions indicated by the APPLY CHECK, remove the CHECK operand and run DSN3APLY again to perform the APPLY.

**Expected Return Codes and Messages from APPLY:** You will receive a return code of 0 if the job runs correctly.

### 6.1.11 Perform SMP/E ACCEPT

Edit and submit sample job DSNACEP1 to perform an SMP/E ACCEPT CHECK for DB2 base. Consult the instructions in the sample job for more information.

Edit and submit sample job DSN3ACEP to perform an SMP/E ACCEPT CHECK for DB2 10 Value Unit Edition. Consult the instructions in the sample job for more information.

**Expected Return Codes and Messages from ACCEPT CHECK:** These jobs should complete with a return code 4 or less. You may receive message GIM61903W.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do not bypass the PRE, ID, REQ, and IFREQ on the ACCEPT CHECK. This is because the SMP/E root cause analysis identifies the cause of only errors but not warnings (SMP/E treats bypassed PRE, ID, REQ, and IFREQ conditions as warnings rather than errors).

Before you use SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. In this way, you can save the entries that are produced from JCLIN in the distribution zone whenever a SYSMOD that contains inline JCLIN is accepted. For more information about the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E manuals.

After you take actions that are indicated by the ACCEPT CHECK, remove the CHECK operand and run the jobs again to perform the ACCEPT.

**Note:** The GROUPEXTEND operand indicates that SMP/E accepts all requisite SYSMODs. The requisite SYSMODs might be applicable to other functions.

**Expected Return Codes and Messages:** You may receive a return code of 4 or less and the jobs may issue a GIM61903W message which does not affect product installation.

If PTFs that contain replacement modules are accepted, SMP/E ACCEPT processing link-edits or binds the modules into the distribution libraries. During this processing, the Linkage Editor or Binder might issue messages that indicate unresolved external references, which will result in a return code of 4 during the ACCEPT phase. You can ignore these messages, because the distribution libraries are not executable and the unresolved external references do not affect the executable system libraries.
6.1.12 Run REPORT CROSSZONE

The SMP/E REPORT CROSSZONE command identifies requisites for products that are installed in separate zones. This command also creates APPLY and ACCEPT commands in the SMPPUNCH data set. You can use the APPLY and ACCEPT commands to install those cross-zone requisites that the SMP/E REPORT CROSSZONE command identifies.

After you install DB2 10 VUE, it is recommended that you run REPORT CROSSZONE against the new or updated target and distribution zones. REPORT CROSSZONE requires a global zone with ZONEINDEX entries that describe all the target and distribution libraries to be reported on.

For more information about REPORT CROSSZONE, see the SMP/E manuals.

6.1.13 Set Up Controls for English Panel Selection

Each of the display language control techniques described below is a way to set or change the current allocation of the DDNAMES.

6.1.13.1 Logon Procedures: To switch languages, you need only change the data set allocation currently in effect under the standard ISPF panel library DDNAME. A user's logon procedure can allocate DDNAME ISPPLIB to select the current display language. Following is an example from a logon procedure:

```plaintext
///c5197 THIS VERSION DISPLAYS ENGLISH PANELS /c5197/
//ISPPLIB DD DSN=DSNA10.SDSNSPFP,DISP=SHR ENGLISH
// DSN=DSNA10.SDSNPFPK,DISP=SHR ENGLISH
```

6.1.13.2 Language-switching CLISTs: An ordinary CLIST can be used (outside of ISPF) to free and reallocate ISPPLIB. Following is an example of a CLIST:

```plaintext
PROC O LANGUAGE(E) /* Execute this CLIST outside of ISPF */
FREE DD(ISPPLIB)
WRITE Do you want English or Japanese panels: Enter E or J.
READ &LANGUAGE
IF &LANGUAGE = E +
    THEN ALLOC DD(ISPPLIB) DS('DSNA10.SDSNSPFP' 'DSNA10.SDSNPFPK') +
        SHR /* English */
ELSE ALLOC DD(ISPPLIB) DS('DSNA10.SDSNSPFP' 'DSNA10.SDSNPFPK') +
        SHR /* Japanese */
```

Some users allocate the ISPF panel library from their DEFAULT CLIST. Allocation of DDNAME ISPPLIB controls the current language just as it does for the LOGON procedure.
6.1.14 Cleaning Up Obsolete Data Sets, Paths, and DDDEFs

The following data sets, which were allocated and used by previous releases of this product, are no longer used in this release. You can delete these obsolete data sets after you delete the previous release from your system.

- SDSNXML and ADSNXML
- SDXXADM and ADXXADM
- SDXXC and ADXXC
- SDXXCLI and ADXXCLI
- SDXXCLP and ADXXCLP
- SDXXCMD and ADXXCMD
- SDXXDAD and ADXXDAD
- SDXXDBRM and ADXXDBRM
- SDXXDTD and ADXXDTD
- SDXXH and ADXXH
- SDXXJCL and ADXXJCL
- SDXXJDBC and ADXXJDBC
- SDXXLOAD and ADXXLOAD
- SDXXSDDF and ADXXSDDF
- SDXXXML and ADXXXML

The following file system paths, which were created and used by previous releases of this product, are no longer used in this release. You can delete these obsolete file system paths after you delete the previous release from your system.

- /usr/lpp/db2910_base/bin/IBM/
- /usr/lpp/db2910_base/classes/IBM/
- /usr/lpp/db2910_base/IBM/
- /usr/lpp/db2910_base/lib/IBM/
- /usr/lpp/db2910_base/samples/IBM/
- /usr/lpp/db2910_jdbc/bin/IBM/
- /usr/lpp/db2910_jdbc/classes/IBM/
- /usr/lpp/db2910_jdbc/lib/IBM/
- /usr/lpp/db2910_jdbc/samples/IBM/
- /usr/lpp/db2910_mql/IBM/
- /usr/lpp/db2910_worf/IBM/
- /usr/lpp/db2910_worf/lib/IBM/
- /usr/lpp/db2910_worf/schemas/IBM/
- /usr/lpp/db2910_worf/tools/lib/IBM/

The following DDDEF entries, which were created and used by previous releases this product, are no longer used in this release. You can delete these obsolete DDDEF entries after you delete the previous release from your system.

- SDSNXML and ADSNXML
6.2 Activating DB2 10 VUE

The publication *DB2 10 for z/OS Installation and Migration, GC19-2974*, contains the step-by-step procedures to activate the functions of DB2 10 VUE. Please see *Enabling Value Unit Edition (VUE)* in this document for additional information.

6.2.1 Enabling Value Unit Edition (VUE)

Enabling the VUE feature of DB2 10 VUE, requires you to install FMID JDBAA1Z in the SMP/e libraries used by the DB2 subsystem or data sharing member which will operate under the terms of the DB2 10 VUE license.

- FMID JDBAA1Z adds SMP/e jobs and special ISPF panels for the DB2 installation CLIST which allow you to indicate whether a particular DB2 is to operate under the terms of the DB2 10 VUE license.

Note that the DB2 10 VUE feature will only operate on a zNALC z/OS operating system. Any Logical Partition (LPAR) that is designated as a zNALC LPAR must identify itself in one of two ways:

1. By using the naming convention "ZNALxxxx" where xxxx may be any letters or numbers
2. By using the "LICENSE=ZNALC" IPL parameter.

There are two ways to activate the DB2 10 VUE product on your eligible DB2 10 for z/OS subsystem or data sharing member:

1. Use the DB2 installation CLIST and panels
2. Direct update of the job(s) you use to create the DB2 subsystem (DSNZPARM) parameter module

Using the DB2 installation CLIST and panels
Before continuing, ensure that FMID JDBAA1Z is installed in the SMP/e target libraries that you use to run the DB2 10 installation CLIST.

If you're installing or migrating a subsystem or data sharing member to DB2 10 VUE, follow the usual process for INSTALL or MIGRATE as outlined in the DB2 10 for z/OS Value Unit Edition Installation and Migration in topic entitled 'Tailoring DB2 jobs to your environment using the installation CLIST'.

When you run the CLIST from an SMP/e environment with FMID JDBAA1Z installed, it will display the OTC license notice and acceptance panels, DSNTIPO1 and DSNTIPO2, together directly after you proceed from the main panel, DSNTIPA1.

On popup panel DSNTIPO1, indicate whether the OTC license will be used to operate the subsystem or data sharing member you are installing, migrating or updating. If you indicate no, processing continues to the next standard installation panel and DB2 will not use the OTC license.

If you indicate on the popup panel DSNTIPO1 that the OTC license will be used for this DB2, then panel DSNTIPO2 (Notice and acceptance of OTC license) is displayed so you can review the terms of the license. You will not be allowed to proceed until you confirm that you will abide by the terms of the license. The entire IPLA license, translated into multiple languages, is included with the product and is available as publication number GC19-2414.

Use the ISPF DOWN and UP keys to scroll the license terms. If you agree to the terms of the license, enter YES in the LICENSE TERMS ACCEPTED field and press the enter key to continue. Otherwise, press the ISPF RETURN key to return to the main ISPF panel, DSNTIPA1.

Continue through the remaining installation panels as usual. When finished, if you have selected this DB2 to use the OTC license and agreed to the terms thereof, job DSNTIJUZ will contain the keyword "OTC_LICENSE=TERMS_ACCEPTED" in the DSN6SYSP system parameter macro expansion. Run the job to regenerate the subsystem parameter module. You must then stop and restart the DB2 subsystem or data sharing member in order for the change to take affect.

If for any reason you want to discontinue using the DB2 10 VUE license for this DB2 or if you no longer agree to the terms, you must remove the entry for OTC_LICENSE from each job used to generate a subsystem parameter module for that DB2, and regenerate each such subsystem parameter module. You must then stop and restart the DB2 subsystem or data sharing member in order for the change to take affect.

Using direct update of the job(s) you use to create the subsystem (DSNZPARAM) parameter module for DB2

If you do not use the DB2 installation CLIST to install, migrate, or update a DB2 subsystem or data sharing member to operate under the DB2 10 VUE license, you must first review the terms of the license by viewing member DSNTIPO2 of the prefix.SDSNSPFP library.

If you accept the terms of the license, you may activate it by adding "OTC_LICENSE=TERMS_ACCEPTED" in the DSN6SYSP macro expansion of your customized copy of job DSNTIJUZ and any other jobs you use to create the subsystem parameter (DSNZPARAM) module(s).
for the DB2 you intend to operate under the DB2 10 VUE license. Then process as usual to reassemble
and relink your subsystem parameter module. You must stop and restart DB2 in order for the change to
take affect.

If for any reason you want to discontinue use of the DB2 10 VUE license for this DB2 or if you no longer
agree to the terms, you must remove the entry for OTC_LICENSE from each job used to generate a
subsystem parameter module for that DB2, and regenerate each such subsystem parameter module. You
must then stop and restart the DB2 subsystem or data sharing member in order for the change to take
affect.
Appendix A. HOLD DATA for PTFs incorporated in the product tape

------ COVER LETTER FOR PTF UK59465 ------------ 2010/08/06

PROBLEM DESCRIPTION(S):
PM18353 -
 ************************************************************
* USERS AFFECTED: All DB2 V10 users. *
 ************************************************************
* PROBLEM DESCRIPTION: V10 new function update. *
 ************************************************************
* RECOMMENDATION: *
 ************************************************************
V10 new function update.

COMPONENT: 5740-XYR01-HIZAA10
APARS FIXED: PM19414
SPECIAL CONDITIONS:
COPYRIGHT: 5740-XYR01 COPYRIGHT IBM CORP. 1982 2010
LICENSED MATERIAL - PROGRAM PROPERTY OF IBM

ACTION
This PTF corrects a problem that causes an index on expression that contains multiple CONCAT functions to not be used for queries in which the predicate matches the index.

To make this fix effective, take these actions:
- Drop and recreate indexes on expressions in which the expressions contain multiple CONCAT functions.
- Rebind applications that have queries with multiple CONCAT functions in the SELECT list.

------ COVER LETTER FOR PTF UK59475 ------------ 2010/08/06

PROBLEM DESCRIPTION(S):
PM19414 -
 ************************************************************
* USERS AFFECTED: All DB2 V10 users. *
 ************************************************************
* PROBLEM DESCRIPTION: V10 new function update. *
 ************************************************************
* RECOMMENDATION: *
 ************************************************************
V10 new function update.
ACTION
This PTF fixes a problem that causes a TSO session to hang and DB2 to not come down after DFSMS OAM (OTIS) is brought down.

This PTF affects the group attach function. To make this PTF fully effective, the ERLY (early) code for each subsystem that is defined as part of the group attach name must be updated through the refresh process or by a z/OS IPL.

The following actions are required after you apply this PTF:

1. Use the DB2 Version 10 early code that is in FMID HIZAA10 if you plan to run DB2 Version 10.
2. If you are migrating to DB2 Version 10 from DB2 Version 8, perform a z/OS IPL.
3. If you are migrating to DB2 Version 10 from DB2 Version 9.1 with APAR PK27968 applied, you can use the online procedure that is described below or perform a z/OS IPL. If PK27968 is not applied, you need to perform a z/OS IPL.
4. If you are installing DB2 Version 10, you can use the online procedure that is described below or perform a z/OS IPL.

Online early code installation procedure:
After you apply this PTF, you can enter the following commands on the z/OS console, instead of performing a z/OS IPL. Replace the hyphen (-) with the subsystem recognition character for your DB2 subsystem.

MODIFY LLA,REFRESH
-STOP DB2 ... (if the DB2 subsystem is started)
-REFRESH DB2,EARLY
-START DB2,PARM=...

ACTION
This PTF updates module DSN3RRSX in the ERLY code. To make this PTF effective, you must IPL with CLPA, or issue the REFRESH DB2,EARLY command.

The procedure for issuing the REFRESH command is:
-STOP DB2
-REFRESH DB2,EARTLY
-START DB2, ...

Replace the hyphen (-) in the commands above with the correct subsystem recognition character for the subsystem on which you run the commands.

Follow this procedure for each DB2 subsystem that uses the DB2 V10 ERLY code.

------- COVER LETTER FOR PTF UK59834 --------- 2010/08/20

PROBLEM DESCRIPTION(S):
PM2461 -

* USERS AFFECTED: All DB2 V10 users. *
* PROBLEM DESCRIPTION: V10 new function update. *
* RECOMMENDATION: *

V10 new function update.

COMPONENT: 5740-XYR01-HIZAA10
APARS FIXED: PM2461
SPECIAL CONDITIONS:
COPYRIGHT: 5740-XYR01 COPYRIGHT IBM CORP. 1982 2010
LICENSED MATERIAL - PROGRAM PROPERTY OF IBM

ACTION
<< The following HOLD provided by Rich Vivenza for pm13412 and p

This PTF updates module DSN3CLOX in the ERLY code.
After you apply this fix, you must either re-IPL z/OS with CLPA, or issue the DB2 REFRESH command.

The procedure for issuing the REFRESH command is:
1. Issue -STOP DB2
2. Issue MODIFY LLA,REFRESH
3. Issue -REFRESH DB2,EARDLY
4. Issue -START DB2...

Replace the hyphen (-) in the commands above with the correct subsystem recognition character for the DB2 subsystem on which you run the commands.

Follow this procedure for each DB2 subsystem that uses the
**DB2 V10 ERLY code.**

**ACTION**

This PTF updates module DSN3RRSX in the ERLY code.
To make this PTF effective, you must IPL with CLPA, or issue
the REFRESH DB2,EARLY command.

The procedure for issuing the REFRESH command is:

- STOP DB2
- REFRESH DB2,EARLY
- START DB2, ...

Replace the hyphen (-) in the commands above with the
correct subsystem recognition character for the subsystem on
which you run the commands.

Follow this procedure for each DB2 subsystem that uses the
DB2 V10 ERLY code.

------ COVER LETTER FOR PTF UK60226 ------------ 2/zerodot1/zerodot//zerodot9//zerodot3

**PROBLEM DESCRIPTION(S):**

PM2/zerodot463 -

******************************************************************************
* USERS AFFECTED: All DB2 V10 users. *
******************************************************************************
* PROBLEM DESCRIPTION: V10 new function update. *
******************************************************************************
* RECOMMENDATION: *
******************************************************************************

V10 new function update.

**COMPONENT:** 5740-XRROO-HDBAA10
**APARS FIXED:** PM20463

**SPECIAL CONDITIONS:**

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**ACTION**

This PTF corrects a problem that causes more than the correct
number of rows to be returned from a query when all of the
following conditions are true:
- An IN predicate is used in the query
- The data type of the column in the predicate is
  TIMESTAMP WITH TIME ZONE
- DB2 chooses an access path with ACCESSTYPE='N',
  ACCESSTYPE='Y', or ACCESSTYPE+'I'
To make this fix effective for static applications, you need to rebind the affected applications after you apply this PTF.

This PTF corrects a problem that causes abend 00E70005 at location DSNXGRDS,DSNXRTIM M199 during a SELECT from a TIMESTAMP column that is defined as NOT NULL, after a value is inserted into the TIMESTAMP column that has a smaller precision but the same length.

For example, suppose that you execute these SQL statements:
CREATE TABLE TS(C1 TIMESTAMP(5) NOT NULL);
INSERT INTO TS VALUES(CURRENT TIMESTAMP);
SELECT * FROM TS;

The CURRENT TIMESTAMP special register has a default precision of 6. TIMESTAMP(5) and TIMESTAMP(6) both have a length of 10 bytes. The cause of the abend is that during the INSERT, the TIMESTAMP(6) data is not truncated to TIMESTAMP(5) to fit the column.

To make this fix effective, follow these steps:
1. Delete the bad data that was inserted before application of this PTF.
2. Apply this PTF.
3. If the INSERT statement is in a static application, rebind the application.
4. Insert the data again.

------ COVER LETTER FOR PTF UK60239 --------- 2010/09/03

PROBLEM DESCRIPTION(S):
PM21084 -
**************************************************************************************************
* USERS AFFECTED: All DB2 V10 users. *
**************************************************************************************************
* PROBLEM DESCRIPTION: V10 new function update. *
**************************************************************************************************
* RECOMMENDATION: *
**************************************************************************************************

V10 new function update.

Note from DB2 developer: Customers who use the RACF ACCESS CONTROL Module (DSNXRXAC) for authorization should be aware of ++HOLD actions of PM17673 in an earlier release prior to migration to DB2 V10.

COMPONENT: 5740-DRE00-HDREA10
APARS FIXED: PM21084
SPECIAL CONDITIONS:
ACTION
This action is required for all DB2 V10 customers who use the RACF Access Control Module (DSNXRXAC) for authorization.

This PTF updates the RACF Access Control Module support to support new DBA privileges, the SEPARATE_SECURITY subsystem parameter, and system-defined routines.

After you install this PTF, you need to take these actions:

1. Verify that the exit options in the DB2 access control authorization exit are set to values that are appropriate for your installation.

2. Assemble and link-edit the exit, and place the load module into the APF-authorized DB2 exit load library.

After you complete these steps, the RACF access control module will be initialized the next time the DB2 subsystem is started.

For more information, see "Steps for installing the RACF access control module" in the DB2 for z/OS RACF Access Control Module Guide.

ACTION
This action is required for all V10 customers who use the RACF access control module (DSNXRXAC) for authorization.

This PTF adds RACF access control module support for DB2 10 for z/OS.

DB2 sets the version format (XAPLLVL) to 'V10R1M0' and expects the DB2 version identifiers (EXPLVIDS) to be set to '40'X at DB2 initialization (XAPLFUNC=1).

Installation of this PTF requires that you:

1. Verify that the exit options in the exit are set to values that are appropriate for your installation.

2. Assemble and link-edit the exit and place the load module into the APF-authorized DB2 exit load library.

After you complete these steps and restart DB2, the RACF access control will be initialized.
PROBLEM DESCRIPTION(S):

PM21341 -

* USERS AFFECTED: All DB2 V10 users.
* PROBLEM DESCRIPTION: V10 new function update.
* RECOMMENDATION: V10 new function update.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM21341
SPECIAL CONDITIONS:

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ACTION

This PTF fixes a problem that causes incorrect values to be written in the STATUS column of catalog table SYSIBM.SYSTABLESPACE.

Before this PTF, certain rows in the STATUS column of SYSIBM.SYSTABLESPACE were not changed from 'T' to 'A' during enabling-new-function mode processing.

This PTF corrects the problem for future enabling-new-function mode processing, but does not fix existing incorrect values.

Follow these instructions to fix the existing incorrect values:

1. Run this query to identify the rows with incorrect values:

   SELECT SUBSTR(NAME,1,8) FROM SYSIBM.SYSTABLESPACE
   WHERE STATUS='T'
   AND DBID=6
   AND OBID<>0
   AND NTABLES > 0;

2. If the query returns any rows, customize and run this job:

   //JOBLIB DD DISP=SHR,DSN=DSN!!0.SDSNLOAD
   /********************************************************************
   /* This is a special CATMAINT job that fixes incorrect
   /* values in the STATUS column of the
   /* SYSIBM.SYSTABLESPACE catalog table.
   /********************************************************************

1. Change DSN!!0.SDSNLOAD to the name of your DB2 V10 load library.
2. Change SSTR to the name of your DB2 subsystem.
3. Change ‘<** REXX ** TEMPREXX **>’ to the proper REXX comment delimiters.

If you receive message DSNU1188I or SQLCODE-87 when you run this job, you need to bind the DSNUGSQL package. See job DSNTIJSG for the BIND statements.

GENREXX EXEC PGM=IEBGENER
//SYSSIN DD DUMMY
//SYSPRINT DD SYSOUT=
//SYSUT2 DD DSN=&&TEMPPDS(TEMPREXX),
// DISP=(,PASS),
// UNIT=SYSDA,SPACE=(TRK,(1,1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80)
//SYSUT1 DD EXECIO out.1 = X2C('E8')
//SYSSPRINT DD SYSSOUT=
//RUNREXX EXEC PGM=IKJEOFT1,DYNAMNBR=20,COND=(4,LT)
//SYSSEXEC DD DSN=&&TEMPPDS,DISP=(OLD,DELETE)
//SQLDD DD DSN=&&TEMPDD,
// DISP=(,PASS),
// UNIT=SYSDA,SPACE=(TRK,(1,1),RLSE),
// DCB=(RECFM=FB,LRECL=80)
//SYSTSPT DD SYSSOUT=
//SYSPRINT DD SYSSOUT=
//SYSSDUMP DD SYSSOUT=
//SYSTSPRT DD SYSSOUT=
//SYSTSPRT DD SYSSOUT=
//SYSTSIN DD *
//TEMPREXX

Appendix A. HOLD DATA for PTFs incorporated in the product tape
ACTION

This PTF forward fits the fix for APAR PM17194.

In a DB2 data sharing environment, timeout or deadlock errors can occur if the EVALUNC subsystem parameter is not set to the same value on all members of the group. To reduce this exposure, this PTF modifies the DB2 installation CLIST to enforce the same EVALUNC setting during installation or migration of a member of a DB2 data sharing group.

After applying this PTF, you need to take the following actions:

----------------------------------------------------------------
(1) Copy updated DB2 installation panels to alternate libraries:
----------------------------------------------------------------

==>> This action is required for all customers who maintain copies of the DB2 installation panels outside of SMP/E.

This PTF updates DB2 installation panel DSNTIP8 in the SDSNSPFP target library so that during installation or migration of a DB2 data sharing group, the EVALUATE UNCOMMITTED field can be modified only for the first member.

If you keep the DB2 installation panels in a different library, after applying this PTF, you need to copy the updated DSNTIP8 panel to that library.

----------------------------------------------------------------
(2) Update private copies of the DSNTIDxx CLIST input member:
----------------------------------------------------------------

==>> This action is required for all customers.

This PTF modifies the entry for EVALUNC in the CLIST default input members, DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. The PTF changes the data sharing scope for EVALUNC to group, rather than member. You need to modify this entry in all private copies of your CLIST output (DSNTIDxx) members. In each copy, locate the entry for EVALUNC, and change the third column from M to G.
(3) Ensure that all members of your DB2 data sharing group use the same setting for EVALUNC:

`=> This action is recommended for all data sharing customers.`

To prevent possible timeout or deadlock errors, use the same setting for EVALUNC on all members of your data sharing group.

* For each member, review the customized DSNTIJUZ or other job that you use to create and maintain the DSNZPxxx module. Verify that the jobs for all members specify the same EVALUNC setting. If the EVALUNC parameter is not specified in a job, the setting is NO by default.
* If not all members use the same setting, consult the DB2 Installation Guide for guidance in determining the appropriate setting for the data sharing group.
* If you change the EVALUNC setting for a member:
  - Run the job steps to reassemble and link-edit the DSNZPxxx module.
  - Execute the -SET SYSPARM command, or stop and start the member to bring the change online.

Due to DB2 table record length calculation problem, tables that contains LOB and LONG data type might be created incorrectly with record length exceeding 4K buffer pool when the residing table space is explicitly defined.

As a result, a subsequent REPAIR DBD for this table's residing database might result in DSNGDVRT:500D abend.

Moreover, if the user issues a CREATE TABLE LIKE with the problem table as source table in a 4k page size table space, DB2 will issue SQLCODE -670.

Since the table record length exceeds maximum record length, any subsequence INSERT/UPDATE might cause unpredictable result.

This PTF will not fix existing problem. The user will need to run the following queries in order to identify such tables, then drop and recreate the table with the fix.

Queries to identify the tables:

```sql
SELECT TAB.DBNAME, TAB.TSNAME, TAB.CREATOR, TAB.NAME,
       TSP.PGSIZE, BPOOL, TAB.RECLENGTH
FROM SYSIBM.SYSTABLESPACE TSP ,
    SYSIBM.SYSTABLES TAB
WHERE TSP.NAME = TAB.TSNAME
AND TSP.DBNAME = TAB.DBNAME
```
AND TAB.RECLENGTH > 4056
AND TAB.EDPROC = ' ' 
AND TSP.PGSIZE = 4
AND TAB.TYPE = 'T';

SELECT TAB.DBNAME, TAB.TSNAME, TAB.CREATOR, TAB.NAME,
TSP.PGSIZE, BPOOL, TAB.RECLENGTH
FROM SYSIBM.SYSTABLESPACE TSP,
SYSIBM.SYSTABLES TAB
WHERE TSP.NAME = TAB.TSNAME
AND TSP.DBNAME = TAB.DBNAME
AND TAB.RECLENGTH > 4046
AND TAB.EDPROC = ' ' 
AND TSP.PGSIZE = 4
AND TAB.TYPE = 'T';

This PTF forward fits APAR PM20811.

This PTF corrects a problem that causes incorrect output when a query that runs in parallel contains only a literal constant or an aggregate function, and the FROM clause contains one of the following keywords:
- UNION
- UNION ALL
- INTERSECT
- INTERSECT ALL
- EXCEPT
- EXCEPT ALL

To make this fix effective for static applications, you need to rebind the affected applications after you apply this PTF.

----- COVER LETTER FOR PTF UK60953 2010/09/30

PROBLEM DESCRIPTION(S):
PM22045 -

* USERS AFFECTED: All DB2 V10 users.
* PROBLEM DESCRIPTION: V10 new function update.
* RECOMMENDATION: V10 new function update.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM22045
SPECIAL CONDITIONS:
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This PTF corrects a problem with compression dictionary pages built on HASH table spaces during insert and the associated Compensation Log Records (CLRs).

The problem is limited to HASH table spaces created with SEGSIZE = 4 and COMPRESS = YES and have an insert-generated compression dictionary. HASH table spaces with compression dictionary built by DB2 LOAD or DB2 REORG are not affected. You can identify an insert-generated dictionary by checking the HPGZLD field of the page header of the header-page of the pageset/partition. The field HPGZLD is located at offset '16'x (base 0) of the HPG structure. A DSN1PRNT output of the header page obtained with the 'FORMAT' option will show the field formatted. HPGZLD would be = 'F' (= 'C6'x) for an insert-generated dictionary.

The symptoms of the problem include abends or error return codes in/from modules that try to use the dictionary pages and/or DSNT5011 RESOURCE UNAVAILABLE messages on the console with DB2 reason code = 00C9007F.

The PTF will correct the problem but it will not correct the dictionary pages already written with the error and the associated errant CLRs already on the log. After applying the PTF, establishing new recovery bases for hash table spaces which have the conditions specified above is advised. Forward log apply processes for such table spaces should not be performed against image copies taken prior to application of the PTF.

This PTF modifies V10 premigration checkout job DSNTIJPM. It adds reports 27 and 28 for identifying use of DATACAPTURE that will be disabled during migration to conversion mode and during enabling new-function mode. If you maintain a customized copy of job DSNTIJPM then after applying this PTF, you need to refresh it as follows:
- Edit your customized copy of DSNTIJPM
- Delete all lines and copy in the DSNTIJPM member from the prefix.SDNSAMP library
- Follow the directions in the job prolog to customize it for your DB2
- If you are preparing to migrate to DB2 V10, run the updated customized to check for conditions that may affect your migration.
------ COVER LETTER FOR PTF UK61343 ----------- 2010/10/14

PROBLEM DESCRIPTION(S):
PM22044 -

*************************************************************************************************
* USERS AFFECTED: All DB2 V10 users. *
*************************************************************************************************
* PROBLEM DESCRIPTION: V10 new function update. *
*************************************************************************************************
* RECOMMENDATION: *
*************************************************************************************************
V10 new function update.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM22044
SPECIAL CONDITIONS:
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ACTION:
This PTF changes the maximum record length of tables defined with HASH.

This table lists the maximum record length for each page size:

<table>
<thead>
<tr>
<th></th>
<th>4KB pg</th>
<th>8KB pg</th>
<th>16KB pg</th>
<th>32KB pg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-hash table</td>
<td>4056</td>
<td>8138</td>
<td>16330</td>
<td>32714</td>
</tr>
<tr>
<td>Non-hash w/ EDITPROC</td>
<td>4046</td>
<td>8128</td>
<td>16320</td>
<td>32704</td>
</tr>
<tr>
<td>Hash table (hash</td>
<td>3817</td>
<td>7899</td>
<td>16091</td>
<td>32475</td>
</tr>
<tr>
<td>home page)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hash table with</td>
<td>3807</td>
<td>7889</td>
<td>16081</td>
<td>32465</td>
</tr>
<tr>
<td>EDITPROC (hash</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>home page)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A query, such as the sample query below, may be used to determine if existing tables are affected.

SELECT TAB.CREATOR, TAB.NAME
FROM SYSSBM.SYSTABLES AS TAB,
     SYSSBM.SYSTABLESPACE AS TS
WHERE ( ( ( TAB.RECLENGTH > 3817 AND TS.PGSIZE = 4 )
    OR ( TAB.RECLENGTH > 7899 AND TS.PGSIZE = 8 )
    OR ( TAB.RECLENGTH > 16091 AND TS.PGSIZE = 16 )
    OR ( TAB.RECLENGTH > 32475 AND TS.PGSIZE = 32 )
    AND TAB.HASHKEYCOLUMNS > 0
    AND TAB.DBNAME = TS.DBNAME
    AND TAB.TSNAME = TS.NAME )
Existing tables defined with HASH will either need to be dropped and recreated or if allowed, the tablespace which the table resides in can be altered to use a bufferpool with a larger page size. See the SQL Reference for more details.

This PTF causes DB2 to save more attributes for a permission or mask into the catalog table column SYSOBJECTS.DESCRIPTOR when the permission or mask is created. DB2 uses the saved attributes to process and merge a permission or mask into a referencing query.

When DB2 merges a permission or mask into a referencing query, and the expected attributes are missing from SYSOBJECTS.DESCRIPTOR, DB2 issues abend 04E at location DSNXOACL M999.

When DB2 processes ALTER PERMISSION with REGENERATE or ALTER TABLE ALTER COLUMN column-alteration, and the expected attributes are missing from SYSOBJECTS.DESCRIPTOR, DB2 issues abend 04E at location DSNXOACD M999.

To avoid those abends, you need to drop and re-create all existing user-defined permissions and masks.

For security reasons, the recommended drop and re-create sequence is:

1. Activate row access control, so that the default row permission is in effect.

2. Drop, create, and commit masks with no commit between the drop and create operations.

3. Drop, create, and commit permissions with no commit between the drop and create operations.

Packages and cached dynamic statements that reference tables for which masks and permissions are dropped and re-created are invalidated.

To locate existing user-defined permissions and masks, query catalog table SYSOBJECTS. Ignore rows in which the value of the IMPLICIT column is 'Y'.

This PTF corrects a problem that causes abends such as 04E-00C9007E, error return codes, or DSNT501I (resource

Appendix A. HOLD DATA for PTFs incorporated in the product tape
unavailable) messages with reason code 00C9007F when the following conditions are true:
- DB2 uses compression dictionary pages that were built during INSERTs.
- The dictionary pages are on table spaces for tables that use hash organization.

The problem is limited to table spaces that are defined with SEG SIZE 4 and COMPRESS YES and have compression dictionaries that were built during INSERTs. Table spaces with compression dictionaries that were built during LOAD or REORG are not affected.

One way to identify a compression dictionary that was built during an INSERT is to check the HPGZLD field in the header page for the page set or partition. HPGZLD='F' (X'C6') if the dictionary was built during an INSERT.

This fix corrects the problem for dictionary pages that are created after application of the PTF. However, it does not fix existing dictionary pages or the associated compensation log records. After applying this PTF, you should establish new recovery bases for the affected table spaces. You should not perform RECOVER on the affected table spaces using image copies that were taken prior to application of this PTF.

This PTF corrects a problem that causes ill-formed diagnostic log records.

The affected log records are written occasionally for badly performing INSERTs. The diagnostic log records are not tagged as UNDO or REDO.

If DB2 encounters those log records during the following log apply processes, a 00C90101 abend occurs:
- The undo processing steps of RECOVER with consistency
- The undo processing steps of creating a FlashCopy with consistency

The operations will fail. You will need to rerun the operations with a different point of consistency that avoids undo application across the ill-formed log records.

