CDMA Data Outcollects

## Background

Syniverse and TNS are the clearinghouses for 1x/EVDO data roaming (aka: CDMA).  They record all the usage in their database and handle settlement.  When subscribers from other carriers roam on USCC, this is revenue for USCC.  Syniverse and TNS record that revenue in their database. A portion of USCC Roaming Partners clear through Syniverse and rest clear via TNS.

Syniverse and TNS each produce a daily file which breaks down that revenue for the previous day by Settlement Date, Process Date, Company, Cell site, Roaming Partner and HOME\_SID.  The format of the data is identical for each clearinghouse (shown below).

## File FOrmat

"SETTLEMENT DATE","PROCESS DATE","MY COMPANY","BSID","HOME COMPANY","HOME SID","MESSAGE ACCOUNTING DIGITS","ACTUAL USAGE VOLUME","ACTUAL DATA VOLUME","TOTAL CHARGES"

"09/15/2016","08/29/2016","UNITED STATES CELLULAR","**000500151331**","**VZW - VERIZON WIRELESS**","88891","307200","504","3072",".03"

"09/15/2016","08/29/2016","UNITED STATES CELLULAR","**000500151347**","**VZW - VERIZON WIRELESS**","88891","204800","80","1024",".02"

## File Delivery

Mediation delivers the files from the respective clearinghouse to the production EBI server (kpr01ebiap) to the /apps/ebi/usacq1/var/interfaces/ndc/in directory. Files are delivered around 3:30 am.

## Data Repository and Loading

Job Name

PR-MED\_RP\_LOAD\_DATA\_OUTCOLLECT runs daily at 6:00 on EBI production server under p\_usacq1

The job loads the files delivered by Mediation into a table called DATA\_OUTCOLLECT in the BRMPRD database.

The DATA\_OUTCOLLECT table is viewable (read-only) by connecting to BRMPRD using LANID/PASS via SQL Developer or TOAD.

Troubleshooting

The job can fail for several reasons; the most obvious failure is table space in the database or the database being unavailable. Both should be apparent by looking in the job log under:

${EBI\_LOG}/\*PR-MED\_RP\_LOAD\_DATA\_OUTCOLLECT\*

If the job fails, the approach to resolve would be to validate the data is not yet loaded into the DATA\_OUTCOLLECT table and then have OPS rerun the job. The data in the unprocessed file can be cross checked against the DATA\_OUTCOLLECT table by SETTLEMENT\_DATE and PROCESS\_DATE.

Code

/apps/ebi/usacq1/bin/ load\_data\_outcollect.sh

/apps/ebi/usacq1/bin/ load\_data\_outcollect.ctl

Version Control (Clearcase)

/vobs/eps\_tools/eps/load\_data\_outcollect.sh

## Reports

There are multiple reports produced using the data received from the clearinghouses. They are outlined here:

#### Accrual Report

An accrual is a temporary recognition of revenue. The accrual is based on revenue from the beginning of the Settlement Period until the end of the month.

Job Name

PR-MED\_RP\_ACCRUAL\_REP runs on 2nd of month on EBI production server under p\_usacq1

Output

/apps/ebi/usacq1/var/interfaces/ndc/out/data\_roaming\_accrual\_YYYYMMDD.csv

MFT job picks up the output and delivers to share drive <[\\tnknxsfile01\Data\_Outcollect](file:///\\tnknxsfile01\Data_Outcollect)> where it is picked up by Accounting.

The data summarized in the report is reconciled against a report from Syniverse and TNS. The total revenue in the Accrual Report should match the totals reported by the clearinghouses. Accounting is responsible for this reconciliation. The two clearinghouses have a different definition of the timeframe for the accrual. Syniverse considers the accrual period from start of Settlement Period to last day of month based on Process Date. TNS considers the end of the accrual period the 1st of the following month (based on Process Date). The ROAMING\_PARTNER table is joined into the QUERY which produces the accrual report so it can properly do the end of accrual period date determination.

See Failed Reconciliation section below for further details on causes.

Code

/apps/ebi/usacq1/bin/run\_accrual\_report.sh

Version Control (Clearcase)

/vobs/eps\_tools/eps/run\_accrual\_report.sh

#### Settlement Report

The clearinghouse determines the SETTLMENT\_DATE for revenue. The Settlement Report summarizes all the revenue based on that column in the table.

Job Name

MED\_RP\_GL\_REP runs on the 18th of the month on EBI Production server under p\_usacq1

Output

/apps/ebi/usacq1/var/interfaces/ndc/out/data\_roaming\_gl\_YYYYMMDD.csv

MFT job picks up the output and delivers to share drive <[\\tnknxsfile01\Data\_Outcollect](file:///\\tnknxsfile01\Data_Outcollect)> where it is picked up by Accounting.

