

UK Standard for CDRs

May 8

2015

This document defines a standard specification for the supply of wholesale billing data, for the UK telecom marketplace. The specification covers outbound, inbound and mobile call detail records (CDRs) and also recurring and fixed service charges (SDRs). The specification was developed following a consultation between the UK's leading telecoms billing vendors.

Version 3.0

Approved by the Federation of Communication
Services



Standard CDR Format

Version 3.0

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1. Introduction

This document outlines a UK industry standard for the billing data files used to define the wholesale voice and data products supplied by an operator. The standard covers file formats for both call detail record (CDRs) and also service charge detail records (SDRs). The document gives resellers and CPs the information they require in order to bill their end-user customers.

This standard includes two file formats covering the following services:

Call Charges (Section 3)

- **Fixed Line and VOIP CDR**
- **Mobile CDR**
- **Inbound calls (including Inbound Legs of multi-leg calls)**

Service Charges (Section 4)

- **Service Charge Output**

The files contain the core billing data for onward billing and other common billable event records.

2. General Format

All files to be standard text files (PC ASCII encoding), each record terminated by a carriage return and line feed characters. All fields are comma delimited and field values are qualified with "double quotes". NULL values for optional fields should still be presented with quotations, e.g.: "".

Call Charges CDR format

The format for all types of call charges is covered in section 3. The CDR provider may choose to provide all call types mixed together in a single file(s). Alternatively, different services may be separated into different files. .

The 'Call Type' identifier is key to determine whether the call record is Outbound, Inbound, Mobile etc.

In many cases a 'Call Class' may be used to identify the charge group that should be applied when rating the call. The CDR provider should also publish a list of call classes it uses in conjunction with the standard format.

Service Charges SDR format

The service charge format is purely used for fixed and recursive charges e.g. Line rentals, License fees, set-up charges etc.

E.164 Format for Telephone Numbers

The **E.164** recommendation, also called the "international public telecommunications numbering plan," was first approved and published by the ITU-T in May 1997. The E.164 recommendation establishes a standard framework for every country to create its own international phone numbers.

[+][country code][subscriber number including area code]

Taxation

Any fields that refer to a price (for a call or service) are to be considered as **exclusive** of Tax (VAT)

Revision History

Version	Section	Change	Date
1.0		First Draft of suggested standard CDR format Structure	23/05/2012
1.1	All	Updated following meeting of billing vendors 29/05/2012	08/06/2012
1.2	All	Updated following meeting of billing vendors 22/08/2012	22/08/2012
1.3	All	Merged all call formats into one.	18/09/2012
1.4	All	Document formatting and added new field	20/09/2012
1.5	3-7	Added Account Ref to file name	12/11/2012
2.0	TC/SR	Changes as a result of billing group meeting 26/09/13	26/09/2013
2.0	TC	Tidy document and create final approved version following sign off by the billing group	28/01/2014
3.0	TC	Changes as a result of billing group meeting 22/04/15	23/04/15
3.0	TC	Clarification around taxation (no changes to the format)	04/06/15

Effective Date

The UK standard CDR version 3.0 is effective as of 1st July 2015. It will co-exist with version 2.0 for a period of 12 months.

The previous UK standard CDR version 2.0 will be withdrawn on 30th June 2016, thereafter only version 3.0 will be considered as the standard. All new CPs wishing to generate wholesale CDR/SDR files after 1st July 2015 should only adopt version 3.0 of the standard.

3. General Format for any Call Detail Records (CDR)

3.1 Purpose of this format

To be used when producing a CDR for calls made of any type e.g. Fixed Line, VOIP services, Mobile, Outbound etc. It is possible for all these call types to be mixed together in one file.

3.2 File naming convention

The file must be named in the following way:

RID_Frequency_FileType_AAAAAA_DDMMYYYY_SSSSS_CCCCC_REF_VV.txt

Where monthly, DDMMYYYY represents the billing period date (last day of the month in which the calls were made). Where daily, DDMMYYYY represents the day on which the calls were made.

RID = RID code of CDR provider

Frequency = The period of the file contents (either "Daily" or "Monthly")

FileType = "Calls" this denotes that the file contains call data

AAAAAA = An account reference the CDR provider can use to denote the receiver of the CDR i.e. the reseller. (no limit on number of digits i.e. size of number).

SSSSS = sequence number (no limit on number of digits i.e. size of number). Every file produced for a particular customer (regardless of type), should have a sequence number increasing by 1 as each subsequent file is produced.

