

**precisely**

# ExchangeInfo Plus

## Product Guide

Version 2022.05.0



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## ExchangeInfo Plus Product Guide

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# 1 – Getting Started

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## ExchangeInfo Plus Overview

ExchangeInfo Plus is a comprehensive database used for mapping and analyzing wire center serving areas and central offices throughout the United States and Canada. Wire center serving areas are the basic unit of geography in the telecommunications industry, describing the organization of local telephone exchange systems. ExchangeInfo Plus lists every LEC landline wireless center in the United States and Canada, and graphically displays their service areas.

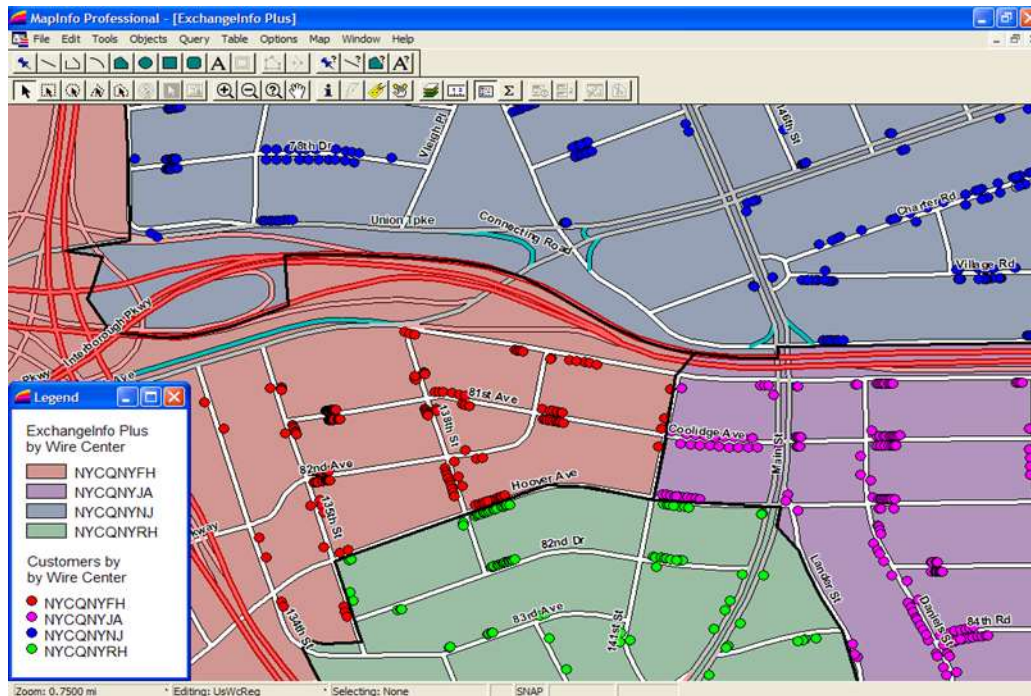


Figure 1 - ExchangeInfo Plus wire center serving area display

## Features

In addition to providing geographic information about wire center serving areas, ExchangeInfo Plus also contains the following data about each wire center:

- CLLI™ (Common Language Location Identifier) code
- LATA assignment
- Rate center names
- Exchange names
- Area codes (NPAs)
- Prefixes (NXXs)
- Carrier type information

## Coverage and Projection

ExchangeInfo Plus has the following coverage, scale, coordinates, and projection:

Coverage	United States, Guam, US Virgin Islands, US Northern Mariana Islands, and Canada
Scale	1:24,000
Coordinates	Latitude and Longitude
Projection	NAD 83

## File Types

ExchangeInfo Plus is supplied in MapInfo TAB file format. The file set can contain the following file types:

Extension	File Type
.DAT	Data file
.ID	Identification file
.IND	Index file
.MAP	Map file
.TAB	Tabular file

In order to properly use ExchangeInfo Plus, the following rules apply:

- You must have access to all of the files in the file set
- All files must be located in the same directory.

## Installation

Precisely recommends using MapInfo Pro **version 7 or higher** in conjunction with our telecommunication data products.

To install ExchangeInfo Plus:

1. Extract the contents of the compressed delivery file to a temporary folder location.
2. Copy the contents of the **Data** folder to the desired destination folder. If the destination folder already contains a dataset of a previous vintage, be sure to use the **Replace** option to replace all files of the same name with files from the temporary location folder.
3. Copy the contents of the **Docs** folder (product guide and release notes) to the desired destination folder.

4. Delete files from the temporary folder location.
5. You are now ready to start using ExchangeInfo Plus.

## Document Conventions

The following conventions are used throughout this document:

Text Style	Significance
<u>Underlined</u>	Emphasis
<i>Italics</i>	Document or chapter titles, or references to specific text
<b>Bold</b>	Field or file name references in text
Text Style	Significance
<b><u>Underlined bold</u></b>	Commands or actions
Typewriter font, shaded background	Keyboard input or screen output

## Field Names in Schema Tables

Field names in schema tables are documented in upper-case letters. The appearance of field names in the actual product may differ from this convention.

# 2 – ExchangeInfo Plus Data Schema

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## File Structure

ExchangeInfo is divided into five file sets:

- Central office points (**\*Wcpt.\***)
- Wire center boundaries (**\*WcReg.\***)
- Area code and prefix data (**\*Npanxx.\***)
- Service type data (**ServiceType.\***)
- OCN (operating company number) category data (**OCNCategory.\***)

### ExchangeInfo Plus File Sets – United States

Central Office Point Files	Wire Center Boundary Files	Area Code and Prefix Data Files	Service Type Data Files	OCN Category Files
UsWcReg.dat UsWcReg.id UsWcReg.ind UsWcReg.map UsWcReg.tab	UsWcPt.dat UsWcPt.id UsWcPt.ind UsWcPt.map UsWcPt.tab	UsNpanxx.dat UsNpanxx.ind UsNpanxx.tab	ServiceType.dat ServiceType.tab	OCNCategory.dat OCNCategory.tab

### ExchangeInfo Plus File Sets - Canada

Central Office Point Files	Wire Center Boundary Files	Area Code and Prefix Data Files	Service Type Data Files	OCN Category Files
CnWcReg.dat CnWcReg.id CnWcReg.ind CnWcReg.map CnWcReg.tab	CnWcPt.dat CnWcPt.id CnWcPt.ind CnWcPt.map CnWcPt.tab	CnNpanxx.dat CnNpanxx.id CnNpanxx.ind CnNpanxx.map CnNpanxx.tab	ServiceType.dat ServiceType.tab	OCNCategory.dat OCNCategory.tab

## ExchangeInfo Plus Data Schema

### United States Data

#### US Central Office Points Table (UsWcPt)

The Central Office Points table (point table) shows the geographical location of the central office for each wire center serving area in the US.

Field Name	Data Type (Length)	Index	Description
WC_Code	CHAR (8)	Yes	8-character CLLI code for wire center
V	CHAR (5)	No	Vertical coordinate of central office
H	CHAR (5)	No	Horizontal coordinate of central office

Field Name	Data Type (Length)	Index	Description
X	FLOAT	No	Longitude coordinate of central office
Y	FLOAT	No	Latitude coordinate of central office
SOURCE	CHAR (4)	No	Indicates how the point was created:  ADDR – Geocoded LERG central office street address  VH – LERG vertical and horizontal coordinates converted to latitude and longitude  OTHR – Point created using other method

### US Wire Center Boundaries (UsWcReg)

The Wire Center Boundaries table (region file) shows the geographic borders of wire center serving areas.

