



**Financial Services
Commission**

Banking Guidance Note No. 7

International Bank Account Numbers

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Introduction

The EU Regulation on Cross Border Payments (Regulation (EC) No 2560/2001) requires that all credit institutions shall, where applicable, communicate to each customer upon request his International Bank Account Number (IBAN) and that institution's Bank Identifier Code (BIC) with effect from the 1st July 2003.

In order for this to take place each EU jurisdiction must establish its own format for the issuance and validation of IBANS so that these can be recognised throughout the EU.

This Guidance Note sets out the format that institutions must follow when preparing, issuing and validating IBANS.

Basis of applicability

This Guidance Note applies to all authorised or recognised institutions under the Banking Ordinance 1992.

This Guidance Note comes into effect on the 1st July 2003.

Why an International Number?

A standard account number system is essential for efficient bank systems.

The creation of a viable international bank account numbering scheme has been viewed by many as a major enabler towards effecting error free cross-border payments, and hence the furtherance of straight-through-processing (STP).

While the proportion of cross-border payments is still marginal in relation to domestic payment volumes (about 1-2%), there is growing pressure to improve their efficiency in regard to cost, speed and quality. Such improvements require, as a minimum, easier validation of foreign account numbers, using a standard cross-border method to recognise and check account number formats.

The International Organization for Standardization (ISO) has completed the development of an important international standard entitled "International Bank Account Number (IBAN)" - reference number ISO 13616: 1997.

IBAN offers the banks and corporates involved in cross-border payment transactions a simple method of checking the validity of the beneficiary's bank account number.

With the completion of the standard, effort within the finance industry is being directed towards implementing IBAN, especially in Europe. ECBS (the European Committee for Banking Standards) has published EBS204 "IBAN: International Bank Account Number" and SIG203 "IBAN: Standard Implementation Guidelines".

Why is IBAN important?

IBAN is important because it facilitates straight-through-processing, enabling greater efficiencies throughout the processing chain. These factors are of differing importance to the various parties involved :-

Specific to European interests

- supports the development of the single market by creating the same degree of confidence in international account numbers as exists with domestic account numbers, and reduces cross-border costs bringing them closer to the level of domestic payments.



Specific to bank interests

- aids Straight Through Processing (STP)¹
- enables clear demarcation of the responsibilities in routing by giving structured information
- provides opportunities to evolve bilateral inter-bank agreements (for example, on improved price and/or quality of service)
- enables simplification of the current complex repair routines

Specific to customer interests

- ultimately IBAN will make cross-border payments less susceptible to delays and queries
- it is intended by the current EU Regulation to reduce the cost of cross-border payments within the euro-zone to the level of domestic charges.

The IBAN

Standard domestic account number systems exist in most countries. IBAN is **not** a utopian single account number structure to replace these. Instead, it is a means of passing a string of numbers, such as an existing account number, correctly.

IBAN consists of a header placed in front of a country's normal domestic account number format. This header consists of a two character country code followed by a pair of check digits. Some countries have placed a code to clearly identify the issuing bank in front of their domestic account number format. The following is an example of a UK IBAN:-

IBAN GB19 LOYD 3096 1700 7099 43

The country code enables recognition of the country in which the IBAN was issued. It also references the national account structure to be used when deciphering the domestic account number contained within the IBAN.

The check digits are calculated by the financial institution issuing the international bank account number, using a formula applied to the whole IBAN. There is a formula by which any party can perform an integrity check on an IBAN that has been quoted to them.

¹ SWIFT will check for a valid IBAN in all occurrences of the MT103+ messages from November 2003 onwards.