This PTF prevents the creation of the ill-formed diagnostic log records in the future. It does not correct existing log records.

This PTF improves performance and reliability for operations
that involve hash tables.

As part of this change, structural changes have been made to data pages in hashed tables. Before you apply this PTF, you must drop and re-create any persistent hash tables. The code that is introduced by this PTF is incompatible with previously created hash tables. Running that code against old hash objects will result in a variety of failures.

This PTF fixes a problem that causes incorrect results when a row is inserted into a table that has a check constraint defined on a TIMESTAMP WITH TIME ZONE column.

Example:

```
CREATE TABLE MYTB
  (TSTZ TIMESTAMP WITH TIME ZONE
   CONSTRAINT MYCHK
   CHECK (TSTZ =
       TIMESTAMP '2010-12-31 23:00:00.000000-2:00'));

INSERT INTO MYTB VALUES(
  TIMESTAMP '2011-01-01 03:00:00.000000+2:00');
```

Before this PTF is applied, the INSERT statement fails with SQLCODE -545, which indicates that the check constraint was not satisfied. However, timestamp value 2011-01-01 03:00:00.000000+2:00 is actually equal to timestamp value 2010-12-31 23:00:00.000000-2:00, so the INSERT statement should execute successfully.

To make this fix effective, after you apply this PTF, you need to drop and re-create all tables that have a check constraint defined on a TIMESTAMP WITH TIME ZONE column.

This PTF makes the following changes:
- Causes the optimizer to use real-time statistics, instead of statistics from the catalog, in more situations
- Fixes problems that occur when the optimizer samples index pages to obtain estimated histogram statistics, such as these:
  - Abend 04E-00E70005 at location DSNXRDS.DSNXOLCM M100
  - Abend 04E-00E70005 at location DSNXRDS.DSNXOIXP P050

With this PTF, the optimizer uses real-time statistics instead of statistics from the catalog in more situations.

When the optimizer uses real-time statistics, you see the following values in EXPLAIN tables:
This PTF corrects a problem that causes incorrect output or abends, such as as 04E-00E70005 at location DSNXGRDS.DSNXGDT2 M111, when the following conditions are true for a query:

- The table against which the query runs has indexes on expressions.
- The query contains the GROUP BY clause, the HAVING clause, or both.
- The query contains the same expressions as the expressions in the indexes on expressions. Those expressions are referenced in the SELECT clause, the GROUP BY clause, or the HAVING clause.

For example:

```sql
CREATE TABLE T1(STATE CHAR(2),
   LASTNAME VARCHAR(80));

CREATE INDEX IX1 ON T1(STATE,
   SUBSTR(UPPER(LASTNAME, 'En_US'), 1, 18));

SELECT SUBSTR(UPPER(LASTNAME, 'En_US'), 1, 18)
   FROM T1
   WHERE STATE = 'CA'
   GROUP BY UPPER(LASTNAME, 'En_US');
```

Before this PTF is applied, when the SELECT statement executes, DB2 chooses index IX1 for the access path. Because of the GROUP BY clause, the access path might cause incorrect output or an abend.

To make this fix effective for static applications, you need to rebind the affected applications after you apply this PTF. You can use the following query to identify all packages that depend on indexes on expressions:

```sql
SELECT DISTINCT SPD.DNAME, SPD.DOWNER, SPD.DOWNTYPE,
```

DSN_COLDIST_TABLE:
  TYPE='T' -- Table statistics
  TYPE='L' -- Column statistics
  TYPE='P' -- Partition statistics

DSN_KEYTGTDIST_TABLE:
  TYPE='I' -- Index statistics
SPD.DLOCATION, SPD.DCOLLID
FROM SYSIBM.SYSINDEXES SIX, SYSIBM.SYSPACKDEP SPD
WHERE SIX.IX_EXTENSION_TYPE = 'S' AND
  SPD.BTYPE = 'I' AND
  SPD.BNAME = SIX.NAME AND
  SPD.BQUALIFIER = SIX.CREATOR AND
  SPD.DTYPE <> 'R';

------ COVER LETTER FOR PTF UK62817 ------------ 2/zerodot1/zerodot/12/2/zerodot

PROBLEM DESCRIPTION(S):

PM25665 -
******************************************************************************************
* USERS AFFECTED: All users of the -DISPLAY THREAD command. *
******************************************************************************************
* PROBLEM DESCRIPTION: 1. In DB2 v9/v10, an ABEND04E RC00F9000C in CSECT DSN9SCNP *
* may occur after issuing a -DISPLAY THREAD SCOPE(GROUP) command without specifying LIMIT(*). *
* 2. In DB2 v10, remote member -DISPLAY THREAD output may be unnecessarily truncated generating a DSNV478I *
* message. *
******************************************************************************************
* RECOMMENDATION: *
******************************************************************************************
1. If remote -DISPLAY THREAD output was truncated and the last message was a DSNV515I message, an improper DSNV477I message would be inserted into the message chain. This message would result in an ABEND04E RC00F9000C in CSECT DSN9SCNP if the output was directed to a console.

2. v10 members can handle more -DISPLAY THREAD output. When communicating with remote members, the return area size used is the v8/v9 size, so truncation of remote member output is more likely.
1. The improper DSNV477I message will not be inserted into the message chain when remote member data is truncated and exceeds the message limit.

2. v10 members will broadcast the ability to handle more -DISPLAY THREAD output from remote members. All v8/v9 members coexisting with v10 must apply this APAR before applying it to v10 members.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM25665
SPECIAL CONDITIONS:
ACTION
In version 10 coexistence mode, all active version 8 and version 9 members MUST apply this APAR before any version 10 member with this APAR applied is restarted. If not applied properly, -DISPLAY THREAD SCOPE(GROUP) commands will not return valid data from remote version 8 and version 9 members which may result in a large amount of invalid output on the version 10 member. In addition, an ABENDC4 in CSECT DSNVDTT may be encountered on the version 10 member.

----- COVER LETTER FOR PTF UK62945 --------- 2010/12/23

PROBLEM DESCRIPTION(S):
PM26964 -
******************************************************************************
* USERS AFFECTED: All DB2 users *
******************************************************************************
* PROBLEM DESCRIPTION: MSGDSNT501I DSNISUPI RC00C9009C TYPE *
* 00000210 for DSNDB01.SPT01.00000002 *
* during BIND or REBIND. *
******************************************************************************
* RECOMMENDATION: *
******************************************************************************
BIND or REBIND of packages may fail with MSGDSNT501I in DSNISUPI
with reason code RC00C9009C and type 210 for NAME
DSNDB01.SPT01.00000002 due to the wrong value for HPGDSSZ in the
header page for SPT01 and SYSUTILX.

The error occurs when SPT01 exceeds 2G in size. Once this error occurs, no further binds of packages will succeed until the size is reduced or space is provided by a REORG or freeing other
packages.
DSNDB01.SYSUTILX and DSNDB01.SPT01 have a value of
HPGDSSZ='00200000'X which is incorrect. The incorrect value can prevent the data set from growing beyond 2G. The
correct value is HPGDSSZ='04000000'X. DSN1PRNT can be used
to see the current value of HPGDSSZ. The value of HPGDSSZ
could be incorrect either from a new install or a migration
from a previous release. The code has been change to correctly
set this value for both new installs and migrations. It does
not correct the value if it was already wrong before the APAR
was applied.

If the value for SPT01 is incorrect the table
space can be REORGed after the PTF is applied to correct the
problem.
If the value for SYSUTILX is incorrect, when there are no active or stopped utilities the table space can be stopped and initialized using the install process to correct the value. Then the indexes on SYSUTILX should be rebuilt.

+++HOLD for PM26964
APAR PM26964 corrects a problem whereby field HPGDSSZ in the header page of DSNDB01.SPT01 and DSNDB01.SYSUTILX contains an incorrect value.

To correct the incorrect value in the SPT01 header page REORG the table space after the PTF has been applied.

To correct the value in the SYSUTILX table space, when there are no active or stopped utilities, stop the table space, initialize it using the installation process and then rebuild all indexes on SYSUTILX.

Once the PTF for PM26964 is applied and the corrective action has been taken, if the SPT01 data set grows beyond 2G the PTF cannot be removed. If the PTF is removed after the data set has grown beyond 2G, the following ABEND, or similar, may occur:

DUMP TITLE=QA1Z,ABND=04E-00C20305,U=USRT011,M=N,C=101.BMC -D SB1LCM,M=DSNTFRCV,LOC=DSNIDM .DSNB1LCM+09A2

In data sharing, the PTF need not be applied to all members of the group at the same time. However, the PTF should be applied to all members of the group before the corrective action is taken. Once the PTF is applied to one member it should be applied to all members of the group before the data set grows beyond 2G.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM26964
SPECIAL CONDITIONS:

APAR PM26964 corrects a problem whereby field HPGDSSZ in the header page of DSNDB01.SPT01 and DSNDB01.SYSUTILX contains an incorrect value.

To correct the incorrect value in the SPT01 header page REORG the table space after the PTF has been applied.

To correct the value in the SYSUTILX table space, when there are no active or stopped utilities, stop the table space, initialize
it using the installation process and then rebuild all indexes on SYSUTILX.

Once the PTF for PM26964 is applied and the corrective action has been taken, if the SPT01 data set grows beyond 2G the PTF can not be removed. If the PTF is removed after the data set has grown beyond 2G, the following ABEND, or similar, may occur:

DUMP TITLE=QA1Z,ABND=04E-00C20305,U=USRT011 ,M=N ,C=101.BMC -D SNB1LCM,M=DSNTFRCV,LOC=DSNIDM .DSNB1LCM+09A2

In data sharing, the PTF need not be applied to all members of the group at the same time. However, the PTF should be applied to all members of the group before the corrective action is taken. Once the PTF is applied to one member it should be applied to all members of the group before the data set grows beyond 2G.

------- COVER LETTER FOR PTF UK63012 ---------- 2010/12/30

PROBLEM DESCRIPTION(S):

PM25093 -

****************************************************************************************************************
* USERS AFFECTED: USERS OF DB2 IDENTITY COLUMNS AND STUD-ALONE SEQUENCE OBJECTS. *
****************************************************************************************************************

* PROBLEM DESCRIPTION: A USER APPLICATION DID A CANCEL THREAD *
* WHEN DB2 WAS IN THE MIDDLE OF WRITING *
* A LOG RECORD FOR UPDATE OF THE CATALOG *
* TABLE SYSEMI.SYSEQUENCES. THE MODULE *
* THAT DID THE UPDATE TOOK THE ABNORMAL *
* ERROR EXIT BUT DID NOT REFLECT THE *
* LOG-WRITE FAILURE IN THE IN-MEMORY *
* STRUCTURE HOLDING THE CACHE INFORMATION *
* FOR THE SEQUENCE OBJECT. AS A RESULT, *
* WHEN CALLED THE NEXT TIME TO GENERATE *
* A VALUE, IT CONTINUED TO USE THE *
* PREVIOUS CACHE INFORMATION. THIS *
* RESULTED IN DUPLICATE VALUES BEING *
* ASSIGNED SINCE ANOTHER DATA SHARING *
* MEMBER ALLOCATED THE SAME CACHE RANGE *
* IN THE MEANTIME. (THIS IS THE DB2 V10 *
* VERSION OF THE V8 APAR PM22009.) *
****************************************************************************************************************

* RECOMMENDATION: *

****************************************************************************************************************
CODE HAS BEEN MODIFIED TO MARK THE IN-MEMORY CACHE INVALID IN CASE AN ABNORMAL ERROR EXIT IS TAKEN DURING SEQUENCE VALUE GENERATION.

COMPONENT: 5740-XYRO0-HDBAA10
APARS FIXED: PM25093
SPECIAL CONDITIONS:

THE PM25093 CORRECTION APPLIED ON ONE DB2 DATA SHARING MEMBER IS NOT DEPENDENT ON ITS BEING APPLIED ON ALL OTHER DB2 DATA SHARING MEMBERS. HOWEVER, IF A SEQUENCE OBJECT IS SHARED BY APPLICATIONS ON MULTIPLE DB2 MEMBERS IN A DATA SHARING ENVIRONMENT, IT IS ADVISED THAT THE PTF OF APAR PM25093 SHOULD BE APPLIED ON ALL THE DB2 DATA SHARING MEMBERS WHERE THOSE APPLICATIONS WILL BE RUN.

----- COVER LETTER FOR PTF UK63419 --------- 2011/01/05

PROBLEM DESCRIPTION(S):
PM13844 -

* USERS AFFECTED: Users of SQL procedures with DB2 Version 9.1 for z/OS and DB2 Version 10.1 for z/OS.

* PROBLEM DESCRIPTION: Provide precompiler to support native SQL procedure migration and development activity

* RECOMMENDATION:

A HOST(SQLPL) precompiler is provided to perform a checkout inspection for an SQL procedure definition, validating that the source is properly coded to conform with native SQL PL syntax and behaviors. This is a recommended step to perform for all native SQL procedure development. It is a vital step to perform prior to any migration of an external SQL procedure to a native SQL procedure.

The following sample JCL can be used to invoke the HOST(SQLPL) checkout precompiler:

//CHKSQLPL EXEC PGM=DSNHPSM,
// PARM='HOST(SQLPL),SOURCE,XREF,NEWFUN(YES)'
//STEPLIB DD DSN=... <= location of DSNHPSM loadmod ALIAS

Appendix A. HOLD DATA for PTFs incorporated in the product tape  67
Note: Adjust the precompiler options to match your source and suit your needs. In particular, pay close attention to the accurate use of precompiler options CCSID() and MARGINS().

This APAR adds the following new messages to the DB2 Messages publication:

DSNH4772I I csectname LINE nnnn COL cc
  UNQUALIFIED IDENTIFIER name IS USED IN AN AMBIGUOUS CONTEXT

Explanation:
The named identifier is not a unique reference in the SQL statement context. An sql-parameter or an sql-variable with that name is declared but does not have priority over a column with that name in this context.

User Response:
Inspect the ambiguous reference and qualify the named identifier to clarify the intended usage in the SQL statement.

- For a reference to an sql-parameter qualify the name with the SQL PL routine name.
- For a reference to an sql-variable qualify the name with the label of the compound-statement that declares the sql-variable. If missing, first add a label to the compound-statement.
- For a reference to a column qualify the name with the appropriate table designator.

Severity:
0 (informational)

DSNH4773I W csectname LINE nnnn COL cc
  HANDLER BODY IS A CONTROL STATEMENT OTHER THAN A COMPOUND STATEMENT

Explanation:
The body of a handler-declaration is an SQL-control-statement other than an SQL-compound-statement. This usage will displace the original condition information available to the condition
handler logic. The SQL diagnostic area accessed by a GET CURRENT 
DIAGNOSTICS statement will be modified and unrelated to the 
original condition. The values of variables SQLSTATE and SQLCODE 
will be modified and unrelated to the original condition.

User Response:
Replace the SQL-control-statement (IF, CASE, LOOP, REPEAT, 
WHILE) that defines the body of the handler-declaration with an 
SQL-compound-statement (BEGIN).

Severity:
4 (warning)

Additional keywords: DB2PRECOMPLIER MSGDSNH4772I MSGDSNH4773I 
SQLEXTERNALSQLPL SQLNATIVESQLPL SQLSP
The DB2 precompiler is modified to support the HOST(SQLPL) 
precompiler option for providing a checkout inspection for an 
SQL procedure definition.

COMPONENT: 5740-XR00-HDBAA10
APARS FIXED: PM13844

SPECIAL CONDITIONS:

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DOCUMENTATION:
APAR PM13844 adds the following new messages to the DB2 Messages 
publication:

DSNH4772I I csectname LINE nnn COL cc
UNQUALIFIED IDENTIFIER name IS USED IN AN AMBIGUOUS CONTEXT

Explanation:
The named identifier is not a unique reference in the SQL 
statement context. An sql-parameter or an sql-variable with 
that name is declared but does not have priority over a column 
with that name in this context.

User Response:
Inspect the ambiguous reference and qualify the named 
identifier to clarify the intended usage in the SQL statement.

- For a reference to an sql-parameter qualify the name with the 
SQL PL routine name.
- For a reference to an sql-variable qualify the name with the 
label of the compound-statement that declares the 
sql-variable. If missing, first add a label to the 
compound-statement.
- For a reference to a column qualify the name with the
appropriate table designator.

Severity:
0 (informational)

DSNH4773I W csectname LINE nnnn COL cc
HANDLER BODY IS A CONTROL STATEMENT OTHER THAN A COMPOUND STATEMENT

Explanation:
The body of a handler-declaration is an SQL-control-statement other than an SQL-compound-statement. This usage will displace the original condition information available to the condition handler logic. The SQL diagnostic area accessed by a GET CURRENT DIAGNOSTICS statement will be modified and unrelated to the original condition. The values of variables SQLSTATE and SQLCODE will be modified and unrelated to the original condition.

User Response:
Replace the SQL-control-statement (IF, CASE, LOOP, REPEAT, WHILE) that defines the body of the handler-declaration with an SQL-compound-statement (BEGIN).

Severity:
4 (warning)

------ COVER LETTER FOR PTF UK63600 --------- 2011/01/18

PROBLEM DESCRIPTION(S):
PM26881 -
**********************************************************************************************
* USERS AFFECTED: All DB2 for z/OS V8 and DB2 9 for z/OS *
* and DB2 10 for z/OS users who have enabled *
* functionality of z/OS metrics to be included *
* in the DB2 trace. *
**********************************************************************************************
* PROBLEM DESCRIPTION: IFCID 0001 - Data section QWSOORDO *
* z/OS METRICS shows zero values for the *
* metrics related to DB2 if the *
* DB2 subsystem name is less than *
* 4 characters. *
**********************************************************************************************
* RECOMMENDATION: Apply PTF when available. *
**********************************************************************************************
The filter that is used for identifying the address space names
related to a specific DB2 system is not setup correctly if the subsystem name is less than 4 characters. This is because the trailing blanks in the subsystem name do not get handled in an appropriate way.

Trace processing for z/OS metrics has been changed so that reporting is performed for DB2 subsystems without restriction to name of subsystem.

COMPONENT: 5740-XYRO1-HIZAA10
APARS FIXED: PM26881
SPECIAL CONDITIONS:
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ACTION
After installation of the PTF for APAR PM26881 it is recommended that the linklist be refreshed with the following MVS command:

f lla,refresh

------- COVER LETTER FOR PTF UK64682 --------- 2011/02/24

PROBLEM DESCRIPTION(S):

PM28835 -
**********************************************************************
* USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of * *
* native SQL procedures. * *
**********************************************************************
* PROBLEM DESCRIPTION: An unexpected SQLCODE-313 could be * *
* issued when a native SQL procedure * *
* contains a SQL statement that * *
* references a view which has a column * *
* with a field procedure, and the view * *
* is created in DB2 8 CM(COMPAT MODE), * *
* DB2 7 or prior. * *
**********************************************************************
* RECOMMENDATION: *
**********************************************************************
An unexpected SQLCODE-313 could be issued when a native SQL procedure contains a SQL statement that references a view which has a column with a field procedure, and the view is created in DB2 8 CM(COMPAT MODE), DB2 7 or prior.

DB2 is updated to handle view with field procedure in native SQL procedure correctly.

Additional Keywords: SQLNATIVESQLPL SQLFIELDPROC SQLVIEW
COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM28835
SPECIAL CONDITIONS:
ACTION

***Action for PM28835:

TYPE: ACT

PM28835 corrects a problem of an unexpected SQLCODE-313 when a native SQL procedure contains a SQL statement that references a view which has a column with a field procedure, and the view is created in DB2 8 CM(COMPAT MODE), DB2 7 or prior.

After the application of this PTF, ALTER PROCEDURE REGENERATE is required for each native SQL procedure that is affected. Review the PTF cover letter to determine which, if any, native SQL procedure could be affected by this change.

PROBLEM DESCRIPTION(S):

PM25373 -

******************************************************************************************************
* USERS AFFECTED: All DB2 users of WLM managed user-defined functions and stored procedures. *
* PROBLEM DESCRIPTION: WLM manages the number of server tasks in the WLM Stored Procedure Address *
* Space used to execute WLM-managed stored procedures and user-defined functions. *
* Under certain conditions WLM may increase or decrease the number of server tasks in the address space. *
* However, in a certain case the number of server tasks are not increased even when the workload warrants it. *

******************************************************************************************************

* RECOMMENDATION:

DB2 code incorrectly interprets the WLM notification to reduce the number of server tasks and goes to the path where the number of server tasks cannot be increased again on that address space.
DB2 code is modified to correctly handle notification to reduce the number of server tasks from WLM.
ACTION

This APAR needs application of z/OS PTFs for APARs OA33344 and OA33406 to get the intended behavior. Without the PTFs for OA33344 and OA33406 installed, the problem being corrected still exists but DB2 functions as before.

----- COVER LETTER FOR PTF UK65312 -------- 2011/04/04

PROBLEM DESCRIPTION(S):

PM24292 -

********************
* USERS AFFECTED: All Distributed Data Facility (DDF) users *
* in a data sharing group environment during *
* migration processing. Specifically those *
* with remote applications, running in *
* Sysplex workload balancing environments, *
* that connect to the DB2 for z/OS server *
* data sharing group. *

********************
* PROBLEM DESCRIPTION: During the process of forward/backward *
* migration of a DB2 for z/OS data *
* sharing group to/from various modes, *
* a DB2 server may report mixed levels *
* of product identification information *
* and DRDA support from different *
* members in the same data sharing *
* group. This behavior of reporting *
* mixed levels from the same group may *
* cause remote applications, running in *
* Sysplex workload balancing *
* environments, to encounter errors *
* (such as Error code=-4212 or -4499 *
* from JDBC application environments). *

********************
* RECOMMENDATION: *

There are several mode transitions during the process of migrating a DB2 for z/OS data sharing group to a new version. After the transition to New Function Mode (NFM) is completed, some members can remain active through the migration process while some of the members in the same data
sharing group can be restarted. Members that remain active through the migration process continue to report the same (Conversion Mode (CM)) product identification and DRDA level information. Other members that are restarted, after the NFM migration process is completed, start to report new information reflecting the NFM capabilities of the member.

For example, consider the case of migrating a DB2 for z/OS V8 data sharing group to DB2 9 for z/OS where there are two members in the group, say MemA and MemB. While the DB2 V8 data sharing group is first being migrated to DB2 V9, this DB2 group is considered to be in DB2 9 for z/OS CM. During the process of migrating the group from DB2 V9 CM to DB2 V9 NFM, one of the members, say MemA, remains active and lives through the migration process to DB2 V9 NFM. MemA continues to report CM related information reflecting V9 coexistence environment, including product level, and can only negotiate and support DRDA functions related to DB2 for z/OS V9 CM. MemB is restarted but now reports information reflecting the V9 NFM capabilities of the member, including product level, and can now negotiate and support DRDA functions available in DB2 V9 NFM. Both members are now reporting mixed levels of information to remote Sysplex workload balancing client systems.

The same situation of reporting mixed levels of product information and DRDA support also exists in the backward migration process. That is, after the DB2 group is migrated to NFM, the user can revert the DB2 group back to Enabling New Function Mode* (ENFM*) or Conversion Mode* (CM*). After the transition back to ENFM* or CM* is completed, some of the members can remain active through the backward migration process while some of the members in the same data sharing group can be restarted. Members that live through the backward migration process continue to report product level information and support DRDA functions that the members were started with. Members that are restarted, after the backward migration is completed, report product level and DRDA support reflecting the current DB2 level that the members are restarted with.

For example, consider the case of reverting the same DB2 group as above from V9 NFM back to V9 CM*. During the process of reverting the group from DB2 V9 NFM to DB2 V9 CM*, one of the members, MemA, was started in V9 NFM and lives through the backward migration process to DB2 V9 CM*. MemA continues to report information reflecting V9 NFM, including product level, and can support DRDA functions available in DB2 V9 NFM. MemB is restarted but now reports information reflecting DB2 V9 CM* capabilities, including product level, and now negotiates and supports DRDA functions only available in DB2 V9 CM*. Both members are now reporting mixed levels of information to remote Sysplex workload balancing client systems.

Reporting mixed levels causes problems for remote applications.
in a Sysplex workload balancing environment because consistent product level information and consistent support of DRDA functions are expected by the remote environment across all members in the same data sharing group. When mixed levels are encountered, an error is explicitly issued by IBM Data Server client Drivers.

DB2 for z/OS server processing has been changed to return consistent product level and DRDA functional information across all members of the same data sharing group, specifically for the benefit of remote application environments that utilize Sysplex workload balancing functionality. This occurs regardless if the member has been restarted or not during the migration process. This change applies to both forward and backward migration to ensure that all members in the same data sharing group present consistent and predictable behavior.

To allow for a smooth, seamless, migration of a DB2 for z/OS data sharing group, with respect to remote Sysplex workload balancing client systems, users are advised to first apply this change to all members of their DB2 for z/OS data sharing group, specifically as it relates to the target version that is being migrated to.

- Source DB2 for z/OS V8 migration to target V9.
  The V9 target code base for all members should include this change.
- Source DB2 for z/OS V8 or V9 migration to target V10.
  The V10 target code base for all members should include this change.

Also, in order for remote Sysplex workload balancing clients to support a seamless migration of DB2 for z/OS to NFM, companion IBM Data Server client Driver support is also required. The necessary IBM Data Server client Driver maintenance is planned to be included in V9.7 FixPak 3A, but users should reference Informational APAR III14619 for more current information on this maintenance. This informational APAR also contains additional information related to DB2 for z/OS data sharing group forward/backward migration with respect to remote Sysplex workload balancing client systems.

PM34780 -

******************************************************************************
* USERS AFFECTED: All Distributed Data Facility (DDF) users   *
******************************************************************************
* PROBLEM DESCRIPTION:                                           *
******************************************************************************
* RECOMMENDATION:                                              *
******************************************************************************
Fix completion for PM24292.
Fix completion for PM24292.

COMPONENT: 5740-XYR00-HDBAA10

APARS FIXED: PM24292,PM34780

SPECIAL CONDITIONS:

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ACTION

***Action for PM24292:

APAR PM24292 provides the DB2 for z/OS portion of a solution that provides a non disruptive DB2 for z/OS data sharing group migration where remote Sysplex workload balancing client application environments are involved.

To allow for a smooth, seamless, migration of a DB2 for z/OS V8 or V9 data sharing group, with respect to remote Sysplex workload balancing client systems, users are advised to first apply this change to all members of their DB2 for z/OS data sharing group, specifically as it relates to the target version that is being migrated to. That is, all the DB2 V10 CM8/CM9 members are required to apply this change before attempting a migration to DB2 V10 NFM for users who have remote Sysplex workload balancing clients running during the migration process.

Also, in order for remote Sysplex workload balancing clients to support a seamless migration to DB2 V10 NFM, companion IBM Data Server client Driver support is also required. The necessary IBM Data Server client Driver maintenance is planned to be included in V9.7 FixPak 3A, but users should reference Informational APAR III4619 for more current information on this maintenance. This informational APAR also contains additional information related to DB2 for z/OS data sharing group forward/backward migration with respect to remote Sysplex workload balancing client environments.

See PTF cover letter for more information.

----- COVER LETTER FOR PTF UK65972 --------2011/04/04-----

PROBLEM DESCRIPTION(S):

PM30464 -

**********************************************************************************
* USERS AFFECTED: All Distributed Data Facility (DDF) users. *
* Specifically those where DB2 is configured with DDF THREADS=INACTIVE specified (DSN6FAC CMTSTAT INACTIVE). *
* DB2 9 and DB2 10 for z/OS users only. *
**********************************************************************************

**********************************************************************************
* PROBLEM DESCRIPTION: An IBM Data Server Driver for JDBC and SQLJ Type 4 Connectivity requester connects to a DB2 9 or DB2 10 for z/OS server. The application inserts Unicode data into an EBCDIC table. A *
**********************************************************************************
subsequent query of the inserted data showed incorrect output.

RECOMMENDATION:

An IBM Data Server Driver for JDBC and SQLJ Type 4 Connectivity requester connects to a DB2 for z/OS server. The connection was inactivated after the connection was established. The connection was then reactivated, and the application inserted Unicode data into an EBCDIC table. DB2 incorrectly determined the encoding scheme of the input data after the connection was reactivated. As a result, DB2 inserts incorrect data into the EBCDIC table. When the data is subsequently fetched or selected, it returned incorrect output. This problem only occurs with IBM Data Server Driver for JDBC and SQLJ Type 4 Connectivity requesters connecting to a DB2 9 or DB2 10 for z/OS server, with DSN6FAC CMTSTAT=INACTIVE.

DB2 for z/OS server has been corrected to preserve the encoding scheme of input data during connection inactivation so that it can be restored during connection activation.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM30464
SPECIAL CONDITIONS:

ACTION

This APAR/PTF changes DB2 for z/OS server authorization behavior with respect to remote DB2 for z/OS client applications that access the DB2 for z/OS server via DRDA protocols.

After applying this APAR/PTF, access from remote DB2 for z/OS client applications, via DRDA, MAY now fail with SQLCODE -551. This will likely occur during the process of converting remote DB2 for z/OS applications from Private Protocol to DRDA protocol, but it may also occur if existing DRDA related application environments relied on the authorization behavior that has been eliminated. Authorization adjustments must be made to satisfy the condition described by the -551 SQLCODE.

It is extremely difficult to predict in advance any potential remote DB2 z/OS applications that may be affected by this change in DB2 server authorization behavior. As a result, users must be aware of the potential that -551 SQLCODE conditions can result from this APAR/PTF and be prepared to make the necessary authorization adjustments.

Other than potentially removing the APAR/PTF, if possible, there is no technique to restore old authorization
behavior since DB2 10 for z/OS does not support Private Protocol. Users must make the necessary authorization adjustments to satisfy the condition described by the -551SQLCODE.

See PM17665 APAR/PTF text for additional information.

------- COVER LETTER FOR PTF UK66185 -------

PROBLEM DESCRIPTION(S):

PM25624 -

*************************************************************************************************
* USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS *
* users of queries that involve STAR JOIN *
* and FETCH FIRST N ROWS ONLY. *
*************************************************************************************************

PROBLEM DESCRIPTION: An ABEND RC4 can occur at location DSNXRSJ +168E when the FETCH FIRST N ROWS ONLY clause is specified for a STAR JOIN SELECT query.

The following example is such a query.

```sql
SELECT DISTINCT
  RT.KEY,
  RT.LST,
  RT.FST
FROM
  (SELECT FACT.KEY,
    FACT.ADR,
    PHY.LST,
    PHY.FST
  FROM PHYSN_FACT FACT, ZIP_DIM ADR, DIM PHY
  WHERE FACT.ADR = ADR.ADR
  AND FACT.KEY = PHY.KEY
  AND ADR.ST = 'AK'
  AND LST LIKE 'CHEN%'
  FETCH FIRST 1 ROWS ONLY ) AS RT, PHYSN_FACT FACT2
```

An ABEND RC4 can occur at location DSNXRSJ +168E (or offset 168E) when the FETCH FIRST N ROWS ONLY clause is specified for a STAR JOIN SELECT query.
WHERE RT.KEY = FACT2.KEY
AND RT.ADR = FACT2.ADR
ORDER BY RT.LST, RT.FST
WITH UR;

The code in DB2 is modified to provide support for a STAR JOIN query that contains the FETCH FIRST N ROWS ONLY clause.

The complete solution is to apply the pre-conditioning apar PM28898 followed by this apar, the enabling apar.

Additional Keywords: SQLSTARJOIN SQLFFNR
COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM25624
SPECIAL CONDITIONS:
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DB2BIND:
***Action for PM25624:

Apar PM25624 corrects an ABENDC4 RC00000004 that can occur at location DSNXRSJ offset 168E when the FETCH FIRST N ROWS ONLY clause is specified for a STAR JOIN SELECT kind of query.

PM25624 is the enabling APAR that completes the fix for an earlier pre-conditioning APAR PM28898. In a data sharing group, this pre-conditioning APAR should be applied to all members before applying this ENABLING APAR to any member.

The fix will be enabled once this ENABLING APAR is applied.

------- COVER LETTER FOR PTF UK66317 -------- 2011/04/13

PROBLEM DESCRIPTION(S):
PM33495 -

* USERS AFFECTED: All DB2 9 for z/OS users of DB2 triggers *
* created on DB2 10 for z/OS. *
* PROBLEM DESCRIPTION: SQLCODE -723 may occur on an INSERT, *
* UPDATE, DELETE statement running on *
* DB2 9 for z/OS and fires a DB2 *
* trigger created on DB2 10 for z/OS. *
* RECOMMENDATION: *

When an INSERT, UPDATE, or DELETE statement was run on DB2 9
for z/OS member and fired a DB2 trigger that was created on DB2 10 for z/OS, SQLCODE -723 or SQLCODE -9/zerodot4 occurred. This could occur on DB2 9 after fallback from DB2 10 or when running in Data Sharing coexistence mode where there is a mix of DB2 9 members and DB2 10 members. Other unexpected results may occur.

DB2 10 for z/OS code has been modified to CREATE DB2 10 triggers that are runnable and usable after fallback to DB2 9 or when in Data Sharing coexistence mode (as described above).

PM33495 does *not* fix triggers created in DB2 10 prior to applying this apar. To correct this problem for those affected DB2 10 triggers, those triggers must be dropped and recreated, either on DB2 9 or, after applying this apar, on DB2 10.

A query such as the sample query below may be used to identify triggers created in DB2 10 for z/OS:

```
SELECT * FROM SYSIBM.SYSTRIGGERS WHERE RELCREATED = 'O';
```

ADDITIONAL SEARCH KEYWORDS:
SQLCODE9/zerodot4
SQLCODE723
SQLTRIGGER
SQLINSERT
SQLUPDATE
SQLDELETE
INCORROUT

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM33495
SPECIAL CONDITIONS:
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ACTION
PM33495 corrects a problem where an INSERT, UPDATE, or DELETE statement was run on DB2 9 for z/OS member and fired a DB2 trigger that was created on DB2 10 for z/OS, SQLCODE -723 or SQLCODE -904 occurred.
PM33495 does *not* fix triggers created in DB2 10 prior to applying this apar. To correct this problem for those affected DB2 10 triggers, those triggers must be dropped and recreated, either on DB2 9 or, after applying this apar, on DB2 10.

