Kineto WIRELESS

Smart Wi-Fi

A Smart Offload Solution for Smartphones

Kineto Wireless, Inc.
1601 McCarthy Blvd.
Milpitas, CA 95035
Tel: +1 408 546 0660

The Smartphone Opportunity (…and Challenge)

The smartphone revolution is upon us. With their large displays and easy-to-use touchscreens, smartphones have become the handset of choice for consumers in developed mobile markets worldwide. On a positive note, smartphones have resulted in a significant boost to mobile data usage and revenues. Smartphones have finally made the Internet mobile, and they are delivering on the promise of putting information at subscribers' fingertips. However, along with their benefits, smartphones also bring a number of significant new challenges for mobile operators.

Capacity Crunch

By delivering a compelling mobile Internet experience, smartphone data usage has grown exponentially. 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. Unfortunately, this rapid rise in data usage is putting a tremendous strain on mobile networks. Operators are moving quickly to add capacity, but it's a very expensive and time-consuming process.

Indoor Coverage

Today, subscribers both expect and demand superior mobile coverage. Unfortunately, coverage for voice and data services in the locations subscribers spend most of their time (home and office) continues to challenge operators. This situation has only grown worse with the rollout of 3G networks, where operating at higher frequencies has made in-building penetration even more problematic.

Mobile VoIP Threat

With significant processing power and open operating systems, smartphones have finally opened the market for 3rd-party, or over-the-top, applications. However, some of these applications, especially 3rd-party mobile VoIP services, represent a direct threat to mobile operators' main source of revenue.

With some operators expecting smartphones to represent more than 50% of handset sales starting in 2010, the challenges discussed above are only set to get worse. As a result, a number of operators are now looking for creative solutions.

Fortunately, Wi-Fi is Ready to Help….

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

At this point, Wi-Fi coverage is nearly ubiquitous in the exact locations smartphone subscribers spend most their time, at the home and office. According to a recent European Union Commission study of EU households, more than 50% of homes with broadband access already have Wi-Fi installed. And in the business world, it's difficult to find a enterprise today that has not deployed Wi-Fi coverage within their facilities.

At the same time, Wi-Fi has proven to be a very popular feature in smartphones. While Wi-Fi penetration in smartphones began slowly, the expectation moving forward is that all smartphones will include Wi-Fi as a standard feature.

When you combine widespread adoption within homes and offices with being an embedded feature in smartphones, Wi-Fi would seem an ideal technology for addressing the capacity, coverage, and mobile VoIP challenges operators face due to smartphones.

…but Current Smartphone Wi-Fi Solutions Don't Address the Challenges

However, mobile operators are only using the most basic capabilities of Wi-Fi. In this manner, Wi-Fi offers only a partial solution to the key challenges, while introducing a few additional challenges.

Today, when connected to a Wi-Fi access point, smartphones automatically route all web-based services (e.g. YouTube, Pandora, Skype, etc.) to the Internet over the Wi-Fi connection, but continue to route all the mobile operators services (Voice, SMS, MMS, IMS, video, etc…) over the cellular network.

While this approach does help address the coverage and capacity challenges for certain services, it does not do so for the operator's own, revenue-generating services. By offloading 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, 2G/3G for cellular) to provide basic offload.

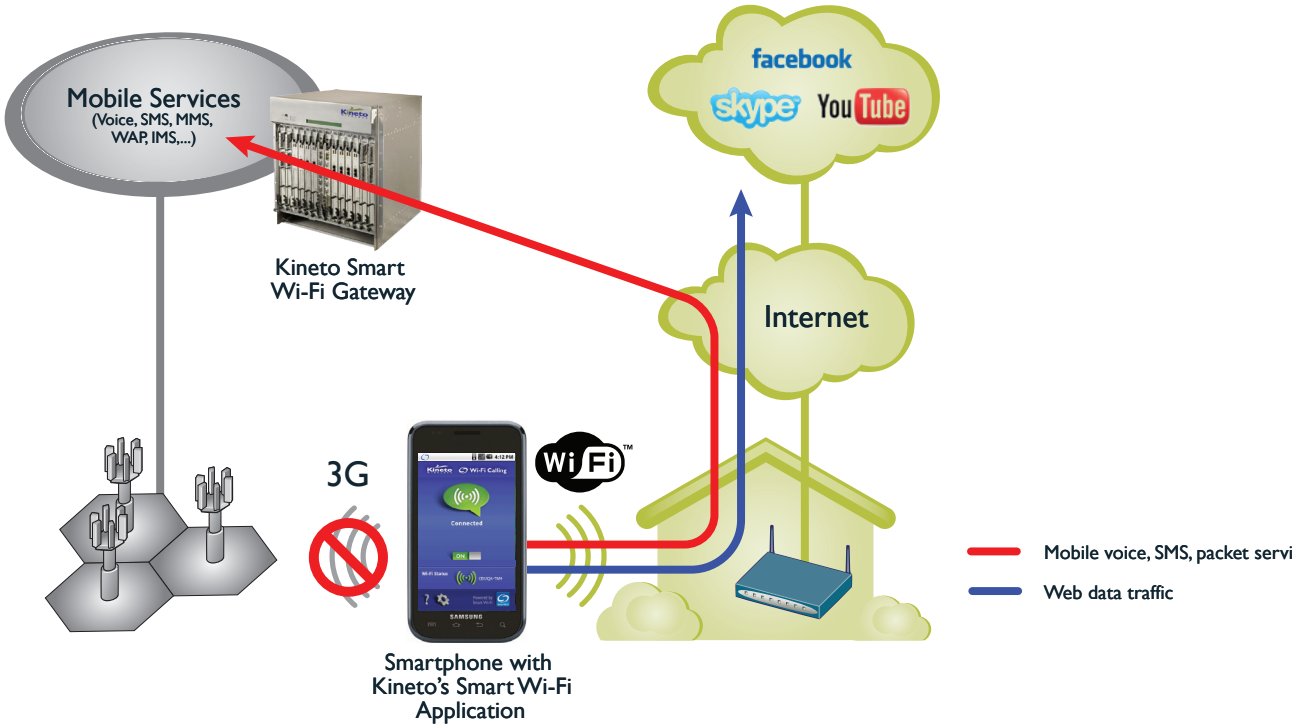
This results in a disincentive for consumers to use Wi-Fi and ends up impacting the benefit mobile operators can achieve.

