

# Host-based and Network-based Mobility Management Approaches for Next-Generation Networks

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# Outline

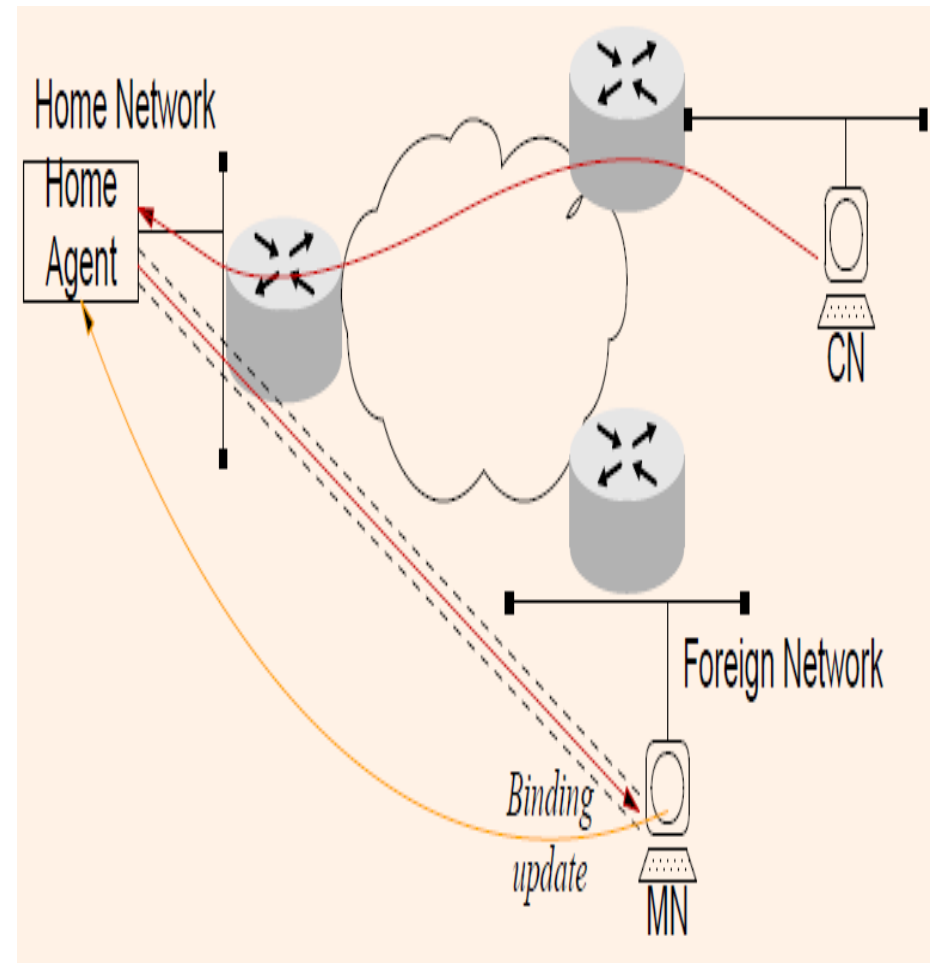
- Introduction
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# Introduction

- Fundamental networking trend has been focused on realizing all-IP mobile networks.
- Host-based protocol MIPv6 is one of the most representative efforts on the way towards next generation all-IP networks.
- MIPv6 has still revealed problems such as handover latency, packet loss, and signaling overhead.

# Host based mobility

- MN connects to foreign network and gets COA
- MN sends binding update to HA
- Every traffic destined to the MN will be encapsulated in Ipv6-in-IPv6 tunnel and send to the COA of MN
- So the network involvement in mobility is minimal.



# Why Network -based Mobility management?

- Deployment perspective
  - Unlike host-based mobility management, network-based mobility management does not require any modifications of mobile nodes(MNs).
  - No requirement for modification of MNs is expected to accelerate deployment of PMIPv6.

