

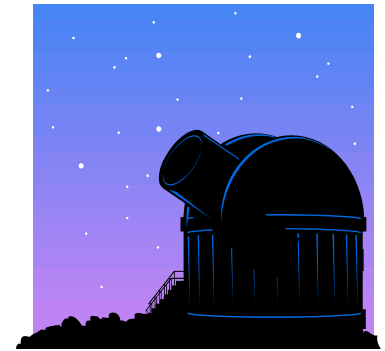


# White-Fi: What are the Applications ?

By Akshay Sharma  
Research Director

Communications Service Provider Technology - Gartner

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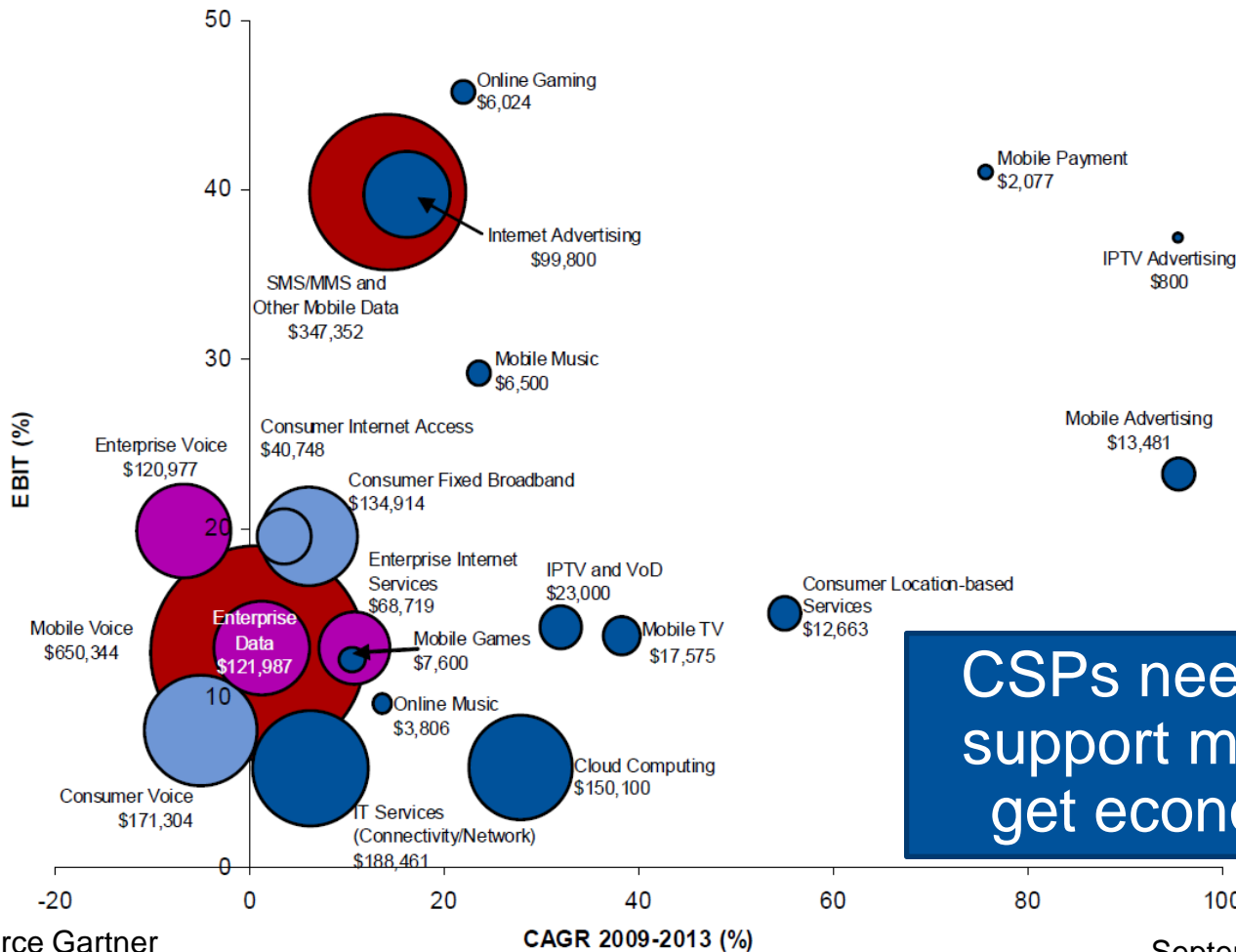


**Gartner provides technology and market vision necessary for service providers and vendors to successfully face their challenges and opportunities, globally.**

# Reinventing the Role of Communications

# CSP Revenue Opportunities

Figure 1. Strategic Mapping of Market Opportunities, Worldwide (Millions of Dollars)



