BUILDING YOUR CARRIER WI-FI STRATEGY

OPPORTUNITIES, CONSIDERATIONS AND SOLUTIONS

STRATEGIC WHITE PAPER

Telecom providers such as cable multiple system operators (MSOs) and fixed and converged service providers are turning their attention to Wi-Fi® technologies for both competitive and revenue generating business strategies. Providers are contemplating community Wi-Fi, venue coverage and extended hotspot strategies – each of which has unique business implications – to meet business objectives. Alcatel-Lucent lightRadio™ Wi-Fi is becoming a de facto standard for Carrier Wi-Fi, and the solution architecture is the driving force behind Euro Cable Labs' recommended approach for Wi-Fi deployments. This paper offers insights into the key considerations when planning a Carrier Wi-Fi strategy and highlights the role Alcatel-Lucent can play in helping providers address Carrier Wi-Fi requirements.

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TURNING WI-FI CONNECTIVITY INTO A REVENUE OPPORTUNITY

Today's mobile data users are offloading ever-increasing amounts of data traffic onto private, enterprise and public Wi-Fi® networks. This is happening due to nearly ubiquitous Wi-Fi support in devices and the widespread availability of Wi-Fi coverage. With these advances, Wi-Fi has become the key technology for wireless video delivery. The number of public hotspots is rapidly increasing with 5.8 million hotspots expected to be in use by 2015 globally — a 350 percent increase over 2011. Currently, end users spend about 70 percent of their time in Wi-Fi coverage areas[1].

In terms of devices, in 2012, 95 percent of tablet traffic used Wi-Fi, and therefore fixed broadband, rather than cellular mobile networks[2]. In addition, 50 percent, or sometimes higher depending on geography, of current hotspot traffic is generated by smartphones[3].

Informa telecoms & media states that "Wi-Fi will be the key technology in allowing operators to offer mobile video content as LTE starts to scale. Wi-Fi can already provide a good user experience for video — and is widely available — while LTE is a few years away from mass-market adoption in terms of both devices and coverage"[4].

Cable multiple system operators (MSOs) and fixed service providers can take advantage of this connectivity trend to offer their Wi-Fi-enabled customers branded connectivity in and out of the home as a churn-reducing tactic and as a revenue-generating capability. We see several common approaches to addressing these business objectives.

Reducing churn

To reduce churn, the focus has been on community Wi-Fi initiatives. The main driver and use case is that valued subscribers can access their services while outside of their home environment. This access is enabled by an enhancement to existing home and residential gateways to pool the external coverage offered by individual systems so it can be used by these valued subscribers. Providers also see that in some cases and locations, opening the community Wi-Fi system to visitors can be beneficial in terms of attracting new subscribers or reaching roaming agreements with other providers.

An Alcatel-Lucent study estimated conservatively that a medium sized homespot/hotspot deployment aimed at causing a 20% reduction in churn can bring returns within 2 years.

Branding

Providers see branding opportunities in venue coverage. Linking a business name to a venue experience is a differentiator, and can be a powerful brand enhancement tactic. In addition, when considering this approach, providers also recognize that venue coverage can:

- Be bundled with community Wi-Fi
- Offer a good location to attract roamers or capture new customers
- Create new advertising or value-added application opportunities
- Generate wholesale opportunities

1 According to data from Alcatel-Lucent Bell Labs, SITU, Wireless Broadband Alliance, Stratecast, Informa Telecoms and Media, Ovum and Light Reading.
2 http://www.betterbroadbandblog.com/2011/12/catch-sandvines-crystal-ball
3 According to data from Alcatel-Lucent Bell Labs, SITU, Wireless Broadband Alliance, Stratecast, Informa Telecoms and Media, Ovum and Light Reading.
4 The Way Ahead - The 10 key issues facing the Asia Pacific telecom sector, Informa UK Ltd., 2012.

Generating new revenue

In addition to wholesale venue coverage, some providers are considering general public hotspot deployments as a potential way of generating new revenue. This is a more complex scenario than the previous two and careful planning is required to select hotspot locations for maximum business case impact.

Well-planned hotspot locations can complement tactics to reduce churn for valued subscribers who would like to access their services outside of their usual footprint. Churn reduction was the initial driver for Time Warner Cable´s aggressive hotspot deployment in the Los Angeles area of the United States. Business-to-business (B2B) services such as business virtual private networks (VPNs) may also come into play depending on the selected zone and expected number of Wi-Fi-capable visitors. This can help to stimulate sales of additional B2B services, and a better relationship between the provider and its enterprise customers.

