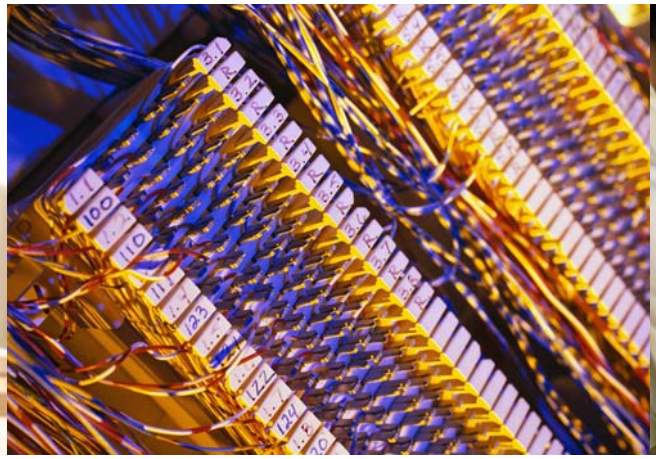
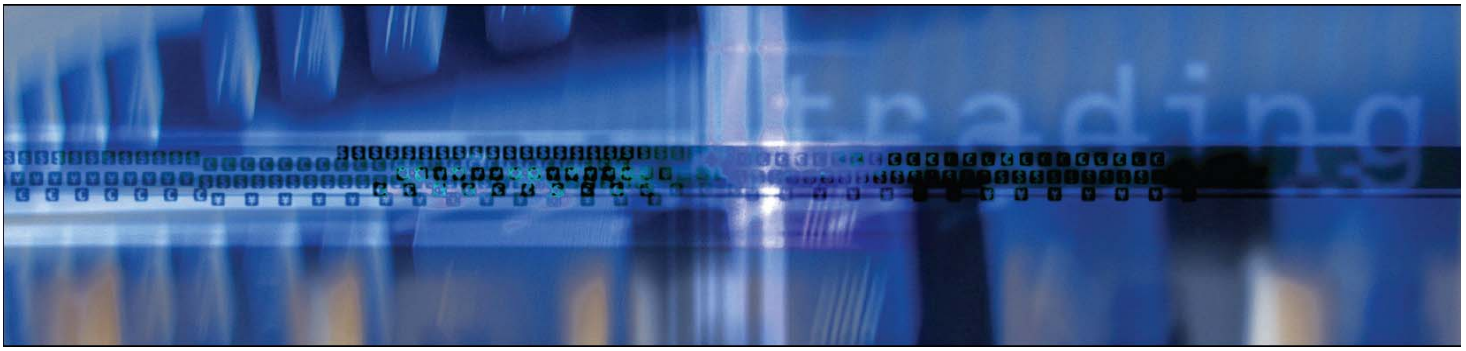




Whitepaper

The Financial Risk of World Wide Calling Code Confusion

CARRIERCall



Industry
Telecommunication

XCarrier is an enterprise inter-carrier trading platform designed for ambitious wholesale operators. Many carriers have multiple billing, BSS and OSS systems and sprawling IT infrastructures covering multiple territories. Data is not stored centrally, but instead held in silos across the enterprise. Key business activities – such as the management of bilateral agreements – are frequently managed manually.

This situation is no longer sustainable. Operators are leaking revenue – by some accounts up to 15% of their income – due to administrative errors, high costs and inefficient processes.

There is a growing consensus amongst operators that they require a single trading platform – one that is capable of handling all of their wholesale business processes. ***XCarrier*** meets this important requirement. In addition, XCarrier enables carriers to cut costs, boost margins and react instantly to changing market conditions.

Besides these benefits, ***XCarrier*** helps operators to identify sources of revenue leakage; act on new business opportunities; improve operational efficiency and obtain detailed business intelligence reports on call traffic.

