Distributed Mobility Management Protocol for WiFi Users in Fixed Network

Behcet Sarikaya (sarikaya@ieee.org)
Li Xue (xueliucb@gmail.com)
DMM for WiFi

Virtualized Control Plane

MAG-Control App
LMA-Control App
AAA App
BNG-Control App

SDN Controller for Core Network

Core Network

SDN Controller for Fixed Access Network

Fixed Access with A-DPN

SDN Controller for Backhaul Network

Mobile Backhaul

L2 Mobility

MN Mobility

VMs

RG
The Scope

• Considering the distributed mobility management of MNs in WiFi network, both Layer 2 mobility and Layer 3 mobility
  – Layer 2 mobility in the fixed access network:
  – Layer 3 above the access network
  – Authentication flows

• Considering the routing issues during mobility
  – Route establishment after handover using host routes
  – Routing Management based on a Yang Data Model
Layer 2 Mobility

• Mobility table kept in SDN controller to select Layer 2 path for the packet;
• Mobility table will be changed when mobility occurs.
Layer 3 Mobility

- FMIP (RFC 5949) signaling is used, reactive or predictive handover can be supported, Signaling occurs between Control Plane VMs in the cloud.
- Route establishment after handover for host routing. MN is assigned a prefix and it keeps this prefix as it moves.
- At nA-DPN retrieve the active route for MN, add a host route for the MN, propagate upstream.
- At pA-DPN delete the route.
Experimental Work

• Layer 2 mobility control. Use ONF’s open flow protocol to control switches
• Coding with Java based Opendaylight (ODL) on a small scale network containing 4-5 switches
• Layer 3 mobility. Use RFC 8022 YANG module
• Modify ietf-ipv6-unicast-routing module
• Develop RPC modules to add/delete routes
• Validate YANG module and RPCs
Conclusions

• Applied DMM deployment models work to Wi-Fi access
• Establish relationship of Wi-Fi entities to DMM entities as much as possible, still ongoing
• Establish relationship of YANG RPC work and FPC draft
• Comments welcome 😊
Thank you.