CTI Billing Solutions Limited

Data interface specification

Analysis 7 1.10 – Core

Product	Analysis 7
Product version	1.10
Internal Version:	26.00
Doc Ref	
Doc Version	1.8
Doc Status	Published
Circulation	Commercial in confidence
Doc Size	32 pages
Created on	Tuesday, 02 June 2015
Last modified on	Wednesday, 03 June 2015

Copyright statement

Our contact address:

CTI Billing Solutions Limited

Daisyfield Business Centre
Appleby Street
Blackburn
United Kingdom
BB1 3BL

Tel: +44 0 1254 291500
Fax: +44 0 1254 291504

Email: *info@ctigroup.com*

Feedback on this document

We are always looking for ways to improve the support we provide to our customers. Your feedback is invaluable in enabling us to do so.

Comment on this document via the following email address:

documentation@ctigroup.com

Control Page

Revisions

Version	Current Status	Changed Date	Primary author(s)	Description of changes
1.8	Published	03/06/2015	Ian Bridge	Redrafted version 1.7 to external standards
1.7	Published	June 2014	G. Lawrenson	Altered section 6.1 on tax lines to state that invoice tax line element totals and handset tax lines element totals will be combined by the data processor to obtain the total tax for the bill. This means that the invoice tax line element total defined in the data file should not include tax totals defined in handset tax line elements.
1.6	Published	March 2014	R. Pickering	Added Member Taxline and tax value to CDRs and Charge records
1.5	Published	May 2013	S. Riley	Cycle code – slight change to state this value is stored as an integer even though a string can be provided
1.4	Published	November 2012	J. Reast-Jones	Updated to reflect latest XSD. Formatting and nomenclature updates.
1.3	Published	January 2012	M Ford	Added new Address element to data.
1.2	Published	May, 2011	S. Riley	Attributes and configuration capabilities
1.1	Published	May, 2011	J. Reast-Jones	Update to reflect schema changes up to April 2011
1.00	Published	July, 2009	S. Riley	Creation

Distribution

Name	Position	Copy For
J. Reast-Jones	CTI Group - Technical Architect	Approval
B. Dobson	CTI Group - Technical Architect	Approval
S. Riley	CTI Group – Senior Developer	Review

Approval

Name	Signature	Date
J. Reast-Jones		
B. Dobson		

Preface

Contents

1. Document definition

This document details the standard data specification agreement between *CTI Group* (*CTI*) and a customer. This document is designed to show all the fields in available and whether they are mandatory or optional.

1.1. Scope

The supporting XSD will primarily be the point of reference for technical readers of the document, this is the first validation point – files that do not conform to the agreed XSD will fail processing and the file will not be processed.

1.2. Related documentation

Purpose	Name	Embedded Object Link
The XSD file used for validation	`Customer.xsd`	

1.3. Definition of terms

Term	Definition
Customer:	the company or individual being billed.
Corporate ID:	the unique reference that identifies a Customer, for example, Country, Billing Account Number (BAN)
Bill:	the collection of invoices produced by a billing run.
Company Structure:	some billing systems can provide an organisational structure of sub-accounts where handsets are situated.
Handset:	the device or connection capable of generating call records or other types of usage.

2. Data File Format

2.1. Content

The data file contains XML. Each file contains billing data for one Customer only.

2.2. XML Schema Definition

The schema for the data interface is included with this document.

The namespace for the data file is: `uri://CTIGroup/Customer`

2.3. Character Encoding

The data processor obeys the XML character encoding declaration at the beginning of the XML document,.

For example, "`UTF-8`".

2.4. Filename

The filename comprises the *Corporate ID* and *Date of the bill*. It is not used during processing, but is intended as to aid user identification of the files.

For example `ABC_20090101.xml`

2.5. Whitespace

The XML document is indented so that operators can more easily examine the data files to identify and resolve any issues.

2.6. XSD Data Types

Certain data types have a fixed format to ensure the data is interpreted correctly.

For ease of use, the here are some key data types that will aid a user understand the data mapping to an XML file.

Table 1: Fixed-format data types

Data Type	Format	Example	Notes
Date	YYYY-MM-DD	2009-01-01	
DateTime	YYYY-MM-DDThh:mm:ss	2009-01-01T00:00:00	
Decimal			Max 4 decimal places

2.7. XML Structure

2.7.1. Diagram

Outline of the XML Elements detailing the recurring groups and single elements.

