New IP and its Application in Vehicular Network

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Abstract:

In the era of 5G and beyond, it is expected that more and more applications require end-to-end guaranteed services for bandwidth, latency, jitter and packet loss ratio. Current IP Internet cannot provide such complicated services. New IP-based solution is needed to provide the new services. This presentation will talk about one interesting use case of New IP: New Architecture and Technologies for In-Vehicle-Network (IVN) and V2X for 5G and beyond.
New IVN is purely IP based network with the support of TCP/IP capable Electronic Control Unit (ECU) and Embedded Computers. New IP makes it possible that for Scheduled Traffic (ST) and Real-Time Traffic (RT), the E2E Latency Guaranteed Service has Vehicle industry expected latency, jitter and zero packet loss. New IVN can still support the traditional TCP/IP applications for infotainment System and networking with cloud, and can interwork with all legacy Vehicle Networking Protocols like CAN, LIN, FLexray, etc.
New V2X for 5G and beyond will integrate the New Radio, Service Based Architecture in 5G and New UE device with New IP. It will make the uRLLC defined in 3GPP become a truly end-to-end. The 5G system and the existing Internet technologies such as MPLS and Ethernet will work seamlessly with New IP. New UE device will have new transport stack to work with New IP. Finally, New IP will cover from the UE to Cloud, from Vehicle to Vehicle. This includes cell phone, IVN, ECU, core network, metro network and data center.