

How to build a PRL?



By Ernesto Lazcano

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PRL was born when IS-41 based networks realized the available SID/NID pairs in handset memory were not enough to include all SID/NID pairs from own network nor those from the roaming partners.

Then a new portion of memory was created to store more SID/NID pairs.

Preferred Roaming List also known as PRL is basically a binary file loaded in that new portion of memory in every single handset that allows it to choose the best option from all networks available in the visited area according to the strategy specified by roaming business rules.

Is there a unique format for PRL?

Yes, there is.

Even though OEM define their own PRL file extension (e.g.: .prl, .bin, or .rla), it has the same content in the same file structure:

- Acquisition Table
- System Table

What information does the Acquisition Table have?

The Acquisition Table has two main parts:

- Type of network
- Channels for finding

This table defines the kind of network (AMPS, TDMA, CDMA) and the channels where carriers are tuned

What information does the System Table have?

The System Table has the backbone of PRL, it contents:

- SID/NID pairs
- If service is allowed or denied for the pair
- If the pair is either a part of the same geographical area or a new one
- The priority to get service regarding the rest of available networks
- The state of roaming indicator for customer

How does PRL work?

PRL works sequentially, i.e. it looks for the network allowed starting from the top and finishing at bottom of the list; in the same way that a teacher checks attendance in classroom.

There is no optimal PRL, it is a file that suffers many modifications due to coverage growth in roaming partner networks and new roaming agreements.

Furthermore, there must be close coordination among people responsible for roaming to maintain information updated and reliable through the Technical Data Sheet (TDS).

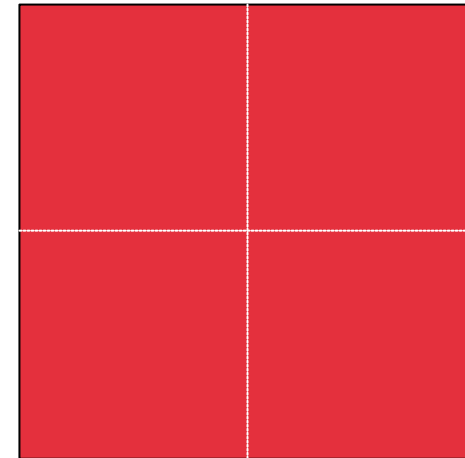
According to Iusacell experience, there are some items to consider in PRL construction:

- Own network architecture
- Internal roaming policy
- Main roaming markets in the same country
- Roaming agreements with more than one roaming partner in the same geographical area
- Roaming customer behavior

How to build a PRL?

A basic rule for designing is to have a high level view of the project.

A useful figure to decide the way to sweep geographical areas is the square divided in four quadrants.

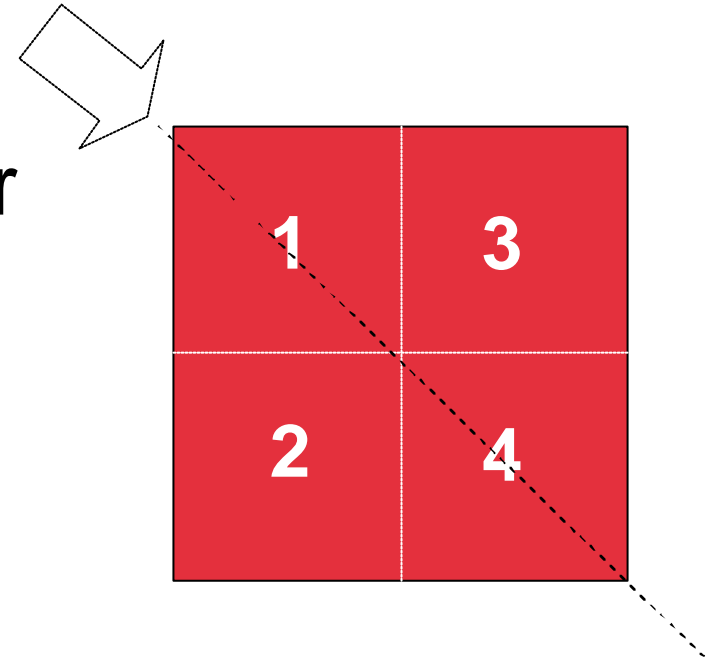


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Now we have our big geographical area, now we will apply a firefighter technique to sweep it.

We have two options:

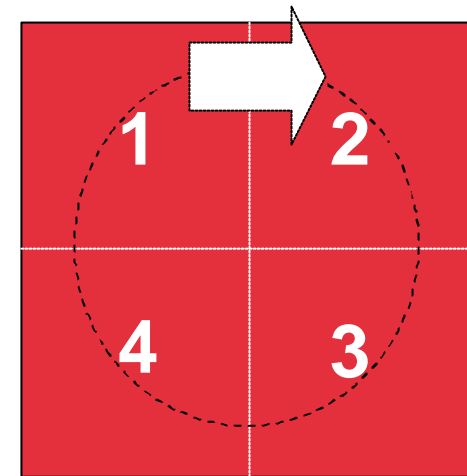
- 1.- Linear, starting in one corner and finishing in the opposite one



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2.- Spiral or Circular, starting in one corner and finishing in an adjacent quadrant.