A query such as the sample query below may be used to identify triggers created in DB2 10 for z/OS:

```
SELECT * FROM SYSIBM.SYSTRIGGERS WHERE RELCREATED = 'O';
```
PROBLEM DESCRIPTION(S):
PM28925 -

* USERS AFFECTED: All users of DB2 10 for z/OS data sharing. *

* PROBLEM DESCRIPTION: Data corruption may occur if DB2 *
* structures in the coupling facilities *
* are not deleted prior to a group *
* restart. *

* RECOMMENDATION: *

In certain situations involving coupling facility problems
and/or DB2 data sharing group outage, DB2 structures in CF could
be corrupted.
If the old CF structures are not manually deleted before a group
restart, a problem may go undetected until objects are being
processed. This could result in data corruption and may follow
with different DB2 abends.
APAR PM28925 adds a new DB2 subsystem parameter
DEL_CFSTRUCTS_ON_RESTART to DSN6SYSP. Users can optionally set
this option if they want DB2 restart to attempt to delete the
DB2 structures (SCA, IRLM lock structure and group buffers pools)
in the coupling facility. In a data sharing environment, the
deletion of the structures will be successful only in the case
where there are no other active connections. If there are other
active connections, the deletion will fail and restart will
proceed normally. In a non-data sharing DB2 environment,
any setting of DEL_CFSTRUCTS_ON_RESTART is ignored.

Note:
IRLM APAR PM31807 is also needed to be applied to get IRLM
lock structure deleted in CF when DEL_CFSTRUCTS_ON_RESTART
parameter is set to YES. Without the PM31807 fix, DB2 would
attempt to delete only the group buffer pool (GBP) and the
SCA structures with this option.

Acceptable values for DEL_CFSTRUCTS_ON_RESTART are:

- NO  : DB2 restart will not attempt to delete
the data sharing group's coupling
facility structures.
  => This is the default setting

- YES : DB2 restart will attempt to delete the
structures during restart. The delete
will only be successful if there are no other DB2 subsystems connected to the structures at the time deletion is attempted. If deletion is successful, the deleted structures will be recovered as necessary using the group restart or GRECP recovery process. This may increase the time DB2 restart takes to complete.

DEL_CFSTRUCTS_ON_RESTART is meaningful only in the DB2 data sharing environment. It cannot be changed online because the function is effective only during restart.

For this function to work as intended, all members of a data sharing group need to have the same setting for DEL_CFSTRUCTS_ON_RESTART.

The DEL_CFSTRUCTS_ON_RESTART setting can be specified in the DEL CF STRUCTS field on installation panel DSNTIPK.

New DB2 and IRLM Messages:

Messages will be issued by DB2 and IRLM to indicate that a CF structure was deleted because of the DEL_CFSTRUCTS_ON_RESTART parameter setting. These messages are strictly informational and will not be issued if a CF structure deletion fails.

DSNB316I csect-name GROUP BUFFER POOL gbpname DELETED BECAUSE OF SUBSYSTEM PARAMETER SETTING

Explanation: Group buffer pool gbpname was deleted during DB2 restart processing. This occurs when there are no other DB2 subsystems connected to the group buffer pool listed in the message and when the DEL_CFSTRUCTS_ON_RESTART ZPARM indicates that DB2 should attempt to delete all group buffer pools.

System action: The group buffer pool named in the message is deleted.

DSN7003I csect-name SCA DELETED BECAUSE OF SUBSYSTEM PARAMETER SETTING

Explanation: The DB2 Shared Communications Area (SCA) has been deleted because the DEL_CFSTRUCTS_ON_RESTART ZPARM indicated that DB2 restart should attempt to delete it. The SCA will only be deleted if there are no other DB2 subsystems connected at the time deletion was attempted.
System action: The SCA is deleted and rebuilt by DB2.

DXR185I irlmx IXLFORCE SUCCESSFUL FOR IRLM LOCK STRUCTURE wwwwwww

Explanation: IRLM has deleted its lock structure due to a request made by the associated database subsystem. If DB2 is the associated subsystem, lock structure deletion is done if the setting of the DEL_CFSTRUCTS_ON_RESTART ZPARM is YES.

wwwwwwwww Is the lock table name currently in use by the IRLM.

System action: The lock structure is deleted and recovered by restart process.

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APARS FIXED: PM28925
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ACTION
***Actions for PM28925

This APAR adds a new DB2 subsystem parameter, DEL_CFSTRUCTS_ON_RESTART, to DSN6SYSP in DB2 V10.
Valid values are YES and NO, indicating whether or not DB2 will delete the CF structures during restart. The default is NO.

*** Special guidance for data sharing customers:
- IRLM APAR PM31807 is also needed to be applied to get IRLM lock structure deleted in CF when DEL_CFSTRUCTS_ON_RESTART parameter is set to YES. Without the PM31807 fix, DB2 would attempt to delete only the group buffer pool (GBP) and the SCA structures with this option.
- Do not use DEL_CFSTRUCTS_ON_RESTART=YES before you have applied PTFs PM28925 and PM31807 to all members of the group.
- Use the same setting for DEL_CFSTRUCTS_ON_RESTART on all members of the group.

If you have already installed or migrated to DB2 V10, you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Copy updated DB2 installation panels to alternate libraries
(3) Update your customized copy of job DSNTIJUZ
(4) Update private copies of the DSNTIDxx CLIST input member
(5) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)
Detailed guidance for these actions follows:

(1) Update customized copies of DB2 installation CLIST members

This action is required for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTs processed by job DSNTIJVC reside.

(2) Copy updated DB2 installation panels to alternate libraries

This action is required for all V10 customers who maintain copies of the DB2 installation panels outside of SMP/E

This PTF modifies DB2 installation panel DSNTIPK in the SDSNSPFP target library, adding a field called DEL CF STRUCTS that can be used to set DSN6SYSP.DEL_CFSTRUCTS_ON_RESTART.

If you keep the DB2 installation panels in a different library then after applying this PTF, you need to copy the updated DSNTIPK panel to that library.

(3) Update your customized copy of job DSNTIJUZ

This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter DEL_CFSTRUCTS_ON_RESTART=<x>, where <x> is NO or YES, to the invocation of the DSN6SYSP macro in your customized copy of installation job DSNTIJUZ. Make sure to add a continuation character in column 72 if needed. If you omit adding DEL_CFSTRUCTS_ON_RESTART here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, the changes do not become
effective until you stop and start DB2.

----------------------------------------------------------------
(4) Update private copies of the DSNTIDxx CLIST input member
----------------------------------------------------------------

==> This action is required for all customers

This PTF adds an entry for DEL_CF_STRUCTS_ON_RESTART to the
CLIST default input members, DSNTIDX A and DSNTIDX B, in the
SDSNSAMP target library. You need to add this entry to all
private copies of your CLIST output DSNTIDxx member. In
each such copy, add the following lines:

DEL_CFSTRUCTS_ON_RESTART CHAR G NO YES <x>

Change <x> to the value you specified for
DEL_CF_STRUCTS_ON_RESTART in step (3), above.

----------------------------------------------------------------
(5) Bind a new package for DSNTXAZP (DSNTIDxx refresh tool)
----------------------------------------------------------------

==> This action is required for all customers who use the
DSNTXAZP to refresh input CLIST (DSNTIDxx) members from the
current DB2 settings.

Submit a job that contains the following BIND statement:

BIND PACKAGE(DSNTXAZP) MEMBER(DSNTXAZP) -
  ACTION(REPLACE) ENCODING(EBCDIC) -
  LIBRARY('prefix.SDSNDBRM')

where <prefix> is the high-level qualifier for the
target DB2 subsystem.

------- COVER LETTER FOR PTF UK66476 --------

PROBLEM DESCRIPTION(S):

PM29900 -

* USERS AFFECTED: All DB2 10 for z/OS users of the following *
* features:
  * 1. built-in functions: *
  * BITAND, BITANDNOT, BITOR, BITXOR, BITNOT *
  * DECFLOAT_FORMAT *
  * DECODE *
  * NVL *
  * TO_CHAR *
  * TO_NUMBER *
  * VARCHAR_FORMAT *

Appendix A. HOLD DATA for PTFs incorporated in the product tape
* 2. untyped parameter markers in arithmetic operation and unary minus
* 3. use of string representation of decimal floating point special value of NaN, sNaN and Infinity

************************************************************************************
* PROBLEM DESCRIPTION: New and extended function is being provided to the following built-in functions:
* 1: BITAND, BITANDNOT, BITOR, BITXOR, BITNOT
* 2: DECFLOAT_FORMAT
* 3: DECODE
* 4: NVL
* 5: TO_CHAR
* 6: TO_NUMBER
* 7: VARCHAR_FORMAT
*
* The following incompatible changes are made starting in CM mode:
* 1. DB2 assumes type of DECFLOAT(34) for an untyped parameter marker following an unary minus.
* 2. When DB2 returns a decimal floating point value for NaN, sNaN, or infinity as a character string, the value is returned in uppercase for the CAST specification and DECFLOAT function.
* DB2 will allow an arithmetic operation involving only untyped parameter markers, such as ?, + ?, starting in NFM.

************************************************************************************
* RECOMMENDATION: DB2 has provided additional new and extended function to the following built-in functions:
* 1: BITAND, BITANDNOT, BITOR, BITXOR, BITNOT
* 2: DECFLOAT_FORMAT
* 3: DECODE
* 4: NVL
* 5: TO_CHAR
* 6: TO_NUMBER
* 7: VARCHAR_FORMAT

In addition, syntax alternatives for DISTINCT and sequences and a limit increase to nested levels are provided.
For detailed information regarding the above changes, please refer to this APAR's ++HOLD DOC.

The following incompatible changes are made starting in CM mode:
1. DB2 assumes type of DECFLOAT(34) for an untyped parameter marker following an unary minus.
2. When DB2 returns a decimal floating point value for NaN, sNaN, or Infinity as a character string, the value is returned in uppercase for the CAST specification and DECFLOAT function.

DB2 will allow an arithmetic operation involving only untyped parameter markers, such as ? + ?, starting in NFM mode. APAR PM29901 provides the pre-conditioning for this APAR.

In a data sharing group, pre-conditioning APAR PM29901 should be applied to all members before this enabling APAR is applied to any member.

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APARS FIXED: PM29900
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DB2BIND:
***Action for PM29900:

See PM29900 APAR/PTF text for additional information about why a REBIND is necessary.

PM29900 introduces new function to the following built-in functions:
1: BITAND, BITANDNOT, BITOR, BITXOR, BITNOT
2: DECFLOAT_FORMAT
3: DECODE
4: NVL
5: TO_CHAR
6: TO_NUMBER
7: VARCHAR_FORMAT
In addition, syntax alternatives for DISTINCT.

PM29900 also introduce incompatible changes starting in V10 CM mode.
1. DB2 will assume type of decimal floating point, DECFLOAT(34), for an untyped parameter marker following an unary minus. Such untyped parameter marker was previously treated as double-precision floating point.  
2. When DB2 returns a decimal floating point value for NaN, sNaN, or Infinity as a character string, the value is returned in uppercase for CAST specification and
DECFLOAT function.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

MULTSYS:
PM29900 is an APAR that includes changes to support a functional code change that will be enabled once this APAR is applied. Earlier, pre-conditioning APAR PM29901 was delivered. In a data sharing group, the pre-conditioning APAR should be applied to all members before applying this enabling APAR to any member. The code change is enabled once this enabling APAR is applied.

The functional code change enabled by APAR PM29900 is to provide additional function to the following built-in functions:
1: BITAND, BITANDNOT, BITOR, BITXOR, BITNOT
2: DECFLOAT_FORMAT
3: DECODE
4: NVL
5: TO_CHAR
6: TO_NUMBER
7: VARCHAR_FORMAT
In addition, syntax alternatives for DISTINCT and a limit increase to nested levels is being introduced.

DOCUMENTATION:
NOTE:++HOLD DOC CONTINUES IN A SECOND ++HOLD DOC.

APPROXIMATE CHANGES IN DB2 PUBLICATIONS FOLLOW:
1. Language Elements->Functions->Function invocation:
   For compatibility with other SQL implementations, UNIQUE can be specified as a synonym for DISTINCT in aggregate functions.

2. Language Elements->Expressions->Sequence Reference Syntax alternatives: sequence-name .NEXTVAL can be specified in place of NEXT VALUE FOR sequence-name, and sequence-name .CURRVAL can be specified in place of PREVIOUS VALUE FOR sequence-name.

3. Language Elements->Predicates->Aggregate functions (built-in) For compatibility with other SQL implementations, UNIQUE can be specified as a synonym for DISTINCT in aggregate functions.

4. Language Elements->Functions->Scalar functions (built-in) BITAND, BITANDNOT, BITOR, BITXOR, BITNOT
   These bitwise functions operate on the "two's complement" representation of the integer value of the input arguments and return the result as a corresponding base 10 integer value in a data type based on the data type of the input arguments.
The schema is SYSIBM.

The bit manipulation functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>A bit in the two's complement representation of the result is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BITAND</td>
<td>Performs a bitwise AND operation.</td>
<td>1 only if the corresponding bits in both arguments are 1</td>
</tr>
<tr>
<td>BITANDNOT</td>
<td>Clears any bit in the first argument that is in the second argument.</td>
<td>Zero if the corresponding bit in the second argument is 1; otherwise, the result is copied from the corresponding bit in the first argument.</td>
</tr>
<tr>
<td>BITOR</td>
<td>Performs a bitwise OR operation.</td>
<td>1 unless the corresponding bits in both arguments are zero.</td>
</tr>
<tr>
<td>BITXOR</td>
<td>Performs a bitwise exclusive OR operation.</td>
<td>1 unless the corresponding bits in both arguments are the same.</td>
</tr>
<tr>
<td>BITNOT</td>
<td>Performs a bitwise NOT operation.</td>
<td>Opposite of the corresponding bit in the argument.</td>
</tr>
</tbody>
</table>

The arguments must be integer values represented by the data type SMALLINT, INTEGER, BIGINT, or DECFLOAT. Arguments of type DECIMAL, REAL, or DOUBLE are cast to DECFLOAT. The value is truncated to a whole number.

The bit manipulation functions can operate on up to 16 bits for SMALLINT, 32 bits for INTEGER, 64 bits for BIGINT, and 113 bits for DECFLOAT. The range of supported DECFLOAT values includes integers from -2 to the 112 to 2 to the 112 minus 1, and special
values such as NaN or INFINITY are not supported (SQLSTATE 42815, SQLCODE -171). If the two arguments have different types, the argument supporting fewer bits is cast to a value with the data type of the argument supporting more bits. This cast impacts the bits that are set for negative values. For example, -1 as a SMALLINT value has 16 bits set to 1, which when cast to an INTEGER value has 32 bits set to 1.

The result of the functions with two arguments has the data type of the argument that is highest in the data type precedence list for promotion. If either argument is DECFLOAT, the data type of the result is DECFLOAT(34). If either argument can be null, the result can be null; if either argument is null, the result is the null value.

The result of the BITNOT function has the same data type as the input argument, except that DECIMAL, REAL, DOUBLE, or DECFLOAT(16) returns DECFLOAT(34). If the argument can be null, the result can be null; if the argument is null, the result is the null value.

Due to differences in internal representation between data types and on different hardware platforms, using functions (such as HEX) or host language constructs to view or compare internal representations of BIT function results and arguments is data type-dependent and not portable. The data type- and platform-independent way to view or compare BIT function results and arguments is to use the actual integer values.

Use of the BITXOR function is recommended to toggle bits in a value. Use the BITANDNOT function to clear bits. BITANDNOT(val, pattern) operates more efficiently than BITAND(val, BITNOT(pattern)).

5. Language Elements-> Functions-> Scalar functions (built-in)

DECFLOAT_FORMAT

The DECFLOAT_FORMAT function returns a DECFLOAT(34) value that is based on the interpretation of the input string using the specified format.

```
+-----------------------------------------------+
| |--DECFLOAT_FORMAT-(-string-expression+---------+)<
| | [-,-format-string-]|
+-----------------------------------------------+
```

The schema is SYSIBM.

string-expression

An expression that returns a value that is a CHAR and VARCHAR
data type (SQLSTATE 42815, SQLCODE -171). If a supplied argument is a GRAPHIC or VARGRAPHIC data type, it is first converted to VARCHAR before evaluating the function. Leading and trailing blanks are removed from the string. If format-string is not specified, the resulting substring must conform to the rules for forming an SQL integer, decimal, floating-point, or decimal floating-point constant (SQLSTATE 22018, SQLCODE -42) and not be greater than 42 bytes (SQLSTATE 42820, SQLCODE -405); otherwise, the resulting substring must contain the components of a number that correspond to the format specified by format-string (SQLSTATE 22018, SQLCODE -20477).

format-string
An expression that returns a value that is a built-in character string data type (except CLOB) (SQLSTATE 42815, SQLCODE -171). If a supplied argument is a graphic string (except DBCLOB), it is first converted to a character string before evaluating the function. The actual length must not be greater than 254 bytes (SQLSTATE 22018, SQLCODE -20476).

The value is a template for how string-expression is to be interpreted for conversion to a DECFLOAT value. A format-string must contain a valid combination of the listed format elements according to the following rules (SQLSTATE 22018 SQLCODE -20476):
- Blanks must not be specified between format elements. Leading and trailing blanks can be specified but are ignored.
- At least one '/zerodot' or '9' format element must be specified.
- Alphabetic format elements must be specified in upper case.
- A prefix format element can only be specified at the beginning of the format string before any format elements that are not prefix format elements. When multiple prefix format elements are specified they may not be specified in any order.
- A suffix format element can only be specified at the end of the format string after any format elements that are not suffix format elements.
- A sign format element ('S', 'MI', 'PR') can be specified at most once.
- A decimal point format element can be specified at most once.
- A comma format element can be the first format element that is not a prefix format element. There can be any number of elements.

Format elements for the DECFLOAT_FORMAT function
--------------------------------------------------------------
<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Represents a digit. A digit is expected if the</td>
</tr>
</tbody>
</table>
'0' format element is to the left of the decimal point, and leading zeros must be specified if there are fewer digits to the left of the decimal point in the number than in the format string. A digit can be included if the '0' format element is to the right of the decimal point.

<table>
<thead>
<tr>
<th>9</th>
<th>Represents a digit that can be included at the specified location.</th>
</tr>
</thead>
</table>

**MI** Suffix: If string-expression represents a negative number, a trailing minus sign (-) is expected at the specified location. If string-expression represents a positive number, a trailing blank can be included at the specified location.

**S** Prefix: If string-expression represents a negative number, a leading minus sign (-) is expected at the specified location. If string-expression represents a positive number, a leading plus sign (+) or leading blank can be included at the specified location.

**PR** Suffix: If string-expression represents a negative number, a leading less than character (<) and a trailing greater than character (>) are expected. If string-expression represents a positive number, a leading blank and a trailing blank can be included.

**$** Prefix: A leading dollar sign ($) is expected at the specified location.

*,* Represents a group separator. A group separator is expected at the specified location if there is a character to the left of it that is not a prefix character.

*,* A period represents a decimal point that is expected at the specified location.

If format-string is not specified, string-expression must conform to the rules for forming an SQL integer, decimal, floating-point, or floating-point constant (SQLSTATE 22018, SQLCODE -420) and have a length not greater than 42 bytes (SQLSTATE 22018, SQLCODE -20476).
The result is a DECFLOAT(34). If the first or second argument can be null, the result can be null; if the first or second argument is null, the result is the null value.

Notes
Syntax alternatives: TO_NUMBER is a synonym for DECFLOAT_FORMAT.

6. Language Elements->Functions->Scalar functions (built-in)
DECODE
The DECODE function compares each expression2 to expression1. If expression1 is equal to expression2, or both expression1 and expression2 are null, the value of the following result-expression is returned. If no expression2 matches expression1, the value of else-expression is returned; otherwise a null value is returned.

```
+--------------------------------------------------------------+
| -DECODE-(-expression1-, -expression2-, -result-expression----) |
+--------------------------------------------------------------+
```

The schema is SYSIBM.

The DECODE function is similar to the CASE expression except for the handling of null values:
- A null value of expression1 will match a corresponding null value of expression2.
- If the NULL keyword is used as an argument in the DECODE function, it must be cast to an appropriate data type.

The rules for determining the result type of a DECODE expression are based on the corresponding CASE expression.

7. Language Elements->Functions->Scalar functions (built-in)
NVL

```
+--------------------------------------------------------------+
| ---NVL---(--expression--, --expression--++)-------------------< |
+--------------------------------------------------------------+
```

The schema is SYSIBM.

The NVL function returns the first argument that is not null.

NVL is a synonym for COALESCE.
8. Language Elements->Functions->Scalar functions (built-in)

TO_CHAR

The TO_CHAR function returns a character representation of an input expression that has been formatted using a character template.

Character to varchar

+-----------------------------------------------------------------------+
| >--TO_CHAR(--character-expression--)----------------------------------< |
+-----------------------------------------------------------------------+

Decimal floating-point to varchar

+-----------------------------------------------------------------------+
| >--TO_CHAR(--decimal-floating-point-expression--+-format-string-)------< |
+-----------------------------------------------------------------------+

The schema is SYSIBM.

The TO_CHAR scalar function is a synonym for the VARCHAR_FORMAT scalar function.

9. Language Elements->Functions->Scalar functions (built-in)

TO_NUMBER

The TO_NUMBER function returns a DECFLOAT(34) value that is based on the interpretation of the input string using the specified format.

+-----------------------------------------------------------------------+
| >--TO_NUMBER(--string-expression--+format-string--)------------------< |
+-----------------------------------------------------------------------+

The schema is SYSIBM.

The TO_NUMBER scalar function is a synonym for the DECIMAL_FORMAT scalar function.

NOTE:++HOLD DOC CONTINUES IN A SECOND ++HOLD DOC.

DOCUMENTATION:
TEXT CONTINUATION FROM FIRST ++HOLD DOC.

APPROXIMATE CHANGES IN DB2 PUBLICATIONS Follows:
The VARCHAR_FORMAT function returns a character string based on applying the specified format string argument, if provided, to the value of the first argument.

Character to varchar

An expression that returns a value that must be a built-in CHAR or VARCHAR data type. If a supplied argument is a GRAPHIC or VARGRAPHIC data type, it is first converted to VARCHAR before evaluating the function.

The result is a VARCHAR with a length attribute that matches the length attribute of the argument. The value of the result is the same as the value of character-expression.

If character-expression returns graphic data, the CCSID of the result is the character mixed CCSID that corresponds to the graphic argument. If character-expression returns bit data, the result is bit data. Otherwise, the CCSID of the result is the same as the CCSID of character-expression.

Decimal floating-point to varchar

An expression that returns a value of any built-in numeric data type. If the argument is not a decimal floating-point value, it is converted to DECFLOAT(34) for processing.

The expression must return a value that is a built-in CHAR, VARCHAR, numeric data type. If the value is not a CHAR or VARCHAR data type, it is implicitly cast to VARCHAR before evaluating the function. If the supplied argument is a GRAPHIC
or VARGRAPHIC data type, it is first converted to VARCHAR before evaluating the function. The actual length must not be greater than 254 bytes (SQLSTATE 22018, SQLCODE -20476).

The value is a template for how decimal-floating-point-expression is to be formatted. A format-string must contain a valid combination of the format elements according to the following rules (SQLSTATE 22018, SQLCODE -20476):

- Blanks must not be specified between format elements. Leading and trailing blanks can be specified but are ignored when formatting the result.
- Alphabetic format elements must be specified in upper case.
- A prefix format element can only be specified at the beginning of the format string before any format elements that are not prefix format elements. When multiple prefix format elements are specified they may be specified in any order.
- A suffix format element can only be specified at the end of the format string after any format elements that are not suffix format elements.
- A sign format element ('S','MI','PR') can be specified at most once.
- A decimal point format element can be specified at most once.
- A comma format element must not be the first format element that is not a prefix format element. There can be any number of comma format elements.

<table>
<thead>
<tr>
<th>Format Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/zerodot</td>
<td>Each /zerodot represents a digit. Leading zeros in a number are formatted as zeros.</td>
</tr>
<tr>
<td>9</td>
<td>Each 9 represents a digit. Leading zeros in a number are formatted as blanks.</td>
</tr>
<tr>
<td>MI</td>
<td>Suffix: If decimal-floating-point-expression is a negative number, a trailing minus sign (-) is included in the result. If decimal-floating-point-expression is a positive number, a trailing blank is included in the result.</td>
</tr>
<tr>
<td>S</td>
<td>Prefix: If decimal-floating-point-expression is a negative number, a leading minus sign (-) is included at the specified location in the result. If decimal-floating-point-expression is a positive number, a leading plus sign (+) is</td>
</tr>
</tbody>
</table>
If format-string is not specified, the function is equivalent to: `VARCHAR(decimal-floating-point-expression)`

The result is a representation of the possibly rounded `decimal-floating-point-expression` value in the format specified by format-string according to the following rules:

- The value that is actually formatted is the result of the `ROUND` function
- Let `number_digit_format_elements` be the number of digit format elements to the right of the decimal point in format-string.
- Let `rounded-input-value` be
  
  \[
  \text{ROUND (decimal-floating-point-expression, number_digit_format_elements)}. \]

- If the number of digits to the right of the decimal point in `decimal-floating-point-expression` is not greater than the number of digit format elements to the right of the decimal in format-string, the result of the `ROUND` function is the same as the original input argument.

- The result does not include any digit characters to the left of the decimal point if all of the following conditions are true:
  - \(-1 < \text{rounded-input-value} < 1\)
  - The format-string does not include a '0' format element to the left of the the decimal point
  - The format-string includes at least one digit format element ('0' or '9') to the right of the decimal point
- The result includes a single 0 character immediately before the implicit or explicit decimal point if all of the following
conditions are true:
- The value of rounded-input-value is 0 or -0
- The format-string includes only '9' format elements to the left of the implicit or explicit decimal point
- The format-string does not include any digit format elements to the right of the decimal point
- If the format-string includes both '0' and '9' format elements to the left of the decimal point, the position of the first digit element from the left side of the format string determines the presence of leading blanks or zeroes. All '9' format elements after the leftmost '0' format element to the left of the implicit or explicit decimal point are treated the same as if a '0' format element had been specified. For example, the format-string value '99099' is the same as the value '99000'.
- If the number of digits to the right of the decimal point in rounded-input-value is less than the number of digit format elements to the right of the decimal point in format-string, the result includes the number of digit characters to the right of the decimal point corresponding to the number of digit format elements right of the decimal point in format-string, padded to right with zeros.
- If the number of digits to the left of the decimal point in rounded-input-value is greater than the number of digit format elements to the left of the decimal point in format-string, the result is a string of number sign (#) characters that matches the length that format-string produces in the result for valid values.
- If the value of rounded-input-value presents any of the positive or negative special values Infinity, sNaN, or NaN, the string 'INFINITY', 'SNAN', 'NAN', '-INFINITY', '-SNAN', or '-NAN' is returned without using the formatting specified by the format-string. The decimal floating-point special value sNaN does not result in an exception when converted to a string.
- If format-string does not include any of the sign format elements 'S', 'MI', or 'PR', and the value of rounded-input-value is negative, a minus sign (-) is included in the result; otherwise, a blank is included in the resulting string. The minus sign or blank immediately precedes the first digit of the result to the left of the decimal point, or the decimal point if there are no digits to the left of the decimal point.

The result is a varying-length character string representation of rounded-input-value. If a single argument is specified the length attribute is 42, otherwise the length attribute is 254. The actual length of the result is determined by the format-string, if specified; otherwise, the actual length of the result is the smallest number of characters that can represent the value of rounded-input-value. If the resulting string
exceeds the length attribute of the result, the result will be truncated.

11. Language Elements->Queries->select-clause->DISTINCT
For compatibility with other SQL implementations, UNIQUE can be specified as a synonym for DISTINCT.

12. Language Elements->Queries->from-clause->joined-table
A joined-table specifies an intermediate result table that is the result of either an inner, outer join, or cross join. The table is derived by applying one of the join operators: INNER, LEFT, OUTER, RIGHT OUTER, FULL OUTER, or CROSS to its operands. If a join operator is not specified, INNER is implicit. The order in which a LEFT OUTER JOIN or RIGHT OUTER JOIN is performed can affect the result.

Cross joins represent the cross product of the tables, where each row of the left table is combined with every row of the right table. Inner joins can be thought of as the cross product of the tables, keeping only the rows where the join condition is true. The result table might be missing rows from either or both of the joined tables. Outer joins include the rows produced by the inner join as well as the missing rows, depending on the type of outer join as follows:
- Left outer join includes rows from the left table that were missing from the inner join.
- Right outer join includes rows from the right table that were missing from the inner join.
- Full outer join includes rows from both the left and right table that were missing from the inner join.

+--------------------------------------------------------------+
|     |     |
|     |     |
|     |     |
|>---table-reference--------------------------------------------<|
|--CROSS JOIN-table-reference---------------|
+--------------------------------------------------------------+

join operations
CROSS JOIN
The result of T1 CROSS JOIN T2 consists of each row of T1 paired with each row of T2. CROSS JOIN is also known as cartesian product.

A cross join can also be specified without the CROSS JOIN syntax by listing the two tables in the FROM clause separated by commas without using a WHERE clause to supply join criteria.
13. Language Elements->Queries->fullselect
UNION, EXCEPT, or INTERSECT
The set operators, UNION, EXCEPT, and INTERSECT, correspond to the relational operators union, difference, and intersection. A fullselect specifies a result table. If a set operator is not used, the result of the fullselect is the result of the specified subselect. Otherwise, the result table is derived by combining the two other result tables (R1 and R2) subject to the specified set operator.

UNION DISTINCT or UNION ALL
For compatibility with other SQL implementations, UNIQUE can be specified as a synonym for DISTINCT.

EXCEPT DISTINCT or EXCEPT ALL
For compatibility with other SQL implementations, MINUS can be specified as a synonym for EXCEPT, and UNIQUE can be specified as a synonym for DISTINCT.

INTERSECT DISTINCT or INTERSECT ALL
For compatibility with other SQL implementations, UNIQUE can be specified as a synonym for DISTINCT.

14. Statements->CREATE FUNCTION (sourced)
SOURCE
DECODE can not be a built-in function that is the sourced function.

15. Statements->DELETE
Alternative syntax: For compatibility with other SQL implementations, the FROM keyword may be omitted.

16. Limits
64 nested levels is the maximum number of stored procedures, triggers, and user-defined functions that an SQL statement can implicitly or explicitly reference.

17. Messages and Codes
SQLCODES
-20476 THE function-name FUNCTION WAS INVOKED WITH AN INVALID FORMAT STRING format-string.
Explanation: An invalid format string was specified for the function-name function. The value for function-name could be VARCHAR_FORMAT or DECFLOAT_FORMAT, even if the name used to invoke the function was TO_CHAR or TO_NUMBER. A valid format string for the VARCHAR_FORMAT function must:
- Have an actual length of the data type that is not
greater than 254 bytes
-Only contain supported format elements
-Not result in a string with an actual length that is
greater than the length attribute of the result

A valid format string for the DECFLOAT_FORMAT function
must:
- Have an actual length of the data type that is not
greater than 254 bytes
- Contain at least one format element
- Only contain supported format elements

System response: The statement cannot be processed.
User response: Change the format string argument of the
function-name function. For more information, see the
corresponding description of the function in the SQL
Reference.
SQLSTATE: 22018

-20477 THE function-name FUNCTION IS NOT ABLE TO USE FORMAT
STRING format-string TO INTERPRET THE ARGUMENT
string-expression.
Explanation: The function-name function was invoked
with format and string-expression. The value for
function-name would be DECFLOAT_FORMAT, even if the
name used to invoke the function was TO_NUMBER. The
value of the argument string-expression cannot be
interpreted with the format string format-string
to produce a DECFLOAT(34) value.
This error can occur for any of the following reasons:
- string-expression is too long for the specified
  format string
- string-expression does not conform to the template
  specified in format string; for example: Too many
digits were specified in string-expression for
  corresponding format element in the format string,
such as in the specific case where 1234 is not a valid
  value for 999
- A value in string-expression is not valid for the
  corresponding format element in the format string,
such as in the specific case where S is not a valid
  value for S

System response: The statement cannot be processed.
User response: Change the arguments of the
function-name function to valid values. For more
information, see the corresponding description of the
function in the SQL Reference.
SQLSTATE: 22018

------- COVER LETTER FOR PTF UK66598 ------------ 2/zerodot11//zerodot4/22
PROBLEM DESCRIPTION(S):

PM28626 -

******************************************************************************
* USERS AFFECTED: All Distributed Data Facility (DDF) users. *
* Specifically where remote clients access          *
* DB2 via DRDA over TCP/IP.                        *
******************************************************************************
* PROBLEM DESCRIPTION: DRDA TCP/IP zIIP related changes. *
******************************************************************************
* RECOMMENDATION:                          *
******************************************************************************

1. In cases where DRDA applications create extended duration work threads in DB2, for example through extensive use of held cursors, the zIIP utilization levels can become more variable after applying the PTF for APAR PM12256.
2. For customers running on System z complexes where the processor speed of the zIIP processors differ from that of the general purpose processors, after applying the PTF for APAR PM12256:
   a. the execution time of DRDA threads with multiple SQL statements can be more variable, particularly in cases where DRDA applications create extended duration work threads in DB2, for example through the use of held cursors.
   b. the performance of a single DRDA SQL statement can experience more variation from one execution to the next, especially for longer running SQL statements.
3. Enclaves with associated control structures not established by DB2 can result in unauthorized processor utilization.

This APAR alone addresses problems 1, 2a and 3 listed above.

