Expanding Consolidated Receipting in Blackbaud CRM

BLACKBAUD CRM™ TRACK

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DEVELOPERS' CONFERENCE
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Session Host: Jim Ballou

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Let's Make This Interactive

- Please post questions to the chat throughout. We'll answer as many of them live as possible! We may ask you to come off mute.

- Lots of time for questions at the end.

- Download our global change and SQL code examples from the Teams site.

Introductions

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Canadian Red Cross and BBCRM

- Went live September 2019 in Blackbaud's Azure Canada instance

- ~200 users, ~10 million constituents, ~90K consolidated receipts annually

- On SP25. Upgrading to SP28.

- Merged 4 Raiser's Edge databases into one (during implementation)

- Current customizations: email permissions, SSO, bilingual BBCRM

Receipting Issues for CRCS in BBCRM

- Charitable donation receipts are a legal document that legal requirements in Canada.

  - Some fields not available in OOB receipting exports

  - A custom query view would be required to join to some fields that had to be added

- Issuing Consolidated Receipts

  - Export definitions would not consolidate data correctly

- Volume

  - The receipting team is very small, and issues thousands of receipts per week through mail and email. BBCRM needs to do most of the tasks for them.

The first receipting season

- Issued first official tax receipt within the first week after deployment using a custom receipt word merge export (later slides).

  - The out of the box receipt by selection processes are used, but the output is designed to work specifically for the word merge files.

- The first consolidated receipts were generated, and the custom export would time out if more than 600 constituents were included. Small selections were used to generate receipts while working on a solution. 90,000 consolidated tax receipts were generated between late January and late February 2020. Per payment receipting was run during the days while queues of consolidated receipts ran over night.

The Solutions

Due to large size of consolidated receipts, and transacting calculations needed during the data populating, a staging (Receipt Print) table has been created (next slide).

The Receipt Print table is populated each morning for any consolidated receipt processes that were run. (slides 9 & 10)

The header needs to be the same for both Per Payment and Consolidated. In some fields, a function is used to ensure that each receipt is only 1 row in the table. (slide 11)

Print Table Build

```
1  <TableSpec
2    xmlns="bb_appfx_table"
3    xmlns:c="bb_appfx_commontypes"
4    ID="f78d8ea8-3ca8-4431-b1f6-ee4705f4db89"
5    Name="Receipt Details Download Staging"
6    Description="Store information about receipt details download staging records"
7    Author="REDCROSS\ctong"
8    Tablename="USR_RECEIPTDETAILSDOWNLOADSTAGING"
9    IsBuiltIn="false"
10   >
11
12   <!-- define fields on the table -->
13   <Fields>
14     <!-- ID field is automatically added and indexed -->
15     <ForeignKeyField Name="RECEIPTINGPROCESSSTATUSID" ForeignTable="RECEIPTINGPROCESSSTATUS" OnDelete="CascadeDelete" Required="true"/>
16     <TextField Name="PUBLICFUNDNAMEENGLISH" Length="500" IsNullable="true"/>
17     <TextField Name="PUBLICFUNDNAMEFRENCH" Length="500" IsNullable="true"/>
18     <TextField Name="LANGUAGE" Length="100" IsNullable="true"/>
19     <TextField Name="PRIMARYADDRESSEE" Length="700" IsNullable="true"/>
20     <TextField Name="PRIMARYSALUTATION" Length="700" IsNullable="true"/>
21     <TextField Name="TAX" Length="700" IsNullable="true"/>
22     <TextField Name="ADDRESSLINE1" Length="150" IsNullable="true"/>
23     <TextField Name="ADDRESSLINE2" Length="150" IsNullable="true"/>
24     <TextField Name="ADDRESSLINE3" Length="150" IsNullable="true"/>
25     <TextField Name="ADDRESSLINE4" Length="150" IsNullable="true"/>

56     <TextField Name="ORGANIZATIONPRIMARYCONTACTNAME" Length="50" IsNullable="true"/>
57     <TextField Name="ORGANIZATIONSTEWARDSHIPCONTACT" Length="50" IsNullable="true"/>
58     <TextField Name="APPEAL" Length="500" IsNullable="true" />
59     <!-- Audit fields (Added by ID, Changed by ID, Date added, Date changed, TS, and TSLONG) are added automatically -->
60   </Fields>
61   <!-- define any indexes on the table -->
62   <Indexes>
63     <Index>
64       <IndexFields>
65         <IndexField Name="RECEIPTINGPROCESSSTATUSID" />
66       </IndexFields>
67     </Index>
68   </Indexes>
69
70 </TableSpec>
```

40 different fields that are included in the receipt word merge files:

- constituent data fields

- details about the designation (how the money is spent) or benefits and which revenue thank you letter to use.

