The Usage Bible

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August 13, 2019

Contents

1 Usage Overview

Usage is a broad term used to refer to network event records that are used for rating and charging our customers. In telephony we tend to think of usage in two ways, **Voice** or **Data**.

1.1 Usage Record Formats

Usage records come from the switch in a verity of formats depending on the equipment used.

Voice
Voice usage can come in one of two formats:

1. **Alcatel Lucent (APLX)** - The **Alcatel Lucent APLX** switch record are found mostly in the Maine market.
2. **Nortel (NTI)** - The **NORTEL NTI** switch record is the most common voice record format.
3. **CIBER** - For *InCollect and OutCollect* processing.

Data
For data there is a format for each type:

1. **SMSC** - The **SMS** record type comes in the **Motorola** format.
2. **AAA Server** -
   - **PGW** - P-Gateway **LTE** data usage
   - **ECS** - ECS **3G and lower** data usage.
   - **AAA** - Raw AAA usage found on the CallDump only.
   - **TAS** - *Volte* Voice over **LTE**.
3. **VALI** - *Premium SMS (Valista)* pre-rated records.
4. **GSM Roaming** - Voice and data records from our customers who are roaming in Europe and other **GSM** countries.
5. **MMSC** - Used for both pictures and picture messaging text only (treated as an **SMS** message in the system).
6. **TAP** - Used for **Incollect/Outcollect 4G** processing.

1.2 Network Elements

The list below is the name of **switches/network elements** that produce usage and where that usage is stored in **TOPS**. Except for the **TAP** files, all are readable as either **CIBER** of **UFF**.

Element	New Host	New Directory
APPL	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/APPL
ASHE	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/ASHE
CDP	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/CONT/CDP
CDR2	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/CDR2
CIB_IC	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/switch/DIRI
CIB_OCR	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/switch/SYNR
CLIN	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/CLIN
COLU	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/COLU
CONG	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/CONG
ECS	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/AAA/AAA1
EURE	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/EURE
GRAN	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/GRAN
GREE	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/GREE
GSM_IR	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/GSMI/GSMS
GSM_IR	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/GSMI/GSMV
JOHN	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/JOHN
JOPL	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/JOPL
KNOX	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/KNOX
LLYN	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/APLX/LLYN
LROE	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/APLX/LROE
LTE	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/PGW/PGW1
LTE	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/GSMI/GSMD
MADI	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/MADI
MEDF	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/MEDF
MMSC	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/SMS_MMS/PMG1
MMSC	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/SMS_MMS/PTX1
MORG	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/APLX/MORG
NEWB	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/NEWB
OKLA	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/OKLA
OMAH	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI1/OMAH
OWAS	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/OWAS
PEO2	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/PEO2
ROC2	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/ROC2
SALI	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/SALI
SMS_NSN	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/SMS_MMS/MOT
SMS_NSN	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/GSMI/GSMT
TAS	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/TAS/TAS1
VALISTA	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/CONT/VALI
YAKI	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/NTI2/YAKI
TAP_IN	kpr01bchl4	/pkgbl04/inf/prdsys/prodwrk4/var/usc/projs/smm/DATA/TAPIN
TAP_OUT	kpr01bchl4	/pkgbl04/inf/prdsys/prodwrk4/var/usc/projs/smm/DATA/TAPOUT
APRM	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/switch/DATAIN
CIB_IC	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/switch/DATACBR
CIB_IC	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/up/physical/switch/DIRI
CIB_ICR	kpr01bchl2	/pkgbl02/inf/prdsys/prodwrk2/var/usc/projs/apr/interfaces/output
SGW/DISP	kpr01bchl3	/pkgbl03/inf/prdsys/operaprm/var/usc/LSN/input2
GSM_IR	kpr01bchl4	/pkgbl04/inf/prdsys/prodwrk4/var/usc/projs/smm/DATA/TAPIN
RAP_IN	kpr01bchl4	/pkgbl04/inf/prdsys/prodwrk4/var/usc/projs/smm/DATA/RAPIN
RAP_OUT	kpr01bchl4	/pkgbl04/inf/prdsys/prodwrk4/var/usc/projs/smm/DATA/RAPOUT

1.3 Pre-Pay and Data Roaming

In addition to **Post-Pay** we also handle **Pre-Pay** which follows a different flow using the diameter interface. The **Diameter interface** is described as follows:

- **Diameter** is a **AAA** protocol, a type of computer networking protocol for authentication, authorization and accounting **(AAA)**. **Diameter** controls communication between the authenticator (Secure Ticket Authority, STA) and any network entity requesting authentication. **Diameter Applications** extend the base protocol by adding new commands and/or attributes, such as those for use of the Extensible Authentication Protocol (**EAP**).

1.4 Carrier Code and Names

SQL Statement which produced this data:

```
select distinct carr_name, carr_cd from prm_app.PRM_REP_CARR_INFO
```

CARRIER_NAME	CARRIER_CODE
AT&T Mobility (USAAT)	USAAT
AT&T Mobility (USACG)	USACG
AT&T Mobility (USABS)	USABS
Pioneer Cellular (USAPI)	USAPI
T-Mobile (USATM)	USATM
Nex-Tech Wireless (USA6G)	USA6G
AT&T Mobility (USAPB)	USAPB
AT&T Mobility (USAMF)	USAMF
Sprint (USASG)	USASG
T-Mobile (USAW6)	USAW6
Sprint (USASP)	USASP
Verizon (USAVZ)	USAVZ
Vodafone Netherlands (NLDLT)	NLDLT
AT&T Mobility (USACC)	USACC

1.5 Usage Time Zones

Usage Type	**TimeZone**
AAA	GMT
PGW/LTE	GMT
PMG/PTX	GMT
TAS	GMT
MOT/ALU	EST
VoLTE	Switch Location
Voice	Switch Location
CIBER	Switch Location
GSMD/V/S	GMT

1.6 Duplicate Record Keys

Columns used to detect if a record is a duplicate.

MMS	SMS	Content
1. Event type ID	1. Event type ID	1. Event type ID
2. Start time	2. Start time	2. Start time
3. Resource value	3. Resource value	3. Resource value
4. Call direction	4. Call direction	4. Content session ID
5. Called number	5. Called number	
6. Calling number	6. Calling number	

Voice	Data	LTE
1. Event type ID	1. Event type ID	1. Event type ID
2. Start time	2. Start time	2. Start time
3. Resource value	3. Resource value	3. Resource value
4. Call direction	4. Call direction	4. Call direction
5. Surcharge indicator	5. Call source	5. Call source
6. Air elapsed time		
7. Calling number		

1.7 US Territories

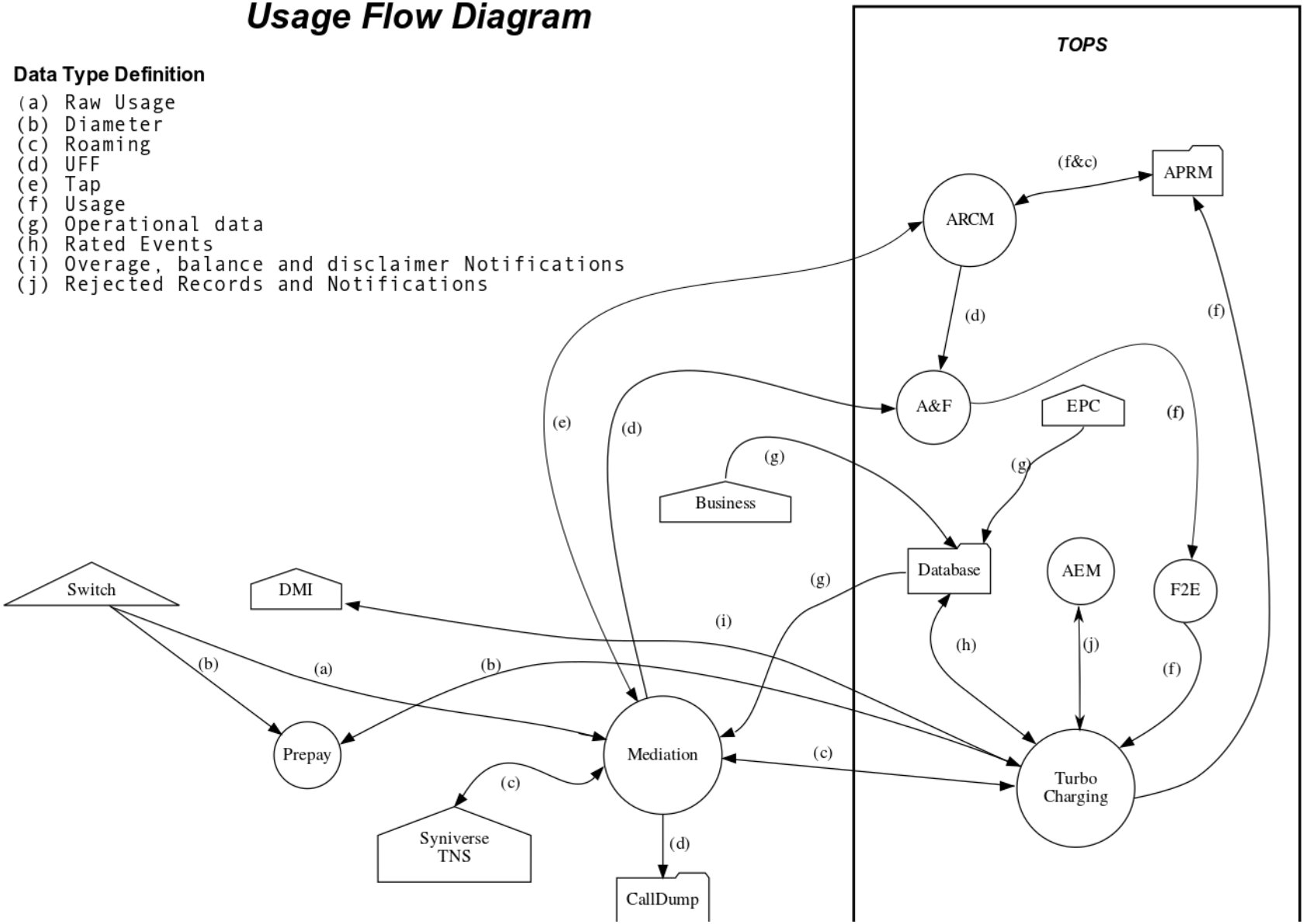
These calls are identified as international but are charged domestic rates.

Country Code	Area Code	ISO Country Code	Description
1	340	VIR	United States Virgin Islands
1	670	MNP	Northern Mariana Islands
1	671	GUM	Guam
1	684	ASM	American Samoa
1	787/939	PRI	Puerto Rico

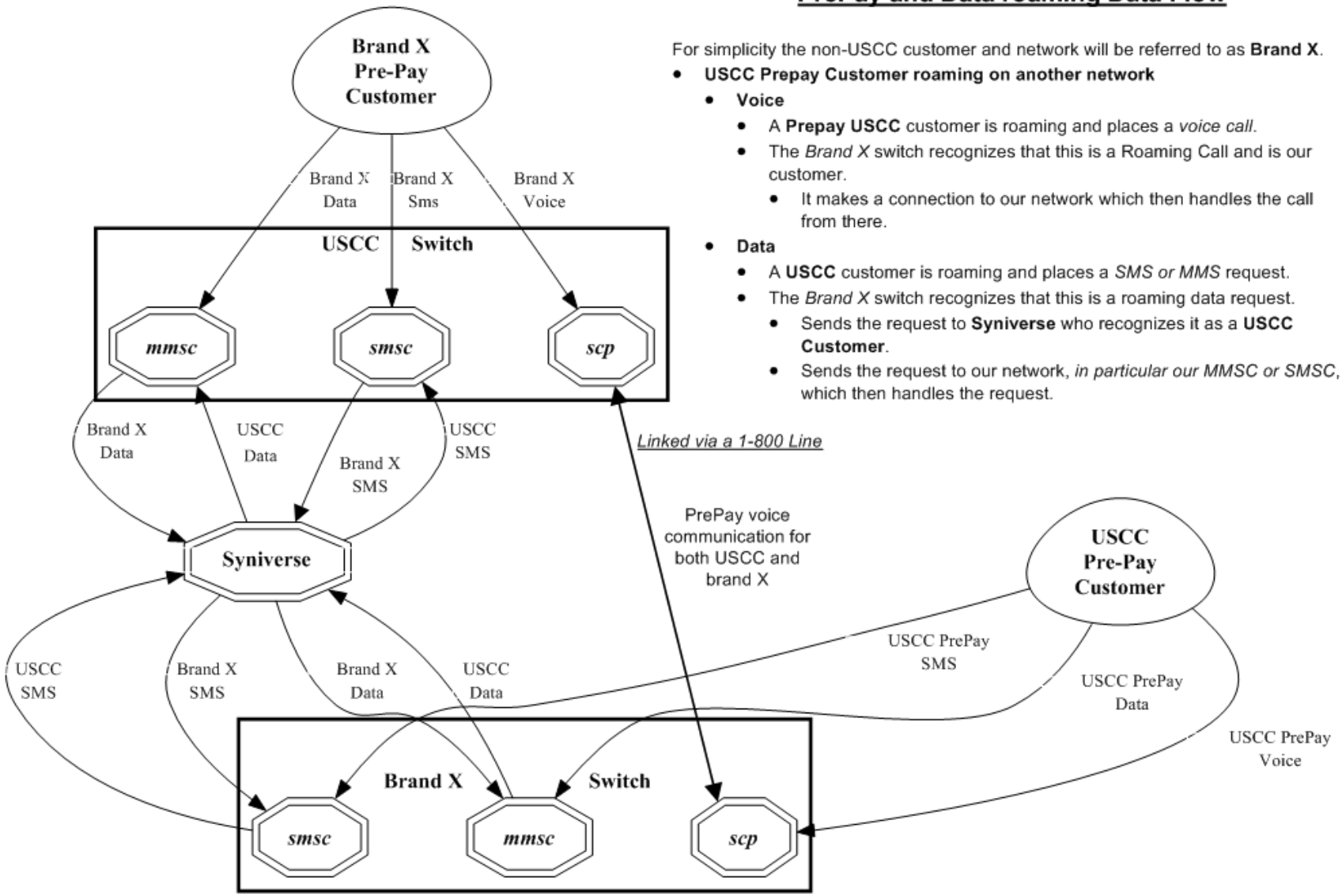
Usage Flow Diagram

Data Type Definition

(a) Raw Usage
(b) Diameter
(c) Roaming
(d) UFF
(e) Tap
(f) Usage
(g) Operational data
(h) Rated Events
(i) Overage, balance and disclaimer Notifications
(j) Rejected Records and Notifications



PrePay and Data roaming Data Flow



For simplicity the non-USCC customer and network will be referred to as **Brand X**.

- **USCC Prepay Customer roaming on another network**
  - **Voice**
    - A **Prepay USCC** customer is roaming and places a *voice call*.
    - The *Brand X* switch recognizes that this is a Roaming Call and is our customer.
      - It makes a connection to our network which then handles the call from there.
  - **Data**
    - A **USCC** customer is roaming and places a *SMS or MMS* request.
    - The *Brand X* switch recognizes that this is a roaming data request.
      - Sends the request to **Syniverse** who recognizes it as a **USCC Customer**.
      - Sends the request to our network, *in particular our MMSC or SMSC*, which then handles the request.

2 Voice Overview

One major undertaking in the transition to **TOPS** is moving most of the voice mediation to the **INTEC** platform. To help facilitate this move, the current rules system **(RBMS)** was studied and documented. The following provides a brief overview of the processes used.

