KEEPING ROAD TRAFFIC FLOW SAFE AND CONNECTED

HIGHLIGHTS

- The Pereira Mobility Institute is a Colombian governmental Institute that's responsible for supervising the Pereira municipality region and integrating mobility improvements that adhere to national laws with one of the focuses of the Institute being traffic control.
- The Institute got a request to implement a cohesive traffic light system for the capital city of Pereira, which would enable remote monitoring and control. However, that's only half of the request. It also needed to ensure the entire system is safe and immune to cyberattacks.
- For this solution, it chose the trio of our RUT241, RUTX11, and Open VPN, which enabled robust and uninterrupted network connectivity for seamless M2M communication with great security as a cherry on top.

THE CHALLENGE – THE CHAOS OF TRAFFIC

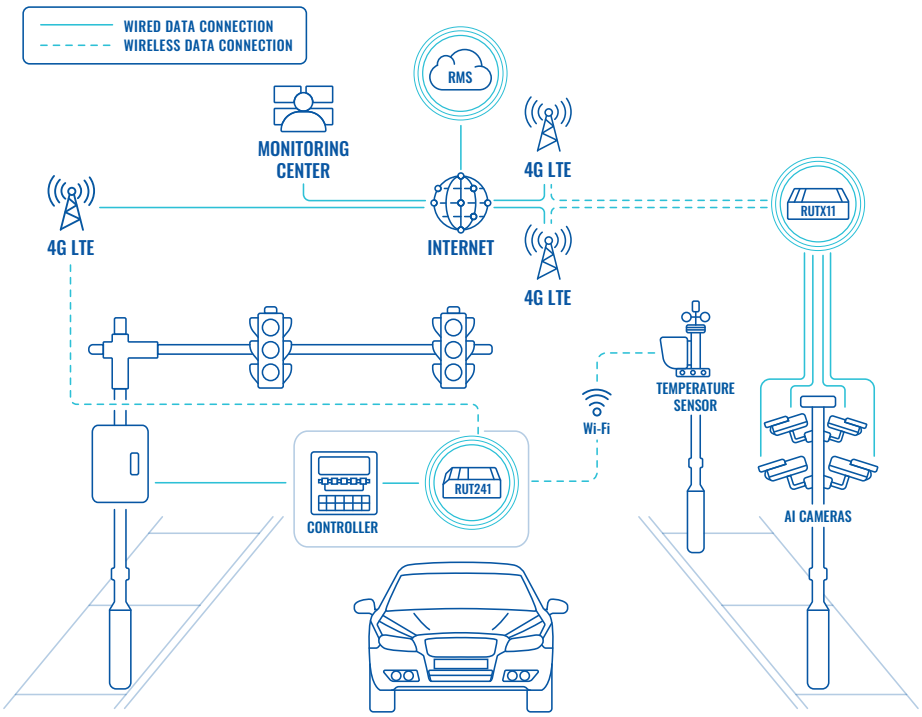
It's a well-known fact that people are sluggish by nature (it's not an accusation, it's a simple truth!). Pedestrians, cyclists, and drivers have one thing in common: they want to get from point A to point B quickly, safely, and without thinking too much. That's why the streets, especially intersections, need an extra helping hand to keep the roads running smoothly. Otherwise, traffic becomes chaotic very quickly. In such cases, traffic lights are the irreplaceable helping hand. But they're not just a simple solution that switches lights between green and red; the reality behind them is far more complex. The need for compromises between construction costs, setting traffic light cycle times, and counts of traffic volumes are only half of the concern. It's also essential to take into account the maintenance and operational performance that is required for them to run without skipping a beat.

Usually, such solutions consist of many traffic lights spread around a multitude of streets across all types of cities, and they need to be supervised at all times. Since there are so many of them, they can't be configured and continuously checked on by dedicated engineers manually, as it's very costly, time-consuming, and inefficient. Importantly, it's now common to see traffic lights having AI cameras attached to them. These cameras need robust network connectivity for continuous data transmission to the monitoring centers in order to track traffic status and take appropriate action in case of an accident.

And that's not all...

One more concern is security. Hacked traffic lights can cause tremendous chaos in the streets, monetary loss, and even endanger lives. The entire solution must be invulnerable to cyberattacks from hackers who are always looking for system vulnerabilities to exploit.

TOPOLOGY



THE SOLUTION – GREEN LIGHT FOR IoT

This was a constant issue for the city of Pereira, but thanks to our partner – Instituto de Movilidad de Pereira, that is no longer the case. It utilized our RUT241 and RUTX11 cellular routers as well as our Remote Management Service (RMS) to craft a solution that exceeded all expectations.

Providing 75 traffic lights with robust network connectivity is our RUT241 router. With its 4G Cat 4 support, RUT241 enabled the traffic light system's data transmission to the monitoring center, allowing supervisors to check the status of each traffic light and take corrective measures if any malfunction occurred. RUT241 is also equipped with Wi-Fi support, which is an essential feature for traffic lights with integrated temperature and humidity sensors. This allows the data collected by these sensors to be transmitted wirelessly to the monitoring center too.

The solution also has 5 AI-enhanced cameras attached to street lights in critical locations for vehicle and pedestrian recognition. The job to provide them with network connectivity was assigned to our RUTX11 cellular router. With cellular speeds of up to 300 Mbps and a carrier aggregation feature, RUTX11 supports continuous live footage of these critical locations and sends it over to the monitoring center, where data like traffic volume, vehicle license plates, and pedestrian behavior is attained. Such information helps the government of Pereira ensure their residents are safe, and in the event of any accidents, the collected footage could serve as incontrovertible evidence.

To make the solution invulnerable to cyberattacks, our client used Open VPN services to create a VPN tunnel for M2M communication, ensuring a secure connection from over 70 routers to the monitoring room. This is key for the entire solution, as it's critical to keep the surveillance information (usually consisting of sensitive and personal data) safe from leaks and cyberattacks. Establishing smooth and uninterrupted monitoring and control capabilities for a city's traffic lights system is one thing. However, doing so while enabling compatibility with top-notch security options is exactly why clients choose us.