# Methodology for creating the IP table

## Sources

From the ARIN website (<https://whois.arin.net/rest/asn/AS14593>), we know that the Autonomous System (AS) number of SpaceX is AS14593, so we can base our research on the IPv4 and IPv6 address belonging to this AS. Here are the two different sources from which data were taken:

* <https://whois.ipip.net/AS14593>
* <https://ipinfo.io/AS14593>

For each of the range present in this database, once you click on it, you have access to various information, including a whois record. Usually most information are available from this record (NetName, Continent, Country,…) but sometimes it can be obtained otherwise. Analysing the Netname can give information mostly on the location, and you can use the map on whois.ipip.net which indicates location of certain range of IP (however the source of this information is unknown.

## Creation of the table

To create this table, we start by looking at the list of each IP address. For each range of IP address in th original sources, we click on it and access the whois record. Here is a sample of the first few lines of the table, for which we will describe the utility

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| IPv4 | | | | | |
| City | Country | Continent | Address | NetName | Range utility |
| Frankfurt | Germany | Europe | 169.155.224.0/21 | STARLINK\_10795\_FRNTDEU1\_IPV4 |  |
| Olso | Norway | Europe | 91.102.182.0/23 | STARLINK\_9704\_FRNTDEU1\_IPV4 |  |
| Zurich | Switzerland | Europe | 169.155.232.0/21 | STARLINK\_10803\_FRNTDEU1\_IPV4 |  |
| Brussels | Belgium | Europe | 169.155.240.0/22 | STARLINK\_10811\_FRNTDEU1\_IPV4 |  |
|  | Virgin Islands | North America | 98.97.76.0/25 | STARLINK-6110-VI-ATLAGAX1-IPV4 |  |
| Lagos | Nigeria | Africa | 102.215.56.0/23 | STARLINK\_10449\_LGOSNGA1\_IPV4 |  |
| Tokyo | Japan | Asia | 170.203.83.0/25 | STARLINK-8544-XX-TKYOJPN1-IPV4 |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Dallas | USA | North America | 2605:59C8:4000::/40 | STARLINK-6735-US-DLLSTXX1-IPV6 |  |

First, we look at the NetName work sort of as identifier for each IP range. It usually start with “STARLINK-“, followed by an 4 or 5 number ID which is unique to every IP range. After that, in most cases, we have the two letter itentifier of the country for the issued range but you can also have the presence of POP (Point of Presence), XX (maybe inter-continental link) or MC (Multi Carrier). Then there is an identification code for every city in which starlink has a POP/Gateway, for example London becomes LNDNGBR, New York NWYYNYX,… Here are few examples to understand various types of NetName :

* STARLINK-6110-VI-ATLAGAX1-IPV4 : Virgin Island IP address, closest to the POP of Atlanta in Georgia
* STARLINK-6735-US-DLLSTXX1-IPV6: Dallas, Texas, USA in IPv6
* STARLINK\_10449\_LGOSNGA1\_IPV4 : Lagos, Nigerie in Africa
* STARLINK-8544-XX-TKYOJPN1-IPV4 : Tokyo, Japan in Asia

Second we added the address range such as indicated into the whois record, that is, using the “/” IPv4/v6 present in the record.

Third, we were able to fill the City/Country/Continent column. The city was indicated in two way, either from the NetName (such as LNDN for London), or from the map in whois.ipip.net that indicate a somewhat precise location for certain IP range. The Continent was derived from the country as this is easy to guess. Record without city means that we were not sur of which country it was based at by just have the country and no indication on the map. If the country code was set to XX, then the country wasn’t filled. If the NetName had MC or POP instead of the country code, the continent wasn’t set but the country was set to the one present in the whois record.

To made it more clear, we’ve classify (colored) entries in the table based on their NetNames (and other fields) property. Here is the classification that can be seen in the table :

* Green : These are for the direct range of the PoP
* Blue : These are range that have been assigned to another geographical area, while still having their closest PoP in NetNames
* Yellow : These are for the range having “XX” set as country
* Orange : These are for the range distributed by the PoP around his geographical area.
* Pink : These are for the range having the Multi-Carrier tag in their NetNames

An example could be the Belgian case, 169.155.240.0/23 is the IP with a NetName corresponding to “STARLINK\_10811\_FRNTDEU1\_IPV4”. It could be guessed that it belongs to the PoP in Frankfurt, however in the whois the country is set as “BE” (for Belgium) and if we take a look at the location on the map, the range belongs to Brussel. We can then guess that

The range utility content hasn’t been set yet, but will be used in the future for noting comment on certain range and what could be their specific purpose if they have one.

This process of analysing the record was repeated for every range as certain case are verry special. IPv6 was also model, even thought it contains way less range, since range are much bigger themselves. Some of the range have not been added since the whois record didn’t hold any relevent information that could help at the identification of a range.

## Future improvement

An improvement to this table could be to fill every column, but that would require additional information on every range as well as information obout the utility of every range. That is expected to come as I move forward in my research.

It is also possible (case seen for IPv6 address in Australia) that some range are not present in the original sources, that will be added as time goes on and as I make more discovery.

The expected output is to have a comprehensive table that indicate the location, utility and NetName for a specific IP range.