

**IP2LOCATION™ IP-COUNTRY-REGION-CITY-LATITUDE-LONGITUDE DATABASE**

**DATA FILE SPECIFICATIONS**

Product:	IP2Location™ IP-Country-Region-City-Latitude-Longitude Database [DB5]
File Name:	IP2Location_IP_Country_Region_City_Latitude_Longitude_Specification.PDF
Total Fields:	8
Data Format Available:	i. CSV [ Comma-Delimited ASCII ] ii. BIN [ IP2Location™ Binary Format ]

FIELD #	FIELD NAME	DATA TYPE	FIELD DESCRIPTION
1	IP_FROM	IPv4 DECIMAL(10) IPv6 DECIMAL(39)	Beginning of IP address range. The data is represented in IP number <sup>1</sup> format.
2	IP_TO	IPv4 DECIMAL(10) IPv6 DECIMAL(39)	Ending of IP address range. The data is represented in IP number <sup>1</sup> format.
3	COUNTRY_CODE	CHAR(2)	Two-character country code based on ISO 3166.
4	COUNTRY_NAME	VARCHAR(64)	Country name based on ISO 3166.
5	REGION	VARCHAR(128)	Region name.
6	CITY	VARCHAR(128)	City name.
7	LATITUDE	NUMERICAL (DOUBLE)	City latitude. Default to capital city latitude if city is unknown.
8	LONGITUDE	NUMERICAL (DOUBLE)	City longitude. Default to capital city longitude if city is unknown.

**Note:**

**<sup>1</sup> IP Address to IP Number Conversion**

If the IP address 161.132.13.1, then the IP number is 2709785857.

$$\begin{aligned} \text{IP Number, X} &= 161 \times (256 \times 256 \times 256) + 132 \times (256 \times 256) + 13 \times (256) + 1 \\ &= 2709785857 \end{aligned}$$

In general, this is the formula to convert an IP Address to IP Number.

Let assume the IP Address is A.B.C.D.

$$\text{IP Number, X} = A \times (256 \times 256 \times 256) + B \times (256 \times 256) + C \times 256 + D$$

$$\text{IP\_FROM} \leq X \leq \text{IP\_TO}$$

**<sup>2</sup> Record Matching**

First, convert the search IP Address to IP Number, X. Search a record that matches the range condition. You will get only one match per query. The country and city information is attached to country fields of the record.

$$\text{IP\_FROM} \leq X \leq \text{IP\_TO}$$