In certain strategic hotspot locations, providers with mobile virtual network operator (MVNO) operations may even find that MVNO offload — usage of Wi-Fi instead of the provider's 3G data service — also represents cost savings that can be included in the overall business case for a public hotspot strategy.

Because hotspot strategies tend to be the most complex of the examples described here, Alcatel-Lucent develops and applies methodologies that help providers quickly define and select optimum hotspot placements, while meeting the tight timescales of a quick market deployment.

The business reality is that Wi-Fi is just one of many ways of connecting subscribers to services and is part of a bigger picture — giving subscribers the overall experience of being connected thanks to their favorite provider or business partner. As a result, providers must contemplate the interplay among the Wi-Fi deployment scenarios described above, existing services and new business objectives.

ASSESSING WI-FI REQUIREMENTS

Alcatel-Lucent is the partner of choice for many cable MSOs and service providers, directly assisting them in understanding the key business requirements for tactical and strategic Carrier Wi-Fi deployments and in applying practical methodologies that minimize business risk.

From listening to our customers and partnering with European providers on Carrier Wi-Fi strategy, we see that certain themes and concerns frequently arise.

Multi-access. Do you have a strategy for building Wi-Fi access into an overall mobile broadband offer?

Many providers support MVNOs, and some have 4G spectrum. It makes sense to think about how the wireless packet core will enable Wi-Fi users to handoff to other Wi-Fi networks as well as to the MVNOs' current 3G and future LTE access networks. With an offering such as the Alcatel-Lucent Wireless Packet Core, providers can ensure mobility across disparate access networks, as well as integration with existing platforms.

One architecture. Can you use the same architecture for all expected Wi-Fi use cases and business models?

Using a single architecture simplifies design and has a positive impact on operations and upgrades. The Alcatel-Lucent soft Generic Routing Encapsulation (GRE)-based architecture provides a practical approach for providers that are contemplating the deployment of multiple homespot, public hotspot and venue strategies. Furthermore, the ability to integrate Carrier Wi-Fi with existing Alcatel-Lucent 7750 Service Routers (SRs) in the network allows providers to leverage common platforms and management to simplify operations and reduce capital and operating expenditures (CAPEX and OPEX) while enabling rapid Carrier Wi-Fi deployments.

Roaming. How can you interwork with third-party Wi-Fi access providers?

Many providers are considering interoperability with existing Wi-Fi roaming aggregators. In addition to assessing the impact of third-party Wi-Fi quality of service (QoS) on the company brand, providers ideally need to authenticate with roaming aggregators and introduce mechanisms to charge incoming roamers. Alcatel-Lucent lightRadioTM Wi-Fi addresses all of these concerns, adapting to providers' near-term needs while they build a more complete strategy for the medium- or long-term.

Security. How secure is the solution?

In trialing Wi-Fi homespot architectures, cable MSOs and other providers have seen that there is a fundamental requirement to easily create and differentiate between multiple Wi-Fi Service Set Identifiers (SSIDs) on a Wi-Fi home gateway or Access Point (AP) device. The Alcatel-Lucent lightRadio Wi-Fi approach simplifies this requirement. It allows control of QoS per SSID, removing providers' concerns that valued homespot subscribers are worrying about possible intrusions into their home environment.

Monitoring and statistics. What data do you really need to provide the service and make the most of performance and monetization efforts?

Providers need to understand the real amount of data related to roaming or handoff to other technologies such as LTE or 3G. This understanding is important because it gives providers a clear view of how the service is being used, which can justify the initial business case or help to define future business cases. Alcatel-Lucent lightRadio Wi-Fi provides this crucial information.

Authentication. What authentication methods do you need to support, and how do you connect to national prepaid and postpaid systems?

Alcatel-Lucent lightRadio Wi-Fi addresses these concerns by concurrently supporting open captive portal and the latest Hotspot 2.0-based authentication mechanisms, including Extensible Authentication Protocol (EAP). Authenticating devices without a Subscriber Identity Module (SIM) also widens the addressable market for providers. Alcatel-Lucent lightRadio Wi-Fi enables delivery of services to the widest possible Wi-Fi-enabled user base to maximize revenue opportunities in different business scenarios.

Policy, and the Policy, Charging and Rules Function (PCRF). What does the PCRF really do for us in terms of building business, and is it the only mechanism you need?