**Note:** ExchangeInfo Plus US does not contain any geographic coverage data associated with wireless phone service.

Field Name	Data Type (Length)	Index	Description
WC_CODE	CHAR (8)	Yes	8-character CLLI code for wire center

### US Area Code and Prefix Data Table (USNpanxx)

The Area Code and Prefix Data table (data file) contains information about every NPA/NXX in service.

Field Name	Data Type (Length)	Index	Description
NPA	CHAR (3)	Yes	Area code
NXX	CHAR (3)	Yes	Prefix
STARTRANGE	CHAR (4)	Yes	For NPA/NXXs that have line range splits (thousand block pooling), this is the first number in the range
ENDRANGE	CHAR (4)	Yes	For NPA/NXXs that have line range splits (thousand block pooling), this is the last number in the range
STATE	CHAR (2)	No	State served by the NPA/NXX <sup>1</sup>
WC_CODE	CHAR (8)	No	8-character CLLI code for wire center <sup>2</sup>
SWITCH	CHAR (3)	No	Last 3 characters of the CLLI code, indicating the switch that serves the NPA/NXX

Field Name	Data Type (Length)	Index	Description
SERVICETYPE	CHAR (3)	No	Type of service provided by NPA/NXX.
LATA	CHAR (5)	No	LATA number
OCN	CHAR (4)	No	Operating company number <sup>3</sup>
COMPANYNAME	CHAR (50)	No	Name of the carrier assigned to the OCN, as it appears in the LERG
OCNCATEGORY	CHAR (10)	No	Type of carrier
LOCALITY	CHAR (10)	No	City name of the NPA/NXX
EXCHANGE	CHAR (24)	No	Exchange served by the NPA/NXX
RATECENTER	CHAR (16)	No	Rate center served by the NPA/NXX

**Notes:**

<sup>1</sup> NPA/NXXs do not cross state lines.

<sup>2</sup> The 11-character CLLI code is divided across two fields in the database. The first 8 characters are shown in the **WC\_Code** field. The remaining 3 characters are shown in the **Switch** field.

<sup>3</sup> In cases where carrier number local portability applies, there will be some subscribers in the NPA/NXX who are served by a different operating company. In such cases, the value listed in this field is the OCN of the company that “owned” the NPA/NXX prior to the number being ported to a different carrier.

### US Service Type Data Table (ServiceType)

The Service Type data table (data file) provides service type descriptions.

Field Name	Data Type (Length)	Index	Description
TYPE	CHAR (3)	No	Service type
DESCRIPTION	CHAR (100)	No	Description of service type

### US OCN Category Data Table (OCNCategory)

The OCN Category data table (data file) contains descriptions of OCN categories.

Field Name	Data Type (Length)	Index	Description
CATEGORY	CHAR (10)	No	OCN category
DESCRIPTION	CHAR (50)	No	Description of OCN category

## Canadian Data

### Canadian Central Office Points Table (CnWcPt)

The Canadian Central Office Points table (point file) provides the geographic location for each wire center servicing area.

Field Name	Data Type (Length)	Index	Description
WC_Code	CHAR (8)	Yes	8-character CLLI code for wire center
V	CHAR (5)	No	Vertical coordinate of central office
H	CHAR (5)	No	Horizontal coordinate of central office
X	FLOAT	No	Longitude of central office
Y	FLOAT	No	Latitude of central office
SOURCE	CHAR (4)	No	Indicates how the point was created:  ADDR – Geocoded LERG central office street address  VH – LERG vertical and horizontal coordinates converted to latitude and longitude  OTHR – Point created using other method

### Canadian Wire Center Boundaries Table (CnWcReg)

ExchangeInfo Plus Canada does not contain any geographic coverage data associated with wireless phone service. ExchangeInfo Plus Canada contains geographic areas that have no telephone service. Each province containing this type of area will have a **WC\_Code** designation with the province abbreviation followed by **\_UNS** (ON\_UNNS in the case of Ontario, for example) in the **CnWcReg.tab** file. These **WC\_Code** values are Precisely designated codes.

Field Name	Data Type (Length)	Index	Description
WC_CODE	CHAR (8)	Yes	8-character CLLI code for wire center

## Canadian Area Code and Prefix Data Table (CnNpanxx)

The Area Code and Prefix Data table (data file) contains information about every Canadian NPA/NXX in service.

Field Name	Data Type (Length)	Index	Description
NPA	CHAR (3)	Yes	Area code
NXX	CHAR (3)	Yes	Prefix
STARTRANGE	CHAR (4)	Yes	For NPA/NXXs that have line range splits (blocked), this is the first line number in the range.
ENDRANGE	CHAR (4)	Yes	For NPA/NXXs that have line range splits (blocked), this is the last line number in the range.
PROV	CHAR (2)	No	Province served by NPA/NXX <sup>1</sup> .
WC_CODE	CHAR (8)	No	8-character CLLI code for wire center <sup>2</sup> .
SWITCH	CHAR (3)	No	Last 3 characters of the CLLI code, indicating the switch that serves the NPA/NXX.
SERVICETYPE	CHAR (3)	No	Type of service provided by NPA/NXX.
LATA	CHAR (5)	No	LATA number
OCN	CHAR (4)	No	Operating company number <sup>3</sup> .
COMPANYNAME	CHAR (50)	No	Name of the carrier associated to the OCN, as it appears in LERG.
OCNCATEGORY	CHAR (10)	No	Type of carrier.
LOCALITY	CHAR (10)	No	City name of NPA/NXX.
EXCHANGE	CHAR (24)	No	Exchange served by NPA/NXX.
RATECENTER	CHAR (16)	No	Rate center served by NPA/NXX.

### Notes:

<sup>1</sup> NPA/NXXs do not cross province boundaries.

<sup>2</sup> The 11-character CLLI code is divided across two fields in the database. The first 8 characters are shown in the WC\_Code field. The remaining 3 characters are shown in the **Switch** field.

<sup>3</sup> In cases where carrier number local portability applies, there will be some subscribers in the NPA/NXX who are served by a different operating company. In such cases, the value listed in this field is the OCN of the company that “owned” the NPA/NXX prior to the number being ported to a different carrier.

## Canadian Service Type Table (ServiceType)

The Service Type table (data file) provides descriptions of various service types.

Field Name	Data Type (Length)	Index	Description
TYPE	CHAR (3)	No	Service type
DESCRIPTION	CHAR (100)	No	Description of service type.

## Canadian OCN Category Data Table (OCNCategory)

The OCN Category Data table (data file) provides descriptions of various OCN categories.

Field Name	Data Type (Length)	Index	Description
CATEGORY	CHAR (10)	No	OCN category
DESCRIPTION	CHAR (50)	No	OCN category description.