2.1 Call Types

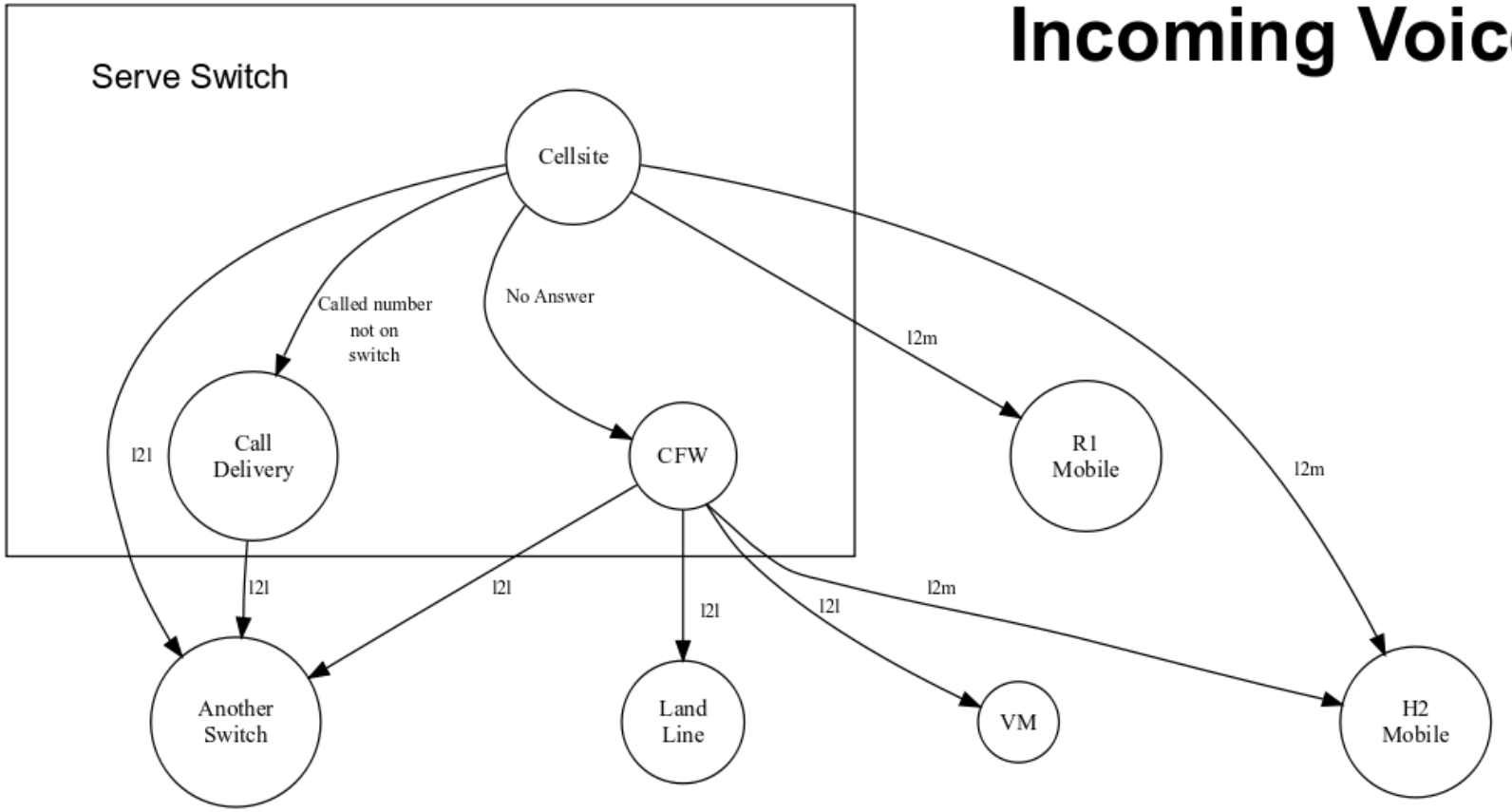
1. **M-M** - Mobile to Mobile
2. **M-L** - Mobile to Land Line
3. **L-M** - Land Line to Mobile
4. **L-L** - Land Line to Land Line

The call records can come in four possible states.

1. Mobile Terminating (Incoming)
2. Mobile Originating (Outgoing)
3. **NTI ONLY**
   - **Both**
     (NTI Mobile to Mobile) in which for every voice event, two records are created, a **Mobile Originated** and **Mobile Terminated** record. For **APLX** this is taken care of automatically. In the case of an **NTI** switch, depending on the call scenario, it is up to the mediation platform to create one if needed.
   - **Neither**
     (per example **L-L**)

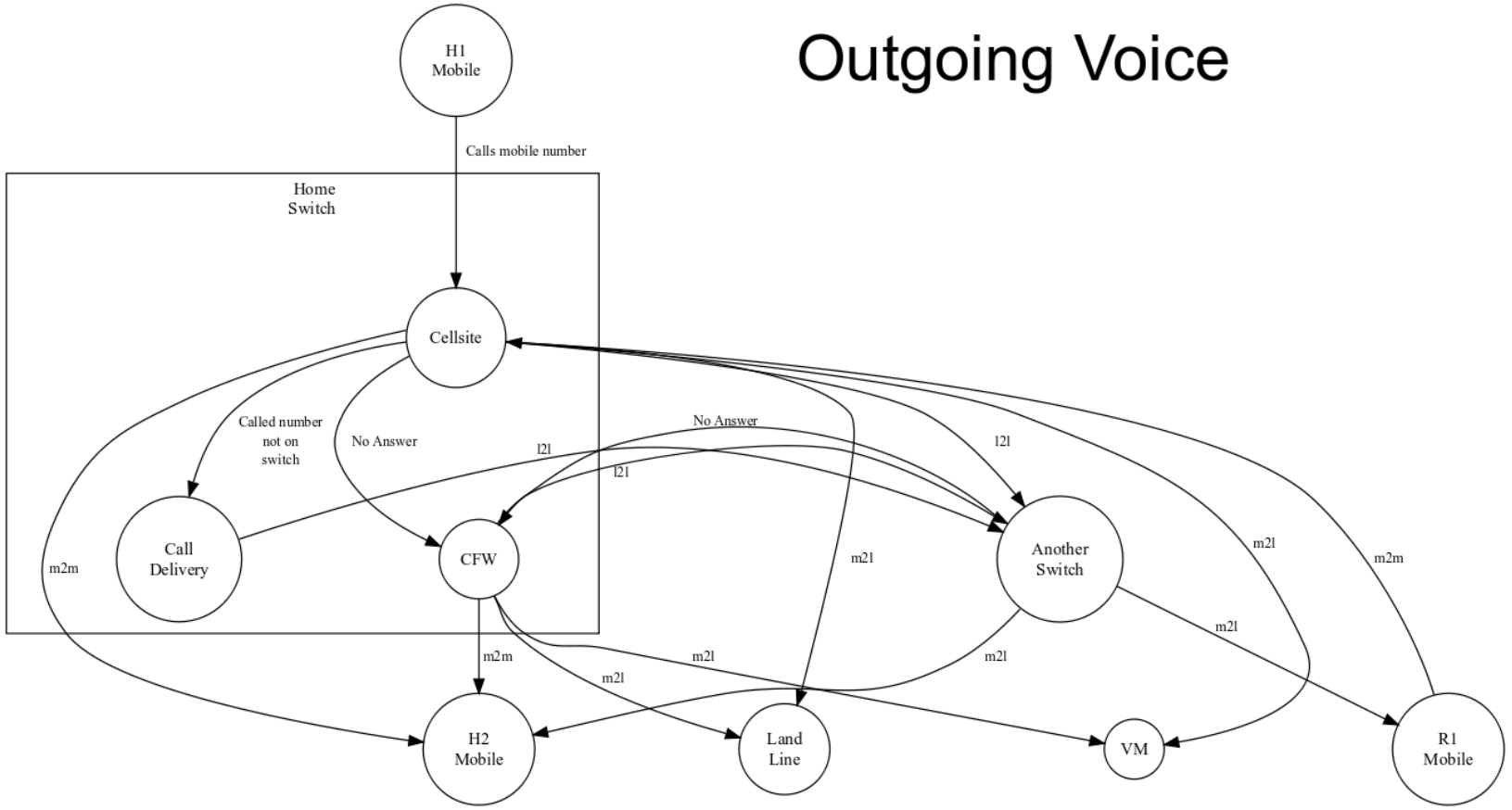
2.2 Incoming - Mobile Terminated

An **Incoming** call is a *mobile terminated* call where one of our customers receives a call from some caller to a **USCC** switch.
The diagram below shows the data flow for an incoming call:



2.3 Outgoing - Mobile Originated

An **outgoing** call is a *mobile originating* call from a **USCC** customer in which the following can occur.
The diagram below shows the data flow for an outgoing call:



3 Unified File Format (UFF)

In **TOPs** system all **CDRs**, excluding **InCollect/OutCollect TAP or CIBER**, will be reformatted into a *Unified File Format* (**UFF**). This format is a standard **Unix/ASCII** formatted **CSV** file using '|' **(pipe)** as the delimiter.

3.1 UFF File Record Format

Field	Field Name	Description
1	Record Type	HR - Header Record DR - Data Record TR - Trailer Record
2	Service Type	Initial record type of Usage Record **MOT, PTX, ALU, QIS, AAA, TPC, APLX, NTI, PMG, PGW**
3	Record sequence Number	A unique numeric identifier for the record.
4	File Number	A unique identifier that shows the original file that the record came in from. *(ex. ID044803)*
5	Record Disposition	The disposition shows the destination of the record in the Mediation process. 0 = Rated 1 = Dropped 2 = Error
6	Record Code	The Drop or Error code. The drop and error codes will be defined using present day **AMDOCS** codes as a template. (presently a 3 digit integer but will bump to 5 for extra growth)
7	Source System	Switch identifier (See Switch Name and type tab for a complete listing) (Possible Voice values include: madi, scha etc.) (Data values can include aaa1, vali etc.
8	Start Date	Start date for this event {YYYYMMDD}
9	Start Time	Start Time for this event {HHMMSSss}
10	Start Time Zone	Offset in seconds from **GMT**
11	Home Sid	Home Switch ID
12	Serve SID	Serving Switch ID
13	Originating Cell Trunk	Initial cell trunk
14	Terminating Cell Trunk	Termination Cell trunk
15	BSID	Broadcast Station ID
16	Carrier ID	The carrier that handled the events identification symbol. Mostly USCC but may contain others especially in data roaming situations.
17	Protocol	**EVDO, LTE, CDMA**
18	Event Type	**QIS** event type used for reporting and drop logic
19	Call Direction	One of two types: **Mobile Originating (MO)** or **Mobile Terminating (MT)**.
20	Originating MSID	10-Digit Mobile Identification Number 16 digits for possible future use/Blanks if mobile terminated
21	Identity	MEID/ESN
22	Originating MDN	In a Mobile Originating call It's the originating callers phone number.
23	Originating Address	IP or Email
24	Terminating MSID	Called MSID this is on Mobile to Mobile records only.
25	Terminating Number	Normalized number *(example 6085551212 instead of 411*
26	Dialed Digits	The untranslated dialed number *(e.g. 441 instead of 555-1212)*
27	Terminating Address	IP Address/Email Name Client IP for **PMG**
28	Termination Code	**SMS.CALL_TERMINATION_CODE**
29	Service Feature	MPS Service feature codes (See the list below)
30	Call Forwarding Ind	If the call has been forwarded than true, false otherwise.

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Field	Field Name	Description
		0 = False 1 = True
31	Call Delivery Ind	If the call has been through call delivery than true, false otherwise 0 = False 1 = True 2 = CDLX
32	Call Waiting Ind	If the call has been through call waiting than true, false otherwise 0 = False 1 = True
33	3 way Calling Ind	If the call has been through 3 way calling, false otherwise 0 = False 1 = True
34	Call Answered Ind	If the call has been answered than true, false otherwise. 0 = False 1 = True
35	Ring Time	Total ring time in seconds
36	Call Duration	Call duration minus ring-time in seconds. Includes the duration in seconds of the data session
37	Roaming Ind	Data roaming indicator 0 = False 1 = True
38	Session ID	Primary Key for AAA, Transaction ID for PSMS AAA.SESSION_ID <= 64 Chars PSMS.TRANS_ID <= 50 Chars QIS.EVENT_ID <= 50 chars Used to find the charge code
39	Session Type	For QIS 0 = Charge (only) For PSMS there are two possible values: 0 = Charge 1 = Adjustment For **PTX** and **SMS** we can have the following values: **SMSTXT and SMSEMIL**
40	Bytes In	Total of incoming bytes associated this event can also be negative. Using this field and the "Bytes Out" field we can derive the total bytes.
41	Bytes Out	Total of outgoing bytes associated with this event contains a signed byte (+-) Using this field and the "Bytes In" field we can derive the total bytes.
42	Application ID	QIS = Part ID AAA = AppID PSMS = Short Code
43	Application Type	QIS = (Download or Subscription) PSMS = (One-Off or Subscription)
44	Application Name	
45	Purchase Category Code	Used by PSMS
46	Application Description	Will be used for both QIS and PSMS for QIS it will come from the AE field directly on the record for PSMS it will be a combination of the <short code> <description> <content provider> if it is a "Subscription", "Subscription -" is displayed. If it is a one-off, it is not presented in the invoice line item.
47	Content Amount	Combines Pre-rated usage amount for QIS and PSMS
48	Orig_trans_ID	Orig Trans ID PSMS.TRANS_ID
49	Network Flag	Used by QIS to calculate the charge code. 0 = not a 1 = is a network application.. Default is 0
50	Femto-cell-ringtime	Will not be needed until after **TOPS** implementation
51	Femto-cell-ringpluse	Will not be needed until after **TOPS** implementation
52	LTE Handoff	This maybe needed after the move to LTE, so is just used as a placeholder
53	Market/Sub-market	The Market and Sub-market for a customer this can also be blank.

