Enabling FMC: Airvana Universal Access Gateway

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Airvana Summary

Leader in Mobile Broadband
- Mobile Broadband Air Interfaces
- All-IP Wireless Network Architecture
- VoIP over EV-DO Rev A
- In-building solutions / FMC
- Air-to-Ground Broadband Solutions
- Mobile WiMAX ASN Gateway

Key Partnerships
- Nortel, Qualcomm

Commercial Networks In Service
- Verizon Wireless, Sprint PCS, Bell Mobility, Pelephone, Eurotel

Financial Position
- Revenue >$100M
- Profitable, 9 consecutive quarters
- Strong positive cash flow
- Operations in Boston & India
- More than 380 employees
Today’s Wireless Services Network

Services delivered only via 2G/3G Radio Access Network
Service Delivery via Other Access Networks

- RAN
- Operator's Domain
- Public Domain
- Dual-mode 3G/WiFi Handset
- WLAN
  - Home
  - Enterprise
  - Hot Spot
  - Municipal WiFi
- Universal Access Gateway

- Internet
- PSTN

- Operator Service Network

- Protects subscriber traffic
- Protects operator service core
- Enables IP mobility
- Per-subscriber QoS
- Per-subscriber detailed statistics
3GPP2 and 3GPP Standards Define this Gateway

3GPP2

CDMA2000

UMTS/GSM

3GPP

UMTS/GSM

3GPP2 “Packet Data Interworking Function”

“Unlicensed Mobile Access (UMA) Security Gateway”
All Standards Define a Similar “Gateway” Function

Packet Data Interworking Function (PDIF)
- Security gateway with secure tunnels
- IP connectivity and Mobility
- User authentication
- Policy Enforcement
- Accounting

Packet Data Gateway (PDG)
- Security encapsulation and de-capsulation
- Mobile IP procedures
- Authorization, authentication, prevention of hijacking
- Policy enforcement & packet filtering
- Accounting, Charging

Unlicensed Mobile Access Security Gateway (UMA SGW)
- Terminates secure remote access tunnels from the MS
- Provides mutual authentication, encryption and data integrity for signalling and bearer traffic.

UMA

Airvana Universal Access Gateway (UAG)
Universal Access Gateway (UAG) Requirements

**IP Mobility**
- Macro Mobility with Mobile IP
- Micro Mobility with MOBIKE

**Carrier Grade IP Platform**
- Huge Capacity – subscribers & throughput
- Full redundancy

**Security**
- Topology Hiding
- DoS Protection
- IKEv2 & IPSec

**Accounting**
- Per-Subscriber Usage
- Performance Data

**Quality of Service**
- Service Differentiation
- Per-Subscriber Profiles

Diagram:
- Enterprise
- Internet
- Operator's Domain
- Public Domain
- Dual Mode WiFi/3G Phone
- Hot Spot
- Home
- Packet Data Network
- UAG
- IMS
- GGSN
- MGW
- PSTN
- RAN
- MSC
- Dual Mode WiFi/3G Phone

6/1/2006
Killer App: Call Handoffs (“Voice Call Continuity” - VCC)

- UAG provides WiFi to WiFi voice/data mobility
- UAG provides 3G to WiFi voice/data mobility
- For 2G circuit to VoIP call hand-off, use “Mobility Server” for VCC
- UAG is transparent to all mobility servers!

Dual-mode WiFi/Cell phone

Operator’s Domain

Public Domain

Dual-mode WiFi/Cell phone

- Home
- Enterprise
- Hot Spot
- Municipal WiFi

Beyond 3G

Internet

PSTN

Internet

Public Domain

Operator Service Network

UAG

Mobility Server

WLAN

RAN

Dual-mode WiFi/Cell phone

Internet
Universal Access Gateway (UAG) in IMS Architecture

Application Layer
- PTT
- Presence
- IM
- VCC

Session Control Layer
- HA
- CSCF
- HSS/HLR
- MGCF/MGW

Access Control Layer
- UAG
- PDSN/SGSN
- MSC/VLR

Public Domain

Any IP Access
- Home
- Enterprise
- Hot Spot
- WiFi, WiMAX, LTE

Dual-mode WiFi/3G phone

Internet

RAN

PSTN
Thank You

Mobile Broadband. Everywhere.