

# Mobile IPv6: A Key Enabler for WLAN to GPRS Interoperability

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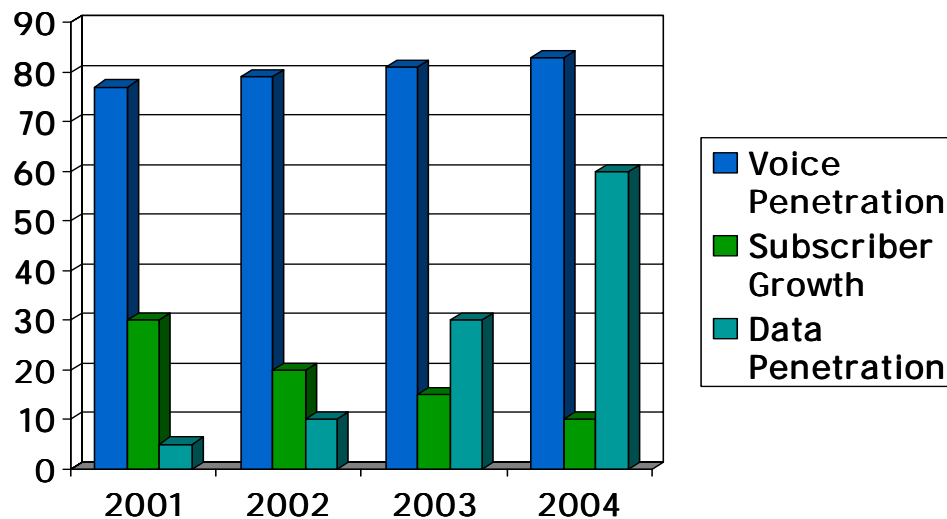
# Quick Introduction

... just so you know where we're coming from ...



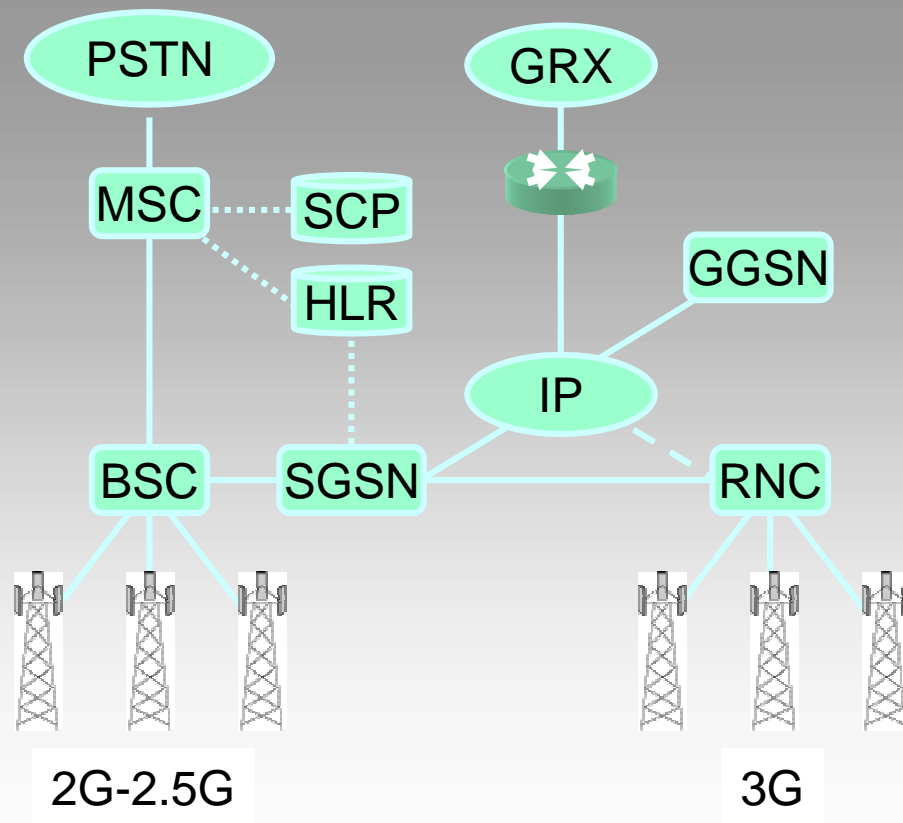
*is a young company, founded by mobile & Internet communications industry veterans, that is developing a Mobile Internet Service Gateway to help mobile operators deliver new and profitable data services.*

# Mobile Network Operator (MNO) Challenge



- Phone penetrations at or near saturation
- New voice-based revenue opportunities are limited
- Data services are considered the new opportunity
- Large 3G spectrum investments have already been made
- Rapid ROIs are required for any new investment

