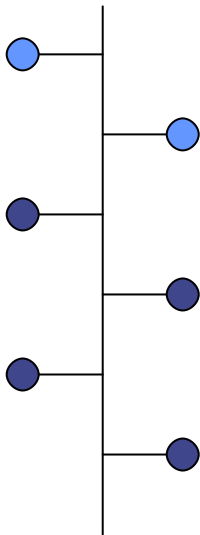


# Mobility Support in IP-based Networks: A Multicast-based Approach



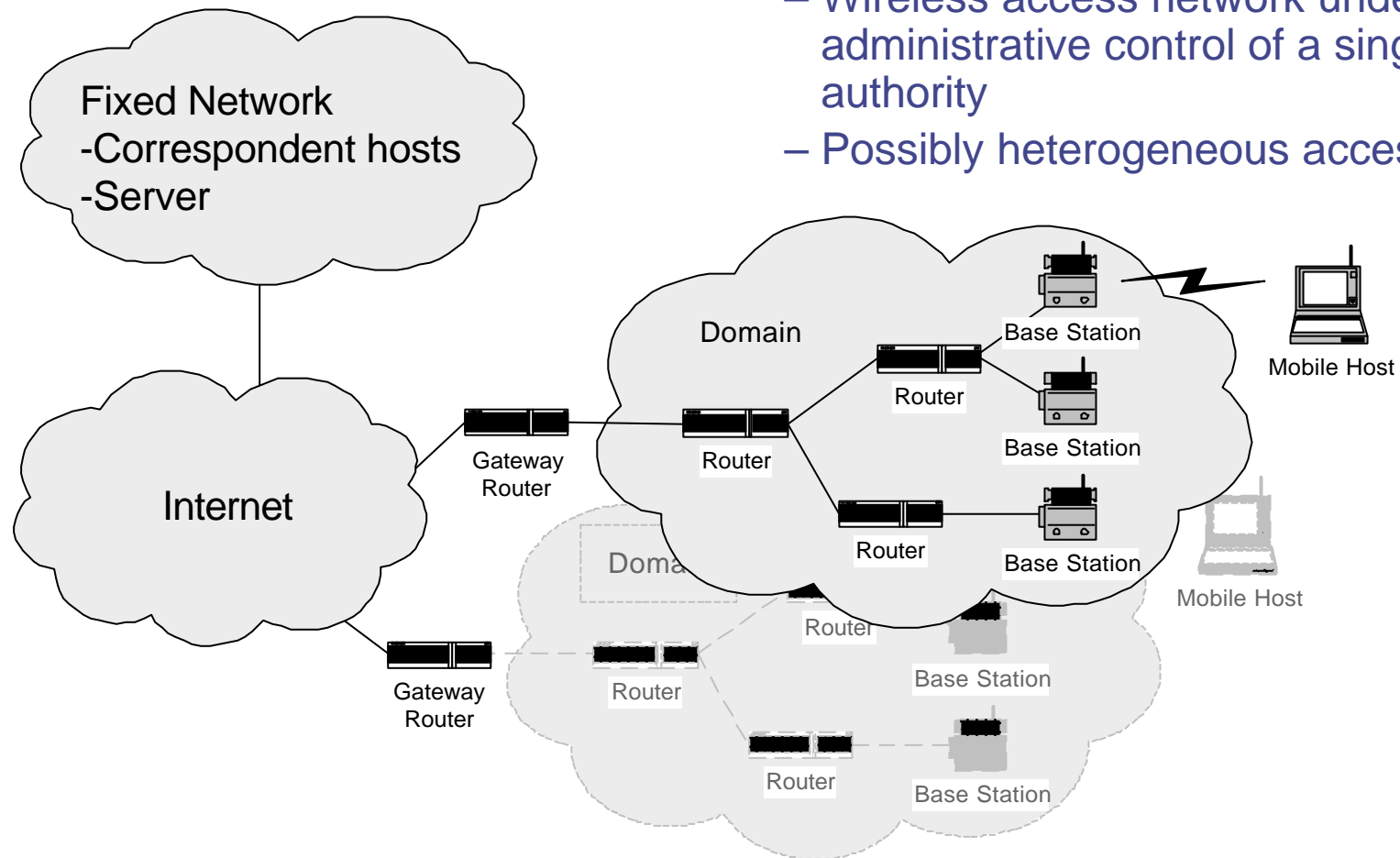
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# General Network Architecture

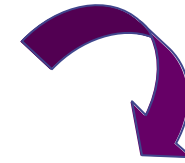
- Domain

- Wireless access network under administrative control of a single authority
- Possibly heterogeneous access



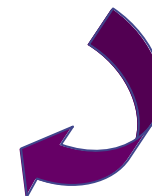
# User and network requirements and opportunities of new technologies

- Ubiquitous network access
- User mobility
- Heterogeneous end system
- Heterogeneous access networks
- Protocol conversions
- Privacy
- Personal locator services