CCCCC = record count (no limit on number of digits i.e. size of number)

REF = File content reference. Used to denote different content types when the file contains a specific call services e.g. "SIP", "CPS", "Mobile", "Inbound" or "IDA" etc. If the file may contain a mixture of different call services, then use "ALL" as a REF. Note: the REF is for information purposes and should only be used to help identify the type of service contained in the file.

VV = The version of the standard that has been used. This should be set to "V3"

Example:

Monthly: **ZZZ_Monthly_Calls_ABC001_31012012_13_189_SIP_V3.txt**

Daily: **ZZZ_Daily_Calls_ABC001_29062012_394_21125_IDA_V3.txt**

3.3 CDR Format

The table below shows the columns required.

Field	Column Name	Description	Example	Mandatory Field	Field Size Max
1	Call Type	The type of call being made. For example call types: V = outbound voice call, VOIP = Voice over IP call D = Data/ISDN Call C = Conference call N = Inbound call (billable) I = Standard Inbound call (usually not billable e.g. Raw call data) U = Unanswered call B = Busy Call X = Call failed M = Mobile call (made from mobile device) G = GPRS Data	"V"	Yes	4
2	Call Cause (Definition required)	Further defines a call from just being a certain call type. For example call type V can be used for both fixed line and NGN outbound calls. If the call cause is 0 then you know it is a fixed line call. If the call cause is 1 then you know it is an NGN outbound call.	"0"	No	1
3	Customer Identifier (CLI)	An identifier to which the call charge can be allocated. This is most commonly the customer Caller Line Identity (CLI). It must be in E.164 format if it is an actual telephone number, else can be a reference number e.g. an IP address or email address.	"+441234567890"	Yes	100
4	Telephone Number Dialed (or the caller's number for inbound calls)	Telephone number called. All telephone numbers should be displayed in E.164 format. The convention of using 000 for international data calls should NOT be used A Telephone number must be set. The only exception to this rule is when a call class has been used to identify the charging group.	"+441234567890"	Yes	50
5	Call Date	Date call is made DD/MM/YYYY	"31/12/2012"	Yes	10
6	Call Time	Time call is made HH:MM:SS	"09:15:30"	Yes	10
7	Duration	Duration of the call in whole seconds	"237"	Yes	10

8	Bytes Transmitted	Only applies if Call type is G otherwise "" if not used. Number of bytes of data transmitted. Numeric. Note: If Used the sum of [Bytes Transmitted] + [Bytes Received] must be equal to the Total Bytes Transferred (Field 35)	"12000"	No	20
9	Bytes Received	Only applies if Call type is G otherwise "" if not used. Number of bytes of data received. Numeric. Note: If Used the sum of [Bytes Transmitted] + [Bytes Received] must be equal to the Total Bytes Transferred (Field 35)	"12000"	No	20
10	Description	Destination description	"London"	No	100
11	Chargecode	A destination description used on supplier's billing system to bill the call.	"UK Local"	No	100
12	Time Band	The time band within which the call was made. For information purposes. Typically: Peak, OffPeak, Weekend, Special1, Special2, Special3, Special4 (optional) Note: The time band is denoted as the band that was used at the time the call was initiated, regardless of whether the call crossed into another time band.	"Peak"	No	10
13	Salesprice	Sales price in the primary unit of currency e.g. pounds, euros, dollars etc. (no currency symbols to be included). This is the final sales price for the call after any bundles have been applied Numeric (up to 4 decimal places). For example: 12.5 pence is 0.125	"0.125"	No	9
14	Salesprice (pre-bundle)	This is the sales price <u>before</u> any bundle has been applied. If no bundle has been used, this field should be set to be the same as the Salesprice above. If this field is unused, set to "" Numeric (up to 4 decimal places) in the primary unit of currency e.g. pounds, euros, dollars etc. (no currency symbols to be included).	"0.125"	No	9
15	Extension	User's extension number, if known	"2142"	No	6