1 to 1	<Customer> (customerComplexType)	
	<MetaData> (metaComplexType)	0 to ∞
	<Recipient> (recipientComplexType)	0 to ∞
	<Address> (metaComplexType)	0 to ∞
	<Tax> (taxComplexType)	0 to ∞
1 to 1	<Bill> (billComplexType)	
0 to ∞	<Invoice> (invoiceComplexType)	
	<TaxLine> (invoiceTaxLineComplexType)	0 to ∞
	<Charge> (chargeComplexType)	0 to ∞
0 to ∞	<Handset> (handsetComplexType)	
	<TaxLine> (taxLineComplexType)	0 to ∞
	<Charge> (handsetChargeComplexType)	0 to ∞
	<Call> (callComplexType)	0 to ∞
	</Invoice>	
	</Bill>	
0 to 1	<CompanyStructure> (structureComplexType)	
1 to 1	<Group> (structureGroupComplexType)	
	<Group> (Iteration of structureGroupComplexType)	0 to ∞
	<BillingEntity> (billingEntityComplexType)	0 to ∞
	<Handset> (handsetComplexType)	0 to ∞
	<Invoice> (structureGroupInvoiceComplexType)	0 to ∞
	</Group>	
	</CompanyStructure>	
	</Customer>	

2.7.2. File Record layouts

The XML Structure diagram shows the relationships between the elements and this section details the sub-elements and their attributes for each element.

Where an attribute is specified as being optional in the XSD, but has a default specified, the default values are used when the attribute is omitted.

Attributes should be present if a value is known or when the default value must be overwritten.

Customer Element

XSD type 'customerComplexType'

Attribute	Notes	XSD Type	Default value	Fmt in DB	Rqd
CorpID	Unique customer identifier	requiredString		String 16	Y
Name	Name of the customer	requiredString		String 50	Y
Currency	Must be in list of pre-defined currency codes	requiredString	GBP	String 3	N
SecondaryCurrency	Only used when a legal entity uses the secondary currency	requiredString		String 3	N
ReadOnlyCompanyStructure		booleanYesNo	false		N
ConsolidatedCorpID	Customers consolidated account reference – for MNC enabled deployments only.	requiredString		String 16	N
xmlns	Schema namespace validation – should be set to; uri://*CTI*roup/Customer				Y
Level	Analysis application level e.g. l1, l3.	applicationLevelEnumeration	l3		N
ContactName	Stored but not used – available for bespoke support	optionalString	Blank String	String 50	N
EmailAddress	Stored but not used – available for bespoke support	optionalString	Blank String	String 100	N
DefaultTagType	Usage Tagging default – only applicable for Usage Tagging solutions.	TaggingTypeEnumeration	Un-tagged		N

Example

```
<Customer CorpID="X102" Name="Data Feed Evolution" Currency="EUR"
SecondaryCurrency="GBP" ReadOnlyCompanyStructure="true"
ConsolidatedCorpID="A001" xmlns="uri://CTIroup/Customer" Level="13">
```

MetaData Element

XSD type 'metaComplexType'

Attribute	Notes	XSD Type	Default value	Fmt in DB	Rqd
Name		requiredString		String 30	Y

Attribute	Notes	XSD Type	Default value	Fmt in DB	Rqd
	Value Contained within the Element tag	requiredString		String 255	Y

Example

```
<MetaData Name="Country">United Kingdom</MetaData>
```

Recipient Element

XSD type 'recipientComplexType'

Not required for Analysis 7.

Address Element

XSD type 'addressComplexType'

Attribute	Notes	XSD Type	Default value	Fmt in DB	Rqd
AddressType		addressTypeEnumeration	0	Integer	Yes
AddressLine1		optionalString	Blank string	String 80	No
AddressLine2		optionalString	Blank string	String 80	No
AddressLine3		optionalString	Blank string	String 80	No
AddressLine4		optionalString	Blank string	String 80	No
AddressLine5		optionalString	Blank string	String 80	No
AddressLine6		optionalString	Blank string	String 80	No
AddressLine7		optionalString	Blank string	String 80	No
PostCode		optionalString	Blank string	String 30	No

Example:

```
<Address AddressType="Standard" AddressLine1="B1" AddressLine2="B2"
AddressLine3="B3" AddressLine4="B4" AddressLine5="B5" AddressLine6="B6"
AddressLine7="B7" PostCode="PC2" />
```

