Carrier Wi-Fi Calling
Deployment Considerations
(draft-pularikkal-opsawg-wifi-calling-02)

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A brief introduction to mobile data and voice offload
What is Carrier Wi-Fi Calling?

A Solution which allows Mobile Operators to seamlessly offload mobile voice signaling and bearer traffic into Wi-Fi networks.
What is this draft about?

• This draft provides an Architectural overview of Carrier Wi-Fi calling solutions
• Provides best practice recommendations for fine tuning the network to support Wi-Fi Calling
• Focus is around the following areas of Wi-Fi Calling:
  ➢ Wi-Fi Access Network
  ➢ Packet Core Integration Architectures
  ➢ UE side characteristics
Target Audience

• Carriers who have deployed or planning to deploy Wi-Fi Calling:
  ➢ And want to work with Wi-Fi providers to improve end users experience
• Wi-Fi hotspot providers such as Broadband Operators
  ➢ Who wants to monetize Wi-Fi deployments
• Enterprises planning to enable Wi-Fi calling in their networks
  ➢ In order to improve employee productivity
• Smartphone vendors:
  ➢ To optimize the Wi-Fi calling client implementation
What are the objectives?

- A **field reference** guide for the SP and Carriers who deploy Wi-Fi Calling
- Highlight the impact **Wi-Fi RF network fine tuning** on Wi-Fi calling performance
- Provide recommendations for **QoS Optimization** the Wi-Fi access network
- Provide recommendations for automatic **network discovery**
- Provide recommendations for seamless **user authentication**
Wi-Fi network to Mobile Packet Core Integration

• Possible Architecture options:
  ➢ Untrusted Wi-Fi access model
  ➢ Trusted Wi-Fi access model
  ➢ Hybrid Wi-Fi access model

• Pros & cons of the models covered in the draft
Architecture Overview Diagram

Wi-Fi Hotspot

WLAN Access

Backhaul/Internet

Carrier Packet Core

HSS

3GPP/AAA

PCRF

TWAG/ePDG

P-GW

IMS
Seamless Subscriber Onboarding

• Wi-Fi Network Auto-discovery via Hotspot 2.0
  ➢ Enable Hotspot 2.0 in the Wi-Fi access network and on the devices

• Automatic authentication into Wi-Fi Networks
  ➢ Use SIM credentials where possible
  ➢ Else leverage EAP-TTLS/ EAP-TLS methods

• Roaming partnerships
  ➢ Between Wi-Fi Operators and Mobile Operators
  ➢ Helps for automatic network discovery and authentication
Wi-Fi Network Fine Tuning

• Helps to improve Latency, jitter and packet drop characteristics for voice

• Key optimization options are:
  - Radio Resource Management
  - 802.11r based Fast Roaming
  - 802.11k based neighbor reports
  - 802.11v based assisted roaming and load balancing
QoS Optimization Options for Wi-Fi Calling

• Wi-Fi Access Network QoS
  ➢ Wi-Fi Multimedia (WMM) implementation on Radio interface
  ➢ Requires support on both client and access point

• Core Network QoS
  ➢ Dependent on the packet core integration trust models
  ➢ If public Internet is in the path QoS implementation will be limited
  ➢ DiffSrv. QoS can be leveraged in IP path
  ➢ 3GPP dedicated bearers can be used in the packet core
Wi-Fi Calling in restrictive networks

• Carrier Wi-Fi Calling solution requires IPSec tunnel establishment

• ”Some Networks” won’t allow IPSec traffic
  ➢ Due to security policy
  ➢ Or due to only allowing web traffic

• IPSec over TCP encapsulation could be leveraged to address this:

• Solution is covered in the following draft:
  – draft-ietf-ipsecme-tcp-encaps
Conclusions & Next steps

• Request for more reviews and feedback from community
• Request for adoption call after the reviews