Handover Security in Wireless and Mobile Networks

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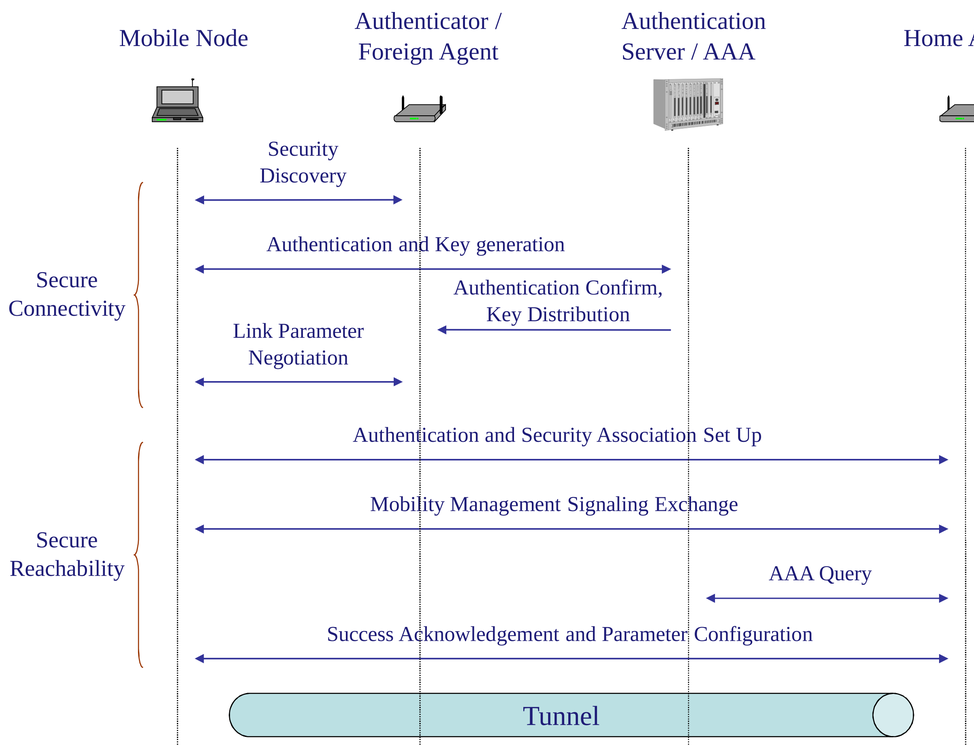
Background and Motivation

- IP based heterogeneous wireless access environment
- Mobile devices with mobile Internet services
- Handover aims at: always-on connection, best possible performance and user experience