Tax Element

XSD type 'taxComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
Code		requiredString		String 10	Yes
Name		optionalString	blank string	String 50	No
Rate		xs:decimal	0		No

Example:

```
<Tax Code="STD" Name="Standard Rate" Rate="17.5" />
```

Bill Element

XSD type 'billComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
Date		xs:date			Yes
Name		optionalString	Blank string	String 50	No
Cycle		optionalString[1]	Blank string	Integer	No
Month		monthNumber	Blank string		No
Year		xs:gYear			No
DateFrom		xs:date			No
DateTo		xs:date			No
Tax		xs:decimal	0		No
Currency	Must match to the 'Currency' attribute specified in the 'Customer' element		GBP	String 3	No
Address1			Blank string	String 60	No
Address2			Blank string	String 60	No
Address3			Blank string	String 60	No
Address4			Blank string	String 60	No
Address5			Blank string	String 60	No
Address6			Blank string	String 60	No
Address7			Blank string	String 60	No
Address8			Blank string	String 60	No

Example:

```
<Bill Date="2009-01-20" Name="January 2009" Cycle="0" Month="1" Year="2009"
DateFrom="2009-01-01" DateTo="2009-01-31" Currency="GBP">
```

[1] The cycle attribute, although specified as being an optional string it stored as a numeric value – so, if provided must be provided as a whole number

Invoice Element

XSD type 'invoiceComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
Number		requiredString		String 50	Yes
Date		xs:date			Yes
Due Date		xs:date			No
PreviousBalance		xs:decimal	0		No
TotalPayment		xs:decimal	0		No
TotalAdjustment		xs:decimal	0		No
InvoiceBalance		xs:decimal	0		No
InvoiceAmountInclTax		xs:decimal	0		No
InvoiceAmountExclTax		xs:decimal	0		No
Tax		xs:decimal	0		No
Email		optionalString	Blank string	String 50	No
Address1		optionalString	Blank string	String 60	No
Address2		optionalString	Blank string	String 60	No
Address3		optionalString	Blank string	String 60	No
Address4		optionalString	Blank string	String 60	No
Address5		optionalString	Blank string	String 60	No
Address6		optionalString	Blank string	String 60	No
Address7		optionalString	Blank string	String 60	No
Address8		optionalString	Blank string	String 60	No
GroupCode	Obsolete – company structure invoice record is now used to associate invoice to a location in the company structure	optionalString	Blank string	String 16	No
BillSystemReferencePoint		optionalString	Blank string	String 60	No

Example:

```
<Invoice Number="1000124" Date="2009-01-20">
```

Invoice TaxLine Element

XSD type 'invoiceTaxLineComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Rqd
TaxableAmount		Xs:decimal	0		No
TaxCode		optionalString	Blank string	String 10	No
TaxAmount		xs:decimal			Yes
BillingEntity		optionalString	Blank string	String 40	No
Service		optionalString	Blank string	String 50	No

Example:

```
<TaxLine TaxableAmount="100" TaxCode="STD" TaxAmount="17.5"
BillingEntity="BE01">
```

Charge Element

XSD type 'chargeComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Rqd
DateTime		xs:dateTime			No
DateFrom		xs:date			No
DateTo		xs:date			No
Type	Required, but superseded by the use of 'ChargeSubCode' attribute – see 'Configuration Items' notes.	chargeTypeEnumeration			Yes
Value		xs:decimal	0		No
Description		optionalString	Blank string	String 50	No
TaxCode		optionalString	Blank string		No
SvcPlatform	Not stored		Blank string		No
SvcType	Not stored		Blank string		No
Service		optionalString	Blank string		No
BillingEntity	Used to link a charge to a position in the company structure	optionalString	Blank string	String 16	No
Qty		xs:decimal	0		No
UnitPrice		xs:decimal	0		No
OriginalValue		xs:decimal	0		No
ChargeSubCode		optionalString			No

Attribute	Notes	XSD Type	Default value	Format in DB	Rqd
Data1		optionalString	Blank string	String 20	No
Data2		optionalString	Blank string	String 20	No
Data3		optionalString	Blank string	String 20	No
Tax		xs:decimal	0	Decimal	No

Example

```
<Charge Type="Recurring" Qty="1" UnitPrice="15.00" Value="15.00"
OriginalValue="11.11" Description="Line Rental" TaxCode="STD"
DateFrom="2009-01-20" DateTo="2009-01-20" Service="Mobile"
BillingEntity="BE001" Data1="Some Text" Data2="Some More Text" Data3="Some
Details"/>
```

There must be a charge record for each item that appears on an invoice that includes '*Call Usage*' at a summary level.