In short, ***XCarrier*** unleashes enterprise wide value. Major functions and features include:

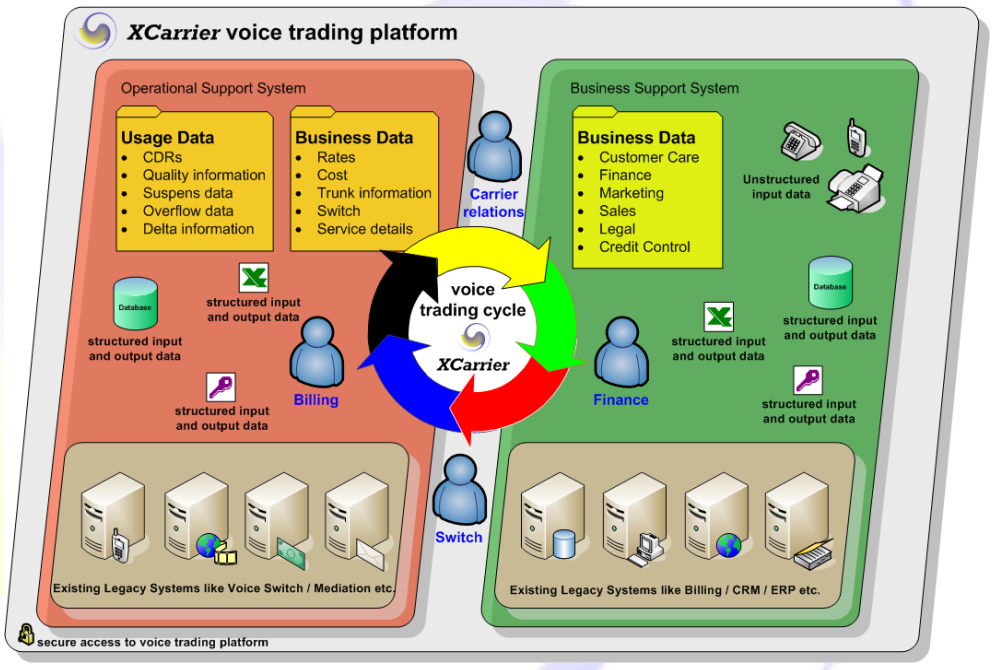
- **Billing** – reconciling received invoices and statements
- **Routing** – disseminating traffic through the most appropriate channel
- **Switch provisioning** – new routes and numbering plans are automatically delivered in real time to switches
- **Trading** – management of the entire voice trading process covering buying, pricing and selling
- **Price control** – ability to alter prices in real time on a daily and hourly basis
- **Dispute management** – tools to automate the whole claim management process
- **Handling and management of bilateral and swap agreements.**

Abstract

The number of international carriers continues to grow exponentially. These new carriers are generating a glut of phone numbers and calling codes. Unfortunately, there are few standards governing how these codes are allocated within the industry. Not surprisingly, carriers are finding it hard to track and manage national and international calling codes. But accurate and up-to-date calling codes are needed – without the right information a carrier can't properly route traffic across international networks. Inaccurate code information leads to blocked calls, lost revenue and billing discrepancies. To address this challenge, carriers need an automated solution.

XCarrier® allows fully integrated and automated destination code list synchronisation

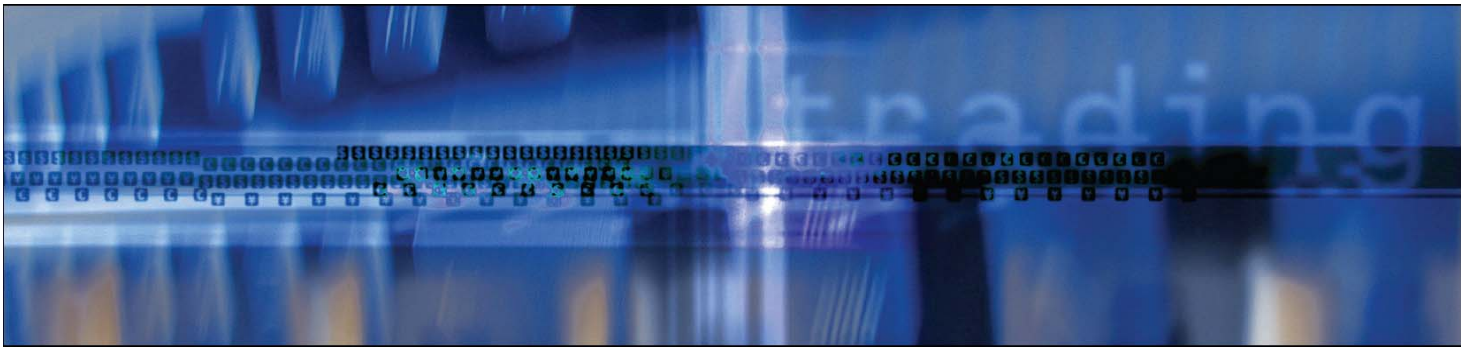
XCarrier® enables carriers to streamline processes and efficiently manage national, international, landline and mobile calling codes.