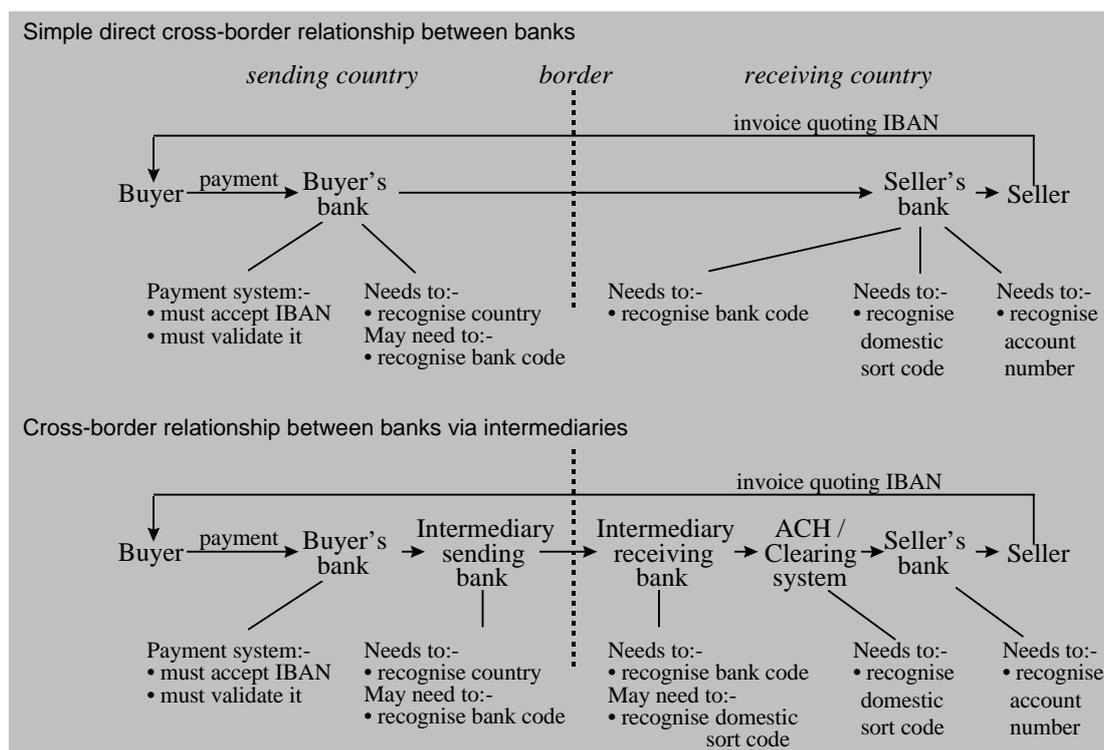


Figure 1 - Simple direct cross border relationship between banks

What Does Implementing IBAN Involve?

Implementing the IBAN in the payment chain means the following aspects must be addressed:-

- An issuing bank would provide IBANs to its customers who are likely to receive payments from abroad. The IBANs would be derived from the existing domestic account number of the customer.
- The customer then encourages the use of their IBAN by specifying it on their invoices etc.
- Ordering customers would instruct their bank to pay quoting the IBAN provided by the beneficiary. The bank will have confidence in sending the transaction onwards as they can, and must, check the validity of the proffered IBAN by a simple process.
- Correspondent banks throughout a payment chain may similarly verify the check sum at every stage, although it is not a necessity.
- The correspondent bank within the country of the beneficiary will recognise the payment as destined for that country from its country code. It may verify the check sum. It unpacks the domestic account format and will use that to complete the transfer, as it would for any other domestic payment.

Clearly there are two sides to the implementation of IBANs:-

- Pro-active - Issuance of IBANs to Gibraltar customers
- Re-active - Processing IBANs on Outgoing Cross-Border Payments

Pro-active - Issuance of IBANs to Gibraltar customers

The IBAN standard specifies that the only organisation allowed to generate an IBAN is an issuing bank. In practice, pro-active implementation means that banks have to be able to create IBANs for their customers.

Banks will also need to make provision in their in-bound processing systems to:-

- recognise an IBAN when it has been quoted.
- possibly re-validate the IBAN
- carry out any routing that the in-bound transaction may require.
- unwrap the domestic account identification from within the IBAN.

There is a more detailed section "IBAN Processing - Bank Implications" within this Guidance Note.

Re-active - Processing IBANs on Outgoing Cross-Border Payment

The IBAN standard directs that the paying bank carries out a validation of the IBAN at the initial point of entry into the payment system, i.e. data capture. Validation could be accomplished with a simple stand-alone 'calculator' routine. If all else fails, a manual check is possible but it is somewhat time-consuming.

If validation checks are repeated by subsequent parties in the payment chain, it would be obvious that an invalid IBAN had not been checked on input, or had been allowed in.

Each bank will need to make provision within their systems and procedures for checking and processing IBANs. Banks will need to brief all personnel likely to encounter IBANs, especially front-line staff and those in a customer liaison role, to meet a potentially immediate but initially unpredictable demand. Each bank will also need to make provision within their systems and procedures for validating and handling IBANs in creating the necessary cross-border payment transactions.

