



Smart Offload for Smartphones

Kineto Wireless Inc.

January 2010

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The Smartphone Revolution

The growth of the mobile industry during the last century has been one of the business world's greatest success stories. In less than 30 years, mobile handsets have become a mainstay of daily life for more than 3 billion people around the world. Now, the industry is facing its next great challenge as consumers embrace the mobile Internet with smartphones.

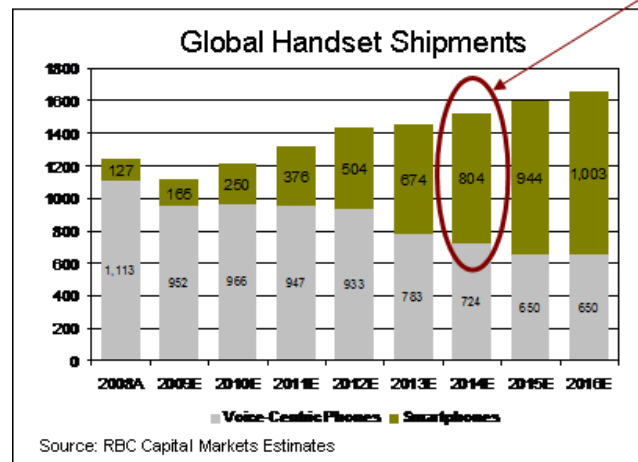
Smartphones, with their large displays and easy-to-use touchscreens, have become the phones of choice for consumers, particularly in developed mobile markets. Smartphones have made the Internet mobile, and they are delivering on the promise of putting information at subscribers' fingertips.

Today, subscribers both expect and demand superior mobile coverage. In addition, they expect high-speed access to mobile Internet services commensurate with their fixed-broadband services. Yet the impact of meeting these requirements on mobile networks has become overwhelming.

One industry insider quipped that smartphone users on his network consume 50 times more data bandwidth than traditional mobile phone users. AT&T in the US, which has fully embraced the iconic iPhone, has faced the full brunt of smartphone 'success.' John Donovan, AT&T's Chief Technology Officer, recently stated that "...mobile data traffic has grown nearly 5,000% in three years..." since the iPhone launch.

For the industry, this is simply the tip of the iceberg. RBC Capital Markets estimated that in 2009, smartphones accounted for just under 15% of the total handsets shipped. Yet by 2014, more than 52% of all handsets shipped worldwide - a staggering 804 million units - will be smartphones. The effect of these smartphones on mobile networks with their bandwidth consumption will be staggering.

Smartphones to be >50% of ALL handsets!



Wi-Fi: A Smart Choice for Offload

Wi-Fi technology, based on the IEEE's 802.11 specification, has been an unqualified success. Designed to operate in an unlicensed band, the technology has been proven to be very popular with consumers and enterprises and far more resilient than ever imaged.

Wi-Fi offers significant benefits as a technology for cellular offload:

- It operates at a frequency independent of mobile networks. Thus, the proliferation of access points in the home does not interfere with the outdoor macro network.
- It is an existing technology in many consumers' homes and offices. According to a recent European Union Commission study of EU households, more than 50% of homes with broadband access already have Wi-Fi installed.
- Wi-Fi is already in smartphones, the handsets which are causing the coverage and capacity challenges. ABI Research stated that by 2014, fully 90% of smartphones will be equipped with Wi-Fi.

Basic Wi-Fi Offload

Today, the use of Wi-Fi by mobile operators for macro network offload is rather simplistic. When a smartphone is connected to a Wi-Fi access point, it automatically routes web-based traffic (e.g. YouTube, Pandora, Skype, etc.) to the Internet, without sending the data over the cellular network. While this immediately relieves non-revenue generating web traffic from the network, it doesn't enable an operator to get the full benefit of Wi-Fi.

By utilizing Wi-Fi for Internet traffic only, subscribers receive five bars of Wi-Fi coverage for web services but receive the 'usual' coverage from the macro network. This produces cases where web services may perform better than an operator's own services indoors. This is especially troubling if the user can't make a mobile call, yet receives a clear Wi-Fi signal to place a VoIP call with Skype.

In addition, a basic Wi-Fi offload approach requires both the cellular and Wi-Fi radios to be powered on simultaneously. Two radios operating simultaneously drain the battery faster than one, yet both radios are required (Wi-Fi for Internet offload, GSM/3G for cellular) to provide basic offload.

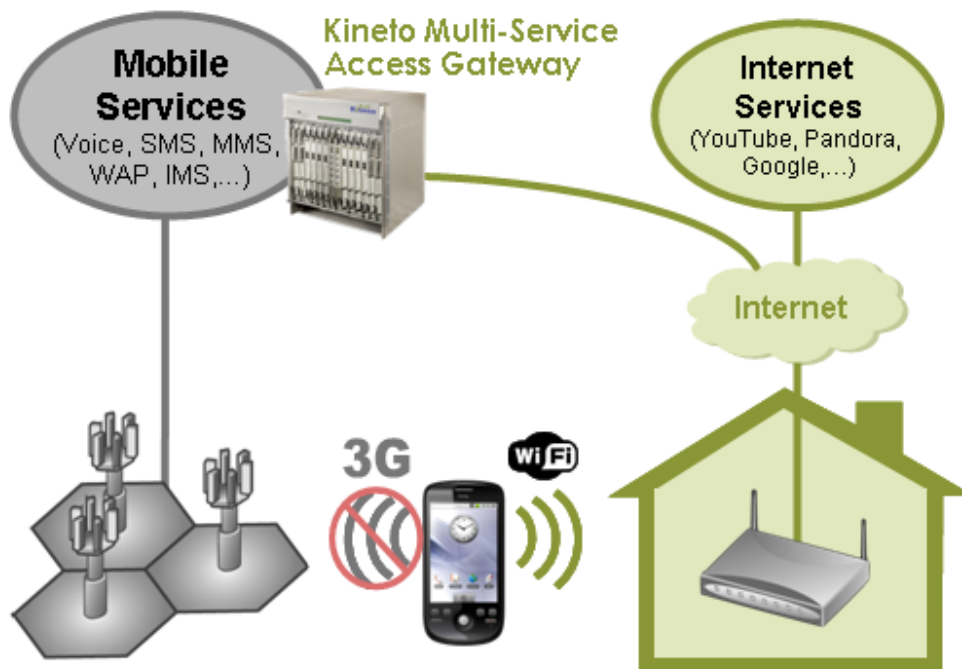
This results in a disincentive for consumers to use Wi-Fi, and ends up impacting the benefit mobile operators can achieve.