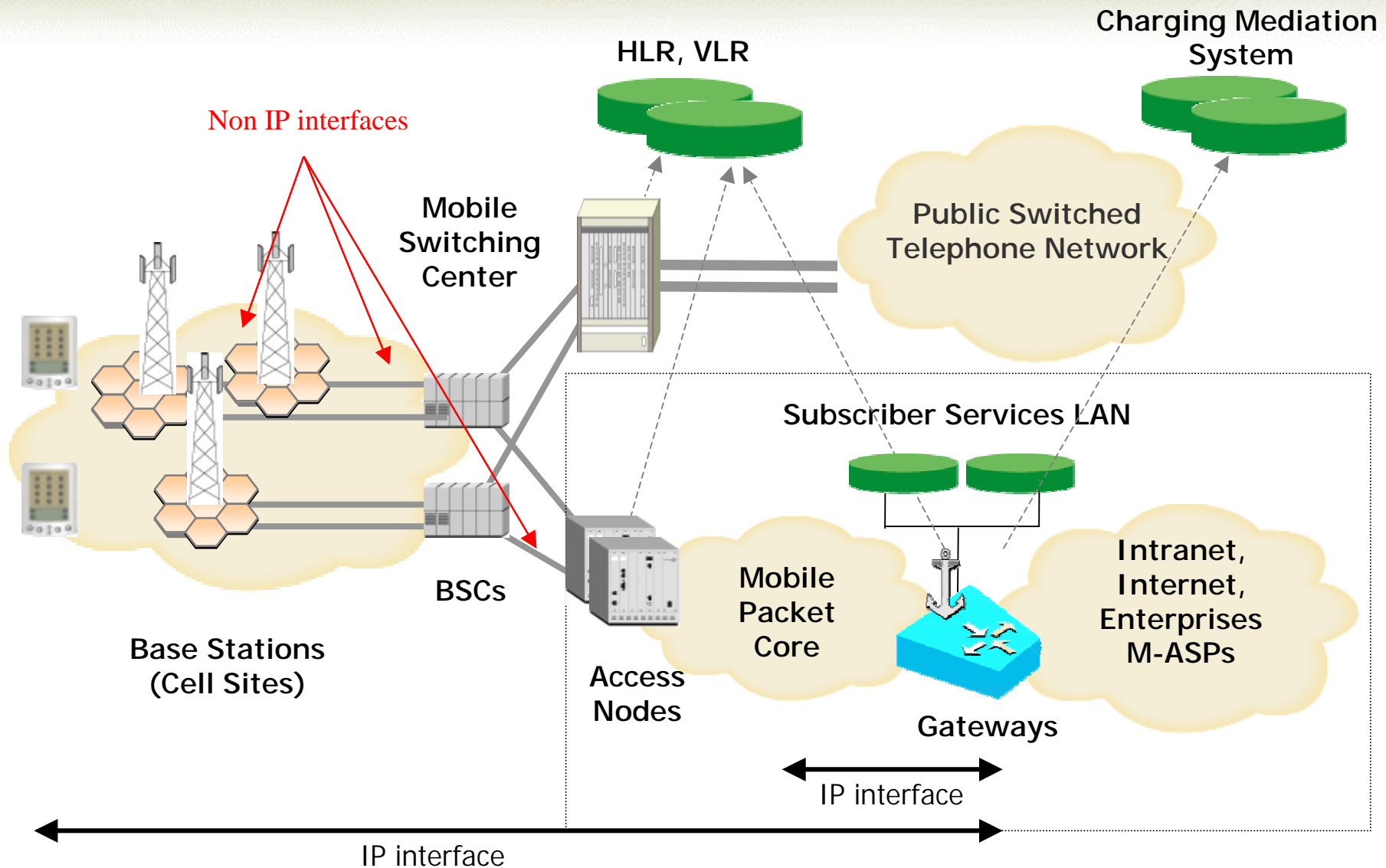
# General Packet Radio Service (GPRS) Overview



- Packet data service overlay on GSM network
- Shares air with circuit voice and provides always-on access at moderate data rates
- Standardized and in commercial service now



# 2.5G Network Infrastructure



# Key Benefits Available Now

- IP layer access to attached devices (internetworking with any connected IP network)
- IP roaming within GPRS networks (via GRX or any other IP transit network for that matter)
- QoS-ready with key specifications for QoS within the GSM network completed
- IPv6 to handsets standardized as an option

# 3G Network Infrastructure



## (IMS)

HLR, VLR

Charging Mediation System

Non IP interfaces

Mobile Switching Center

Public Switched Telephone Network

Subscriber Services LAN

Intranet  
Internet  
Enterprise  
M-ASPs

Base Stations  
(Cell Sites)