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Field	Field Name	Description
		This field is populated by using a MSID against the MIN_LR
54	Originating IMSI	The IMSI assigned to the SIM card originating a LTE or eHRPD data session. This can be a routing parameter for LTE or eHRPD traffic.
55	Adjustment Reason Code	The Adjustment Reason Code for a PSMS adjustment
56	External Reference ID	The External Reference ID for a PSMS record
57	Partner ID	The Partner ID for PSMS record
58	Campaign ID	The Campaign ID for a PSMS record
59	Initiator Type	The Initiator Type for PSMS record
60	Initiator ID	The Initiator ID for PSMS record

3.2 Header

Field	Field Name	Description	Data Type
1	Record Type	The record type for Header is HR	4 character alpha-numeric
2	File Number	file Identifier A unique identifier that shows the original file that the record name in from. (ex. ID044803)	alpha-numeric <= 24 chars and have the pattern IDxxxxxxx.. Where xxxx is a number that's no greater then 16 char
3	Source System	Switch identifier (See Switch Name and type tab for a complete listing) (Possible Voice values include: madi, scha etc.) (Data values can include aaa1, vali etc.	alpha-numeric <= 16 characters
4	Start Date	Start date of file creation {YYYYMMDD}	Event Date YYYYMMDD 1900 <= YYYY <=9999 01 <= MM <= 12 01 <= DD <= 31
5	Start Time	Start Time for file creation {HHMMSSss}	Switch Time HHMMSSss 00 <= HH <= 23 00 <= MM <= 59 00 <= SS <= 59 00 <= ss <= 59

3.3 Trailer

Field	Field Name	Description	Data Type
1	Record Type	The record type for Trailer is TR	4 character alpha-numeric
2	File Number	File Identifier A unique identifier that shows the original file that the record came in from. (ex. ID044803)	alpha-numeric <= 24 chars and have the pattern IDxxxxxxx.. Where xxxx is a number that's no greater then 16 char
3	Source System	Switch identifier (See Switch Name and type tab for a complete listing) (Data values can include aaa1, vali etc.	alpha-numeric <= 16 chars
4	End Date	End date of file creation {YYYYMMDD}	Event Date YYYYMMDD 1900 <= YYYY <=9999 01 <= MM <= 12 01 <= DD <= 31
5	End Time	End Time of file creation {HHMMSSss}	Switch Time HHMMSSss 00 <= HH <= 23 00 <= MM <= 59 00 <= SS <= 59 00 <= ss <= 59
6	Total Records	Total number of records in this file	numeric <= 100000000 (Including Header and trailers)

3.4 Service Feature Codes

Description of the service feature codes found in field 29 of the **UFF**

Description	Code
(NTI Only) - Automatic Roaming	ARM
Call Delivery Interconnect	CDLX
Call Forward Immediate	CFW
Call Forward Busy	CFB
Call Forward No Answer Transfer	CFWTRN
(NTI Only) - Calls to/from hotline	HT
(NTI Only) -Inter system hand-off	ISH
Operator assisted call	OPA
(NTI Only) - Vertical feature flag	VFF
Voice-mail delivery	VMD
Voice-mail retrieval	VMR
Caller ID Restriction (ID block)	CIR

3.5 Drop Reason Codes

There many many reasons why a record can be dropped and are to numerous to list. The complete list can forwarded upon request.

4 CIBER File Format

Incollect and Outcollect **CDMA** files are come in the **CIBER** File format which is a fixed length record format described below.

4.1 Ciber Record Types

The **Ciber** standard defines the following record Types:

- **01** Header
- **22** Voice (main Record type)
- **32** Data
- **52** One time charge
- **98** Trailer

4.1.1 CIBER 01 Record

Field	Position	Description
Record Type	1-2	
Batch Creation Date	3-8	
Batch Sequence Number	9-11	
Sending Carrier SID/BID	12-16	
Receiving Carrier SID/BID	17-21	
CIBER Record Release Number	22-23	
Original/Return Indicator	24-24	
Currency Type	25-26	
Settlement Period	27-32	
Clearinghouse ID	33-33	
CIBER Batch Reject Reason Code	34-35	
Batch Contents	36-36	
Local Carrier Reserved	37-56	
System Reserved Filler	57-200	

4.1.2 CIBER 22 Record

Voice roaming record.

FIELD NAME	POSITION	Description
Record Type	1-2	
Return Code	3-3	
CIBER Record Return Reason Code	4-5	
Invalid Field Identifier	6-8	
Home Carrier SID/BID	9-13	
MSID Indicator	14-14	
MSID	15-29	
MSISDN/MDN Length	30-31	
MSISDN/MDN	32-46	
ESN/UIMID/IMEI/MEID Indicator	47-47	0 = NA 1 = ESN 2 = IMEI 3 = MEID 4 = pESN
ESN/UIMID/IMEI/MEID	48-66	
Serving Carrier SID/BID	67-71	
Total Charges and Taxes	72-81	
System Reserved Filler	82-82	
Total State/Province Taxes	83-92	
System Reserved Filler	93-93	
Total Local/Other Taxes	94-103	
System Reserved Filler	104-104	
Call Date	105-110	
Call Direction	111-111	
Call Completion Indicator	112-112	
Call Termination Indicator	113-113	
Caller ID Length	114-115	
Caller ID	116-130	
Called Number Length	131-132	
Called Number Digits	133-147	
Location Routing Number Length Indicator	148-149	
Location Routing Number	150-164	
TLDN Length	165-166	
TLDN	167-181	
Currency Type	182-183	
System Reserved Filler	184-185	
Original Batch Sequence Number	186-188	
Initial Cell Site	189-199	
Time Zone Indicator	200-201	
Daylight Savings Indicator	202-202	
Message Accounting Digits	203-212	
Air Connect Time	213-218	
Air Chargeable Time	219-224	
Air Elapsed Time	225-230	
Air Rate Period	231-232	
Air Multi-Rate Period	233-233	
Air Charge	234-243	
System Reserved Filler	244-244	
Other Charge No. 1 Indicator	245-246	
Other Charge No. 1	247-256	
System Reserved Filler	257-257	
System Reserved Filler	258-270	
Printed Call	271-285	
Fraud Indicator	286-287	
Fraud Sub-Indicator	288-288	

Continued on next page

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FIELD NAME	POSITION	Description
Special Features Used	289-293	
Called Place	294-303	
Called State/Province	304-305	
Called Country	306-308	
Serving Place	309-318	
Serving State/Province	319-320	
Serving Country	321-323	
Toll Connect Time	324-329	
Toll Chargeable Time	330-335	
Toll Elapsed Time	336-341	
Toll Tariff Descriptor	342-343	
Toll Rate Period	344-345	
Toll Multi-Rate Period	346-346	
Toll Rate Class	347-347	
Toll Rating Point Length Indicator	348-349	
Toll Rating Point	350-359	
Toll Charge	360-369	
System Reserved Filler	370-370	
Toll State/Province Taxes	371-380	
System Reserved Filler	381-381	
Toll Local Taxes	382-391	
System Reserved Filler	392-392	
Toll Network Carrier ID	393-397	
Local Carrier Reserved	398-472	
System Reserved Filler	473-547	

4.1.3 CIBER 32 Record

Data roaming record.

Field	Position	Description
Record Type	1-2	
Return Code	3-3	
CIBER Record Return Reason Code	4-5	
Invalid Field Identifier	6-8	
Home Carrier SID/BID	9-13	
MSID Indicator	14-14	
MSID	15-29	
MSISDN/MDN Length	30-31	
MSISDN/MDN	32-46	
ESN/UIMID/IMEI/MEID Indicator	47-47	
ESN/UIMID/IMEI/MEID	48-66	
Serving Carrier SID/BID	67-71	
Total Charges and Taxes	72-81	
System Reserved Filler	82-82	
Total State/Province Taxes	83-92	
System Reserved Filler	93-93	
Total Local Taxes	94-103	
System Reserved Filler	104-104	
Call Date	105-110	
Call Direction	111-111	
Call Completion Indicator	112-112	
Call Termination Indicator	113-113	
Caller ID Length	114-115	
Caller ID	116-130	
Called Number Length	131-132	
Called Number Digits	133-147	

Continued on next page

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Field	Position	Description
Location Routing Number Length Indicator	148-149	
Location Routing Number	150-164	
TLDN Length	165-166	
TLDN	167-181	
Currency Type	182-183	
System Reserved Filler	184-185	
Original Batch Sequence Number	186-188	
Initial Cell Site	189-199	
Time Zone Indicator	200-201	
Daylight Savings Indicator	202-202	
Message Accounting Digits	203-212	
Charge No. 1 Indicator	213-214	
Charge No. 1 Connect Time	215-220	
Charge No. 1 Chargeable Time	221-226	
Charge No. 1 Elapsed Time	227-232	
Charge No. 1 Rate Period	233-234	
Charge No. 1 Multi-Rate Period	235-235	
Charge No. 1 Tax/Surcharge Indicator	236-236	
Charge No. 1	237-246	
System Reserved Filler	247-247	
Charge No. 2 Indicator	248-249	
Charge No. 2 Connect Time	250-255	
Charge No. 2 Chargeable Time	256-261	
Charge No. 2 Elapsed TIme	262-267	
Charge No. 2 Rate Period	268-269	
Charge No. 2 Multi-Rate Period	270-270	
Charge No. 2 Tax/Surcharge Indicator	271-271	
Charge No. 2	272-281	
System Reserved Filler	282-282	
Charge No. 3 Indicator	283-284	
Charge No. 3 Connect Time	285-290	
Charge No. 3 Chargeable Time	291-296	
Charge No. 3 Elapsed Time	297-302	
Charge No. 3 Rate Period	303-304	
Charge No. 3 Multi-Rate Period	305-305	
Charge No. 3 Tax/Surcharge Indicator	306-306	
Charge No. 3	307-316	
System Reserved Filler	317-317	
Charge No. 4 Indicator	318-319	
Charge No. 4 Connect Time	320-325	
Charge No. 4 Chargeable Time	326-331	
Charge No. 4 Elapsed Time	332-337	
Charge No. 4 Rate Period	338-339	
Charge No. 4 Multi-Rate Period	340-340	
Charge No. 4 Tax/Surcharge Indicator	341-341	
Charge No. 4	342-351	
System Reserved Filler	352-352	
Blank Fill Serving Place	353-362	
Serving State/Province	363-364	
Serving Country	365-367	
Special Features Used	368-372	
Other Charge No. 1 Indicator	373-374	
Other Charge No. 1	375-384	
System Reserved Filler	385-385	
System Reserved Filler	386-398	
Printed Call	399-413	
Fraud Indicator	414-415	

Continued on next page

Continued from previous page

Field	Position	Description
Fraud Sub-Indicator	416-416	
Features Used After Handoff Indicator	417-417	
Local Carrier Reserved	418-492	
System Reserved Filler	493-567	

4.1.4 CIBER 52 Record

FIELD	POSITION	Description
Return Code	3-3	
CIBER Record Return Reason Code	4-5	
Invalid Field Identifier	6-8	
Home Carrier SID/BID	9-13	
MSID Indicator	14-14	
MSID	15-29	
MSISDN/MDN Length	30-31	
MSISDN/MDN	32-46	
ESN/UIMID/IMEI/MEID Indicator	47-47	
ESN/UIMID/IMEI/MEID	48-66	
Serving Carrier SID/BID	67-71	
Total Charges and Taxes	72-81	
System Reserved Filler	82-82	
Total State/Province Taxes	83-92	
System Reserved Filler	93-93	
Total Local Taxes	94-103	
System Reserved Filler	104-104	
OCC Charge/Start Date	105-110	
Connect Time	111-116	
OCC End Date	117-122	
OCC Interval Indicator	124-133	
OCC Charge	134-134	
System Reserved Filler	135-159	
OCC Description Currency Type	160-161	
System Reserved Filler	123-123	
Original Batch Sequence Number	164-166	
Initial Cell Site	167-177	
Time Zone Indicator	178-179	
Daylight Savings Indicator	180-180	
Message Accounting Digits	181-190	
Record Use Indicator	191-191	
Serving Place	192-201	
Serving State/Province	202-203	
Serving Country	204-206	
Other Charge No. 1 Indicator	207-208	
Other Charge No. 1	209-218	
System Reserved Filler	219-219	
System Reserved Filler	220-232	
Fraud Indicator	233-234	
Fraud Sub-Indicator	235-235	
Record Create Date	236-241	
System Reserved Filler	220-232	
Fraud Indicator	233-234	
Fraud Sub-Indicator	235-235	
Record Create Date	236-241	

4.1.5 CIBER 98 Record

FIELD	POSITION	Description
Record Type	1-2	
Batch Creation Date	3-8	
Batch Sequence Number	9-11	
Sending Carrier SID/BID	12-16	
Receiving Carrier SID/BID	17-21	
Total Number Records in Batch	22-25	
Batch Total Charges & Taxes	26-37	
Settlement Period	38-43	
Clearinghouse ID	44-44	
System Reserved Filler	45-49	
Original Total Number of Records	50-53	
Original Total Charges & Taxes	54-65	
System Reserved Filler	66-73	
Currency Type	74-75	
Local Carrier Reserved	76-95	
System Reserved Filler	96-200	

4.2 MF1_CIBER_BATCH_SEQ

The table used to keep the CIBER Outcollect sequences in sync with Syniverse. Every once a while we need to update it to keep in sync.

Sequence Creation Job

Column Name	Data Type	Description
Application_Id	Char (6 Byte)	
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Home_Sid	Char (5 Byte)	
Locked_Sid	Number (10)	
Operator_Id	Number (9)	
Seq_No	Number (3)	
Serve_Sid	Char (5 Byte)	
Status_Ind	Char (2 Byte)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	

4.3 CIBERNET - Specification/Reference

`https://www.one1clear.net/mxp/Login.asp`

5 Acquisition and Formating (A&F)

A&F is the first stage of the **TOPS** mediation process where the **UFF** or **CIBER** record is examined, enriched and transfered to an intermediary *usage* format. For **CIBER** records an extra rules step is added to further mediate the records.

5.1 AC_PHYSICAL_FILES

Provides information for the physical files that were processed.

Column Name	Data Type	Description
Identifier	Number(15,0)	file Identifier
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
File_Name	Varchar2(200 Byte)	
Host_Name	Varchar2(50 Byte)	
File_Path	Varchar2(512 Byte)	
Serial_Number	Varchar2(8 Byte)	
System_Rcv_Date	Date	
Fsrc_Src_Type	Char(10 Byte)	
Fsrc_Type_Id	Char(10 Byte)	
Rcrdng_Start_Date	Date	
Rcrdng_End_Date	Date	
Trlr_Record_Count	Number(9,0)	
Trlr_Block_Count	Number(9,0)	
Trlr_L_File_Count	Number(9,0)	
Pgm_L_File_Count	Number(9,0)	
Pgm_Tracer_Ind	Char(1 Byte)	
Dupl_Entry_Ind	Char(1 Byte)	
Entry_Status	Char(2 Byte)	
Old_Age_Ind	Char(1 Byte)	
End_Of_Tree_Seq	Number(9,0)	
Balance_Date	Date	

5.2 AC_SOURCE

This table lists the **network elements** and the file type processed. When a new network element is created, an entry describing it must be created.

Column Name	Data Type	Description
Source_Type	Char(10 Byte)	
File_Type	Char(10 Byte)	UFF/CIBER etc.
Switch_Id	Varchar2(32 Byte)	Network Element
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
File_Seq_No	Number(6,0)	
Max_File_Seq_No	Number(6,0)	
Max_Time	Number(10,0)	

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Column Name	Data Type	Description
Min_Time	Number(10,0)	
Last_Cycle_Procd	Date	
Next_Cycle_Expect	Date	
Status_Ind	Char(2 Byte)	
Dupl_Entry_Ind	Char(1 Byte)	
Ho_From_Time	Date	
Ho_From_Seq	Number(6,0)	
Days_Bfr_Phy_Cln	Number(4,0)	
Gap_Permitted	Number(6,0)	

5.3 AC1_CONTROL (-HIST)

When it comes to investigating usage issues **AC1_CONTROL_HIST** in both **PRDAF** (Usage) **PRDCUST** (AR) is usually the first stop for any file issues.

