OPENET

Wi-Fi: Intelligent Offload

Delivering Quality of Experience
and Lower Network Costs

Managing & Controlling Wi-Fi Customer Experience

While many operators initially embarked on a Wi-Fi strategy to ease congestion on cellular networks they are now starting to focus on using Wi-Fi to deliver an enhanced customer network experience and also as a revenue generator. This is enabled by operators providing intelligent offload capabilities as well as being able to control and manage the customer experience while using Wi-Fi, and not just on cellular networks.

The roll out of Wi-Fi hotspots continues apace, and more and more mobile traffic is now going over Wi-Fi. Research firm Juniper, predicts that only 40% of data traffic will go over cellular networks by 2017, thanks to Wi-Fi. This is not surprising when you look at the cost saving Wi-Fi can deliver. Research[1] from Senza Fill consulting shows that the total cost of ownership per bit of Wi-Fi is only 10% of 3G and 43% of 4G. While this TCO figure may have accountants excited, it's worth noting that the top reasons that consumers select their mobile internet provider is network quality, then coverage, and then cost.[2] Also the top objective of mobile operator CMOs is to improve customer loyalty and advocacy.[3]

1: Source: White Paper- Carrier Wi-Fi for Mobile Operators – Senza Fili Consulting, June 2013

2: Source: Accenture Mobile Web Watch. Survey of 31,000 consumers in 26 countries, June 2013

3: CMO Council – Survey of Mobile Operator CMOs – November 2012

Managing & Controlling Wi-Fi Customer Experience

Wi-Fi delivers significant network savings and operators will increasingly offload cellular traffic. But what if this off-load results in poor customer network experience? What will be the effect on loyalty and advocacy?

With increasing volumes of cellular traffic being offloaded to Wi-Fi, and customers rating network quality as the most important attribute of their mobile internet experience, it's important that operators can extend and manage the customer network experience to Wi-Fi and beyond. This is the key to being able to deliver a good customer experience from Wi-Fi on which operators can build loyalty and generate revenue. But the problem is that currently many operators have no control over when and under what conditions a user will be offloaded to Wi-Fi. As well as this many have no way to provision a user's device to automatically connect to Wi-Fi. This leads to a poor experience with connecting to Wi-Fi often being a painful process. Furthermore, when customers move onto a Wi-Fi network their mobile operator has no visibility of their traffic, can't enforce policy decisions, and has no ability to monitor and manage the customer experience.

New standards such as ANDSF (Access Network and Discovery Function) are changing how customers can use Wi-Fi. This provides the foundation for the revenue opportunity for operators to position Wi-Fi as an extension of their cellular networks in which operator controlled policies, controls, marketing offers, and charging are applied.

Managing Quality of Experience

Wi-Fi and the Customer Experience

Many operators are fighting back from price cutting by MVNOs by promoting quality. Being able to offer a range of offers with different QoS (quality of service) and QoE (quality of experience) helps in ensuring that data doesn't become a 'one size fits all' commoditized offer. Given that so much mobile traffic is going over Wi-Fi networks, in order to deliver the desired QoE operators need to know the performance on Wi-Fi hotposts. Having information on the QoE on Wi-Fi hotspots helps the operator automatically select which Wi-Fi hotspot traffic should be offloaded to. By doing this operators can ensure consistency across Wi-Fi and deliver the expected and desired customer QoE.

ANDSF - How does it Work?

ANDSF enables operator controlled offload by assisting devices to discover access networks in their vicinity (e.g. Wi-Fi) and provide rules to prioritise and manage connection to all networks. This allows operators to dynamically control and define preferences – that is how, where, when and for what purpose a device can use a certain radio access technology – e.g. under what conditions is traffic offloaded to Wi-Fi.

When, What, Where and Who
- Which Traffic to Offload?

Intelligent Offload Decisions

Operators can define policies that enable devices to automatically connect and authenticate to Wi-Fi access points. From the users perspective this is a completely seamless and transparent experience. The operator can centrally manage policies which give a great deal of control over which Wi-Fi networks will be selected and under what conditions. These intelligent offload decisions can be based on multiple inputs including customer profile, historical data consumption, tariff plan, device type, time-of-day, location information and a wealth of other network information. ANDSF enables operators' policies to be installed on users' devices and also to change them dynamically as conditions change.

