



Laboratory for Telecommunications Sciences  
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# New protocol standards for wireless mobility: CAPWAP and HOKEY

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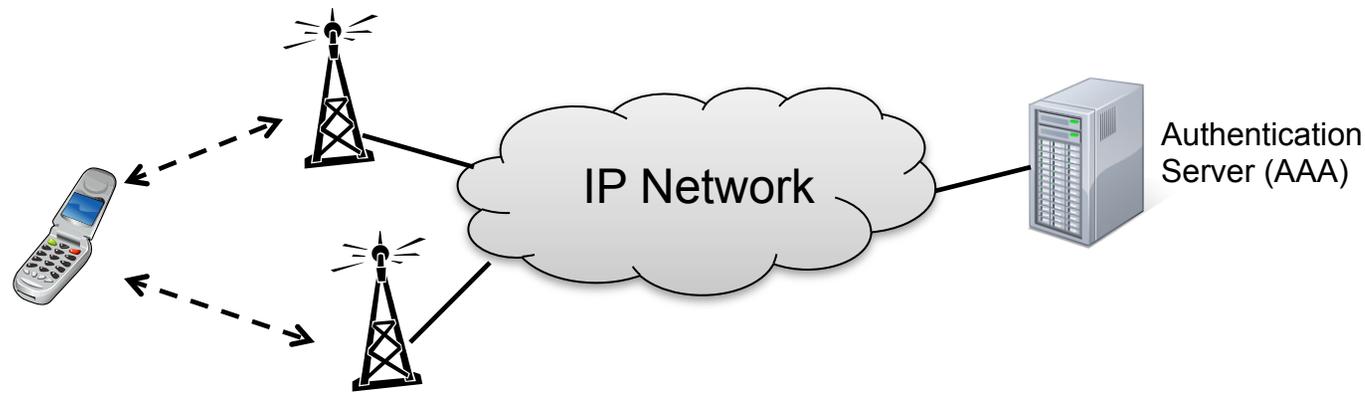
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D&D Forum: Security for Seamless Mobility

# Mobile Handover

- Key properties of commercial 4G networks
  - Infrastructure Topology
    - Can't guarantee availability of mesh topologies → can't sell service
  - Mobile Devices
  - Adaptive, Intelligent
- In infrastructure networks, secure mobile handover between base stations is necessary



