

# Mobile Routing, Multi-homing, and Autonomy

July 10, 2007

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# New Environment and New Demand

- Ubiquitous Networking and Mobile Users
- Heterogeneous Wireless Networks
- Scalable and Complex Networks

Architecture  
Operation  
Commercialization

- Mobile Routing
- Multi-homing
- Autonomy

# Mobile Routing: Architecture

- **Infrastructured Mobile Routing**
  - e.g., Network Mobility (NEMO)
- **Infrastructure-less Mobile Routing**
  - e.g., Mobile Ad hoc Networks (MANET)
- **Integration of Infrastructured and Infrastructure-less Mobile Routing**
  - e.g., MANET for NEMO (MANEMO)

# Mobile Forwarding: Scenario

- Mobile Access Point
- Mobile Base Station
- Mobile Platform
  - e.g., Automotive and Aviation platform

# Multi-homing: Motivation

- Connection with heterogeneous wireless networks for
  - Cost
  - Data Rate
  - Covered Area
  - etc.

# Multi-homing: Issues

- Terminology
- Addressing
- Routing
- Security
- etc.

# Autonomy: Motivation

- Networks are scalable
- Networks become complex

Hard  
to  
Manage

- Self-Organization
- Self-Configuration
- Self-Detection
- Self-Healing



# Mobile Routing and Autonomy

- Self-Organization
  - e.g., Mobile Nodes organize a mobile network
- Self-Configuration
  - e.g., Mobile network configures itself
- Self-Detection
  - e.g., Detects whether it is attached or detached
- Self-Healing
  - e.g., Recover failed association

# Multi-homing and Autonomy

- Self-Configuration
  - e.g., Configures multiple addresses
- Self-Detection
  - e.g., Detects failed path among multiple path
- Self-Healing
  - e.g., Heals failed path with active path by switching them

# Supporting Considerations

- Software Defined Radio (SDR)
  - Flexible adoption of emerging various wireless technologies

# Emerging Challenges

- Identification and Location
- Routing/Forwarding
- Authentication, Authorization, and Accounting
- etc.

# New Issue

New Network

Emerging Challenges

Mobile Routing  
Multi-homing  
Autonomy

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