2-Phase Model of Handover Security

Challenges

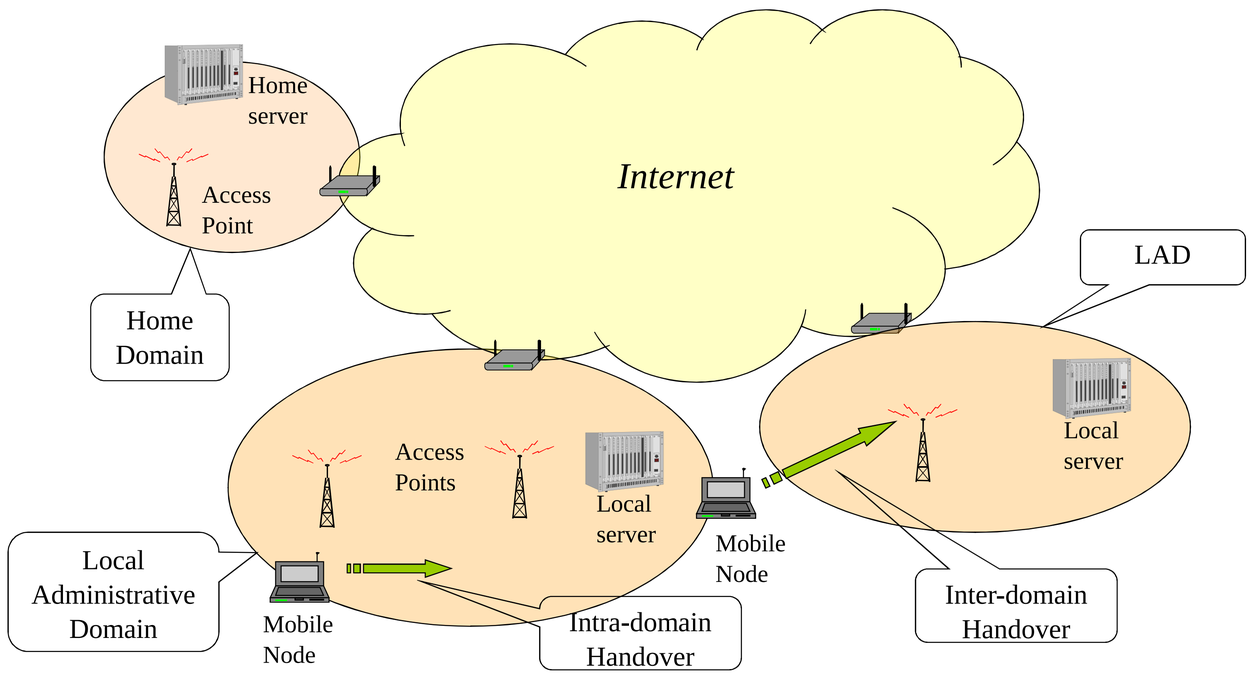
- Security in handover: user confidential context, mutual authentication, key management
- Demanding requirements from real time applications
- Overhead from security implementations: latency, energy
- Seamless and Secure

Research Question

- How to best achieve a balance between security and performance in handover?

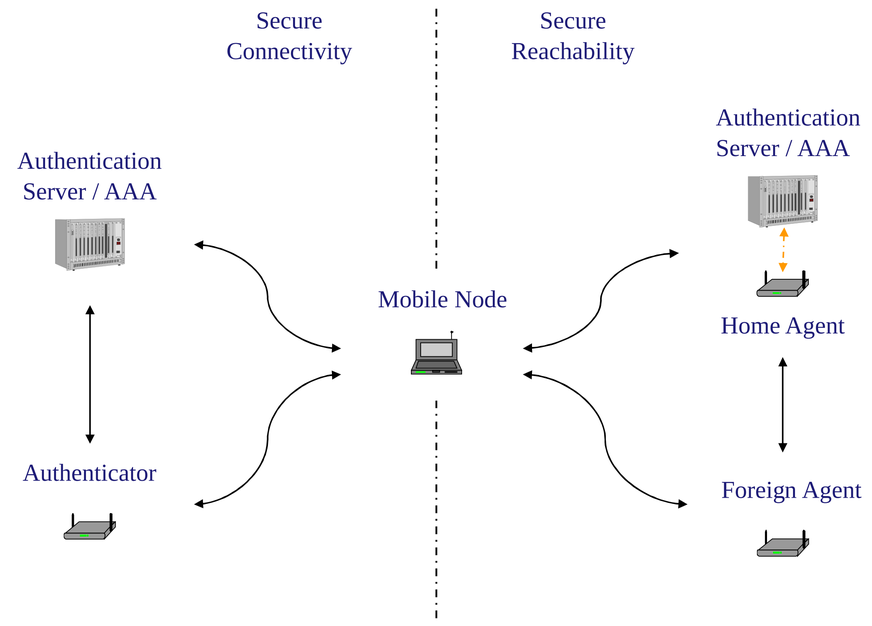
Proposal

- Local Administrative Domain (LAD)