Populate the Table

```
 1  <GlobalChangeSpec
 2    xmlns="bb_appfx_globalchange"
 3    xmlns:c="bb_appfx_commontypes"
 4    ID="64f18fa0-eb54-4426-868d-c9603b904977"
 5    Name="Populate Receipt Details Download Staging Global Change"
 6    Description="Populating Receipt Details Download to Staging table"
 7    Author="REDCROSS\ctong"
 8    DisplayName="Populate receipt details download to staging table"
 9    GlobalChangeFolder="CRC Custom"
10    SPName="USR_USP_GLOBALCHANGE_POPULATERECEIPTDETAILSDOWNLOADSTAGING"
11  >
12    <!-- describe the SP that performs the global change operation -->
13    <CreateProcedureSQL>
14      <![CDATA[
15        create procedure dbo.USR_USP_GLOBALCHANGE_POPULATERECEIPTDETAILSDOWNLOADSTAGING
16        (
17          @CHANGEAGENTID uniqueidentifier = null,
18          @ASOF as datetime = null,
19          @NUMBERADDED int = 0 output,
20          @NUMBEREDITED int = 0 output,
21          @NUMBERDELETED int = 0 output
22        )
23        as
24          set nocount off;
25
26          declare @CURRENTDATE datetime, @DATECHANGED datetime;
27          set @CURRENTDATE = getdate();
28          set @NUMBERADDED = 0;
29          set @NUMBEREDITED = 0;
30          set @NUMBERDELETED = 0;
31
32          if @CHANGEAGENTID is null
33            exec dbo.USP_CHANGEAGENT_GETORCREATECHANGEAGENT @CHANGEAGENTID output;
34
35          begin try
36            -- do the global change operation here, and set @NUMBERADDED, @NUMBEREDITED, and/or @NUMBERDELETED as appropriate
37            BEGIN TRANSACTION;
38
39            --***==1) START: INSERT new records ==***--->>
40            Insert Into dbo.USR_RECEIPTDETAILSDOWNLOADSTAGING
```

