

Quentin Sager Consulting, Inc.

# [ITED™ STANDARD EDITION]

International Telephone Exchange Database reference manual

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ITED™ Standard Edition Reference Manual  
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## 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
<b>CC</b>	International Telephone Union ITU-T Recommendation E.164 numeric country code.  Commonly referred to as an <i>International Dialing code</i> , 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.
<b>InternationalPrefix</b>	International prefix. The <b>international prefix</b> 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.
<b>NationalPrefix</b>	National (trunk) prefix. The <b>national (trunk) prefix</b> 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.
<b>CellPrefix</b>	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.
<b>NDC</b>	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 <i>International City Code</i> or <i>(Numbering Plan) Area Code</i> , 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.
<b>SN_From</b>	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 <i>Central Office Code</i> or telephone exchange prefix and identify the local (city) level service area.
<b>SN_To</b>	Subscriber's Number (SN) ending range (high range) in this block assignment.
<b>NDC_Length</b>	Length of the National Destination Code or significant leading digits of the national (significant) number.

<b>Uses_NDC</b>	Yes/No field indicating whether value specified in NDC field is a <i>National Destination Code</i> (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.
<b>NSN_Length</b>	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.
<b>NumberType</b>	Type of service, associated with the particular telephone exchange or number. <ul style="list-style-type: none"> <li>• <b>A</b> – Value Added Services</li> <li>• <b>B</b> – Shared Cost Services</li> <li>• <b>C</b> – Calling Card</li> <li>• <b>D</b> – Corporate Numbers</li> <li>• <b>F</b> – Freephone, Toll-free</li> <li>• <b>G</b> – Geographic</li> <li>• <b>I</b> – Internet Access, Online and dialup services</li> <li>• <b>L</b> – Local Rate Service</li> <li>• <b>M</b> – Mobile Telephony</li> <li>• <b>N</b> – National Number</li> <li>• <b>O</b> – Directory Assistance, Operator Services</li> <li>• <b>P</b> – Personal Number Service, Universal Access Number</li> <li>• <b>Q</b> – Mass Calling</li> <li>• <b>R</b> – Routing Number</li> <li>• <b>S</b> – Premium Rate Services</li> <li>• <b>T</b> – Telematic / Machine to Machine Communications</li> <li>• <b>U</b> – Universal Personal Telecommunications</li> <li>• <b>V</b> – VoIP, IP Telephony</li> <li>• <b>X</b> – 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.</li> <li>• <b>Z</b> – Virtual Private Network</li> </ul>
<b>CarrierName</b>	Name of primary telecom carrier or service provider name the numbering block is assigned to.
<b>Language</b>	ISO 639 language code identifying the predominate language within the service area or territory.
<b>Country</b>	ISO 3166-1 numeric country code
<b>ISO</b>	ISO 3166-1 alpha 2 country code
<b>RegionCode</b>	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.

<b>RegionName</b>	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.
<b>City</b>	Name of the geographic area, locale, city, municipality, or service type identified by the national (significant) number.
<b>TimeZone</b>	Time zone the service area is located in specified using <i>Olson Time Zone Database</i> time zone ID.
<b>UTC</b>	Time zone specified as <i>Coordinated Universal Time</i> (UTC) offset. Format is +/-hh:mm
<b>DST</b>	Y/N flag indicating whether daylight savings time is recognized in this time zone.
<b>Latitude</b>	Latitude in decimal degree format of the locale, city, municipality, or other geographically identifiable service area of the exchange.
<b>Longitude</b>	Longitude in decimal degree format of the locale, city, municipality, or other geographically identifiable service area of the exchange.
<b>NSN_Min_Length</b>	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
<b>ISO_A2</b>	ISO 3166 two character alpha <i>country</i> code.
<b>ISO_A3</b>	ISO 3166 three character alpha <i>country</i> code.
<b>ISO_Num</b>	ISO 3166 numeric <i>country</i> code.
<b>ITU</b>	International Telephone Union ITU-T Recommendation E.164 numeric country code.
<b>ISO_Name</b>	The International Standards Organization common short name for the country, territory or region.
<b>Country</b>	The International Standards Organization full name for the country, territory or region.

# SQL SCRIPTS AND SCHEMAS

## MYSQL

```
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 `is03166` (
  `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 ( <i>Significant</i> ) 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