Improving QoE – Co-ordinated Policy Rules across Wi-Fi and Cellular Networks

Customer offload analytics provides valuable feedback to operators over which networks are being utilized by their customers, per application, data consumption and the QoE of these networks. This allows operators to identify Wi-Fi problematic hotspots or areas with insufficient coverage. Policy based decisions relating to who should be moved off the cellular network, in which locations, or during which times are all controlled by the operator. Operators can utilize the Wi-Fi network to offer additional value to their customers i.e. offload users who exceed their fair usage restrictions on the cellular network or by providing a larger quantity of Wi-Fi access points to higher value customers.

Wi-Fi and Cellular

Wi-Fi is Becoming an Extension of the Cellular Network

Wi-Fi needs to be able to support integration with cellular networks in terms of seamless handover, security and authentication. In other words, from a customer's experience viewpoint Wi-Fi should be an extension of their cellular network.

The Hotspot 2.0 standard will ease the integration of Wi-Fi and cellular networks and with seamless integration mobile users will not be concerned about whether they're using cellular or Wi-Fi. Being able to offer this consistency of experience while taking advantage of the lower cost of Wi-Fi is often enough for operators to invest in Wi-Fi, but increasingly there are demands on Wi-Fi to pay for itself and so operators are looking at how to make money out of Wi-Fi.

Wi-Fi Revenue Opportunities

Bundling Wi-Fi with a Data Plan:

Being able to offer an additional data allowance as part of a plan can add value. As can be seen from figure 1, Vodafone in the UK offer a Wi-Fi allowance along with a cellular data allowance as part of their higher end plans. This enables operator to increase usage quotas and / or charge more for increased allowances.

Tiered Hotspot Services:

Being able to manage QoE in Wi-Fi enables operators to offload traffic for specific services and charge accordingly. For example, if a customer wants to use a high speed day pass for video, operators can off-load the relevant video traffic for the duration of the service pass (e.g. 1 day) to available Wi-Fi networks, where they know the QoE will support hi-def video. This frees up more expensive cellular capacity and at the same time generates revenue from selling tiered offers over Wi-Fi. Offering premium, high-priority connectivity and user experience on Wi-Fi enables service differentiation and selling add-ons for higher speed access.
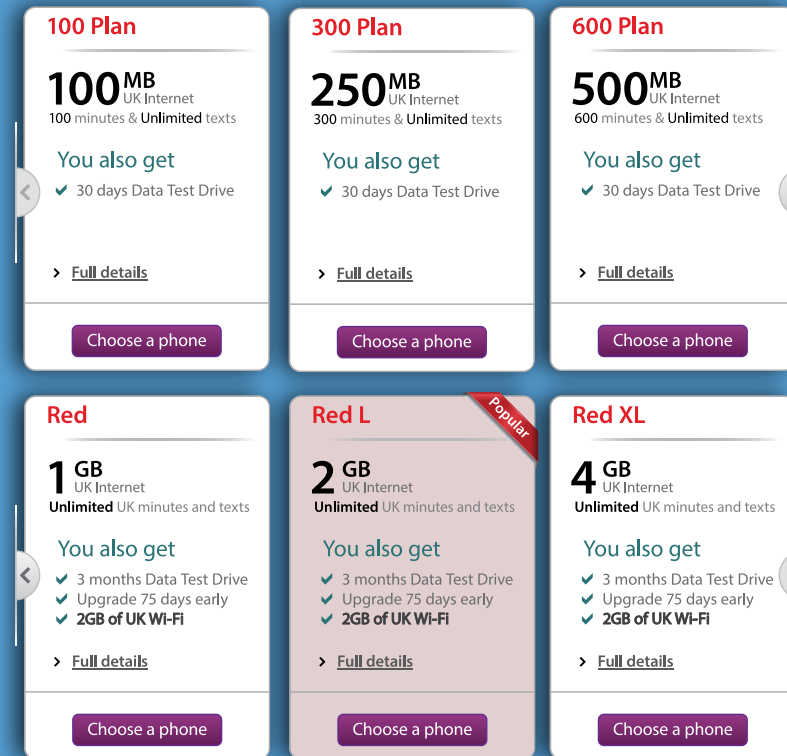
Fig 1: Vodafone UK Sample Plans: Wi-Fi included in higher end plans

Wi-Fi Revenue Opportunities

Wi-Fi Based Roaming:

Several mobile operators are already doing deals with Wi-Fi hotspot providers for data roaming. AT&T offers free Wi-Fi access at Boingo's hotspots located in airports throughout the world. This is available as part of AT&T's international plans, and as any frequent traveller will testify having such a service, which is part of your monthly data plan, makes using data services overseas more convenient. Many operators have an opportunity here to bundle and sell Wi-Fi roaming at low cost as part of existing data bundles. As can be seen from figure 2, AT&T bundle 1GB of Wi-Fi roaming usage into their data roaming add ons.