For problem 2b, this APAR must work in conjunction with z/OS APAR OA35146.

For problem 3, if DB2 detects an unauthorized control structure, it will delete the identified enclave and execute the DRDA request under a pre-emptable SRB, outside of its normal WLM enclave service class, on a general purpose processor and not on a zIIP. This could cause some changes in customer established dispatching priorities for this work, and it could cause changes in WLM service class reporting. A new indicator is provided in the DB2 Accounting record (IFCID 003) that will indicate that these actions have been taken with regard to the affected DRDA request.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM28626
SPECIAL CONDITIONS:
ACTION
*** Action for PM28626 ***
Users encountering problem 2b described in this APAR should be
aware that companion maintenance, the PTF for MVS APAR OA35146,
is also required in order to correct the condition.
Please see PTF cover letter for more information.

----- COVER LETTER FOR PTF UK66379 ----------- 2011/05/02

PROBLEM DESCRIPTION(S):
PM27811 -

* USERS AFFECTED: All DB2 users.

* PROBLEM DESCRIPTION: The in-line length of DSNDB01.SPT01 can * 
  not be changed this can affect * 
  performance and the DASD required for * 
  packages. * 

* RECOMMENDATION: *

In DB2 V10 NFM the package information is stored in a LOB 
table space with an inline length of 0 which causes the 
following two problems:

- All the package information is stored in the LOB table 
  space and this can not be compressed. This can cause 
  more DASD to be used for packages.
- When package information is stored in the LOB, the base row 
  and the LOB row must be read. This can affect performance. 

With APAR PM27811 DB2 code has been enhanced to allow the 
in-line length of DSNDB01.SPT01 to be changed. When DB2 is 
started with PM27811 on for the first time the in-line 
length is changed from 0 to 32138 and the table space is put 
in AREOR. The in-line length can be changed by using the 
SET SYSPARM LOAD command to load a new ZPARM module that 
has a different in-line length specified. The new ZPARM 
SPT01_INLINE_LENGTH can have a value of NOINLINE or 1-32138.

When the in-line length is made larger, a new message 
DSNG0101 will be issued showing the new length and the 
table space will be put in AREOR. New rows inserted by 
BIND will use the new length and a REORG will convert 
all the rows to the new length.

When the new in-line length is smaller, a new message 
DSNG009I will be issued to indicate that the table space
is put in REORP and message DSNG010I will be issued with the new in-line length. The table space must be REORGed before any packages can be bound or run.

After the ENFM step for DSNDB01.SPT01 has completed, the SPT01 table space has BLOB columns. By default, at this point, when the table space is in AREOR or REORP, a REORG TABLESPACE on DSNDB01.SPT01 will implicitly reorganize both the base table space and the associated LOB table spaces at the same time.

++Hold for PM27811
***Action for PM27811:

See PM27811 APAR/PTF text for additional information.

PM27811 is the enabling APAR that introduces the new function support for the ability to change the in-line length of DSNDB01.SPT01. Earlier, a pre-conditioning APAR PM27073 was delivered that is a prereq. In a data sharing group, this pre-conditioning APAR should be applied to all members before applying this enabling APAR to any member. The new function will be enabled once this enabling APAR is applied.

When DB2 is started with PM27811 on for the first time, the in-line length of DSNDB01.SPT01 is changed from 0 to 32138 and the table space DSNDB01.SPT01 is put in AREOR.

If you apply this PTF after SPT01 has been converted in ENFM, please specify the size of the SYSCOPY data set (either thru DD card specification or utility template) when you REORG SPT01.

This PTF adds a new DB2 subsystem parameter in DSN6SPRM called SPT01_INLINE_LENGTH to specify the maximum length in single-byte characters of LOB column data in the SPT01 directory space to be maintained in the base table. Valid settings are an integer from 1 - 32138 or NOINLINE. NOINLINE means that no LOB data is to be placed inline in the SPT01 base table. The default setting is 32138. SPT01_INLINE_LENGTH is externalized on installation panel DSNTIPA2 as SPT01 INLINE LENGTH.

This PTF also externalizes an existing parameter in DSN6SPRM, COMPRESS_SPT01, on DB2 installation panel DSNTIPA2 as COMPRESS SPT01. The COMPRESS_SPT01 parameter can be used to indicate that DB2 is to compress data in the SPT01 base table. Valid settings are NO and YES. The default is NO. For more information about COMPRESS_SPT01, consult the DB2 Installation Guide.
A change to the SPT01_INLINE_LENGTH parameter does not take effect until you use the -SET SYSPARM command to bring it online. In other words, even if you start or restart DB2 after changing the value, the change is not honored until you issue the -SET SYSPARM command.

If you increase the setting, DB2 will place SPT01 in Advisory REORG-pending (AREOR) status after you bring the change on-line. If you decrease the setting, DB2 will place SPT01 in REORG-pending (REORP) status after you bring the change on-line. REORG SPT01 with SHRLEVEL(REFERENCE) to materialize the inline LOB data.

In DB2 data sharing, all members need to use the same setting. It is not required to apply this PTF to all members of the group at the same time. However:
* The PTF for pre-conditioning APAR PM27073 must be applied to all members before this PTF is applied to any member
* When the PTF is applied to any member, the subsystem parameter (DSNZPxxx) module for that member must be configured to use the same SPT01_INLINE_LENGTH setting as all other members that have this PTF applied. See action (3) below for guidance.

When changing the setting of SPT01_INLINE_LENGTH for a data sharing group, make the change on all members before running the -SET SYSPARM command on any member.

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

1. Update customized copies of DB2 installation CLIST members
2. Copy updated DB2 installation panels to alternate libraries
3. Update your customized copy of job DSNTIJUZ
4. Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

(1) Update customized copies of DB2 installation CLIST members

===> This action is required for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTS processed by
job DSNTIJVC reside.

(2) Copy updated DB2 installation panels to alternate libraries

=> This action is required for all V10 customers who maintain copies of the DB2 installation panels outside of SMP/E

This PTF modifies DB2 installation panels DSNTIPA2 and DSNTIPB in the SDSNSPFP target library.

If you keep the DB2 installation panels in a different library then after applying this PTF, you need to copy the updated DSNTIPA2 and DSNTIPB panels to that library.

(3) Update your customized copy of job DSNTIJUZ

=> This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter SPT01_INLINE_LENGTH=<n>, where <n> is either NOINLINE or an integer from 1 to 32138, to the invocation of the DSN6SPRM macro in your customized copy of installation job DSNTIJUZ. Make sure to add a continuation character in column 72 if needed. If you omit adding SPT01_INLINE_LENGTH here, the value will be set to the default of 32138 when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET SYSPARM command for the change to take effect. In DB2 data sharing, all members need to use the same setting. When changing the setting of SPT01_INLINE_LENGTH for a data sharing group, make the change on all members before running the -SET SYSPARM command on any member.

(4) Update private copies of the DSNTIDxx CLIST input member

=> This action is required for all customers

This PTF adds an entry for SPT01_INLINE_LENGTH to the CLIST default input members, DSNTIDXAX and DSNTIDXBX, in the
SDSNSAMP target library. You need to add this entry to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following line:

```
SPT01_INLINE_LENGTH CHAR G NONE NONE <n>
```

Change <n> to the value you specified for SPT01_INLINE_LENGTH in step (3), above.

***DOC for PM27811:

See PM27811 APAR/PTF text for additional information.

New DB2 messages, DSG009I, DSG010I and DSG011I are added by this APAR/PTF. The change will be documented in the DB2 Messages manual and in the Information Management Software for z/OS Solutions Information Center.

The new message text is:

- **DSNG009I** csect-name TABLE SPACE DSND801.SPT01 IS IN REORG PENDING STATE

  Explanation: This message is issued at the completion of changing the in-line length of the SPTSEC_DATA column of SPT01 when the new length is shorter than the current length.

- **DSNG010I** csect-name SPT01 INLINE LENGTH CHANGE SUCCESSFUL, LENGTH new-size

  Explanation: The SPT01 inline length was successfully changed.

  new-size The size of the inline length in bytes.

- **DSNG011I** csect-name SPT01 INLINE LENGTH CHANGE UNSUCCESSFUL, LENGTH size

  Explanation: The SPT01 inline length was not changed. Check the console for a DSNT5001 message.

  size The size of the inline length in bytes.
New DB2 messages, DSNG009I, DSNG010I and DSNG011I are added by this APAR/PTF.
The change will be documented in the DB2 Messages manual and in the Information Management
Software for z/OS Solutions Information Center.

The new message text is:

DSNG009I csect-name TABLE SPACE DSNDB01.SPT01 IS IN REORG PENDING STATE

Explanation: This message is issued at the completion of changing the in-line length of the SPTSEC_DATA column of SPT01 when the new length is shorter than the current length.

DSNG010I csect-name SPT01 INLINE LENGTH CHANGE SUCCESSFUL, LENGTH new-size

Explanation: The SPT01 inline length was successfully changed.

new-size The size of the inline length in bytes.

DSNG011I csect-name SPT01 INLINE LENGTH CHANGE UNSUCCESSFUL, LENGTH size

Explanation: The SPT01 inline length was not changed. Check the console for a DSNT5001 message.

ACTION

***Action for PM27811:

See PM27811 APAR/PTF text for additional information.

PM27811 is the enabling APAR that introduces the new function support for the ability to change the in-line length of DSNDB01.SPT01. Earlier, a pre-conditioning APAR PM27073 was
delivered that is a preq. In a data sharing group, this
pre-conditioning APAR should be applied to all members before
applying this enabling APAR to any member. The new function
will be enabled once this enabling APAR is applied.

When DB2 is started with PM27811 on for the first time the
in-line length of DSNDB01.SPT01 is changed from 0 to 32138
and the table space DSNDB01.SPT01 is put in AREOR.

If you apply this PTF after SPT01 has been converted in ENFM,
please specify the size of the SYSCOPY data set (either
thru DD card specification or utility template) when you
REORG SPT01.

This PTF adds a new DB2 subsystem parameter in DSN6SPRM called
SPT01_INLINE_LENGTH to specify the maximum length in single-
byte characters of LOB column data in the SPT01 directory
space to be maintained in the base table. Valid settings are
an integer from 1 - 32138 or NOINLINE. NOINLINE means that no
LOB data is to be placed inline in the SPT01 base table. The
default setting is 32138. SPT01_INLINE_LENGTH is externalized
on installation panel DSNTIPA2 as SPT01 INLINE LENGTH.

This PTF also externalizes an existing parameter in DSN6SPRM,
COMPRESS_SPT01, on DB2 installation panel DSNTIPA2 as
COMPRESS SPT01. The COMPRESS_SPT01 parameter can be used to
indicate that DB2 is to compress data in the SPT01 base table.
Valid settings are NO and YES. The default is NO. For more
information about COMPRESS_SPT01, consult the DB2 Installation
Guide.

A change to the SPT01_INLINE_LENGTH parameter does not take
effect until you use the -SET SYSPARM command to bring it
online. In other words, even if you start or restart DB2 after
changing the value, the change is not honored until you issue
the -SET SYSPARM command.

If you increase the setting, DB2 will place SPT01 in Advisory
REORG-pending (AREOR) status after you bring the change on-line.
If you decrease the setting, DB2 will place SPT01 in REORG-
pending (REORP) status after you bring the change on-line.
REORG SPT01 with SHRLEVEL(REFERENCE) to materialize the inline
LOB data.

In DB2 data sharing, all members need to use the same setting.
It is not required to apply this PTF to all members of the
group at the same time. However:
* The PTF for pre-conditioning APAR PM27073 must be applied
to all members before this PTF is applied to any member.
* When the PTF is applied to any member, the subsystem parameter (DSNZPxxx) module for that member must be configured to use the same SPT01_INLINE_LENGTH setting as all other members that have this PTF applied. See action (3) below for guidance.

When changing the setting of SPT01_INLINE_LENGTH for a data sharing group, make the change on all members before running the -SET SYSPARM command on any member.

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Copy updated DB2 installation panels to alternate libraries
(3) Update your customized copy of job DSNTIJUZ
(4) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----------------------------------------------------------------
(1) Update customized copies of DB2 installation CLIST members
----------------------------------------------------------------

==> This action is required for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTS processed by job DSNTIJVC reside.

----------------------------------------------------------------
(2) Copy updated DB2 installation panels to alternate libraries
----------------------------------------------------------------

==> This action is required for all V10 customers who maintain copies of the DB2 installation panels outside of SMP/E

This PTF modifies DB2 installation panels DSNTIPA2 and DSNTIPB in the SDSNSPPFP target library.

If you keep the DB2 installation panels in a different library then after applying this PTF, you need to copy the updated DSNTIPA2 and DSNTIPB panels to that library.

----------------------------------------------------------------
(3) Update your customized copy of job DSNTIJUZ
----------------------------------------------------------------

==> This action is required for all customers
This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter SPT01_INLINE_LENGTH=<n>, where <n> is either NOINLINE or an integer from 1 to 32138, to the invocation of the DSN6SPRM macro in your customized copy of installation job DSNTIJUZ. Make sure to add a continuation character in column 72 if needed. If you omit adding SPT01_INLINE_LENGTH here, the value will be set to the default of 32138 when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET SYSPARM command for the change to take effect. In DB2 data sharing, all members need to use the same setting. When changing the setting of SPT01_INLINE_LENGTH for a data sharing group, make the change on all members before running the -SET SYSPARM command on any member.

---

(4) Update private copies of the DSNTIDxx CLIST input member

This PTF adds an entry for SPT01_INLINE_LENGTH to the CLIST default input members, DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. You need to add this entry to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following line:

SPT01_INLINE_LENGTH CHAR G NONE NONE <n>

Change <n> to the value you specified for SPT01_INLINE_LENGTH in step (3), above.

----- COVER LETTER FOR PTF UK67423 ---------- 2011/05/18

PROBLEM DESCRIPTION(S):

PM25961 -

* USERS AFFECTED: All DB2 Users of CREATE FUNCTION and trusted context.

* PROBLEM DESCRIPTION: In a trusted context, CREATE FUNCTION results in an unexpected SQLCODE -601 when a function of the same name
In a trusted context, CREATE FUNCTION results in an unexpected SQLCODE -601 when a function of the same name already exists. The error occurs because SYSIBM.SYSOBJROLEDEP DNAME is populated with the function name instead of the specific name.

Additionally, a function created in a trusted context may have a missing SYSIBM.SYSOBJROLEDEP row if a function with the same name is dropped.

PM27706 must be applied to all members of a data sharing group before PM25961 is applied.
APAR PM27706 (PTF UK65255) must be applied to all members of a data sharing group before PM25961 is applied.

Functions with the same name may be created in a trusted context.

PM25961 will not correct existing SYSIBM.SYSOBJROLEDEP rows with incorrect DNAME values or missing rows. The user-defined function must be dropped and recreated. The queries below are provided as examples and may not cover all variations and scenarios.

To identify user-defined functions created in a trusted context with missing corresponding SYSIBM.SYSOBJROLEDEP rows, a query such as the following may be used. Note that this query must be run prior to applying PM25961.

```
SELECT * FROM SYSIBM.SYSROUTINES AS R
WHERE NOT EXISTS
  (SELECT * FROM SYSIBM.SYSOBJROLEDEP AS D
   WHERE ( D.DSCHEMA = R.SCHEMA
        AND D.DNAME = R.NAME
        AND D.DTYPE = 'F' ))
   AND R.ROUTINETYPE = 'F'
   AND R.OWNERTYPE = 'L';
```

To identify user-defined functions created in a trusted context with incorrect SYSIBM.SYSOBJROLEDEP.DNAME values, a query such as the following may be used.

```
SELECT * FROM SYSIBM.SYSOBJROLEDEP AS D JOIN SYSIBM.SYSROUTINES AS R
ON ( D.DSCHEMA = R.SCHEMA
    AND D.DNAME = R.NAME
    AND R.ROUTINETYPE = 'F' )
```

To identify user-defined functions created in a trusted context with incorrect SYSIBM.SYSOBJROLEDEP.DNAME values, a query such as the following may be used.

```
SELECT * FROM SYSIBM.SYSOBJROLEDEP AS D JOIN SYSIBM.SYSROUTINES AS R
ON ( D.DSCHEMA = R.SCHEMA
    AND D.DNAME = R.NAME
    AND R.ROUTINETYPE = 'F' )
```
AND D.DTYPE = 'F' AND R.ROUTINETYPE = 'F')
WHERE ( R.NAME <> R.SPECIFICNAME
AND R.OWNERTYPE = 'L'
AND D.DNAME <> R.SPECIFICNAME );

ADDITIONAL KEYWORDS:
SQLCODE601
SQLFUNCTION
SQLCREATE

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM25961
SPECIAL CONDITIONS:
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MULTSYS:
APAR PM27706 (PTF UK65254) must be applied to all members of a
data sharing group before PM25961 is applied.

In a trusted context, CREATE FUNCTION results in an
unexpected SQLCODE -6 when a function of the same name
already exists. Additionally, a function created in a trusted
context may have a missing SYSIBM.SYSOBJROLEDEP row if a
function with the same name is dropped.

PM25961 will not correct existing SYSIBM.SYSOBJROLEDEP
rows with incorrect DNAME values or missing rows. The user-
defined function must be dropped and recreated. The queries
below are provided as examples and may not cover all variations
and scenarios.

To identify user-defined functions created in a trusted context
with missing corresponding SYSIBM.SYSOBJROLEDEP rows, a
query such as the following may be used. Note that this query
must be run prior to applying PM25961.
SELECT * FROM
SYSIBM.SYSROUTINES AS R
WHERE NOT EXISTS
  (SELECT * FROM SYSIBM.SYSOBJROLEDEP AS D
   WHERE ( D.DSCHEMA = R.SCHEMA
   AND D.DNAME = R.NAME
   AND D.DTYPE = 'F' )
   AND R.ROUTINETYPE = 'F'
   AND R.OWNERTYPE = 'L' );

To identify user-defined functions created in a trusted
context with incorrect SYSIBM.SYSOBJROLEDEP.DNAME values, a
query such as the following may be used.
SELECT * FROM

SYIBM.SYSOBJROLEDEP AS D JOIN SYIBM.SYSROUTINES AS R
ON (  D.DSCHEMA = R.SCHEMA
    AND D.DNAME = R.NAME
    AND D.DTYPE = 'F' AND R.ROUTINETYPE = 'F')
WHERE (  R.NAME <> R.SPECIFICNAME
    AND R.OWNERTYPE = 'L'
    AND D.DNAME <> R.SPECIFICNAME );

------- COVER LETTER FOR PTF UK67966 --------- 2011/05/20

PROBLEM DESCRIPTION(S):

PM32408 -

************************************************************************************************************
* USERS AFFECTED: All data sharing users of HIR2230(IRLM230) *
************************************************************************************************************
* PROBLEM DESCRIPTION: NOTIFY response data is handled in * ECSA during IRLM processing. This *
* can lead to an ECSA shortage. IRLM *
* APAR PM25282 and DB2 APAR PM25271 *
* provide relief, but need to be enabled. *
************************************************************************************************************
* RECOMMENDATION: *

With IRLM APAR PM25282 installed, IRLM is capable of passing NOTIFY response data back to DB2 in IRLM private. However, DB2 APAR PM25271 is required to enable DB2 to receive NOTIFY response data from IRLM in IRLM private storage. Because IRLM and DB2 cannot see each other's maintenance levels, they will both assume that the other does not have the required maintenance, and use ECSA.

Background on DB2 APAR PM25271 and IRLM APAR PM25282:
IRLM uses ESCA storage to handle response data to a NOTIFY request. Prior to DB2 V10, the amount of data per member was limited to 4MB. To support DB2 V10, this limit has been increased to 64MB. IRLM230 NOTIFY RESPONSE exceeding 4MB will be processed using IRLM private storage

KEYWORDS: SYSPLEXDS

PM32408 will enable DB2 to tell IRLM if PM25271 is installed during the IDENTIFY processing. Likewise, DB2 will be informed if IRLM has PM25282 installed. So, IRLM will be able to determine if DB2 is able to process NOTIFY response data in IRLM private, and if so, NOTIFY response data will be returned to DB2 in IRLM private.

If PM25271 is not installed, then IRLM will know that DB2 is unable to handle response data in IRLM private and will use ECSA. As stated above if PM32408 is not installed, then ECSA will be used as a before.
IRLM uses ESCA storage to handle response data to a NOTIFY request. Prior to DB2 V10, the amount of data per member was limited to 4MB. To support DB2 V10, this limit has been increased to 64MB.

This apar will enable the use of IRLM private storage for NOTIFY RESPONSE data.

Use of IRLM private storage for NOTIFY RESPONSE data functionality has been added by DB2 PTF UK66475 (PM25271) and IRLM PTF UK64370 (PM25282). If UK66475 is not installed on the DB2 that identifies to IRLM with this apar installed, IRLM will use ECSA for NOTIFY RESPONSE data.

Without this apar, IRLM will use ECSA for NOTIFY RESPONSE data.

PROBLEM DESCRIPTION(S):

PM37300 -

* USERS AFFECTED: All Distributed Data Facility (DDF) users.
* Specifically where DB2 for z/OS is accessed
* as a server, via DRDA protocols, from
* remote DB2 for z/OS client applications.

* PROBLEM DESCRIPTION: With the elimination of DB2 Private Protocol in DB2 10 for z/OS, the current DB2 server plan owner based authorization behavior relative to remote DB2 for z/OS client systems is no longer applicable.
* APAR PM17665 made changes to allow users to move to this new authorization environment however additional new function is required.

* RECOMMENDATION:
When a DB2 for z/OS server is accessed via DRDA protocols, the authorization behavior relative to remote DB2 for z/OS client applications is different than the authorization behavior relative to remote non DB2 for z/OS client applications. The authorization behavior for a DB2 for z/OS DRDA client application was treated differently because it was associated to a DB2 for z/OS Plan, and thus DB2 for z/OS server processing wanted to apply the same authorization behavior that users were accustomed to with DB2 Private Protocol. That is, remote DB2 for z/OS DRDA, like Private Protocol, client application privileges are also inherited from the associated DB2 for z/OS Plan Owner ID and this privilege inheritance has historically been honored by DB2 for z/OS servers relative to remote DB2 for z/OS client applications only.

Now that DB2 Private Protocol is being eliminated, this DB2 for z/OS server privilege inheritance behavior (relative to remote DB2 for z/OS DRDA client applications) is no longer applicable and is being eliminated for the benefit of consistent authorization behavior with respect to non DB2 for z/OS client applications.

Changes were made via APAR PM17665 to help users move to the new authorization environment however additional changes are required.

- Users need a more flexible environment.
  It may be difficult, and it may take time, for users to adjust their authorization rules to satisfy the new authorization environment. As a result, users require a mechanism to enable and disable this new authorization environment.

In DB2 for z/OS V8 and V9, the DSN6FAC PRIVATE_PROTOCOL configuration parameter can be used for this. If the old authorization environment is required by remote DB2 for z/OS applications, the PRIVATE_PROTOCOL parameter may be set to YES, however this also allows actual usage, perhaps accidental, of Private Protocol. There is no solution for DB2 for z/OS V8 and V9 users who wish to prevent the usage of Private Protocol yet also retain the old authorization behavior that their remote DB2 for z/OS (DRDA) applications may still depend on.

In DB2 10 for z/OS, there is no mechanism to enable or disable the new authorization environment. There is no solution for users to migrate to DB2 10 for z/OS that have remote DB2 z/OS (DRDA) client applications that may still depend on the old authorization behavior.

- Utilization of secondary group IDs.
  A primary authorization ID may be associated to secondary group IDs that are granted the necessary privileges, and these secondary group IDs are recognized relative to non DB2 for z/OS remote client application environments.
The goal is for DB2 for z/OS server systems to provide consistent authorization behavior for all remote DRDA client application environments, DB2 for z/OS and non DB2 for z/OS, yet the new authorization environment does not consider secondary group IDs for remote DB2 for z/OS DRDA client applications.

DB2 for z/OS server processing, relative to remote (via DRDA) DB2 for z/OS client applications only, is changed to provide additional enhancements for the benefit of moving to an environment that provides consistent authorization behavior with respect to remote non DB2 for z/OS client applications. Users need a more flexible environment.

In DB2 for z/OS V8 and V9, the DSN6FAC PRIVATE_PROTOCOL parameter is extended to allow for a new AUTH keyword. Specifying AUTH indicates that Private Protocol is disabled (like NO) yet still allows the old authorization behavior for the benefit of remote DB2 for z/OS DRDA client applications that may still rely on it.

In DB2 10 for z/OS, the PRIVATE_PROTOCOL parameter is being added to the DSN6FAC configuration macro. Specifying AUTH still allows the old authorization behavior for the benefit of remote DB2 for z/OS DRDA client applications that may still rely on it. A specification of NO is the default. Specifying YES is not supported in DB2 10 for z/OS.

Note:
The default DSN6FAC PRIVATE_PROTOCOL specification in DB2 for z/OS V8 and V9 is YES (which allows old authorization behavior), but since actual support of Private Protocol has been eliminated in DB2 10 for z/OS, the default behavior in DB2 10 for z/OS is NO (which prevents old authorization behavior).

All DB2 z/OS V8 and V9 users that are migrating to DB2 10 for z/OS with a DSN6FAC PRIVATE_PROTOCOL specification of YES (the default), or AUTH (with PM37300 applied), should be aware of this release incompatibility. It may be necessary for users to install PM37300 to their target DB2 10 for z/OS environment and insure that DSN6FAC PRIVATE_PROTOCOL=AUTH is specified.

Note:
DB2 10 for z/OS installation support for the PRIVATE_PROTOCOL parameter is provided in APAR PM38417. This APAR also provides installation support for the new PRIVATE_PROTOCOL AUTH keyword in DB2 for z/OS V8 and V9.

Utilization of secondary group IDs.
When the DB2 for z/OS server subsystem is configured to allow the new authorization behavior for remote DB2 for z/OS DRDA client applications, secondary group IDs will now be utilized in the authorization scheme and the Plan Name associated with
the remote DB2 for z/OS DRDA client applications will now be reported as DISTSERV.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM37300
SPECIAL CONDITIONS:
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ACTION

***Action for PM37300 (V10):
This PTF adds a new DB2 DSN6FAC subsystem parameter, PRIVATE_PROTOCOL, for optionally enabling the use of legacy private protocol related Plan Owner based authorization semantics. This is done for the benefit of remote DB2 for z/OS DRDA client applications, which were historically extended this same form of authorization, that may still rely on it. Valid settings are:
- AUTH: Allows legacy private protocol related Plan Owner based authorization semantics for the benefit of remote DB2 for z/OS DRDA client applications.
- NO (default): Disallows legacy private protocol related Plan Owner based authorization semantics.

Users should be aware that the DB2 10 for z/OS default behavior is different than that of DB2 for z/OS V8 or V9, and this constitutes a release incompatibility relative to DB2 10 for z/OS. When migrating to DB2 10 for z/OS from DB2 for z/OS V8 or V9, users should examine their V8 or V9 PRIVATE_PROTOCOL parameter specification. If the DB2 for z/OS V8 or V9 PRIVATE_PROTOCOL parameter is not specified, or if the YES or AUTH keyword is specified, then users may need to specify AUTH in their target DB2 10 for z/OS environment.

Users should also be aware that in environments where the legacy private protocol related Plan Owner based authorization semantics are disallowed, DB2 for z/OS server processing will now utilize the use of secondary group IDs to establish privileges for remote DB2 for z/OS DRDA client applications, and a Plan Name of DISTSERV will also be utilized.

Please see the PTF cover letter for information on using the PRIVATE_PROTOCOL parameter relative to remote DB2 for z/OS DRDA client applications.

To specify the PRIVATE_PROTOCOL setting after applying this PTF, modify your customized copy of DSNTIJUZ as follows:
1. Add the keyword parameter PRIVATE_PROTOCOL=<x>, where <x> is either NO or AUTH, to the invocation of the DSN6FAC macro in your customized copy of installation job...
DSNTIJUZ. Make sure to add a continuation character in column 72 if needed. If you omit adding PRIVATE_PROTOCOL here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

- Run the first two steps of the DSNTIJUZ job you modified.
- After the job completes, you must either use the -SET SYSPARM command or stop and restart DB2 for the change to take effect.

If you do not update your DSNZPxxx module after applying this PTF or do not load the updated module, DB2 will behave as if PRIVATE_PROTOCOL=NO were in effect.

----- COVER LETTER FOR PTF UK68652 ------------ 2/zerodot11//zerodot6/27

PROBLEM DESCRIPTION(S):

PM24723 -

* USERS AFFECTED: All DB2 users.

* PROBLEM DESCRIPTION: 1. Real storage monitoring is critical for system stability. DB2 private, shared, and common above the bar real storage consumption was previously unreported.

* 2. An ABEND04E RC00F9000C in CSECT DSN9SCNP could occur if a -DISPLAY TRACE(*) SCOPE(GROUP) command was issued.

* RECOMMENDATION:

Enhancements to DB2 are required.

1. The following real storage monitoring and management enhancements are introduced:

   a. IFCID225 is enhanced with new fields

      QW0225PriStg_Real
      QW0225PriStg_Aux
      QW0225ShrStg_Real
      QW0225ShrStg_Aux
      QW0225ShrStkStg_Real
      QW0225ShrStkStg_Aux
      QW0225ComStg_Real
      QW0225ComStg_Aux

      to track real and auxiliary storage consumption
for the private, shared, and common above the bar storage objects. In addition, field QW0225PT is added to track the number of active parallel child threads at the time the IFCID225 is written.

Please refer to external mapping macro DSNDQW03 for field offsets and full descriptions.

b. IFCID1 data section 9 mapped by external mapping macro DSNDQSST is enhanced to include field QSST_CONTSTOR_NUM

This field will record the number of 31-bit agent local pools contracted due to system configuration parameter CONTSTOR being enabled.

c. Real storage consumption for a given DB2 subsystem can now be controlled via 2 system configuration parameters. These system configuration parameters require PM37647 to be fully enabled.

REALSTORAGE_MANAGEMENT

This parameter will tell DB2 how to manage real frames that are backed but are not being used by the system. With this parameter set to ON, unused backed real frames will be discarded when possible. When this parameter is set to OFF, DB2 will only unback unused frames when critical real storage or auxiliary storage usage is detected. When this parameter is set to AUTO, DB2 will unback unused frames when the system begins to page. The default for this parameter is AUTO.

New messages DSNV516I and DSNV517I will be written when DB2 enters and exits real storage contraction mode as controlled by REALSTORAGE_MANAGEMENT.

REALSTORAGE_MAX

This parameter will bound this DB2 subsystem to the amount of GB of real and auxiliary storage.
specified in this parameter. DB2 will terminate if this threshold is reached.

New message DSNS003I will be written when DB2 approaches the threshold specified by REALSTORAGE_MAX. New message DSNS004I will be written to indicate relief from this condition.

2. -DISPLAY TRACE output may be split into multiple multi-line write to operator messages (MLWTO) to prevent an ABEND4E RC00F9000C in CSECT DSN9SCNP. If output is split, a new message DSNW198I will be written to flag the end of a MLWTO message. A new message DSNW199I will be written to mark the beginning of the related MLWTO message.

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APARS FIXED: PM24723
SPECIAL CONDITIONS:
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ACTION
1. z/OS apar OA35885 is required to fully enable all real storage functionality. Without this apar, system configuration parameter REALSTORAGE_MAX cannot accurately detect system real and auxiliary storage consumption. In addition, IFCID225 fields:

   QW225PriStg_Real
   QW225PriStg_Aux
   QW225ShrStg_Real
   QW225ShrStg_Aux
   QW225ShrStkStg_Real
   QW225ShrStkStg_Aux
   QW225ComStg_Real
   QW225ComStg_Aux

will not be populated without the z/OS support installed.

2. PM37647 is required to fully enable the system configuration parameters REALSTORAGE_MANAGEMENT and REALSTORAGE_MAX.

3. The mappings of IFCID225 and IFCID1 remain compatible with prior versions and no immediate change is required. Applications parsing these records will need to be changed if they are to fully exploit the new function.

4. Applications capturing -DISPLAY TRACE SCOPE(GROUP) output from a console may need to recognize the new DSNV198I and DSNV199I messages to ensure all output is properly...
captured. This should not pose immediate compatibility issues as the cases these messages are written currently result in an ABEND.

----- COVER LETTER FOR PTF UK68722 -------- 2011/06/28

PROBLEM DESCRIPTION(S):

PM31486 -

* USERS AFFECTED: All DB2 users who create tables with XML columns.

* PROBLEM DESCRIPTION: PM31486 provides pre-conditioning support for PM31487. Users who create tables with XML columns in a data-sharing environment may be affected.

* RECOMMENDATION:

PM31486 provides pre-conditioning support for PM31487. Users who create tables with XML columns in a data-sharing environment may be affected.

Users who are affected are those who will be creating tables with XML columns in a data-sharing environment, and who also intend to use new function delivered in PM31487 that is enabled through a new system parameter (ZPARM): XMLRANDOMIZE_DOCID.

Users who are affected by PM31486/PM31487 must apply this pre-conditioning APAR (PM31486) to all data-sharing members before the new function enabling APAR (PM31487) is applied to any data-sharing member.

Please refer to the PTF coverletter for PM31487 for a description of the new function being delivered.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM31486
SPECIAL CONDITIONS:

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MULTSYS:

PM31486 is a pre-conditioning APAR that includes toleration support for APAR PM31487. PM31487 delivers new function support for randomized XML DOCIDs.

Users who are not creating new tables with XML columns will not be affected by PM31486/PM31487.
Users who do not reassemble a DSNZPARM module with XML_RANDOMIZE_DOCID=YES (enabled by PM31487) will also not be affected by PM31486/PM31487.

For users who will create new tables with XML columns in a data-sharing group and intend to enable new parameter XML_RANDOMIZE_DOCID, this pre-conditioning APAR PM31486 must be applied to all data-sharing members before enabling APAR PM31487 is applied to any member.