Handset Element

XSD type 'handsetComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
Number		requiredString		String 18	Yes
Name		optionalString	Blank string	String 50	No
Extension		optionalString	Blank string		No
DeviceType		optionalString	Blank string		No
Hash	The hash can be used to have more than one version of a handset within the same data file – referred to as "Multi-Instance". Hashes must be consistent across bills.	optionalString		String 40	No
Description	When using multiple versions of a handset the description can be used to give meaning to the hash, but may be modified by data adaptors to reflect multiple instances of the same handset entity based on hash.	optionalString		String 50	No
Data1		optionalString	Blank string	String 50	No
Data2		optionalString	Blank string	String 50	No
Data3		optionalString	Blank string	String 50	No

Example:

```
<Handset Number="X101-ORPHAN" Name="Mobile Unallocated" DeviceType="MOB">
```

Handset TaxLine Element

XSD type 'taxLineComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
TaxableAmount		Xs:decimal	0		No
TaxCode		optionalString	Blank string	String 10	No
TaxAmount		xs:decimal			Yes
Service		optionalString	Blank string	String 50	No

Example:

```
<TaxLine TaxableAmount="100" TaxCode="STD" TaxAmount="17.5">
```

Handset Charge Element

XSD type 'handsetChargeComplexType'

See Charge Element.
Extension fields defined in handsetChargeComplexType are not used by Analysis 7.

Call Element

XSD type 'callComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Rqd
DateTime		xs:dateTime			Yes
Number	Dialled number	optionalString	Blank string	String 20	No
AreaCode		optionalString	Blank string	String 10	No
Location		optionalString	Blank string	String 30	No
User	Not used/stored	optionalString	Blank string		No
Duration	In seconds	xs:decimal	0		No
Cost		xs:decimal	0		No
OriginalCost		xs:decimal	0		No
Events		xs:int			No
DataVolume	In bytes	xs:decimal	0		No
Category		optionalString	Blank string		No
TxType		optionalString	Blank string		No

Attribute	Notes	XSD Type	Default value	Format in DB	Rqd
Bundle		bundleTypeEnumeration	NotInBundle		No
Roam		roamTypeEnumeration	NotRoamed		No
VPN		optionalString	Blank string		No
Peak		peakTypeEnumeration	Unknown		No
Allocation		xs:integer	0		No
Internal		internalTypeEnumeration	false		No
TaxCode		optionalString	Blank string		No
Network		optionalString	Blank string		No
CallDir		callDirectionTypeEnumeration	Outbound		No
Service		optionalString	Blank string		No
SvcPlatform	Not used/stored	optionalString	Blank string		No
SvcType	Not used/stored	optionalString	Blank string		No
Usage		usageTypeEnumeration	Unknown		No
SourceNetwork		optionalString	Blank string		No
TargetNetwork		optionalString	Blank string		No
SourceCountry		optionalString	Blank string		No
TargetCountry		optionalString	Blank string		No
TaggingStatus	Default usage tagging state for this call	TaggingTypeEnumeration			No
Tax		xs:decimal	0	Decimal	No

Example:

```
<Call DateTime="2009-01-09T09:27:52" Number="01254291500"
AreaCode="01254" Location="Blackburn" Duration="60" Cost="1.20"
OriginalCost="1.05" Service="Mobile" />
```

CompanyStructure Element

XSD type ‘structureComplexType’

No attributes.

Example:

```
<CompanyStructure>
```

Group Element

XSD type 'structureGroupComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
Code		requiredString		String 50	No
Name		requiredString		String 64	Yes

Example:

```
<Group Name="My Company" Code="my001" >
```

BillingEntity Element

XSD type 'billingEntityComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
Number	Used as a reference pointer to the group in the company structure	requiredString		String 18	Yes
Name		optionalString	Blank String	String 50	No

Example:

```
<BillingEntity Number="BE001" />
```

Invoice Element

XSD type 'structureGroupInvoiceComplexType'

Attribute	Notes	XSD Type	Default value	Format in DB	Required
Number	Used to link an invoice to the company structure	requiredString		String 50	Yes

Example:

```
<Invoice Number="1000124" />
```

2.7.3. File Rules

Element	Rules
Tax	The defined code is what should be referenced in elements that specify the 'TaxCode'
Bill	The Currency attribute must match the currency set for the 'Customer' element, if they differ the file will fail processing.
Charge	TaxCode must match with a code specified in the Tax Elements
Handset	Only the 'Number' attribute is used when the Handset element is used as a sub element within the Company Structure.