Kineto: Delivering Smart Wi-Fi Offload

To overcome these limitations, Kineto has developed a new “Smart Wi-Fi Offload” solution. With it, mobile operators can take full advantage of the inherent benefits of Wi-Fi in order to execute a comprehensive service offload strategy – increasing network capacity and improving coverage.

With the smart Wi-Fi offload solution, mobile operators can offload all mobile services (voice, SMS, mobile TV, IMS, ...) from the macro network. Now all mobile services can receive ‘five bars’ of coverage from Wi-Fi while increasing overall network capacity.

Turns existing Wi-Fi access points into seamless extensions of mobile network



In addition, operators can use the Smart Wi-Fi Offload solution to address the growing threat from mobile VoIP clients downloaded onto smartphones. Operators can develop low-cost Wi-Fi calling offers to

incentivize consumers to use their mobile service rather than a competitive offer.

In fact, mobile operators may choose to offer discounted or free Wi-Fi calling as an incentive for subscribers to utilize Wi-Fi when at home or in the office. This type of incentive will make subscribers willing to power on Wi-Fi, giving operators the benefit of increased capacity and coverage.

Kineto's Smart Wi-Fi Application

At the heart of Kineto's solution is a new Smart Wi-Fi Application. The application runs on the leading smartphone operating systems, including Android, iPhone, Symbian and Windows Mobile.

Once the solution is supported as a service by mobile operators, subscribers would be able to download the Smart Wi-Fi Application from an Applications Store or Marketplace. Or, operators may choose to have the application pre-loaded onto new smartphone devices.

The application provides smart service routing, sending web-based applications directly to the Internet, while routing mobile voice and data services through a secure connection to the mobile core network. The application also provides clear notification to subscribers that Wi-Fi offload is enabled.



Smart Wi-Fi Application for Smartphones

Perhaps most importantly, Kineto's Smart Wi-Fi Application overcomes the battery impact of Wi-Fi usage so common in basic Wi-Fi offload approaches. With basic offload, a Wi-Fi radio is powered on and sends web traffic to the Internet. But the GSM or 3G radio needs to remain powered on as well to make/receive phone calls. This added power drain is a result of both radios being on and active simultaneously.

Kineto's Smart Wi-Fi Application solves this issue by sending all mobile services, particularly voice and SMS, over the Wi-Fi radio. It maintains a secure, managed connection to the mobile voice network over Wi-Fi. In this way, smartphones can place and receive calls over Wi-Fi, and the GSM/3G radio is not needed for voice communications. When the Wi-Fi

connection is active, the application places the cellular radio into a hibernation state so that only one radio is drawing power.

Kineto's Multi-Service Access Gateway

The Smart Wi-Fi Application communicates with Kineto's industry-leading Multi-Service Access Gateway located in the mobile operator's core network. The access gateway functions as a 3GPP GAN Controller (GAN-C) that connects to the operator's existing circuit (MSCs) and packet (SGSNs) infrastructure to ensure the delivery of the complete range of mobile services and applications.



Kineto Multi-Service Access Gateway

Kineto's Multi-Service Access Gateway provides a secure, managed connection, including SIM-based authentication, over the Internet to Smart Wi-Fi Applications running in the network. The system also provides AAA-based service authorization to ensure the appropriate users

get access to the appropriate services based on a range of criteria, including location.

Kineto's Hosted Gateway Service

Kineto offers operators the option to have the Multi-Service Access Gateway hosted from sites worldwide. By using Kineto's hosting service, operators can quickly and easily make Smart Offload services available to their subscriber base with minimal capital investment. The hosted service lets operators immediately address coverage problems, while quickly scaling to meet growing network capacity demands.

Conclusion

Wi-Fi is already being embraced by the world's largest mobile operators for basic offload, simply routing web traffic to the Internet. Yet, it has even more potential.

Kineto offers the industry's first Smart Wi-Fi Application which can be downloaded to a variety of smartphones. The application offloads all mobile services and improves mobile coverage using the existing Wi-Fi access points installed in millions of homes, offices and hotspots around the world.

The Smart Wi-Fi Offload solution is based on the trusted, existing 3GPP GAN specification and provides a standardized, secure method for routing mobile voice, data and IMS services to smartphones over the Internet. It provides a comprehensive offload and coverage strategy for mobile operators by routing all mobile services over Wi-Fi. This can help operators take great strides in reducing the challenges created by the proliferation of smartphones.