# 3 – Using ExchangeInfo Pro

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[Selecting NPA/NXX Subsets](#)

[Selecting All Boundaries for a Local Exchange Carrier](#)

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[Building Wire Center Boundaries for a State/Province](#)

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## Selecting NPA/NXXs within a Wire Center

To select the NPA/NXXs within a wire center boundary:

1. Select a wire center boundary from the **WcReg.map** table using the **Select** tool.
2. Click the wire center boundary using the **Info** tool. The **Info** tool window displays the eight-character **WC\_Code** value.
3. Select the **WC\_Code**.
4. Select **Edit > Copy**, or press <CTRL> + C to copy the **WC\_Code**.
5. Select **Query > SQL Select** to open the **SQL Select** dialog.
6. Enter **UsNpanxx** (or **CnNpanxx**, if querying Canadian data) in the **from Tables** field.
7. Enter **\*** in the **Select Columns** field.
8. Enter **WC\_Code =** in the **where Condition** field and press <CTRL> + V to paste the **WC\_Code** into the field. Make sure that the **WC\_Code** is enclosed in double quotes (e.g., "xxxxxxx").
9. Leave the **Group by Columns** and **Order by Columns** fields blank.
10. Enter **Selection** in the **into Table Named** field, as shown below:

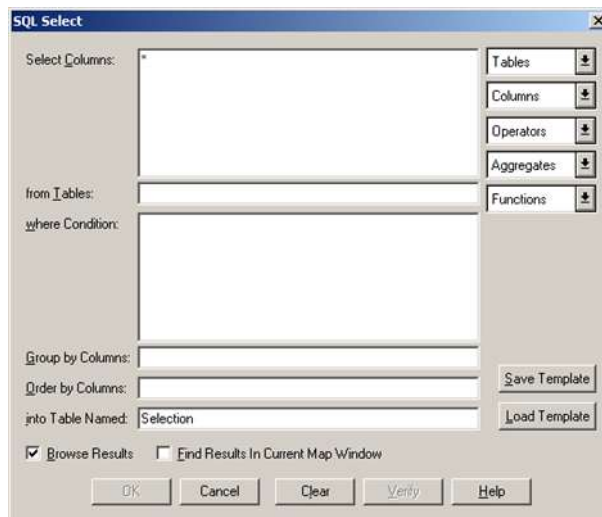


Figure 2 - Selecting NPA/NXXs within a wire center boundary

11. Click **OK**.

Query results will be displayed in a browser window.



## Selecting Subsets of Central Office Points

This section contains instructions for selecting the following subsets of central office points:

- LEC landline central office points
- CLEC central office points
- Central office points that serve at least one wireless NPA/NXX

### Selecting LEC Landline Central Office Points

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter `UsWcPt, UsNpanxx` in the **from Tables** field.
3. Enter `UsWcPt.WC_Code, UsWcPt.V, UsWcPt.H, UsWcPt.Source` in the **Select Columns** field.
4. Enter `UsWcPt.WC_Code = UsNpanxx.WC_Code and (UsNpanxx.OCNCategory = "RBOC" or UsNpanxx.OCNCategory = "ILEC") and UsNpanxx.ServiceType = "EOC"` in the **where Condition** field.
5. In the **Group by Columns** field, enter `UsWcPt.WC_Code`.
6. Leave the **Order by Columns** field blank.
7. Enter Selection in the **into Table Named** field.

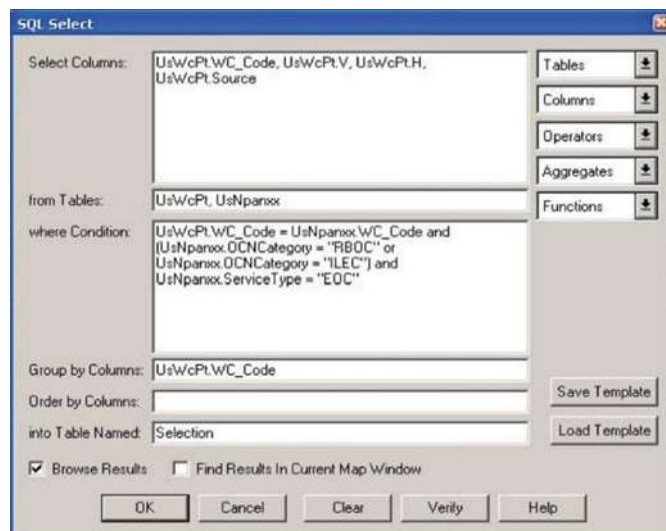


Figure 3 - Selecting LEC landline central office points

8. Click **OK**.

Query results will be displayed in a browser window.

**Note:** to query Canadian data, substitute *Cn* for *Us* in the statements above.

## Selecting CLEC Central Office Points

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter `UsWcPt, UsNpanxx` in the **from Tables** field.
3. Enter the following in the **Select Columns** field: `UsWcPt.WC_Code, UsWcPt.V, UsWcPt.H, UsWcPt.Source`.
4. Enter the following in the **where Condition** field: `UsWcPt.WC_Code = UsNpanxx.WC_Code and UsNpanxx.OCNCategory = "CLEC"`.
5. Enter `UsWcPt.WC_Code` in the **Group by Columns** field.
6. Leave the **Order by Columns** field blank.
7. Enter `Selection` in the **into Table Named** field, as shown below:

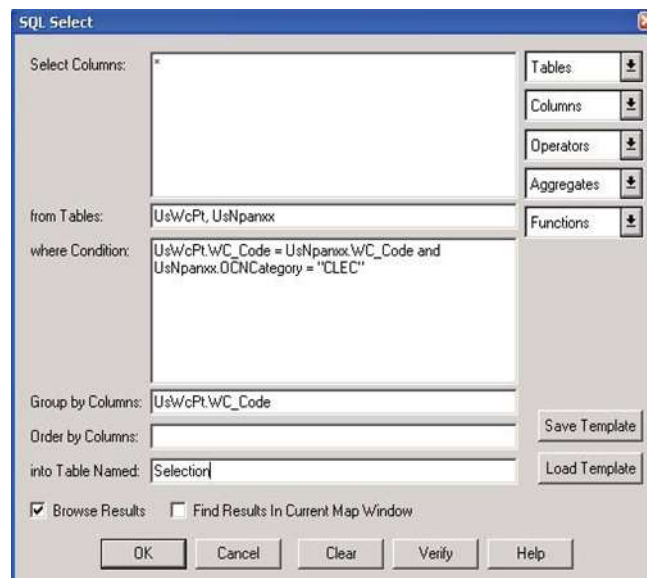


Figure 4 - Selecting CLEC central office points

8. Click **OK**.

Query results will be displayed in a browser window.

**Note:** To query Canadian data, substitute *Cn* for *Us* in the statements above.

## Selecting Central Office Points that Serve at Least One Wireless NPA/NXX

**Note:** Because central office points are not exclusively wireless, this query may return some LEC landline numbers served by these central office points.

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.

2. Enter `UsWcPt, UsNpanxx` in the **from Tables** field.
3. Enter `UsWcPt.WC_Code, UsWcPt.V, UsWcPt.H, UsWcPt.Source` in the **Select Columns** field.
4. Enter `UsWcPt.WC_Code = UsNpanxx.WC_Code and UsNpanxx.ServiceType <> "EOC"` in the **where Condition** field.
5. Enter `UsWcPt.WC_Code` in the **Group by Columns** field.
6. Leave the **Order by Columns** field blank.
7. Enter `Selection` in the **into Table Named** field, as shown below:

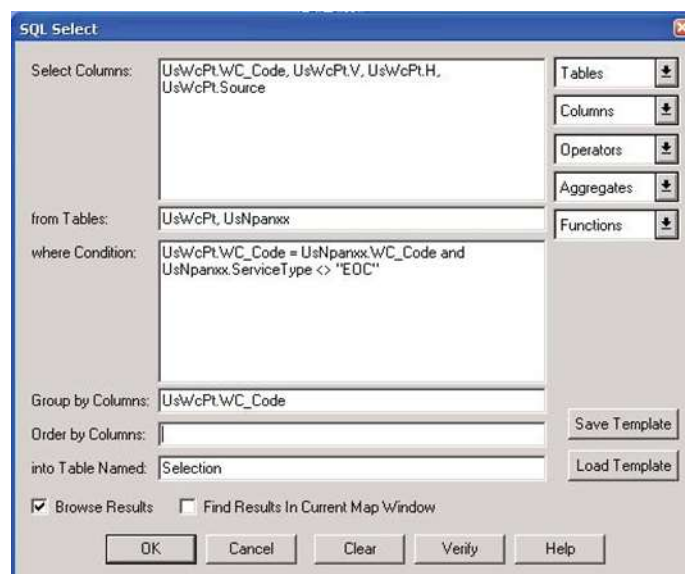


Figure 5 - Selecting central office points that serve at least one wireless NPA/NXX

8. Click **OK**.

Query results will be displayed in a browser window.

