## 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>11/04/2014</td>
<td>Mary Meyer</td>
<td>Initial Draft</td>
</tr>
<tr>
<td>1.1</td>
<td>01/20/2015</td>
<td>Mary Meyer</td>
<td>Remove PPP520</td>
</tr>
</tbody>
</table>
Table of Contents

Version History .......................................................................................................................................................................... 1
1 Introduction........................................................................................................................................................................ 3
2 Overview of System Modifications ................................................................................................................................... 5
3 Design Considerations ....................................................................................................................................................... 5
3.1 Assumptions and Dependencies ................................................................................................................................... 5
6 Mainframe Design.............................................................................................................................................................. 7
  6.1.1 Cobol Programs .................................................................................................................................................... 7
  6.1.2 Copylib Members ..................................................................................................................................................... 9
7 Unit Testing Requirements ............................................................................................................................................... 9
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.

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:

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

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.COBOL (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
    ... ...
    )
END-EXEC
*
*-*-*-*- END OF SQL INSERTED CODE -*-*-*-*

• **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
   - delete

   (Statements for declare, include do not required msg tags).
2 **Overview of System Modifications**

For **RITM0047174**, changes will be made to 21 programs to replace ‘select *’ or insert statements with the list of column and host variableames. If the statement is a ‘declare cursor’, the ‘fetch’ statement will be changed to list the host variables.

For **RITM0048039**, no programs included in this Release require changes related to this ticket.

Various processes will require testing.

3 **Design Considerations**

3.1 **Assumptions and Dependencies**

- For this release, 21 programs were selected. The remaining programs will be changed in future Technical Releases. Some programs have been changed by R2160-Technical Release QTR4 2014.

- 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 to by the programs.

- Code review is required.

- Testing will include executing the SQL statements that were changed for RITM0047174.

- RITM0047174 and RITM0048039 will remain open until the entire inventory is completed.

- No QA or UAT

5. **Testing Considerations**

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.
**CHECK COMPILE LISTINGS CAREFULLY**

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.
o **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:

```plaintext
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:

```plaintext
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:

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

and

FETCH DEP_ROW INTO
  :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

#### 6.1.1 Cobol Programs

For the following programs, make changes to list column names and host variables in place of ‘select *’ statements as described in this document:

**PPACTUTW** - part of the EDB fetch complex that processes updates to PPPACT rows. One insert statement to change.

**PPAPEUFE** - final edit processor for the EDB Entry/Update CICS subsystem. One select statement to change.
PPAPEUPU - pre-update processor for the EDB Entry/Update CICS subsystem. One select statement and two declare and fetch statements to change.

PPAPNUPD - updates rows on the History PPPAPN table. One insert statement to change.

PPAPPPUTW - part of the EDB fetch complex that processes updates to PPPAPP rows. One insert statement to change.

PPATNUPD - updates rows on the History PPPATN table. One insert statement to change.

PPAWDUPD - updates rows on the History PPPAWD table. One insert statement to change.

PPAWRUTW - part of the EDB fetch complex that processes updates to PPPAWR rows. One insert statement to change.

PPBELUTL - retrieves the PPPBEL data for an employee. One select statement to change.

PPBELUTW - part of the EDB fetch complex that processes updates to PPPBEL rows. One insert statement to change.

PPEULOAD - loads several CTL tables for use by online applications when CICS transaction T002 is executed at CICS region startup. Multiple Declare and Fetch statements to change.

PPEXPTLA - generates the expense transfer data for TL pay transactions. One Declare statement to change.

PPPREDT - validates EDB edit/update fields against the Data Element Table. One Declare statement to change.

PPPREDT - main batch driver program for consistency edits in the EDB maintenance process. Multiple Declare, Select, Fetch statements to change.

PPP120 - main batch driver program for final edits and implied maintenance in the EDB maintenance process. Changes to copylibs only. Recompile only.

PPP130 - main batch driver program for Periodic EDB Maintenance and special daily maintenance. Changes to copylibs only. Recompile only.

USER08 - driver for the EDB maintenance edit process. Multiple Declare and Fetch statements to change.

USER12 - driver for the EDB maintenance update process. Multiple Declare and Fetch statements to change.

PPP560 creates a preliminary benefits enrollment file. The internal table will be expanded to contain 75 PAR records rather than 50.

PPP425 will be made obsolete.
6.1.2 Copylib Members

**CPPDLRDT** - loads several routine processing tables for EDB edit/update. Change FETCH GTN_ROW statement.

**CPPDXLA2** - loads the costing action table for EDB edit/update. Change FETCH PRM_ROW statement.

**CPPDXSP2** - loads the systems parameters into CPWSXSP2. Change FETCH MSG_ROW statement.

**CPPDX020** - loads system message attributes for EDB edit/update into CPWSXMST. Change FETCH MSG_ROW statement.

7 Unit Testing Requirements

This Section pertains to RITM0047174

For each of these programs, use debugger, display or some other method to verify that each of the changed statements is executed. You may have to set up test data to meet certain conditions in order to achieve that.

- Use **CICS EDEM** to test:
  - PPAPEUFE
  - PPAPEUPU
  - PPEULOAD

- Run **Batch EDB Monthly Maintenance** to test: (EDBMONTH)
  - PPAPPUTW
  - PPAWRUTW
  - PPBELUTL
  - PPBELUTW
  - PPP130 – edb monthly

- Run **Batch EDB File Maintenance** to test: (EDBM)
  - PPACTUTW
  - PPPVREDT
  - PPP080
  - PPP120
  - USER08
  - USER12

- Run **Compute** to test:
  - PPEXPTLA

- **Other processing:**
  - PPAPNUPD, PPATNUPD, PPAWDUPD: Execute **PPP742** - updates rows on the History PPPATN table
  - PPP560 – Execute RUN560A