There is an increasingly important discussion regarding the application of subscriber and services policies within the packet cable architecture to drive revenues. Alcatel-Lucent lightRadio Wi-Fi enables the implementation of granular, flexible and dynamic policies through standards-based Remote Authentication Dial In User Service (RADIUS) interactions with the wireless LAN (WLAN) gateway. These policies can be applied across the Carrier Wi-Fi implementation.

SSID service. How effective is a basic open SSID service?

Many providers see strong business justification for a service that goes beyond open SSID. Existing subscribers, roamers and visitors see the end-to-end process required to achieve connectivity for their apps as cumbersome and time-consuming, resulting in little real usage of the service.

In some cases, this mechanism is only seen as useful for visitors who have no other options and need connectivity. In reality, it is necessary to automate connectivity services and handoffs between different coverage areas because devices such as smartphones and tablets continuously upload and download data without user intervention. Alcatel-Lucent has successfully implemented large connectivity schemes for providers globally.

Wholesale and B2B offerings. Are wholesale and B2B offerings important to your business?

Wholesale and B2B offerings can form the basis of a solid business for providers looking to link Carrier Wi-Fi with business offerings or enter into partnerships or wholesale schemes to monetize their investments. To support these offerings, the wireless core network will require the capabilities to extend existing VPN services or wholesale branded connectivity offered at a stadium or other public venue. Authentication, portals and billing capabilities are essential to the success of these offerings.

System integration and deployment. Do you have the internal resources to manage and deploy your chosen Wi-Fi access strategy within the desired timeframes? How many different departments are involved? Where are the touch points? What is the process for homespot rollouts and upgrades?

Most providers appreciate help with system integration and deployment and will benefit from a single point of contact with an end-to-end view of all requirements. Alcatel-Lucent has broad experience in end-to-end multivendor integration and offers Carrier Wi-Fi-oriented professional services. These capabilities have made us a trusted partner for many providers looking to build and deploy Carrier Wi-Fi-based strategies and networks.

Ecosystem support. Can you leverage previous Wi-Fi investments?

The ability to make the most of existing Wi-Fi investments is an important factor for all providers. The multivendor interoperability provided by the Alcatel-Lucent WLAN gateway allows providers to use any previous Wi-Fi AP investments and to choose the Wi-Fi AP products that match their business requirements. APs from multiple vendors can be integrated onto the same Alcatel-Lucent WLAN gateway to support different business applications such as residential coverage, stadium coverage, public hotspots and managed enterprise Wi-Fi-cellular offloading. Alcatel-Lucent partners with ecosystem providers to deliver these capabilities and has pushed for the availability of devices that support soft GRE tunneling.

Regulatory support. Does the solution comply with local regulations around lawful interception?

Alcatel-Lucent lightRadio Wi-Fi takes full advantage of the fact that the WLAN gateway is based on the Alcatel-Lucent 7750 SR platform. This platform offers integrated enhanced gateway capabilities and features, including VPN support, Network Address Translation (NAT), Dual-Stack Lite (DSLite) for dual-stack IPv4 and IPv6 support, scalable application assurance (AA) and deep packet inspection (DPI) for compliance with lawful interception regulations.

Scalability. Even if you start small, what is the impact of scaling the Carrier Wi-Fi solution?

In addition to having an extremely low impact on the network, Alcatel-Lucent lightRadio Wi-Fi supports scalable deployment of the thousands of Wi-Fi multivendor APs required to support providers' Carrier Wi-Fi business scenarios and plans for growth.

Meeting business needs with Alcatel-Lucent lightRadio Wi-Fi

Alcatel-Lucent lightRadio Wi-Fi is based on a single, simple architecture that supports all foreseen business needs. For example, the solution supports connectivity to wireless metro and macro network components as well as to fixed broadband network components, removing potential future stumbling blocks for provider strategists and architects. More than one European MSO has acknowledged that the application of a single architectural scheme across homespot, hotspot and venue initiatives makes for a much simpler and controlled approach to the Carrier Wi-Fi business.