The Global Change (ADD) starts by finding new records and inserting the details from the database into the Print Table.

```
39    --***==1) START: INSERT new records ==***--->>
40    Insert Into dbo.USR_RECEIPTDETAILSDOWNLOADSTAGING
41    (  [RECEIPTINGPROCESSSTATUSID]
42      ,[PUBLICFUNDNAMEENGLISH]
43      ,[PUBLICFUNDNAMEFRENCH]
44      ,[LANGUAGE]
45      ,[PRIMARYADDRESSEE]
46      ,[PRIMARYSALUTATION]
47      ,[TAX]
48      ,[ADDRESSLINE1]
49      ,[ADDRESSLINE2]
50      ,[ADDRESSLINE3]
51      ,[ADDRESSLINE4]
52      ,[CITY]
53      ,[PROVINCE_STATE]
54      ,[POSTCODE]
55      ,[COUNTRY]
56      ,[CONSTITUENTNAME]
          [CONSTITUENTLOOKUPID]
```

```
170      on ltrc.id = letter.LETTERCODEID
171    )
172    on letter.REVENUEID = ft.ID --i beleve this is many:one, need to verify
173    Inner join dbo.FINANCIALTRANSACTIONLINEITEM li
174      on li.FINANCIALTRANSACTIONID = ft.ID
175    join dbo.REVENUESPLIT_EXT ext
176      on ext.id = li.ID
177    join DESIGNATION d
178      on d.id = ext.DESIGNATIONID
179    join constituent c
180      on c.id = ft.CONSTITUENTID
181    Inner join [dbo].[ADDRESS] addr
182      on addr.CONSTITUENTID = c.ID
183    Inner join [dbo].[ADDRESSTYPECODE] addrc
184      on addrc.ID = addr.ADDRESSTYPECODEID
185    left join NAMEFORMAT nf
186      on nf.CONSTITUENTID = c.ID
187      and nf.PRIMARYADDRESSEE = 1
188    join dbo.V_QUERY_CONSTITUENTMARKETING mark
189      on mark.CONSTITUENTID = c.ID
190    left join
191    (
192      SELECT E.CONSTITUENTID, E.EMAILADDRESS, E.DATECHANGED FROM EMAILADDRESS E
193      LEFT JOIN dbo.USR_EMAILADDRESS_EXT U on E.ID = U.ID
194      LEFT JOIN dbo.USR_EMAILPERMISSIONCODE P on U.EMAILPERMISSIONCODEID = P.ID
195      WHERE dbo.UFN_EMAILADDRESSTYPECODE_GETDESCRIPTION(E.EMAILADDRESSTYPECODEID) =  'eRec / Reçu électronique'
196      AND E.ENDDATE is NULL
197      AND ISNULL(P.DESCRIPTION,'') <> 'Inactive / Inactif'
198    ) ea on ea.CONSTITUENTID = c.ID
199    left join REVENUE rvn on rvn.ID = rr.REVENUEID
200    left join dbo.REVENUEREFERENCE ref on ref.ID = rvn.ID
201    --left join [CRC_RECEIPTING_DETAILS rd on rd.UNIQUERECEIPTNUMBER = rr.UNIQUERECEIPTNUMBER --this needs to do on click Download
202    Where
203      addr.ISPRIMARY = 1
204      and (@ASOF IS NULL or rr.DATEADDED >= @ASOF);
205
206    set @NUMBERADDED = @@ROWCOUNT;
207    COMMIT TRANSACTION;
208    ---***==1) END of insert new records ==***----<<
209
210    --***==2) START: UPDATE existed records ==***--->>
```
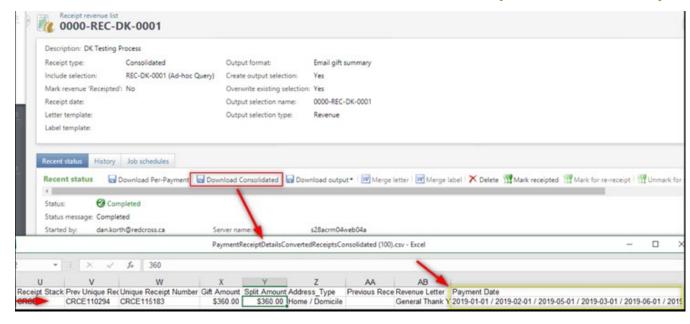
Updates to the Print Table

