

# Seamless Mobility Support for Mobile Networks on Vehicles across Heterogeneous Wireless Access Networks

Eun Kyoung Paik  
Seoul National University  
eun@mmlab.snu.ac.kr

Yanghee Choi  
Seoul National University  
yhchoi@mmlab.snu.ac.kr

**Abstract**—This paper proposes an architecture designed for mobile networks, i.e. a network that moves as a single unit. The proposed architecture organizes routers and hosts located inside a vehicle into a mobile network. It enables passengers to access the Internet while the vehicle moves. To support IPv6 addressing, mobility management and consistent Internet connectivity, it comprises mobile DHCPv6 agents, a handoff management center (HMC) and multiple mobile routers. The mobile DHCPv6 agent moves with the mobile network and allocates IPv6 addresses to the nodes within the mobile network, thus enabling packets to be correctly routed to their destinations. The HMC implements location management and forward loss recovery (FLR) based on mobility anticipation. Multiple mobile routers access heterogeneous wireless access networks so as to maintain Internet connectivity, even though one single wireless access network does not cover all of the areas through which the mobile network navigates. With the proposed architecture, passengers and fixed devices inside vehicles can access the Internet with seamless mobility across heterogeneous networks.

**Keywords**—Network mobility, Mobile networks, Mobile IP, IPv6, Heterogeneous networks, Handoff, Mobility management, Vehicle communications