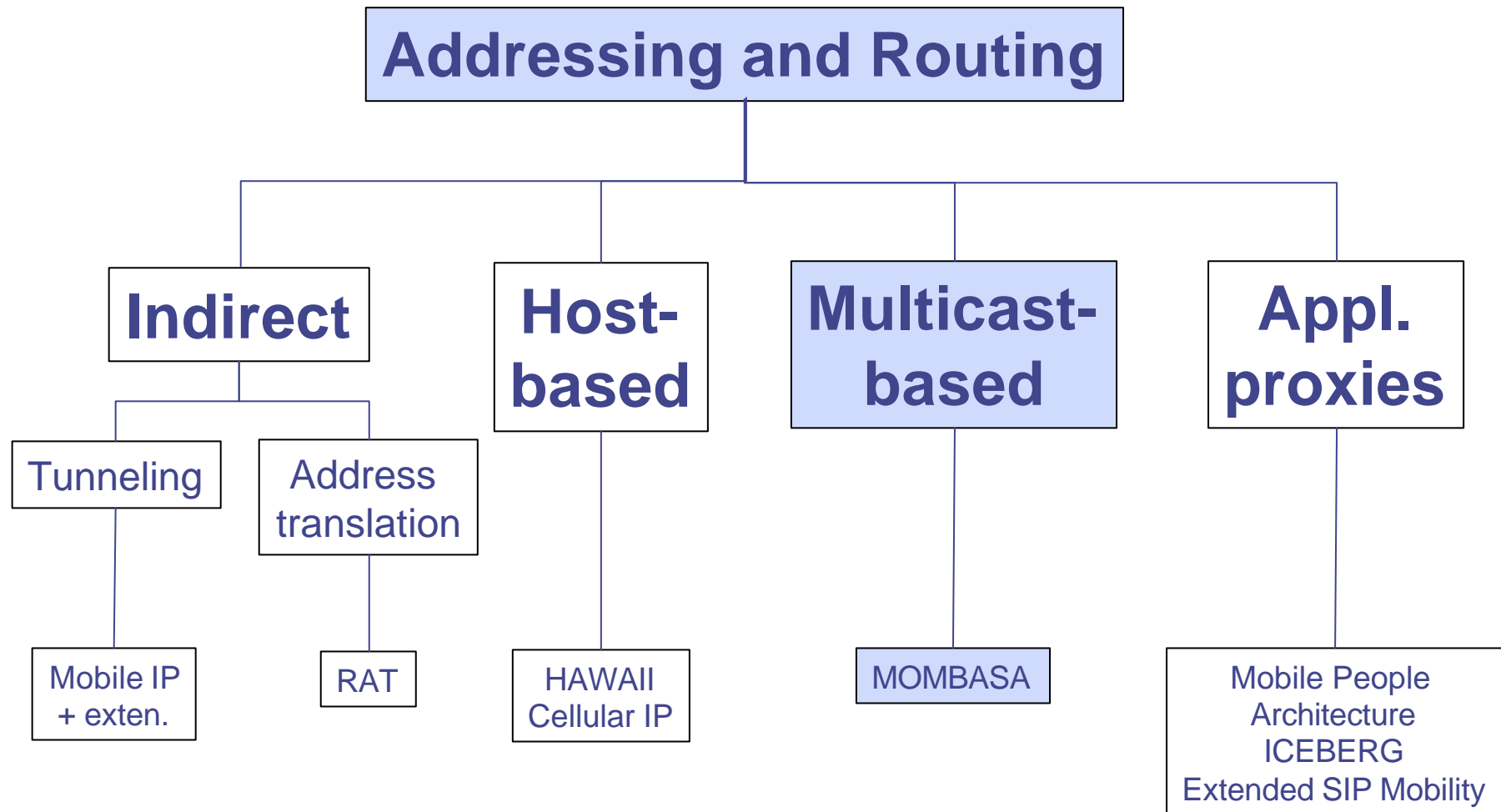


## Conceptual consequences for handover design

- Enhanced address concept
- Support of vertical handover
- Differentiation between types of mobility



# Current Approaches on IP Mobility



# Problems with Mobile IP

- Ingress filtering for packets with topologically incorrect IP address
- Indirect routing increases delay and data overhead
- Signalling overhead due to distance between FA and HA
- No user mobility concept
- Vertical handover
  - Open questions regarding handover policies
- No differentiation between mobility types
  - „One scheme fits all“



Some of the problems have been addressed by MIP extensions (e.g. NAI ext., route optimization)

# MOMBASA

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- Approach

- Multicast supports location-independent addressing and routing
- Similar to mobility support, though in a different context
- Utilization of multicast to perform handover

- Advantages

- Rerouting is done in a network node where path to/from old and new base station diverge (and not in a software agent in the mobile's home network)
- No *handover-specific* signaling and infrastructure is required, instead a *future* multicast infrastructure is reused
- Handover latency can be reduced to an absolute minimum

# MOMBASA Overview

- Basic idea: Base stations and routers capable of doing multicast routing. Interconnected to the Internet with Gateway.
- Mobile hosts acquires temporary IP address. Within the access network address is translated into multicast address (NAT or tunneling)
- Multicast router forwards packets over dynamically established leaves of multicast trees
- Compatible with Mobile IPv4 messages
- Additional messages for power up, update and refresh messages used by the network
- Paging for mobile hosts in inactive mode

# MOMBASA Paging

- Paging is utilized to search mobile hosts and find their current point of attachment
- A mobile host can update the network less frequently and provide the network with only approximate location information
- Tradeoff between tracking and paging

