Enabling On-demand Guaranteed QoS for Real Time Video Streaming from Vehicles in 5G Advanced with CAPIF & NEF APIs

Honda R&D Europe (UK), 6G Lab University of Sussex, Nextworks

HONDA

Goal

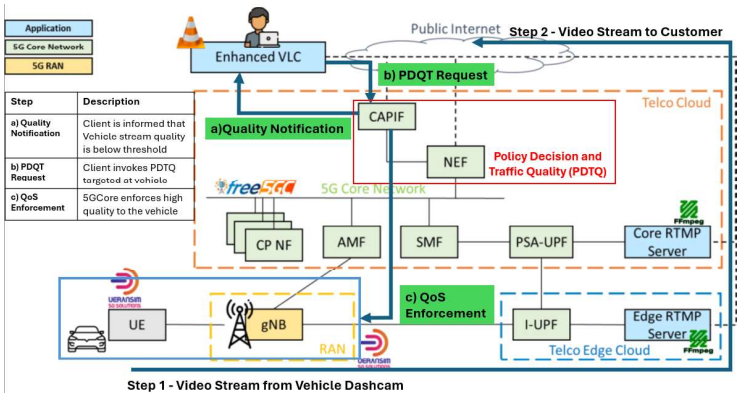
Demonstrates how 5G Advanced Network Functions can be integrated with the Common API Framework (CAPIF) to support enhanced connectivity for automotive applications

System architecture

What is CAPIF? CAPIF, a standard interface framework implemented using the open-source ETSI Open CAPIF Software

System overview

- Using CAPIF to publish, discover and invoke custom built Network Exposure Function (NEF)
- **PDTQ (Policy Decision and Traffic Quality)** : A custom-built API that **extends standard NEF capabilities**, allowing applications to monitor QoS and trigger on-demand QoS adaptation for mobility use cases such as video streaming
- Deployed in four VMs including Telco Coud VM



PoC

On-demand QoS invocation for vehicle uplink video using CAPIF-based Network APIs

When network congestion occurs, the application dynamically invokes QoS via NEF APIs, preserving critical vehicle video streams without over-provisioning the network.

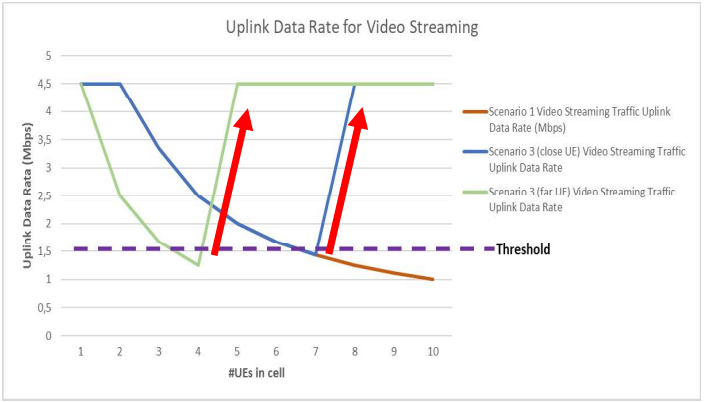
Benchmark(Scenario-1): No guaranteed QoS

Proposal(Scnario-3):

Video streaming with dynamic guaranteed QoS upon 5G network congestion

When congestion is detected, the application automatically invokes QoS via NEF APIs, restoring uplink video performance.

Key Results



Benchmark(Scenario-1): Without guaranteed QoS, uplink video performance degrades as network congestion increases

Proposal(Scenario-3):

- With on-demand QoS, performance is automatically restored once a degradation threshold is reached
- The same control logic works for vehicles at both cell center and cell edge

Key Message

Network control

Mobility focused custom build network APIs