

Wi-Fi Public Easements and Collaborative Mobile Overlay Networks (CMON)

A Libre End-to-End Service

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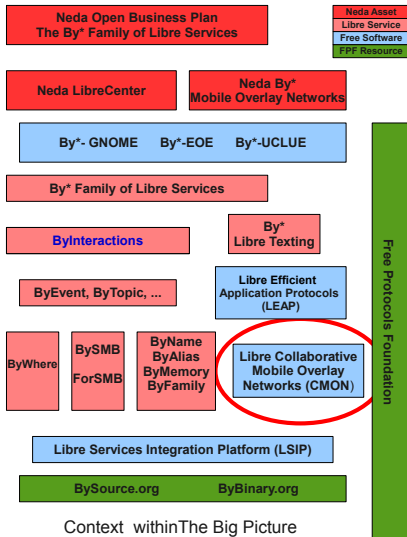
Free Protocols Foundation

<http://www.FreeProtocols.org>

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<http://www.freeprotocols.org/PLPC/100109>

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What Problem Are We Solving?

- (A) Wi-Fi is everywhere but often you can't get guest access to the network even for very minor traffic access.
- (B) After gaining guest access, things are very insecure.
- (C) You are usually behind a NAT and push is not possible
- (D) You don't have a stable IP address and mobility is not well supported.

General Solution

Collaborative Mobile Overlay Network

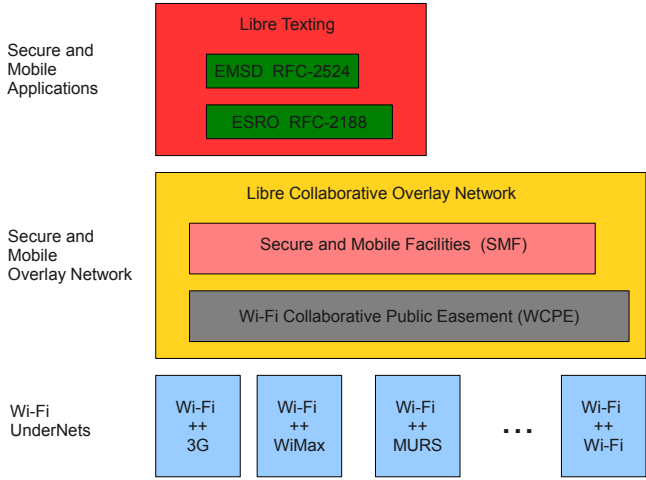
Wi-Fi Access: Collaborative Wi-Fi Public Easements

Wi-Fi Access: Intelligent Access Point Selection

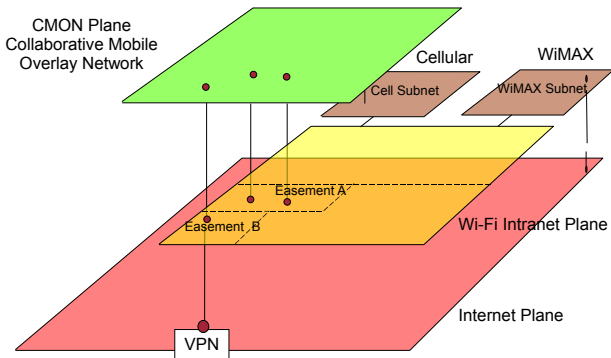
Security and Mobility: Identity and Credentials
(provisioning/management/verification)

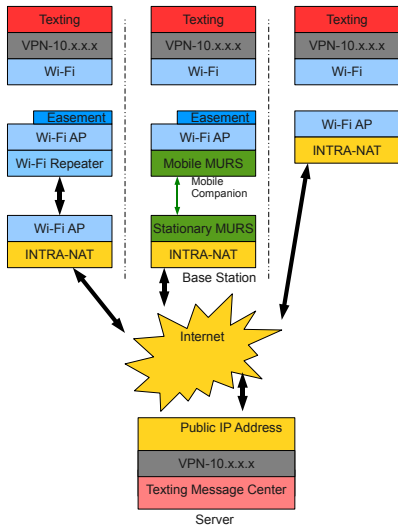
Security and Mobility: VPN Tunnel now
(Mobile-IPv4/Mobile-IPv6 later)

Security and Mobility: Static IP Address
(from the Overlay Network)



Libre Texting and Libre Collaborative Overlay Network and Wi-Fi++





Applications/Uses of Wi-Fi Public Easement.

