Quentin Sager Consulting, Inc.

[ITED™ STANDARD EDITION]

International Telephone Exchange Database reference manual

This document contains the data set and file specifications for the ITED™ Standard Edition database. These specifications are subject to change without notice. The data it describes is furnished under a license agreement, and may be used or copied only in accordance with the terms of the license agreement.

ITED™ Standard Edition Reference Manual
Revised: November 4, 2015

Published by:
Quentin Sager Consulting, Inc.
1589 South Wallace Point
Crystal River, FL 34429

Disclaimer and Limitation of Liability

The information provided in this document is directed solely to users who have the appropriate degree of experience to understand and interpret its contents in accordance with generally accepted engineering, industry, or other professional standards and applicable regulations.

NO REPRESENTATION OR WARRANTY IS MADE THAT THE INFORMATION IS TECHNICALLY ACCURATE OR SUFFICIENT OR CONFORMS TO ANY STATUTE, GOVERNMENTAL RULE OR REGULATION, AND FURTHER NO REPRESENTATION OR WARRANTY IS MADE OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. QUENTIN SAGER CONSULTING SHALL NOT BE LIABLE, BEYOND THE AMOUNT OF ANY SUM RECEIVED IN PAYMENT BY QUENTIN SAGER CONSULTING FOR THIS DOCUMENT, WITH RESPECT TO ANY CLAIM, AND IN NO EVENT SHALL QUENTIN SAGER CONSULTING BE LIABLE FOR LOST PROFITS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. QUENTIN SAGER CONSULTING EXPRESSLY ADVISES THAT ANY AND ALL USE OF OR RELIANCE UPON THE INFORMATION PROVIDED IN THIS DOCUMENT IS AT THE RISK OF THE USER.

DATABASE DESCRIPTION

The International Telephone Exchange Database provides coverage of the numbering plans identified by the International Telephone Union ITU-T E.164 assigned country codes. These country codes are commonly referred to as *International Dialing Codes*.

The database identifies the telephone exchange or service, telephone number type, geographic area, time zone and other information based on the Country Code, National Destination Code, and Subscriber Number significant digits for a particular country's numbering plan.

All countries will have an ITU-T E.164 assigned country code (*International Dialing Code*). A National Destination Code (NDC) may or may not be used but a Subscriber Number is always present. This database uses the ITU country code, National Destination Code (if present in the numbering plan), and Subscriber Number *from-to* range to identify the telephone exchange or service.

Geographic references which include entities such as country, region, and city names are specified in English unless otherwise noted.

FILE FORMAT

Each file in the ITED™ database is a flat, UTF-8 text, comma-separated-value (CSV) data file. Each file has a single header row followed by one or more data rows. Each row within the file terminates with a carriage return/line feed (CR/LF) character combination. Elements or columns within a row are separated with a single comma character. Data elements or column values are encapsulated with opening and closing "Double Quotes" when the data value contains an embedded comma character.

Record Layouts and Field Descriptions

FILE: ited.csv

The sequential file *ited.csv* contains the raw data used to populate the *ITED* data table. This data identifies international telephone exchanges, numbering ranges, service type, and other information based on a particular country's national numbering plan, regulatory and carrier assignments.