Column Name	Data Type	Description
Identifier	Number(15,0)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
File_Name	Varchar2(200 Byte)	
File_Path	Varchar2(512 Byte)	
File_Seq_No	Number(6,0)	
Host_Name	Varchar2(50 Byte)	
Data_Group	Varchar2(64 Byte)	
File_Create_Date	Date	
File_Status	Varchar2(2 Byte)	
Origin_File_Ident	Number(15,0)	The Identifier of the original file.
Phy_File_Ident	Number(15,0)	
Cur_Pgm_Name	Varchar2(32 Byte)	
Cur_File_Alias	Varchar2(10 Byte)	
Nxt_Pgm_Name	Varchar2(32 Byte)	
Nxt_File_Alias	Varchar2(10 Byte)	
File_Format	Varchar2(10 Byte)	
File_Group	Char(1 Byte)	
File_Type	Char(2 Byte)	
Repro_Ind	Char(1 Byte)	
Source_Type	Char(10 Byte)	
Source_File_Type	Char(10 Byte)	
File_Deleted_Ind	Char(1 Byte)	
System_Id	Char(5 Byte)	
Abp_Var	Varchar2(512 Byte)	
Priority	Char(1 Byte)	
Wr_Rec_Quantity	Number(9,0)	
Wr_Time_Quantity	Number(13,2)	
Wr_Money_Quantity	Number(13,2)	
Wr_Euro_Quantity	Number(13,2)	
In_Rec_Quantity	Number(9,0)	
In_Time_Quantity	Number(13,2)	
In_Money_Quantity	Number(13,2)	
In_Euro_Quantity	Number(13,2)	
Gn_Rec_Quantity	Number(9,0)	
Gn_Time_Quantity	Number(13,2)	

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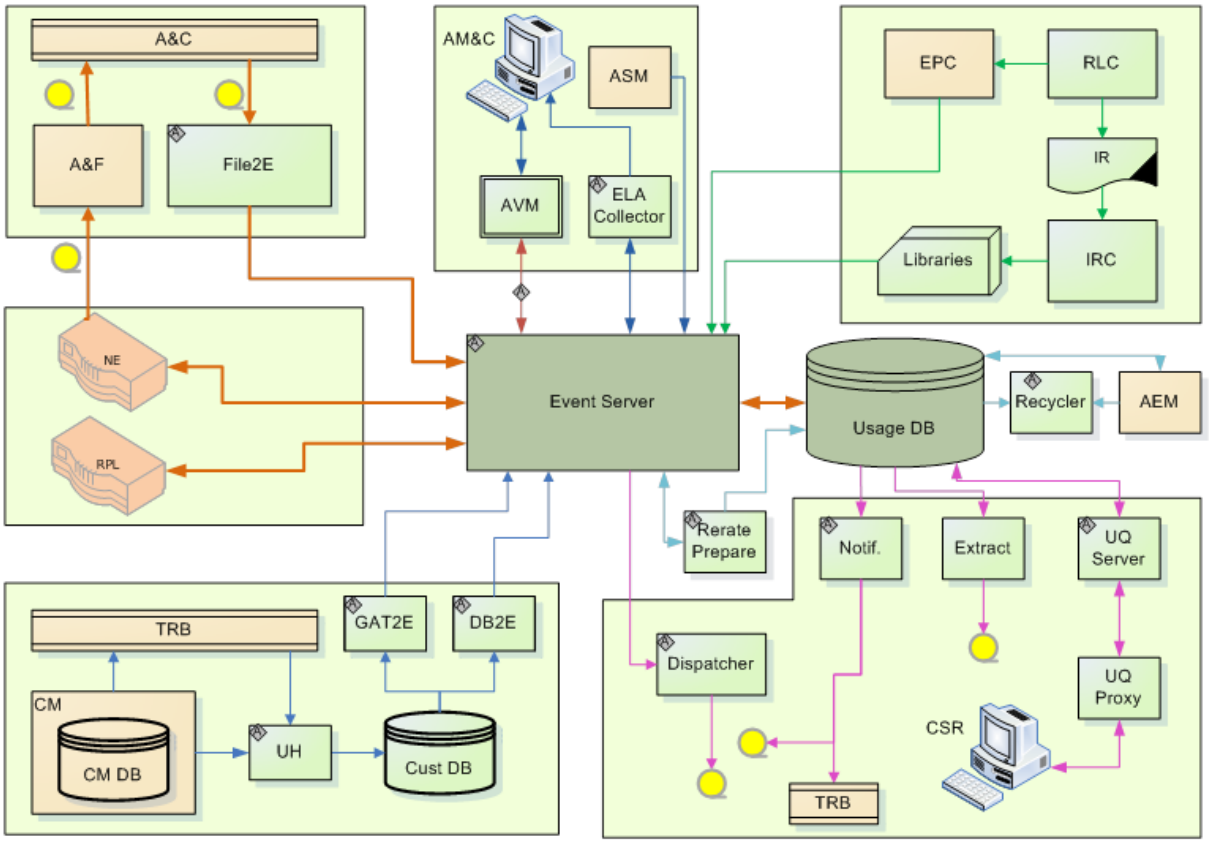
Column Name	**Data Type**	Description
Gn_Money_Quantity	Number(13,2)	
Gn_Euro_Quantity	Number(13,2)	
Dr_Rec_Quantity	Number(9,0)	
Dr_Time_Quantity	Number(13,2)	
Dr_Money_Quantity	Number(13,2)	
Dr_Euro_Quantity	Number(13,2)	
Processed_Rec_No	Number(9,0)	
Rejected_Reason_Cd	Char(3 Byte)	
Owner_Name	Varchar2(50 Byte)	
Table_Alias	Number(5,0)	
Nxt_Process_Id	Number(9,0)	
Nxt_Process_Start_Time	Date	
Cur_Process_Id	Number(9,0)	
Max_Event_Time	Date	
Logical_File_Ident	Number(15,0)	
Table_Issue_Code	Number(9,0)	
External_Id	Varchar2(32 Byte)	
Dest_Rout_Crtria	Varchar2(24 Byte)	
Status_Category	Varchar2(20 Byte)	
Status_Code	Varchar2(200 Byte)	
Application_Code	Varchar2(50 Byte)	
File_Size	Number(15,0)	
Recycle_Counter	Number(15,0)	
Group_Sequence	Number(15,0)	
Out_Req_Quantity	Number(9,0)	
Bulk_Id	Number(9,0)	
Store_Mode	Char(2 Byte)	
Session_Id	Number(15,0)	
Target_File_Path	Varchar2(512 Byte)	
Target_Host	Varchar2(50 Byte)	
Ext_Identifier	Number(9,0)	
Ext_Orig_Ident	Number(9,0)	
Additional_Attr	Varchar2(300 Byte)	
Group_Size	Number(4,0)	
Monitor_Data	Varchar2(50 Byte)	
Wr_Volume_Quantity	Number(15,2)	
In_Volume_Quantity	Number(15,2)	
Gn_Volume_Quantity	Number(15,2)	
Dr_Volume_Quantity	Number(15,2)	
End_Process_Time	Date	
Fr_Time	Date	
Eng_Priority	Number(1,0)	

6 TurboCharging

The most important *sub-system* in **TOPS**. It is here that all usage is guided and rated.



- **Event flow:**
  1. An event comes in to via a network element
  2. Transforms data into a conical form which also includes the network element.
  3. Gets Rated
     - For **Pre-Pay** the **HLR**[1]. is handled by the **SCP**[2]
     - We convert everything to the customers **Home SID timezone** for bill presentment.
     - Limiting or "*choking*" usage can be handled by **Diameter**[3] for **Pre-Pay** and **Turbo-Charging** for **Post-Pay**

6.1 Guide By Criteria

The value used for each usage type to find the customer information.

Data Types	Guide By
voice	MSID
GSM	**IMSI**
SMS	MDN
VOLTE/TAS	IMSI
PMG/PTX	MSID
AAA	MSID
PGW/LTE	**MDN/IMSI**
Vali	MDN

[1] Home Location Resource
[2] Service Control Protocol
[3] Application which implements the **SCP** Protocol

6.2 Event Servers

Turbo-Charging is not one application but multiple instances of **Event Servers**. Each event server corresponds to a bill cycle. Their status can be viewed using the following query on the **PRDAF** database.

```
 SELECT DISTINCT
         A.PROCESS_GROUP_ID,
         PROCESS_CODE,
         DECODE (HOST_ID,
                 2001, 'EVESRV1',
                 2022, 'EVESRV2',
                 2023, 'EVESRV3',
                 2024, 'EVESRV4',
                 2025, 'EVESRV5',
                 2026, 'EVESRV6')
             AS "MACHINE",
         DESCRIPTION,
         DECODE (PROCESS_GROUP_ROLE,  0, 'ACTIVE',  1, 'STANDBY') ES_STATUS
    FROM AVM1_SEGMENT_TOPOLOGY A, GN1_SYS_PROC_INSTANCE_CFG B
   WHERE     A.PROCESS_GROUP_ID = B.PROCESS_GROUP_ID
         AND A.ACTIVE_PROCESS_ID = B.PROCESS_INSTANCE_ID
         AND PROCESS_CODE LIKE '%ES1%'
ORDER BY MACHINE ASC
```

6.3 Rerate Servers

In addition we have five **Rerate Servers** they are:

1. **RRP_EOC1056**
2. **RRP_EOC1068**
3. **RRP_EOC1192**
4. **RRP_EOC1257**
5. **RRP_EOC1259**

6.4 AGD1_RESOURCES

Given a customer attribute, use this table to find the rest of the customer information.

Column Name	Data Type	Description
Resource_Segment	Number(4,0)	
Resource_Value	Varchar2(63 Byte)	Contains
Resource_Type	Number(4,0)	0 - Mdn 19 - Min 21 - Outcollects 23 - Timsi
Effective_Date	Date	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Update_Id	Number(18,0)	
Expiration_Date	Date	
Subscriber_Id	Number(10,0)	The Subscriber
Sub_Status	Char(1 Byte)	
Routing_Policy_Id	Number(9,0)	
Payment_Category	Char(4 Byte)	
Customer_Id	Number(10,0)	Customer ID
Bill_Cycle	Number(4,0)	
New_Bill_Cycle	Number(4,0)	
Chg_Cyc_Req_Date	Date	
Large_Cust_Ind	Char(1 Byte)	
Resource_Hash_Value	Number(10,0)	
Subscriber_Hash_Value	Number(10,0)	
Load_Ind	Char(1 Byte)	

- Subscriber Table Status
  - A = Active
  - C = Canceled
  - S = Suspended
  - U = Collection Suspend
  - L = Collection Canceled
  - D = Collection Suspend

6.5 APE1_RATED_EVENT

Where all the rateable non-roaming events are contained. For roaming events look at **APRM**.

Column Name	Data Type	Description
Cycle_Code	Number (4)	See Usage Db By Cycle For Complete List.
Cycle_Instance	Number (2)	Cycle Month
Customer_Segment	Number (4)	
Customer_Id	Number (10)	
Event_Id	Number (18)	
Subscriber_Id	Number (10)	
Start_Time	Date	
Event_Type_Id	Number (9)	The Event Type Voice - 62 Data - 51 Lte - 69 Sms - 54 Mms - 60 Volte - 69 *Click above link* *For Complete List*
Target_Cycle_Code	Number (4)	
Cycle_Year	Number (4)	
Billing_Arrangement	Number (18)	
Source_Id	Number (15)	
Event_State	Char (1 Byte)	X = Stripped
Event_State_Reason_Code	Char (5 Byte)	
Rerate_Type	Char (1 Byte)	
Original_Event_Id	Number (18)	
Resource_Value	Varchar2 (63 Byte)	
Resource_Type	Varchar2 (16 Byte)	0 - Mdn 19 - Min 21 - Outcollects 23 - Imsi
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number (9)	
Application_Id	Char (6 Byte)	
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Update_Id	Number (9)	
Version_Id	Number (9)	
Network_Start_Time	Date	
Event_Status	Char (1 Byte)	
Event_Counters	Number (20)	
Token_Id	Number (20)	
L3_Account	Number	
L3_Additional_Chg_Amt	Number	
L3_Airtime_Chg_Amt	Number	
L3_Basic_Service_Code	Varchar2 (2 Byte)	
L3_Calling_Country_Code	Varchar2 (3 Byte)	
L3_Call_Category	Varchar2 (1 Byte)	Volte = 'V'
L3_Call_Direction	Varchar2 (1 Byte)	1 = Incoming 2 = Outgoing
L3_Call_Source	Varchar2 (4 Byte)	
L3_Charge_Amount	Number	The Amount Charged
L3_Charge_Code	Varchar2 (15 Byte)	
L3_Chg_Amt_Inc_Free_Allow	Number	

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Column Name	Data Type	Description
L3_Customer_Offer_Currency	Varchar2 (3 Byte)	
L3_Discount_Amount	Number	
L3_Duration	Number	
L3_Imsi	Varchar2 (15 Byte)	
L3_Offer_Id	Number	The Price Plan The Event Was Rated Against.
L3_Original_Charge_Amount	Number	
L3_Payment_Category	Varchar2 (4 Byte)	
L3_Pay_Channel	Number	
L3_Physical_File_Id	Number	
L3_Pricing_Item_Id	Number	
L3_Rounded_Unit	Number	
L3_Special_Number_Group	Varchar2 (10 Byte)	
L3_Starting_Period	Varchar2 (10 Byte)	
L3_Target_Customer_Id	Number	
L3_Unapplied_Amount	Number	
L3_Uom	Varchar2 (1 Byte)	
L3_Volume	Number	
Service_Filter	Varchar2 (15 Byte)	
L9_Call_Tax_Indicator	Varchar2 (2 Byte)	
L9_Originating_Cell_Id	Varchar2 (16 Byte)	
L9_Number_Of_Recipients	Number	
L9_Cross_Toll_Period_Ind	Varchar2 (1 Byte)	
L9_Charge_Type	Varchar2 (4 Byte)	
L9_File_Number	Varchar2 (24 Byte)	
L9_Air_Tax	Number	
L9_Surcharge_Indicator	Varchar2 (1 Byte)	
L9_Special_Features_Used	Varchar2 (2 Byte)	
L9_Original_Toll_Charge	Number	
L9_Called_Number	Varchar2 (256 Byte)	
L9_Originating_Category	Varchar2 (6 Byte)	
L9_Volume_Type	Varchar2 (2 Byte)	
L9_Toll_Type_Indicator	Varchar2 (2 Byte)	
L9_Original_Add_Chrg_Amt	Number	
L9_Termination_Reason	Varchar2 (8 Byte)	
L9_Toll_Chrg_Amt_Inc_Alwnce	Number	
L9_Air_Rerate_Ind	Varchar2 (1 Byte)	
L9_Network_Flag	Varchar2 (1 Byte)	
L9_Called_Place	Varchar2 (10 Byte)	
L9_Surcharge_Type	Varchar2 (1 Byte)	
L9_Special_Number_Type	Varchar2 (32 Byte)	
L9_Period_Name	Varchar2 (10 Byte)	
L9_Correlation_Id	Varchar2 (14 Byte)	
L9_Additional_Rate_Offer_Id	Number	
L9_Cross_Period_Ind	Varchar2 (1 Byte)	
L9_Price_Plan_Offer_Id	Number	
L9_Toll_Rerate_Ind	Varchar2 (1 Byte)	
L9_Serving_Place	Varchar2 (26 Byte)	
L9_Original_Tax	Number	
L9_Toll_Offer_Instance	Number	
L9_Terminating_Cell_Id	Varchar2 (16 Byte)	
L9_Visitor_Indicator	Varchar2 (1 Byte)	
L9_Band_Code	Varchar2 (1 Byte)	
L9_Validity_Time	Number	
L9_Toll_Offer_Id	Number	
L9_Rounded_Toll_Duration	Number	