RNCs

IPv4

Access Nodes

Mobile  
Packet  
Core

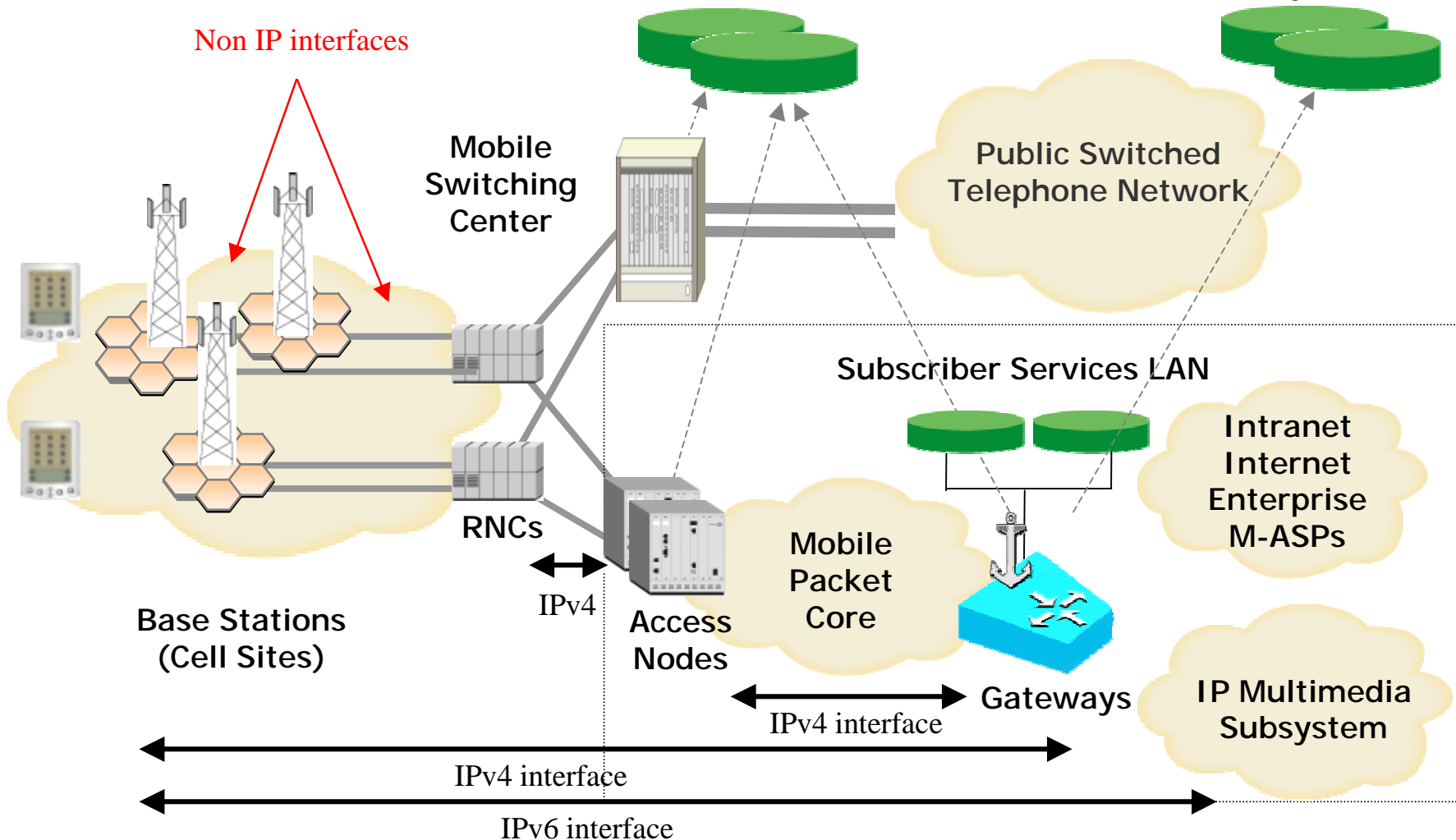
IPv4 interface

Gateways

IP Multimedia Subsystem

IPv4 interface

IPv6 interface

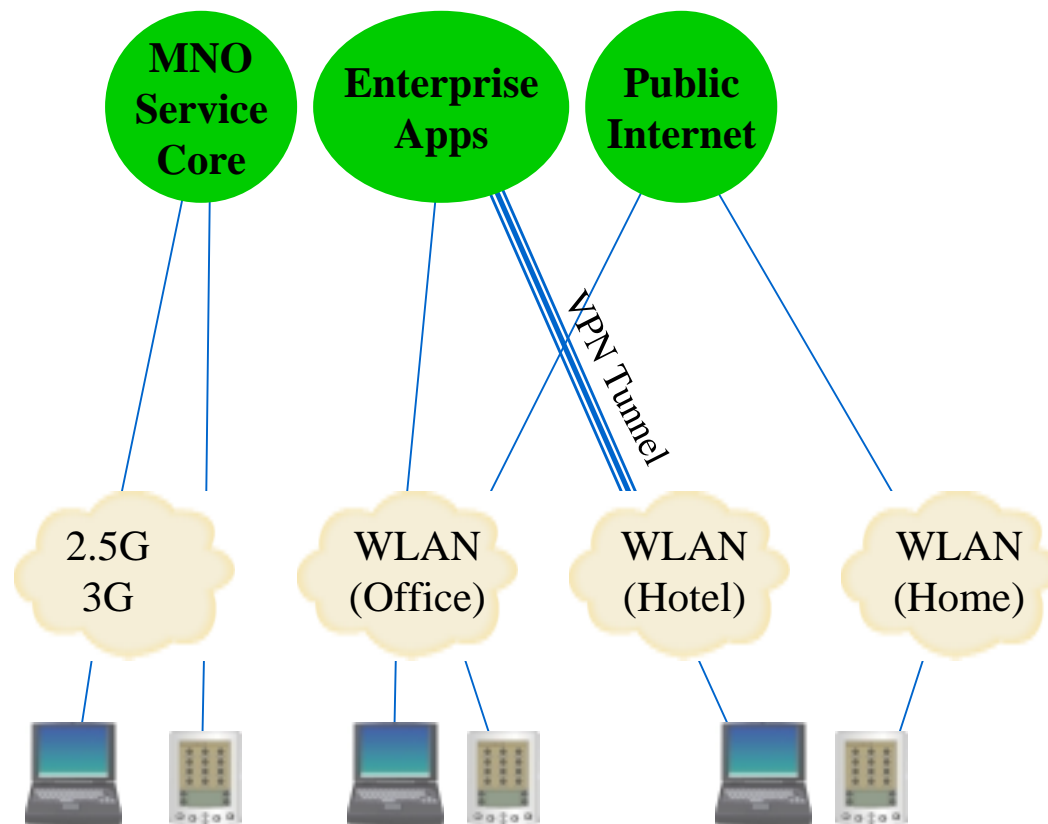


# Key Capabilities in Tomorrow's Networks

- IP Multimedia Services capability
- IP v6 to mobile device mandated as only IP protocol for IP Multimedia Service