PROBLEM DESCRIPTION(S):
PM31487 -
* USERS AFFECTED: All DB2 users who create tables with XML columns.
* PROBLEM DESCRIPTION: PM31487 adds new subsystem parameter XML_RANDOMIZE_DOCID which specifies that the DOCIDs for tables that are created with XML columns can be generated in random order instead of sequentially.
* RECOMMENDATION: PM31487 adds new subsystem parameter XML_RANDOMIZE_DOCID which indicates whether the DOCIDs for tables that are created with XML columns are to be generated in random order instead of sequentially.

Tables with XML columns and DOCIDs generated in random order may have a performance benefit when concurrent users are inserting XML simultaneously.

The new function takes effect when the DSNZPARM module is reassembled with XML_RANDOMIZE_DOCID=YES and put into effect.

Tables created after XML_RANDOMIZE_DOCID is set to YES will get DOCIDs generated in random order. Table created prior to applying this PTF, and tables created with XML_RANDOMIZE_DOCID set to NO will continue to have DOCIDs generated in sequential order.

The default value of XML_RANDOMIZE_DOCID is NO, which provides the same behavior for generating DOCIDs that DB2 has without applying this PTF. In other words, applying
this PTF will have no effect unless XML\_RANDOMIZE\_DOCID is set to YES.

APAR PM31486 provides pre-conditioning support for PM31487. Users who create tables with XML columns in a data-sharing environment may be affected.

Users who are affected are those who will be creating tables with XML columns in a data-sharing environment, and who also intends to use new function delivered in PM31487 that is enabled through a new system parameter (ZPARM): XML\_RANDOMIZE\_DOCID.

Users who are affected by PM31486/PM31487 must apply pre-conditioning APAR PM31486 to all data-sharing members before this new function enabling APAR PM31487 is applied to any data-sharing member.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM31487
SPECIAL CONDITIONS:

Users who are not creating tables with XML columns on data-sharing systems will not be affected by PM31486/PM31487.

Users who do not reassemble a DSNZPARM module with XML\_RANDOMIZE\_DOCID=\textit{YES} (enabled by this APAR PM31487) will also not be affected by PM31486/PM31487.

For users who will create new tables with XML columns in a data-sharing group and intend to enable new parameter XML\_RANDOMIZE\_DOCID, the pre-conditioning APAR PM31486 must be applied to all data-sharing members before enabling APAR PM31487 is applied to any member.

ACTION

This PTF adds a new DB2 subsystem parameter in DSN6SYSP called XML\_RANDOMIZE\_DOCID to specify whether DB2 should generate the DOCID values for XML columns sequentially or randomly. When a row is inserted into an XML table, DB2 automatically generates a DOCID to be used for clustering rows that belong to the same XML document. The DOCIDs for an XML table are generated sequentially or randomly according to the setting of this
parameter at the time the table was created. Valid settings are NO and YES:

- NO means that DB2 is to generate the values sequentially.
  ==> This is the default setting.

- YES means that DB2 generates the values in a randomized manner. This setting can be beneficial for performance when concurrent insert is expected.

XML_RANDOMIZE_DOCID is externalized on installation panel DSNTIP8 as RANDOMIZE XML DOCID.

In DB2 data sharing, it is recommended that all members use the same setting. It is not required to apply this PTF to all members of the group at the same time. However:

* The PTF for pre-conditioning APAR PM31486 must be applied to all members before this PTF is applied to any member

* When this PTF is applied to any member, it is recommended that the subsystem parameter (DSNZPxxx) module for the member use the same XML_RANDOMIZE_DOCID setting as all other members that have this PTF applied. See action (3) below for guidance.

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Copy updated DB2 installation panels to alternate libraries
(3) Update your customized copy of job DSNTIJUZ
(4) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

-------------------------------------------------------------------------------------------------  
(1) Update customized copies of DB2 installation CLIST members
-------------------------------------------------------------------------------------------------  
==> This action is required for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTS processed by job DSNTIJVC reside.

-------------------------------------------------------------------------------------------------  

Appendix A. HOLD DATA for PTFs incorporated in the product tape 125
(2) Copy updated DB2 installation panels to alternate libraries

This action is required for all V10 customers who maintain copies of the DB2 installation panels outside of SMP/E

This PTF modifies DB2 installation panels DSNTIP8 in the SDSNSPFP target library.

If you keep the DB2 installation panels in a different library then after applying this PTF, you need to copy the updated DSNTIP8 panel to that library.

(3) Update your customized copy of job DSNTIJUZ

This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter XML_RANDOMIZE_DOCID=<n>, where <n> is either NO or YES to the invocation of the DSN6SYSP macro in your customized copy of installation job DSNTIJUZ. Make sure to add a continuation character in column 72 if needed. If you omit adding XML_RANDOMIZE_DOCID here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET SYSPARM command or stop and restart DB2 for the change to take effect. In DB2 data sharing, it is recommended that all members use the same setting for XML_RANDOMIZE_DOCID.

(4) Update private copies of the DSNTIDxx CLIST input member

This action is required for all customers

This PTF adds an entry for XML_RANDOMIZE_DOCID to the CLIST default input members, DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. You need to add this entry to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following line:

XML_RANDOMIZE_DOCID CHAR G NO YES <n>
PROBLEM DESCRIPTION(S):

PM35428 -

* USERS AFFECTED: All DB2 9 for z/os and DB2 10 for z/os users *
* of -TERM UTILITY command, RECOVER utility, *
* and REPORT RECOVERY utility. *

* PROBLEM DESCRIPTION: 1. -TERM UTILITY and RECOVER UTILITY *
* insert wrong values for LOGICAL_PART *
* and OLDEST_VERSION in SYSIBM.SYSCOPY. *
* 2. REPORT RECOVERY incorrectly displays *
* 0001 for OLDEST_VERSION when the *
* actual value is -1. *

* RECOMMENDATION: Apply corrective PTF when available. *

1. -TERM UTILITY and RECOVER UTILITY are modified to set correct *
   default values for OLDEST_VERSION and LOGICAL_PART for *
   records they insert into SYSIBM.SYSCOPY. *
2. REPORT RECOVERY is modified to display -1 when OLDEST_VERSION *
   is -1.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM35428

ACTION

The PTF for APAR PM35428 has changed to print -1 instead of 0001 *
for OLDEST VERSION in the output for REPORT RECOVERY when the *
real value of OLDEST VERSION is -1. *
Customer applications which are sensitive to those values should *
be aware of the changes. *
For more information of the changes, please refer to the closing
text of APAR.

------- COVER LETTER FOR PTF UK69254 --------- 2011/07/12

PROBLEM DESCRIPTION(S):

PM36636 -

* USERs AFFECTED: All DB2 10 for z/OS REORG, and CHECK INDEX, *
* and REBUILD INDEX users who use DB2 Sort *
* for z/OS *

* PROBLEM DESCRIPTION: The REORG utility may run with reduced *
* performance because the resources *
* are not balanced well enough between *
* the data sort and index sort(s). *
* *
* The CHECK INDEX, and REBUILD INDEX *
* utility may fail with ABENDS878 *
* RC00000010 when using many parallel *
* sort tasks. *

* RECOMMENDATION: Apply corrective PTF when available *

When the REORG utility is executing without unload/reload partition parallelism, the available resources in data spaces and memory objects were not balanced well enough between the data sort and the index sort(s). This could result in reduced overall performance, especially if not all available resources were actually used.

The calculation for memory use below the line did not take into account all possible memory users, so the degree of parallelism may have been selected higher than the system could support for the CHECK INDEX, or REBUILD INDEX utility.

The REORG utility was changed to assign data spaces and memory objects to the data sort and index sorts in a more balanced way when running with DB2 Sort.

The CHECK INDEX and REBUILD INDEX utilities were changed to take all users of below the line memory into account when calculating the degree of parallelism when running with DB2 Sort.

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APARS FIXED: PM36636
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ACTION
The PTF for APAR PM36636 has modified CSECTs in both the
DSNUT1/01 and DSNUTIL/A load modules, affecting the utility batch and DB2 DBM1 address spaces. After the PTF has been applied, it will become active in the utility batch address space immediately upon job submission, while it will not take effect in the DB2 DBM1 address space until DB2 is stopped and started.

The PTF does not have to be applied to all members in a data sharing environment simultaneously, and may be staged across each member. However, until the fix is active in both the utility batch and DB2 DBM1 address spaces, the problem the PTF addresses will not be resolved.

------ COVER LETTER FOR PTF UK6216 ---------- 2011/07/13

PROBLEM DESCRIPTION(S):
PM31180 -

*************************************************************************************************************************
* USERS AFFECTED: ALL DB2 9 FOR z/OS USERS OF -TERM UTIL *
* COMMAND AND ALL DB2 10 FOR z/OS USERS *
* OF RECOVER TOCOPY AND FLASHCOPY IMAGE *
* COPIES. *
*************************************************************************************************************************

*************************************************************************************************************************
* PROBLEM DESCRIPTION: PROBLEM 1: IN DB2 9, -TERM UTILITY *
* COMMAND IS NOT PROCESSED CORRECTLY *
* DURING RECOVER UTILITY, LEADING TO *
* RECP NOT BEING SET AS EXPECTED. *
* PROBLEM 2: IN DB2 10, RECOVER *
* TOCOPY UTILITY SPECIFYING A DATA SET *
* NAME MADE BY A FLASHCOPY IMAGE COPY *
* Fails with ABEND04E RC00C200F7. *
*************************************************************************************************************************

*************************************************************************************************************************
* RECOMMENDATION: *
*************************************************************************************************************************

This APAR addresses two unrelated problems.

Problem 1: While RECOVER utility to a prior point in time is running, a -TERM UTIL command is issued during LOGCSR phase, and appears to complete successfully. But because of incorrect return code handling, the -TERM is not processed until the recovery is complete, leading to unexpected results. In the reported case, RECP was not set on the target object as expected; it should have been according to the timing of the -TERM command. Note this problem does not occur in DB2 10.

Problem 2: A FlashCopy image copy was made of an entire partitioned table space with DSNUM ALL. Then, a RECOVER TOCOPY was run on the table space with DSNUM ALL and the data set name specified was taken from the SYSCOPY record for the table space-level (dsnum 0) FlashCopy that was made. The job abended ABEND04E RC00C200F7 (I/O error due to unexpected page number) because the data set name used was
actually for the FlashCopy image copy of only a single partition. This data set name was written incorrectly to SYSCOPY as though it was for the entire table space. When it was specified for RECOVER TOCOPY of the entire table space, the abend occurred. The data set was unusable for a TOCOPY recovery other than for that part alone, and should have been prohibited. This problem can occur for partitioned objects with more than one partition, and for linear objects containing more than one linear piece.

For the first problem, return code handling was corrected in RECOVER utility code where it checks for and processes -TERM UTILITY commands. For the second problem, code was changed to ensure that an invalid data set name won’t be written to the syscopy record for a FLASHCOPY IMAGE COPY. In these cases, a string of the form database-name.space-name will be written to the DSNAME field instead. Since RECOVER with DSNUM ALL is prohibited in the reported scenario (DSNUM n must be used), with this fix, RECOVER TOCOPY DSNUM ALL will now receive MSGDSN519I (TOCOPY DATASET NOT FOUND).

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM31180
SPECIAL CONDITIONS:

ACTION
After applying the fix for PM31180 in DB2 10 for z/OS, FLASHCOPY IMAGE COPIES of partitioned objects with more than one partition or of linear objects containing more than one piece will insert a string of the form database-name.space-name into the DSNAME (data set name) column of the SYSCOPY record it writes for the FLASHCOPY record with DSNUM 0, similar to SYSCOPY records that are currently written for various types of non-backup activity. This is done to prevent invalid data set names from being written in these records. Users or automated programs sensitive to the contents of SYSIBM.SYSCOPY are advised.

------ COVER LETTER FOR PTF UK69264 ------------ 2011/07/15

PROBLEM DESCRIPTION(S):
PM33871 -

* USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS *
* users of the following stored procedures: *
* - SYSPROC.ADMIN_JOB_CANCEL *
* - SYSPROC.ADMIN_JOB_FETCH *
* - SYSPROC.ADMIN_JOB_QUERY *
* - SYSPROC.ADMIN_JOB_SUBMIT *

DB2 10 for z/OS Value Unit Edition Program Directory
PROBLEM DESCRIPTION: This PTF enhances the following DB2-supplied stored procedures:
- SYSPROC.ADMIN_JOB_CANCEL
- SYSPROC.ADMIN_JOB_FETCH
- SYSPROC.ADMIN_JOB_QUERY
- SYSPROC.ADMIN_JOB_SUBMIT
- SYSPROC.ADMIN_COMMAND_UNIX

to be called with a null user ID and password to indicate that the primary authorization ID of the stored procedure should be used instead.

RECOMMENDATION: APPLY PTF

This PTF enhances the DB2-supplied stored procedures SYSPROC.ADMIN_JOB_CANCEL, SYSPROC.ADMIN_JOB_FETCH, SYSPROC.ADMIN_JOB_QUERY, SYSPROC.ADMIN_JOB_SUBMIT, and SYSPROC.ADMIN_COMMAND_UNIX to be called with a null user ID and password to indicate that the primary authorization ID of the stored procedure should be used instead.

The stored procedures ADMIN_JOB_CANCEL, ADMIN_JOB_FETCH, ADMIN_JOB_QUERY, ADMIN_JOB_SUBMIT, and ADMIN_COMMAND_UNIX are enhanced to allow these stored procedures to be called with a null user ID and password which would then indicate the primary authorization ID of the stored procedure should be used instead.

These stored procedures will continue to support non-null user ID and password.

In z/OS 1.12 and earlier, the authorization ID associated with the stored procedure address space must have daemon authority if these stored procedures are called with a null user ID and password.

In z/OS 1.13 and higher, if these stored procedures are called with a null user ID and password, the authorization ID associated with the stored procedure address space must either have daemon authority or must be authorized to the 'BPX.SRV.userid' SURROGATE profile, where 'userid' is the primary authorization ID of the stored procedure. For z/OS 1.13, you must install APAR OA36062 when the authorization ID associated with the stored procedure address space does not have daemon authority.

The following steps can be taken by the RACF security...
administrator to authorize SYSDSP to the SURROGATE profile
BPX.SRV.USER01 (assuming that the resources listed below
were previously defined):

```
PERMIT BPX.SRV.USER01 ID(SYSDSP) ACCESS(READ)
CLASS(SURROGAT)
```

where

- SYSDSP is the authorization ID associated with the stored
  procedure address space
- USER01 is the primary authorization ID of the stored
  procedure

Note: Daemon authority is given to any superuser that is also
permitted to the BPX.DAEMON FACILITY class profile.
If BPX.DAEMON FACILITY class profile is not defined then
all superusers are considered to have daemon authority.

Due to this enhancement, these stored procedures will no longer
return 12 in the RETURN_CODE output parameter, nor message
DSN6011I in the MSG output parameter when they are called with
a null user ID and password. Therefore, any application calling
these stored procedures with null user ID and password and
expecting these stored procedures to return an error must be
modified to screen for null user ID and password before calling
these stored procedures.

**COMPONENT:** 5740-XYR00-HDBAA10
**APARS FIXED:** PM33871
**SPECIAL CONDITIONS:**
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**ACTION**
This PTF enhances the DB2-supplied stored procedures
SYSPROC.ADMIN_JOB_CANCEL, SYSPROC.ADMIN_JOB_FETCH,
SYSPROC.ADMIN_JOB_QUERY, SYSPROC.ADMIN_JOB_SUBMIT,
and SYSPROC.ADMIN_COMMAND_UNIX to be called with a
null user ID and password to indicate that the primary
authorization ID of the stored procedure should be used
instead.

Due to this enhancement, these stored procedures will no longer
return 12 in the RETURN_CODE output parameter, nor message
DSN6011I in the MSG output parameter when they are called with
a null user ID and password. Therefore, any application calling
these stored procedures with null user ID and password and
expecting these stored procedures to return an error must be
modified to screen for null user ID and password before calling
these stored procedures.

To exploit this enhancement in z/OS 1.13 when the authorization
ID associated with the stored procedure address space does not have daemon authority, APAR OA36062 must be installed, and the authorization ID associated with the stored procedure address space must be authorized to the correct SURROGATE profile. See the PTF cover letter for more information on how to authorize the authorization ID associated with the stored procedure address space to the correct SURROGATE profile.

See the PTF cover letter for more information regarding this PTF.

**********************************************************************
Actions for customers who are already using DB2 V10:
**********************************************************************

Run installation job DSNTIJRT to bind modified stored procedures packages and grant access on new stored procedures packages

**********************************************************************
* This action is required for all V10 customers
**********************************************************************

Run your customized copy of job DSNTIJRT with MODE(INSTALL)
to bind the stored procedures SYSPROC.ADMIN_JOB_CANCEL,
SYSPROC.ADMIN_JOB_FETCH, SYSPROC.ADMIN_JOB_QUERY,
SYSPROC.ADMIN_JOB_SUBMIT, and SYSPROC.ADMIN_COMMAND_UNIX
packages, and to grant access on the new
SYSPROCADMINJOB_CANCEL and SYSPROCADMINJOB_QUERY
packages.

If you have previously run DSNTIJRT, rerunning with
MODE(INSTALL) will cause it to detect and correct only
missing and downlevel SQL objects and packages for
DB2-supplied routines.

Note: Use MODE(INSTALL-PREVIEW) to obtain a report of any
changes without processing them. The PREVIEW option will
also generate and output a JCL job to the JCLOUT DD that
contains any SQL and bind statements to be processed.
After reviewing the changes, either rerun DSNTIJRT without
the PREVIEW option or customize and run the generated job.

------------------------------------------------------------------

----- COVER LETTER FOR PTF UK70848 --------- 2011/08/30

PROBLEM DESCRIPTION(S):
PM43676 -

**********************************************************************
* USERS AFFECTED: All DB2 9 and DB2 10 for z/OS users of
  native SQL procedures. *
**********************************************************************
PROBLEM DESCRIPTION: An incorrect output or unexpected SQLCODEs, such as -3/zerodot5, may result from the execution of a native SQL procedure which has been created with a CREATE or ALTER PROCEDURE statement with a SQLWARNING.

RECOMMENDATION:

An incorrect output or an unexpected SQLCODEs, such as -305, may result from the execution of a native SQL procedure which has been created with a CREATE or ALTER PROCEDURE statement with a SQLWARNING.

EXAMPLE
=======

1. In V10, create a V9 Explain Table.
2. Create the following table and SQL native procedure.

   CREATE TABLE T1 (C1 INT NOT NULL);
   INSERT INTO T1 VALUES (1/zerodot/zerodot);

   CREATE PROCEDURE MYTEST (IN INVAR INT, OUT OUTVAR INT)
   LANGUAGE SQL
   WITH EXPLAIN
   BEGIN
   SELECT T1.C1 INTO OUTVAR
     FROM T1
     WHERE T1.C1 = INVAR;
   END

   This procedure is created successfully with a SQLWARNING 20520.

3. In an application, call MYTEST procedure.

   CALL MYTEST(100, HVOUT);

   HVOUT does not contain an expected results and the CALL statement receives SQLCODE -305.

   DB2 is modified to produce correct results if the native SQL procedure is created or altered with a SQLWARNING.

Additional Keywords: SQLNATIVESQLPL SQLINCORR SQLCODE305
ACTION
PM43676 corrects a problem of incorrect output or unexpected SQLCODEs, such as -305, from executing the native SQL procedure which has been created with CREATE or ALTER PROCEDURE statement with a SQLWARNING.

After the application of this PTF, ALTER PROCEDURE REGENERATE is required for each native SQL procedure that is affected. Review the PTF cover letter to determine which, if any, native SQL procedure could be affected by this change.

PROBLEM DESCRIPTION(S):
PM36936 -

* USERS AFFECTED: All DB2 users of REORG or ALTER TABLE. *

* PROBLEM DESCRIPTION: Customer may receive the following ABENDS: *

1. ABEND04E RC00E70005 DSNXIPND P080 for REORG concurrent with DML SQL *
   during REORG *

2. ABEND0C4 RC00000038 DSNIRFNX +F67A during REORG *

3. ABEND04E RC00C90101 DSNIMOFR :5384 during REORG *

* RECOMMENDATION: *

DB2 has the following problems:

1. When REORG to materialize pending alter is running concurrently with DML on the same table space, a reserved DBID/OBID could be incorrectly used which causes ABEND04E RC00E70005 DSNXIPND P080.

2. After a table was altered to hash access, an internal control block to support hash access may not be set, as a result, subsequent REORG could hit the abend DSNIRFNX +F67A.
3. After a table space is in REORP state, ALTER TABLE ADD COLUMN NOT NULL WITH DEFAULT does not put the table space in AREO state as expected. A subsequent ALTER TABLE ALTER COLUMN DROP DEFAULT is allowed to execute instead of failing with SQLCODE -650. As a result, REORG abends because DB2 could not find the default value.

DB2 has been changed to correct the problems.

1. Ensure that any reserved DBID/ObID is not incorrectly reused to avoid ABEND04E RC00E70005 DSNXIPND 0080

2. After a table was altered to hash access, DB2 code has been changed to ensure the internal control block for hash access is set to avoid ABEND0C4 RC0000038 DSNIRFNX +F67A during REORG.

3. For REORP table space, ALTER table alter column drop default will fail with SQLCODE -650 if the column is added by ALTER TABLE ADD COLUMN. If alter table alter column drop default has already been done before applying this fix, drop and re-create the table could fix the REORG ABEND04E RC00C90101 DSNIMOF 5384.

Additional Keywords: SQLALTER SQLCODE650

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APARS FIXED: PM36936
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MULTSYS:
PM36177 is a pre-conditioning APAR that includes changes to support the enhancement for IRLM timeout value for DDL statements that will be enabled via APAR PM37660. At this time, all of the changes are transparent to the user. In a data sharing group, this pre-conditioning APAR should be applied to all members before the enabling APAR is applied to any member. The enhancement is not enabled until the enabling APAR is applied.

DOCUMENTATION:
With this APAR fix, after a table space is in REORP state, ALTER TABLE ALTER COLUMN DROP DEFAULT will fail with SQLCODE -650 if the column is added by ALTER TABLE ADD COLUMN. Customer needs to change their application to expect SQLCODE -650 for the ALTER TABLE DROP DEFAULT.

-------- COVER LETTER FOR PTF UK70647 ---------- 2011/09/07

PROBLEM DESCRIPTION(S):
PM27835 -
**USERS AFFECTED:** All DB2 for z/OS users.

**PROBLEM DESCRIPTION:** DB2 will support a TCB level ACEE for the authid used in an IMS transaction that calls DB2. This will permit RACF authorization of DB2 resources accessed in the IMS transaction.

**RECOMMENDATION:**

DB2 will support a TCB level ACEE for the authid used in an IMS transaction that calls DB2. This will permit RACF authorization of DB2 resources accessed in the IMS transaction.

DB2 module DSN3SI30 has been modified to use the TCB level RACF ACEE for an IMS transaction.

The DB2 Administration Guide will be updated to state that IMS transactions can exploit RACF authorization of DB2 objects if the following tasks are completed:

- IMS must be configured to use APPC/OTMA security full or use the Build Security Environment DFSBSEX0 security exit to return RC04 in register 15 to tell IMS to create the ACEE in the dependent region.
- The RACF DB2 security exit DSNX0XAC must be installed.
- DB2 resources accessed by IMS transactions must be defined in a RACF profile and RACF permits must be created for IMS authorization IDs.

The DB2 Administration Guide, Appendix A 'Consideration for the access control authorization routine. When DB2 cannot provide an ACEE' will have the following sentence added - An ACEE is available to DB2 for an IMS transaction if IMS has been configured to use APPC/OTMA security full or the DFSBSEX0 security exit has been configured to return RC04 in register 15 to tell IMS to create the ACEE in the dependent region.

The RACF Access Control Module Guide, Chapter 10 section 'When DB2 cannot provide an ACEE' contains this restriction. 1. The ACEE address is not passed for IMS transactions. This restriction will be changed to say - The ACEE may not be available for IMS transactions unless IMS has been configured to use APPC/OTMA security full or the DFSBSEX0 security exit has been configured to return RC04 in register 15 to tell IMS to create the ACEE in the dependent region.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM27835
SPECIAL CONDITIONS:
The DB2 Administration Guide will be updated to state that IMS transactions can exploit RACF authorization of DB2 objects if the following tasks are completed.
- IMS must be configured to use APPC/OTMA security full or use the Build Security Environment DFSBSEX0 security exit to return RC04 in register 15 to tell IMS to create the ACEE in the dependent region.
- The RACF DB2 security exit DSNX@XAC must be installed.
- DB2 resources accessed by IMS transactions must be defined in a RACF profile and RACF permits must be created for IMS authorization IDs.

The DB2 Administration Guide, Appendix A 'Consideration for the access control authorization routine. When DB2 cannot provide an ACEE' will have the following sentence added - An ACEE is available to DB2 for an IMS transaction if IMS has been configured to use APPC/OTMA security full or the DFSBSEX0 security exit has been configured to return RC04 in register 15 to tell IMS to create the ACEE in the dependent region.

The RACF Access Control Module Guide, Chapter 10 section 'When DB2 cannot provide an ACEE' contains this restriction. 1. The ACEE address is not passed for IMS transactions. This restriction will be changed to say - The ACEE may not be available for IMS transactions unless IMS has been configured to use APPC/OTMA security full or the DFSBSEX0 security exit has been configured to return RC04 in register 15 to tell IMS to create the ACEE in the dependent region.

--- COVER LETTER FOR PTF UK71136 -------- 2011/09/12 ---

PROBLEM DESCRIPTION(S):
PM43179 -

* USERS AFFECTED: Users of the DB2 coprocessor for z/OS *
* using file reference variables for XML data *
* types (XML AS CLOB-FILE, XML AS BLOB-FILE, *
* or XML AS DBCLOB-FILE host variable in a *
* COBOL application, XML AS CLOB_FILE, *
* XML AS BLOB_FILE, or XML AS DBCLOB_FILE *
* host variable in a C/C++ or PL/I *
* application). 910 A10 *

* PROBLEM DESCRIPTION: For a file reference host variable *
* with XML data type (XML AS CLOB-FILE *
* XML AS BLOB-FILE or XML AS DBCLOB-FILE *
* in a COBOL application, *
* XML AS CLOB_FILE, XML AS BLOB_FILE *
* or XML AS DBCLOB_FILE in a C/C++ or *
* PLI application), DB2 may incorrectly *
* issue SQLCODE -171 during *
* bind time. *

**********************************************************************
* RECOMMENDATION: *
**********************************************************************
The following COBOL example illustrates the problem:

01 HV-XML-CLOB-FILE SQL TYPE IS XML AS CLOB-FILE.
EXEC SQL
   INSERT INTO T1 (DOCID, DOC)
   SELECT X.ID, XMLDOCUMENT(X.DOC)
   FROM XMLTABLE('//item' PASSING HV-XML-CLOB-FILE
   COLUMNS
      ID INTEGER PATH 'itemID',
      DOC XML PATH '.'
   ) AS X
END-EXEC.

When binding the DBRM generated by the DB2 coprocessor, DB2 incorrectly issues SQLCODE -171.
COBOL APAR PM43791 is required as well as this DB2 APAR to fix the problem in a COBOL application.

Additional keywords: DB2COPROCESSOR SQLCODE171 SQLHOSTVAR SQLLOB
The DB2 coprocessor code is modified so that the unexpected SQLCODE -171 is not issued for the valid use of a file reference variable with XML data type.

COMPONENT: 5740-XYR00-HDBAAI0
APARS FIXED: PM43179
SPECIAL CONDITIONS:
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ACTION
PM43179 corrects a problem of SQLCODE -171 during bind when using a file reference host variable of XML data type in an application prepared by the DB2 coprocessor.
To make this fix effective for a static application, it must be recompiled after application of this PTF.

If the application is a COBOL application, the following COBOL PTFs may also be required in addition to this PTF to fix the problem:

UK71077 Enterprise COBOL for z/OS V3R4  H26L340
UK71078 Enterprise COBOL for z/OS V4R2  HADB420

Appendix A. HOLD DATA for PTFs incorporated in the product tape  139
There is no problem applying the PTF for PM43179 without the COBOL PTF. However, the problem described in PM43179 will not be fixed for COBOL applications until the corresponding COBOL PTF is also applied.

------- COVER LETTER FOR PTF UK71486 2011/09/14

PROBLEM DESCRIPTION(S):

1. **ABEND4E RC00E70005** may occur at DSNXOFM M120 when the column access control is activated for a table that is referenced in a nested table expression.

2. **ABEND4E RC00E70005** may occur at DSNXOOS2 M180 or at DSNXRNWM M190 when the column access control is activated for a table and the masked column is referenced in the argument of an OLAP aggregate-function.

3. SQLCODE -20478, reason code 23 is missing when the column access control masked column is referenced in the partitioning-expression or in the sort-key-expression of an OLAP aggregate-function.

RECOMMENDATION:
1. ABEND/zerodot4E RC00E70005 may occur at DSNXOFL M120 when the column access control is activated for a table that is referenced in a nested table expression.

For example:

Assuming the column access control is activated for table T1 and an enabled column mask exists for column SHIPMENT --

```
SELECT * FROM (SELECT DISTINCT SHIPMENT, WEIGHT
    FROM T1
    WHERE TAX BETWEEN 0.06 AND 0.08
    FETCH FIRST 100 ROWS ONLY
  ) X(C1, C2)
WHERE X.C1 LIKE 'CA%'
FETCH FIRST 10 ROWS ONLY
ORDER BY X.C2;
```

When DB2 applies the column mask to column SHIPMENT, it causes a 04E abend.

2. ABEND/zerodot4E RC00E70005 may occur at DSNXOOS2 M180 or at DSNXRWND M190 when the column access control is activated for a table and the masked column is referenced in the argument of an OLAP aggregate-function.

For example:

Assuming the column access control is activated for table LINEITEM and an enabled column mask exists for column SHIPINSTRUCT --

```
SELECT SHIPDATE,
    MAX(SHIPINSTRUCT)
OVER(ORDER BY SHIPDATE ASC NULLS FIRST
    RANGE BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW
  ) MAX
FROM LINEITEM
WHERE LINESTATUS = 'F'
ORDER BY 1,2;
```

When DB2 applies the column mask to the argument of the OLAP MAX aggregate function, it causes a 04E abend.

3. SQLCODE -2/zerodot478 reason code 23 is missing when the column access control is activated for a table and the masked column...
column is referenced in the partitioning-expression or in the sort-key-expression of an OLAP aggregate-function.

For example:

Assuming the column access control is activated for table LINEITEM and an enabled column mask exists for column SHIPDATE --

```
SELECT SHIPDATE,
       MAX(SHIPINSTRUCT)
OVER (ORDER BY SHIPDATE ASC NULLS FIRST
       RANGE BETWEEN UNBOUNDED PRECEDING AND
       CURRENT ROW
       ) MAX
FROM LINEITEM
WHERE LINESTATUS = 'F'
ORDER BY 1, 2;
```

When DB2 tries to apply the column mask, it fails to issue SQLCODE -2/zerodot478 reason code 23 for column SHIPDATE inside the OVER ORDER BY sort-key-expression and the column mask is not applied to SHIPDATE.

DB2 has been modified to handle the above examples correctly.

Additional keywords: SQLMASK SQLCOLUMNMASK SQLACCESSCONTROL SQLOLAP SQLOLAPAGGREGATE SQLOLAPSORTKEY SQLOLAPPARTITION

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PK94822
SPECIAL CONDITIONS:
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DB2BIND:
***Action for PK94822:

See PK94822 APAR/PTF text for additional information about why a REBIND is necessary.

PK94822 corrects the following problems:

1. ABEND04E RC00E70005 may occur at DSNX0OS2 M180 or at DSNXRNWND M190 when the column access control is activated for a table and the masked column is referenced in the argument of an OLAP aggregate-function.

2. SQLCODE -20478 reason code 23 is missing at bind or prepare time when the column access control is activated for a table and the masked column is referenced in the
partitioning-expression or in the sort-key-expression of an OLAP aggregate-function.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

------ COVER LETTER FOR PTF UK72195 ------------ 2011/09/23

PROBLEM DESCRIPTION(S):

PM45659 -

*****************************************
* USERS AFFECTED: All IRLM 2.1(HIR2101), IRLM 2.2(HIR2220) *
* and IRLM 2.3(HIR2230) DB2 users data sharing *
* SYSPLEXDS. *
*****************************************
* PROBLEM DESCRIPTION: DB2 restart failure after IRLM PTFs for *
* apars PM28625/PM38328 are applied. *
* IRLM failed during its global *
* initialization unable to join a data *
* sharing group. IRLM MSGDXR158I and *
* MSGDXR133I are issued on the console. *
*****************************************
* RECOMMENDATION: INSTALL CORRECTIVE SERVICE FOR APAR/PTF *
*****************************************

A data sharing member may be unable to join the group after PTFs for PM28625/PM38328 are applied to all existing members of the group. MSGDXR158I is issued by existing members rejecting the peer connection.

DXR158I irlmmA CANNOT COEXIST WITH AT LEAST ONE EXISTING MEMBER.
ALL DBMS IDENTIFY REQUESTS TO THAT IRLM WILL BE DENIED.
The member which failed to restart would ABENDU2025 after issuing MSGDXR133I.

DXR133I irlmmmB TIMEOUT DURING GLOBAL INITIALIZATION
WAITING FOR irlmmA

COMPONENT: 5695-1640-HIR2230
APARS FIXED: PM45659
SPECIAL CONDITIONS:

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ACTION
PM45659

PM45659 is a fix for PE PTFs for apars PM28625 or PM38328
APAR | IRLM210 | IRLM220 | IRLM230
----------------------------------------
PM28625 | UK65360 | UK65361 | UK65362
PM38328 | UK69136 | UK69137 | UK69138
PTFs for PM38328 supercedes PTFs for PM28625.