Element	Rules
Call	▪ TaxCode must match with a code specified in the Tax Elements; ▪ Category should match to one to the pre-defined category codes; ▪ TxType should match to one of the pre-defined types

3. Pre-Defined Codes

Common

Name	Enumeration type	Possible values
TxType	Standard transmission type values;	▪ “Voice” or “V” ▪ “Message” or “SMS” or “M” ▪ “Data” or D” ▪ “Fax” or “F” ▪ “Email” or “E” ▪ “GRPS” or “G” ▪ “MMS” or “P” ▪ “Reserved1” or “X” ▪ “Reserved2” or “Y” ▪ “Reserved3” or “Z”
Charge	ChargeTypeEnumeration See charge configuration notes for important information regarding the use of charge types.	▪ Call ▪ CallCredit ▪ OneOff ▪ OneOffCredit ▪ Recurring ▪ RecurringCredit
Peak	peakTypeEnumeration	▪ Peak ▪ OffPeak ▪ NotApplicable ▪ Unknown (default)
Bundle	bundleTypeEnumeration	▪ InBundle ▪ PartBundle ▪ Expired ▪ NotInBundle
Roamed	roamTypeEnumeration	▪ Roamed ▪ NotRoamed ▪ RoamReceived ▪ RoamAdditional1 ▪ RoamAdditional2
CallDir	callDirectionTypeEnumeration	▪ Inbound ▪ Outbound
Internal	internalTypeEnumeration	▪ True ▪ False ▪ Yes ▪ No
Usage	usageTypeEnumeration	▪ Unknown ▪ Duration ▪ Event ▪ Data
Address Types	addressTypeEnumeration	▪ Standard ▪ AEnd ▪ Bend
Application Level	applicationLevelEnumeration The code’s first character is a lowercase "L".	▪ l1 ▪ l2 ▪ l3
TaggingTypeEnumeration	TaggingTypeEnumeration	▪ Tagged ▪ UnTagged

4. Configuration Items

CTI Group work required key:

Small	Up to 10 days
Medium	10 – 40 days
Large	40+ days

For Illustrations, please note if categories increase, existing data loaded will not reflect the new categorisation. Only data loaded after the changes will be correctly populated

4.1. MetaData

Value pair information that is stored against the Customer. This information can be used in a bespoke fashion in order to make logic decisions and/or potentially show in the solution.

The information is stored in the solution database, however, any work to use this information would be require a bespoke implementation.

As a standard offering, this is a useful mechanism for data to be given that could help in identify information about a data file and the configuration of the system providing that data.

4.2. Tax

New Tax elements can be created without CTI Group involvement. They are dynamically added to the solution in the reports that show tax rate/code or name.

Tax codes referenced in the other elements need to have a matching code defined using the element.

4.3. TaxLine

4.3.1. Service (Multiplay)

See section Service **(Multiplay)**

4.4. Charge

4.4.1. Type

Although the ‘type’ is set to required and must be populated with one of the defined values – it is actually superseded by the use of ‘ChargeSubCode’ attribute.

4.4.2. Service (Multiplay)

See section Service **(Multiplay)**

4.4.3. BillingEntity

4.4.4. ChargeSubCode

There are 12 parent categories supported, these parent categories and the relationship to the sub category is typically defined during an Analysis 7 deployment project. Just the 'ChargeSubCode' is required to categorise the charge. These categories can be translated. Alternatively a bespoke component can be developed as part of an Analysis 7 deployment project to allow for the ability for new sub categories to be added dynamically - these will not however be translated.

All parent categories will be shown for all customers, however when you drill into the category only the sub categories used for the customer will be shown – see the product specification – "Charge Categorisation" report

There would need to be CTI Group's involvement to change the number of top categories being used.

Illustration A

Month 1: 6 'Parent' Categories are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 8 'Parent' Categories are used.

CTI Group would need to increase the configuration to state the solution is required to display the 8 (2 new categories) – and unless otherwise already prepared in an Analysis 7 deployment project, update the mappings, and name of these categories.

CTI Task: Small

Month 3: 13+ 'Parent' Categories are used.