Alcatel-Lucent lightRadio Wi-Fi helps cable MSOs and fixed service providers — with or without MVNOs — manage mobile broadband traffic to a Carrier Wi-Fi access network and to other access technologies without losing customer ownership. It consists of:

- A WLAN gateway based on the Alcatel-Lucent 7750 SR.
- Connectivity with the Alcatel-Lucent Wireless Packet Core to ensure inter-mobility to and from other wireless networks of all types.
- Extensive support for Wi-Fi APs and homespots. This support is enabled by our open architecture and provided through the lightRadio portfolio or through interworking with third-party Wi-Fi AP vendors. For example, Alcatel-Lucent already has deployments that include ARRIS, Aruba Networks, BelAir Networks, Ruckus Wireless, Tropos Networks, Cisco Systems, LANCOM Systems, Technicolor and Ubee Interactive devices. Because both Broadcom and Intel now support soft GRE tunneling, many new devices are appearing on the market and will also be supported.
- The Alcatel-Lucent 5620 Service Aware Manager (SAM), which provides integrated management capabilities for Alcatel-Lucent lightRadio Wi-Fi and for the underlying backhaul and transport networks.
- The Motive Authentication, Authorization and Accounting (AAA) server, which supports a range of Carrier Wi-Fi authentication mechanisms and roaming scenarios to maximize revenue and partnership opportunities.

- A captive portal, which enables first-time user authentication and allows subscribers to select and purchase a product, such as a day pass, or check their remaining account balance.
- The Alcatel-Lucent 5780 Dynamic Services Controller (DSC), which supports policy and Access Network Discovery and Selection Function (ANDSF) capabilities. The Alcatel-Lucent 5780 DSC quickly and easily creates policies with flexibility, performance and scalability that can be applied across Carrier Wi-Fi and other wireline broadband and wireless access types to deliver a seamless service experience to end users. It also supports tight integration with charging and billing systems. Using the ANDSF capabilities, end users can automatically discover and select the best possible or most appropriate type of wireless access — Wi-Fi, small cells or the macro cellular network.

"Delivering secure, seamless access to Wi-Fi networks is a key requirement in the market right now… Alcatel-Lucent lightRadio Wi-Fi provides operators with a comprehensive solution that smartly draws from the company's strengths in radio access technology and IP routing. The result is an offer that lets operators leverage existing network assets while delivering demanding smartphone users an outstanding customer experience."

– Ken Rehbehn, principal analyst at Yankee Group

CONCLUSION

As cable MSOs and fixed service providers look to develop Carrier Wi-Fi strategies that will help them gain a competitive advantage and generate new revenue, questions and concerns about various strategies and tactics will naturally arise.

Many providers are already considering community Wi-Fi strategies based on homespots and venue coverage as possible initial strategies. Working with a trusted partner that can offer insights based on deep experience in Carrier Wi-Fi deployments, expertise in Wi-Fi technologies and Wi-Fi-oriented professional services will help providers make the right decisions for their market and business goals. A partner can also help providers accelerate time-to-market for Carrier Wi-Fi offerings.

Alcatel-Lucent lightRadio Wi-Fi provides a base upon which any current Wi-Fi use case and business model can be built. It also ensures continuity of subscriber services across other wireless access technologies and partner access networks.

Alcatel-Lucent is currently in the Wi-Fi trial or deployment project phase with more than 15 service providers in Europe. The company also has the number one market share in this region for edge routing using the Alcatel-Lucent 7750 SR and for small cells. Spurred by Euro Cable Labs' support for the Alcatel-Lucent end-to-end Carrier Wi-Fi architecture, Alcatel-Lucent lightRadio Wi-Fi is becoming the Wi-Fi architecture of choice for European service providers that simply need to connect customers to services.

For more information about Alcatel-Lucent lightRadio Wi-Fi, please visit www.alcatel-lucent.com/lightradio-wifi or contact your local Alcatel-Lucent sales representative.

ABBREVIATIONS

AA	application assurance
AAA	Authentication, Authorization and Accounting
AC	Access Controller
ANDSF	Access Network Discovery and Selection Function
AP	Access Point
B2B	business-to-business
CAPEX	capital expenditure
DPI	deep packet inspection
DSC	Dynamic Services Controller
DSLite	Dual-Stack Lite
EAP	Extensible Authentication Protocol
GRE	Generic Routing Encapsulation
MSO	multiple system operator
MVNO	mobile virtual network operator
NAT	Network Address Translation
OPEX	operating expenditure
PCRF	Policy, Charging and Rules Function
QoS	quality of service
RADUIS	Remote Authentication Dial In User Service
SAM	Service Aware Manager
SR	Service Router
SIM	Subscriber Identity Module
SSID	Service Set Identifier
VPN	virtual prívate network
WLAN	wireless LAN

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