A New Approach: Smart Wi-Fi Offload

Kineto has developed a new "Smart Wi-Fi Offload" solution that enables mobile operators to overcome these limitations. 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.

Mobile operators can also 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.

Smart Wi-Fi Solution



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 more interested in powering on Wi-Fi, while 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 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 alerting them that Smart Wi-Fi is active.

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 2G 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 2G/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 draws power.

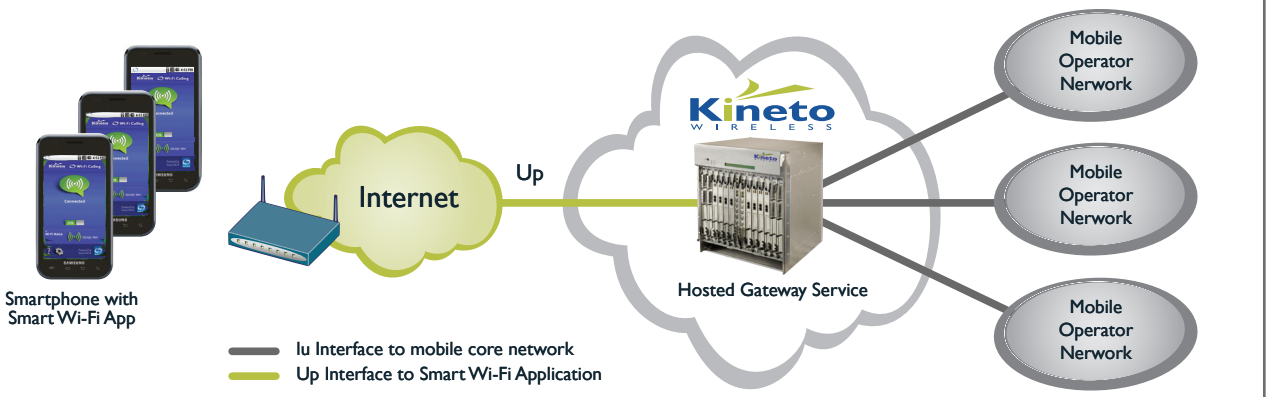
Smart Wi-Fi Application for Smartphones

The application is designed to be pre-loaded onto smartphones and is based on 3GPP UMA/GAN standard. Kineto's Smart Wi-Fi Application supports Android version 2.1 and later, with support for Windows Phone and Apple iOS planned* for the near future.

** Research in Motion and Nokia support an embedded UMA/GAN client in a range of devices today.*

Kineto's Smart Wi-Fi Gateway

The Smart Wi-Fi Application communicates with Kineto's industry-leading Smart Wi-Fi Gateway. The access gateway functions as a 3GPP GAN Controller (GAN-C) that sits between the operator's existing voice (MSCs) and packet data (SGSN/GGSN) infrastructure and smartphones with the Smart Wi-Fi Application. This ensures the delivery of the complete range of mobile services and applications.



Kineto offers its Smart Wi-Fi Gateway as a service hosted from sites worldwide. This allows operators to 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.

Kineto's hosting locations are state-of-the-art facilities operated by Tata Communications, one of the world's largest backbone network providers and the global leader in supplying carrier-grade hosting centers. By partnering with Tata, Kineto is able to meet the rigorous reliability and security requirements of mobile service providers.

Alternatively, Kineto offers operators the option to have the Smart Wi-Fi Gateway installed and deployed at the mobile provider's core network. The gateway still maintains the secure, managed connection between the smartphone with the Smart Wi-Fi application, and offers the same flexible tools for service authentication to ensure appropriate users gain access to the appropriate services based on a range of criteria, including location.

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 for smartphones. The application 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 UMA/GAN standard that provides a reliable, 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.