This would require CTI Group to extend the core offering – judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

This is not something that should be done as a bespoke solution unless it was for a specific bespoke report (which is outside the scope of this topic)

CTI Task: Large

Illustration B

Month 1: 32 'ChargeSubCode' Categories are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 32+ 'ChargeSubCode' Categories are used.

If not translated, then CTI Group would not need to be involved, provided a bespoke component was developed to fulfil this as part of project work.

If a bespoke component was not developed as part of an Analysis 7 deployment project then CTI Group would need to add the addition sub categories and map them to a parent

category. Likewise, if translation was required, CTI Group would need to add those tokens and language text into the solution.

CTI Task: Small

4.5. Call

4.5.1. TxType

There are 10 supported transmission types.

If the core adapter is used, then there are specific values that are supposed – see section TxType in Pre-Defined Codes.

Other values could be used to map to 1 of the 10 values, but this would be bespoke work.

The captions for these transmission types can be changed as part of an Analysis 7 deployment project work.

Illustration

Month 1: 6 ‘TxType’ items are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 8 ‘TxType’ items are used.

CTI Group would need to increase the configuration to state the solution is required to display the 8 (2 new categories) – and unless otherwise already prepared in an Analysis 7 deployment project, update the mappings, and name of these transmission types.

CTI Task: Small

Month 3: 11+ ‘TxType’ items are used.

This would require CTI Group to extend the core offering – judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

This is not something that should be done as a bespoke solution unless it was for a specific bespoke report (which is outside the scope of this topic)

CTI Task: Large

4.5.2. Bundle

There are 4 supported bundle types.

If the core adapter is used, then there are specific values that are supported – see section Bundle in Pre-Defined Codes.

These are the only values that can be provided as part of the core adapter.

The bundle information does not support anything other than these 4 categories (although captions can be changed). This is specific information for the ‘Bundle’ category report and is not currently configurable to allow less or more options. The report would be removed as part of an Analysis 7 deployment project if this information can not be provided.

Illustration

Month 1: 0 ‘Bundle’ items are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 4 ‘Bundle’ items are used.

CTI Group would need to alter the system setup to allow this report to be shown.

CTI Task: Small

Month 3: Not 0 or 4 ‘Bundle’ items are used.

This would require CTI Group effort.

If less than 4 items were required, this **is** something that could/should be done as a bespoke solution, as a bespoke processing and report components.

CTI Task: Medium

If more than 4 items were required, this would require core to change to allow x more bundle items - judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

CTI Task: Large

4.5.3. Roamed

There are 5 supported roam status types.

If the core adapter is used, then there are specific values that are supposed – see section Roamed in Pre-Defined Codes.

Other values could be used to map to 1 of the 5 values, but this would be bespoke work.

The captions for these roamed status’ can be changed as part of an Analysis 7 deployment project.

Illustration

Month 1: 3 ‘Roamed’ items are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 5 ‘Roamed’ items are used.

CTI Group would need to increase the configuration to state the solution is required to display the 5 status’ – and unless otherwise already prepared in an Analysis 7 deployment project, update the mappings, and name of these roamed status’.

CTI Task: Small

Month 3: 6+ ‘Roamed’ items are used.

This would require CTI Group to extend the core offering – judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

This is not something that should be done as a bespoke solution unless it was for a specific bespoke report (which is outside the scope of this topic)

CTI Task: Large

4.5.4. Category

There are 15 parent categories supported, these parent categories and the relationship to the sub category is typically defined during an Analysis 7 deployment project. Just the 'Category' is required to categorise the call. These categories can be translated. Alternatively a bespoke component can be developed as part of an Analysis 7 deployment project to allow for the ability for new sub categories to be added dynamically - these will not be translated.

All parent categories will be shown for all customers, however when you drill into the category only the sub categories used for the customer will be shown – see the product specification – "Destination Analysis" report

There would need to be CTI Group's involvement to change the number of top categories being used.

Illustration A

Month 1: 6 'Parent' Categories are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 8 'Parent' Categories are used.

CTI Group would need to increase the configuration to state the solution is required to display the 8 (2 new categories) – and unless otherwise already prepared in an Analysis 7 deployment project, update the mappings, and name of these categories.

CTI Task: Small

Month 3: 16+ 'Parent' Categories are used.

This would require CTI Group to extend the core offering – judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

This is not something that should be done as a bespoke solution unless it was for a specific bespoke report (which is outside the scope of this topic)

CTI Task: Large

Illustration B

Month 1: 32 'Category' Categories are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 32+ 'Categorye' Categories are used.

