Sensor Netw Data Commun 2015, 3:2
http://dx.doi.org/10.4172/2090-4886.C1.003

OMICS International
conferenceseries.com

International Conference and Business Expo on
Wireless Communication & Network
September 21-23, 2015 Baltimore, USA

Seamless communication in wireless networks

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With the rapid development in Internet technology and convergence in communications, the overall quality of ubiquitous communication has improved significantly. IPv6-based next-generation wireless mobile communications will need an effective mobility management protocol to support ubiquitous network access by providing seamless handover. This is especially true with invention of portable mobile devices that can be connected almost anywhere at any time. However, the recent explosion in the usage of mobile devices has also generated several issues in terms of performance and quality of service. With the ever increasing number of mobile user, mobile users demand high quality performance, best quality of services and seamless connections that support real-time application which are audio and video streaming. Seamless is referred to users that are free to roam around different networks and at the same time stay connected without any disturbance to the ongoing session during the process of handover from one network to another. The handover process between these networks spawns long delay or latency, high packet loss, and fewer throughputs which may degrade the performance of real-time applications during the handover process. Therefore, the challenging issues of wireless network in real-time application are seamless connection and data packet load. These will be the focus of this presentation. This presentation will provide a methodology assessment of seamless connection and diminution of data packet load.

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Flexray protocol in an electric vehicle

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With rapid growth in complex requirements in the design of modern vehicles, the necessity of real time operation of advanced applications, considering various electronic control units and applied intelligent systems prerequisite communication technique between every sub-systems within the vehicle. These complex systems vary from safety related systems of the vehicle such as Supplemental Restraint System (SRS) – airbag, Steering-By-Wire (SBW), Adaptive Cruise Control (ACC), Traction Control System (TCS), Anti-lock Braking System (ABS), Electronic Stability Program (ESP), to the comfort systems of a car like central locking system and in-car entertainment gadgets. All of the above systems comprised of several ECUs that are interconnected through in-vehicle networking system. These networking systems must meet the hard real-time constraints of driver's assistant systems as missing a deadline can simply lead to a catastrophe. There are several protocols defined for in-vehicle communication system such as a Local Interconnected Network (LIN), controller Area Network (CAN), Media Oriented Systems Transport (MOST), J1939 and the one that recently has become popular is FlexRay. In this study, the function of FlexRay Protocol in an ultra-important system in a vehicle called Advanced Driver Assistant Systems (ADAS) as part of an electronic stability program (ESP) and anti-lock braking system (ABS) has been envisaged. A suitable choice of networking infrastructure in the early stages of ADASs implementation will influence the overall performance and reliability of the system. Though FlexRay is one of the most sophisticated networking protocols that can be used in such systems, but it provides redundancy, high-speed, fault tolerant and deterministic exchange of data.

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