16	DDI	User's DDI number, if known in E.164 Format	"+441234567890"	No	50
17	Grouping ID	Common numeric identifier to group records to represent elements of a single call. For example connections in a single conference call, or multiple legs of a single inbound call.	"1"	No	100
18	Call Class (Feature)	<p>Alpha numeric code referencing how the call should be billed. Used for when the dialling code of the dialled number cannot be used to rate the call.</p> <p>For example:</p> <ul style="list-style-type: none"> a) Mobile class associated with the call. <p>This field alone determines how this call is charged.</p> <ul style="list-style-type: none"> b) There are some kinds of calls (e.g. Operator assistance and reverse charges) that cannot be rated by number dialled. A unique call class should be allocated for each of these and used here. Typically this field could contain the feature codes that BT use to define certain call types e.g. <p>"BT312CR" = Call Return "BT313OACA" = Op Assistance - Chg Advice "BT313RCCA" = Reverse Charge - Chg Advice</p> <p>The supplier the CDR file should also provide a list of all call classes that can be used.</p>	"BT313OACA"	No (but Yes if calltype is 'M')	50
19	Carrier	Text description of the carrier from which the call originated. This may be required by the recipient of the CDR file for accurate rating. For example, when a call is routed via a CPS carrier or via BT Wholesale.	"Gamma"	No	150
20	Recording	Flag used to determine if call is recorded or not 1= Recorded 0 = Not recorded "" = Not recorded	"0"	No	1
21	VAT	Flag to define if VAT is applied. S = Standard Z = Zero Rate	"S"	No	1

		E = Exempt "" = Unused			
22	Country of Origin	The country handling roamed calls. This must follow a standard – internationally recognised 3 character country codes. (ISO 3166-1 alpha-3 standard)	"GBR"	No	3
23	Network	Mobile network. This is a required field if Calltype is M	"O2"	No	10
24	Retail tariff code	Retail tariff code – to represent buy tariff used. Values may be determined by provider. A complete list of available values should be made available.	"BB"	No	8
25	Remote Network	The network handling roamed calls. As code or full network description.	"TC"	No	50
26	APN	Access Point Name for GPRS Calls Not required for non-GPRS calls	"Blackberry"	No	15
27	Diverted Number	Number the NGN number is diverted (mapped) to. In E.164 format	"+441234567890"	No	15
28	Ring time	Presented where available Duration of the ring time in whole seconds	"75"	No	10
29	RecordID	A unique id of the record	"2314-132A23145782345"	No	50
30	Currency	The currency code as per the ISO 4217 published standard	"GBP"	No	3
31	Presentation Number	The Calling Line Identity (CLI) presented by the calling party. E.164 format	"+441234567890"	No	30
32	Network Access Reference (Endpoint)	The name of the point from which a call accesses the network. E.g. in the case of SIP trunking/TDM interconnections it will be an endpoint reference, in the case of hosted telephony it may be the Enterprise reference.	"DC2N92JAZ001"		50
33	NGCS Access Charge	Where an unbundled tariff is applied, the total Access Charge applicable to calls for non-geographic call services. If there is no NGCS Access charge applicable then this field should display "". Numeric (up to 6 decimal places) Note: If Used the sum of [NGCS Access Charge] + [NGCS Service Charge] must be equal to the Salesprice (Field 13)	"0.125"	No	15
34	NGCS Service Charge	Where an unbundled tariff is applied, the total Service Charge applicable to calls for non-geographic call services. If there is no NGCS Service charge	"1.15"	No	15

		applicable then this field should display "" . Numeric (up to 6 decimal places)			
35	Total Bytes Transferred	Data volume transferred (including uploaded and downloaded) in bytes. Numeric.	"12000"	No	20
36	User ID	Alphanumeric identity referring to a user which may take multiple services, for example converged services.	"HealthCoMainHQ2014"	No	50
37	Onward Billing Reference	Additional information available for end users to bill separate calls to customers. For example in multi-tenanted offices.	"21427"	No	14
38	Contract Name	Name of the contract to which the CLI is associated, if applicable	"Custom Name[1067]"	No	100
39	Bundle Name	Where a bundle is applied to the call charges, this field provides the name of the bundle that was first applied to the call for information purposes. It is not recommended to use this field where multiple bundles may be applied to a call. Standard bundle names.	"500Mb Data"	No	100
40	Bundle Allowance	Total available units for the applicable bundle for information purposes. Amount will be pro-rated for bundles or bolt-ons applied mid-month. It is not recommended to use this field where multiple bundles may be applied to a call. Numeric.	"512000"	No	50
41	Discount Reference	Contains a reference to identify CDRs relating to certain promotional adjustments. e.g. BCAD pricing	"628374"	No	50
42	Routing Code	IDA/CPS code or other routing code used to access the network	"1656"	No	10

3.4 Header Row

The first row of the CDR file must contain a header row which includes the field names as per below:

"Call Type","Call Cause","Customer Identifier","Telephone Number Dialed","Call Date","Call Time","Duration","Bytes Transmitted","Bytes Received","Description","Chargecode","Time Band","Salesprice","Salesprice (pre-bundle)","Extension","DDI","Grouping ID","Call Class","Carrier","Recording","VAT","Country of Origin","Network","Retail tariff code","Remote Network","APN","Diverted Number","Ring time","RecordID","Currency","Presentation Number","Network Access Reference"," NGCS Access Charge"," NGCS Service Charge"," Total Bytes Transferred"," User ID"," Onward Billing Reference"," Contract Name"," Bundle Name"," Bundle Allowance"," Discount Reference"," Routing Code"

3.5 Call rating rules/ logic

Standard Voice Calls are rated by means of the dialled number. If the chargeband for rating cannot be derived by the dialled number then the call class may be used instead. Where a call class is used it will take precedence over rating via the dialled number.

