Technical Release Q1.2 2015

Technical Specification

Created January 6, 2015
Last updated February 10, 2015
Prepared by Mary Meyer

Information Technology Services
Office of the President
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## Version History

<table>
<thead>
<tr>
<th>Version #</th>
<th>Date</th>
<th>Revised By</th>
<th>Reason for Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>01/06/2015</td>
<td>Mary Meyer</td>
<td>Initial Draft</td>
</tr>
<tr>
<td>1.1</td>
<td>01/28/2015</td>
<td>Mary Meyer</td>
<td>Added CHG0033589</td>
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<tr>
<td>1.2</td>
<td>01/30/2015</td>
<td>Mary Meyer</td>
<td>Replaced references to CHG0033589 with RITM0057502; removed references to specific JCL members in Unit Testing Requirements section, only process is mentioned since sample test JCL is not used by Hosted Apps</td>
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<tr>
<td>1.3</td>
<td>02/05/2015</td>
<td>Mary Meyer</td>
<td>Added PPP465 to Section 6</td>
</tr>
<tr>
<td>1.3</td>
<td>02/10/2015</td>
<td>Mary Meyer</td>
<td>Removed PPACAHRS</td>
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1 Introduction

Service Now Ticket - RITM0047174
RITM0047174 requests that programs containing SQL statements ‘Select *’ be changed to list the column names and host variables and the insert statements using ‘from’ also be changed to list the column names and values.

Service Now Ticket – RITM0048039
RITM0048039 requests that the following changes be made, if not already present, at the same time the changes for RITM0047174 are being made:
1) Move the program name to ‘DB2MSG-PGM-ID’ in the Initialization section before any SQL statements are executed.
2) Populate DB2MSG-TAG just before each and every executable SQL request.

Service Now Ticket – RITM0055126
RITM0055126 requests that a new DB2 table be created to store rows from PPPEUD before they are deleted. It is extremely rare but when loading the DB2 PAR, program PPP465 will delete an old record PAR record if it has the same employee ID and PRI_GROSS_CTL values. This is necessary because indexes prevent two records from having the same values for those fields.
At present, there is no way of knowing which records have been deleted. For future projects, it may become important to identify any records which have been deleted. A separate tech spec (techspec2.docx) will be included in this release to address this Service Now ticket.

Background

• Service Now Ticket - RITM0047174
The DBA has requested that for efficiency and reduced overhead, SQL statements containing ‘Select *’ be replaced by statements that list the column and host variable names. DBA provided a list of ‘select * from DB2P created in Mar 2011:

```text
"db2pSelAsteris"
```

to get a more current program list, run: SPGRRR.JCL.CNTL(SELASTR). It takes a few hours to run.

This release does not contain any programs using the group ‘insert’ logic. Below is a list of programs requiring changes that will be addressed in a future release. However, for any programs where the ‘select *’ is being changed, check for ‘insert’ statements and correct them as well.

An example of an ‘insert’ statement that should be changed can be found in ‘PAY.BASE.COBO (PPACTUTW):

EXEC SQL
INSERT INTO PPPVACT2_ACT
VALUES (:ACT-ROW-DATA)
END-EXEC.

After typing on command line: sql ins pb0da.PPPVACT2_ACT, the tool will replace it with this code:

******************************************************************************
*** SQL FOR TABLE PPPVACT2_ACT
******************************************************************************
EXEC SQL
  INSERT INTO PPPVACT2_ACT
  (EMPLOYEE_ID
   ,APPT_NUM
   ,DIST_NUM
   ,ACTION_CODE
   ,ACTION_EFFDATE
  )
  VALUES
  (;
   :DCLPPPVACT2-ACT.EMPLOYEE-ID
   ,:DCLPPPVACT2-ACT.APPT-NUM
   ,:DCLPPPVACT2-ACT.DIST-NUM
   ,:DCLPPPVACT2-ACT.DIST-NUM
   ,:DCLPPPVACT2-ACT.ACTION-CODE
   ,:DCLPPPVACT2-ACT.ACTION-EFFDATE
  )
END-EXEC
*
******************************************************************************

• Service Now Ticket - RITM0048039

RITM0048039 requests changes to improve error handling and facilitate debugging.

1) Move the program name to ‘DB2MSG-PGM-ID’in the initialization section before any SQL statements are executed.