## Performance perspective

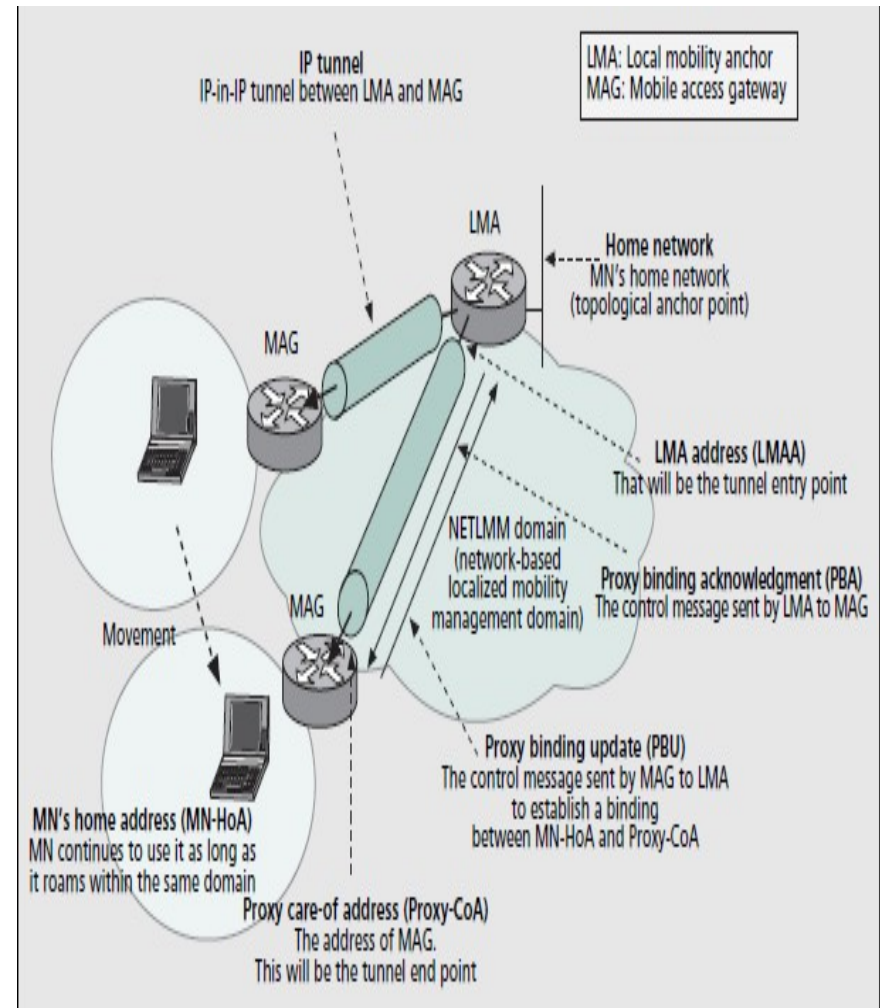
In terms of scalability, efficient use of wireless resources can result in enhancement of network scalability.

In host-based network layer approaches such as MIPv6, a lot of tunneled messages as well as mobility-related signaling messages are exchanged via the wireless links.

The signaling latency introduced by the MN could result in increasing handover failures as wireless channel access and wireless transmission delays get larger.

# Network-based Proxy Mobile IPv6

- MN first attaches to an access network connected to MAG, the access authentication is performed using an MN's Identity.
- MAG obtains the MN's profile.
- Then MAG sends a PBU message to the MN's LMA on behalf of the MN.
- If the sender is a trusted MAG, the LMA accepts the PBU message. LMA sends a PBA message and sets up a route for the MN's home network prefix.



# Network-based vs Host-based Mobility

- Tunnel in PMIPv6 is established between the LMA and the MAG, and not an MN.
- Tunneling increases the bandwidth constraints on the wireless link and the processing burden on the MN.
- MN always obtains its unique home address while it moves within a PMIPv6 domain.



# Future work

- PMIPv6 is a practical derivative of MIPv6 rather than a new idea.
- In future we will do a quantitative analysis of PMIPv6 for 3G cellular and Broadband Wireless Access technologies.
- Also build an architecture framework for mobility management in 3G cellular and WiMAX using PMIPv6.
- Further enhance this framework to include LTE as well.
- It reflects telecommunication operators' favor, enabling them to manage and control their networks more efficiently.

# Conclusion

- A network-based solution requires no localized mobility management support on the mobile node and is independent of global mobility management protocol.
- So it can be used with any or none of the existing global mobility management protocols.
- The result is a more modular mobility management architecture that better accommodates changing technology and market requirements.

**Thank you!**

Back up

# Mobile IPv6 vs Proxy Mobile IPv6

Category	MIPv6	PMIPv6
Mobility management type	Host-based mobility management	Network-based mobility management
Mobility scope	Global mobility	Localized mobility
MN modification	Yes	No
Tunneling over wireless link	Required	Not required
Route advertisement type	Broadcast	Unicast
Return routability	Required	Not required

# Other Mobility Protocols

Protocol criteria	MIPv6	Cellular IP	SIP	PMIPv6
Operating layer	Network Layer	Network Layer	Application Layer	Network Layer
Mobility Scope	Global	Local	Local/global	Local
Handover management	Yes(limited)	Yes	No	Yes
Required infrastructure	HA	Enhanced BS	Registrar	LMA, MAG
MN modification	Yes	Yes	No	No
Handover latency	Bad	Good	NA	Good