VoIP Traffic Capture and IP Geolocation Mapping

This repository contains a Python script for capturing VoIP traffic, retrieving geolocation data for IP addresses involved in the traffic, and an HTML/JavaScript file to visualize this data on a map.

Overview

- **Python Script (`capture_voip.py`)**: Captures VoIP traffic, extracts IP addresses, retrieves geolocation data using IPinfo, and saves the results to a JSON file.
- **HTML/JavaScript (`map_visualization.html`)**: Displays the IP addresses on a Google Map using the geolocation data saved in the JSON file.

Prerequisites

1. **Python 3.x**: Ensure Python is installed on your system.
2. **Python Libraries**: `pyshark`, `ipinfo`
3. **Google Maps API Key**: Required for the HTML file to display maps.

Installation

Python Dependencies

1. Install the required Python libraries:

```
pip install pyshark ipinfo
```

2. Obtain an IPinfo API token by signing up at IPinfo.io and replace `'your_ipinfo_access_token_here'` in `capture_voip.py` with your token.

Google Maps API Key

1. Obtain a Google Maps API key from Google Cloud Console.

2. Replace `YOUR_GOOGLE_MAPS_API_KEY` in `map_visualization.html` with your actual API key.

Usage

Running the Python Script

1. Save the Python code as `capture_voip.py`.
2. Run the script to start capturing VoIP packets and saving geolocation data:

```
python capture_voip.py
```

   - The script will continuously capture VoIP traffic on the specified network interface (replace `'en0'` with your network interface if different) and save geolocation data to `geolocation_data.json`.

Serving the HTML and JSON Files

1. Ensure `geolocation_data.json` and `map_visualization.html` are in the same directory.
2. Use a simple HTTP server to serve the files:

```
python -m http.server 8000
```

3. Open a web browser and navigate to `http://localhost:8000/map_visualization.html` to view the map with the geolocation data.

Notes

- **Network Interface**: The default network interface in the script is set to `'en0'` for macOS. Adjust this to match your network interface if necessary.
- **Legal and Ethical Use**: Ensure you have the necessary permissions and are compliant with all legal and ethical guidelines when capturing and analyzing network traffic.