Merits

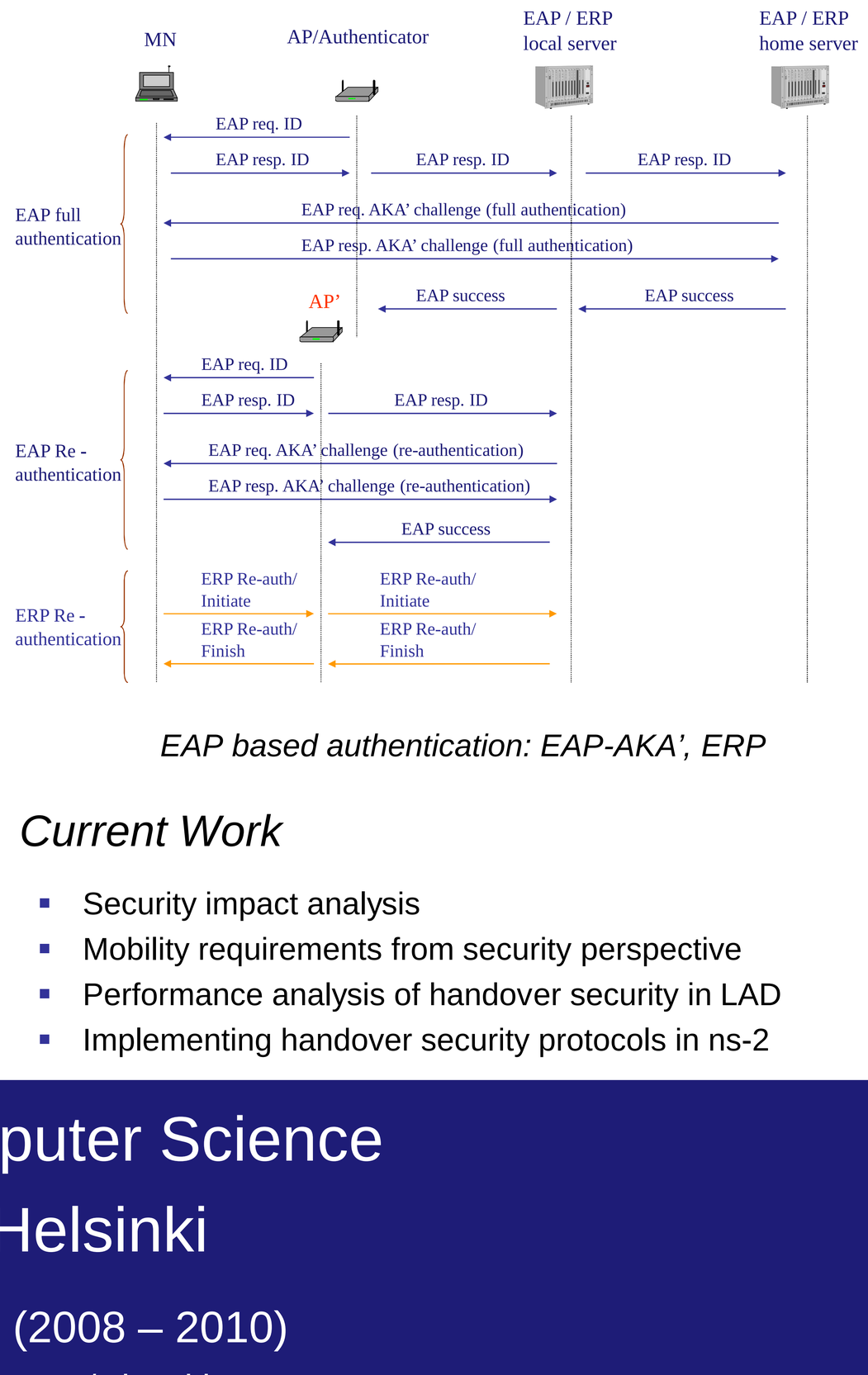
- Localized handovers with less latency
- Avoids frequent signaling across Internet
- Less key management overhead
- Fast authentication with re-authentication schemes



Security and Trust Relation in Handover

Main Technique

- Secure Connectivity: Extensible Authentication Protocol (EAP), Improved Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA'), EAP Extensions for EAP Re-authentication Protocol (ERP), Diameter
- Secure Reachability: Proxy Mobile IP, IKEv2, IPSec



EAP based authentication: EAP-AKA', ERP

Current Work

- Security impact analysis
- Mobility requirements from security perspective
- Performance analysis of handover security in LAD
- Implementing handover security protocols in ns-2

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WISEciti Project (2008 – 2010)

http://www.cs.helsinki.fi/group/wiseciti