Managing national and international calling codes

Carriers need national and international calling codes to identify call destinations and determine termination rates. Once the codes have been identified, they need to be programmed into routing tables. The whole process should take place seamlessly.

Carriers are constantly deluged with calling code information. This being the case, is it worth your while building an internal code management capability? Or isn't it more sensible to turn to a trusted third party with a deep understanding of the issues?"



Country codes - why so much complexity?

Tracking international country and regional codes is difficult. Premium service codes pose problems too. The 900 prefix, traditionally associated with premium audio and text services, differs across countries. Mobile codes are even harder to manage.

Every day, thousands of customers subscribe to new mobile services. Traditional reporting bodies, such as the International Telecommunications Union (ITU), are struggling to find the codes to match these services. Carriers used to receive occasional bulletins from the ITU outlining minor updates to country and regional codes. Now they receive an avalanche of premium and mobile code information every day. Each time a change is made carriers have to update their routing software accordingly, which puts added pressure on administrators.

Three causes for the complexity:

1. **De-regulation has created more carriers. This has resulted in an explosion of fixed-line, mobile, premium and personal phone services. Different services are priced differently and are identified by their own codes.**
2. **Existing approaches to code allocation are not working. Carriers, trade groups and regulatory organisations use different standards to designate their codes. Often, these standards are not compatible.**
3. **To compete efficiently, carriers have to connect with a wide range of international networks. However, before they can take advantage of these opportunities, they must find an efficient way to route detailed code information to network elements.**

Before we explore these factors, we need to answer two questions - what is the purpose of country codes and why are these codes critical to business success?

Codes equal money

Country codes serve many purposes. They can be used to describe tariffs, rates and country locations. Codes fall into the following categories:

- International country codes
- Regional codes
- City codes
- Mobile codes
- Premium service codes

Carriers understand that they need to keep a database of accurate codes to ensure:

- Calls are successfully terminated and not blocked
- They pay the correct amount to transport traffic on competing networks
- They charge the correct amount when transporting foreign traffic

Dissatisfied customers

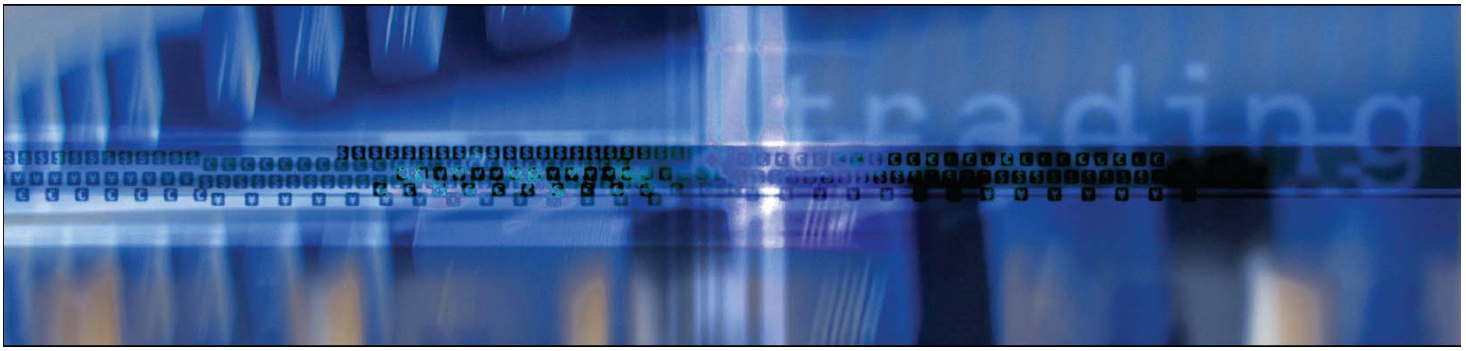
If a carrier doesn't manage its codes properly this can cause a range of problems. When a carrier's system fails to recognise a new or changed code it may block calls. Blocked calls translate into lost revenue, upset customers and higher service costs. If the problem persists, customers may decide to cancel services or switch to another carrier.