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Column Name	Data Type	Description
L9_Carrier_Id	Varchar2 (16 Byte)	
L9_Special_Number	Varchar2 (32 Byte)	
L9_Toll_Charge_Amount	Number	
L9_Toll_Duration	Number	
L9_Air_Time_Ind	Varchar2 (1 Byte)	
L9_Event_Type_Name	Varchar2 (50 Byte)	
L9_Record_Sequence_Number	Number	
L9_Serve_Sid	Varchar2 (5 Byte)	
L9_Downlink_Volume	Number	
L9_Calling_Number	Varchar2 (256 Byte)	
L9_Call_Completion_Code	Number	
L9_Uplink_Volume	Number	
L9_Dialed_Digits	Varchar2 (32 Byte)	
L9_Toll_Rate_Class	Varchar2 (1 Byte)	
L9_Eha_Indicator	Varchar2 (1 Byte)	
L9_Ring_Time	Number	
L9_Toll_Tax	Number	
L9_Currency_Type	Varchar2 (2 Byte)	
L9_Calling_State	Varchar2 (2 Byte)	
L9_Toll_Item_Id	Number	
L9_Customer_Sub_Type	Varchar2 (15 Byte)	
L9_Application_Id	Varchar2 (64 Byte)	Used For Brew
L9_Orig_Trans_Id	Varchar2 (64 Byte)	
L9_Call_Answered_Indicator	Varchar2 (1 Byte)	
L9_Destination_Category	Varchar2 (6 Byte)	INTNL = International
L9_Surcharge_Amount	Number	
L9_Destination_State_Code	Varchar2 (2 Byte)	
L9_Redirect_Number	Varchar2 (32 Byte)	
L9_Toll_Charge_Code	Varchar2 (15 Byte)	
L9_Customer_Type	Varchar2 (1 Byte)	
L9_Home_Sid	Varchar2 (5 Byte)	
L9_Starting_Call_Toll_Period	Varchar2 (10 Byte)	
L9_Called_Country	Varchar2 (3 Byte)	
L9_Air_Elapsed_Time	Number	
L9_Originating_Address	Varchar2 (26 Byte)	Orig Address From Uff
L9_Additional_Charge_Tax	Number	
L9_Destination_City_Name	Varchar2 (30 Byte)	
L9_Media_Type	Varchar2 (1 Byte)	
L9_Toll_Period_Name	Varchar2 (10 Byte)	
L9_Call_Type	Varchar2 (1 Byte)	1 = International L= Local (Sms Only)
L9_Rerate_Indicator	Varchar2 (1 Byte)	
L9_Nt_Roaming_Ind	Varchar2 (1 Byte)	
L9_Offer_Instance	Number	
L9_Daily_Surcharge_Ind	Varchar2 (1 Byte)	
L9_Incollect_Indicator	Varchar2 (1 Byte)	If True Then Its An Incollect.
L9_Session_Identifier	Varchar2 (128 Byte)	
L9_Free_Unit	Number	
L9_Ext_Trx_Id	Varchar2 (18 Byte)	
L9_Roaming_Ind	Varchar2 (1 Byte)	Used For Data 2 = Roaming
L9_Balance_Exp_Date	Date	
L9_Orig_Additional_Chg_Tax	Number	
L9_Method	Varchar2 (50 Byte)	
L9_Recharge_Id	Number	
L9_Announcement_Param	Varchar2 (50 Byte)	

Continued on next page

Continued from previous page

Column Name	Data Type	Description
L9_Reason	Varchar2 (10 Byte)	
L9_Activity_Amount	Number	
L9_Channel	Varchar2 (100 Byte)	
L9_Blocked_Number_Ind	Varchar2 (1 Byte)	
L9_Remaining_Balance_Amt	Number	
L9_Min	Varchar2 (10 Byte)	Msid
L9_Equipment_Id	Varchar2 (32 Byte)	Postpaid = Esn Prepaid = 0
L9_Threshold_Amount	Number	
L9_Service_Feature	Varchar2 (128 Byte)	
L9_Original_Air_Time_Chg_Amt	Number	
L9_Be	Number	
L9_Charg_Beyond_Cap	Number	
L9_Is_Online	Varchar2 (1 Byte)	Y = **Pre-Pay**
L9_Volume_Per_Type	Varchar2 (512 Byte)	
L9_Units_Beyond_Cap	Number	
L9_Volume_Complex	Varchar2 (512 Byte)	
L9_M2m_Ind	Varchar2 (2 Byte)	Mobile To Mobile
L9_Balance_Amount	Number	
L9_Calling_Area_Name	Varchar2 (50 Byte)	
L9_Toll_Free_Ind	Varchar2 (1 Byte)	Y = Toll Free
L9_Partner_Id	Varchar2 (64 Byte)	
L9_Ext_Ref_Id	Varchar2 (64 Byte)	
L9_Campaign_Id	Varchar2 (64 Byte)	
L9_Application_Type	Varchar2 (64 Byte)	
L9_Application_Description	Varchar2 (193 Byte)	
L9_Charge_Code_Description	Varchar2 (193 Byte)	
L9_System_Service	Varchar2 (4 Byte)	
L9_Initiator_Id	Varchar2 (64 Byte)	
L9_Adj_Reason_Cd	Varchar2 (64 Byte)	
L9_Initiator_Type	Varchar2 (19 Byte)	

6.6 APE1_ACCUMULATORS

The accumulation tables sums by event type by customer.

Column Name	Data Type	Description
Cycle_Code	Number(4,0)	
Cycle_Instance	Number(2,0)	*Cycle Instance = 0 Pre-Paid Subscriber*
Customer_Segment	Number(4,0)	
Customer_Id	Number(10,0)	
Accum_Type_Id	Number(9,0)	
Owner_Id	Number(10,0)	*Same as Subsciber_id*
Owner_Type	Char(1 Byte)	
Item_Id	Number(9,0)	
Offer_Instance	Number(10,0)	
Dimension_Id	Number(5,0)	
Cycle_Year	Number(4,0)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Update_Id	Number(9,0)	
Version_Id	Number(9,0)	
Global_Accum_Ind	Char(1 Byte)	
Cross_Cycle_Ind	Char(1 Byte)	
Accum_Id	Number(9,0)	
Rerate_Type	Char(1 Byte)	
Account	Number	
Accum_Charge	Number	
Accum_Chg_Incl_Free_Allw	Number	
Accum_Free_Unit	Number	
Accum_Unit	Number	
Billing_Arrangement	Number	
Currency_Code	Varchar2(3 Byte)	
First_Event_Date	Date	
L3_Balance_Amount	Number	
L3_Balance_Status	Varchar2(1 Byte)	
Last_Event_Date	Date	
Number_Of_Events	Number	
Number_Of_Free_Events	Number	
Number_Of_Rolled_Cycles	Number	
Offer_Id	Number	
Pi_Role	Number	
Pi_Status	Number	
Quota	Number	
Quota_Per_Period	Varchar2(512 Byte)	
Remaining_Quota_Per_Period	Varchar2(512 Byte)	
Remain_Quota_Per_Month_Period	Varchar2(512 Byte)	
Rolled_Previous_Cyc_Per_Period	Varchar2(512 Byte)	
Rolled_Quota_From_Previous_Cyc	Number	
Uom	Varchar2(1 Byte)	
Utilized_Quota_Per_Period	Varchar2(512 Byte)	
Utilize_Quota_Per_Month_Period	Varchar2(512 Byte)	
Billing_Resource_Type	Varchar2(16 Byte)	
Billing_Resource_Id	Varchar2(63 Byte)	
Toll_Tax	Number	
L9_Accum_Chg_Incl_Allw_Cmplx	Varchar2(512 Byte)	
L9_Accum_Credit	Number	

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Continued from previous page

Column Name	Data Type	Description
L9_Accumulated_Chg_Cmplx	Varchar2(512 Byte)	
L9_Overage_Cap	Number	
L9_Accum_Free_Unit_Cmplx	Varchar2(512 Byte)	
L9_Number_Of_Events_Cmplx	Varchar2(512 Byte)	
L9_Number_Free_Events_Cmplx	Varchar2(512 Byte)	
L9_Accum_Unit_Cmplx	Varchar2(512 Byte)	
L9_Cap_Exceed	Varchar2(1 Byte)	
L9_Number_Of_Credit_Events	Number	
Air_Tax	Number	
L9_Tot_Units_Above_Cap	Varchar2(512 Byte)	
Accum_Duration	Number	
L9_Call_Direction	Varchar2(1 Byte)	
L9_Roaming_Ind	Varchar2(1 Byte)	
L9_Tax_Change_Date	Varchar2(25 Byte)	
L9_Serve_Sid	Varchar2(5 Byte)	
L9_Eha_Indicator	Varchar2(1 Byte)	
L9_Pay_Channel	Number	
L9_Customer_Sub_Type	Varchar2(15 Byte)	
L9_Be	Number	
L9_Customer_Type	Varchar2(1 Byte)	
L9_Called_Country	Varchar2(3 Byte)	
L9_Payment_Category	Varchar2(4 Byte)	*Post Or Pre*
L9_Billing_Arrangement	Number	
L9_Volume_Accumulation	Number	
L9_Offer_Level	Varchar2(1 Byte)	
L9_Full_Cap	Number	
L9_Charge_Type	Varchar2(3 Byte)	
L9_Prev_Add_Chg_Cmplx2	Varchar2(512 Byte)	
L9_Prev_Add_Chg_Cmplx1	Varchar2(512 Byte)	
L9_Prev_Add_Chg_Cmplx3	Varchar2(512 Byte)	
L9_Prev_Add_Chg_Cmplx	Varchar2(4000 Byte)	
L9_Acc_Usage_Before_Eom	Number	
L9_Acc_Usage_After_Eom	Number	
L9_Msisdn	Varchar2(256 Byte)	
L9_Cap_To_Be_Used	Number	
L9_Charge_Code	Varchar2(15 Byte)	
L9_Offer_Type	Varchar2(255 Byte)	
L9_Accum_Chg_Beyo_Cap_Cmplx	Varchar2(512 Byte)	
L9_Ctn	Varchar2(10 Byte)	
L9_Media_Type	Varchar2(1 Byte)	
L9_Utilized_Quota_Cmplx	Varchar2(512 Byte)	
L9_First_Threshold_Sent_Ind	Varchar2(1 Byte)	
L9_Remain_Quota_Cmplx	Varchar2(512 Byte)	
L9_Used_Quota	Number	
L9_Last_Threshold_Sent	Number	
L9_Charge_Rev_Code	Varchar2(2 Byte)	
L9_Is_New_Scale	Varchar2(1 Byte)	
L9_Is_First_Notif	Varchar2(1 Byte)	
L9_Notified_Ctn	Varchar2(32 Byte)	
L9_Unlimited_Ind	Varchar2(1 Byte)	
Proration_Factor	Number	
L9_Curr_Leg	Number	
L9_Num_Of_Period	Number	
L9_Is_Notif_Sent	Varchar2(1 Byte)	
L9_Period_Name	Varchar2(255 Byte)	
L9_Volume_Per_Leg	Varchar2(4000 Byte)	
L9_Cycle_Start_Date_Cmplx	Varchar2(512 Byte)	

Continued on next page

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Column Name	Data Type	Description
Disable_Notif_Ind	Varchar2(1 Byte)	
L9_Notif_Elig	Varchar2(1 Byte)	
L9_Is_Second_Notif	Varchar2(1 Byte)	
L9_Limit_Quota_Change_Cmplx	Varchar2(512 Byte)	
Agr_Level_Offer_Inst	Varchar2(512 Byte)	
L9_Last_Notif_Index	Number	
L9_Second_Notif_Thresh	Number	
Offer_Exp_Date	Date	
L9_Second_Threshold	Number	
L9_Accum_Free_Unts_Beyo_Cap	Number	
Offer_Eff_Date	Date	
L9_First_Threshold	Number	
L9_Second_Threshold_Sent_Ind	Varchar2(1 Byte)	
L9_Limit_Quota_Cmplx	Varchar2(512 Byte)	
L9_First_Notif_Thresh	Number	
L9_Remaining_Bucket	Number	
L9_Class_Code	Varchar2(12 Byte)	
L9_Ivr_Ann_Code	Varchar2(50 Byte)	
L9_Accum_Add_Tax_Amt	Number	
L9_Accum_Tax_Amt	Number	
L9_Days_Of_Daily_Data	Number	
L9_Calling_Area_Name	Varchar2(50 Byte)	
Expiration_Date	Date	
L9_Disclaimer_Sent	Varchar2(1 Byte)	
L9_Is_Roam_Data_Speed_Notif	Varchar2(1 Byte)	
L9_Geocode	Varchar2(10 Byte)	
L9_Is_Total_Data_Speed_Notif	Varchar2(1 Byte)	
L9_Roam_Volume_Accumulation	Number	
L9_Roam_Speed_Limit	Number	
L9_Indicator	Varchar2(1 Byte)	
L9_Charge_Accumulation	Number	
L9_Pp_Changed_Ind	Varchar2(1 Byte)	
L9_First_Level	Varchar2(512 Byte)	
L9_Grp_Level_Offer_Inst	Number	
L9_Group_Offer_Id	Number	

6.7 BPT Tables

The **Business Process Tables** are the Tops equivalent to the reference tables in **CARES**. The following is the list of all **BPT** tables that we are responsible for:

6.7.1 ADJ1_OUTCOL_PROVIDER

A list of all vendors we have an agreement with for out-collects.

Column Name	Data Type	Description
Provider_Id	Number(18,0)	
Customer_Id	Number(10,0)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Cycle_Code	Number(4,0)	
Group_Id	Number(9,0)	
Min_Time_To_Send	Number(4,0)	
Max_Recs_In_File	Number(9,0)	
Send_Empty_Notif	Char(1 Byte)	
Expiration_Date	Date	
Effective_Date	Date	
Provider_Desc	Varchar2(256 Byte)	
Resource_Type	Number(4,0)	

6.7.2 ADJ9_TIME_ZONE_REF

Time zone parameters.

6.7.3 AGD1_RESOURCES_REF

Lists **TOPS** resources used by Turbo charging very important to map **SIDS** to there offers.

Column Name	Data Type	Description
Resource_Segment	Number(4,0)	
Resource_Value	Varchar2(63 Byte)	
Resource_Type	Number(4,0)	
Effective_Date	Date	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Update_Id	Number(18,0)	
Expiration_Date	Date	
Subscriber_Id	Number(10,0)	
Sub_Status	Char(1 Byte)	
Routing_Policy_Id	Number(9,0)	
Payment_Category	Char(4 Byte)	
Customer_Id	Number(10,0)	
Bill_Cycle	Number(4,0)	
New_Bill_Cycle	Number(4,0)	

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Column Name	Data Type	Description
Chg_Cyc_Req_Date	Date	
Large_Cust_Ind	Char(1 Byte)	
Resource_Hash_Value	Number(10,0)	
Subscriber_Hash_Value	Number(10,0)	

6.7.4 APE1_SUBSCR_DATA_REF

List subscriber reference data. (Customer data)

Column Name	Data Type	Description
Cycle_Code	Number(4,0)	
Customer_Segment	Number(4,0)	
Subscriber_Id	Number(10,0)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Update_Id	Number(18,0)	
Customer_Id	Number(10,0)	
Be	Number(9,0)	
Currency_Id	Char(3 Byte)	
Subscriber_Hash_Value	Number(10,0)	

6.7.5 APE1_SUBSCR_OFFERS_REF

List subscriber offers. (Customer data)

Column Name	Data Type	Description
Cycle_Code	Number(4,0)	
Customer_Segment	Number(4,0)	
Subscriber_Id	Number(10,0)	
Offer_Id	Number(9,0)	
Offer_Instance	Number(10,0)	
Offer_Eff_Date	Date	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Update_Id	Number(18,0)	
Offer_Exp_Date	Date	
Source_Offer_Agr_Id	Number(10,0)	
Source_Offer_Instance	Number(10,0)	
Eff_Act_Code_Pror	Varchar2(25 Byte)	
Exp_Act_Code_Pror	Varchar2(25 Byte)	

6.7.6 PRM_REP_CARR_INFO

Defines the Carrier (TADIG[4]) Code used in IN and OUTCOLLECTS. The below query shows the company name and carrier code.

```
SELECT DISTINCT carr_name, carr_cd
  FROM prm_app.PRM_REP_CARR_INFO
ORDER BY carr_name;
```

6.7.7 M19_MIN_LR

Contains the **USCC** MIN (MSID) block ranges and their **SID** code. The Block Ranges are listed in the **Technical Data Sheet** from **Syniverse**. This only contains **USCC** MINS only. For foreign carriers see the **VISITOR_MIN_LR**.

