

Next – generation Wireless Technologies

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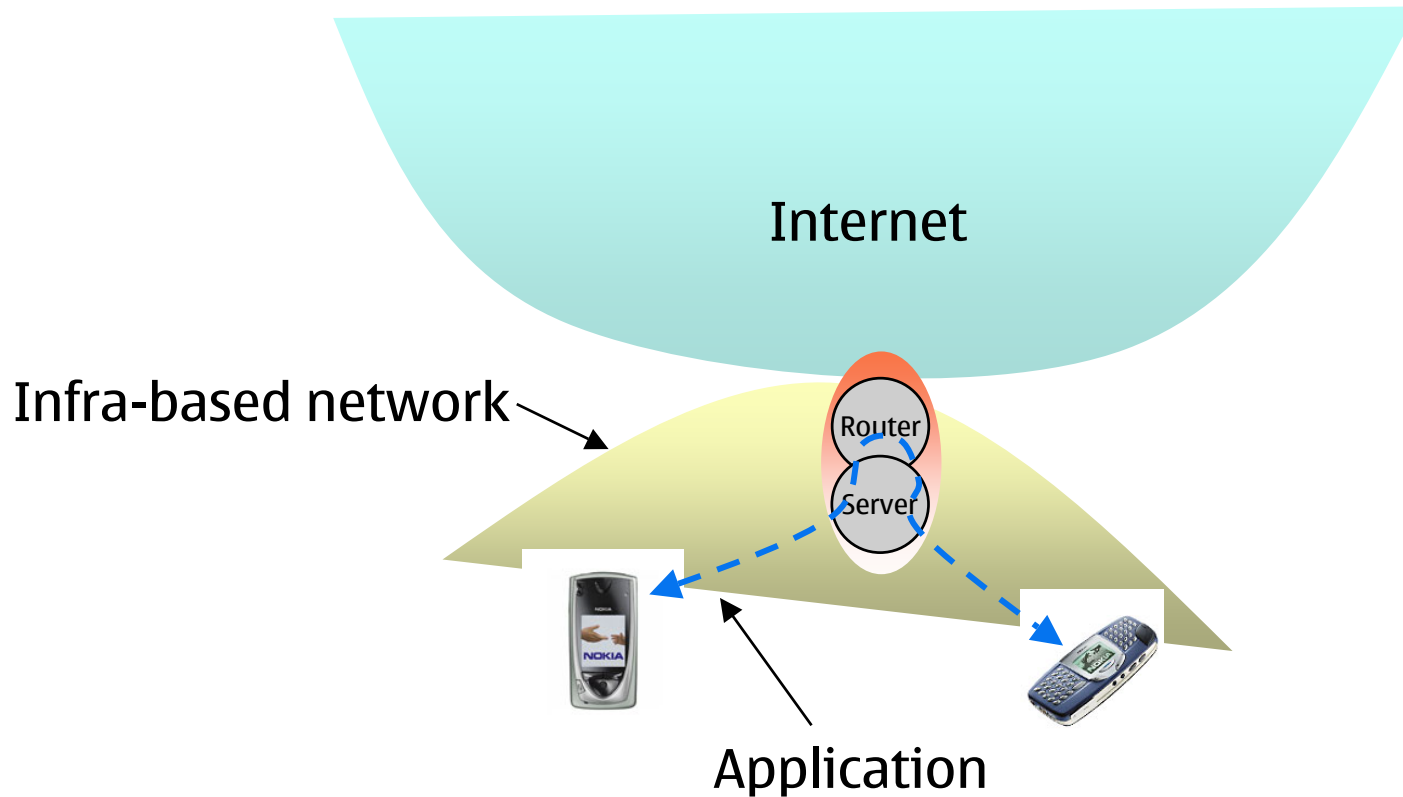
Next generation Technologies

- Radio:
 - Higher rate, often not with longer range
 - Multi-radio integration in a single terminal continues
 - Ubiquity: *some* radio will be available (from among multiplicity of radios)
 - Diversity: leads to choice for an end-user
- Application models:
 - Client – server applications continue (e-mail does not lose its value)
 - Peer – peer more prominent
 - Machine – machine automation
 - Machine – peer interaction
- Services
 - Given the same device form factor, users would like to access services without worrying about “access profiles”
 - Access-specific services are acceptable if they are the only choice
 - Example: location – based services are perhaps best offered by cellular systems