If not translated, then CTI Group would not need to be involved, provided a bespoke component was developed to fulfil this as part of project work.

If a bespoke component was not developed as part of an Analysis 7 deployment project then CTI Group would need to add the addition sub categories and map them to a parent category. Likewise, if translation was required, CTI Group would need to add those tokens and language text into the solution.

CTI Task: Small

4.5.5. CallDir

There are 2 supported call direction types.

If the core adapter is used, then there are specific values that are supported – see section CallDir in Pre-Defined Codes.

These are the only values that can be provided as part of the core adapter.

The call direction information does not support anything other than these 2 categories (although captions can be changed). This is specific information for the 'Usage by direction' report and is not currently configurable to allow less or more options. The report would be removed as part of an Analysis 7 deployment project if this information can not be provided.

Illustration

Month 1: 0 'CallDir' items are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 2 'CallDir' items are used.

CTI Group would need to alter the system setup to allow this report to be shown.

CTI Task: Small

Month 3: Not 0 or 2 'CallDir' items are used.

This would require CTI Group effort.

If less than 2 items were required, this **is** something that could/should be done as a bespoke solution providing bespoke processing and report components.

CTI Task: Medium

If more than 2 items were required, this would require core to change to allow x more direction items - judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

CTI Task: Large

4.5.6. Internal

There are 2 supported internal types, represented as 4 possible values, but mapped to 2.

If the core adapter is used, then there are specific values that are supported – see section Internal in Pre-Defined Codes.

These are the only values that can be provided as part of the core adapter.

The ‘Internal’ flag anything other than these 2 categories (although captions can be changed). This is specific information for the ‘Internal’ report and is not currently configurable to allow less or more options. The report would be removed as part of an Analysis 7 deployment project if this information can not be provided.

Illustration

Month 1: 0 ‘Internal’ items are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 2 ‘Internal’ items are used.

CTI Group would need to alter the system setup to allow this report to be shown.

CTI Task: Small

Month 3: Not 0 or 2 ‘Internal’ items are used.

This would require CTI Group effort.

If less than 2 items were required, this **is** something that could/should be done as a bespoke solution, as a bespoke processing and report components.

CTI Task: Medium

If more than 2 items were required, this would require core to change to allow x more direction items - judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

CTI Task: Large

There is a separate configuration item that can be set during an Analysis 7 deployment project which can set calls to *internal* status based on whether a dialled number matches that of a handset used/defined in the data.

4.5.7. Usage

There are 3 supported usage types, represented as 4 possible values, but mapped to 3

If the core adapter is used, then there are specific values that are supported – see section Usage in Pre-Defined Codes.

These are the only values that can be provided as part of the core adapter.

The usage information does not support anything other than these 3 categories (although captions can be changed).

This information is used on CDR based reports, and isn’t for a specific report. If the standard transmission types are used then the usage, if not supplied, will be implied based on;

- Usage is ‘Data’ when the transmission type is ‘D’ / ‘Data’
- Usage is ‘Event’ when the transmission type is ‘Message’ / ‘SMS’ / ‘M’
- Usage is ‘Voice’ when the transmission type is ‘Voice’ / ‘V’

- Usage is ‘Voice’ when the duration is above 0
- Usage is ‘Data’ when the data volume is above 0

This logic can be changed via a bespoke logic created during an Analysis 7 deployment project.

Illustration

The notion of expanding the usage is not applicable for CDR’s as all aspects are covered for handset level itemisation. The ability to have ‘n’ usage types will be address by using the ‘Service’ Element [currently under review]

4.5.8. Peak

There are 5 supported peak types, represented as 4 possible values but mapped to 5 for reporting purposes:

- Not applicable
- Peak Weekday
- Peak Weekend
- Off-peak Weekday
- Off-peak Weekend

These values are different to the values supported in the data!!

If the core adapter is used, then there are specific values that are supposed – see section Peak in Pre-Defined Codes.

Other values could be used to map to 1 of the 5 values, but this would be bespoke work.

The captions for these peak status’ can be changed as part of an Analysis 7 deployment project work.

If this is set to ‘Unknown’ then the core solution will work out the peak status of peak or off peak based on the time of the call (core peak time is 8AM to 7PM). If a different time is required this can be adapted during an Analysis 7 deployment project to use a different time range.

The Weekend/Weekday is calculated based on the day of the call, Weekday (Mon-Fri) and Weekend (Sat-Sun).