**Note:** To query Canadian data, substitute *Cn* for *Us* in the statements above.

## Selecting NPA/NXX Subsets

This section provides instructions for selecting the following subsets of NPA/NXXs:

- LEC landline NPA/NXXs
- CLEC NPA/NXXs
- Wireless NPA/NXXs

### Selecting LEC Landline NPA/NXXs

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter `UsNpanxx` in the **from Tables** field.
3. Enter `*` in the **Select Columns** field.
4. Enter `ServiceType = "EOC" and (OCNCategory = "RBOC" or OCNCategory = "ILEC")` in the **where Condition** field.
5. Leave the **Group by Columns** and **Order by Columns** fields blank.
6. Enter `Selection` in the into **Table Named** field:

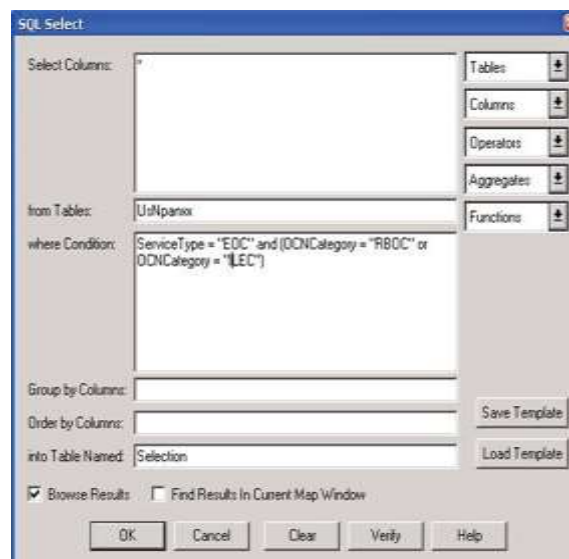


Figure 6 - Selecting LEC landline NPA/NXXs

7. Click **OK**.

Query results will be displayed in a browser window.

To query Canadian data, substitute *Cn* for *Us* in the statements above.

## Selecting CLEC NPA/NXXs

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter `UsNpanxx` in the **from Tables** field.
3. Enter `*` in the **Select Columns** field.
4. Enter `OCNCategory = "CLEC"` in the **where Condition** field.
5. Leave the **Group by Columns** and **Order by Columns** fields blank.

6. Enter `Selection` in the **into Table Named** field:

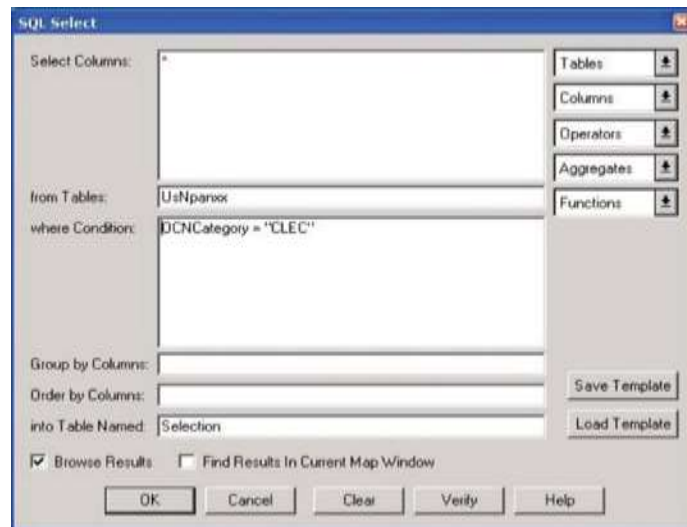


Figure 7 - Selecting CLEC NPA/NXXs

7. Click **OK**.

Query results will be displayed in a browser window.

To query Canadian data, substitute *Cn* for *Us* in the statements above.

### Selecting Wireless NPA/NXXs

1. Click **Query** > **SQL Select** to open the SQL Select dialog.
2. Enter `UsNpanxx` in the **from Tables** field.
3. Enter `*` in the **Select Columns** field.
4. Enter `ServiceType = "EOC"` in the **where Condition** field.
5. Leave the **Group by Columns** and **Order by Columns** fields blank.
6. Enter `Selection` in the **into Table Named** field, as shown on the following page:

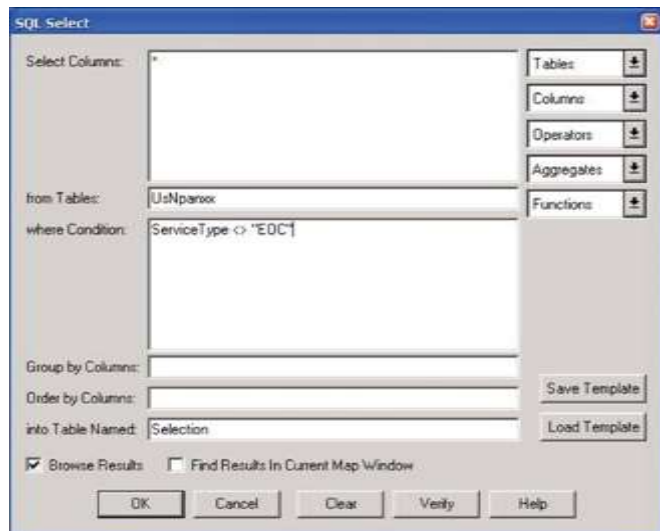


Figure 8 - Selecting wireless NPA/NXXs

7. Click **OK**.

Query results will be displayed in a browser window.

To query Canadian data, substitute *Cn* for *Us* in the statements above.

### Selecting NPA/NXXs that Have Line Range Splits

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter `UsNpanxx` in the **from Tables** field.
3. Enter `*` in the **Select Columns** field.
4. Enter `StartRange <> "0000" or EndRange <> "9999"` in the **where Condition** field.
5. Leave the **Group by Column** and **Order by Column** fields blank.
6. Enter `Selection` in the **into Table Named** field, as shown on the following page:

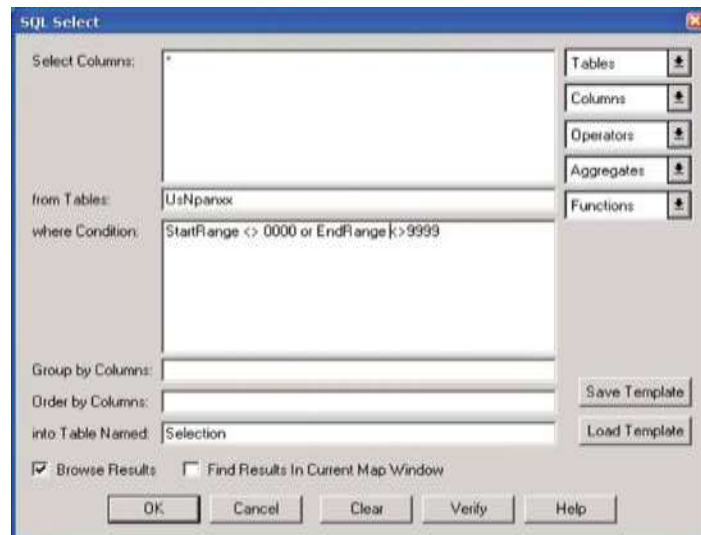


Figure 9 - Selecting NPA/NXXs that have line range splits

7. Click **OK**.

Query results will be displayed in a browser window.