Column Name	Data Type	Description
Min_Blk	Number(6,0)	
From_Line_Range	Number(4,0)	
To_Line_Range	Number(4,0)	
Effective_Date	Date	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Npa_Type	Char(1 Byte)	C = Postpaid T = Prepaid
Sids	Varchar2(5 Byte)	
Expiration_Date	Date	

6.7.8 VISITOR_MIN_LR

This table is created via a program and contains all of our roaming partners MIN/SID block ranges. It is located on the **BRMPRD** database.

6.7.9 MI1_STLMNT_CONTRACT

The Settlement Contracts table contains one record for each contract. A contract is defined as the entity to which a group of **SIDS** belongs, whose common attribute is the clearinghouse-related Net Settlement bank account. This usually means that all the **SIDS** that belong to a settlement contract are part of one operating company.

6.7.10 MF1_OUTCOL_DESTINATION

This table includes detailed information on every destination. A destination represents a target of Out-collect calls (such as a clearinghouse). The destination of every roamer call is determined according to the Home **SID** value of that call.

[4]Transfer Account Data Interchange Group

6.7.11 MF1_OUTCOL_SID_PAIR

Defines out-collect roaming agreement between **SID** pair. Originating category is retrieve from the table that is used later on for service filter determination. **INCOL_SID_PAIR** and **SID** tables are also used by Acquisition & Formatting.

Column Name	Data Type	Description
Serve_Sid	Char(5 Byte)	
Home_Sid	Char(5 Byte)	
Effective_Date	Date	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number(9,0)	
Application_Id	Char(6 Byte)	
Dl_Service_Code	Char(5 Byte)	
Dl_Update_Stamp	Number(4,0)	
Expiration_Date	Date	
Outcol_Dest_Cd	Char(6 Byte)	
Cre_Daily_Surcg_Ind	Char(1 Byte)	
Daily_Surcharge_Amt	Number(18,3)	
Misc_Schg_Ind	Char(1 Byte)	
Misc_Schg_Rate	Number(18,3)	
Misc_Schg_Measure_Ind	Char(1 Byte)	
Misc_Descriptor	Char(2 Byte)	
Misc_Schg_Desc	Varchar2(50 Byte)	
Cycle_Code	Number(4,0)	
Priority	Number(5,0)	
Num_Of_Rec_To_Commit	Number(9,0)	
Partition_Id	Number(4,0)	
Group_Id	Number(4,0)	
Agreement_Id	Number(9,0)	

6.7.12 MI1_RETURN_RRC

Used for **InCollect CIBER** processing. Contains the various reasons why an **InCollect** file can be returned.

6.7.13 MI1_REJECT_RRC

Used for **InCollect CIBER** processing. Contains the various reasons why an **InCollect** file can be rejected.

6.8 (BPT) EPC Tables

These tables are included in the **EPC** dump which happens once or twice a month, no hot-fix is needed unless it needs to be in production right away.

6.8.1 PC9_SID

One of the most important reference tables used, contains all the information for all the **SIDS** for all the companies we have a contract with.

Column Name	Data Type	Description
Cindex	Number(9,0)	
Sids	Varchar2(5 Byte)	
Effective_Date	Date	
Sid_Desc	Varchar2(50 Byte)	
Sid_Commercial_Name	Varchar2(50 Byte)	
Time_Zone_Code	Varchar2(2 Byte)	
Setlmnt_Contract_Cd	Varchar2(3 Byte)	
Intracomp_Ind	Varchar2(3 Byte)	
Sid_State	Varchar2(2 Byte)	
Sid_Country	Varchar2(3 Byte)	
Sid_City	Varchar2(30 Byte)	
Sid_Location_Cd	Char(1 Byte)	
Outcol_Dest_Cd	Varchar2(6 Byte)	
Currency_Code	Varchar2(2 Byte)	
Band_Code	Char(1 Byte)	
Geo_Code	Varchar2(9 Byte)	
Originating_Category	Varchar2(6 Byte)	
Expiration_Date	Date	
Incorporate_Ind	Char(1 Byte)	

6.8.2 PC9_SID_LIST

A description of each **SID** found in the **PC9_SID** table. When the **SID** table is updated this table needs to be updated as well.

6.8.3 PC9_SPECIAL_NUMBER

Contains a list of all the special numbers, numbers that can be dropped (no charge), toll or air time free.

Column Name	Data Type	Description
Special_Number	Varchar2(10 Byte)	
Call_Direction	Char(1 Byte)	1 = Incoming 2 = Outgoing 5 = Both
Home_Roam_Ind	Char(1 Byte)	1 = Home 2 = Roam 3 = Both
Call_Source	Varchar2(4 Byte)	V = Voice
Effective_Date	Date	
Air_Time_Ind	Char(1 Byte)	N = Air Time Is Free
Toll_Special_Number_Group	Varchar2(255 Byte)	
Drop_Call_Ind	Char(1 Byte)	Y = This Record Will Be Dropped
Special_Number_Type	Char(1 Byte)	

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Column Name	Data Type	Description
Service_Filter	Varchar2(15 Byte)	
Toll_Free_Ind	Char(1 Byte)	Y = No Toll Will Be Charged
Bl_Call_Dest_State	Varchar2(2 Byte)	
Bl_Call_Dest_City	Varchar2(30 Byte)	
Automatically_Authorized	Char(1 Byte)	
Description	Varchar2(50 Byte)	
Expiration_Date	Date	

6.8.4 PC9_SERVE_AREA_TO_SID

Maps the service area to (*all maybe to strong a term*) supported **SIDS**.

Column Name	Data Type	Description
Serve_Area	Varchar2(50 Byte)	
Sids	Varchar2(5 Byte)	
Effective_Date	Date	
Expiration_Date	Date	

6.8.5 PC9_COUNTRY_CODE

List of country code, country description, NANP indicator.

Column Name	Data Type	Description
Cindex	Number(9,0)	
Country_Code	Varchar2(3 Byte)	
Description	Varchar2(30 Byte)	
Nanp_Ind	Char(1 Byte)	

6.8.6 PC9_INCOL_SID_PAIR

Defines **InCollect** roaming agreement between **SID** pair. Originating category is retrieved from the table and that is used later on for service filter determination. INCOL_SID_PAIR and **SID** tables are also used by Acquisition & Formatting.

Column Name	Data Type	Description
Serve_Sid	Varchar2(5 Byte)	
Home_Sid	Varchar2(5 Byte)	
Effective_Date	Date	
Originating_Category	Varchar2(6 Byte)	
Incol_Not_Valid_Act	Char(1 Byte)	
Agr_Peak_Rate	Number(18,3)	
Agr_Off_Peak_Rate	Number(18,3)	
Agr_Schg_Amt	Number(18,3)	
Toll_Agr_Type	Char(1 Byte)	
Agr_Toll_Rate	Number(18,3)	
Incol_Tl_Nvalid_Ac	Char(1 Byte)	
Daily_Surcharge_Indication	Char(1 Byte)	
Expiration_Date	Date	

6.8.7 PC9_CELL_SITE_TO_CELL_ID

Cell site name to number ID.

6.8.8 PC9_SERVICE_FILTER

This table as well and **PC3_SERVICE_FILTER_LIST** are used by the **RLC**, to define the service filter

Column Name	Data Type	Description
Be	Number(2,0)	
Call_Source	Varchar2(4 Byte)	
Service_Type	Char(1 Byte)	
Originating_Category	Varchar2(5 Byte)	
Destination_Category	Varchar2(5 Byte)	
Call_Direction	Char(1 Byte)	
Effective_Date	Date	
Service_Filter	Varchar2(15 Byte)	
Description	Varchar2(30 Byte)	
Expiration_Date	Date	

6.8.9 PC3_SERVICE_FILTER_LIST

This table as well as **PC3_SERVICE_FILTER** are used by the **RLC** to rate the event.

Column Name	Data Type	Description
Service_Index	Number(9,0)	
Service_Filter	Varchar2(15 Byte)	
Description	Varchar2(50 Byte)	

6.8.10 PC9_NUMBER_ANALYSIS

Used to analyze telephone prefix's. Mostly used to determine International calls.

Column Name	Data Type	Description
Prefix	Varchar2(30 Byte)	
Station_Type	Varchar2(30 Byte)	
Effective_Date	Date	
Destination_Category	Varchar2(6 Byte)	
Automatically_Authorized	Char(1 Byte)	
Roaming_Dest_Category	Varchar2(6 Byte)	
Drop_Ind	Char(1 Byte)	
Country_Code	Varchar2(3 Byte)	
Description	Varchar2(30 Byte)	
Network_Call_Type	Char(1 Byte)	
Expiration_Date	Date	

6.8.11 PC1_CHARGE_CODE

Lists and describes the supported charge codes.

Column Name	Data Type	Description
Charge_Code_Seq	Number(5,0)	
Charge_Code	Varchar2(15 Byte)	
Description	Varchar2(4000 Byte)	
Charge_Entity	Varchar2(60 Byte)	
Revenue_Type	Char(2 Byte)	

6.8.12 PC9_NANP_NPA_LIST

The NPA (Area Code) and the country description.

6.8.13 PC9_LOCAL_TOLL_FREE_AREA

Lists the relationship between **SIDS** and NPA ranges where the toll is free.

6.8.14 PC9_IP_ADDR_LIST

This contains the list of all of the pre-paid IP's. When a new IP is going to be used for pre-pay, it needs to be added to this table. Otherwise it will show up as roaming.

Column Name	Data Type	Description
cindex	number(9,0)	
address	varchar2(256 byte)	i.p address
description	varchar2(101 byte)	

7 AEM

AEM gets the Turbo-Charging errors from the **APE1_REJECTED_EVENTS** table. For **A&F** they are in the **EM1_RECORD** table. Since there are so many columns in the **EM1_RECORD** table we must limit our query's to the following columns:

EM1 Queries

7.1 AEM Error Summary

List of error codes.

ERROR CODE	POSTPAID	PREPAID	RECYCLE	REGUIDE	PURGE	COMMENTS
30728	X		X		X	Cannot be fixed WA in place.
30724	X				X	Technical non-usage events.
30712	X	X		X	X	Guiding error.
30263	X	X			X	Open Remedy against Amdocs to handle error as NON-BAU or against IS Ops - Bill Cycle Management when handled by Incident Management. Large charge issue where TC is not down during EPC dump.
30257	X	X			X	Open Remedy against Amdocs for NON-BAU postpaid errors. BAU prepaid events with junk in l9_called_number can be purged, because that is what the user dialed, ref textjunk in the called number field.msg
30249		X			X	Can be caused by recycling non-recyclable errors. See error analysis.
30232		X			X	Valid reject that cannot be fixed by a WA.
30219	X	X	X		X	Postpaid are recycled until purged. Prepaid are purged.
30218	X	X	X		X	Postpaid are recycled until purged. Prepaid are purged.
30209	X	X		X	X	Open Remedy against Amdocs to handle error as NON-BAU or against IS Ops - Bill Cycle Management when handled by Incident Management. Large charge issue where TC is not down during EPC dump.
30206	X	X	X		X	Open Remedy against Amdocs to handle error as NON-BAU or against IS Ops - Bill Cycle Management when handled by Incident Management. Large charge issue where TC is not down during EPC dump.
30203		X			X	Zero byte LTE events. None since 03/2015
30109	X				X	IF offer is missing from CSM_OFFER open RT for EPC, if not open Remedy against Amdocs.
10060		X			X	First received on 20170116: Open Remedy against Amdocs. Prepaid online event rejected due to the EOD maintenance. Remedy 03416730
10040	X	X		X	X	Guiding error
10037	X	X		X	X	Guiding error
10036	X	X		X	X	NON-BAU are re-guided and BAU are purged. See AEM Error Analysis History - TC Errors.docx for rejected 'vali' events.
10035	X	X		X	X	Guiding error
10025		X			X	Events are rejected, because of failed prepaid replenishments and cannot be recycled.
6001		X	X		X	Follow AEM Error Analysis History steps. Recycle when carrier id is added by EPC.
6000	X	X	X		X	Open Remedy against NDCII-DCS - Switch Data Coll (Mediation) for postpaid. Prepaid can be purged. Recycle when fix is deployed.

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ERROR CODE	POSTPAID	PREPAID	RECYCLE	REGUIDE	PURGE	COMMENTS
3000	X	X	X		X	NON-BAU: Open Remedy against TOPS Configuration for "Event is rejected due to not found value 175 in table Incol SID pair". BAU: There is also a known special number issue that can be purged.
1083	X		X		X	Open Remedy against Inter-carrier Services and recycle once added.
1081	X	X			X	These are valid rejects and can be purged
1032		X			X	Never investigated
1031	X	X			X	Check with Nidal Elhrisse then if needed Open Remedy against EPC. See AEM Error Analysis History - TC Errors.docx Events with google-content etc. can be ignored, because the project ended on 11/20/2015. See EOL spreadsheet 102915.xlsx
1030		X			X	Insufficient balance
1019		X			X	Technical non-usage events
1013		X			X	Balance is already opened
1012	X	X		X	X	Open Remedy against Amdocs for postpaid usage charge event types for active subscribers and purged the rest.
1007		X			X	Balance is not yet open
1003		X			X	Insufficient balance
1002		X			X	Insufficient balance
1001		X			X	Balance is expired
1000		X			X	Balance is closed
103	X			X	X	System errors. Re-guided every day.
102	X			X	X	System errors. Re-guided every day.
101	X	X		X	X	System errors. Postpaid re-guided every day. Prepaid purged every day.

7.2 EM1_RECORD

The EM1 record database is the database used by **AEM**, To see the columns within the EM1_RECORD look at the **EM1_STREAM_STREAM_**N table. Click on the link provided below to see an example on how to query this table. EM1_RECORD Example

8 APRM

Amdocs Partner Relationship Module is a **TC** submodule that handles all *Incollect* and *Outcollect* wholesale rating. See **APRM** tables for further information.

8.1 APRM Tables

8.1.1 CDMA USC_ROAM_EVNTS

Used for CDMA Incollect/Outcollect Voice and data files.