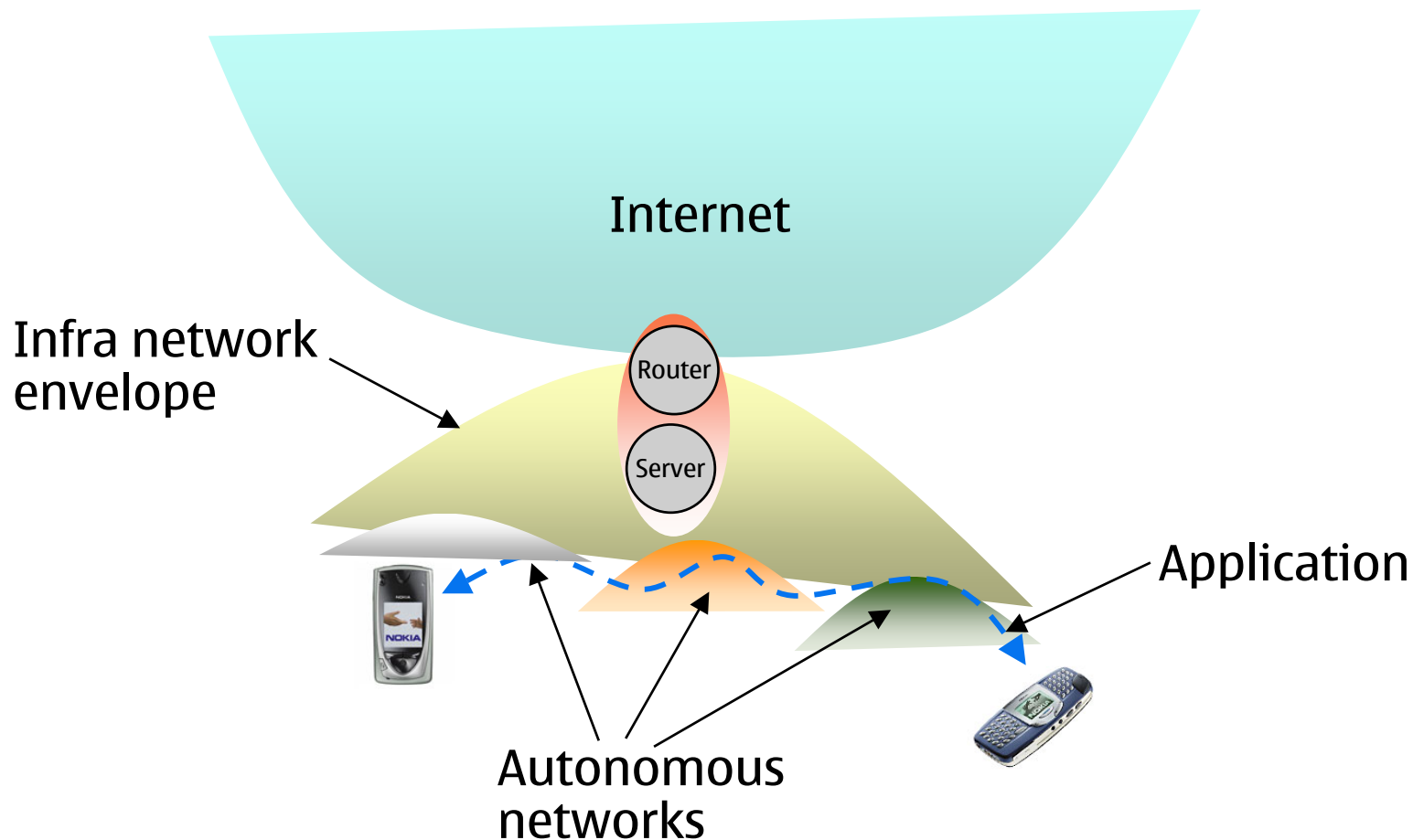
Key components

- Glue for radios:
 - Common connectivity substrate required
 - IP exists
- Addressing:
 - For communication across links, common address structure is crucial
 - Should not be a burden
 - Provider-provisioned and provider-independent addressing
 - IPv6
- Ad hoc networking
 - Networks formed with little or no assistance from typical infrastructure elements
 - Make use of the infra when available

Today's model



Terminal-centric model



Autonomous Networks

- (Typically) End-user initiated
 - Devices come and go
 - Use any or more than one interface
- Address auto-configuration, name resolution, service discovery are crucial
- Each node typically needs to perform routing and forwarding
- Reliable communication with acceptable performance
 - TCP over multi-hop radios
- Secure communication is necessary, but not always a must
- Mobility is highly desirable
 - Terminal mobility within an autonomous network
 - Autonomous network mobility

Getting there..

- Hmm.. 😊
- Rapid integration of computing power and multi-access radios (cellular, WLAN, Bluetooth)
- Ever increasing computing power (tradeoff with battery power)
- Adoption of IPv6
- Many open issues, especially related to reliability and performance, remain
- Regulatory considerations