Mobile losses

International carriers have invested billions of dollars on licenses and infrastructure. To recoup their costs, they charge premium rates to transport traffic around their networks. Most carriers today either buy off-net termination or sell wholesale capacity on their networks. As a result, they pay or charge higher wholesale rates to use foreign mobile networks.

A worldwide explosion of premium rate mobile services is a leading culprit in causing code confusion, as many countries create non-standard mobile codes faster than carriers can update their routing plans to accommodate them.

Termination fees on mobile networks are usually more expensive than calls terminated on a land-line. In most of the world the caller is charged with this higher mobile termination rate. The US is an exception. It uses an air-time model where users are charged air time independent of termination.



More low cost destinations - but are they worth the hassle?

In the past, operators established Interconnect agreements on a bi-lateral basis. This approach no longer works for the majority of destinations in today's marketplace. New networks are being launched all the time. This is resulting in an increase in the number of Interconnect agreements. These contracts allow even the smallest carriers to offer attractive and low cost rates to an increasing number of international destinations. Low-cost destinations include some of the world's busiest and most populated cities, such as New York, London, Frankfurt and Paris. While a growing number of low-costs destinations stimulates wholesale minutes trading and interconnect agreements between carriers, it also burdens business operations, intensifies network management and complicates code management. It takes time and money to negotiate an interconnect agreement. In many cases, carriers are forced to manage multiple network connections. Work also needs to be put into routing plans – calls are often routed to many destinations at varying rates. These negotiations can stretch small operators to the limit.

Country Code Management – what is involved today?

When the carrier space was regulated, code management was a straightforward task. Today, the network management department is responsible for code management. This activity requires full-time and specialised resources.

Carrier managers face three major tasks. First of all, they need to create lists of new country, regional and mobile and premium service codes. Secondly, they must accurately monitor traffic and associated codes to low-cost destinations. Thirdly, they must perform invoice reconciliation for accuracy and consistency.

How do you build an accurate code list? Sources of accurate code information are scarce and badly organised. Code exchange formats are not standardised. Updating codes manually is a labour-intensive process. In some cases, it can involve code management personnel making calls to 230 countries to collect and verify code data. It is not uncommon for carriers to use information posted on telecoms web sites. Limited information is available on the LERG database. Carriers often rely on information from industry organisations like the ITU and GSM as well as international regulatory commissions similar to the Federal Communications Commission (FCC). But these organisations are under no obligation to share data and are often not even set up to do so. Carriers use data from other operators routinely. But there is no standard procedure for updating code lists. Some carriers perform updates on a weekly or monthly basis, while others implement changes only on a quarterly basis. When carriers negotiate interconnect agreements with each other, they often agree to share their most recent code lists. But are these lists accurate? Who knows! Language problems, different spellings of country and provider names and a lack of co-operation routinely hinder work.

Finding information from different sources is not easy. Even worse, some information can not be found at all. As a result, code managers often have to use intuition and guesswork to rationalise code lists and determine which information is accurate and current.

Unfortunately, errors in code lists are detected the hard way. Blocked calls and settlement discrepancies indicate that a carrier is using out-of-date or inaccurately priced codes.

Some common scenarios

Failure to understand the rates associated with various codes can lead to serious losses for carriers. A common problem occurs when a carrier passes along traffic destined for mobile termination, but bills the customer only at the standard fixed line termination rate. It is therefore critical that carriers synchronise their routing and code information. All parties need to know the current call termination costs associated with different services. They also need to know how these services relate to destination codes. Carriers lacking appropriate processes and systems can incur significant losses. The example below demonstrates such a scenario.

In this example, a carrier (We) is buying from a supplier (*Supplier's setup)* and selling to a customer (*Customer Setup)*.