Name	Data Type	Description
Air_Chrg_Amt	Number (18,5)	
Application_Id	Char (6 Byte)	
Au_Id	Number (9)	
Bp_Start_Date	Date	
Carrier_Cd	Varchar2 (20 Byte)	
Ciber_File_Name_1	Varchar2 (50 Byte)	
Ciber_File_Name_2	Varchar2 (50 Byte)	
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Edr_Id	Number (11)	
Event_Date	Date	
Event_Id	Number (4)	
Event_Type	Varchar2 (20 Byte)	
File_Report_Period	Date	
Generated_Rec	Number (4)	
Geo_Code	Varchar2 (10 Byte)	
Home_Company	Varchar2 (20 Byte)	
Home_Sid	Char (5 Byte)	
Ntwrk_Roam_Ind	Char (1 Byte)	
Operator_Id	Number (9)	
Orig_Bp	Date	
Originating_Id	Char (20 Byte)	
Other_Company	Varchar2 (20 Byte)	
Prod_Id	Number (4)	
Serve_Company	Varchar2 (20 Byte)	
Serve_Sid	Char (5 Byte)	
Subscriber_Id	Char (10 Byte)	
Surcharge_Amount	Number (18,5)	
Surcharge_Ind	Char (1 Byte)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Terminating_Id	Char (20 Byte)	
Toll_Chrg	Number (18,5)	
Toll_Duration	Number (11)	
Toll_Tp_Ind	Varchar2 (20 Byte)	
Total_Chrg_Amount	Number (18,5)	
Total_Tax	Number (18,5)	
Usage	Number (18,5)	
Usc_Uom	Char (1 Byte)	
Visit_Ind	Char (1 Byte)	
Volume_Type	Char (2 Byte)	

8.1.2 DATA_OUTCOLLECT

Event table used for CDMA data Outcollects which run totally outside **TOPS**.

Name	Data Type	Description
Actual_Data_Volume	Number	
Actual_Usage_Volume	Number	
Amount	Number (9,2)	
Bsid	Char (12 Byte)	
Home_Carrier	Varchar2 (40 Byte)	
Home_Sid	Char (5 Byte)	
Message_Accounting_Digits	Number	
Partner	Varchar2 (40 Byte)	
Process_Date	Date	
Settlement_Date	Date	

8.1.3 ROAMING_PARTNER

A table that contains all the CDMA Data Outcollect roaming partners. This table works in tandom with the **DATA_OUTCOLLECT** table.

Name	Data Type	Description
Bsid_Type	Char (5 Byte)	
Clearinghouse	Varchar2 (40 Byte)	
Partner	Varchar2 (40 Byte)	
Roaming_Type	Char (1 Byte)	

8.1.4 4G IC_ACCUMULATED_USAGE

This is the equivalent to the **APE1_ACCUMULATORS** for wholesale 4G roaming usage and is a view of the **PRM_EVENT_DTL_PARAM** and **IC_ACCUMULATED_CHRG** tables. One of the tables that is part of **USC_SAP_EXTRACT_V** useful for usage totals and file names.

Column Name	Data Type	Description
Carrier_Cd	Varchar2 (20 Byte)	
Prod_Bdl_Id	Number (6)	
Prod_Id	Number (4)	
Event_Id	Number (4)	
Content_Grp_Cd	Varchar2 (20 Byte)	
Service_Id	Number (20)	
Elmnt_Cd	Char (8 Byte)	
Rate_Plan_Cd	Varchar2 (20 Byte)	
Chrg_Direction	Char (1 Byte)	
Orig_Bp	Date	
Bp_Start_Date	Date	
Event_Date	Date	
Rate_Eff_Datetime	Date	
Destination_Cd	Char (5 Byte)	
Chrg_Param_Id	Number (4)	
Qual_Param_1_Id	Number (4)	
Qual_Param_1_Set_Cd	Char (4 Byte)	
Qual_Param_1_Val	Varchar2 (20 Byte)	
Qual_Param_2_Id	Number (4)	
Qual_Param_2_Set_Cd	Char (4 Byte)	
Qual_Param_2_Val	Varchar2 (20 Byte)	
Qual_Param_3_Id	Number (4)	

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Column Name	Data Type	Description
Qual_Param_3_Set_Cd	Char (4 Byte)	
Qual_Param_3_Val	Varchar2 (20 Byte)	
Qual_Param_4_Id	Number (4)	
Qual_Param_4_Set_Cd	Char (4 Byte)	
Qual_Param_4_Val	Varchar2 (20 Byte)	
Nr_Param_1_Val	Char (20 Byte)	
Nr_Param_2_Val	Char (20 Byte)	
Nr_Param_3_Val	Char (20 Byte)	
Future_1	Varchar2 (20 Byte)	
Future_2	Varchar2 (20 Byte)	
Future_3	Varchar2 (20 Byte)	
Future_4	Varchar2 (20 Byte)	
Future_5	Varchar2 (20 Byte)	
Future_6	Varchar2 (20 Byte)	
Future_7	Varchar2 (20 Byte)	
Future_8	Varchar2 (20 Byte)	
Future_9	Varchar2 (20 Byte)	
Future_10	Varchar2 (20 Byte)	
Future_11	Varchar2 (50 Byte)	
Future_12	Varchar2 (50 Byte)	
Future_13	Varchar2 (50 Byte)	
Future_14	Varchar2 (50 Byte)	
Future_15	Varchar2 (50 Byte)	
Au_Id	Number (9)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number (9)	
Application_Id	Char (6 Byte)	
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Jurisdiction	Char (1 Byte)	
Prod_Cat_Id	Char (2 Byte)	*Same as Au_Prod_Cat_Id*
Agreement_Id	Number (6)	
Elmnt_Cat_Id	Number (2)	
Rate_Class_Set_Cd	Char (4 Byte)	
Rate_Per_Unit_Seq	Number (9)	
One_Time_Rate_Seq	Number (9)	
Nr_Param_4_Val	Char (20 Byte)	
Qual_Param_5_Id	Number (4)	
Qual_Param_5_Set_Cd	Char (4 Byte)	
Qual_Param_5_Val	Varchar2 (20 Byte)	
Qual_Param_6_Id	Number (4)	
Qual_Param_6_Set_Cd	Char (4 Byte)	
Qual_Param_6_Val	Varchar2 (20 Byte)	
Qual_Param_7_Id	Number (4)	
Qual_Param_7_Set_Cd	Char (4 Byte)	
Qual_Param_7_Val	Varchar2 (20 Byte)	
Qual_Param_8_Id	Number (4)	
Qual_Param_8_Set_Cd	Char (4 Byte)	
Qual_Param_8_Val	Varchar2 (20 Byte)	
Qual_Param_9_Id	Number (4)	
Qual_Param_9_Set_Cd	Char (4 Byte)	
Qual_Param_9_Val	Varchar2 (20 Byte)	
Qual_Param_10_Id	Number (4)	
Qual_Param_10_Set_Cd	Char (4 Byte)	
Qual_Param_10_Val	Varchar2 (20 Byte)	
Nr_Param_1_Id	Number (4)	

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Column Name	Data Type	Description
Nr_Param_2_Id	Number (4)	
Nr_Param_3_Id	Number (4)	
Nr_Param_4_Id	Number (4)	
Tax_Set_Cd	Char (2 Byte)	

BooGoo9000#

Uom	Char (2 Byte)
Num_Of_Events	Number (9)
Event_Chrg_Tp	Char (1 Byte)
Tot_Org_Chrg_Prm_V	Number (18,5)
Tot_Chrg_Param_Val	Number (18,5)
Tot_Net_Acces_Chrg	Number (18,5)
Tot_Net_Onetm_Chrg	Number (18,5)
Tot_Net_Usage_Chrg	Number (18,5)
Acces_Chrg_Seq	Number (9)
Content_Rate	Number (13,8)
Cp_Access_Chrg	Number (18,5)
Cp_Usage_Chrg	Number (18,5)
Tenant_Cd	Varchar2 (20 Byte)
Core_Reserved_1	Char (1 Byte)
Core_Reserved_2	Varchar2 (20 Byte)
Core_Reserved_3	Varchar2 (20 Byte)
Event_Direction	Char (1 Byte)

8.1.5 4G PRM_ROM_INCOL_EVENTS_AP

APRM table that contains the events for wholesale 4G Incollects.

Column Name	Data Type	Description
Validation_Sts	Char (1 Byte)	
Uom	Char (2 Byte)	
Transcut_Ts_Offst	Char (5 Byte)	
Transcut_Ts	Char (14 Byte)	
Tenant_Cd	Varchar2 (20 Byte)	
Teleservicecode	Char (2 Byte)	
Tax_Type	Char (2 Byte)	
Tap_In_File_Seq_Number	Number (5)	
Tap_In_File_Name	Varchar2 (20 Byte)	
Tadig_File_Type	Char (2 Byte)	
Sys_Update_Date	Date	
Sys_Creation_Date	Date	
Supp_Serv_Cd	Char (2 Byte)	
Sim_Toolkit_Ind	Char (1 Byte)	
Serving_Bid	Char (5 Byte)	
Service_Type	Char (1 Byte)	
Rerate_Cnt	Number (3)	
Record_Type	Char (1 Byte)	
Record_Position	Varchar2 (6 Byte)	
Rating_Curr	Char (3 Byte)	
Rap_File_Sequence	Varchar2 (20 Byte)	
Process_Date	Date	
Orig_Brok_Filename	Varchar2 (24 Byte)	
Operator_Id	Number (9)	
Ods_Last_Update_Date	Date	
Ods_Insert_Date	Date	
Normalized_Calling_Number	Char (20 Byte)	
Normalized_Called_Number	Char (20 Byte)	

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Column Name	Data Type	Description
Non_Chrg_Party_Num	Char (17 Byte)	
Non_Chr_Prt_Pub_User_Id	Char (64 Byte)	
Network_Element_Type	Char (1 Byte)	
Network_Element_Id	Char (50 Byte)	
Mobile_Session_Service	Char (17 Byte)	
Message_Event_Service	Char (17 Byte)	
Local_Currency	Char (3 Byte)	
Generated_Rec	Number (4)	
Future_Buff	Varchar2 (443 Byte)	
File_Avail_Ts_Offst	Char (5 Byte)	
File_Avail_Ts	Char (14 Byte)	
Exchange_Rate	Number (18,5)	
Event_Start_Date_Time	Date	
Event_Reference	Char (64 Byte)	
Edr_Id	Number (11)	
Dl_Update_Stamp	Number (4)	
Dl_Service_Code	Char (5 Byte)	
Currency_Code	Char (3 Byte)	
Country_Code	Char (3 Byte)	
Chr_Prt_Pub_User_Id	Char (64 Byte)	
Charge_Type	Char (1 Byte)	
Charge_Parameter	Number (18,5)	
Charge_Amount_Sdr	Number (18,5)	
Charge_Amount_Rc	Number (18,5)	
Charge_Amount	Number (18,5)	
Carrier_Cd	Varchar2 (20 Byte)	
Call_Type_Level_3	Varchar2 (11 Byte)	
Call_Type_Level_2	Char (2 Byte)	
Call_Type_Level_1	Char (3 Byte)	
Call_Direction	Char (1 Byte)	
Bp_Start_Date	Date	
Bp_End_Date	Date	
Au_Id	Number (9)	
Aprm_Edr_Id	Number (20)	
Application_Id	Char (6 Byte)	

8.1.6 4G PRM_ROM_OUTCOL_EVENTS_AP

APRM table that contains the events for wholesale 4G Outcollects.

Column Name	Data Type	Description
Utc_Offset	Char (5 Byte)	
Usg_Net_Charge_Sdr	Number (18,5)	
Usg_Net_Charge_Rc	Number (18,5)	
Usg_Net_Charge_Lc	Number (18,5)	
Uom	Char (2 Byte)	
Tot_Tax_Amount_Sdr	Number (18,5)	
Tot_Tax_Amount_Rc	Number (18,5)	
Tot_Tax_Amount_Lc1	Number (18,5)	
Tot_Tax_Amount_Lc	Number (18,5)	
Tot_Net_Charge_Sdr	Number (18,5)	
Tot_Net_Charge_Rc	Number (18,5)	
Tot_Net_Charge_Lc1	Number (18,5)	
Tot_Net_Charge_Lc	Number (18,5)	
Tot_Gross_Amt_Sdr	Number (18,5)	
Tot_Gross_Amt_Rc	Number (18,5)	
Tot_Gross_Amt_Lc1	Number (18,5)	

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Column Name	Data Type	Description
Tot_Gross_Amt_Lc	Number (18,5)	
Termination_Cause	Varchar2 (8 Byte)	
Term_Province	Char (2 Byte)	
Tenant_Cd	Varchar2 (20 Byte)	
Tele_Serv_Code	Char (2 Byte)	
Taxable_Amount4	Number (18,5)	
Taxable_Amount3	Number (18,5)	
Taxable_Amount2	Number (18,5)	
Taxable_Amount1	Number (18,5)	
Tax_Tp_4	Char (2 Byte)	
Tax_Tp_3	Char (2 Byte)	
Tax_Tp_2	Char (2 Byte)	
Tax_Tp_1	Char (2 Byte)	
Tax_Set_Cd	Char (2 Byte)	
Tax_Rate_4	Number (6,3)	
Tax_Rate_3	Number (6,3)	
Tax_Rate_2	Number (6,3)	
Tax_Rate_1	Number (6,3)	
Tax_Jurisdiction	Char (2 Byte)	
Tax_Code_4	Char (2 Byte)	
Tax_Code_3	Char (2 Byte)	
Tax_Code_2	Char (2 Byte)	
Tax_Code_1	Char (2 Byte)	
Tax_Amount_4_Rc	Number (18,5)	
Tax_Amount_4	Number (18,5)	
Tax_Amount_3_Rc	Number (18,5)	
Tax_Amount_3	Number (18,5)	
Tax_Amount_2_Rc	Number (18,5)	
Tax_Amount_2	Number (18,5)	
Tax_Amount_1_Rc	Number (18,5)	
Tax_Amount_1	Number (18,5)	
Tap_Trx_Curr	Char (3 Byte)	
Tap_Out_File_Name	Varchar2 (20 Byte)	
Tap_File_Seq	Number (5)	
Sys_Update_Date	Date	
Sys_Creation_Date	Date	
Supp_Service	Char (2 Byte)	
Src_Number	Char (20 Byte)	
Sim_Toolkit_Ind	Char (1 Byte)	
Service_Type	Char (1 Byte)	
Rec_Entity_Tp	Char (1 Byte)	
Rating_Curr	Char (3 Byte)	
Rap_File_Seq	Number (5)	
Processed_Ind	Char (1 Byte)	
Process_Date	Date	
Pdp_Address	Varchar2 (50 Byte)	
Partial_Type_Ind	Char (1 Byte)	
Orig_Province	Char (2 Byte)	
Operator_Id	Number (9)	
Ods_Last_Update_Date	Date	
Ods_Insert_Date	Date	
Norm_Src_Number	Char (20 Byte)	
Norm_Dest_Number	Char (20 Byte)	
Non_Chr_Prt_Pub_User_Id	Char (64 Byte)	
Network_Element_Type	Char (1 Byte)	
Network_Element_Id	Char (50 Byte)	
Net_Sgsnid	Varchar2 (50 Byte)	