The Format of the IBAN in Gibraltar

The header comprises two alpha characters, containing the international country code (e.g. GI), followed by a two digit check sum which checks the entire IBAN including the country code and domestic account details.

The European Committee for Banking Standards required each member country to agree the domestic part of the IBAN, referred to as their BBAN (Basic Bank Account Number). The Gibraltar format for the BBAN has already been agreed and is published in the European Committee for Banking Standards web-site (www.ecbs.org).

There is an obligation to identify the bank uniquely and unambiguously within the IBAN.

The Gibraltar BBAN, the domestic part of the IBAN, includes a specific bank code in front of the account number and that the first four characters of the bank's BIC are used for this purpose. This should be instantly recognisable within cross-border banking circles and thus enable very rapid identification of the bank to which the incoming (into the Gibraltar) transaction should be routed..

The second part of the BBAN uses 15 alphanumeric digits (i.e. numbers from 0 to 9 and/or letters from A to Z) to represent the account number. Where an institution does not use the complete 15 digits for its account number these would be preceded by leading "0"s to make up a total of 15 digits.

The following picture shows a complete Gibraltar IBAN in the form in which it appears on paper

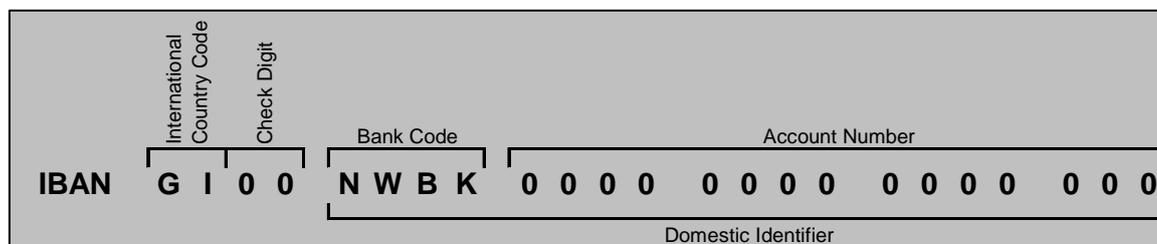


Figure 2 – Format for a Gibraltar IBAN

When communicated electronically, it is minus the prefix 'IBAN' and the spacing into sets of four .

Definition / Sources

The two-letter **international country code** is taken from the ISO 3166 standard.

The **bank code** is the first four characters of the bank's BIC code and unambiguously identifies the institution. Any branch of that institution shall also be represented by the same bank code irrespective of its geographic location. The BIC codes are registered by S.W.I.F.T. (as the Registration Authority for ISO 9362) these can be viewed at <http://www.swift.com/biconline/>.

Any Gibraltar bank without a BIC code must first apply to S.W.I.F.T. for their own BIC (or, alternatively, make suitable correspondent/agency arrangements with another Gibraltar bank and quote their BIC).

Validation of an IBAN

The following picture shows an IBAN in the form in which it would appear on paper. The example is a Belgian account. This is the kind of IBAN which will be quoted in Gibraltar as a destination account for a cross border payment



Figure 3 – Sample EU IBAN

Validation (verification) of the IBAN is carried out in the following way:

Certain check digits are "impossible", that is to say, the generation formula will never result in them being given as check digits. They are 00, 01 and 99. It is suggested that any validation first tests for these values in the check digits of the IBAN and, if they do occur, rejects the IBAN as invalid with any further examination.



The letters IBAN and any spaces are ignored. The country code and the check digit pair (i.e. the first four characters/numbers) are then moved to the right hand end. The example would now look like this:-

320034713441BE88

The characters are now replaced by numbers according to the following table.

A	10	F	15	K	20	P	25	U	30
B	11	G	16	L	21	Q	26	V	31
C	12	H	17	M	22	R	27	W	32
D	13	I	18	N	23	S	28	X	33
E	14	J	19	O	24	T	29	Y	34
								Z	35

The example IBAN would now look like this:-

320034713441111488

This is then divided by 97. If the remainder is 1, the IBAN is valid, as the country and domestic part tally with the check digit pair.

In the example, the result of division is 1 and the IBAN can therefore be accepted.

Implementation Note for Calculation

For reasons of precision, the use of integers instead of floating point numbers is recommended. If the number is too long for the software implementation of integers, then the calculation can be split up into consecutive remainder calculations of integers with a maximum length of 9 digits.