Field	Description
CC	International Telephone Union ITU-T Recommendation E.164 numeric country code. Commonly referred to as an *International Dialing code*, this code is the combination of one, two or three digits identifying a specific country, countries in an integrated numbering plan, or a specific geographic area.
InternationalPrefix	International prefix. The **international prefix** is the digit, or combination of digits, that must be dialed before a country code when dialing a call to a country other than the one from which the call is being placed.
NationalPrefix	National (trunk) prefix. The **national (trunk) prefix** is the digit, or combination of digits, which must be dialed before an area (city) code when dialing a call to a subscriber from inside his own country but outside his own numbering area.
CellPrefix	Dialing prefix that must prepend the National Significant Number for inbound international calls to cellular and\or wireless numbers. This prefix appears between the international Country Code and the National Destination Code in normal dialing procedures.
NDC	National Destination Code (NDC) or significant leading digits of national (significant) number. The NDC can be a decimal digit or a combination of decimal digits (not including any prefix) identifying a numbering area within a country (or group of countries included in one integrated numbering plan or a specific geographic area) and/or network/services. Commonly referred to as an *International City Code* or *(Numbering Plan) Area Code*, the NDC is a nationally optional code field, which – combined with the Subscriber's Number (SN) – will constitute the national (significant) number of the international E.164-number for geographic areas.
SN_From	Subscriber's Number (SN) beginning range (low range) in this block assignment. In many numbering plans the subscriber number contains significant leading digits that (in addition to the NDC) further define the local exchange area and/or service. For example in the North American Numbering Plan the first 3-digits of the subscriber number are known as the *Central Office Code* or telephone exchange prefix and identify the local (city) level service area.
SN_To	Subscriber's Number (SN) ending range (high range) in this block assignment.
NDC_Length	Length of the National Destination Code or significant leading digits of the national (significant) number.

Uses_NDC	Yes\No field indicating whether value specified in NDC field is a *National Destination Code* (area code). If "N" NDCs are not used in the country's telephone numbering system however the leading digits of a number can be used to determine number use and possible geographic information.
NSN_Length	Length of the National (Significant) Number (NSN). The National Significant Number includes the NDC (area code) if any and the subscriber number. The NSN excludes the leading national trunk digit (normally "0") if used.
NumberType	Type of service. associated with the particular telephone exchange or number. • **A** – Value Added Services • **B** – Shared Cost Services • **C** – Calling Card • **D** – Corporate Numbers • **F** – Freephone, Toll-free • **G** – Geographic • **I** – Internet Access, Online and dialup services • **L** – Local Rate Service • **M** – Mobile Telephony • **N** – National Number • **O** – Directory Assistance, Operator Services • **P** – Personal Number Service, Universal Access Number • **Q** – Mass Calling • **R** – Routing Number • **S** – Premium Rate Services • **T** – Telematic / Machine to Machine Communications • **U** – Universal Personal Telecommunications • **V** – VoIP, IP Telephony • **X** – Exception, the number block is technically not active but residual, functioning telephone numbers from the block still exist. The block is contaminated as a side effect of number portability. United States only. • **Z** – Virtual Private Network
CarrierName	Name of primary telecom carrier or service provider name the numbering block is assigned to.
Language	ISO 639 language code identifying the predominate language within the service area or territory.
Country	ISO 3166-1 numeric country code
ISO	ISO 3166-1 alpha 2 country code
RegionCode	Postal abbreviation or code of the state, province, department, territory, or similar division within the country associated with the National Destination Code if any. If a standard national abbreviation does not exist for the region the value will be that specified in International Standard ISO 3166-2:2007 Codes for the representation of names of countries and their subdivisions.

RegionName	Common name of the state, province, department, territory, or similar division, if any, identified by the National Destination Code and/or National (Significant) Number. When present, RegionName agrees with those values specified in the International Standard ISO 3166-2:2007 Codes for the representation of names of countries and their subdivisions.
City	Name of the geographic area, locale, city, municipality, or service type identified by the national (significant) number.
TimeZone	Time zone the service area is located in specified using *Olson Time Zone Database* time zone ID.
UTC	Time zone specified as *Coordinated Universal Time* (UTC) offset. Format is +/-hh:mm
DST	Y/N flag indicating whether daylight savings time is recognized in this time zone.
Latitude	Latitude in decimal degree format of the locale, city, municipality, or other geographically identifiable service area of the exchange.
Longitude	Longitude in decimal degree format of the locale, city, municipality, or other geographically identifiable service area of the exchange.
NSN_Min_Length	Minimum length of the National (Significant) Number (NSN).

FILE: iso3166.csv

The sequential file iso3166.*csv* contains the ISO 3166 Standard alpha and numeric codes to names cross reference identifying countries, dependent territories, and special areas of geographical interest.