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Column Name	Data Type	Description
Net_Rec_Entity_Id	Varchar2 (50 Byte)	
Net_Loc_Area_Code	Varchar2 (20 Byte)	
Msisdn	Varchar2 (20 Byte)	
Message_Event_Service	Char (17 Byte)	
Imsi	Varchar2 (15 Byte)	
Home_Province	Char (2 Byte)	
Home_Bid	Char (5 Byte)	
Gprs_Dest_Apn_Oi	Varchar2 (38 Byte)	
Gprs_Dest_Apn_Ni	Varchar2 (64 Byte)	
Globalrefnumber	Varchar2 (42 Byte)	
Ggsn_Address	Varchar2 (50 Byte)	
Geo_Serv_Loc_Desc	Varchar2 (30 Byte)	
Geo_Serv_Bid	Char (5 Byte)	
Generated_Rec	Number (4)	
Future	Varchar2 (100 Byte)	
File_Identifier	Number (9)	
Extract_Date	Date	
Ext_File_Id	Number (9)	
Event_Start_Datetime	Date	
Event_Reference	Char (64 Byte)	
Event_End_Datetime	Date	
Equipment_Id	Varchar2 (20 Byte)	
Edr_Id	Number (11)	
Dl_Update_Stamp	Number (4)	
Dl_Service_Code	Char (5 Byte)	
Disp_File_Seq	Number (9)	
Dest_Number	Char (20 Byte)	
Data_Vol_Outgoing	Varchar2 (12 Byte)	
Data_Vol_Incoming	Varchar2 (12 Byte)	
Cross_Rate	Number (11,6)	
Country_Code	Char (3 Byte)	
Chrg_Id	Varchar2 (10 Byte)	
Chr_Prt_Pub_User_Id	Char (64 Byte)	
Charging_Param	Number (18,5)	
Charge_Units	Number (18,5)	
Cell_Id	Varchar2 (10 Byte)	
Carrier_Cd	Varchar2 (20 Byte)	
Camel_Serv_Level	Char (2 Byte)	
Camel_Serv_Key	Varchar2 (10 Byte)	
Camel_Invoc_Fee	Number (18,5)	
Camel_Dflt_Hndl	Char (2 Byte)	
Camel_Dest_Num	Char (20 Byte)	
Camel_Cse_Info	Char (40 Byte)	
Call_Tp_Level_3	Char (4 Byte)	
Call_Tp_Level_2	Char (2 Byte)	
Call_Tp_Level_1	Char (2 Byte)	
Call_Direction	Char (1 Byte)	
Bp_Start_Date	Date	
Bp_End_Date	Date	
Bearer_Serv_Code	Char (2 Byte)	
Au_Id	Number (9)	
Application_Id	Char (6 Byte)	
Air_Toll_Ind	Char (1 Byte)	
Acc_Net_Charge_Sdr	Number (18,5)	
Acc_Net_Charge_Rc	Number (18,5)	
Acc_Net_Charge_Lc	Number (18,5)	

8.1.7 (Both) USC_SAP_EXTRACT_V

The SAP Extract table is a view of a view **IC_ACCUMULATED_USAGE** joined with table **USC_GL_ACC_LKP**. It is this table that is used create a report that is sent to **TDS** to be loaded into **SAP**

Name	Data Type	Descritption
Au_Id	Number (9)	
Carrier_Cd	Varchar2 (20 Byte)	
Other_Partner	Varchar2 (20 Byte)	
Au_Prod_Id	Number (4)	
Au_Evt_Id	Number (4)	
Au_Prod_Cat_Id	Char (2 Byte)	IR - Intra Roaming IN - Incollect Roaming RO - Outcollect Roaming IS - TAPIN OS - TAPOUT II - GSM
Au_Bp_Start_Date	Date	Billing Period Start
Au_Charge	Number	
Gl_Account	Number	
Crdr_Ind	Char (2 Byte)	
Cost_Center	Char (10 Byte)	
Product	Char (18 Byte)	
Tax_Code	Char (2 Byte)	
Tax_Jur_Cd	Char (15 Byte)	
Line_Order	Number	

9 ARCM

Thw whole purpose of **ARCM** is to convert wholesale IN/OUT Collect **TAP** files into usage records that could then put into **APRM**.

9.1 ARCM Tables

9.1.1 SMM1_COLLECT_FILES_HIST

The **TAP** file equivalent to **AC1_CONTROL_HIST**.

Column Name	Data Type	Description
Ods_Source_Cd	Number	
Period_Key	Number (4)	
File_Identifier	Number (22)	
File_Name	Varchar2 (200 Byte)	
File_Format	Varchar2 (10 Byte)	
Source_Id	Number (22)	
Source_Type	Varchar2 (10 Byte)	
File_Path	Varchar2 (512 Byte)	
File_Status	Varchar2 (2 Byte)	
Physical_Date	Date	
File_Size	Number (15)	
Is_Instance_Id	Number (11)	
Reject_Reason	Varchar2 (512 Byte)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number (9)	
Application_Id	Char (6 Byte)	

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Continued from previous page

Column Name	Data Type	Description
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Ods_Insert_Date	Date	
Ods_Last_Update_Date	Date	

9.1.2 SMM1_ARCM_FILE_REPOSITORY

Used in conjunction with **SMM1_COLLECT_FILES_HIST** to get more detailed information.

Column Name	Data Type	Description
Ods_Source_Cd	Number	
File_Name	Varchar2 (20 Byte)	
File_Dir	Varchar2 (100 Byte)	
File_Status	Varchar2 (20 Byte)	
File_Type	Varchar2 (5 Byte)	
Sender	Varchar2 (5 Byte)	
Recipient	Varchar2 (5 Byte)	
Sequence_Num	Number (11)	
Last_Modified_Timestamp	Number (22)	
File_Available_Timestamp	Number (22)	
File_Content	Varchar2 (50 Byte)	
Corresponding_File_Name	Varchar2 (20 Byte)	
Clearing_House	Varchar2 (50 Byte)	
Events_Count	Number (11)	
Total_Value	Varchar2 (20 Byte)	
Currency	Varchar2 (5 Byte)	
File_Ack_Status	Varchar2 (20 Byte)	
Module_Id	Number (11)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number (9)	
Application_Id	Char (6 Byte)	
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Ods_Insert_Date	Date	
Ods_Last_Update_Date	Date	

9.1.3 PRM_RAPOUT_ERR_MNGR

Keeps track of all the RAP out errors.

9.1.4 PRM_ROM_OUTCOL_EVENTS_AP

Column Name	Data Type	Description
Edr_Id	Number (11)	
Generated_Rec	Number (4)	
Event_Start_Datetime	Date	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number (9)	
Application_Id	Char (6 Byte)	
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Bp_Start_Date	Date	

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Column Name	Data Type	Description
Bp_End_Date	Date	
Carrier_Cd	Varchar2 (20 Byte)	
Process_Date	Date	
Tap_File_Seq	Number (5)	
Air_Toll_Ind	Char (1 Byte)	
Rating_Curr	Char (3 Byte)	
Tap_Trx_Curr	Char (3 Byte)	
File_Identifier	Number (9)	
Globalrefnumber	Varchar2 (42 Byte)	
Charging_Param	Number (18,5)	
Uom	Char (2 Byte)	
Ext_File_Id	Number (9)	
Extract_Date	Date	
Processed_Ind	Char (1 Byte)	
Charge_Units	Number (18,5)	
Tax_Set_Cd	Char (2 Byte)	
Tax_Jurisdiction	Char (2 Byte)	
Tax_Code_1	Char (2 Byte)	
Tax_Tp_1	Char (2 Byte)	
Tax_Rate_1	Number (6,3)	
Tax_Amount_1	Number (18,5)	
Tax_Code_2	Char (2 Byte)	
Tax_Tp_2	Char (2 Byte)	
Tax_Rate_2	Number (6,3)	
Tax_Amount_2	Number (18,5)	
Tax_Code_3	Char (2 Byte)	
Tax_Tp_3	Char (2 Byte)	
Tax_Rate_3	Number (6,3)	
Tax_Amount_3	Number (18,5)	
Tax_Code_4	Char (2 Byte)	
Tax_Tp_4	Char (2 Byte)	
Tax_Rate_4	Number (6,3)	
Tax_Amount_4	Number (18,5)	
Tot_Net_Charge_Lc	Number (18,5)	
Tot_Tax_Amount_Lc	Number (18,5)	
Tot_Gross_Amt_Lc	Number (18,5)	
Tot_Net_Charge_Sdr	Number (18,5)	
Tot_Tax_Amount_Sdr	Number (18,5)	
Tot_Gross_Amt_Sdr	Number (18,5)	
Cross_Rate	Number (11,6)	
Service_Type	Char (1 Byte)	
Norm_Src_Number	Char (20 Byte)	
Norm_Dest_Number	Char (20 Byte)	
Dest_Number	Char (20 Byte)	
Call_Direction	Char (1 Byte)	
Country_Code	Char (3 Byte)	
Orig_Province	Char (2 Byte)	
Term_Province	Char (2 Byte)	
Home_Province	Char (2 Byte)	
Event_End_Datetime	Date	
Net_Rec_Entity_Id	Varchar2 (50 Byte)	
Net_Loc_Area_Code	Varchar2 (20 Byte)	
Geo_Serv_Bid	Char (5 Byte)	
Geo_Serv_Loc_Desc	Varchar2 (30 Byte)	
Equipment_Id	Varchar2 (20 Byte)	
Bearer_Serv_Code	Char (2 Byte)	
Tele_Serv_Code	Char (2 Byte)	

Continued on next page

Continued from previous page

Column Name	Data Type	Description
Supp_Service	Char (2 Byte)	
Call_Tp_Level_1	Char (2 Byte)	
Call_Tp_Level_2	Char (2 Byte)	
Call_Tp_Level_3	Char (4 Byte)	
Camel_Serv_Level	Char (2 Byte)	
Camel_Serv_Key	Varchar2 (10 Byte)	
Camel_Invoc_Fee	Number (18,5)	
Camel_Dflt_Hndl	Char (2 Byte)	
Camel_Dest_Num	Char (20 Byte)	
Camel_Cse_Info	Char (40 Byte)	
Home_Bid	Char (5 Byte)	
Cell_Id	Varchar2 (10 Byte)	
Utc_Offset	Char (5 Byte)	
Rec_Entity_Tp	Char (1 Byte)	
Chrg_Id	Varchar2 (10 Byte)	
Src_Number	Char (20 Byte)	
Pdp_Address	Varchar2 (50 Byte)	
Ggsn_Address	Varchar2 (50 Byte)	
Gprs_Dest_Apn_Ni	Varchar2 (64 Byte)	
Gprs_Dest_Apn_Oi	Varchar2 (38 Byte)	
Data_Vol_Incoming	Varchar2 (12 Byte)	
Data_Vol_Outgoing	Varchar2 (12 Byte)	
Termination_Cause	Varchar2 (8 Byte)	
Partial_Type_Ind	Char (1 Byte)	
Imsi	Varchar2 (15 Byte)	
Msisdn	Varchar2 (20 Byte)	
Disp_File_Seq	Number (9)	
Net_Sgsnid	Varchar2 (50 Byte)	
Future	Varchar2 (100 Byte)	
Tax_Amount_1_Rc	Number (18,5)	
Tax_Amount_2_Rc	Number (18,5)	
Tax_Amount_3_Rc	Number (18,5)	
Tax_Amount_4_Rc	Number (18,5)	
Tot_Net_Charge_Rc	Number (18,5)	
Tot_Tax_Amount_Rc	Number (18,5)	
Tot_Gross_Amt_Rc	Number (18,5)	
Tot_Net_Charge_Lc1	Number (18,5)	
Tot_Tax_Amount_Lc1	Number (18,5)	
Tot_Gross_Amt_Lc1	Number (18,5)	
Au_Id	Number (9)	
Usg_Net_Charge_Lc	Number (18,5)	
Usg_Net_Charge_Rc	Number (18,5)	
Usg_Net_Charge_Sdr	Number (18,5)	
Acc_Net_Charge_Lc	Number (18,5)	
Acc_Net_Charge_Rc	Number (18,5)	
Acc_Net_Charge_Sdr	Number (18,5)	
Tap_Out_File_Name	Varchar2 (20 Byte)	
Rap_File_Seq	Number (5)	
Taxable_Amount1	Number (18,5)	
Taxable_Amount2	Number (18,5)	
Taxable_Amount3	Number (18,5)	
Taxable_Amount4	Number (18,5)	
Tenant_Cd	Varchar2 (20 Byte)	
Network_Element_Type	Char (1 Byte)	
Network_Element_Id	Char (50 Byte)	
Chr_Prt_Pub_User_Id	Char (64 Byte)	
Non_Chr_Prt_Pub_User_Id	Char (64 Byte)	

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Continued from previous page

Column Name	Data Type	Description
Event_Reference	Char (64 Byte)	
Sim_Toolkit_Ind	Char (1 Byte)	
Message_Event_Service	Char (17 Byte)	
Ods_Insert_Date	Date	
Ods_Last_Update_Date	Date	

9.1.5 PRM_ROM_INCOL_EVENTS_AP

Column Name	Data Type	Description
Edr_Id	Number (11)	
Generated_Rec	Number (4)	
Rerate_Cnt	Number (3)	
Sys_Creation_Date	Date	
Sys_Update_Date	Date	
Operator_Id	Number (9)	
Application_Id	Char (6 Byte)	
Dl_Service_Code	Char (5 Byte)	
Dl_Update_Stamp	Number (4)	
Record_Type	Char (1 Byte)	
Tap_In_File_Name	Varchar2 (20 Byte)	
Tap_In_File_Seq_Number	Number (5)	
Tadig_File_Type	Char (2 Byte)	
Record_Position	Varchar2 (6 Byte)	
Charge_Type	Char (1 Byte)	
Charge_Parameter	Number (18,5)	
Uom	Char (2 Byte)	
Charge_Amount	Number (18,5)	
Charge_Amount_Rc	Number (18,5)	
Charge_Amount_Sdr	Number (18,5)	
Currency_Code	Char (3 Byte)	
Rap_File_Sequence	Varchar2 (20 Byte)	
Carrier_Cd	Varchar2 (20 Byte)	
Service_Type	Char (1 Byte)	
Normalized_Calling_Number	Char (20 Byte)	
Normalized_Called_Number	Char (20 Byte)	
Call_Direction	Char (1 Byte)	
Country_Code	Char (3 Byte)	
Serving_Bid	Char (5 Byte)	
Event_Start_Date_Time	Date	
Process_Date	Date	
Bp_Start_Date	Date	
Bp_End_Date	Date	
Local_Currency	Char (3 Byte)	
Rating_Curr	Char (3 Byte)	
Exchange_Rate	Number (18,5)	
Call_Type_Level_1	Char (3 Byte)	
Call_Type_Level_2	Char (2 Byte)	
Call_Type_Level_3	Varchar2 (11 Byte)	
Tax_Type	Char (2 Byte)	
Future_Buff	Varchar2 (443 Byte)	
Au_Id	Number (9)	
Teleservicecode	Char (2 Byte)	
Supp_Serv_Cd	Char (2 Byte)	
Validation_Sts	Char (1 Byte)	
Aprm_Edr_Id	Number (20)	
Orig_Brok_Filename	Varchar2 (24 Byte)	
File_Avail_Ts	Char (14 Byte)	

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Continued from previous page

Column Name	Data Type	Description
File_Avail_Ts_Offst	Char (5 Byte)	
Transcut_Ts	Char (14 Byte)	
Transcut_Ts_Offst	Char (5 Byte)	
Tenant_Cd	Varchar2 (20 Byte)	
Network_Element_Type	Char (1 Byte)	
Network_Element_Id	Char (50 Byte)	
Chr_Prt_Pub_User_Id	Char (64 Byte)	
Non_Chr_Prt_Pub_User_Id	Char (64 Byte)	
Event_Reference	Char (64 Byte)	
Sim_Toolkit_Ind	Char (1 Byte)	
Message_Event_Service	Char (17 Byte)	
Mobile_Session_Service	Char (17 Byte)	
Non_Chrg_Party_Num	Char (17 Byte)	
Ods_Insert_Date	Date	
Ods_Last_Update_Date	Date	

10 EpsMonitor

The EpsMonitors are located on all production servers listed in the diagram below and can be found at **/apps/amduser/prodtc*/eps/EpsMonitors**, **where * = 1-6**