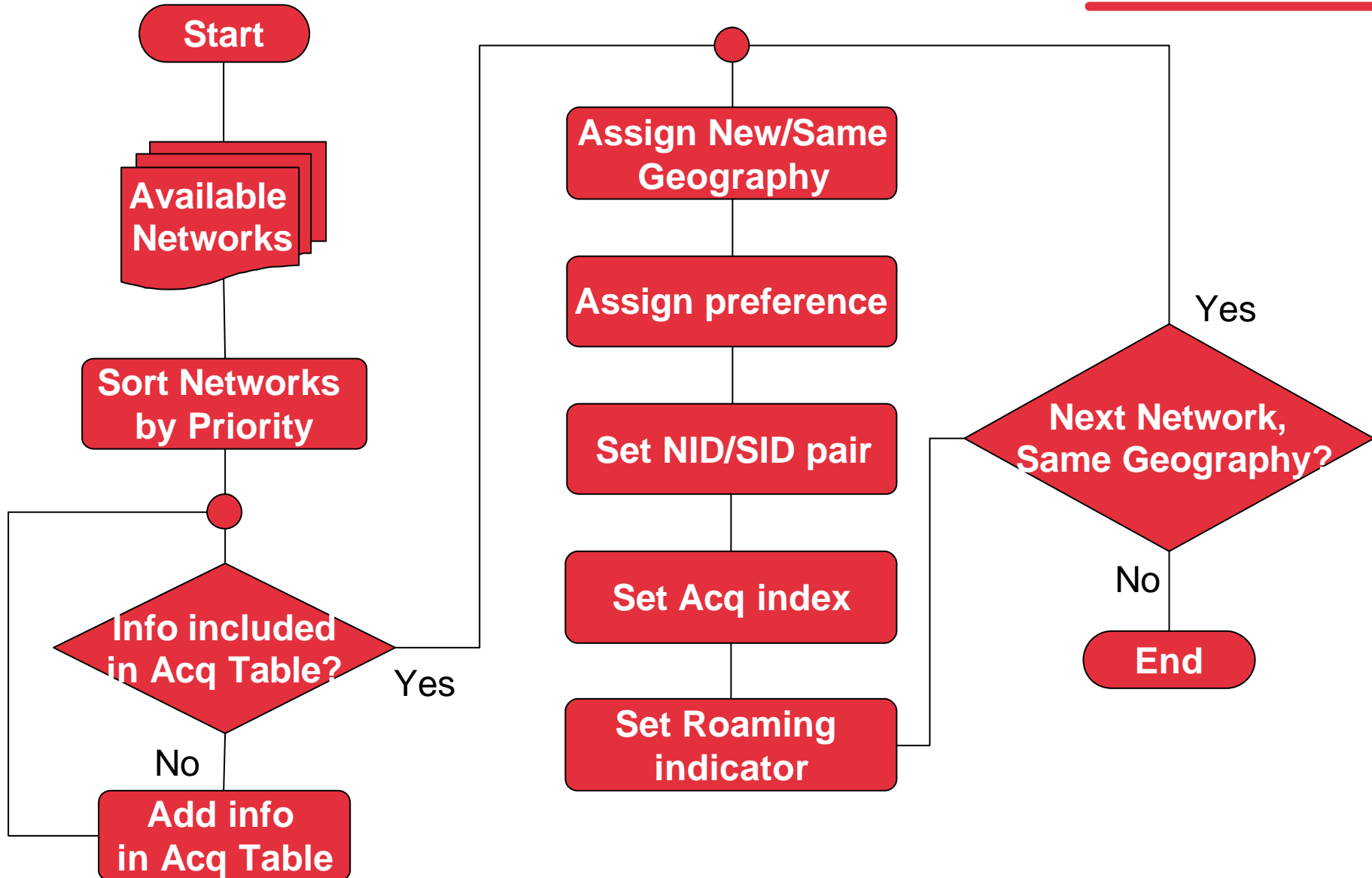
In both techniques we are trying to assure we are covering the whole geographical area.



Once we have the way to sweep geographical areas, now we have to sort row by row the information from each network available in the “quadrant”.

The following flowchart can help to cover necessary information to either add or update new rows in PRL, it applies for each quadrant or geographical area:

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Depending on the PRL editor to be utilized for building the file, the order to edit parameters can change, however, we recommend to sort TDS information as follow:

1. Separate in Groups by Geographical Area
2. Sort by Priority
3. Set Acquisition Information considering all particularities for each carrier
4. Set all parameters in rows of the System Table

Finally, a couple of tips:

1. Always update the ID number of the PRL each time it is updated
2. Before editing a binary file, design a draft of it using Excel™ that allows you to include more useful information for better management, such as names of regions, cities or countries, and the causes of changes.



Thanks

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