To query Canadian data, substitute *Cn* for *Us* in the statements above.

## Selecting All Boundaries for a Local Exchange Carrier

The query to select wire center boundaries for a particular local exchange carrier (LEC) can be based on either the company name or the operating company number (OCN). Both methods are detailed below.

### Selecting Boundaries by Company Name

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter `UsWcReg, UsNpanxx` in the **from Tables** field.
3. Enter `*` in **Select Columns** field.
4. Enter `UsWcReg.WC_Code = UsNpanxx.WC_Code and UsNpanxx.CompanyName = "company_name"` in the **where Condition** field. (**Note:** Replace "company\_name" with the actual name of the company, surrounded by double quotes.)
5. Leave the **Group by Columns** and **Order by Columns** fields blank.
6. Enter `Selection` in the **into Table Named** field, as shown on the following page:

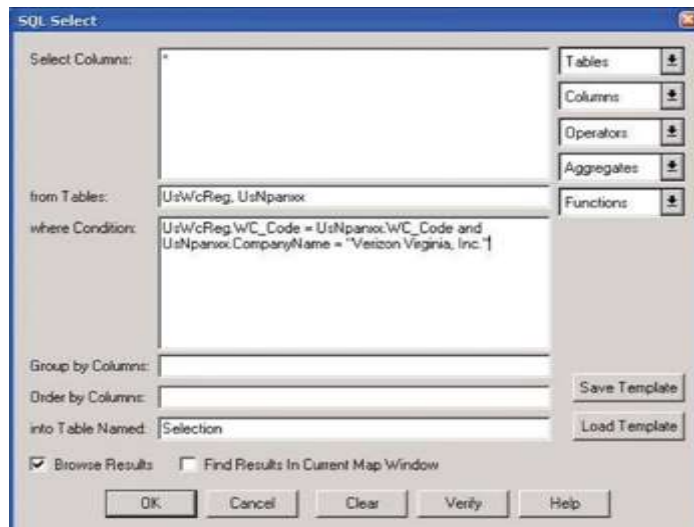


Figure 10 - Selecting LEC boundaries by company name

7. Click **OK**.

Query results will be displayed in a browser window.

To query Canadian data, substitute *Cn* for *Us* in the statements above.

### Selecting Boundaries by Operating Company Number

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter `UsWcReg, UsNpanxx` in the **from Tables** field.
3. Enter `*` in the **Select Columns** field.
4. Enter `UsWcReg.WC_Code = UsNpanxx.WC_Code and UsNpanxx.OCN = "####"` in the **where Condition** field. (**Note:** Be sure to replace "####" with the actual OCN on which you're querying, surrounded by double quotes.)
5. Leave the **Group by Columns** and **Order by Columns** fields blank.
6. Enter `Selection` in the **into Table Named** field, as shown on the following page:



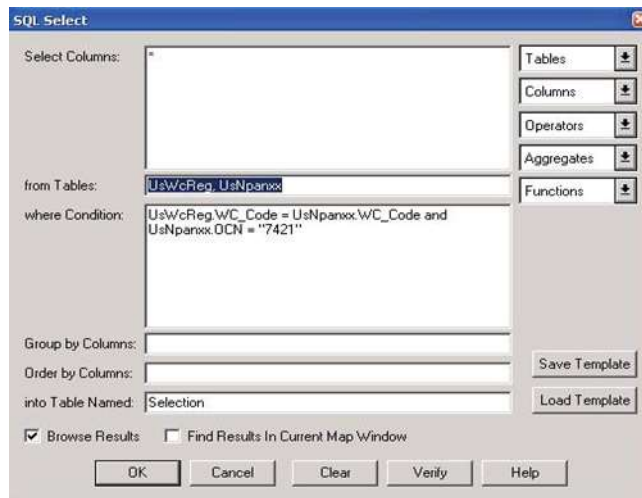


Figure 11 - Selecting LEC boundaries by OCN

7. Click **OK**.

Query results will be displayed in a browser window.

To query Canadian data, substitute *Cn* for *Us* in the statements above.

## Determining Service Wire Center Codes for a Customer Location Database

**Note:** The following example assumes that customer locations are stored in a MapInfo Pro point table named **Addresses**, and that this table contains a column called **WC\_Code** into which wire center codes will be written.

1. Click **Table > Update Column** to open the **Update Column** dialog:

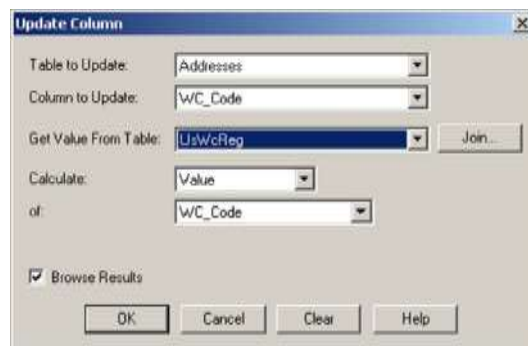


Figure 12 - Update Column dialog

2. Select the **Addresses** table from the **Table to Update** drop-down.

3. Select **UsWcReg** from the **Get Value from Table** drop-down.

4. Select **Value** from the **Calculate** drop-down.

5. Select **WC\_Code** from the **of** drop-down.
6. Select **WC Code** from the **Column to Update** drop-down.
7. Click the **Join** button. This displays the **Specify Join** dialog:



Figure 13 - **Specify Join** dialog

8. Check the **where object from table UsWcReg** radio button.
9. Select **contains** from the **object from table Addresses** drop-down.
10. Click **OK**. This returns you to the **Update Column** dialog.
11. Click **OK** in the **Update Column** dialog.

The **Addresses** table mentioned at the beginning of this subsection now contains the wire center cores that serve your customer locations. Wire center codes are displayed in the **Addresses.WC\_Code** field.

## Building Wire Center Boundaries for a State/Province

There are two methods for building a wire center layer for a particular state or province:

- Finding wire center boundaries for all central offices in a state/province
- Finding wire center boundaries serving all NPA/NXXs in a state or province

Both methods are described in this section.

### Finding Wire Center Boundaries for Central Offices within a State/Province

1. Click **Query** > **SQL Select** to open the **SQL Select** dialog.
2. Enter **UsWcReg** in the **from Tables** field.
3. Enter **\*** in the **Select Columns** field.
4. Enter **Mid\$(WC\_Code, 5, 2) = "XX"** in the **where Conditions** field, replacing "XX" with the two-letter state or province abbreviation, surrounded by double quotes.
5. Leave the **Group by Columns** and **Order by Columns** fields blank.