  - Opens up possibilities of newer cleaner network operation
- Reuse of GPRS features
  - Uses all existing support for mobility among GSM networks
  - Supports seamless operation and end-to-end QoS
- Extend all services across all radio access networks



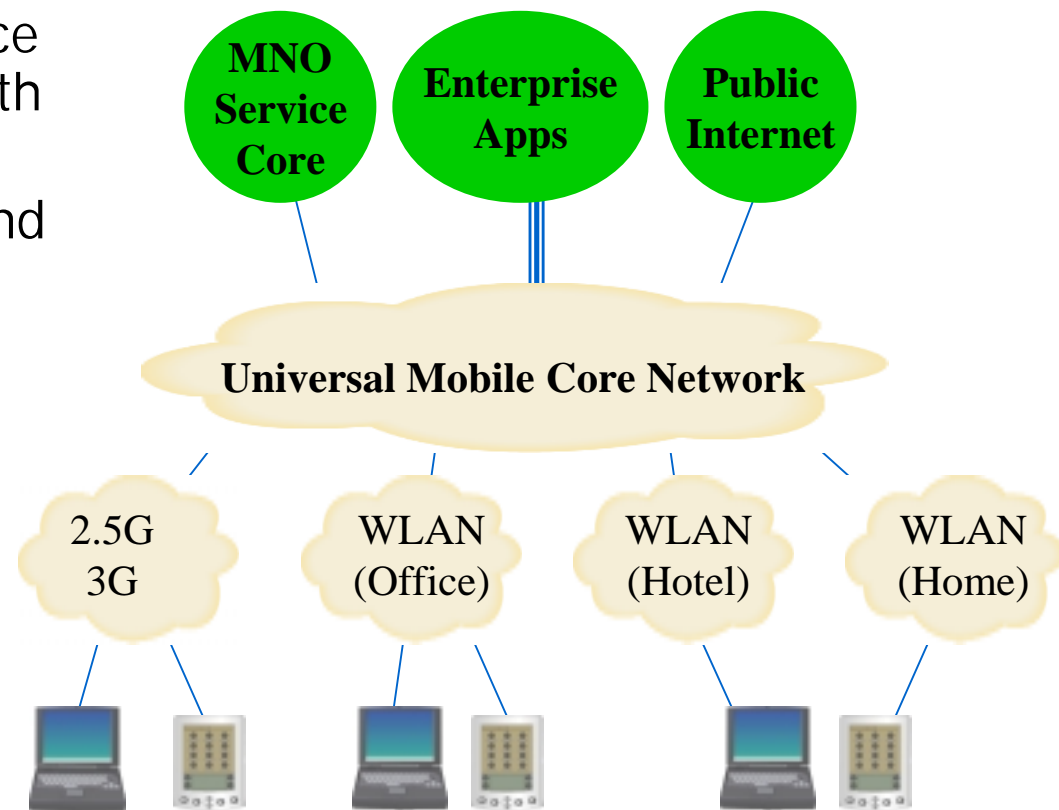
# Public WLAN Hotspots – MNO Threat!