The NGH (Next Generation Hotspot) initiative has been launched by the Wireless Broadband Alliance in order to help advance best practice for Wi-Fi roaming and help develop Wi-Fi roaming partnerships for operators.

Fig 2: AT&T – offers Wi-Fi bundles as part of data global add on packages

Ad-Hoc Prepaid Wi-Fi Access:

As operators invest in, and roll out their own Wi-Fi hotspots, then it makes sense to offer and charge for access to casual users, as most Wi-Fi providers currently do. Figure 3 illustrates the offer provided by South African operator, Telkom Mobile for pre-paid casual Wi-Fi access.


Fig 3: Telkom Mobile's Prepaid Wi-Fi Usage Offer

Integrating Wi-Fi with PCC (Policy & Charging Control) - Openet's Solution

Openet's Wi-Fi Offload solution is based on client interaction with a fully standards compliant Access Network and Discovery Function (ANDSF) server contained within Openet's Interaction Gateway. Openet can provide its own client for download by end users or the client functionality can be provided as a library for integration into 3rd party clients. Furthermore, the Openet ANDSF server fully implements the 3GPP standard defined S14 interface and can therefore interact with any third party ANDSF client. The interaction gateway provides integration with back end operator policy and charging control systems.
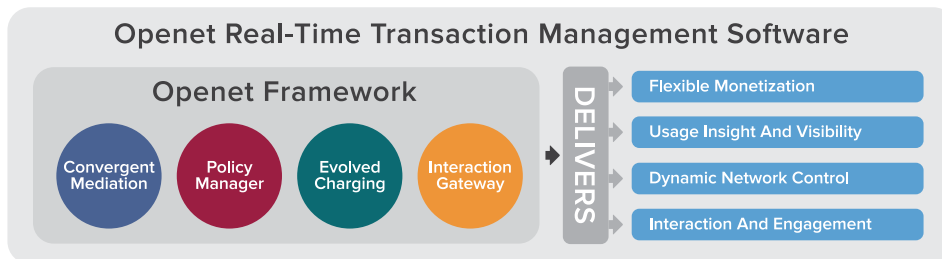
Openet's Offload Solution

Smart Devices | Access Networks | Policy & Charging Control
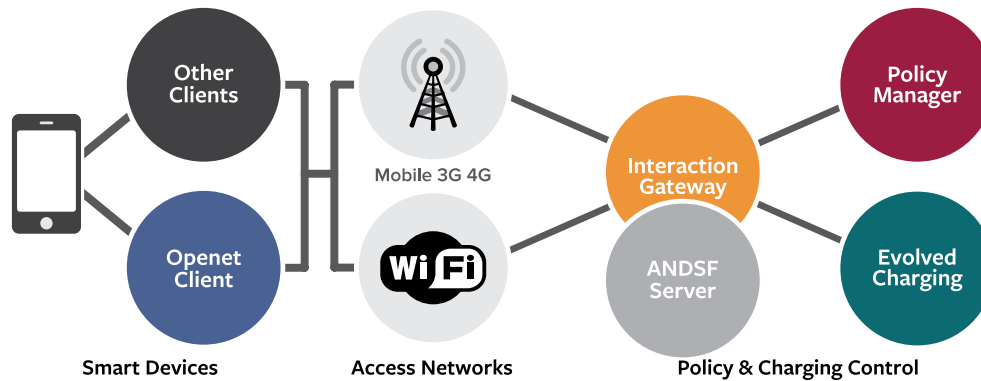
OPENET

About Openet

Since the introduction of mobile data services in 1998, Openet has helped service providers capitalize on opportunities and overcome challenges. With competitive pressure accelerating, today's service providers rely on Openet software to evolve business models around networking smartphones, M2M devices and third party services. Openet's portfolio combines policy and charging control with device and third party interaction to enable innovative charging models, to control operating cost and to personalize services. More than 80 of the world's largest service providers in 28 countries use Openet's high performance software.

Openet has helped operators worldwide take advantage of growth opportunities by evolving legacy platforms to provide a flexible, real-time charging/OCS capability integrated with policy control (PCC).

Openet Real-Time Transaction Management Software

Openet Framework

Convergent Mediation | Policy Manager | Evolved Charging | Interaction Gateway

DELIVERS

Flexible Monetization
Usage Insight And Visibility
Dynamic Network Control
Interaction And Engagement

OPENET

For more information,
please visit www.openet.com