Mobile Calls are rated by means of using the call class provided.

Inbound Calls are rated by means of the dialled number which received the call. If the chargeband for rating cannot be derived by the dialled number then the call class may be used instead. Where a call class is used it will take precedence over rating via the dialled number.

3.6 Example CDR file

Below are example records following the standard format for outbound calls:

```
"V", "0", "+441999887000", "+441999878333", "28/01/2012", "10:37:23", "233", "", "", "Hampton", "UK  
Local", "Peak", "0.8", "0.8", "654", "+441999887654", "", "UKL", "Talk  
Talk", "", "S", "", "", "", "", "", "778789", "GBP", "", "", "", "", "HealthCoMinHQ2014", "2142", "",  
"", "", "", "1656"
```

```
"VOIP", "0", "Brianb@M1.com", "+442086019080", "28/01/2012", "10:39:23", "345", "", "", "On-Net", "On-  
Net", "Peak", "0.0", "0.0", "", "", "", "ON",  
, "TalkTalk", "1", "S", "", "", "", "", "", "8011229", "GBP", "+441234567890", "", "", "", "HealthCo  
Min", "2142", "ABRefuseCollection[1067]", " ", "", "628374", "1656"
```

Below are example records following the standard format for mobile calls:

```
"M", "", "+447114467900", "+441999878333", "27/01/2012", "10:39:23", "987", "", "", "Mobile Inland",  
"Mobile to UK Inland", "Peak", "0", "0.125", "", "", "", "504", "O2", "", "S", "GBR", "O2",  
"BB", "", "", "", "GBP", "", "", "", "", "500MbData", "512000", "", ""
```

```
"G", "", "+447114467900", "", "28/01/2012", "10:32:21", "0", "56000000", "3100000", "GPRS UK", "GPRS  
UK", "Peak", "20.05", "20.05", "", "", "", "UKGPRS", "O2", "", "S", "GBR", "O2", "BB", "", "Blackberry",  
"", "", "2314-132A-2347", "GBP", "+441234567890", "", "", "59100000", "HealthCoMin5", "2142",  
"", "500MbData", "512000", "628374", ""
```

Below are example records following the standard format for inbound calls:

```
"N", "", "+448007766557", "+4419998", "23/01/2012", "13:42:23", "509", "", "", "Freephone Inbound", "0800 Inbound to  
National", "Peak", "1.035", "", "", "", "1", "0800Nat", "", "0", "S", "", "", "", "+441999767936", "75", "2312", "GBP  
", "", "", "", "", "", "", "", "", "", "", "", "", ""
```

```
"N", "", "+448707766002", "+4419998", "23/01/2012", "13:42:23", "509", "", "", "NGCS 11", " NGCS  
11", "Peak", "0.825", "", "", "", "1", "0800Nat", "", "0", "S", "", "", "", "+441999767936", "75", "2312", "GBP", "+4  
48707766002", "", "0.55", "0.275", "", "", "", "", "", "", "", ""
```

```
"N", "", "+448007766567", "019922", "23/01/2012", "13:45:13", "89", "", "", "Freephone Inbound", "0800 Inbound to  
Orange", "Peak", "15.4", "", "", "", "1", "0800Orange", "TalkTalk", "0", "S", "", "", "", "+441999767222", "32", "237  
78", "GBP", "+441234567890", "", "0.125", "0.125", "12000", "HealthCoMinHQ2014", "2142", "ABRefuseColle  
ction[1067]", "500MbData", "512000", "628374", "1656"
```

4. Service Charge Event Output (SDRs)

4.1 Purpose of this format

To be used when producing a file which details fixed one off and rental charges.

4.2 File naming convention

The file must be named in the following way:

RID_Frequency_Service_AAAAAA_DDMMYYYY_SSSSS_CCCCC_REF_VV.txt

Frequency = The period of the file contents e.g. "Monthly"

Where monthly, DDMMYYYY represents the billing period date (day when charges were issued).