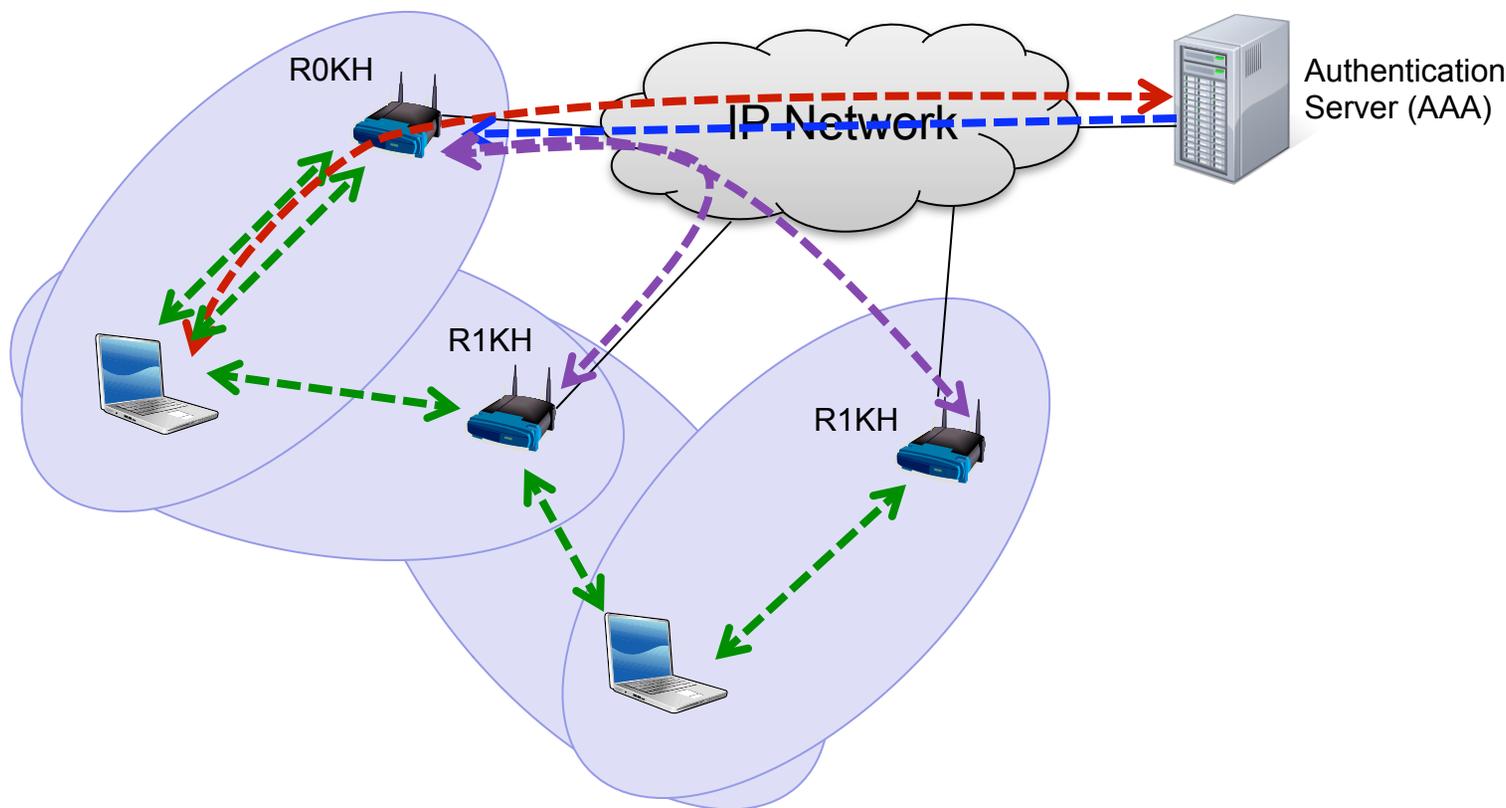


# Case Study in Handover Standards

- Use current WLAN handover standards to illustrate different approaches
- Standards
  - IEEE 802.11r
    - Fast Roaming / Fast BSS Transition for WLAN
  - CAPWAP
    - Control and Provisioning of Wireless Access Points
  - HOKEY
    - Handover Keying

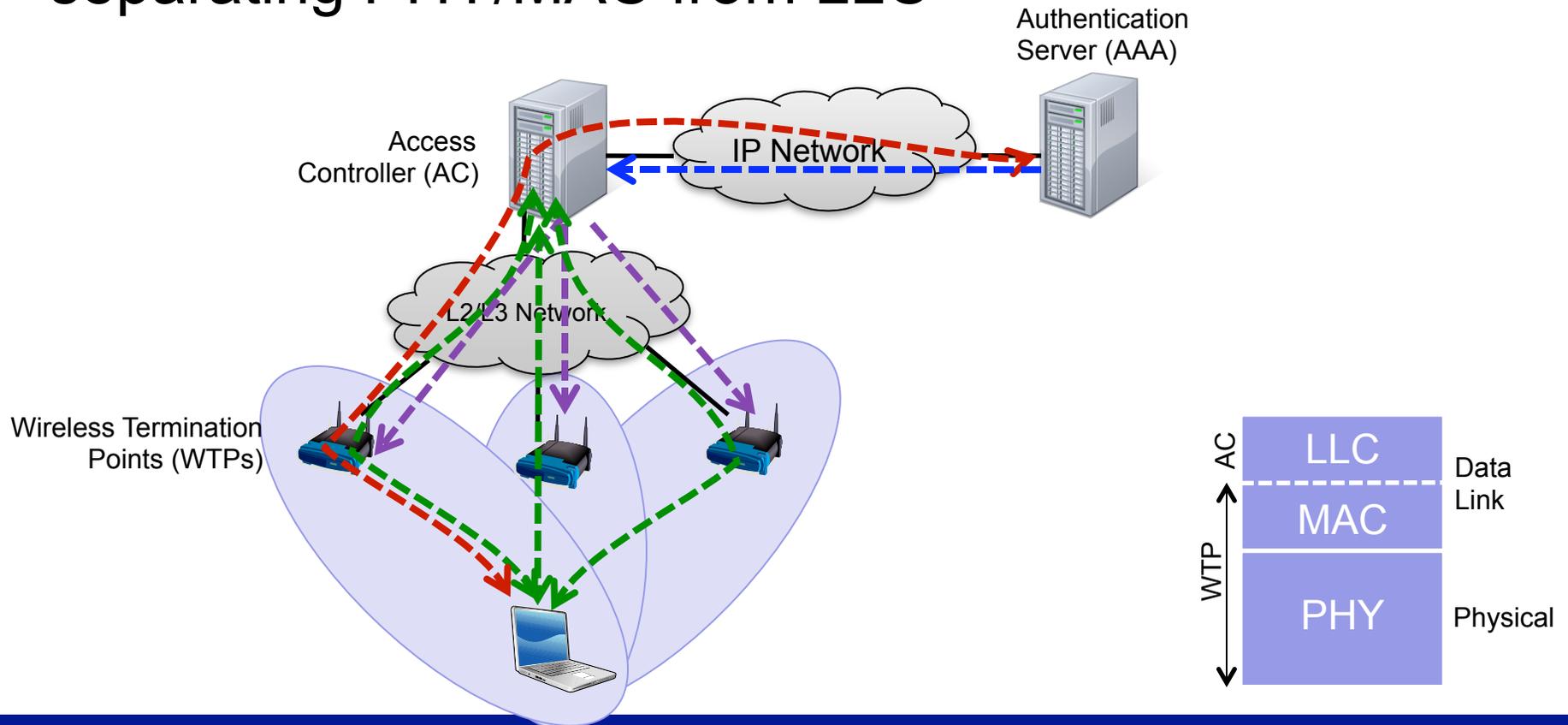
# IEEE 802.11r

- Fast roaming in an enterprise WLAN network
- Superimposes hierarchy over flat topology