Field	Description
ISO_A2	ISO 3166 two character alpha *country* code.
ISO_A3	ISO 3166 three character alpha *country* code.
ISO_Num	ISO 3166 numeric *country* code.
ITU	International Telephone Union ITU-T Recommendation E.164 numeric country code.
ISO_Name	The International Standards Organization common short name for the country, territory or region.
Country	The International Standards Organization full name for the country, territory or region.

SQL SCRIPTS AND SCHEMAS

MySQL

```sql
CREATE DATABASE if not exists `ITED`;
USE `ITED`;

DROP TABLE IF EXISTS `ited`;
CREATE TABLE `ited` (
  `CC` char(3) NOT NULL,
  `InternationalPrefix` varchar(26) DEFAULT NULL,
  `NationalPrefix` varchar(26) DEFAULT NULL,
  `CellPrefix` char(3) DEFAULT NULL,
  `NDC` varchar(15) NOT NULL,
  `SN_From` varchar(15) NOT NULL,
  `SN_To` varchar(15) NOT NULL,
  `NDC_Length` int(11) NOT NULL,
  `Uses_NDC` char(1) NOT NULL,
  `NSN_Length` int(11) NOT NULL,
  `NumberType` char(1) NOT NULL,
  `CarrierName` varchar(128) DEFAULT NULL,
  `Language` char(3) NOT NULL,
  `Country` int(3) NOT NULL,
  `ISO` char(2) NOT NULL,
  `RegionCode` varchar(10) DEFAULT NULL,
  `RegionName` varchar(128) DEFAULT NULL,
  `City` varchar(128) DEFAULT NULL,
  `TimeZone` varchar(128) NOT NULL,
  `UTC` char(6) NOT NULL DEFAULT '+00:00',
  `DST` char(1) NOT NULL,
  `Latitude` double NOT NULL DEFAULT '0',
  `Longitude` double NOT NULL DEFAULT '0',
  `NSN_Min_Length` int(11) NOT NULL DEFAULT '0',
  KEY `exchange` (`CC`,`NDC`,`SN_From`)
) ENGINE=MyISAM DEFAULT CHARSET=utf8;


DROP TABLE IF EXISTS `is03166`;
CREATE TABLE `iso3166` (
  `ISO_A2` char(2) NOT NULL,
  `ISO_A3` char(3) DEFAULT NULL,
  `ISO_Num` int(3) DEFAULT NULL,
  `ITU` char(3) NOT  NULL,
  `ISO_Name` varchar(128) NOT NULL,
  `Country` varchar(128) NOT NULL
  KEY `place` (`ISO_A2`,`ITU`)
) ENGINE=MyISAM DEFAULT CHARSET=utf8;
```

DATA STANDARDS, RECOMMENDATIONS, AND REFERENCES

ITU-T Rec. E.164 (02/2005), SERIES E: OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS; International operation – Numbering plan of the international telephone service

Annex to ITU Operational Bulletin No. 930 – 15.IV.2009, ITU-T TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU COMPLEMENT TO ITU-T RECOMMENDATION E.164 (02/2005); List of ITU-T Recommendation E.164 assigned country codes

International Standard ISO 3166-1:2006, Codes for the representation of names of countries and their subdivisions--Part 1: Country codes, ISO 3166-1: 2006 (E/F), International Organization on Standardization (Geneva, 2006).

International Standard ISO 3166-2:2007 Codes for the representation of names of countries and their subdivisions - Part 2: Country subdivision code, ISO 3166-2: 2007 (E/F), International Organization on Standardization (Geneva, 2007).

Olson Time Zone ID; Olson time zone database

National Geospatial Intelligence Agency; NGA GEOnet Names Server (GNS); foreign geographic names

Structure of the international E.164-number

The international E.164-number for geographic areas is composed of a variable number of decimal digits arranged in specific code fields. The international E.164-number code fields are the Country Code (CC) and the National (Significant) Number N(S)N.

CC	NDC	SN
1 to 3 digits Country Code	Max *(15 – n)* digits National *(Significant)* Number	
Max 15 digits International E.164 – number for geographic areas		

CC   ITU Country Code
NDC   National Destination Code
SN   Subscriber Number
n   Number of digits in the country code