PTFs for PM45659 can be applied in a rolling way. A group restart is not necessary. Until all members in a datasharing group have this fix ON, the group will continue to operate at the lowest IRLM function level that will be using the old or new hashing mechanism. When the last member is bounced with the PM45659 fix and joins the group where all existing members already have PM45659 fix ON, it will trigger the lock structure rebuild for coexistence. The group will start operating with the hashing mechanism that was used prior to PM28625/PM38328 changes, after the lock structure rebuild is successfully completed.

PM45659 introduces a new function level 29 for IRLM. Until all members of the data sharing group get this fix installed, the group will be operating at function level < 29. Once the whole group is operating at function level 29, IRLM will switch the whole group to use the old hashing method which was in place before the PM28625/PM38328 changes.

Installation Notes for PM45659

A. If you have NOT applied PE PTFs for apars PM28625 or PM38328 for any IRLM releases on any members in your datasharing group, there is no restriction in applying the PTFs for PM45659. There is NO NEED to read further.

B. !!! ATTENTION REQUIRED !!!

If you have PE PTFs for apars PM28625 or PM38328 installed, PLEASE READ the following note carefully, else you could run into following problems in a data sharing environment.
- a member being unable to rejoin the group.
- exposure to data corruption if PE PM28625 is installed without its fixing APAR PM38328 on some members in a group.

Please contact IBM support with any questions.

If you have applied PE PTFs for apars PM28625 or PM38328 on your data sharing members, you could perform rolling install of PM45659. Until the last member is refreshed with PM45659, the remaining members can join and leave the group without any restrictions. When the last IRLM member in the group is upgraded with PM45659 and is restarted, the IRLM group function level is upgraded to function level 29 and members without PM45659 will not be allowed to join the group.
Note #1

In the event of a group restart where not all members had PM45659 applied, there are special guidelines and restrictions.
If a member with PM45659 comes up first in the group during the restart, it will block those members which have PE PTFs for PM28625 or PM38328 on.
If a member with PE PTFs for PM28625 /PM38328 comes up first then there are no restrictions in other members having PM45659 applied to rejoin the group.

Corrective action:
Apply PM45659 fix or restore the PTFs for apars PM28625/PM38328 on these failing members in order to have them join the group. A new member NOT having PE PTFs for apars PM28625/PM38328 would be able to join and leave the group without any restrictions.

Note #2
With PE PTFs for apars PM28625 or PM38328 installed on all members of a datasharing group, the IRLM function group level is 28. While the existing IRLM group function level remains at 28 IRLM group is using new hashing mechanism. IRLMs in the group will not allow any member with function level less than 28 to join the group (i.e. those with IRLM maintenance level prior to PM28625/PM38328 changes).

Corrective action:
Apply PM45659 fix on those members which failed to restart, or terminate all members and start a member first which does not have PE PTFs for apars PM28635/PM38328 applied.

ACTION
***********************************************************************************************************************************************
PM38328
*******************************************************************************************************************************************************
APAR PM38328 corrects an error in PM28625 which could cause incorrect lock resource hash values in IRLM. Please follow the installation guidelines below, which match your current environment.

PM28625 ALREADY INSTALLED ON ALL MEMBERS
----------------------------------------
If PM28625 is already applied to all members in a group, the group should be functioning at level 28 after the successful rebuild of the lock structure which should have occurred when the last member was upgraded to PM28265. You can apply PM38328 if you upgraded all members at once, there would not be a rebuild necessary, so none would have been triggered.
You can apply PM38328 by recycling one or more members at a time or all at one time. The group will still be functioning at level(28) after PM38328 is applied. There will be no rebuild of the CF lock structure occurring when the last member is upgraded with PM38328.

INSTALLATION OR OPERATIONAL RESTRICTIONS:
There are no restrictions associated with this install.

PM28625 NOT INSTALLED ON ANY MEMBER
-----------------------------------
Since PM38328 supercedes PM28625 and corrects the hash algorithm error, it may be applied by recycling one or more members at a time. The old hash algorithm is used until all members have PM38328 applied and the group function level rebuild of the CF lock structure has occurred. If all members are brought down and upgraded at the same time, no rebuild of the lock structure is necessary and none will be triggered.

INSTALLATION OR OPERATIONAL RESTRICTIONS:
Members without PM38328 will be allowed to join the group under the following conditions:
The first member to join the group does not have PM38328 applied AND either:
1. there is always at least one member in the group without PM38328 applied
OR
2. no member with PM38328 applied has joined the group since the last member without PM38328 left the group.

Once the last member without PM38328 leaves the group so that all remaining members have PM38328 applied, if another member with PM38328 joins the group resulting in a REBUILD of the CF lock structure, the function level will change to 28 and members without PM38328 will no longer be allowed in the group.

If you are forced into a GROUP RESTART before all members have been upgraded to PM38328, you have two choices:
1. Start one member which does NOT have the PM28625/PM38328 fix on, first. This will preset the data sharing group level to the lower value (i.e. without PM28625/PM38328 fix). Bring up the rest of the group members with or without the PM28625/PM38328 fix applied, in any order.
OR
2. Upgrade all members immediately so that the group comes up with all members having PM38328 applied.
GENERAL INFORMATION:
----------------------
IRLM function level is being increased in PM28625/PM38328 fix. Until all members of a data sharing group have this fix on, the group will continue to operate at a lower level which will be using the old hashing mechanism in IRLM. The new hashing method implemented in PM28625 will be enabled only when all of the members in a data sharing group have PM28625/PM38328 fix available. The last member joining the group where all other members already have the fix ON, will trigger the lock structure rebuild for group function change. The group will start operating with the new hashing mechanism after a successful rebuild indicated by the following messages:
Again, if the group was upgraded all at one time, there will not be a rebuild of the CF lock structure.

DXR156I irlmnm REBUILDING LOCK STRUCTURE TO CHANGE THE GROUP FUNCTION LEVEL.

DXR146I irlmnm REBUILD OF LOCK STRUCTURE COMPLETED SUCCESSFULLY WITH nM LOCK TABLE AND nnnn RECORD LIST ENTRIES

>>>> IMPORTANT >>>
Once a group is operational with all members having PM38328 applied, the group would be using the new hashing mechanism. From this point forward, any new member attempting to join the group WITHOUT the fix, will NOT be allowed in the group. This is done to protect data integrity as all members in a group are required to use the same hashing algorithm. After the REBUILD of the CF lock structure is completed or your group was started with all members having PM38328 applied, you can NOT have any member fall back to the old code level.

If you need to fall back to the old level for any reason, you will need to quiesce the whole group normally or otherwise terminate the group. You may then start the first member of the group without PM38328 applied and the group will function using the old hash algorithm.

If a new member, which does not have PM28625/PM38328 fix applied, attempts to join a group where all members have PM28625/PM38328 fix already applied and are using the new hashing algorithm, IRLM will fail the new member's initialization.

Existing members of the data sharing group will issue MSGDXR158I.
DXR158I ir1mnA CANNOT COEXIST WITH AT LEAST ONE EXISTING MEMBER. ALL DBMS IDENTIFY REQUESTS TO THAT IRLM WILL BE DENIED.

The down level member failing to join the group will issue MSGDXR133I for each existing member it is waiting on.

DXR133I ir1mnB TIMEOUT DURING GLOBAL INITIALIZATION
WAITING FOR ir1mnA

This down level member will finally time out and IRLM will produce ABENDU2/zerodot25.

There is no restriction for coexistence of members with different DB2/IRLM release levels, as long as all of them have the PM28625/PM38328 fix on.

******************************************************************************
ACTION
******************************************************************************
PM28625
******************************************************************************

This APAR fix could be applied to all members of a datasharing group in a rolling fashion. The new functionality will be enabled only when all of the members have this fix ON.

A group restart would be fine as long as all of the members in the group have this fix applied. IRLM group function level is being raised up with this fix. If a new member which does not have this fix applied and attempts to join this group which is operating at higher level, IRLM initialization will fail.

In cases where some of the datasharing members have the fix applied and some of them don't have it, there are special steps to be taken in order do a group restart in any event. Users would need to bring an old member which doesn't have the fix on, first in the group, followed by rest of the members in that group.

If the group restart is attempted and one of the members that has the fix, becomes the first member in the group it will prevent restart of those members which don't have the fix ON. Because the group function level is raised by this APAR.

Failing members would be able to join in only after getting this fix applied.

******************************************************************************
----- COVER LETTER FOR PTF UK71875 ---- 2011/09/28

PROBLEM DESCRIPTION(S):

PM42331 -

******************************************************************************

148  DB2 10 for z/OS Value Unit Edition Program Directory
* USERS AFFECTED: All DB2 users

* PROBLEM DESCRIPTION: DB2 internal changes to support PM35190.

  LOCK TABLE does not issue SQLCODE -607 for a catalog table and might incorrectly issue -607 for a user table.

* RECOMMENDATION:

This APAR contains changes to support PM35190. This APAR should be applied to all members of a data sharing group before PM35190.

During testing it was discovered that because of un-initalized storage LOCK TABLE against a catalog table did not receive a -607 as it should. Also, because of this problem LOCK TABLE on a user table could get a -607 when it should not. Both of these problems have been corrected.

***Action for PM42331:

See PM42331 APAR/PTF text for additional information.

PM42331 is a pre-conditioning APAR that includes changes to support new function that will be enabled via APAR PM35190 at a later date. At this time, all of the changes are transparent to the user. In a data sharing group, this pre-conditioning APAR should be applied to all members before the later enabling APAR is applied to any member. The new function is not enabled until the enabling APAR is applied. The following APAR PM35190 adds a new feature to allow selects against some Directory objects.

The code logic has been added to support PM35190 and the problems with LOCK TABLE have been corrected.

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APARS FIXED: PM42331
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MULTSYS:

***Action for PM42331:

See PM42331 APAR/PTF text for additional information.

PM42331 is a pre-conditioning APAR that includes changes to support new function that will be enabled via APAR PM35190 at a later date.
later date. At this time, all of the changes are transparent to the user. In a data sharing group, this pre-conditioning APAR should be applied to all members before the later enabling APAR is applied to any member. The new function is not enabled until the enabling APAR is applied. The following APAR PM35190 adds a new feature to allow selects against some Directory objects.

----- COVER LETTER FOR PTF UK72122 2/11/2011/

PROBLEM DESCRIPTION(S):

PM43936 -

* USERS AFFECTED: All DB2 9 for z/OS and DB2 10 for z/OS
* users of XML columns.

* PROBLEM DESCRIPTION: Incorrect result for an XML column
when the length of the XMLDATA column is equal to 15849 or 15850 bytes

* RECOMMENDATION:

XMLDATA is a column in the XML auxiliary table. The problem is when an XML column is fetched, two bytes of the XML document may be incorrect if the length of the data in the XMLDATA column is equal to 15849 or 15850 bytes. XMLDATA is a varbinary column with a maximum length of 15850.

The problem is only 15850 bytes of memory was allocated for fetching the XMLDATA column. Two more bytes needed to be allocated to include the two byte length field for the varbinary column.

The problem appeared when the UNLOAD utility was used to unload an XML column that supports multiple XML versions. The problem may also occur for SQL statements that fetch an XML column if the length of the data in the XMLDATA column is equal to 15849 or 15850 bytes. DB2 was fixed to allocate 15852 bytes for fetching the XMLDATA column from the XML auxiliary table.

Additional keywords: SQLXML XMLALL

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DB2BIND:

See PM43936 APAR/PTF text for additional information about
why a REBIND is necessary.

PM43936 corrects a problem of incorrect XML output when the length of the XMLDATA column in the XML auxiliary table is greater than or equal to 15849 bytes.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

------- COVER LETTER FOR PTF UK72208 --------- 2011/09/28

PROBLEM DESCRIPTION(S):
PM47617 -

******************************************************************************************
* USERS AFFECTED: All DB2 10 for z/OS users of pureXML. *
******************************************************************************************
* PROBLEM DESCRIPTION: This is the preconditioning APAR for a future function. *
* *
* This APAR also fixes following XML related problems:
* 1. An XML document containing xmlns="" is not handled properly during INSERT/LOAD/SELECT/UNLOAD using Extensible Dynamic Binary XML DB2 *
* Client/Server Binary XML Format(IBM defined binary XML format). *
* 2. Incorrect output is received when an XML value index with key type of SQL DECFLOAT is used for XMLEXISTS. This problem would only occur when the inserted data that matches the key pattern is a floating point data and conforms to the pattern (0-9)*.0+(1-9)+E... (* means 0 or more, + means 1 or more). In other words, the pattern has one or more 0s following . and then followed by non-zero digit(s) and then E. For example, the problem would occur when the key value is 1.05E20, 123.000078E-1 etc. but would not occur for key value 1.00E3. *
******************************************************************************************
* RECOMMENDATION: *
******************************************************************************************

This is the preconditioning APAR for future function.
This APAR also fixed following XML related problems:

1. An XML document containing a namespace declaration of xmlns="" is not handled properly during INSERT/LOAD/SELECT/UNLOAD using Extensible Dynamic Binary XML DB2 Client/Server Binary XML Format (IBM defined binary XML format). During INSERT/LOAD/SELECT/UNLOAD using binary XML, when an XML document contains xmlns="", DB2 incorrectly skipped this info.

2. Incorrect output is received when an XML index with key type of SQL DECFLOAT is used for XMLEXISTS. For example, suppose an XML index below is created

   CREATE TABLE T1 (ID INTEGER, DOC XML);
   CREATE INDEX INDX1 ON T1 (DOC)
       GENERATE KEY USING XMLPATTERN
           '/a/b/c' 
       AS SQL DECFLOAT;

Suppose the XML document below is inserted

   INSERT INTO T1 (ID, DOC) VALUES(1,
       '<a><b><c>1./zerodot5E2/zerodot</c></b></a>') ;

The problem was caused by an error in handling the floating point data when generating index key values. The generated index key value was wrong for the above mentioned specific pattern (one or more /zerodots following . and then followed by non-zero digit(s) and then E) and hence caused the incorrect output. The run time portion of the future function has been added to DB2. Also the problems listed above have been fixed.

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MULTSYS:
   See PM47617 APAR/PTF text for additional information.

PM47617 is a pre-conditioning APAR that includes changes to support a new function that will be enabled via another APAR at a later date. At this time, all of the changes are transparent to the user. In a data sharing group, this pre-conditioning APAR should be applied to all members before the later enabling APAR is applied to any member. The new function is not enabled until the enabling APAR is applied.

ACTION
   See PM47617 APAR/PTF text for additional information about why a REBUILD INDEX is necessary.
PM47617 corrects a problem of incorrect output when an XML value index with key type of SQL DECFLOAT is used in XMLEXISTS. This problem would only occur when the inserted data that matches the key pattern is a floating point data and conforms to the pattern that has one or more 0s following . and then followed by non-zero digit(s) and then E.

The problem was caused by an error in handling the floating point data when generating index key values. The generated index key value was wrong for the above mentioned specific pattern and hence caused the incorrect.

To make this fix effective, the index needs to be rebuilt.

----- COVER LETTER FOR PTF UK73139 --------- 2011/10/26

PROBLEM DESCRIPTION(S):
PM47618 -

************************************************************************************
* USERS AFFECTED: All DB2 10 for z/OS users of pureXML. *
************************************************************************************
* PROBLEM DESCRIPTION: This is the enabling APAR for the embedded XQuery and the constraint repetition regular expression extension support. *
* This APAR also fixes following XML related problems: *
* 1. SQLCODE -16009 is issued when the xs:untypedAtomic constructor function is called. *
* 2. ABEND04E DSNNXML DSNNOCCN M200 might occur when the XML storage usage reaches the limit and the query contains XML publishing functions or XQuery constructor functions. *

************************************************************************************
* RECOMMENDATION: *
************************************************************************************

This is the enabling APAR for the embedded XQuery and the constraint repetition regular expression extension support.

Below is the list of embedded XQuery features supported in this APAR:
1. FLWOR (For, Let, Where, Order By, Return) expressions
2. Conditional (if-then-else) expressions
3. Value comparisons
4. Node comparisons
5. XQuery prolog
   Two XQuery prologs are supported:
   a) Boundary-space declaration
   b) Copy-Namespace Declaration
6. XQuery constructors
   Following XQuery constructors are supported:
   a) Direct element constructors
   b) Document node constructors
   c) Processing instruction constructors
   d) Comment constructors
7. Sequence expressions
   Currently only Comma operator is supported.
8. Castable expressions
9. fn avg built-in function

For the constraint repetition regular expression extension support, we extend the regular expression support by providing constraint repetition quantifiers. We support three constraint repetition quantifiers:
1. \{n\} matches a pattern exactly n times.
2. \{n,m\} matches a pattern at least n times but not more than m times.
3. \{n,\} matches a pattern at least n times.

These embedded XQuery features and the constraint repetition regular expression extension can be used in following SQL/XML functions:
1. XMLQUERY
2. XML EXISTS
3. XML TABLE
4. XML MODIFY

Please refer to DB2 10 for z/OS pureXML Guide for the syntax and usage detail.

For the xs:untypedAtomic constructor function, SQLCODE -16009 will be issued when the following query is executed.

```
SELECT XMLQUERY('xs:untypedAtomic(55)') FROM SYSIBM.SYSDUMMY1;
```

For the ABEND04E DSNNXML DSNNCCN M200, it can happen when the XML storage usage reaches the limit and the query contains XML publishing functions or XQuery constructor functions. This is caused by the return code not being handled properly. In stead of DB2 issuing SQLCODE -904, the ABEND occurs.

Additional keywords: SQLCODE16009 SQLXML
The embedded XQuery and the constraint repetition regular expression extension supports are enabled. Also the XML related problems have been fixed.

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MULTSYS:
See PM47618 APAR/PTF text for additional information.

PM47618 is the enabling APAR that introduces the new function support for the embedded XQuery and the constraint repetition regular expression extension. Earlier, a pre-conditioning APAR PM47617 was delivered that is required. In a data sharing group, this pre-conditioning APAR should be applied to all members before applying this ENABLING APAR to any member.

The new function will be enabled once this ENABLING APAR is applied.

If the new function will not be used, then there is no need to take precautions for rolling through the pre-conditioning PTF ahead of the enabling PTF. Instead, both PTFs can be rolled through together.

------ COVER LETTER FOR PTF UK73137 ----------- 2011/11/07

PROBLEM DESCRIPTION(S):
PM44216 -
* ***************************************************************
* USERS AFFECTED: All DB2 users who create tables with XML columns.
* PROBLEM DESCRIPTION: PM44216 adds new subsystem parameter XML_RANDOMIZE_DOCID which specifies that the DOCIDs for tables that are created with XML columns can be generated in random order instead of sequentially.
* RECOMMENDATION: *
* ******************************************************

In DB2 9 for z/OS, PM44216 adds new subsystem parameter XML_RANDOMIZE_DOCID which indicates whether the DOCIDs for tables that are created with XML columns are to be generated in random order instead of sequentially.

Tables with XML columns and DOCIDs generated in random order
may have a performance benefit when concurrent users are inserting XML simultaneously.

The new function takes effect when the DSNZPARM module is reassembled with XML_RANDOMIZE_DOCID=YES and put into effect.

Tables created after XML_RANDOMIZE_DOCID is set to YES will get DOCIDs generated in random order. Tables created prior to applying this PTF, and tables created with XML_RANDOMIZE_DOCID set to NO will continue to have DOCIDs generated in sequential order.

The default value of XML_RANDOMIZE_DOCID is NO, which provides the same behavior for generating DOCIDs that DB2 has without applying this PTF. In other words, applying this PTF will have no effect unless XML_RANDOMIZE_DOCID is set to YES.

In DB2 10 for z/OS, APAR PM31487 adds the XML_RANDOMIZE_DOCID subsystem parameter but requires DB2 10 for z/OS new-function mode in order to create table with DOCIDs that are generated in random order. APAR PM44216 allows tables with DOCIDs that are generated in random order to be created in DB2 10 for z/OS conversion mode after migration from DB2 9 for z/OS.

PRECONDITIONING APAR CONSIDERATIONS:
This APAR requires support from one or more preconditioning APARs according to the DB2 version and whether the environment is data sharing.

* DB2 9 for z/OS: A prerequisite for this APAR is UK72542, the PTF for preconditioning APAR PM44210. On DB2 for z/OS data sharing systems, apply PTF UK72542 to -all- V9 members of the group before applying the fix for this APAR to -any-member if all of the following are true:
  - DB2 is running in V9 new-function mode
  - You will set the XML_RANDOMIZE_DOCID parameter to YES
  - You will be creating tables with XML columns

* DB2 10 for z/OS: A prerequisite for this APAR is UK68722, the PTF for preconditioning APAR PM31486. On DB2 for z/OS data sharing systems, apply PTF UK68722 to -all- V10 members of the group before applying the fix for this APAR to -any-member if all of the following are true:
  - DB2 is not running in V10 new-function mode
  - You have set or will set the XML_RANDOMIZE_DOCID parameter to YES
  - You will be creating tables with XML columns
* DB2 data sharing systems that are in coexistence mode during migration from DB2 9 for z/OS to DB2 10 for z/OS: Apply PTF UK72542 to -all- V9 members of the group and apply PTF UK68722 to -all- V10 members of the group before applying the fix for this APAR to -any- member if all of the following are true:
  - You have set or will set the XML_RANDOMIZE_DOCID parameter to YES
  - You will be creating tables with XML columns

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MULTSYS:
PM44216 is an enabling APAR that includes additional support for the subsystem parameter XML_RANDOMIZE_DOCID (added by APAR PM31487). The additional support is enabled when XMLRANDOMIZE_DOCID is set to YES.

Users who are not creating tables with XML columns on data-sharing systems will not be affected by PM44210/PM44216.

For users who will create new tables with XML columns in a data-sharing group and intend to enable the parameter XMLRANDOMIZE_DOCID, the pre-conditioning APAR PM44210 for DB2 9 for z/OS and the pre-conditioning APAR PM31486 for DB2 10 for z/OS must be applied to all data-sharing members before enabling APAR PM44216 is applied to any member.

-------- COVER LETTER FOR PTF UK73144 -------- 2011/11/07

PROBLEM DESCRIPTION(S):
PM48732 -

**********************************************************************
* USERS AFFECTED: All users of DB2 metadata stored procedure *
*                SYIBM.SQLGETTYPEINFO in DB2 10 for z/OS are *
*                affected by this APAR. *
*                *
*                All users of installation jobs DSNTIJRV are *
*                affected by this APAR. *
**********************************************************************

* PROBLEM DESCRIPTION: One or both of the following symptoms *
* is encountered when using DB2 10 for *
* z/OS:
* (1) DB2 metadata stored proc *
*                SYIBM.SQLGETTYPEINFO returns *
*                2147483647 instead of 0 as the *
This APAR addresses the following problems:

(1) DB2 metadata stored proc SYSIBM.SQLGETTYPEINFO returns 2147483647 instead of 0 as the length for XML columns. The incorrect length data comes from a DB2 metadata table called SYSIBM.SQLTYPEINFO. This table is created and initialized by running installation job DSNTIJRT, program DSNTRIN, which installs and configures the DB2-supplied routines and their supporting objects.

(2) Job DSNTIJRV, program DSNTRVFY (the validation program for DB2-supplied routines), ends with return code 8 because the WLM environment for one or more routines is reported to be in 'VAILABLE' state rather than 'AVAILABLE' state. The error occurs only when the name of the WLM environment being checked is a substring of another WLM environment that is defined on the same system (for example, DSNWLM_JAVA is a substring of ADSNWLM_JAVA). In that case, subsequent parsing to obtain the WLM environment's state is affected and results in an incorrect/invalid state being reported.

This APAR makes the following changes:

(1) DB2 metadata stored proc SYSIBM.SQLGETTYPEINFO returns 2147483647 instead of 0 as the length for XML columns. In response, DSNTRIN is modified to initialize the SYSIBM.SQLTYPEINFO table correctly. It is also modified to detect and correct cases where SYSIBM.SQLTYPEINFO contains an incorrect value for the length of an XML column.

(2) Job DSNTIJRV, program DSNTRVFY (the validation program for DB2-supplied routines), ends with return code 8 because the WLM environment for one or more routines is reported to be in 'VAILABLE' state rather than 'AVAILABLE' state.
In response, DSNTRVFY is modified to prevent it from using the wrong WLM environment name to obtain the state.

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ACTION

***Action for PM48732

This PTF corrects an error that causes DB2 metadata stored procedure SYSIBM.SQLGETTYPEINFO to return an incorrect length for XML columns.

If you have already installed or migrated to DB2 V1 then after applying this PTF, you need to take the following action:

Run your copy of job DSNTIJRT with MODE(INSTALL) to adjust DB2 metadata table SYSIBM.SQLTYPEINFO.

If you have previously run DSNTIJRT, rerunning with MODE(INSTALL) will cause it to detect and correct only missing and downlevel SQL objects and packages for DB2-supplied routines.

Note: Use MODE(INSTALL-PREVIEW) to obtain a report of any changes without processing them. The PREVIEW option will also generate and output a JCL job to the JCLOUT DD that contains any SQL and bind statements to be processed. After reviewing the changes, either rerun DSNTIJRT without the PREVIEW option or customize and run the generated job.

----- COVER LETTER FOR PTF UK73183 ------ 2011/11/08

PROBLEM DESCRIPTION(S):

PM45829 -  
******************************************************************************************************************  
* USERS AFFECTED: Users of DB2 9 and 10 for z/OS using *  
* index-controlled partitioned table space *  
******************************************************************************************************************  
* PROBLEM DESCRIPTION: Converting from index-controlled to *  
* table-controlled partitioning results *  
* in all columns of the partitioning *  
* index to be used for partitioning, *  
* rather than using only column(s) *  
* with a limit key value specified. *  
******************************************************************************************************************  
* RECOMMENDATION: *  

Appendix A. HOLD DATA for PTFs incorporated in the product tape  159
DB2 automatic conversion of index-controlled partitioned table space to table-controlled partitioned table space uses all columns of the partitioning index for partitioning, instead of using only the columns which the limit key values were specified for.

Consider the following scenario:

```sql
CREATE DATABASE EMPDB;

CREATE TABLESPACE EMPTS
IN EMPDB
NUMPARTS 4;

CREATE TABLE EMPTAB
(FIRST CHAR(5) NOT NULL,
 MIDDLE CHAR(5) NOT NULL,
 LAST CHAR(5) NOT NULL,
 ID CHAR(5) NOT NULL)
IN EMPDB.EMPTS;

CREATE INDEX EMPPARTIX ON EMPTAB (LAST,FIRST,MIDDLE)
CLUSTER (PARTITION 1 ENDING AT ('BAKER'),
 PARTITION 2 ENDING AT ('DOUGL'),
 PARTITION 3 ENDING AT ('HUGHS'),
 PARTITION 4 ENDING AT ('JAMES'));

ALTER TABLE EMPTAB ADD PARTITION ENDING AT ('SMITH');
```

When adding a new partition, the conversion to table-controlled partitioned table space results in an internal limit key in SYSTABLEPART.LIMITKEY_INTERNAL which includes all the columns in the partitioning index.

- 'BAKER',x'FFFFFFFFFF',x'FFFFFFFFFF'
- 'DOUGL',x'FFFFFFFFFF',x'FFFFFFFFFF'
- 'HUGHS',x'FFFFFFFFFF',x'FFFFFFFFFF'
- 'JAMES',x'FFFFFFFFFF',x'FFFFFFFFFF'
- 'SMITH',x'FFFFFFFFFF',x'FFFFFFFFFF'

CREATE INDEX EMPIX02 ON EMPTAB(LAST,ID) PARTITIONING;
EMPIX02 WILL BE CONSIDERED A DATA PARTITIONING secondary index (DPSI) instead of a partitioning index since the limit key is now defined on LAST, FIRST, and MIDDLE.

This APAR introduces an online-changeable subsystem parameter in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE. Valid settings are YES and NO. The default is NO, meaning that all columns are used. When set to YES, DB2 will use only significant columns of the partitioning index that is on an index-controlled partitioned table space to define the
table-controlled partitioning key. DB2 will exclude all trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY. There will be no distinction between explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key value.

The following will be affected:
- CREATE INDEX statement with the PARTITIONED clause to create a secondary partitioned index on an index-controlled partitioned table space.
- ALTER INDEX statement with the NOT CLUSTER clause on a partitioning index that is on an index-controlled partitioned table space.
- DROP INDEX statement to drop a partitioning index on an index-controlled partitioned table space.
- ALTER TABLE statement to add a new partition, change a partition boundary, or rotate a partition to last on an index-controlled partitioned table space. Trailing 'FF'x, MAXVALUE, or MINVALUE specified in the limit key value of the statement will always be significant.
- ALTER TABLE statement to add a clone table.

IX_TB_PART_CONV_EXCLUDE does not apply to a CREATE INDEX statement with a PART VALUES clause and without a CLUSTER clause to create a partitioning index even though this causes automatic conversion to table-controlled partitioning.

ADDITIONAL KEYWORDS:
SQLCREATE SQLALTER SQLDROP SQLCLONE

+++HOLD COMMENT FOR RELEASE A10, TYPE DOC:
PM45829 introduces an online-changeable subsystem parameter in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE. Valid settings are YES and NO. The default is NO, meaning that all columns are used. When set to YES, DB2 will use only significant columns of the partitioning index that is on an index-controlled partitioned table space to define the table-controlled partitioning key. DB2 will exclude all trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY. There will be no distinction between explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key value.

The approximate text is to be added to the DB2 manuals. This text is subject to change.

==========================================
Changes to DB2 Administration
==========================================
Automatic conversion to table-controlled partitioning
-----------------------------------------------------
When subsystem parameter IX TB PART_CONV_EXCLUDE is set NO (default), all columns of the partitioning index that is on an index-controlled partitioned table space will be used to define the table-controlled partitioning key. When set to YES, DB2 will use only significant columns of the partitioning index. DB2 will exclude all trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY. There will be no distinction between explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key value.

For ALTER TABLE statement to add a new partition, change a partition boundary, or rotate a partition to last on an index-controlled partitioned table space, the trailing 'FF'x, MAXVALUE, or MINVALUE specified in the limit key value of the statement will always be significant.

IX TB PART_CONV_EXCLUDE does not apply to a CREATE INDEX statement with a PART VALUES clause and without a CLUSTER clause to create a partitioning index.

Changes to DB2 Installation
===========================
PM45829 introduces an online-changeable subsystem parameter in DSN6SPRM called IX TB PART_CONV_EXCLUDE that can be used to indicate whether DB2 will use only significant columns of the index-controlled partitioning partitioning index to define the table-controlled partitioning key. Valid settings are YES and NO. The default is NO, meaning that all columns are used. IX TB PART_CONV_EXCLUDE is online changeable. In data sharing, it has member scope.

++HOLD COMMENT FOR RELEASE 910, TYPE DOC: PM45829 introduces an online-changeable subsystem parameter in DSN6SPRM called IX TB PART_CONV_EXCLUDE. Valid settings are YES and NO. The default is NO, meaning that all columns are used. When set to YES, DB2 will use only significant columns of the partitioning index that is on an index-controlled partitioned table space to define the table-controlled partitioning key. DB2 will exclude all trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY. There will be no distinction between explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key value.
The approximate text is to be added to the DB2 manuals. This text is subject to change.
Changes to DB2 Administration

Automatic conversion to table-controlled partitioning

When subsystem parameter IX_TB_PART_CONV_EXCLUDE is set NO (default), all columns of the partitioning index that is on an index-controlled partitioned table space will be used to define the table-controlled partitioning key. When set to YES, DB2 will use only significant columns of the partitioning index. DB2 will exclude all trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY. There will be no distinction between explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key value.

For ALTER TABLE statement to add a new partition, change a partition boundary, or rotate a partition to last on an index-controlled partitioned table space, the trailing 'FF'x, MAXVALUE, or MINVALUE specified in the limit key value of the statement will always be significant.

IX_TB_PART_CONV_EXCLUDE does not apply to a CREATE INDEX statement with a PART VALUES clause and without a CLUSTER clause to create a partitioning index.

Changes to DB2 Installation

PM45829 introduces an online-changeable subsystem parameter in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used to indicate whether DB2 will use only significant columns of the index-controlled partitioning partitioning index to define the table-controlled partitioning key. Valid settings are YES and NO. The default is NO, meaning that all columns are used. IX_TB_PART_CONV_EXCLUDE is online changeable. In data sharing, it has member scope.

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

1. Update customized copies of DB2 installation CLIST members

Appendix A. HOLD DATA for PTFs incorporated in the product tape
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

---------------------------------------------------------------
(1) Update customized copies of DB2 installation CLIST members
---------------------------------------------------------------

==> This action is recommended for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTS processed by job DSNTIJVC reside.

---------------------------------------------------------------
(2) Update your customized copy of job DSNTIJUZ
---------------------------------------------------------------

==> This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter IX_TB_PART_CONV_EXCLUDE=<x>, where <x> is NO or YES, to the invocation of the DSN6SPRM macro. Make sure to add a continuation character in column 72 if needed. If you omit adding IX_TB_PART_CONV_EXCLUDE here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET SYSPARM command or stop and restart DB2 for the change to take effect.

---------------------------------------------------------------
(3) Update private copies of the DSNTIDxx CLIST input member
---------------------------------------------------------------

==> This action is required for all customers

This PTF adds an entry for IX_TB_PART_CONV_EXCLUDE to the CLIST default input members in the SDSNSAMP target library. You need to add these entries to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following line:
IX_TB_PART_CONV_EXCLUDE CHAR M NO YES <x>

Change <x> to the value you specified for IX_TB_PART_CONV_EXCLUDE in step (2), above.

If you do not add IX_TB_PART_CONV_EXCLUDE to a DSNTIDxx member, the DB2 installation CLIST will assume IX_TB_PART_CONV_EXCLUDE=NO when run with that member as input.