Examples.

Uses

Initially targeted towards Libre Texting Application – has many other usages.

Narrowband: Libre Texting

Narrowband: Instant Messaging

Narrowband: Location Applications

Broadband: VoIP and VoIP-with-Mobility

Wi-Fi ++.

What is Wi-Fi++?

Wi-Fi access point on one side –
an other Wireless (3G, WiMax, MURS, ...) on the other side.

Wi-Fi++ 3G: Novatel's MiFi is an example of things to come.

Wi-Fi++ WiMax: Enables Clearwire to get into Texting.

Wi-Fi++ Wi-Fi: Anyone who has access can open the public easement.

Wi-Fi++ MURS:

- Narrowband Nationwide Public (unlicensed) spectrum
- 150Mhz – four 25Khz channels
- 1 to 5 miles radius range
- Narrow Pipe – Adequate for Texting and Instant Messaging but not much more

Wi-Fi Public Easement Concept.

What is an easement?

An easement is the concept of grant of use to one party over the property owned by another.

An example of a Wi-Fi Public Aasement.

When you are at my house, I allow you (the public) to access my Wi-Fi network but I limit it to Libre Texting application and 100KB/Sec data rate.

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Libre Texting Wi-Fi Public Easements.

- Public Easement Size: 10KB/Sec
- Ports: VPN Ports - EMSD Port, ESRO Port
- Name and Number Assignments at FPF:

Easement Nu: 129

Easement Name: LibreTexting

Providing Wi-Fi Public Easements.

- Wi-Fi provider decides which Public Easements he wishes to enable (e.g., Libre Texting).
- Libre Texting is advertized with SSID (eg lws003:129)
- When user presents Easement Name (eg LibreTexting) as passcode, her traffic is passed through the public easement.
- Bandwidth is shaped at the discretion of the access point
- Provides Public Easement through NATed last leg wi-fi connectivity

Using Wi-Fi Public Easements.

- Wi-Fi user scans SSIDs as usual.
- Detects an easement (eg lws003:129)
- User presents Easement Name (eg LibreTexting) as passcode.
- Uses Public Easement through NATed last leg wi-fi connectivity

Joining the Overlay Network

Step-by-Step.

- Assumes NATed last leg wi-fi connectivity (Public Easement Access).
- Establishes an OpenVPN tunnel.
- Uses its own static private IP address.
- Is push enabled in the private network. (Equivalent to private Mobile-IPv4/Mobile-IPv6)

Provisioning.

Goes through ByName (or BySMB controlled account assignment)
and is assigned the following

- Account Name
- Account Passwd
- PGP Public/Private Key
- Static IP Address

Example Scenario – Usage.

- The user recognizes Wi-Fi Public Easement
- The user goes through the “captive portal” authentication.
- The user gains access to behind the NAT routing.
- The user establishes a VPN connection and gets a private IP address – for push.
- The user optionally uses Libre Texting.

A Libre Service.

- Free Software
- In Its entirety
- Free Protocols
- Libre Services Manifesto
- Enhances Other Libre Services – Libre Texting, ByEntity (By*)

Server Side Software Components.

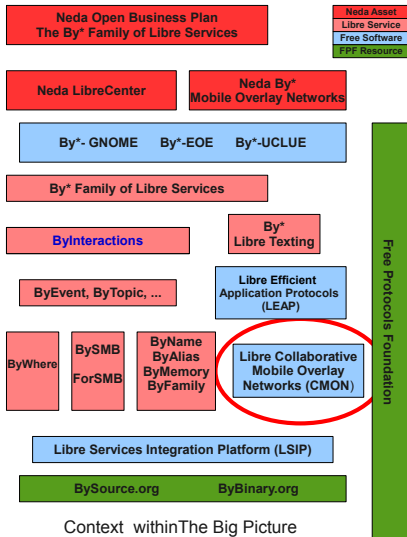
Access Point, Auth Server and Infrastructure (Debian)

- MadWifi (Access Point Atheros Chipset)
- HostAP (Access Point)
- NoCatAuth (Access Point)
- Dynamic iptables configuration
- DHCPD
- OpenVPN
- MySql
- Apache
- GNU Privacy Guard
- DD-WRT Packaging – <http://www.dd-wrt.com>

Device Side Software Components.

Maemo (Nokia 810) – Ubuntu

- Public Easement Access Point Selection
- Identity and Credentials Management
- OpenVPN



Context within The Big Picture