# CAPWAP

- Control and Provisioning of Wireless Access Points
- Splits Access Point into two physical devices, separating PHY/MAC from LLC



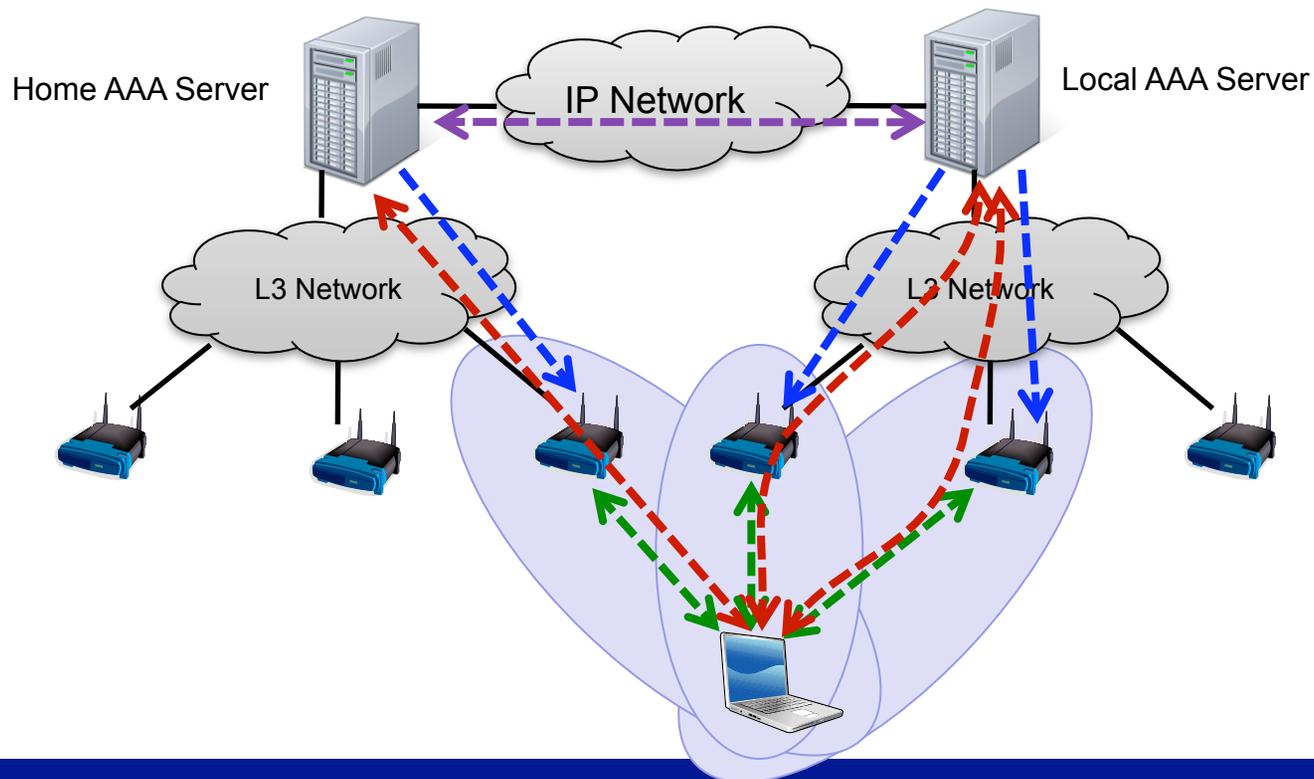


## 802.11r & CAPWAP

- Both provide secure mobile handoff for WLANs
- Some limitation from security perspective
  - Only work within single AAA domain
    - Cannot handover from one carrier to another
      - i.e. TMobile hotspot to Verizon hotspot
    - Must reauthenticate completely to roam
  - Only 802.11 (CAPWAP could support other bindings)
- More general solution: HOKEY

# Handover Keying (HOKEY)

- Extensions to EAP and AAA to natively support fast handover between access points
- 4G gets it for free if they use AAA





# HOKEY Features

- L2 medium independent
  - Usable by any L2 that uses AAA (e.g. IMS)
  - Useful for handover between L2 media (802.21)
- Support for cross-domain handover
- Part of a secure authentication scheme for 4G
- HOKEY Status
  - EAP keying and protocol extensions documented as RFCs
    - RFC 5295, RFC5296
  - Currently working on AAA key delivery protocol document