6. Enter `XXWcReg` in the **into Table Named** field, replacing XX with the two-letter state/province abbreviation:

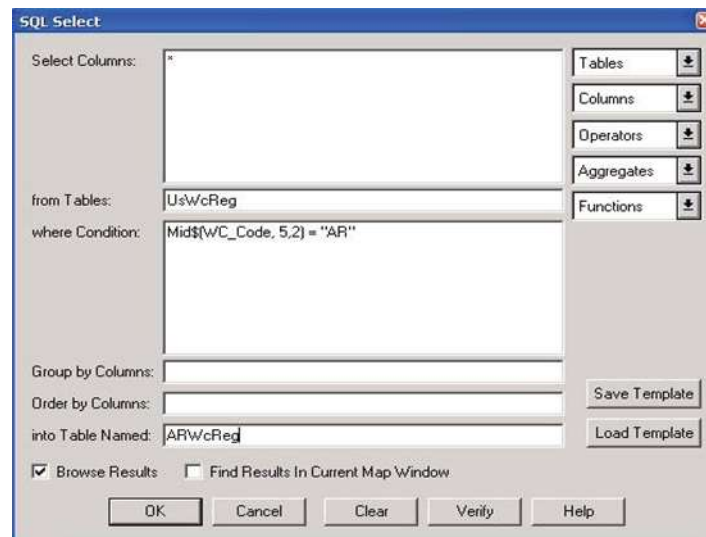


Figure 14 - Finding wire center boundaries for central offices in a given state/province

7. Click **OK**. Query results are displayed in a browser window.
8. To save a copy of the wire center boundaries for the state or province, click **File > Save Copy As ...**

### Finding Wire Center Boundaries Serving All NPA/NXXs in a State/Province

1. Click **Query > SQL Select** to open the **SQL Select** dialog.
2. Enter `XxNpanxx` in the **from Tables** field. Substitute `Us` for `Xx` if finding wire center boundaries for a state or `Cn` if finding them for a province.
3. Enter `*` in the **Select Columns** field.
4. Enter `State = "YY"` in the **where Condition** field, substituting the two-letter state or province abbreviation, enclosed in double quotes, for "YY".
5. Enter `WC_Code` in the **Group by Columns** field.
6. Leave the **Order by Columns** field blank.
7. Enter `YY_WC_Codes` in the **into Table Named** field, replacing YY with the two-letter state or province abbreviation:

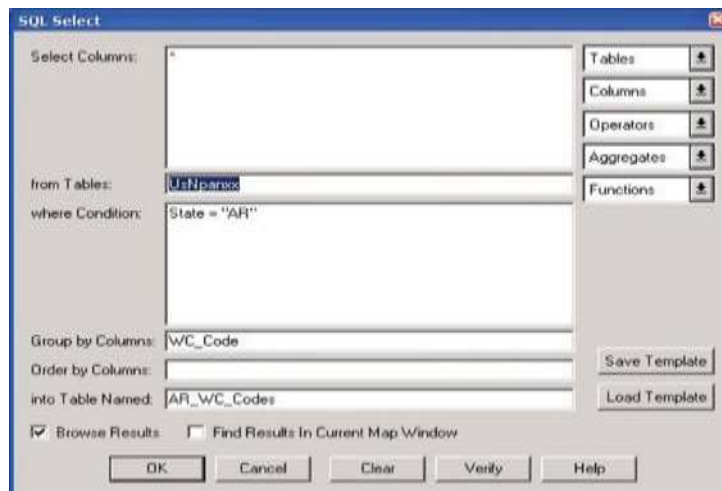


Figure 15 - Query for building state/province wire center codes table

8. Click **OK**. Query results are displayed in a browser window.
9. Save a copy of the **YY\_WC\_Codes** table by clicking **File > Save Copy As ...**, replacing YY with the two-letter state/province abbreviation.
10. Click **File > Open Table** and open the wire center codes table you just created.
11. Open the **SQL Select** dialog again by clicking **Query > SQL Select**.
12. Enter **XxWcReg, YY\_WC\_Codes** in the **from Tables** field, replacing Xx with *Us* for a state or *Cn* for a province, and YY with the two-letter state/province abbreviation.
13. Enter **XxWcReg.WC\_Code** in the **Select Columns** field, replacing Xx with *Us* for a state or *Cn* for a province.
14. Enter **XxWcReg.WC\_Code = YY\_WC\_Codes.WC\_Code** in the **where Condition** field. Substitute *Us* for Xx for a state or *Cn* for a province, and the two-letter state/province abbreviation for YY.
15. Leave the **Group by Columns** and **Order by Columns** fields blank.
16. Enter **YYWcReg** in the **into Table** field, replacing YY with the two-letter state or province abbreviation:

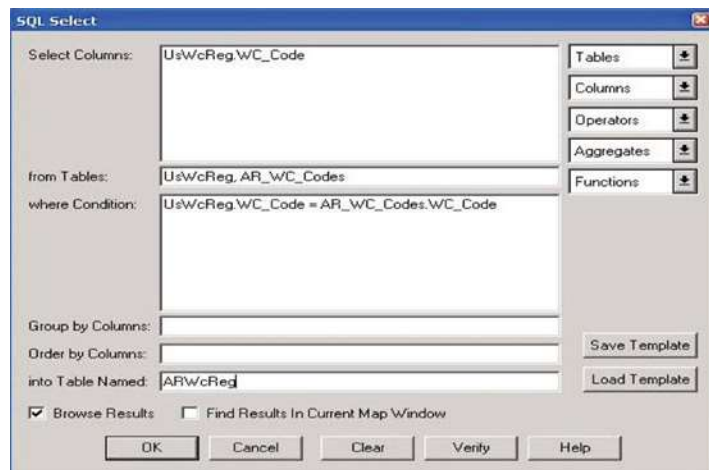


Figure 16 - Finding wire center boundaries for all NPA/NXXs in a state/province

17. Click **OK**. Query results are displayed in a browser window.

18. Save a copy of **YYWCReg** by clicking **File > Save As Copy ...**

## Geocoding a Database of Phone Numbers Using Central Office Points

This section outlines the process for using ExchangeInfoPlus to geocode a database that has a phone number field. Once finished, a map can be produced for each record in the source file. Mapped locations are based on the location of the central office point serving the NPA/NXX for a given number.

### Notes:

- The following example uses an input file named **Customers.tab**, which contains the fields **Name** and **Phone**. The **Phone** field is formatted as NPA-NXX-XXXX, including dashes. The queries below need to be modified if the phone number field in your input file is formatted differently.
- The queries below will also need to be modified to reflect the field names used in your input file.
- To geocode Canadian addresses, substitute *Cn* for *Us* in the queries below.

1. Click **File > Open Table** to open the input file in MapInfo Pro.

Name	Phone
<input type="checkbox"/> Jones	870-544-0234
<input type="checkbox"/> Smith	501-827-1234
<input type="checkbox"/> Johnson	870-854-1234
<input type="checkbox"/> Baker	501-276-1234
<input type="checkbox"/> Adams	870-547-6234

Figure 17 - Sample geocoding input file

2. Click **Query > SQL Select** to open the **SQL Select** dialog.

3. Enter **Customers** in the **from Tables** field.

4. Enter the following in the **Select Columns** field:  
`Name, Phone, Left$(Phone, 3) "NPA", Mid$(Phone, 5, 3) "NXX", Right$(Phone, 4) "Block"`
5. Leave the **where Condition**, **Group by Columns**, and **Order by Columns** fields blank.
6. Enter `TempCustomers` in the **into Table Named** field, as shown below:

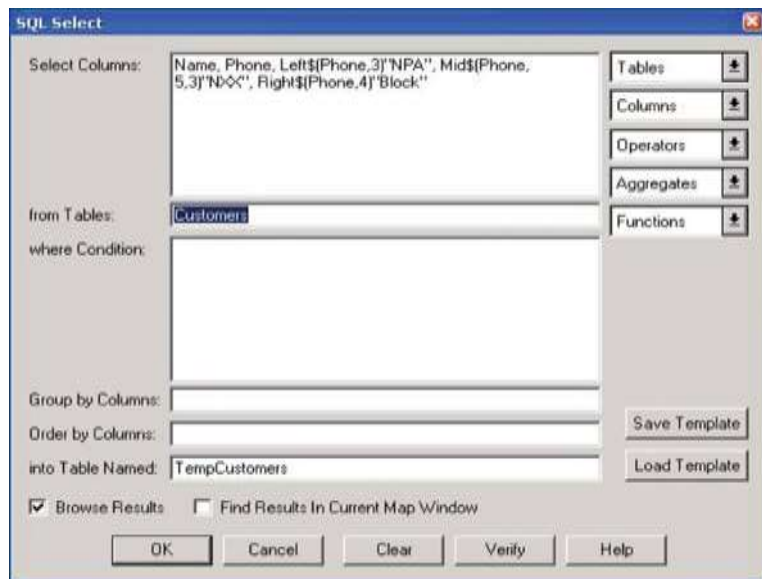


Figure 18 - Creating table for geocoding phone numbers using central office points

7. Click **OK**. Query results will be displayed in a browser window.
8. Save a copy of the **TempCustomers** table by clicking **File > Save Copy As ...**
9. Click **File > Open Table** and open `TempCustomers.tab`.
10. Open the **SQL Select** dialog again by clicking **Query > SQL Select**.
11. Enter `TempCustomers, UsNpanxx, UsWcPt` in the **from Tables** field.
12. Enter `TempCustomers.Name, TempCustomers.Phone` in the **Select Columns** field.
13. Enter the following condition in the **where Condition** field: `TempCustomers.NPA = UsNpanxx.NPA and TempCustomers.NXX = UsNpanxx.NXX and TempCustomers.Block >= UsNpanxx.StartRange and TempCustomers.Block <= UsNpanxx.EndRange and UsNpanxx.WC_Code = UsWcPt.WC_Code`
14. Leave the **Group by Columns** and **Order by Columns** fields blank.
15. Enter `CustomerMap` in the **into Table Named** field, as shown on the following page:

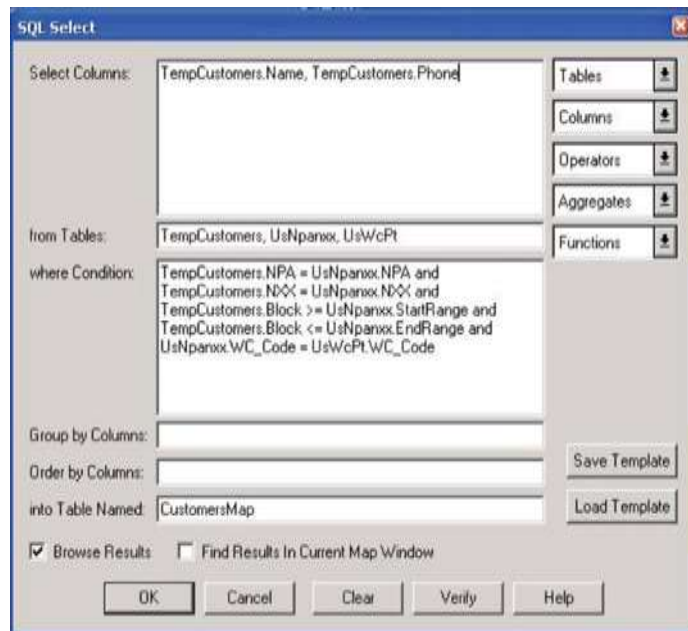


Figure 19 - Geocoding phone numbers using central office points

16. Click **OK**. Query results will display in a browser window.
17. Save a copy of **CustomerMap** by clicking **File** > **Save Copy As ...**
18. Delete the **TempCustomers** table by clicking **Table** > **Maintenance** > **Delete Table ...**

**CustomerMap.tab** contains your original data plus a geocoded point for each record in the database.

# Acronyms

This section lists the acronyms used in Precisely's telecommunications data products. Definitions of these terms are found in the [Glossary](#) section of this product guide.

**AHJ:** Authority Having Jurisdiction

**ALI:** Automatic Location Identification

**ANI:** Automatic Number Identification

**CLEC:** Competitive Local Exchange Carrier

**CLLI:** Common Language Location Identifier; Wire Center Code

**CO:** Central Office

**CRTC:** Canadian Radio-television and Telecommunications Commission

**E9-1-1:** Enhanced 9-1-1

**ESRD:** Emergency Services Routing Digit

**ESRK:** Emergency Services Routing Key

**FCC:** Federal Communications Commission

**FIPS:** Federal Information Processing Standard [codes]

**GIS:** Geographic Information System

**ILEC:** Incumbent Local Exchange Carrier

**LATA:** Local Access Transport Area

**LEC:** Local Exchange Carrier

**MSAG:** Master Street Address Guide

**NPA:** Numbering Plan Area; area code

**NXX:** Prefix

**OCN:** Operating Company Number

**PCS:** Personal Communications Services



**PSAP:** Public Safety Answering Point

**PRCD:** Province Code and Census Division [code]

**PSTN:** Public Switched Telephone Network

**RBOC:** Regional Bell Operating Company

**SQL:** Structured Query Language

**V&H:** Vertical and Horizontal [grid coordinates]

**VoIP:** Voice over Internet Protocol

# Glossary

This section lists and defines terms used throughout this document and in Precisely's telecommunications data products.

**9-1-1 Service Area:** The geographic area that has been granted by a state or local governmental body to provide 9-1-1 service.

**9-1-1 System:** The set of network, database, and CPE (Customer Premises Equipment) components required to provide 9-1-1 service.

**Area Code:** Also referred to as a Numbering Plan Area or NPA, the area code is a three-digit code designating a “toll” center in the United States or Canada. The first three digits of a telephone number (usually shown in parentheses) are the area code. For example, in the telephone number (412) 372-2399, the area code is 412.

**Automatic Location Identification (ALI):** The automatic display at the PSAP of the caller’s telephone number, the address/location of the telephone, and supplementary emergency services information.

**Automatic Number Identifier (ANI):** The telephone number associated with the access line from which a call originates.

**Backup Public Safety Answering Point:** Typically, a disaster recover answering point that serves as a backup to the primary PSAP and is not co-located with the primary PSAP. PSAP Pro does not contain Backup PSAPs.

**Basic 9-1-1:** An emergency telephone system that automatically connects 9-1-1 callers to a designated answering point. Call routing is determined by originating central office only. Basic 9-1-1 may or may not support ANI and/or ALI.

**Call Routing:** The capability to selectively route the 9-1-1 call to the appropriate PSAP.

**Cellular:** The cellular radiotelephone service is a mobile radiotelephone service in which common carriers are authorized to offer and provide mobile telecommunications service for hire to the general public, using cellular systems. Cellular systems in the United States operate in 824-894 MHz frequency band and have 30 kHz channel spacing.

**Central Office (CO):** A telephone company facility where a subscriber’s lines are joined to the switching equipment. This connects subscribers to each other for local and long distance service. The CO actually delivers the dial tone to the subscriber’s phone equipment. Each CO is assigned to a unique 11-character CLLI Code.

**Common Language Location Identifier (CLLI Code):** Pronounced *silly code*, this is a code used to locate Wire Centers and switches. A wire center is assigned an 8-character CLLI Code; switches connected to a specific Wire Center are assigned an 11-character CLLI Code, the first 8 characters of which are the CLLI Code of the Wire Center.

**Competitive Local Exchange Carrier (CLEC):** A Competitive Local Exchange Carrier (CLEC) provides alternate service in areas served by either an RBOC or ILEC. CLECs are not required to provide service to all locations within their service territory and can decline to offer service to particular regions or consumers.