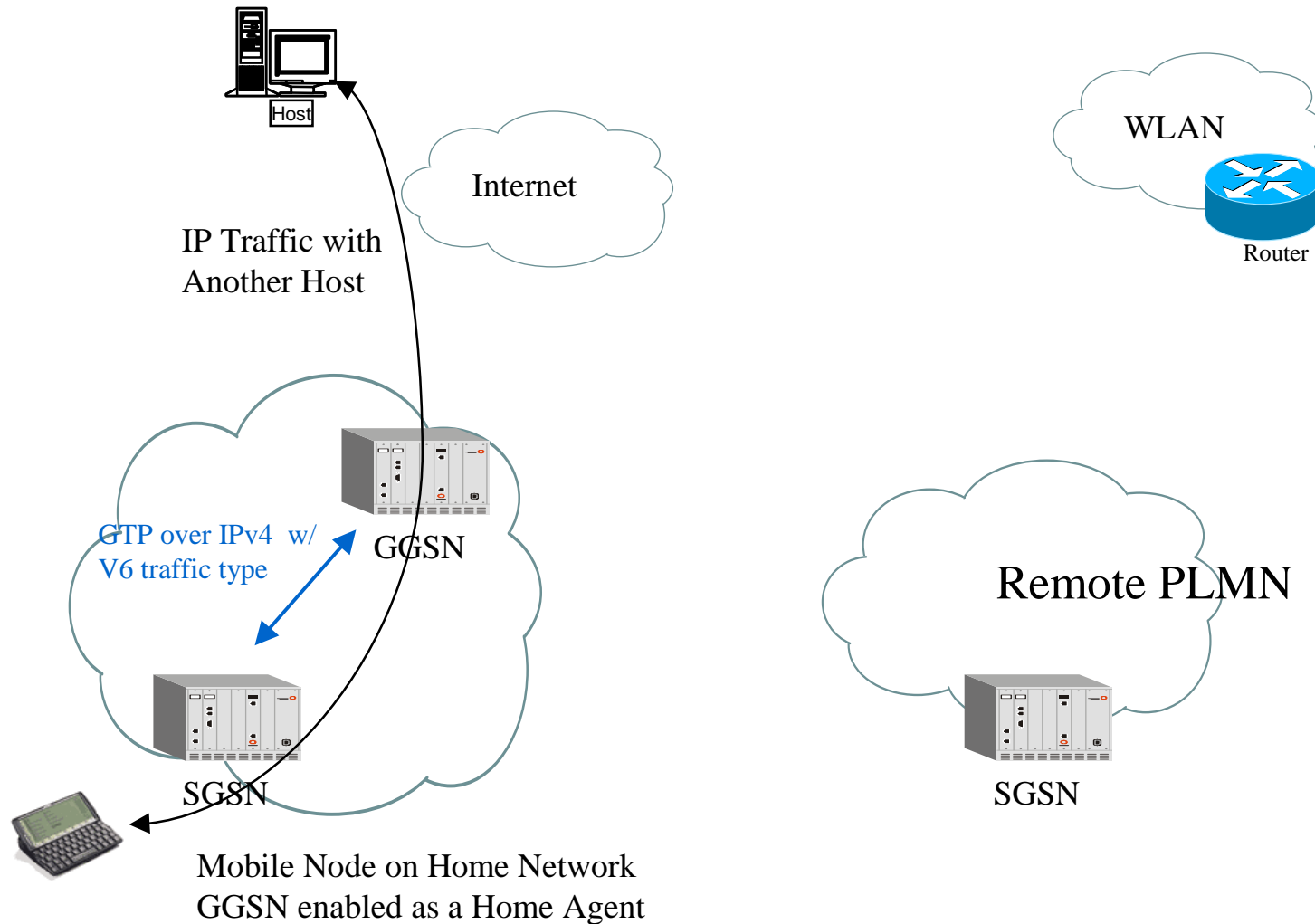
- Easy to deploy
- Unlicensed (and low cost!) spectrum
- Alternate access Providers
- Services could siphon mobile data revenue from MNOs