Bubble Size =  
Total CSP Fixed  
and Mobile  
Revenues 2013,

Bubble color  
Denotes similar  
Apps – e.g.  
Consumer

CSPs need OTT that can  
support many services to  
get economies of scale

Source Gartner

September 2010

# Mobile Trends

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## Key Findings from H1, 2010

- Global mobile data bandwidth usage increased significantly with 68% growth.
- Video streaming continued to be the fastest growing application with a 92% increase. Video steaming is also the single largest application worldwide.
- YouTube remains one of the single most important websites accounting for 13% of global mobile data bandwidth.
- VoIP and IM grew by 84% becoming the second fastest growing application worldwide.
- Twitter experienced a huge 310% jump in its global mobile data bandwidth share.
- Facebook increased its dominance of the social networking segment and grew by a massive 200%.
- Skype remains the undisputed VoIP market leader, accounting for 83% of global mobile VoIP bandwidth.

Source: Allot Communications

# Opportunities

“White-Fi”, this is a Wi-Fi like system that uses white spaces in the UHF (Ultra High Frequency) band.

- Spectrum Bridge with experimental network that used white space spectrum to provide wireless connectivity to surveillance cameras, and environmental sensors, in a "smart city" deployment.

## Trends in 4G/EPC



Can this occur for White-Fi ?

# Adoption Drivers

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- Possibilities around utilizing White Space spectrum in a campus setting for broadband access,
- Promising data rates exceeding several 100-Mbps.
- Lower frequency means better in-building coverage
- Upcoming 802.11 “White-Fi” standard (802.11af).
- Vendors like Google, MSFT, and WiFi vendors behind it
- Mobile-IP standards supporting seamless handoff
- QoS, DPI, Policy controllers can be applied by Managed Service Providers

# Adoption Drivers – Newer Features Needed

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The Femto Forum has developed APIs for LTE Femtocells which White-Fi 802.11af should adopt as well !

- **Presence information** – when a user enters, leaves or is present on White-Fi Access Point.
- **Routing information** – access to the routing table for the local network, to redirect traffic, Mobile-IP standards for session continuity
- **Service Discovery information** – the ability to discover services on the local or wide area network. Media storage/display sync'ing
- **Capability information** – what throughput the White-Fi AP can support and who can use it.
- **Secure remote access** – the ability to connect remotely to the home network from a smartphone/laptop/tablet.



# Adoption Drivers – Newer Applications

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- **Alerts/Proximity with automated updating to Social Networking sites**
- **Location-based Printing/Displaying to alternative devices (seamless video session continuity to laptops, and TVs, or printing to printers)**
- **Location-based DVR Remote Control, from the smartphone/laptop/tablet**
- **Location-based Streaming Content from PC to smartphone/laptop/tablet and back**
- **Location-based Content Synchronization for Media across devices**
- **Policy-based control with end-2-end QoE: quality of experience**

# Adoption Inhibitors

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- **Competition from WiFi, 4G, Femtocells**
- **Interference, QoS, and capacity issues**
- **Complexity and cost to solve interference problems – Geo Location DBs**
- **Powerful TV broadcasters will continue to fight ‘White Space’ – especially when Web-TV runs over it**
- **White spaces only support fixed or semi-mobile users (roaming is not yet possible). Can be mitigated via Mobile IP standards.**
- **LTE is on the horizon to allow offload from 3G to Wi-Fi networks.**

# The OTT/CSP 4G approach, with Ads/Billing

Targeted ads,  
Demographics,  
Location-aware,  
Search-aware,  
Policy-aware,  
Network-aware,  
Session-aware,  
App-aware,  
Content-aware,  
Cache-aware,  
Context-aware

- News, Sports & Alerts
- Video on Demand
- Pictures, MMS, SMS & IM

- Location-Based Services
- Music Downloads
- Voice over IP
- Ringtones



# White-Fi Potential Applications

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- Automatically synchronize music collections across devices with their smartphone/tablet with the content from their PC
- Control their TV from their mobile device and have sessions flow across devices (smartphone, TV, tablet, and laptop)
- Leave virtual notes to be delivered when the recipient returns home or to the office.
- Automated presence/location updates to Social Networking sites
- Remotely control home appliances when out of the house in a secure manner.
- **Video: Broadcast TV, Pay-per-view, Movies, User Generated Content, Telepresence, Interactive Gaming, Telemedicine, Remote supervision and control, etc...**

# White-Fi Potential Applications

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- **Wide area coverage**
- **Low-power broadband**
- **Backhaul for WiFi**
- **Smart Grid, Smart Cities**
- **Cellular Offloading**
- **VoIP/Unified Communications**
- **Vehicular Communications**
- **Healthcare Communications**
- **Mesh Networks → Crowd Computing ?**

**TV Video Spectrum will kill the Radio Star ?**

**Thank you**