If fewer categories are required this can be done by bespoke work to populate the peak categories accordingly as part of an Analysis 7 deployment project.

Illustration

Month 1: 4 ‘Peak Status’ items are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 5 ‘Peak Status’ items are used.

CTI Group would need to increase the configuration to state the solution is required to display the 5 categories – and unless otherwise already prepared in an Analysis 7 deployment project, update the mappings, and name of the peak status.

CTI Task: Small

Month 3: 6+ 'Peak Status' items are used.

This would require CTI Group to extend the core offering – judgement would be taken on an exercise such as this as it has performance and database hardware concerns.

This is not something that should be done as a bespoke solution unless it was for a specific bespoke report (which is outside the scope of this topic)

CTI Task: Large

4.6. Common configuration

4.6.1. Service (Multiplay)

New 'Service' items can be added dynamically by supplying them in the data, without involvement by CTI Group. They will automatically appear in the reports that have the 'Service' filter available.

It may be desirable for the 'Service' to be validated by CTI Group, however, CTI Group would then need to be involved when new 'Service' items are used.

Due to this information being data driven, it is not translated, you would see the same meaning of the service multiple times if supplied in difference languages.

Although there is no hard limit for the number of different 'Service' types you can use, it is recommended that you should not use more than 10.

Illustration

Month 1: 2 'Service' (Multiplay) items are used.

Typical Analysis 7 deployment project involvement to advise the use of this.

Month 2: 4 'Service' (Multiplay) items are used.

Provided no validation was implemented, this would not require CTI Group's involvement.

Month 3: 12 'Service' (Multiplay) items are used.

Provided no validation was implemented, this would not require CTI Group's involvement. However, this wouldn't have been tested for the specification of the kit and is not recommended.

4.7. Report configuration

4.7.1. Cost Range Report

The cost range categories can be defined as part of an Analysis 7 deployment project. The first 3 are reserved for calls less than 0, calls that are in bundle but are 0 cost, and calls out of bundle at 0 cost. There are an additional 8 cost ranges that can be used. The first 3

categories can be removed from the displayed reports as part of an Analysis 7 deployment project. The number of the remaining 8 cost ranges used can be defined during an Analysis 7 deployment project.

4.7.2. Duration Range Report

The duration range categories can be defined as part of an Analysis 7 deployment project. The first is reserved for non duration based calls e.g. data usage. There are an additional 7 categories are supported. All the categories will be displayed in reports.

4.8. Company Structure Use

Using the company structure you can logically define a hierarchy that represents a customer's organisation. Allowing for costs and calls to be aggregated at different levels within the organisation, since handsets and billing entities (invoice level charges) can be linked to the groups within the hierarchy.

Invoices can also be linked to groups within a structure; with the ability to create users (via the Analysis 7 API or user interface) and assign those users positions on the structure you are able to control access to invoices.

5. Tax

5.1. Tax Lines

There are 2 types of tax lines that can be represented in the data.

Handset Taxlines are records that relate to a single handset and should reference the tax rate and the amount of tax. These tax lines are specific to the handset and will be combined with the invoice taxlines to obtain the total tax for a bill.

Invoice taxlines are records that relate to individual tax rates and the amount of tax incurred at that rate. When invoice taxlines and handset taxlines are included in the same file invoice taxlines should not include totals from the handset taxlines as the processor will roll-up all taxline totals to obtain the grand tax total for the bill.

5.2. Tax Values

Tax can also be entered as a single amount against an individual charge or call record. These will be categorised as with the charge / call and will be used for any summaries that contain these categories.

5.3. Tax Database Storage

There are essentially three types of tax that will be used to populate the “TaxTotal” column in all the summary tables. These are : -

- Taxline
- Charge
- Call

In the database there are two areas to store these values : -

- Table Value
- Category Value

There are rules in place to control the level from which the tax is taken.

5.3.1. Table Value

If the table is at handset level it takes its value from the Handset TaxLines

If the table is a summary at handset level (e.g. has multiplay) the value is taken from the sum of the Charge tax values

If the table contains call and charges the tax value is taken from the charges

> Only if the table only contains calls will the tax value be taken from the calls

5.3.2. Category Values

Categories can only be determined by examining the charge or call and as such tax values will only be available at that level

If the table contains values from charges only the tax value will be taken from the charges

If the table contains data from charges and calls the tax value will be taken from the Charges

Only if the table only contains data from calls will the tax value be taken from the calls