"Service" = this denotes that the file can contains only data for service charges

RID = RID code of SDR provider

AAAAAA = An account reference the SDR provider can use to denote the receiver of the SDR i.e. the reseller. (no limit on number of digits i.e. size of number).

SSSSS = sequence number (no limit on number of digits i.e. size of number). Every file produced for a particular customer (regardless of type), should have a sequence number increasing by 1 as each subsequent file is produced.

CCCCC = record count (no limit on number of digits i.e. size of number)

REF = File content reference. Used to denote different content types when the file contains a specific services e.g. "RENTAL", "USERS" etc. If the file may contain a mixture of different services, then use "ALL" as a REF.

VV = The version of the standard that has been used. This should be set to "V3"

Example:

Monthly: **ZZZ_Monthly_Service_ABC001_31012012_16_234_ALL_V3.txt**

4.3 SDR Format

The table below shows the columns required.

Field	Column Name	Description	Format	Mandatory	Max Field
1	Customer Identifier (CLI)	An identifier to which the charge can be allocated. Must be in E.164 Format if an actual telephone number, else can be a reference	" +441234567890"	Yes	100

		number (typically a SERVICE ID).			
2	From Date	Start Date (inclusive) of the billed period Service Charge DD/MM/YYYY	"01/12/2012"	Yes	10
3	From Time	The time the charge started. Use format HH:MM:SS. Leave field empty if time is not required. E.g. ""	"08:30:00"	No	8
4	To Date	End Date(inclusive) billed period of the Service Charge, must be blank for a one-off charge DD/MM/YYYY	"31/12/2012"	No	10
5	To Time	The time the charge ended. Use format HH:MM:SS. Leave field empty if time is not required.	""	No	8
6	Refund (or rental already billed)	Used to identify if the charge is a refund of a rental previously billed R= Refund Leave blank "" if not a refund	"R"	No	1
7	Quantity	Identifies the quantity of the given product/service charged for. Numeric and must always be 1 or more (not null or 0)	"10"	Yes	7
8	Frequency	The frequency the charge is to be applied in months. Numeric 0 – One off 1 - Monthly 3 – Quarterly 12 – Annual	"1"	Yes	2
9	Unit Cost	Sale price in the primary currency unit for one unit of the product or service. (No	"10.15"	Yes	10

		currency e.g. Pounds, Euros, Dollars etc. symbol showing) . For a refund this will still be the positive sale price. Numeric (up to 2 decimal places)			
10	Total Cost	Total sale price in pounds for product/service. No currency sign showing. Numeric (up to 2 decimal places)	"20"	Yes	10
11	Charge type class	Type of service charge, determines what rate to charge (e.g. call class for service charge)	"BUSLR"	No	50
12	Description	A Description of the Service Charge / product.	"CLIP Rental"	Yes	100
13	Service ID	Openreach service ID	"OI3000926890"	No	15
14	Account ref	Network Provider's Account reference	"SD43572786"	No	15
15	Carrier	Text description of the carrier from which the call originated. This may be required by the recipient of the CDR file for accurate rating. For example, when a call is routed via a CPS carrier or via BT Wholesale.	"BT Openreach"	No	150
16	RecordID	A unique id of the record	"2314-132A23145782348"	No	25
17	Currency	The currency code as per the ISO 4217 published standard	"GBP"	No	3
18	Discount Reference	Contains a reference to identify Charges relating to certain promotional adjustments. e.g. BCAD pricing	"628374"	No	50

4.4 Header Row

The first row of the SDR file must contain a header row which includes the field names as per below:

```
"Customer Identifier","From Date","From Time","To Date","To  
Time","Refund","Quantity","Frequency","Unit Cost","Total Cost","Charge type  
class","Description","Service ID","Account ref","Carrier","RecordID","Currency", "Discount  
Reference"
```

4.5 Example SDR file

Below is an example file following the standard format:

```
"+441999767936","23/01/2012","","31/01/2012","","","1","1","10.00","2.58","BUSL","Business  
Line Rental","","89874484","BT Openreach","2314-132A23145782348","GBP",""
```

```
"+441999767900","01/01/2012","","31/01/2012","","R","15","1","12.00","180.00","ISDN30L","ISDN3  
0 Line Rental","IO304848489","89874476","BT Openreach","","GBP",""
```

```
"+441999767936","01/01/2012","","","","","1","0","150.00","150.00","BUSIN","Business Line  
Install","","89874484","BT Openreach","","GBP","628374"
```