# Public WLAN Hotspot – MNO Opportunity!

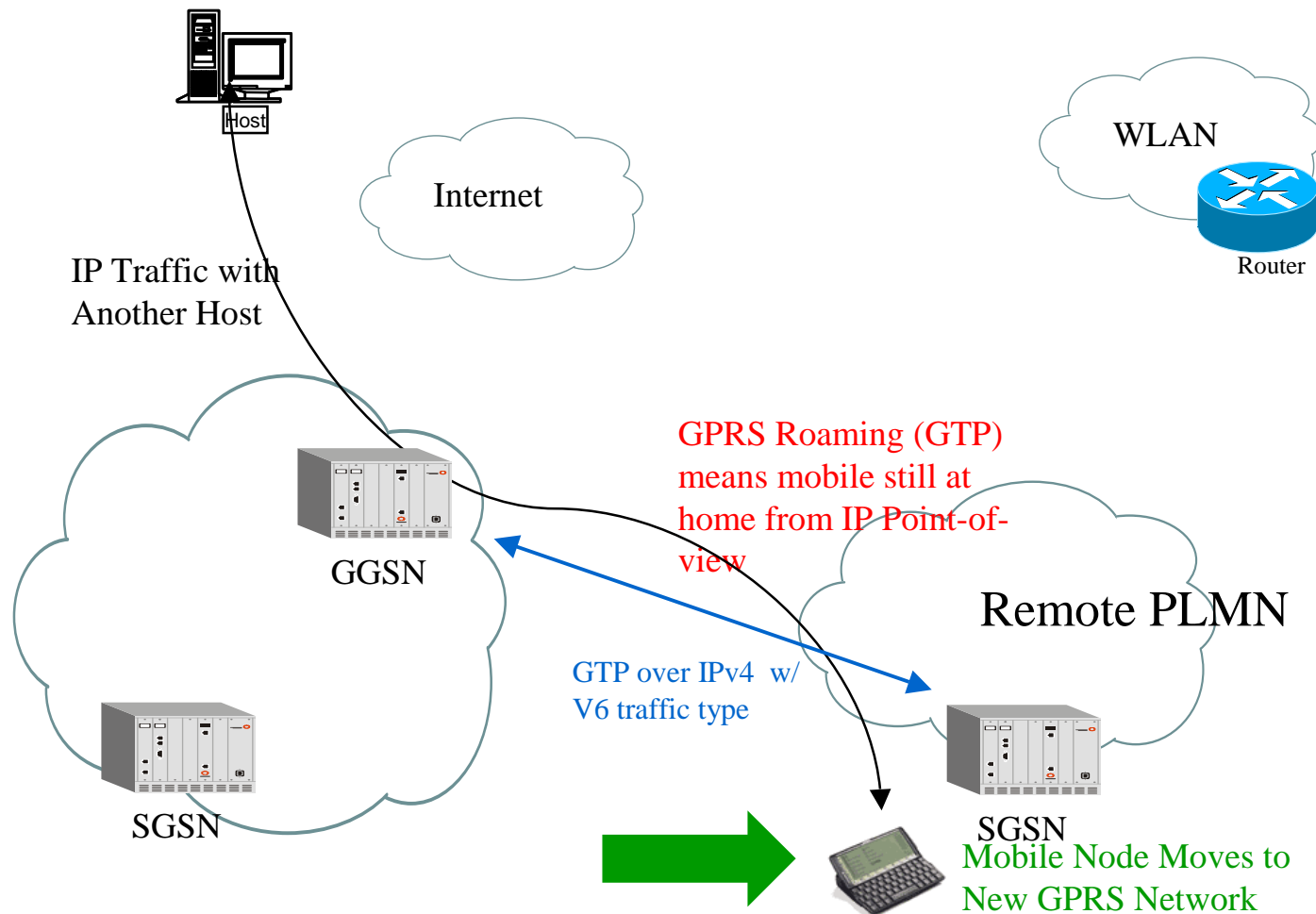
- MNOs have existing service and billing relationship with large customer base
- MNOs have established and reliable “wireless” brand
- Delivery of consistent network services over 2.5G/3G and hot-spot environments provides value
- Hot-spots provide an inexpensive and high performance spectrum alternative