++HOLD COMMENT FOR RELEASE 910, TYPE ACT:
PM45829 introduces an online-changeable subsystem parameter in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used to indicate whether DB2 will use only significant columns of the index-controlled partitioning partitioning index to define the table-controlled partitioning key. Valid settings are YES and NO. The default is NO, meaning that all elements are used.

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

(1) Update customized copies of DB2 installation CLIST members

This action is recommended for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTs processed by job DSNTIJVC reside.

(2) Update your customized copy of job DSNTIJUZ

This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:
* Add the keyword parameter IX_TB_PART_CONV_EXCLUDE=<x>, where <x> is NO or YES, to the invocation of the DSN6SPRM macro. Make sure to add a continuation character in column 72 if needed. If you omit adding IX_TB_PART_CONV_EXCLUDE here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET SYSPARM command or stop and restart DB2 for the change to take effect.

(3) Update private copies of the DSNTIDxx CLIST input member

This action is required for all customers

This PTF adds an entry for IX_TB_PART_CONV_EXCLUDE to the CLIST default input members in the SDSNSAMP target library. You need to add these entries to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following line:

```plaintext
IX_TB_PART_CONV_EXCLUDE CHAR M NO YES <x>
```

Change <x> to the value you specified for IX_TB_PART_CONV_EXCLUDE in step (2), above.

If you do not add IX_TB_PART_CONV_EXCLUDE to a DSNTIDxx member, the DB2 installation CLIST will assume IX_TB_PART_CONV_EXCLUDE=NO when run with that member as input.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM45829
SPECIAL CONDITIONS:
COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2010
LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
MULTSYS:
**Action for PM37660**
PM37660 is an APAR that includes enhancements to support an IRLM timeout factor for DDL statement processing thta will be enabled once this APAR is applied.
A pre-conditioning APAR PM36177 was delivered. In a data sharing groups, this pre-conditioning APAR should be applied to all members before applying this enabling APAR to any member. The code change is enabled once this enabling APAR is applied.

DOCUMENTATION:
PM45829 introduces an online-changeable subsystem parameter
in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE. Valid settings are YES and NO. The default is NO, meaning that all columns are used. When set to YES, DB2 will use only significant columns of the partitioning index that is on an index-controlled partitioned table space to define the table-controlled partitioning key. DB2 will exclude all trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY. There will be no distinction between explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key value.

The approximate text is to be added to the DB2 manuals. This text is subject to change.

================================
Changes to DB2 Administration
================================

Automatic conversion to table-controlled partitioning

When subsystem parameter IX_TB_PART_CONV_EXCLUDE is set NO (default), all columns of the partitioning index that is on an index-controlled partitioned table space will be used to define the table-controlled partitioning key. When set to YES, DB2 will use only significant columns of the partitioning index. DB2 will exclude all trailing columns with all 'FF'x in SYSINDEXPART.LIMITKEY. There will be no distinction between explicitly specified 'FF'x, MAXVALUE, or MINVALUE versus an omitted limit key value.

For ALTER TABLE statement to add a new partition, change a partition boundary, or rotate a partition to last on an index-controlled partitioned table space, the trailing 'FF'x, MAXVALUE, or MINVALUE specified in the limit key value of the statement will always be significant.

IX_TB_PART_CONV_EXCLUDE does not apply to a CREATE INDEX statement with a PART VALUES clause and without a CLUSTER clause to create a partitioning index.

================================
Changes to DB2 Installation
================================

PM45829 introduces an online-changeable subsystem parameter in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used to indicate whether DB2 will use only significant columns of the index-controlled partitioning partitioning index to define the table-controlled partitioning key. Valid settings are YES and NO. The default is NO, meaning that all columns
are used. IX_TB_PART_CONV_EXCLUDE is online changeable. In data sharing, it has member scope.

**ACTION**

PM45829 introduces an online-changeable subsystem parameter in DSN6SPRM called IX_TB_PART_CONV_EXCLUDE that can be used to indicate whether DB2 will use only significant columns of the index-controlled partitioning partitioning index to define the table-controlled partitioning key. Valid settings are YES and NO. The default is NO, meaning that all elements are used.

If you have already installed or migrated to this version of DB2, you need to take the following actions after applying this PTF:

1. Update customized copies of DB2 installation CLIST members
2. Update your customized copy of job DSNTIJUZ
3. Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----------------------------------------------------------------

(1) Update customized copies of DB2 installation CLIST members
----------------------------------------------------------------

=> This action is recommended for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTs processed by job DSNTIJVC reside.

----------------------------------------------------------------

(2) Update your customized copy of job DSNTIJUZ
----------------------------------------------------------------

=> This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter IX_TB_PART_CONV_EXCLUDE=<x>, where <x> is NO or YES, to the invocation of the DSN6SPRM macro. Make sure to add a continuation character in column 72 if needed. If you omit adding IX_TB_PART_CONV_EXCLUDE here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.
* After the job completes, you must either use the -SET SYSPARM command or stop and restart DB2 for the change to take effect.

---

(3) Update private copies of the DSNTIDxx CLIST input member

=> This action is required for all customers

This PTF adds an entry for IX_TB_PART_CONV_EXCLUDE to the CLIST default input members in the SDSNSAMP target library. You need to add these entries to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following line:

```
IX_TB_PART_CONV_EXCLUDE  CHAR  M  NO   YES   <x>
```

Change `<x>` to the value you specified for IX_TB_PART_CONV_EXCLUDE in step (2), above.

If you do not add IX_TB_PART_CONV_EXCLUDE to a DSNTIDxx member, the DB2 installation CLIST will assume IX_TB_PART_CONV_EXCLUDE=NO when run with that member as input.

ACTION

***Actions for PM37816

This PTF adds a new DB2 subsystem parameter in DSN6SPRM named DISALLOW_DEFAULT_COLLID that allows you to specify whether DB2 will prevent use of default collection ID, DSN_DEFAULT_COLLID_plan-name on implicitly generated packages during the DB2 automatic DBRM to package conversion process. Valid settings are NO and YES. The default is NO.
- NO : The BIND PLAN command is not restricted from honoring use of the MEMBER option. When this setting is in effect and a BIND PLAN statement for plan plan-name contains the MEMBER option, DB2 first binds the specified DBRMs as packages in a collection ID named DSN_DEFAULT_COLLID_plan-name and then binds that collection ID into the plan.

If successful, the request ends with return code 4 and a warning message.

REBIND PLAN without COLLID option or with COLLID (*) is not restricted. When this setting is in effect and the plan has DBRMs directly bound, DB2 first binds the DBRMs as
packages in a collection ID named DSN_DEFAULT_COLLID_plan-name and then rebinds that collection ID into the plan.

If successful, the request ends with return code 4 and a warning message.

This setting also allows automatic rebind to convert existing plans that were bound from DBRMs into packages from which those plans are then rebound. When an automatic rebind of plan occurs and that plan was bound directly from a DBRM, DB2 first converts the plan into a package in a collection ID named DSN_DEFAULT_COLLID_plan-name and then rebinds that collection ID into the plan.

===> This is the default setting.

- YES: The BIND PLAN command is restricted from honoring the MEMBER option. When this setting is in effect, the request will fail.

REBIND PLAN without using COLLID option or using COLLID (*) is also restricted if the plan has DBRMs directly bound.

YES also prevents automatic rebind from converting existing plans that were last bound from DBRMs. Attempts will fail with SQLCODE -924.

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----------------------------------------------------------------
(1) Update customized copies of DB2 installation CLIST members
----------------------------------------------------------------

===> This action is required for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your
copies of this CLIST. You may also want to move it to the
prefix.NEW.SDSNCLST data set, where the CLISTs processed by
job DSNTIJVC reside.

----------------------------------------------------------------
(2) Update your customized copy of job DSNTIJUZ
----------------------------------------------------------------

==> This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the
SDSNSAMP target library. After applying this PTF, you
need to update your customized copy of this job as follows:

* Add the keyword parameter DISALLOW_DEFAULT_COLLID=<x>,
  where <x> is NO or YES, to the invocation of the
  DSN6SPRM macro. Make sure to add a continuation character
  in column 72 if needed. If you omit adding
  DISALLOW_DEFAULT_COLLID here, the value will be set to the
default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET
  SYSPARM command or stop and restart DB2 for the change to
take effect.

----------------------------------------------------------------
(3) Update private copies of the DSNTIDxx CLIST input member
----------------------------------------------------------------

==> This action is required for all customers

This PTF adds an entry for DISALLOW_DEFAULT_COLLID
to the CLIST default input members,
DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. You
need to add these entries to all private copies of your
CLIST output DSNTIDxx member. In each such copy, add the
following lines:

DISALLOW_DEFAULT_COLLID CHAR G NO YES <x>

Change <x> to the value you specified for
DISALLOW_DEFAULT_COLLID in step (2), above.

ACTION
***Actions for PM37672

This PTF adds a new DB2 subsystem parameter in DSN6SPRM named
DISABLE_EDMRTS that allows you to specify whether to disable
collection of real time statistics (RTS) by the DB2
Environmental Descriptor Manager (EDM). Valid settings are:
* NO: Indicates that the EDM is to collect RTS to track the "last used" information for packages. DB2 then periodically records the information in the SYSIBM.SYSPACKAGE table. Recording is deferred if the SYSTSPKG table space is not available.
  ==> This is the default and recommended setting

* YES: Disables collection of RTS by EDM. Use of YES may be appropriate in the following situations:
  - There is no need to collect last used information for the packages.
  - The SYSIBM.SYSPACKAGE table is persistently unavailable preventing recording of EDM real time statistics.
  - Deferred externalization of these statistics results in excessive DB2 shutdown time.
  - Performance degradation occurs due to collection of these EDM statistics.

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

----------------------------------------------------------------
(1) Update customized copies of DB2 installation CLIST members
----------------------------------------------------------------

===> This action is required for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTS processed by job DSNTIJVC reside.

----------------------------------------------------------------
(2) Update your customized copy of job DSNTIJUZ
----------------------------------------------------------------

===> This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the
SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter DISABLE_EDMRTS=<x>, where <x> is NO or YES, to the invocation of the DSN6SPRM macro. Make sure to add a continuation character in column 72 if needed. If you omit adding DISABLE_EDMRTS here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET SYSPARM command or stop and restart DB2 for the change to take effect.

(3) Update private copies of the DSNTIDxx CLIST input member

===> This action is required for all customers

This PTF adds an entry for DISABLE_EDMRTS to the CLIST default input members, DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. You need to add these entries to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following lines:

DISABLE_EDMRTS CHAR G NO YES <x>

Change <x> to the value you specified for DISABLE_EDMRTS in step (2), above.

ACTION

***Actions for PM37660

If you have already installed or migrated to this version of DB2 you need to take the following actions after applying this PTF:

(1) Update customized copies of DB2 installation CLIST members
(2) Update your customized copy of job DSNTIJUZ
(3) Update private copies of the DSNTIDxx CLIST input member

Detailed guidance for these actions follows:

(1) Update customized copies of DB2 installation CLIST members

===> This action is required for all customers

This PTF modifies CLIST member DSNTINST in the SDSNCLST
target library only. You need to redo any record format changes and reapply any tailoring you have done to your copies of this CLIST. You may also want to move it to the prefix.NEW.SDSNCLST data set, where the CLISTs processed by job DSNTIJVC reside.

(2) Update your customized copy of job DSNTIJUZ

This action is required for all customers

This PTF modifies DB2 installation job DSNTIJUZ in the SDSNSAMP target library. After applying this PTF, you need to update your customized copy of this job as follows:

* Add the keyword parameter `DDLTOX=<n>`, where `<n>` is an integer ranging from 1 to 254, to the invocation of the DSN6SPRM macro. Make sure to add a continuation character in column 72 if needed. If you omit adding DDLTOX here, the value will be set to the default of NO when you assemble the DSNZPxxx module.

* Run the first two steps of the DSNTIJUZ job you modified.

* After the job completes, you must either use the -SET SYSPARM command or stop and restart DB2 for the change to take effect.

(3) Update private copies of the DSNTIDxx CLIST input member

This action is required for all customers

This PTF adds an entry for DDLTOX to the CLIST default input members, DSNTIDXA and DSNTIDXB, in the SDSNSAMP target library. You need to add these entries to all private copies of your CLIST output DSNTIDxx member. In each such copy, add the following lines:

```
DDLTOX  NUM  M  1  254  <n>
```

Change `<n>` to the value you specified for DDLTOX in step (2), above.

------ COVER LETTER FOR PTF UK73241 2011/11/10

PROBLEM DESCRIPTION(S):

PM467
**PROBLEM DESCRIPTION:** An ABEND/zerodot4E RC/zerodot/zerodotE7/zerodot/zerodot/zerodot5 at DSNXVTRS M42/zerodot may occur when a query containing a CASE expression in selection list is referenced in ORDER BY or GROUP BY clause running in parallel. It is because the parallel buffer adjustment aligns the CASE expression result buffer incorrectly.

Following is an example of such failing query:

```
SELECT ..., 
    CASE WHEN C1 IS NULL THEN 100 ELSE 200 END AS CEX1,
    ...
    FROM T1, ....
WHERE ...
ORDER BY ..., COALESCE(CEX1, 500), ...
```

DB2 is modified to align the CASE expression result buffer for parallelism correctly in such scenario.

Additional Keywords: SQLORDERBY SQLGROUPBY PARALLELISM SQLPARALLELISM SQLCASE DB2PARALL/K

**COMPONENT:** 5740-XYR00-HDBAA10
**APARS FIXED:** PM46702
**SPECIAL CONDITIONS:**
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**DB2BIND:**

**Action for PM46702:**

See PM46702 APAR/PTF text for additional information about why a REBIND is necessary.

PM46702 corrects a problem of an ABEND04E RC00E70005 at DSNXVTRS M420 may occur when a query containing a CASE expression in selection list is referenced in the ORDER BY or GROUP BY clause running in parallel.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

------ COVER LETTER FOR PTF UK73300 2011/11/10

PROBLEM DESCRIPTION(S):
PM46045 -

* USERS AFFECTED: All DB2 V10 users in z/OS 1.12 or higher.
* All DB2 V8 and V9 users with PM17542 (UK60887, UK60888) applied in z/OS 1.12 or higher.

* PROBLEM DESCRIPTION: With PM17542 applied, DB2 users may be exposed to the z/OS problems:

- Overlay of high private storage with a UCB address. ABENDC78-54 when the PPD eyecatcher for z/OS SIOTX cell pool is overlaid with a UCB address.

* SMCOVERLAY.

* Fixed by OA36101 (UA60221 UA60222).

* SMF record type 3 I/O counting info at DBM1 address space level may have missing counts. SMF30TEP and SMF30TEX contain invalid (lower) values.

* Fixed by OA37361 and OA37362 (UA62296 UA62297)

* Note: PM17542 is in DB2 V10 base code.

* RECOMMENDATION:

PM17542 turns on SVC 99 parameter S99DASUP to suppress DD-level accounting when allocating a data set for a DB2 page set. In this path, the storage overlay problem may occur. The SMF record type 30 I/O counting at the DBM1 address space level is suppressed. The APARs and actions to be taken below are pertaining to DB2 running in z/OS 1.12 or higher only.

z/OS APAR OA36101 (allocation) must be installed as soon as possible to fix the potential storage overlay problem.
z/OS APAR OA37361 (media manager) and OA37362 (VSAM) together will fix the missing address space level SMF I/O counting problem. DB2 users should install them when available.

From the DB2 side, PM46045 is used to provide an alternative for DB2 users to turn off S99DASUP. The code is changed to tie S99DASUP to the setting of MEMDSENQMGMT when allocating a data set for a DB2 page set. S99DASUP is set to on only when MEMDSENQMGMT is enabled. So before the user could find a window to install z/OS fixes, PM46045 could be applied first. By setting MEMDSENQMGMT DISABLE, the two z/OS problems can be avoided.

Once all APARs (PM46045, OA36101, OA37361, OA37362) are installed, it is recommended to set MEMDSENQMGMT ENABLE to get the performance benefit.

Instructions on setting MEMDSENQMGMT to DISABLE or ENABLE:
=================================================================
Work with your system programmer to complete one of the following actions:

- Update the ALLOCxx parmlib member to set the SYSTEM MEMDSENQMGMT value.
  
  SYSTEM MEMDSENQMGMT(DISABLE) or
  SYSTEM MEMDSENQMGMT(ENABLE)

- Issue system command SETALLOC

  SETALLOC SYSTEM,MEMDSENQMGMT=DISABLE or
  SETALLOC SYSTEM,MEMDSENQMGMT=ENABLE

Note:
1. Updating the ALLOCxx parmlib is strongly recommended as it remains effective across IPLs.

2. If SETALLOC SYSTEM,MEMDSENQMGMT command is used, a DB2 restart is required to make the change effective.

3. System command D ALLOC,OPTIONS can be used to display the status of MEMDSENQMGMT in z/OS.

Sample DISPLAY output:

IEF003I 15.35.15 ALLOC OPTIONS
SPACE PRIMARY: 4
APARs interactions:

The following summarizes the interactions of DB2 APARs PM17542, PM46045, and z/OS APARs OA36101, OA37361, and OA37362. It is intended to help you determine when to apply DB2 and z/OS APARs, and in what order.

1. PM17542 only - exposed to overlay and missing SMF I/O counting at address space level. MEMDSENQMGMT irrelevant.

2. PM17542 with OA36101 - exposed to missing SMF I/O counting at address space level only. MEMDSENQMGMT irrelevant.

3. PM17542 with OA36101, OA37361 & OA37362 - no longer exposed to either problem.

4. PM17542 with PM46045 - S99DASUP setting now only turned on when MEMDSENQMGMT is enabled. Exposed to overlay and missing SMF I/O counting at address space level ONLY when MEMDSENQMGMT is ENABLED.

5. PM17542 with PM46045 & OA36101 - S99DASUP setting now only turned on when MEMDSENQMGMT is enabled. Exposed to missing SMF I/O counting at address space level ONLY when MEMDSENQMGMT is ENABLED.

6. PM17542 with PM46045, OA36101, OA37361 & OA37362 - no longer exposed to either problem. Performance benefits for both features introduced with PM17542 only available when MEMDSENQMGMT is ENABLED.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM46045
SPECIAL CONDITIONS:

ACTION
The ++HOLD and action is for DB2 users running in z/OS 1.12 or higher only. See PM46045 APAR/PTF text for additional information.
The following summarizes the interactions of DB2 APARs PM17542, PM46045, and z/OS APARs OA36101, OA37361, and OA37362. It is intended to help you determine when to apply DB2 and z/OS APARs, and in what order.

1. PM17542 only - exposed to overlay and missing SMF I/O counting at address space level. MEMDSENQMGMT irrelevant.

2. PM17542 with OA36101 - exposed to missing SMF I/O counting at address space level only. MEMDSENQMGMT irrelevant.

3. PM17542 with OA36101, OA37361 & OA37362 - no longer exposed to either problem.

4. PM17542 with PM46045 - S99DASUP setting now only turned on when MEMDSENQMGMT is enabled. Exposed to overlay and missing SMF I/O counting at address space level ONLY when MEMDSENQMGMT is ENABLED.

5. PM17542 with PM46045 & OA36101 - S99DASUP setting now only turned on when MEMDSENQMGMT is enabled. Exposed to missing SMF I/O counting at address space level ONLY when MEMDSENQMGMT is ENABLED.

6. PM17542 with PM46045, OA36101, OA37361 & OA37362 - no longer exposed to either problem. Performance benefits for both features introduced with PM17542 only available when MEMDSENQMGMT is ENABLED.

Instructions on setting MEMDSENQMGMT to DISABLE or ENABLE:

Work with your system programmer to complete one of the following actions:

- Update the ALLOCxx parmlib member to set the SYSTEM MEMDSENQMGMT value.

  ```
  SYSTEM MEMDSENQMGMT(DISABLE) or
  SYSTEM MEMDSENQMGMT(ENABLE)
  ```

- Issue system command SETALLOC

  ```
  SETALLOC SYSTEM,MEMDSENQMGMT=DISABLE or
  SETALLOC SYSTEM,MEMDSENQMGMT=ENABLE
  ```

Note:
1. Updating the ALLOCxx parmlib is strongly recommended as it
remains effective across IPLs. You may apply the PTF and update the ALLOCxx parmlib member at different times. However, the benefit of the APAR will only be available after re-IPL with ALLOCxx changes or after issuing the SETALLOC command as described above.

2. If SETALLOC SYSTEM, MEMDSENQMGT command is used, a DB2 restart is required to make the change effective.

3. System command D ALLOC,OPTIONS can be used to display the status of MEMDSENQMGT in z/OS.

Sample DISPLAY output:

IEFA003I 15.35.15 ALLOC OPTIONS
SPACE PRIMARY: 4
SECONDARY: 24
:
SYSTEM IEFBR14_DELMIGDS: LEGACY
TAPELIB_PREF: EQUAL
REMIND_INTV: 90
VERIFY_UNCAT: FAIL
TEMPDSTATUS: INCLUDELABEL
MEMDSENQMGT: ENABLE

------ COVER LETTER FOR PTF UK73478 -------- 2011/11/17

PROBLEM DESCRIPTION(S):
PM35190 -

******************************************************************************
* USERS AFFECTED: All DB2 users.  *
******************************************************************************
* PROBLEM DESCRIPTION: Provide the ability to SELECT from                *
* directory tables SYSIBM.SYSLGRNX, SYSIBM.SYSUTILX and SYSIBM.SYSUTIL. *
******************************************************************************
* RECOMMENDATION:                                                      *
******************************************************************************
This APAR provides support for SQL SELECT from directory tables SYSIBM.SYSLGRNX, SYSIBM.SYSUTIL and SYSIBM.SYSUTILX. This capability and the resulting output is primarily intended for use by IBM support.

The following restrictions apply:
- The authorization rules that apply for selects against the catalog also apply for selects against Directory objects. The authority must include one of the following:
  - Install SYSADM
  - SYSADM
  - SYSCTRL

180   DB2 10 for z/OS Value Unit Edition Program Directory
- ACCESSCTRL
- DATAACCESS
- SECADM
- SQLADM
- System DBADM
- DBADM on DSNDB01
- select on a specific table
- Only SELECT and FETCH are permitted.
- No transaction L-locks will be acquired regardless of application isolation level.

The example for the SQLCODE -607 has been enhanced with the following:
- The operation is on a directory object and the unit of work could not be converted to UR. For example: UPDATE T1 SET C1 = (SELECT C1 FROM T1) WHERE EXISTS(SELECT LGR SYSIBM.SYSLGRNX); In this case, the SELECT against a directory object can not be converted to UR.

The ability to SELECT from Directory objects is enabled when NFM (New Function Mode) is entered. The ability to SELECT from the Directory objects is not enabled in a new install. For a new install or if DB2 is already in NFM when apar is applied it can be enabled by running a utility job:

CATMAINT UPDATE UNLDDN PM35190

To verify if the ability to SELECT from Directory objects has been enabled, a row will be returned from the following SELECT:

SELECT * FROM SYSIBM.SYSDATABASE WHERE DBID=1;

DSNTESQ has been updated to support this change. Without this APAR query7 may return rows for DBNAME DSNDB01.

***Action for PM35190:

See PM35190 APAR/PTF text for additional information.

This APAR/PTF changes the text of SQL code -607. The change will be documented in the DB2 Codes manual and in the Information Management Software for z/OS Solutions Information Center.

A new bullet under the example for SQL code -607:

- The operation is on a directory object and the unit of work could not be converted to UR. For example:
UPDATE T1 SET C1 =
(SELECT C1 FROM T1) WHERE EXISTS(SELECT LGR SYSIBM.SYSLGRNX);

in this case, the SELECT against a directory object can not
be converted to UR.

***Action for PM35190:

See PM35190 APAR/PTF text for additional information.

PM35190 is the enabling APAR that introduces the new function
support to allow selects from some Directory objects. Earlier,
a pre-conditioning APAR PM42331 was delivered and will be
needed. In a data sharing group, this pre-conditioning APAR
should be applied to all members before applying this ENABLING
APAR to any member. The new function will be enabled once this
ENABLING APAR is applied and DB2 enters NFM or once this
ENABLING APAR is applied and a special CATMAINT is run with the
input:

CATMAINT UPDATE UNLDDN PM35190

See above.
COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM35190
SPECIAL CONDITIONS:
COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2010
LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
MULTSYS:

***Action for PM35190:

See PM35190 APAR/PTF text for additional information.

PM35190 is the enabling APAR that introduces the new function
support to allow selects from some Directory objects. Earlier,
a pre-conditioning APAR PM42331 was delivered and will be
needed. In a data sharing group, this pre-conditioning APAR
should be applied to all members before applying this ENABLING
APAR to any member. The new function will be enabled once this
ENABLING APAR is applied and DB2 enters NFM or once this
ENABLING APAR is applied and a special CATMAINT is run with the
input:

CATMAINT UPDATE UNLDDN PM35190

DOCUMENTATION:

***Action for PM35190:

See PM35190 APAR/PTF text for additional information.
This APAR/PTF changes the text of SQL code -607. The change will be documented in the DB2 Codes manual and in the Information Management Software for z/OS Solutions Information Center.

A new bullet under the example for SQL code -607:

- The operation is on a directory object and the unit of work could not be converted to UR. For example:

```
UPDATE T1 SET C1 = (SELECT C1 FROM T1) WHERE EXISTS(SELECT LGR SYSIBM.SYSLGRNX);
```

in this case, the SELECT against a directory object can not be converted to UR.

**ACTION**

See PM47932 APAR/PTF text for additional information.

This PTF fixes the default maximum number of databases that can be created implicitly.

Applying this PTF will not remove existing implicit databases or update the current maximum number of implicit databases allowed.

You can use the following query to find out the current maximum number of implicit databases allowed:

```
SELECT MAXVALUE FROM SYSIBM.SYSSEQUENCES
WHERE SCHEMA = 'SYSIBM'
AND NAME = 'DSNSEQ_IMPLICITDB';
```

You can use the following statement to alter it:

```
ALTER SEQUENCE SYSIBM.DSNSEQ_IMPLICITDB MAXVALUE <number>
```

This <number> can be DB2's new default value of 10000 or any valid value as allowed by the ALTER SEQUENCE statement.

------ COVER LETTER FOR PTF UK73601 ------------ 2011/11/21

**PROBLEM DESCRIPTION(S):**

PM48939 -

**************************************************************************************************************
* USERS AFFECTED: DB2 9 for z/OS and DB2 10 for z/OS users of * *
*   pair-wise join query with multi-column index * *
*   applied between dimension table and Fact * *
*   table and with a Fact table local predicate *
PROBLEM DESCRIPTION: An incorrect output may occur when a pair-wise join query uses a multi-column index between dimension table and Fact table, also there is a Fact table local predicate covered by the same multi-column index. It is because the indexable Fact table local predicate does not re-evaluated correctly in the pair-wise join join back phase.

Following is an example of such failing scenario:

```sql
SELECT ...
FROM F, D1, D2, ...
WHERE F.CD1 = D1.C1
AND F.CD2 = D2.C1
AND F.CDX = 142
AND ...
```

NOTE: F -- Fact table
D1 -- dimension table 1
D2 -- dimension table 2

The pair-wise join dimension table/Fact table join pair is (D1, F) and one of the index defined on Fact table is a multi-column index which will be used between the join pair (D1, F):

```sql
CREATE INDEX IDXFD1 ON F (CD1, CDX, ...)
```

DB2 is modified to re-evaluate the indexable Fact table local predicate correctly at the pair-wise join join back phase.

Additional Keyword: SQLPAIRWISEJOIN SQLJOINBACK SQLINCORR INCORROUT SQLINCORROUT DB2INCORR/K

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DB2BIND:
***Action for PM48939:

See PM48939 APAR/PTF text for additional information about
why a REBIND is necessary.

PM48939 corrects a problem of incorrect output may occur when a pair-wise join query uses a multi-column index between dimension table and Fact table and there is a Fact table local predicate covered by the same multi-column index.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

------- COVER LETTER FOR PTF UK73180 ---------- 2011/11/22

PROBLEM DESCRIPTION(S):
PM37057 -

**************************************************************************************************
* USERS AFFECTED: All Distributed Data Facility (DDF) users. *
* Specifically where a DB2 10 for z/OS server *
* is accessed by remote clients using SSL *
* client (mutual) authentication. *
**************************************************************************************************

* PROBLEM DESCRIPTION: Additional enhancements to *
* DB2 10 for z/OS digital certificate *
* authentication support. *
**************************************************************************************************

* RECOMMENDATION: *
**************************************************************************************************

DB2 10 for z/OS implemented the preliminary support to enable remote clients to access DB2 using digital certificates. In the z/OS digital certificate environment, the Secure Socket Layer (SSL) client (mutual) authentication security protocol identifies and authenticates the remote client when it presents its certificate as identification and its proof-of-possession (of the certificate) as authentication.

Note: Traditional remote client applications authenticate themselves to DB2 by presenting their user ID and password. Thus, the client's user ID and password provide identification and authentication.

The client certificate is registered and stored in certificate profiles in RACF. Each certificate is associated with a RACF user ID. When a secure connection is established between the client and DB2, the RACF user ID associated with the client certificate is known to DB2. During DB2 remote connection authentication processing, if the remote client's user ID is not the same as the user ID associated with the certificate, DB2 needs to give special considerations when authenticating the remote client that is attempting to access DB2 using a digital certificate.
DB2 10 for z/OS remote connection authentication processing has been enhanced to ensure remote client's that accesses DB2 using a digital certificate are properly authenticated when the remote client user ID is different from the certificate user ID. To implement client access to DB2 using a digital certificate, users need to define a trusted context at the DB2 server where the system authorization ID is set to the value of the user ID associated with the client certificate. The trusted context would need to include all the user IDs that are allowed to use it (such as, remote client user IDs or the mapped user IDs if z/OS identity name filtering is configured).

Example: A client certificate is registered to RACF and it is associated with user ID, CERTID/zerodot1. A remote client application is configured to access DB2 using a digital certificate and its user ID provided to DB2 is USER01. To define the trusted context at the DB2 server, users might consider the following sample DDL:

```
CREATE TRUSTED CONTEXT CTXT1
BASED UPON CONNECTION USING CERTID/zerodot1
NO DEFAULT ROLE ENABLE
ATTRIBUTES(ADDRESS '1.2.3.4')
WITH USE FOR USER/zerodot1;
```

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ACTION
***Action for PM37057 (V10):

This APAR/PTF provides additional enhancements to the DB2 10 for z/OS support for client access using a digital certificate.

DB2 10 for z/OS remote connection authentication processing has been enhanced to ensure remote client's that accesses DB2 using a digital certificate are properly authenticated when the remote client user ID is different from the certificate user ID. To implement client access to DB2 using a digital certificate, users need to define a trusted context at the DB2 server where the system authorization ID is set to the value of the user ID associated with the client certificate. The trusted context would need to include all the user IDs that are allowed to use it (such as, remote client user IDs or the mapped user IDs if z/OS identity name filtering is configured).

Example: A client certificate is registered to RACF and it is associated with user ID, CERTID/zerodot1. A remote client application is configured to access DB2 using a digital certificate and
its user ID provided to DB2 is USER01. To define the trusted context at the DB2 server, users might consider the following sample DDL:

```
CREATE TRUSTED CONTEXT CTXT1
BASED UPON CONNECTION USING CERTID01
NO DEFAULT ROLE ENABLE
ATTRIBUTES(ADDRESS '1.2.3.4')
WITH USE FOR USER01;
```

See PM37057 APAR/PTF text for additional information.

----- COVER LETTER FOR PTF UK73605 ----------- 2011/11/22

**PROBLEM DESCRIPTION(S):**

PM38326 -

* USERS AFFECTED: All DB2 10 for z/OS users that want the new *
* and extended function delivered by APAR PM40724. *

* PROBLEM DESCRIPTION: This apar is the pre-conditioning APAR *
* for APAR PM40724, the enabling APAR. *

* RECOMMENDATION: *

This APAR provides the necessary pre-conditioning code for the new and extended function provided by APAR PM40724. APAR PM40724 adds support for the following built-in functions:

1. LTRIM
2. RTRIM
3. REPLACE
4. ROUND
5. STRIP
6. TRIM
7. TRUNCATE

ADDITIONAL KEYWORDS: SQLLTRIM SQLRTRIM SQLREPLACE SQLROUND SQLSTRIP SQLTRIM and SQLTRUNCATE

This APAR is a pre-conditioning APAR for PM40724.

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MULTSYS:
PM38326 is a pre-conditioning APAR that includes changes to enhance existing functions as well as introduce new function that will be enabled via another APAR PM40724.
At this time, all of the changes are transparent to the user. In a data sharing group, this pre-conditioning APAR should be applied to all members before the later enabling APAR is applied to any member. The changes for existing functions are not enabled until the enabling APAR is applied.

----- COVER LETTER FOR PTF UK73620 ------- 2011/11/22

PROBLEM DESCRIPTION(S):

PM47058 -

******************************************************************************
* USERS AFFECTED: All DB2 10 for z/OS users of table
* expression with side-way reference and LEFT OUTER JOIN.
******************************************************************************

PROBLEM DESCRIPTION: An incorrect output may occur when an SQL statement satisfies all of the following conditions:

1. Table expression with side-way reference is defined in this SQL statement;
2. LEFT OUTER JOIN is involved in this SQL statement;
3. CPU parallelism setting is enabled.

******************************************************************************

RECOMMENDATION:

******************************************************************************

An incorrect output may occur when an SQL statement satisfies all of the following conditions:

1. Table expression with side-way reference is defined in this SQL statement;
2. LEFT OUTER JOIN is involved in this SQL statement;
3. CPU parallelism setting is enabled.

The following examples help to illustrate the problem.