2) Populate DB2MSG-TAG just before each and every executable SQL request.
   Do not put a period at the end of the statement.
   Executable SQL statements are:
   • select
   • open cursor
   • close cursor
   • fetch
   • update
   • insert
Overview of System Modifications

For RITM0047174, changes will be made to 20 programs to replace ‘select *’ statements with the list of column and host variable names and to change the insert statements using ‘from’ to list the column names and values. If the statement is a ‘declare cursor’, the ‘fetch’ statement will be changed to list the host variables.

For RITM0048039 changes will be made to populate ‘DB2MSG-PGM-ID’ in the initialization section before any SQL statements are executed and to populate DB2MSG-TAG just before each executable SQL request.

For RITM0055126, please refer to techspec2.docx included with this release.

For RITM0057502 an END-IF statement will be added to 2 sections of code. Refer to ticket for details.

Processes Impacted:
- Batch EDB Monthly Maintenance
- EDB File Maintenance
- Load PAR tables
- Compute
- Expense distribution
- History table updates
- Abeyance
- ACA processing

Design Considerations

Assumptions and Dependencies

- For this release, twenty programs were selected. The remaining programs will be changed in future Technical Releases. Some programs have been changed by R2160-Technical Release QTR4 2014 and R2166 Technical Release JAN 2015.
- The list of columns needed to replace ‘*’ in a SELECT (or in re-coding an INSERT) must include all of the columns in the view being used and there will be no attempt made to remove columns that are not referred by the programs.
- Code review is required.
- Testing will include executing the SQL statements that were changed for RITM0047174.
- No testing is required for changes made for RITM0048039.
- RITM0047174 and RITM0048039 will remain open until the entire inventory is completed.
5. Testing Considerations

For RITM0055126, refer to Section 5 of techspec2.docx included with this release.

The remainder of this Section pertains to RITM0047174

• **DBA tool**

DBA provided a tool that looks up all the table’s or view’s column names from the DB2 catalog and inserts them in the cobol program.

The whole model SQL statement is written. You will need to edit it depending on requirements.

The advantage is that all the column names are copied in the right order for you. **Be sure to use the table or view as specified in the SQL statement.** If it’s a view and you use the table name, the column names may be incorrect.
Look at all messages from compile listing if return code is > 0 to ensure that they are not a result of changes you made.

Conditions that will cause return code 4 or 8:

- **“Deleted Columns”**

Some views still contain column names that are no longer used. For example, in PAY.BASE.INCLUDE(PPPVZDEP), DEP-INS-DEENROLL has been commented out and replaced by filler in the COBOL declaration:

```
*****10 DEP-INS-DEENROLL     PIC X(01),
  10 DEP-FILLER                    PIC X(01).
```

However, since it still exists in the DB2 view (PB0DA.PPPVZDEP_DEP), the tool will insert it as a column name. This will become evident when you do a compile. You will get a warning that the column does not exist. You will then need to delete it from the list of names generated by the tool. To date, PPPVZDEP_DEP and PPPVZBEN_BEN (and other views associated with PPPDEP and PPPBEN) have been identified as containing “deleted” columns, but there could be others.

- **Ambiguous References**

There could be multiple `select *` statements that have the same column name from different tables or views. This is not an issue for `select *`, but it will be a problem when all the host variable names are listed. The compiler will give an error that the referenced field name is ambiguous.

For example, PPEC705 contains these statements:

```
FETCH PAY_ROW INTO :PAY-ROW-DATA and FETCH DEP_ROW INTO :DUPE-DEP-ROW-DATA
```

The DBA tool will insert the host variable names like this:

```
FETCH PAY_ROW INTO
 :EMPLOYEE-ID
 :CITIZEN-CODE
 :VISA-TYPE ....
```

and

```
FETCH DEP_ROW INTO
 :EMPLOYEE-ID
 :DEP-NUM
 :DEP-ADC-CODE ....
```

The compiler will flag this as ambiguous. You will need to qualify the host variable names as follows:

```
FETCH PAY_ROW INTO
 :PAY-ROW-DATA.EMPLOYEE-ID
 :CITIZEN-CODE
 :VISA-TYPE ....
```

and

```
FETCH DEP_ROW INTO
```
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:DUPE-DEP-ROW-DATA.EMPLOYEE-ID
:DEP-NUM
:DEP-ADC-CODE ....

NOTE: Other references to the field in the code will already be qualified, for example, ‘MOVE EMPLOYEE-ID OF DUPE-DEP-ROW-DATA”, so you do not need to make any further changes.

6 Mainframe Design

For RITM0055126, refer to techspec2.docx included with this release.