**E9-1-1:** The wireless Enhanced 9-1-1 (E9-1-1) rules seek to improve the effectiveness and reliability of wireless 9-1-1 service by providing 9-1-1 dispatchers with additional information on wireless 9-1-1 calls. The wireless E9-1-1 program is divided into two parts: Phase I and Phase II. Phase I requires carriers, upon valid request by a local Public Safety Answering Point (PSAP), to report the telephone number of a wireless 9-1-1 caller and the location of the antenna that received the call. Phase II requires wireless carriers to provide far more precise location information, within 50 to 300 meters in most cases. The deployment of E9-1-1 requires the development of new technologies and upgrades to local 9-1-1 PSAPs, as well as coordination among local public safety agencies, wireless carriers, technology vendors, equipment manufacturers, and local wireline carriers.

**Emergency Services Routing Digit (ESRD):** Either a 10-digit North American Numbering Plan or non-NANPA number that uniquely identifies a base station, cell site, or sector that is used to route wireless emergency calls through the network. The ESRD may also be used to retrieve ALI data associated with the call. These numbers can be dialable or non-dialable over the PSTN. PSPA Pro does not contain ESRDs.

**Emergency Services Routing Key (ESRK):** Either a 10-digit North American Numbering Plan or non-NANPA number that uniquely identifies a wireless emergency call. It is used to route the call through the network and retrieve associated ALI data. These numbers can be dialable or non-dialable over the PSTN. PSAP Pro does not contain ESRKs.

**Exchange Area:** The geographic area in which telephone prices and services are the same. The concept of an Exchange is based on geography and regulation, not equipment. An Exchange might have one or more central offices and Wire Centers. A subscriber in the Exchange Area could get service from any of the central offices within the Exchange Area.

**FCC Registry:** Information regarding PSAP ID, PSAP Name, and PSAP County can be obtained from the FCC's Master PSAP Registry. PSAP Pro provides the related FCC PSAP ID for each PSAP in the US for which this information can be ascertained.

**Federal Communications Commission (FCC):** The 9-1-1 Act directs the FCC to make 9-1-1 the universal emergency number in the United States for all telephone services, both wireline and wireless. Under FCC rules implementing the 9-1-1 Act, telephone companies and public safety organizations were expected to largely complete the transition to the use of 9-1-1 as the national emergency number by September 11, 2002. The FCC also directed telephone companies to file reports on their progress in implementing the transition to 9-1-1 under Public Notice DA 02-507. These reports are available online by searching for basic 9-1-1 carrier transition reports.

**Federal Information Processing Standards (FIPS) codes:** A standardized set of numeric or alphabetic codes issued by the National Institute of Standards and Technology (NIST) to ensure uniform identification of geographic entities throughout all US federal government agencies.

**Geographic Information System (GIS):** Computer applications, such as MapInfo Pro and CallingAreaInfo, that store and manipulate electronic maps and related data, are GIS applications.

**Inbound Local Calling Area:** All the NPA/NXX combinations (and associated geographic area) that can call in to a given NPA/NXX by using a local phone service provider.

**Incumbent Local Exchange Carrier (ILEC):** Telephone carriers that serve areas not served by RBOCs. In a given area there can be only one RBOC or ILEC offering service.

**License Area:** Geographic area (MTA, BTA, CMA) that is obtained through an FCC auction in order to provide wireless communication at a specified frequency.

**Local Access Transport Area (LATA):** The United States is divided geographically into 192 LATA regions. Local telephone companies are permitted to offer local or long distance telecommunications services within these regions.

**Local Exchange Carrier (LEC):** A local telephone company which can be either a Regional Bell Operating Company (RBOC) or an independent. Also referred to as ILECs.

**Master Street Address Guide (MSAG):** A database of street names and house number ranges within their associated communities, defining Emergency Service Zones (ESZs), along with the associated Emergency Service Numbers (ESNs) to enable proper routing of 9-1-1 calls. PSAP Pro does not contain MSAG information.

**Mobile Virtual Network Operator (MVNO):** A company that buys network capacity from a network operator to offer its own branded mobile subscriptions and value-added services.

**Numbering Plan Area (NPA):** Numbering Plan Area.

**Operating Company Number (OCN):** A number used to identify a specific telephone company.

**Operating Company Number Name (OCN Name):** The company name as shown in the Telcordia LERG database.

**Paging:** A signaling and control channel which operates on a set of frequencies separate from those used to support cellular voice communications.

**Parent Company:** Next-level-up ownership of OCN Name. This is an industry recognized company name that owns/operates multiple OCNs across the country.

**Personal Communication Services (PCS):** Broadband Personal Communications Service (PCS) is used to provide a variety of services, such as digital mobile telephones and wireless Internet access. These services are also called mobile telephone services and mobile data services. PCS operates in the 1850-1990 MHz bands.

**Prefix (NXX):** This term refers to the first three digits of a 7-digit local phone number. These first three digits refer to the number of the telephone company central office.

**Primary PSAP:** A PSAP to which 9-1-1 calls are routed directly from the 9-1-1 control office.

**Province Code and Census Division Code (PRCD):** Used in the Canadian data table to specify the Province Code and Census Division Code in which a PSAP is located. This is comparable to the **CountyFIPS** in the US data table.

**Public Safety Answering Point (PSAP):** The endpoint of an emergency services call. PSAPs are responsible for answering emergency 9-1-1 calls.

**Public Switched Telephone Network (PSTN):** The international telephone system, based on copper wires carrying analog voice data.

**Rate Center:** Rate Centers are geographic locations laid out according to telecommunications industry standards. The distance between two Rate Centers is used to calculate rates for telecommunications services between the two Rate Centers.

**Regional Bell Operating Company (RBOC):** The term given to the 11 companies that were created from the initial divestiture of AT&T in 1984. After several mergers, there are currently 4 RBOCs.

**Secondary PSAP:** A PSAP to which 9-1-1 calls are transferred from a primary PSAP.

**Selective Routing:** The routing of a 9-1-1 call to the proper PSAP based on the caller's location.

**Selective Transfer:** The capability to transfer a 9-1-1 call to a response agency by operation of one of several buttons, typically designated as police, fire, and emergency medical.

**SQL:** Structured Query Language. A powerful database language you can use to pull desired information from the CallingAreaInfo output database. By using various SQL commands, you can sort through the raw output and find the kinds of information you need for numerous applications.

**Trunk:** Typically, a communication path between central office switches, or between the 9-1-1 control office and the PSAP. PSAP Pro does not contain 9-1-1 trunks.

**V & H:** Vertical and Horizontal grid coordinates. These numbers are assigned to locate each telephone company's Central Office or Rate Center on a grid of the North American continent. Essentially, V & H are the "latitude and longitude" values of the telecom industry.

**Voice over Internet Protocol (VoIP):** VoIP is a system for providing telephone service over the Internet.

**Wire Center:** The location where a telephone company terminates local lines; this is usually the same location as a Central Office. A Wire Center might have one or more Central Offices. Because of this, the terms "Wire Center," "Central Office," and "End Office" are often used interchangeably.

**Wire Center Code (CLLI):** A unique 8-character code assigned to each Wire Center.

**Wire Center Servicing Area:** The geographic extent of an Exchange Area served by a single Wire Center.

**Wireless Carrier:** A cellular, PCS, or paging company that provides wireless voice or paging service.

# Product Feedback and Support

Contact our Support team ([software.support@precisely.com](mailto:software.support@precisely.com)) for product support and additional product information. You can also submit your innovative ideas or comment on existing submissions in a way that is visible to all participants via our Support site (<https://support.precisely.com>). This site also includes information about our complete portfolio of Data products.



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