CREATE TABLE TEST.TAB1 (C1 INT, C2 INT);
CREATE TABLE TEST.TAB2 (C1 INT, C2 INT);
CREATE TABLE TEST.TAB3 (C1 INT, C2 INT);

Example #1:
SELECT T1.C1
FROM TEST.TAB1 AS T1
    INNER JOIN TABLE (SELECT T2.C2, T3.C2
                       FROM TEST.TAB2 AS T2
                       LEFT OUTER JOIN TEST.TAB3 AS T3
                       )
ON T2.C1 = T3.C1
WHERE T3.C2 = T1.C2) AS TE(C11, C12)
WHERE T1.C2 = TE.C12;

Example #2:
SELECT T1.C2, TE.C1
FROM TEST.TAB1 AS T1
    LEFT OUTER JOIN TEST.TAB2 AS T2
    ON T1.C1 = T2.C1
    LEFT OUTER JOIN TABLE (SELECT T3.C1, T3.C2
                          FROM TEST.TAB3 AS T3
                          WHERE T3.C1 = T1.C1) AS TE(C1, C2)
    ON T2.C2 = TE.C2;

DB2 didn't handle the correlated predicate in table expression
correctly, which caused incorrect output.
The code in DB2 has been modified correctly to process table
expression with side-way reference and LEFT OUTER JOIN.

Additional keywords: SQLTABLEEXPR SQLSIDEWAY SQLLEFTJOIN
SQLLEFT SQLINCORR

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DB2BIND:
***Action for PM47058:

See PM47058 APAR/PTF text for additional information about
why a REBIND is necessary.

PM47058 corrects a problem of incorrect output when an SQL
statement satisfies all of the following conditions:

1. table expression with sideway reference is defined in this
   SQL statement;
2. LEFT OUTER JOIN is involved in this SQL statement;
3. CPU parallelism setting is enabled.

To make this fix effective for a static application, it must be
rebound after application of this PTF. Review the PTF cover
letter to determine which, if any, applications could be
affected by this change.

DB2BIND:
***Action for PM41296:

See PM41296 APAR/PTF text for additional information about
why a REBIND is necessary.
PM41296 corrects a problem of an SQL statement which defines a table expression one the preserved side of LEFT OUTER JOIN, and a CASE statement or non-column expression is defined in the SELECT list of the table expression and is referenced in the SQL statement.

Performance may regress when a SQL statement satisfies all of the following conditions:

1. OUTER JOIN is contained, and the preserved side is defined with table expression;
2. a CASE statement or non-column expression is defined in the SELECT list of the above table expression;
3. a table expression column which corresponds to the CASE statement or non-column expression from condition #2 is referenced in predicate of the SQL statement.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

----- COVER LETTER FOR PTF UK73621 --------- 2011/11/22

PROBLEM DESCRIPTION(S):
PM45561 -  

* USERS AFFECTED: All DB2 for z/OS 9 and 10 users of XML. * 

* PROBLEM DESCRIPTION: DB2 was sometimes skipping committed * 
* rows when requested by an uncommitted * 
* reader. This happened when requesting * 
* an IS lock on the XML table space * 
* during a very small window of time in * 
* data sharing environment. * 
* 
* Additional keywords: SQLCODE100 XML * 
* ISO(UR) SQLINCORR SQLINCORR/K SQLXML * 
* SQLCODE911 SQLCODE913. * 

* RECOMMENDATION: * 

By design, DB2 acquires a lower level s-lock on the XML document to prevent reading partially inserted documents, since the inserter holds an x-lock on the XML. While s-lock on the XML by a UR reader is normal, it is not expected to fail on getting the IS lock on the table space.
The reason for the IS lock failure is that DB2 was requesting a CONDITIONAL s-lock on the XML document for the UR reader, which resulted in a prerequisite CONDITIONAL IS lock request on the XML table space or the partition. (Note: CONDITIONAL lock request means that the requester does not want to wait for another lock to be released.)

The original insert or update was committed, however a new inserter or updater is attempting an IX lock at the same time as the IS lock request and IRLM is in the middle of processing this request.

In a data sharing environment, there is a small window in IRLM when the IX lock is waiting on System (MVS/XES) Lock Manager (SLM) to grant the lock, therefore the IS lock request is failed since it is conditional. IRLM has to wait to process the IS lock until the IX request is complete to determine if the IS can be granted, but since this is a CONDITIONAL request, IRLM fails the IS lock request instead of waiting. Upon receiving the lock failure, DB2 moves on to the next row, and skips the committed row.

DB2 code is changed to acquire UNCONDITIONAL S-lock on XML documents when requested by a UR reader. This also acquires an UNCONDITIONAL IS lock on the XML table space.

If customers have applications expecting SQLCODE +100 by an uncommitted reader, they can now also expect SQLCODE -911 or -913.

COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM45561
SPECIAL CONDITIONS:

ACTION
APAR PM45561 fixes a problem that causes incorrect output for readers of XML data that use ISOLATION LEVEL(UR) and potentially allows DB2 to cause the readers of XML data to wait for a lock, even though ISO(UR) is specified. The situation usually occurs during heavy concurrent insert, update, or delete activity.

The incorrect output problem is fixed by requiring ISOLATION(UR) readers to wait for XML locks. As a result, ISOLATION(UR) readers that access XML data might see increased wait time for locks.

The additional wait time for unconditional locks sometimes result in deadlocks or timeouts (SQLCODE -911 or -913), therefore, application logic may need to change to accommodate SQLCODEs -911 and -913.
PROBLEM DESCRIPTION(S):

PM48865 -

********************************************************************
* USERS AFFECTED: DB2 10 for z/OS users of virtual indexes. *
* *
* DB2 9 for z/OS and DB2 10 for z/OS users of *
* any of these EXPLAIN tables: *
* *
* - DSN_FUNCTION_TABLE *
* - DSN_PREDICAT_TABLE *
* - DSN_QUERY_TABLE *

********************************************************************
* PROBLEM DESCRIPTION: (1) While using virtual indexes on DB2 *
* 10 for z/OS, the following abend may *
* occur:
* *
* - ABEND/zero4E RC/zero0C90101 in DSNIBCTD :5007 *
* *
* (2) When issuing a SELECT on *
* DSN_FUNCTION_TABLE or *
* DSN_PREDICAT_TABLE *
* SQLCODE -331 with reason 16 may be *
* issued. *
* *
* (3) While using EXPLAIN on a query *
* that has a GROUP BY with all literals, *
* the NODE_DATA column may show a GROUP *
* BY node with no GROUP BY items. *
* *
********************************************************************
* RECOMMENDATION: *
********************************************************************

(1) While using virtual indexes on DB2 10 for z/OS the following abend may occur:

- ABEND/zero4E RC/zero0C90101 in DSNIBCTD :5007

(2) When issuing a SELECT on DSN_FUNCTION_TABLE or
DSN_PREDICAT_TABLE SQLCODE -331 with reason 16 may be issued.

The affected columns include FUNCTION_TEXT from
DSN_FUNCTION_TABLE, and TEXT and LITERALS from
DSN_PREDICAT_TABLE.

(3) While using EXPLAIN on a query that has a GROUP BY with all literals, the NODE_DATA column may show a GROUP BY node with no GROUP BY items.

An example that demonstrates this problem:
Query:

```
SELECT 'string' AS TEXT
FROM T1
GROUP BY 'string'
```

Output before fix:

```
...<FROM-CLAUSE>
  FROM
    <TAB-REF TNO="1" TYPE="T">SYSADM.T1</TAB-REF>
</FROM-CLAUSE>
<GROUP-BY>
  GROUP BY
</GROUP-BY>
...
```

Output after fix:

```
...<FROM-CLAUSE>
  FROM
    <TAB-REF TNO="1" TYPE="T">SYSADM.T1</TAB-REF>
</FROM-CLAUSE>
...
```

The above problems were caused by:
- incorrect handling of virtual indexes
- improper truncation of mixed data
- not checking for GROUP BY items

Additional keywords:
ABEND04E RC00C90101 DSNIBCTD ERQUAL5007 SQLCODE331 SQLEXPLAIN

DB2 code has been changed to:

(1) Fix the problem and not issue the abend

(2) Fix the problem for the FUNCTION_TEXT column of
    DSN_FUNCTION_TABLE and the TEXT and LITERALS columns of
    DSN_PREDICAT_TABLE so that the SQLCODE is not issued

(3) Fix the problem and not print out the GROUP BY

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ACTION
    This PTF corrects a problem where rows containing
incorrectly truncated data are inserted into explain tables DSN_FUNCTION_TABLE and DSN_PREDICAT_TABLE. As a result, subsequent SELECTs on these tables received SQLCODE -331. After applying this PTF, you must delete the rows that are currently in the tables causing -331 to stop receiving the SQL code.

----- COVER LETTER FOR PTF UK73788 -------- 2011/11/28

PROBLEM DESCRIPTION(S):

PM49549 -

**********************************************************
* USERS AFFECTED: 1. All DB2 9 and 10 for z/OS users who  *
*    use spatial predicate functions in                  *  
*    predicates                                          *  
*                                                      *
*    2. All DB2 9 for z/OS users who use a               *  
*    CAST specification that the source and              *  
*    target data types in the CAST are the              *  
*    user-defined data types                            *  
**********************************************************

* PROBLEM DESCRIPTION: 1. When a spatial predicate function  *
*    is used in a predicate, there is no                 *
*    mechanism to influence the spatial                  *
*    index being chosen. Thus the query                  *
*    performance is unpredictable. In                   *
*    some cases, a 2-second query could                  *
*    run for 3 minutes if the spatial                    *
*    index is not used. This is                         *
*    unacceptable for the web and                       *
*    mobile applications.                               *

* *
* *
* *

* 2. In DB2 9 if the source and target                   *
*    data types in a CAST specification                  *
*    are the user-defined types, the                    *
*    query that contains such a CAST                     *
*    could encounter a storage overlay                   *
*    which may result to abend                          *
*    04E-00E20029 at DSNXEFB.DSNSYSVB+                  *
*    096A or other symptoms.                            *

* *
* *
* This storage overlay does not occur                   *
* in DB2 10.                                            *

**********************************************************

* RECOMMENDATION:                                      *
**********************************************************

1. When a spatial predicate function is used in a predicate,
   there is no mechanism to influence the spatial index being
   chosen. Thus the query performance is unpredictable.
In some cases, a 2-second query could run for 3 minutes if the spatial index is not used. This is unacceptable for the web and mobile applications.

2. In DB2 9 if the source and target data types in a CAST specification are the user-defined types, the query that contains such a CAST could encounter a storage overlay which may result to abend 04E-00E20029 at DSNXEFC.DSNVSVB+096A or other symptoms.

For example,

```
CREATE DISTINCT TYPE JOE.SHOESIZE AS DECIMAL(10,2);
SELECT CAST(JOE.SHOESIZE(12) AS JOE.SHOESIZE) FROM DSW;
```

The above CAST specification may receive 04E abend at DSNXEFC.DSNVSVB+096A because DB2 does not handle the storage for such a CAST properly.

This storage overlay does not occur in DB2 10. PM49549 is a new function APAR. But during implementation we uncovered a storage overlay problem that was related to a CAST specification whose source and target data types were user-defined data types. Because the changes in this APAR include the fix for the storage overlay, to make this fix effective for a static application, after the application of the PTF, the static application that reference such a CAST must be rebound.

Additional keyword: SQLOVERLAY SQLSTORGEOVERLAY SQLUDT SQLCAST

The following describes the new function that is supported in this APAR:

The new SELECTIVITY clause with a selectivity percentage constant is introduced to a predicate to allow the user to influence the optimizer to choose the spatial index.

The new clause is available starting in V9 New Function Mode.

```
+-------------+
| SQL Reference |
+-------------+

Search conditions

>>>-++------+-+--predicate--+-+------------------------+-+---->
'-NOT-' | '---SELECTIVITY-clause---' |
```
'--(search-condition)-----------------'

v
>+=--------------------------------------------------------+-+><
'-+-AND-+-+-----+-+-predicate-+---------------------+-+-'
'-OR--' '-NOT-' | '-SELECTIVITY-clause-' |
'-(search-condition)--------------'

SELECTIVITY-clause

SELECTIVITY numeric-constant

SELECTIVITY numeric-constant

Specifies the expected selectivity percentage for the predicate. SELECTIVITY can be specified only when the predicate contains one of the spatial predicate functions (SQLCODE -2/zerodot/zerodot46) and the predicate is in one of the forms

spatial-predicate-function op expression

where op is "=" or "<" (SQLCODE -20046).

The selectivity value must be an integer or decimal constant in the inclusive range from 0 to 1 (SQLCODE -644).

For example, if 0.01 is specified, the spatial function is expected to filter out all but one percent of all rows in the table.

The following spatial predicate functions are supported. For usage syntax and additional details, please refer to IBM Spatial Support for DB2 User's Guide and Reference.

DB2GSE.ST_CONTAINS
DB2GSE.ST_CROSSES
DB2GSE.ST_DISTANCE
DB2GSE.ENVELOPESINTERSECT
DB2GSE.ST_EQUALS
DB2GSE.ST_INTERSECTS
DB2GSE.ST_OVERLAPS
DB2GSE.ST_TOUCHES
DB2GSE.ST_WITHIN

Example:

In the following query, the DB2GSE.ST_WITHIN function is
used to find all the customer locations that lie within
the input search area. With a selectivity value of
0.0001, the spatial index is expected to return 1 result
per 10,000 rows of data.

SELECT ID, NAME FROM CUSTOMERS
    WHERE DB2GSE.ST_WITHIN (LOCATION, :SEARCH_AREA) = 1
        SELECTIVITY 0.0001;

+====================+
| Messages and Codes |
+====================+
-20046

THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY
BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

Explanation

The SELECTIVITY clause is specified with a predicate
that does not include a spatial predicate function or
the operator is incorrect.

System response

The statement cannot be processed.

User response

Remove the SELECTIVITY clause following the predicate.

SQLSTATE: 428E5

DSNH20046I

THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY
BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

Explanation

The SELECTIVITY clause is specified with a predicate
that does not include a spatial predicate function or
the operator is incorrect.

System response

The statement cannot be processed.
User response

Remove the SELECTIVITY clause following the predicate.

Severity: 8 (error)

+====================================+
| Spatial User’s Guide and Reference |
+====================================+

In some instances, the users may have detailed information about their spatial data such that the selectivity of a particular query can be estimated accurately. In those cases, the user can add a SELECTIVITY clause with a numeric constant in the spatial predicate function specification to the DB2 optimizer. DB2 will use this value as the new filter factor for determining an access path for the SELECT statement. Please refer to the SQL Reference for its syntax and usage.

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DB2BIND:
***Action for PM41072:

A rebind is necessary for static applications to rebuild access paths based on the changes in this APAR.

PM41072 corrects an incorrect output problem in which the order of rows can be returned in the wrong order for a query with ORDER BY and multiple encoding schemes.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

DB2BIND:
***Action for PM38954:

See PM38954 APAR/PTF text for additional information about why a REBIND is necessary.

PM38954 corrects a problem of wrong order returned on query with RANK function and index access is selected.
To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

**DB2BIND:**
See PM38287 APAR/PTF text for additional information about why a REBIND is necessary.

PM38287 corrects an incorrect output problem where data is returned in opposite order to what ORDER BY specified when the following conditions are true.

1. ORDER BY contains a column first and then followed by an IOE key expression which preserves column order on the same column.
2. The column is specified as ASC to be returned in ascending order.
3. The IOE key expression is specified as DESC to be returned in descending order.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

**DB2BIND:**

***Action for PM32677:***

See PM32677 APAR/PTF text for additional information about why a REBIND is necessary.

PM32677 corrects a problem that the DB2 optimizer may select an access path that performs an unnecessary sort for a query with both GROUP BY and ORDER BY clauses.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

**ACTION**
This PTF introduces the new SELECTIVITY clause with a selectivity percentage constant to a predicate to allow the user to influence the optimizer to choose the spatial index.

This new clause is available starting in V9 New Function Mode.

+-----------------------------+
| SQL Reference               |

Appendix A. HOLD DATA for PTFs incorporated in the product tape 199
Search conditions

\[ \text{--process--} \]

Selectivity clause

\[ \text{SELECTIVITY numeric-constant} \]

Specifies the expected selectivity percentage for the predicate. SELECTIVITY can be specified only when the predicate contains one of the spatial predicate functions (SQLCODE -20046) and the predicate is in one of the forms

\[ \text{(spatial-predicate-function op expression)} \]

where \( \text{op} \) is "=" or "<" (SQLCODE -20046).

The selectivity value must be an integer or decimal constant in the inclusive range from 0 to 1 (SQLCODE -644). For example, if 0.01 is specified, the spatial function is expected to filter out all but one percent of all rows in the table.

The following spatial predicate functions are supported. For usage syntax and additional details, please refer to IBM Spatial Support for DB2 User's Guide and Reference.

- `DB2GSE.ST_CONTAINS`
- `DB2GSE.ST_CROSSES`
- `DB2GSE.ST_DISTANCE`
- `DB2GSE.ENVELOPESINTERSECT`
- `DB2GSE.ST_EQUALS`
- `DB2GSE.ST_INTERSECTS`
Example:

In the following query, the DB2GSE.ST_WITHIN function is used to find all the customer locations that lie within the input search area. With a selectivity value of 0.0001, the spatial index is expected to return 1 result per 10,000 rows of data.

```
SELECT ID, NAME FROM CUSTOMERS
WHERE DB2GSE.ST_WITHIN (LOCATION, :SEARCH_AREA) = 1
SELECTIVITY 0.0001;
```

THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

Explanation

The SELECTIVITY clause is specified with a predicate that does not include a spatial predicate function or the operator is incorrect.

System response

The statement cannot be processed.

User response

Remove the SELECTIVITY clause following the predicate.

SQLSTATE: 428E5

DSNH20046I

THE SELECTIVITY CLAUSE FOLLOWING predicate-type CAN ONLY BE SPECIFIED FOR A SPATIAL PREDICATE FUNCTION

Explanation

The SELECTIVITY clause is specified with a predicate
that does not include a spatial predicate function or
the operator is incorrect.

System response

The statement cannot be processed.

User response

Remove the SELECTIVITY clause following the predicate.

Severity: 8 (error)

+====================================+
| Spiritual User's Guide and Reference |
+====================================+

In some instances, the users may have detailed information
about their spatial data such that the selectivity of a
particular query can be estimated accurately. In those
cases, the user can add a SELECTIVITY clause with a numeric
constant in the spatial predicate function specification to
the DB2 optimizer. DB2 will use this value as the new filter
factor for determining an access path for the SELECT statement.
Please refer to the SQL Reference for its syntax and usage.

------- COVER LETTER FOR PTF UK73797 ----------- 2/11/28

PROBLEM DESCRIPTION(S):

PM50507 -

* USERS AFFECTED: All DB2 10 for z/OS users who use
  hash-organized tables.

* PROBLEM DESCRIPTION: DB2 may choose other suboptimal access
  method for a hash-organized table, even
  when hash access is the best access
  method.

  For example, table T1 is hash-organized
  on column (C1, C2). T1 has another
  unique index UIX on column (C1, C2).
  When T1's hash space does not overflow,
  the hash access should provide better
  query performance than UIX for the
  following query:

  SELECT ...

202  DB2 10 for z/OS Value Unit Edition Program Directory
* FROM T1 *
* WHERE C1 = ? and C2 = ? *
* *
* However, DB2 may choose UIX over the *
* hash access method, leading to *
* suboptimal query performance. *
* *

******************************************************************************
* RECOMMENDATION: *
******************************************************************************
Hash access is efficient for queries that use equal predicates to access a single row on a table, especially when there is no overflow in the hash space. However, DB2 may choose other access method(s) instead of the hash access method, even when the hash-organized table does not have an overflow in the hash space. This problem is due to an incorrect calculation in the DB2 optimizer to determine the cost of hash access.

The DB2 optimizer is modified to correct the calculation, to get a more accurate cost estimation for hash access. As a result, when there is no overflow in the hash space, hash access is determined to have a lower cost than other access method(s), and DB2 optimizer will prefer using hash access on the hash-organized table for queries using equal predicates to locate a single row.

Additional Keywords:
SQLACCESSPATH
COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM50507
SPECIAL CONDITIONS:
COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2010
LICENSED MATERIAL - PROGRAM PROPERTY OF IBM
DB2BIND:
***Action for PM50507:

See PM50507 APAR/PTF text for additional information about why a REBIND is necessary.

PM50507 corrects a problem of the DB2 optimizer in calculating the cost of hash access for a hash-organized table. The fix will get a more accurate estimation of hash access, and enable the DB2 optimizer to choose hash access methods over other suboptimal method(s).

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.
DB2BIND:
A rebind is necessary for static applications to rebuild access paths based on the changes in this APAR.

PM45292 corrects a problem in which a DB2 intentional abend may occur when a query contains the RID function.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

-------- COVER LETTER FOR PTF UK74015 -------- 2011/11/28

PROBLEM DESCRIPTION(S):

PM42910 -

**********************************************************************************
* USERS AFFECTED: 1. All DB2 9 for z/OS users who have *
*   installed UK64833 (PE APAR PM16023) *
*   and use synonyms in a dynamic *
*   statement *
* *
* 2. All DB2 10 for a dynamic statement *
*   synonyms in a dynamic statement *
**********************************************************************************

* PROBLEM DESCRIPTION: On DB2 9 for z/OS, after PTF UK64833 *
* (PE APAR PM16023) is installed, if *
* a dynamic statement with the *
* DYNAMICRULES run behavior references *
* a synonym, and if the following *
* conditions are true:
*
* 1. the values in CURRENT SQLID and *
   CURRENT SCHEMA special registers *
   are different when the synonym *
   is referenced *
*
* 2. the value in CURRENT SQLID special *
   register can resolve the *
   referenced synonym in catalog *
   table SYSIBM.SYSSYNONYMS *
*
* 3. the synonym name is the same as *
   the base table name on which the *
   synonym was defined, and the *
   value in CURRENT SCHEMA special *
   register can qualify that base *
   table in catalog table *
   SYSIBM.SYSTABLES *
*
* the statement may receive erroneous *
*  abends or SQLCODEs. The symptoms that  *
*  have been identified but not limited  *
*  to are:  *
*  *
*  ABEND04E at DSNXGRDS.DSNXOSL M100  *
*  ABEND04E at DSNXGRDS.DSNXOSL P333  *
*  ABEND04E at DSNXGRDS.DSNXEFDA M500  *
*  ABEND0C4 at DSNXGRDS.DSNXOMD+0E70  *
*  SQLCODE -204  *
*  SQLCODE -206  *
*  SQLCODE -417  *
*******************************************************************************
* RECOMMENDATION:  *
*******************************************************************************

On DB2 9 for z/OS, after PTF UK64833 (PE APAR PM16023) was installed, a dynamic query with the DYNAMICRULES run behavior that references a synonym may receive various symptoms. The symptoms include but not limit to:

ABEND04E at DSNXGRDS.DSNXOSL M100
ABEND04E at DSNXGRDS.DSNXOSL P333
ABEND04E at DSNXGRDS.DSNXEFDA M500
ABEND0C4 at DSNXGRDS.DSNXOMD+0E70
SQLCODE -204
SQLCODE -206
SQLCODE -417

if the following conditions are true:

1. the values in CURRENT SQLID and CURRENT SCHEMA special registers are different when the synonym is referenced
2. the value in CURRENT SQLID can resolve the referenced synonym in catalog table SYSIBM.SYSSYNONYMS
3. the synonym name is the same as the base table name on which the synonym was defined, and the value in CURRENT SCHEMA can qualify that base table in catalog table SYSIBM.SYSTABLES

The following examples illustrate SQLCODE -206 and abend 04E at DSNXOSL M100 --

GRANT CREATEIN, DROPIN ON SCHEMA "BASE" TO "SYNONYM";
COMMIT;

SET CURRENT SQLID = 'SYNONYM';
COMMIT;

SET CURRENT SCHEMA = 'BASE';
COMMIT;
CREATE TABLE T1(C1 INT);
COMMIT;

SELECT SUBSTR(CREATOR,1,8) QUALIFIER,
     SUBSTR(NAME,1,8) NAME,
     TYPE
FROM SYSIBM.SYSTABLES
WHERE NAME = 'T1';

+-----------------------------+
| QUALIFIER | NAME | TYPE |
+-----------------------------+
1_ | BASE | T1 | T |
+-----------------------------+

CREATE SYNONYM T1 FOR BASE.T1;
COMMIT;

SELECT SUBSTR(CREATOR,1,8) CREATOR,
     SUBSTR(NAME,1,8) NAME,
     SUBSTR(TBCREATOR,1,8) TBCREATOR,
     SUBSTR(TBNAME,1,8) TBNAME
FROM SYSIBM.SYSSYNONYMS
WHERE NAME = 'T1';

+--------------------------------------------+
| CREATOR | NAME | TBCREATOR | TBNAME |
+--------------------------------------------+
1_ | SYNONYM | T1 | BASE | T1 |
+--------------------------------------------+

SELECT C1 FROM T1;

SQLCODE = -206, ERROR: C1 IS NOT VALID IN THE CONTEXT WHERE IT IS USED

SELECT * FROM T1;

ABND=04E-00E70005, LOC=DSNXGRDS.DSNXOSL_M100
DB2 has been modified to ensure the erroneous abends and SQLCODEs that were caused by PTF UK64833 (PE APAR PM16023) no longer occur. As part of the fix, DB2 restores the synonym support to the level that existed in V9 prior to the PTF UK64833, which is the same behavior as in V8. As such, DB2 restores the synonym support in DB2 10 to the same level as well.

The synonym support on DB2 for z/OS is different from that
on other DB2 family products. Synonyms are not recommended for use. Use the CREATE ALIAS statement to create an alias instead.

Additional keywords: SQLSYNONYM SQLSDLID SQLSCHEMA SQLALIAS
COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM42910
SPECIAL CONDITIONS:
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ACTION
PM42910 restores the synonym support to the level that existed in V9 prior to PTF UK64833 (PE PM16023), which is the same behavior as in V8. If your application cannot use this level of the synonym support such as receiving SQLCODE -204 when referencing a synonym, please use the CREATE ALIAS statement to create the aliases instead.

------- COVER LETTER FOR PTF UK73880 ------------ 2011/11/30

PROBLEM DESCRIPTION(S):
PM47092 -
******************************************************
* USERS AFFECTED: All DB2 for z/OS V8, DB2 9 and DB2 10 for *
* z/OS users of MQT.
******************************************************
* PROBLEM DESCRIPTION: An incorrect output may occur when an *
* SQL statement satisfies all of the following conditions: *
* *
* 1. a BETWEEN predicate is referenced in *
* the definition of one MQT; *
* 2. an IN predicate or multiple OR predicates are referenced in one *
* SQL statement, and the value of some *
* expressions from IN predicate or OR *
* predicates exceed the value of low *
* bound or high bound from the *
* BETWEEN predicate in #1; *
* 3. the SQL statement in #2 is rewritten *
* to the MQT in #1 by DB2. *
******************************************************

RECOMMENDATION:
******************************************************
An incorrect output may occur when an SQL statement satisfies all of the following conditions:

1. a BETWEEN predicate is referenced in the definition of one MQT;
2. an IN predicate or multiple OR predicates are referenced in one SQL statement, and the value of some expressions from IN predicate or OR predicate exceed the value of low bound or high bound from the BETWEEN predicate in #1;
3. the SQL statement in #2 is rewritten to the MQT in #1 by DB2.

The following example helps to illustrate problem:

CREATE TABLE TEST.TAB1 (C1 INT, C2 INT);
INSERT INTO TEST.TAB1 VALUES(2, 5);
INSERT INTO TEST.TAB1 VALUES(15, 2/zerodot);

CREATE TABLE MQT1 AS
(SELECT T.C1, T.C2
 FROM TEST.TAB1 AS T
 WHERE T.C1 BETWEEN 1 AND 1/zerodot)
DATA INITIALLY DEFERRED
REFRESH DEFERRED
MAINTAINED BY USER
ENABLE QUERY OPTIMIZATION;

REFRESH TABLE MQT1;

SET CURRENT REFRESH AGE = ANY;
SET CURRENT MAINTAINED TABLE TYPES = ALL;

Query #1:
SELECT T.C2
FROM TEST.TAB1 AS T
WHERE T.C1 IN (1, 15, 45);

Query #2:
SELECT T.C2
FROM TEST.TAB1 AS T
WHERE T.C1 = 1
 OR T.C1 = 15
 OR T.C1 = 45;

DB2 rewrites the above SQL to MQT incorrectly, which causes the incorrect output.

DB2 is updated not to rewrite above SQL statement to MQT.

Additional keywords: SQLMQT SQLBETWEEN SQLIN SQLOR
COMPONENT: 5740-XYR00-HDBAA10
APARS FIXED: PM47092
SPECIAL CONDITIONS:
 COPYRIGHT: 5740-XYR00 COPYRIGHT IBM CORP. 1982 2010
**LICENSED MATERIAL - PROGRAM PROPERTY OF IBM**

**DB2BIND:**

***Action for PM47092:***

See PM47092 APAR/PTF text for additional information about why a REBIND is necessary.

PM47092 corrects a problem of an incorrect output when an SQL statement satisfies all of the following conditions:

1. a BETWEEN predicate is referenced in the definition of one MQT;
2. an IN predicate or multiple OR predicates are referenced in one SQL statement, and the value of some expressions from IN predicate or OR predicate exceed the value of low bound or high bound from the BETWEEN predicate in #1;
3. the SQL statement in #2 is rewritten to the MQT in #1 by DB2.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.

------- COVER LETTER FOR PTF UK73883 --------- 2011/11/30

**PROBLEM DESCRIPTION(S):**

PM47894 -

* USERS AFFECTED: All DB2 9 and 10 for z/OS users of queries that contain a CASE expression in a predicate. *

* PROBLEM DESCRIPTION: An incorrout may occur when user's SQL statement satisfies all of following conditions: *

1. The SQL statement contains a BETWEEN predicate which references a CASE expression in its low or high operator. *
2. The CASE expression references a scalar fullselect in its searched-when clause. *

* RECOMMENDATION: *

An incorrout may occur when user's SQL statement satisfies all
of following conditions:

1. The SQL statement contains a BETWEEN predicate which references a CASE expression in its low or high operator.

2. The CASE expression references a scalar fullselect in its searched-when clause.

Example
================================================================
CREATE TABLE TU1 (  
  CU11 INT NOT NULL  
  ,CU12 VARCHAR(10) NOT NULL  
  ,CU13 DATE  
  ,PRIMARY KEY (CU11));

CREATE TABLE TU2 (  
  CU21 INT NOT NULL  
  ,CU22 VARCHAR(10) NOT NULL  
  ,CU23 DATE  
  ,PRIMARY KEY (CU21));

SELECT CU11, CU13  
FROM TU1  
WHERE CU13 BETWEEN  
  (CASE WHEN (SELECT CU21  
          FROM TU2  
          WHERE CU21 = 1  
          ) = 1  
       THEN '1999-01-01'  
       ELSE '2000-01-01'  
       END ) AND  
  (CASE WHEN (SELECT CU21  
          FROM TU2  
          WHERE CU21 =1  
          )= 1  
       THEN '2001-01-01'  
       ELSE '2002-01-01' END)  
AND CU11 BETWEEN 1 AND 4  
ORDER BY CU11, CU13;

The reason for this incorrout is because DB2 did not process BETWEEN predicate with CASE expression correctly.

Now DB2 can process BETWEEN predicate with CASE expression correctly to avoid the incorrout.

Additional Keywords: SQLINCORR INCORROUT SQLINCORROUT DB2INCORR/K
PM47894 corrects a problem that an incorrect may occur when user's SQL statement satisfies all of following conditions:

1. The SQL statement contains a BETWEEN predicate which references a CASE expression in its low or high operator.

2. The CASE expression references a scalar fullselect in its searched-when clause.

To make this fix effective for a static application, it must be rebound after application of this PTF. Review the PTF cover letter to determine which, if any, applications could be affected by this change.
## Appendix B. Included PTFs for DB2 10 VUE

### B.1 Included PTFs for FMID HDBAA10

- FMID HDBAA10

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Appendix B. Included PTFs for DB2 10 VUE
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- FMID HIYAA10

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B.3 Included PTFs for FMID HIZAA10

- FMID HIZAA10

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  UK56129  UK58311

B.4 Included PTFs for FMID HDREA10

- FMID HDREA10

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  UK60239
  UK65253

B.5 Included PTFs for FMID HIR2230

- FMID HIR2230

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B.6 Included PTFs for FMID JDBAA14

- FMID JDBAA14
B.7 Included PTFs for FMID JDBAA11

- FMID JDBAA11

B.8 Included PTFs for FMID JDBAA12

- FMID JDBAA12

B.9 Included PTFs for FMID JDBAA17

- FMID JDBAA17
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Reader's Comments

Program Directory for DB2 10 for z/OS Value Unit Edition, November 2012

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For each of the topics below please indicate your satisfaction level by circling your choice from the rating scale. If a statement does not apply, please circle N.

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<th>RATING SCALE</th>
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<th>Satisfaction</th>
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<td>Contents of Program Directory</td>
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<tr>
<td>Installation Verification Programs</td>
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<td>Time to install the product</td>
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<td>Readability and organization of Program Directory tasks</td>
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<td>Necessity of all installation tasks</td>
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<td>Accuracy of the definition of the installation tasks</td>
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<td>Technical level of the installation tasks</td>
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<td>Ease of getting the system into production after installation</td>
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How did you order this product?

- [ ] CBPDO
- [ ] CustomPac
- [ ] ServerPac
- [ ] Independent
- [ ] Other

Is this the first time your organization has installed this product?

- [ ] Yes
- [ ] No

Were the people who did the installation experienced with the installation of z/OS products?

- [ ] Yes
No

If yes, how many years? __

If you have any comments to make about your ratings above, or any other aspect of the product installation, please list them below:

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Please provide the following contact information:

________________________________________________________________________

Name and Job Title

________________________________________________________________________

Organization

________________________________________________________________________

Address

________________________________________________________________________

Telephone

Thank you for your participation.

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