When the receipting team has an issue with the output, they may need to clear the results, update the database and re-run the process. If this happens, the staging table also needs to be updated for the most recent changes.

```
254        ,[CHANGEDBYID]                  = @CHANGEAGENTID
255        ,[DATECHANGED]                  = @CURRENTDATE
256  FROM dbo.USR_RECEIPTDETAILSDOWNLOADSTAGING stgu
257  INNER JOIN
258  (
259      Select Distinct
260          ps.id
261          ,addr.ISPRIMARY
262          ,rtrim(ltrim(dbo.USR_UFN_COMMASEPARATEDLIST_PUBLICNAMEENGLISH(ps.id, rr.UNIQUERECEIPTNUMBER))) as 'PublicFundNameEnglish'
263          ,dbo.USR_UFN_COMMASEPARATEDLIST_PUBLICNAMEENGLISH_DATECHANGED(ps.id, rr.UNIQUERECEIPTNUMBER) as 'engDATECHANGED'
264          ,rtrim(ltrim(dbo.USR_UFN_COMMASEPARATEDLIST_PUBLICNAMEFRENCH(ps.id, rr.UNIQUERECEIPTNUMBER))) as 'PublicFundNameFrench'
265          ,dbo.USR_UFN_COMMASEPARATEDLIST_PUBLICNAMEFRENCH_DATECHANGED(ps.id, rr.UNIQUERECEIPTNUMBER) as 'freDATECHANGED'
266          ,Case
267              When dbo.USR_UFN_COMMASEPARATEDLIST_LANGUAGENLANGUE(ps.id, rr.UNIQUERECEIPTNUMBER) is not null
268                  Then rtrim(ltrim(dbo.USR_UFN_COMMASEPARATEDLIST_LANGUAGENLANGUE(ps.id, rr.UNIQUERECEIPTNUMBER)))
269              Else 'English / Anglais'
270          End as 'Language'
271          ,dbo.USR_UFN_COMMASEPARATEDLIST_LANGUAGENLANGUE_DATECHANGED(ps.id, rr.UNIQUERECEIPTNUMBER) as 'lngDATECHANGED'
272          ,rtrim(ltrim(isnull([dbo].[USR_UFN_NAMEFORMAT](c.ID, 'Primary Addressee'), c.NAME))) as 'PrimaryAddressee'   --for crc-1933
273          ,rtrim(ltrim([dbo].[USR_UFN_NAMEFORMAT](c.ID, 'Primary Salutation'))) as 'PrimarySalutation'   --for crc-1933
274          ,rtrim(ltrim([dbo].[USR_UFN_NAMEFORMAT](c.ID, 'Tax'))) as 'Tax'      --for crc-1933
275          ,[dbo].[USR_UFN_NAMEFORMAT_DATECHANGED](c.ID) as 'nfDATECHANGED'
276          ,mark.ADDRESSLINE1 as 'AddressLine1'
277          ,mark.ADDRESSLINE2 as 'AddressLine2'
```

```
210  --***==2) START: UPDATE existed records ==***--->>
211  BEGIN TRANSACTION;
212    UPDATE stgu
213    SET
214          stgu.[PUBLICFUNDNAMEENGLISH]     = x.[PublicFundNameEnglish]
215          ,stgu.[PUBLICFUNDNAMEFRENCH]     = x.[PublicFundNameFrench]
216          ,stgu.[LANGUAGE]                 = x.[Language]
217          ,stgu.[PRIMARYADDRESSEE]         = x.[PrimaryAddressee]
218          ,stgu.[PRIMARYSALUTATION]        = x.[PrimarySalutation]
219          ,stgu.[TAX]                      = x.[Tax]
220          ,stgu.[ADDRESSLINE1]             = x.[AddressLine1]
221          ,stgu.[ADDRESSLINE2]             = x.[AddressLine2]
222          ,stgu.[ADDRESSLINE3]             = x.[AddressLine3]
223          ,stgu.[ADDRESSLINE4]             = x.[AddressLine4]
224          ,stgu.[CITY]                     = x.[City]
225          ,stgu.[PROVINCE_STATE]           = x.[ProvinceState]
226          ,stgu.[POSTCODE]                 = x.[PostCode]
227          ,stgu.[COUNTRY]                  = x.[Country]
228          ,stgu.[CONSTITUENTNAME]          = x.[ConstituentName]
```

```
380      ) x
381  ON stgu.RECEIPTINGPROCESSSTATUSID = x.id
382      and x.ISPRIMARY = 1
383      and stgu.UNIQUERECEIPTNUMBER = x.UniqueReceiptNumber
384      and
385      (
386          x.engDATECHANGED > @ASOF
387          or x.freDATECHANGED > @ASOF
388          or x.lngDATECHANGED > @ASOF
389          or x.nfDATECHANGED > @ASOF
390          or x.markDATECHANGED > @ASOF
391          or x.cDATECHANGED > @ASOF
392          or x.eaDATECHANGED > @ASOF
393          or x.tntDATECHANGED > @ASOF
394          or x.rrDATECHANGED > @ASOF
395          or x.addrDATECHANGED > @ASOF
396          or x.revlterDATECHANGED > @ASOF
397          or x.liDATECHANGED > @ASOF
398          or x.ftDATECHANGED > @ASOF
399          or x.rshDATECHANGED > @ASOF
400          or x.applDATECHANGED > @ASOF
401      )
402
403      set @NUMBEREDITED = @@ROWCOUNT;
404  COMMIT TRANSACTION;
405
406  --***==2)END of update existed records ==***--<<
407
```

1 Row per receipt in the table

Query joins (inner/left) primarily are combines with SQL functions to create a " / " delimited list.

For a consolidated receipt, there are multiple payments per unique receipt number. To ensure that only 1 receipt is issued per process run, certain fields need to be updated.

Outcomes and next steps

In January 2021, the receipting team was producing upwards of 10,000 consolidated receipts in a single day. As long the receipt process would complete, and the global change completed everything works. However, there started to be too many receipts in the backlog for the global change to update in a single run. Without being able to complete the process it reverts. The process can not complete before the daily AppPoolRefresh.

For the short term the outputs needed to be exported manually from a read-only connection to the database.

June 2021, we will be looking at a few projects. The two steps in the global change will be separated as the add function needs to run daily and the update function needs only run as required. A third global change will be created to delete table rows that are older than a week old to speed the word merge exports even more.

Thank you!

#bbdevdays