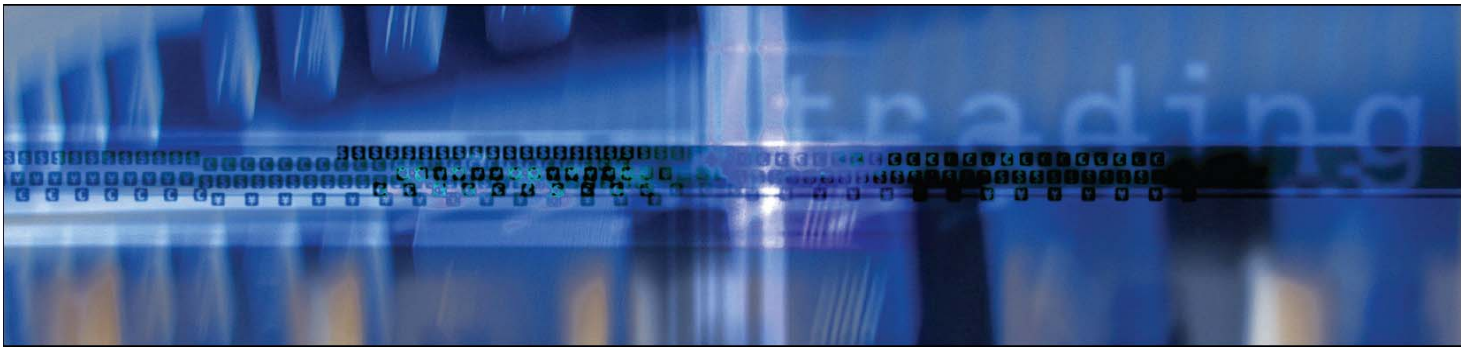
Our setup (We)

Destination	Rate	Code
UK-fixed	0.07	+44
UK-fixed	**0.07**	**+44**
UK-fixed	0.07	+44
UK-fixed	**0.07**	**+44**

Supplier's setup

Code	Rate	Destination
+44	0.07	GB-fixed
+447	0.30	GB-Mobile
+442	**0.03**	**GB-London**
+449	20.0	GB-Premium service

'We' do not break out UK (United Kingdom) codes and have only one destination – UK-fixed and the associated code +44. The supplier, however, does break down the country codes with additional detail under different names. As the second and fourth row in the left table (**red highlight**) shows, we will be charged a higher rate than the rate we assume. As a result, we will lose money if callers call destinations with area code +447 (GB-Mobile). In rare cases, the opposite can be true as the third row in the right table (**green highlight**) shows. In this instance, the supplier charges us a lower rate than we expect. As a consequence, we make more money from customers calling area code +442 (GB-London).



Exploiting carrier code confusion

Code confusion can cause a carrier to lose money. But matters get worse when one carrier exploits another's weakness. Carriers may deliberately prey on suppliers by randomly picking destinations with the wrong codes. These suppliers will initially be happy to see traffic increase to certain destinations. Only later do they realise that they've been duped – because of code mismatches they end up paying more for the termination fee. As a result, wholesale carriers are being forced to cover the difference through their own means. This is costing the industry millions of dollars a month.

Let us continue to use the example listed above. There are more issues associated with lines two and four of the table. Even if We, shown in the left table below, double the assumed buying price from 0.07 to 0.14 and offer to terminate calls to area code +44 for 0.14 (shown in the *Customer Setup table* below) we will continue to lose money on calls to United Kingdom mobile and premium services (listed below as area codes +447 and +449):

Our setup (selling site)

Destination	Rate	Cost	Code
UK-fixed	0.14	0.30	+44
UK-fixed	0.14	20.0	+44

Customer Setup

Code	Rate	Destination
+447	0.14	GB-Mobile
+449	0.14	GB-Premium service

Traffic will explode when carriers realise that a great offer is available. It is even possible that our supplier will route traffic back to us (circular routing) because our offer is so attractive for him. This example shows that it is possible to lose a large amount of money in a very short period of time.

Conclusion

The code management process is complex and prone to error. There is a lack of standards in code allocation, code list exchange and code management. This causes excessive labour for carriers. The failure to properly handle codes can lead to loss of money and dissatisfied customers. Solutions are needed to eliminate calling code confusion.

XCarrier **allows fully integrated and automated destination code list synchronisation**

XCarrier uses a centralised data store to keep relevant information in one place. The flexible and easy to use data loader and the sophisticated user interface offer an intuitive way to import, view, analyse and manage all codes. Filter options and customisable reports enable you to receive up-to-date and accurate information about your code lists. You can easily compare your view of the world against the view of your vendors. Code and destination lists are automatically analysed, differences are detected and correctly rated for review. This allows you to eliminate problems before you make costly mistakes.

Let ***XCarrier*** handle your code and destination matching so you can concentrate on your business.

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