# Mobile IP v6 Operation w/GPRS

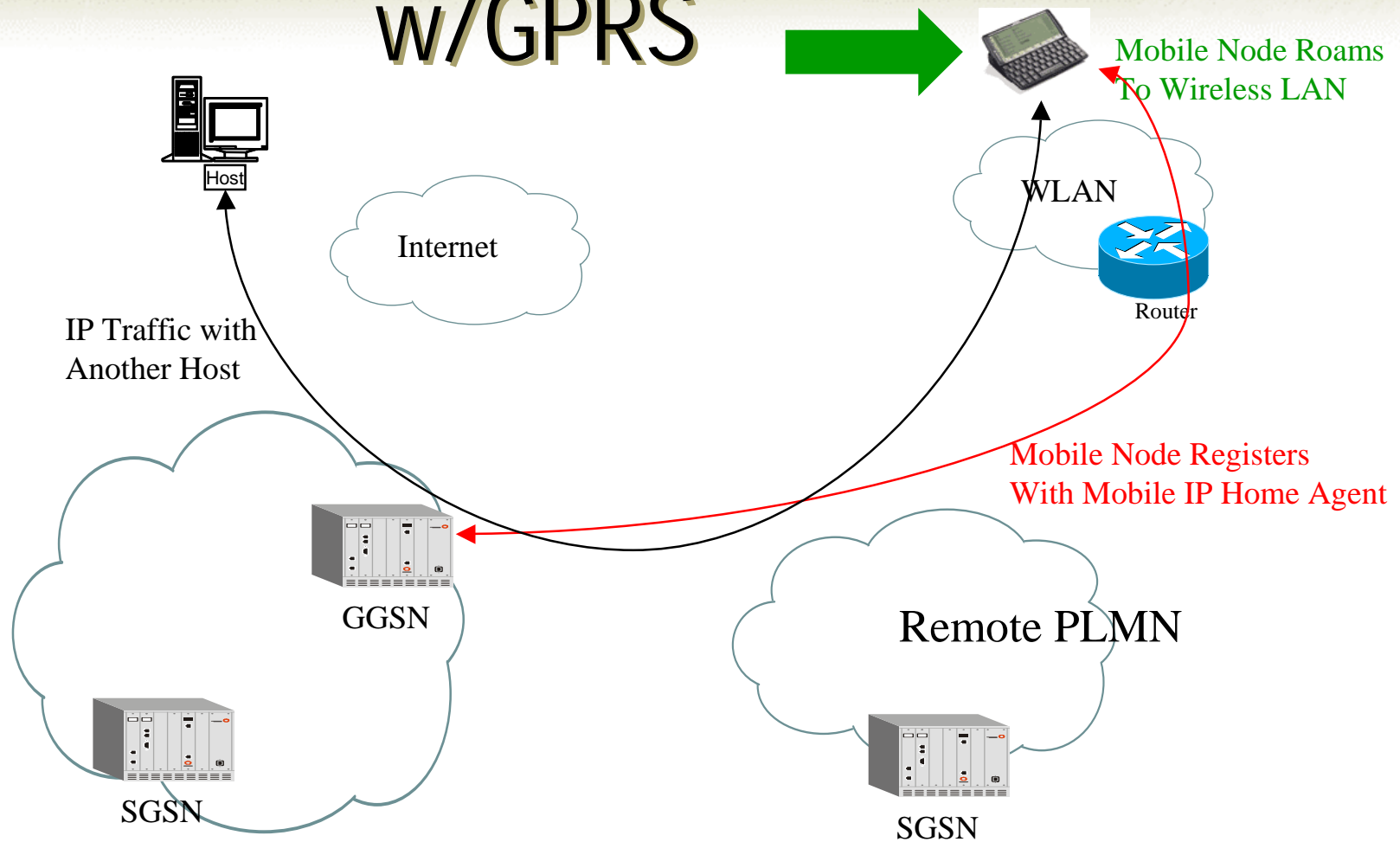


# Mobile IP v6 Operation w/GPRS

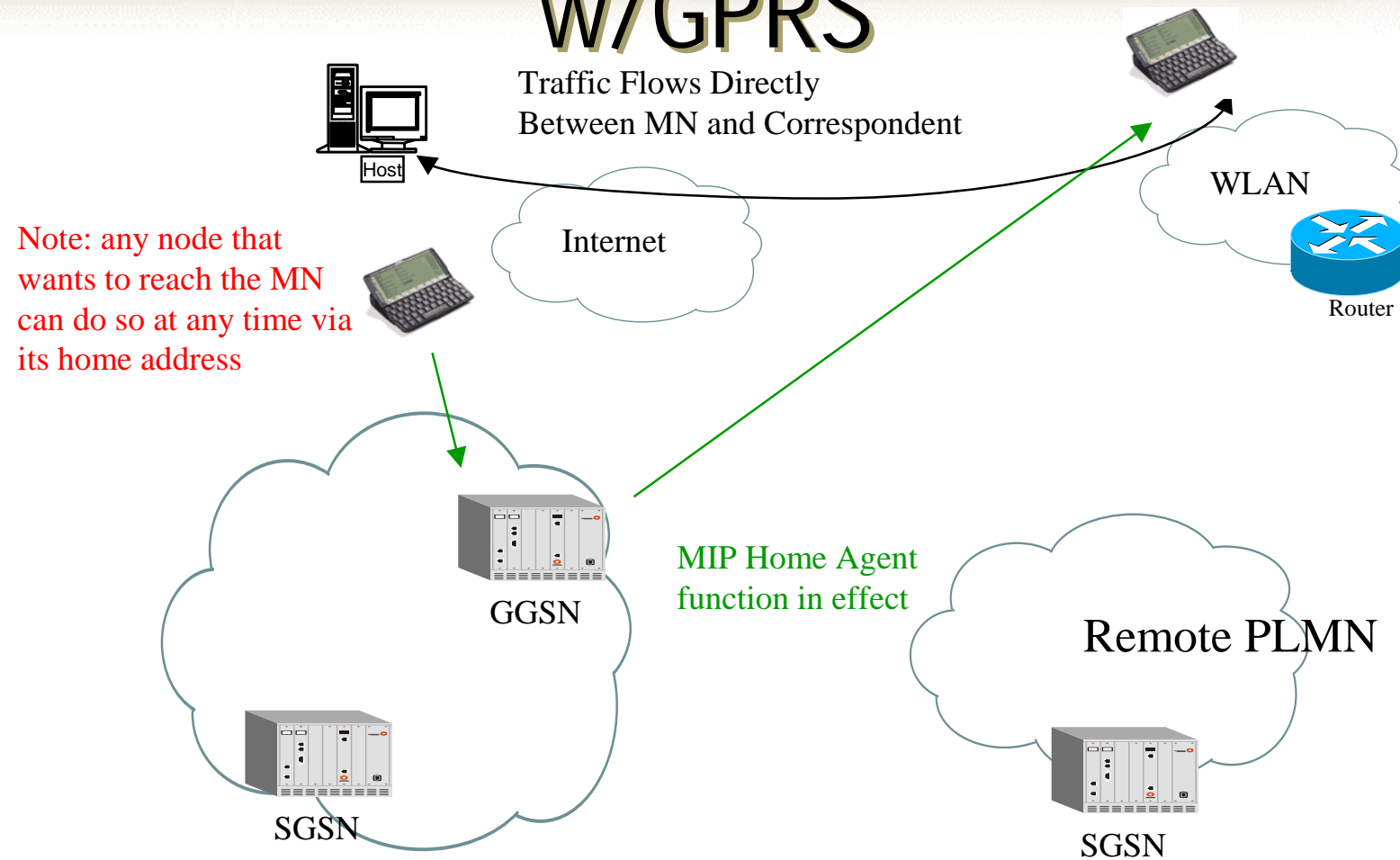




# Mobile IP v6 Operation w/GPRS



# Mobile IP v6 Operation w/GPRS



# Mobile IPv6 Status

- Standards progress
  - Internet draft
  - Goal to be through working group last call March 22
  - Significant activity with respect to Mobile IPv6 security issues
    - Secure route optimization
    - Tightening up some other loose ends
- Implementation status
  - Several implementations exist
  - Most have to be updated to come in line with standard

# Universal Mobility: The Best of All Worlds

- The customer wins
  - Good performance in high-density hotspots
  - Simplified access to hotspot
  - Single billing partner
  - Consistent access to home services regardless of radio interface
  - Use of common 802.11 PCMCIA cards
- The operator wins
  - Retains customer mind share and revenue
  - Augments network air capacity in high-density locations
  - Reduces need for complex pico-cell build-out in hotspots
  - Flexible deployment in advance of Release 5



# IP v6 Business Case?

- Wireless Provides an Important Impetus
  - A sudden influx of connected terminals
  - Step up in the number of consumed addresses (per terminal and per visited network)
  - Need for good mobility support
  - Need for clean support of peer-to-peer and push services
- Allows for a step to a cleaner architecture
- 3gpp has taken a decision that it is the only protocol for IP Multimedia Services

# Summary

- Universal Mobility is Another Compelling Service for MNOs
- IP v6 and Mobile IP combine well for Mobile Network Operators to provide value add for customers
  - Universal mobility with MIP v6 centered in an MNO
  - Operator can maintain subscriber awareness and provide subscriber specific services with v6 as a natural transition from v4