Taking the example on the "Validation of an IBAN" in section 10 above, the account number which is to be verified is IBAN BE88 3200 3471 3441. This gives the number 320034713441111488 which must then be divided by 97. The calculation is done in the following steps:-

320034713441111488

↓ A
↓ B2
↓ C2

A. Divide the first 9 digits of the number by 97.
i.e. divide 320034713 by 97, and the remainder is 91

↑ A
↓ B1

B. Construct the next 9 digits from the remainder in step 1 followed by the next 7 or 8 digits of the number, depending on whether the remainder was 1 or 2 digits.
Divide this set of 9 digits by 97
i.e. divide 914411114 by 97, and the remainder is 68

↑ B1
↑ B2
↓ C1

C. Repeat the process, from the remainder in step 2 followed by the next 7 or 8 digits of the number.
In this example only two digits are left.
Divide this set of digits by 97
i.e. divide 6888 by 97, and the remainder is 1.

↑ C1
↑ C2

If using a calculator...

320034713 / 97 = 3299326.938
0.938 * 97 = 90.986, i.e. rounded = 91

914411114 / 97 = 9426918.701
0.701 * 97 = 67.997, i.e. rounded = 68

6888 / 97 = 71.01030927
0.010300927 * 97 = 0.9999919, i.e. rounded = 1

Figure 4 – Calculation of check digit using stepwise decomposition



This stepwise process may be repeated as many times as necessary, depending on the length of the number to be verified.

The same process can be used in generating the IBAN.

Generation of an IBAN

The IBAN, international bank account number, is derived from the account number. The example below is a hypothetical account at New Bank Limited whose BIC is "NWBK":-

07099453

leading "0"s are place to make a total of 15 digits:

000000007099453

The first four characters from NWBK's BIC code are placed at the front. The country, in this case GI, and two extra digits 00 are always placed on the right hand end. The example would now look like this:-

NWBK000000007099453GI00



In order to calculate the check digits, the characters are temporarily replaced by numbers according to the following table:-

A	10	F	15	K	20	P	25	U	30
B	11	G	16	L	21	Q	26	V	31
C	12	H	17	M	22	R	27	W	32
D	13	I	18	N	23	S	28	X	33
E	14	J	19	O	24	T	29	Y	34
								Z	35

The example would now look like this:-

2332112000000007099453161800

The number is then divided by 97 to obtain the remainder. The remainder is subtracted from 98, and the resulting two digits are the check digit pair for the IBAN. If the result of subtracting the remainder from 98 is less than 10, then a leading zero is used (i.e. 01, 02, etc).

The IBAN is then constructed from the version noted just before converting characters to numbers. For the example, this was:-

NWBK00000007099453GI00

The two '00' digits at the right-hand end are replaced by the check digits which have been calculated. In the example, the remainder after division by 97 was 23, giving the check digit pair 75. The country and check digits are then moved to the front of the IBAN. The example would now look like this:

GI75NWBK00000007099453



Finally it is spaced out in sets of four characters/numbers, and IBAN is added at the front to identify it in this printed presentation:-

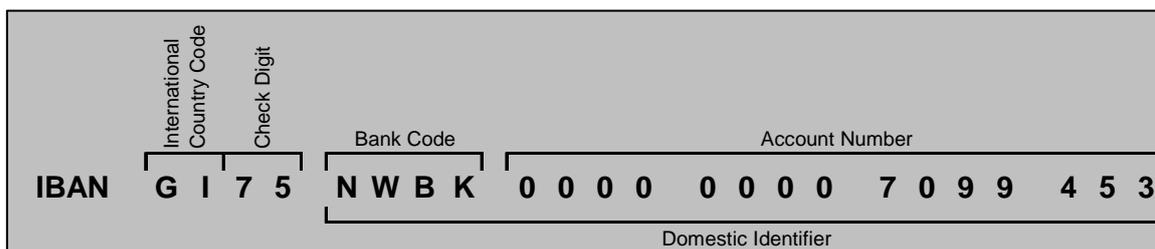


Figure 5 – Valid Gibraltar IBAN

i.e. IBAN GI75 NWBK 0000 0000 7099 453

The calculation of the check digit is shown below:

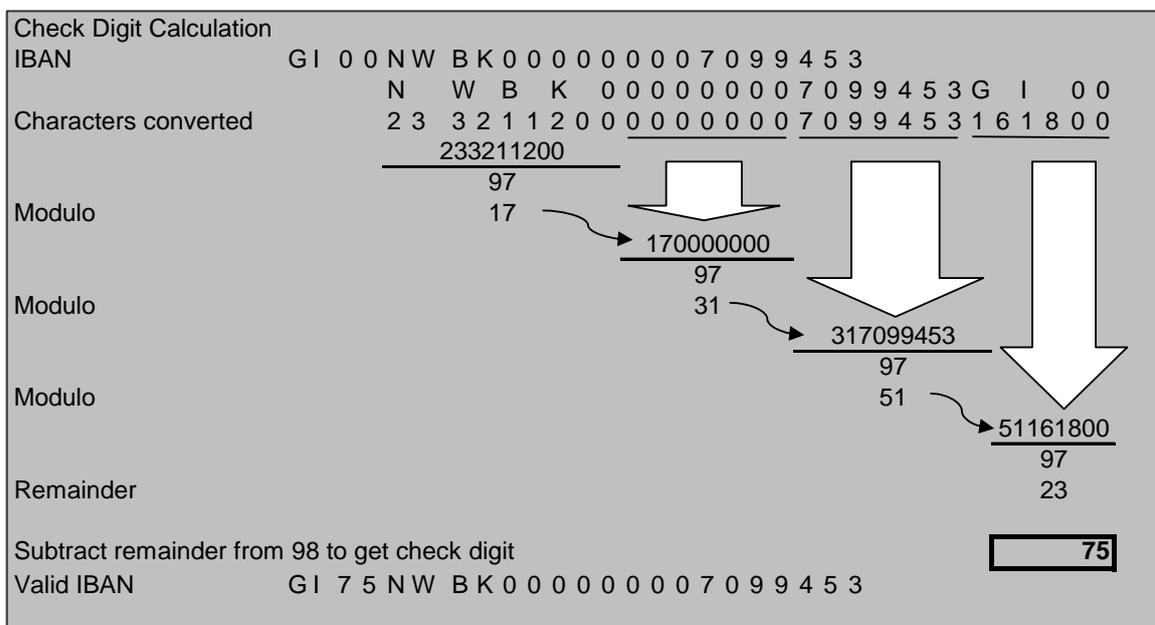


Figure 6 – Calculation of check digit

When to calculate IBANS.

Article 5 of the EU Regulation on cross border payments in euro (2560/2001) requires that:

An institution shall, where applicable, communicate to each customer upon request his IBAN and that institution’s BIC.

With effect from 1st July 2003, institutions shall indicate on statements of account of each customer, or in an annex thereto, his IBAN and the institution’s BIC.

All institution should therefore have the capability to produce IBANS with effect from the 1st July 2003 and that this should appear on customer statements from this same date.



Appendix 1 - European IBAN Format Examples

EXAMPLES

Printed format

The 'bank' and 'account no.' annotations are for explanation and are not part of the printed format.

Electronic format

Austria	IBAN AT61 1904 3002 3457 3201 bank account number	AT611904300234573201
Belgium	IBAN BE62 5100 0754 7061 bank account number	BE62510007547061
Denmark	IBAN DK86 1234 1234 5678 90 bank account number	DK8612341234567890
Finland	IBAN FI46 6601 0015 3064 3 bank account number	FI466601001530643
France	IBAN FR14 2004 1010 0505 0001 3M02 606 bank branch account number	FR1420041010050500013M02606
Germany	IBAN DE89 3704 0044 0532 0130 00 bank account number	DE89370400440532013000
Luxemburg	IBAN LU96 0241 2345 6789 0123 bank account number	LU960241234567890123
Netherlands	IBAN NL91 ABNA 0417 1643 00 bank account number	NL91ABNA0417164300
Norway	IBAN NO93 8601 1117 947 bank account number	NO9386011117947
Portugal	IBAN PT23 1234 1234 1234 5678 9011 2 bank account number	PT23123412341234567890112
Spain	IBAN ES98 1234 5678 9012 3456 7890 bank account number	ES9812345678901234567890

Explanation of the example columns

The examples on the left are shown separated into sets of 4 digits/characters. This is how the IBAN is presented, where the 'IBAN' is equivalent to labelling a printed account number with "Account No:" or an equivalent.

When quoted in electronic form, for example in a S.W.I.F.T. message, there are NO spaces and no preceding word "IBAN". The examples on the right show this.