Code

/apps/ebi/usacq1/bin/run\_ gl\_report.sh

Version Control (Clearcase)

/vobs/eps\_tools/eps/run\_gl\_report.sh

#### Unguided Usage

The DATA\_OUTCOLLECT table is joined to the BSID\_TO\_SERVE\_SID table when the Accrual and Settlement Reports are produced. If there is a value in the BSID column on the DATA\_OUTCOLLECT table which does NOT exist in the BSID\_TO\_SERVE\_SID table then we are unable to map the revenue to the GL Company. This is known as UNGUIDED usage. The main reason for this data integrity problem is engineering has not provided the mapping of Cell Site to GL Company that is required to populate the BSID\_TO\_SERVE\_SID table. If this happens, that revenue is summarized on a separate report for accounting. Details are as follows:

Job Name

PR-MED\_UNGUIDED\_REP runs immediately following the PR-MED\_RP\_ACCRUAL\_REP and MED\_RP\_GL\_REP jobs on the EBI Production server under p\_usacq1. If UNGUIDED revenue is found it is written to a report.

Output

/apps/ebi/usacq1/var/interfaces/ndc/out/data\_roaming\_unguided\_YYYYMMDD.csv

/apps/ebi/usacq1/var/interfaces/ndc/out/bsid\_mapping\_YYYYMMDD.csv

The BSID\_MAPPING file is produced when there is unguided usage reported. The BSID mapping file is supposed to provide accounting a MAP of BSIDs to GL Company. They can use this mapping as a reference when determining how to manually allocate unguided usage. The BSID of the unguided usage can be compared to BSIDS in the BSID\_MAPPING file to “guess” which company should receive the revenue.

MFT job picks up the output and delivers to share drive <[\\tnknxsfile01\Data\_Outcollect](file:///\\tnknxsfile01\Data_Outcollect)> where it is picked up by Accounting.

Code

/apps/ebi/usacq1/bin/run\_unguided\_report.sh

If no usage is considered UNGUIDED then no output report is produced. The report summarizes ALL unguided usage regardless of when it occurred so Accounting needs to look at the PROCESS Date in the report to understand what to do with the usage.

Code

/apps/ebi/usacq1/bin/run\_unguided\_report.sh

Version Control (Clearcase)

/vobs/eps\_tools/eps/run\_unguided\_report.sh

#### Failed Reconciliation

The Accrual and Settlement Reports were created to map Revenue which is recorded by the clearinghouse to our General Ledger (GL) structure which is quite complex. The successful mapping of the revenue involves the DATA\_OUTCOLLEC table along with two reference tables (BSID\_TO\_SERVE\_SID and ROAMING\_PARTNER). These tables are both maintained by the Provisioning and Data Collection team.

There are times when accounting cannot reconcile the USCC report against the reports produced by the clearinghouses. There are numerous causes for this failure:

1. The revenue loaded into DATA\_OUTCOLLECT should match what was sent to USCC by the clearinghouse via the daily files. There have been times that the clearinghouse has sent partial files or no files at all. This would manifest itself in the Revenue totals in DATA\_OUTCOLLECT being less than the totals reported by the clearinghouses. The resolution is to determine what data is missing and ask the clearinghouse to resend. Both clearinghouses have had challenges with this in the past.
2. Another cause of failed reconciliation is a missing entry in the ROAMING\_PARTNER table. The values in the PARTNER column on the DATA\_OUTCOLLECT table have a foreign key relationship with the PARTNER column on the ROAMING\_PARTNER table. There have been times in which Inter Carrier has rolled out a new partner without information IS which leads to the missing entry. A second, more frequent cause was roaming partners changing their PARTNER name at the clearinghouse which leads to it being missing from the ROAMING\_PARTNER table. If there is a value in PARTNER on DATA\_OUTCOLLECT which is not in PARTNER on ROAMING\_PARTNER that revenue will not be included in the report.
3. There have been times in which UNGUIDED usage has occurred and Accounting forgets to include that usage in the reconciliation. It is always best to ask they have included the UNGUIDED before investigating.

## Support

I strongly recommend the following to help the supportability of this solution.

1. Establish logins to both Syniverse and TNS reporting systems so a copy of the reconciliation report used by accounting can be obtained. A more robust solution would be to work with Inter Carrier Services to have a copy of that report send via EMAIL so it is always available for troubleshooting.

#### Troubleshooting Queries

Roaming Partner to Clearinghouse

select TRIM(REGEXP\_REPLACE(PARTNER,',')), clearinghouse from roaming\_partner

Revenue by Partner for Settlement Period X

select TRIM(REGEXP\_REPLACE(t1.PARTNER,',')) as PARTNER, t2.clearinghouse, sum(t1.amount) as REVENUE, sum(message\_accounting\_digits) as DATA\_VOLUME

from data\_outcollect t1, roaming\_partner t2

where TRIM(REGEXP\_REPLACE(t1.PARTNER,',')) = TRIM(REGEXP\_REPLACE(t2.PARTNER,',')) and trunc(settlement\_date) = '15-AUG-2016'

group by TRIM(REGEXP\_REPLACE(t1.PARTNER,',')), t2.clearinghouse

order by 2,1

\* The total of revenue reported by this query should match what is reported by TNS + Syniverse. If the revenue totals match using this query but the Accrual or Settlement Report do not match then there is likely something missing from the BSID\_TO\_SERVE\_SID table or ROAMING\_PARTNER table

\*\* If the total revenue does not match, the next step would be to look at the totals by Clearinghouse which can be done by removing the PARTNER from the query.