6.1.1 Cobol Programs

For the programs listed below, make changes to list column names and host variables in place of ‘select *’ or insert statements as described in this document. Populate DB2MSG-TAG and DB2MSG-PGM-ID as required.

:PPBENESP calculates and prints the Employee Support Program benefit. One ‘select *’ statement to be changed.

PPDBLUTL retrieves the PPPDBL data for an employee into an array. One ‘select *’ statement to be changed.

PPDDGUTL retrieves the PPPDDG data for an employee into an array. One ‘select *’ statement to be changed.

PPDEPUTL retrieves the PPPDEP data for an employee into an array. One ‘select *’ statement to be changed.

PPDISUTW is part of the EDB fetch complex that processes updates to PPPDIS rows. One insert statement to be changed.

PPDOSFET retrieves rows from the CTL PPPDOS table for processing by the history CTL (CDB). Two ‘select *’ statements to be changed. Populate DB2MSG-TAG and DB2MSG-PGM-ID.

PPDOSHST prepares rows for the History PPPDOSH table. One ‘select *’ statement to be changed. Populate DB2MSG-PGM-ID.

PPDSTUPD updates rows on the History PPPDST table. One insert statement to change.

PPDUEUTL performs union dues retention and reinstatement functions. One insert statement to change.

PPDXRHDR builds the document header for employee documents. One declare and fetch statement to change.

PPFAU019 accumulates and prints the fund summary for PPP420 based on call type. One ‘select *’ statement to be changed. Populate DB2MSG-TAG at OPEN FND_CURSOR, CLOSE FND_CURSOR, FETCH FND_CURSOR. Populate DB2MSG-PGM-ID.
PPHBNUDP updates rows on the History PPPHBN table. One insert statement to change.

PPIDXUPD updates rows on the History PPPIDX table. One insert statement to change.

PPMSSG2 retrieves a message from the System Messages table. One ‘select *’ statement to be changed.

PPPPAUTL retrieves PPPPA data for an employee into an array. One declare and fetch statement to change.

PPP060 generates EDB maintenance deduction transactions. One ‘select *’ statement to be changed.

PPP465 maintains (inserts and deletes records from) the DB2 PAR tables. It will write a record to a new table instead of deleting duplicate records.

PPRCABEY creates the batch reports and pay transaction files for ORCA and Rush Check. One insert statement to change. Populate DB2MSG-TAG in 9900-UPDATE-ABC-TOTALS SECTION.

PPTCTUTL retrieves data from the CTL title code tables. Ten select statements to change.

PPUNLECF unloads and purges the employee change data from the PPPECF table. One insert statement to change.

PPWIDSP is the screen processor for the IDSP function (Check Address). One insert statement to change. Populate DB2MSG-TAG in paragraphs 8700-UPDATE-COM and 8750-INSERT-COM.
## Unit Testing Requirements

<table>
<thead>
<tr>
<th>RITM #</th>
<th>PROGRAM</th>
<th>TESTING</th>
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<tbody>
<tr>
<td>RITM0055126</td>
<td>PPP465</td>
<td>Refer to Section 5 of techspec2.docx included with this release</td>
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<tr>
<td>RITM0047174</td>
<td>PPDUEUTL</td>
<td>Batch EDB Monthly Maintenance</td>
</tr>
<tr>
<td></td>
<td>PPDDGUTL PPFAU019 PPPMSSG2 - may need to force an error to occur</td>
<td>Compute</td>
</tr>
<tr>
<td></td>
<td>PPDBLUTL PPDEPUTL PPCTUTL</td>
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<td></td>
<td>PPBENESP</td>
<td>Expense Distribution</td>
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<td></td>
<td>PPDXRHD</td>
<td>CICS - IDOC function</td>
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<tr>
<td></td>
<td>PPWIDSP</td>
<td>CICS - IDSP function</td>
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<tr>
<td></td>
<td>PPDISUTW</td>
<td>CICS - EAPP function</td>
</tr>
<tr>
<td></td>
<td>PPDSTUPD PPHBNUPD PPIDXUPD</td>
<td>Update History (PPP742)</td>
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<tr>
<td></td>
<td>PPDOSHST PPDOSFET</td>
<td>Update History CTL table (PPP741)</td>
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<tr>
<td></td>
<td>PPUNLECF</td>
<td>Run Unload of PPPECF</td>
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<td>PPRCABEY</td>
<td>Run Abeyance process</td>
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<td></td>
<td>PPP060</td>
<td>Generate EDB maintenance deduction transactions – sample JCL included with release</td>
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<tr>
<td>RITM0048039</td>
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<td>No testing required</td>
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