Wi-Fi: New Business Models Create Real Value for Service Providers

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June 01, 2013

Wi-Fi: Service Providers Can Make Money with New Business Models

We truly live in a mobile world. The ITU estimates that there will be close to 7 billion mobile subscribers in the world this year - the equivalent of almost one device for every person on the planet[1]. Recent research from Cisco revealed that entertainment has shifted to the palms of our hands - almost half of all mobile users regularly consume all forms of video, music, books, and games on their devices[2]. The Cisco® Visual Networking Index (VNI) predicts that these mobile trends will cause mobile data traffic to double globally in 2012 and increase another 78 percent by 2014[3]. Global mobile traffic will continue to explode, growing at a rate three times faster than that of fixed IP traffic over this same period. The Cisco 2012 VNI also predicted that two-thirds of all mobile traffic will be video by 2015, and an additional 20 percent of this traffic will be devoted to both the mobile web and mobile data.

In parallel, Cisco is seeing a "perfect storm" in both Wi-Fi availability and customer acceptance that is resulting in a worldwide rise in the popularity of Wi-Fi. Almost half of all households in the world are predicted to have Wi-Fi by 2016, or 83 percent of all broadband households[4]. The Wireless Broadband Alliance predicts that the number of public Wi-Fi hotspots globally will grow more than fourfold, to 5.8 million, by 2015[5].This growth is inspired by a plethora of new Wi-Fi-enabled devices. Mobile research by Cisco discovered that almost all mobile devices have Wi-Fi as their primary wireless access technology[6]. New technologies and standards, such as the Hotspot 2.0 initiative, promise to improve and simplify the Wi-Fi experience, resulting in an even greater supply of Wi-Fi access.

At the same time customers have embraced the use of Wi-Fi to connect their mobile devices. A growing move to free access to Wi-Fi hotspots and the bundling of Wi-Fi access with wired broadband and mobile subscriptions has users consciously searching out Wi-Fi connectivity. Today, mobile is increasingly less about walking or driving, and more about the convenience of a "nomadic" lifestyle - moving, sitting or stopping, and connecting - and then moving on again. An ideal lifestyle for Wi-Fi connectivity. Cisco research found that consumers spend 2.5 hours per day using their mobile devices in their homes, compared with just 0.5 hours engaged in real mobile activities[7]. The same research also found that people will happily use Wi-Fi as a substitute, or complement, to mobile access. In fact, smartphone users on average used Wi-Fi more than one-third of the time to connect to the Internet, as opposed to mobile connectivity. Finally, mobile data caps, the cost of data plans, and the variable quality of many third-generation (3G) networks are encouraging users to replace mobile data with Wi-Fi in many cases. (To learn more about the rise of Wi-Fi, please read the Cisco paper, "A New Chapter for Mobile? How Wi-Fi Will Change the Mobile Industry as We Know It"[8]).

Based on this Wi-Fi "perfect storm" and the explosion of mobile data traffic traversing their networks, service providers realize that they now need to pay attention to Wi-Fi. Service providers around the world now recognize that Wi-Fi is more than just dataoff-load and needs to be part of an integrated access strategy and architecture. However, they are all eager to understand how they can make money from Wi-Fi. They want to discoverthe winning Wi-Fi business models.They want to know if the returns from Wi-Fi justify the investments.Service providers are starting to think about how Wi-Fifits within their own domains. Is it a complement to their business - or a threat? Is supporting Wi-Fi a good idea? And finally, they want to understand what do and when.

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[1] International Telecommunication Union, June 2012
[2] "What Do Consumers Want from Wi-Fi?", Cisco
[3] Cisco Visual Networking Index (VNI), February 2012
[4] Broadband and Wi-Fi Households Global Forecast 2012, Strategy Analytics, March 2012
[5] Wireless Broadband Alliance Industry Report 2011
[6] "What Do Consumers Want from Wi-Fi?", Cisco
[7] "What Do Consumers Want from Wi-Fi?", Cisco
[8] http://www.cisco.com/web/about/ac79/docs/sp/New-Chapter-for-Mobile.pdf

This paper builds on extensive research by Cisco and consultative engagements with leading service providers throughout the world to describe how service providers can truly make money by implementing new and innovative Wi-Fi business models.

## Innovative Business Models for Wi-Fi Monetization

Successful service providers view the monetization opportunities as a pyramid, or set of layers (refer to Figure 1). Each of the layers supports the subsequent layer above. Not only is it extremely difficult to make a compelling business case for a standalone layer without successfully implementing some of the business models in the previous layers, it is also not in the service provider's strategic interests to focus on only one of the layers. However, the service providerand its customers derive increasing value as they move up the Wi-Fi monetization pyramid.

The core layers of Wi-Fi monetization opportunities in the pyramid, starting at the bottom, include:

- Baseline: Using Wi-Fi for broadband retention or mobile data offload offers a very compelling return on investment (ROI), largely based on cost reductions, to justify further investment in other layers of monetization.
- New revenue: Taking advantage ofthe Wi-Fi network deployed in the baseline layer to offer premium connectivity services, managed hotspots, or Wi-Fi roaming offers opportunities to generate significant new revenue from Wi-Fi.
- Value-added services: Increasingly new opportunities are emerging to take advantage of the Wi-Fi network developed in the previous layers to provide new and innovative services related to advertising, location, analytics, retail store interactions, and special venues such as sporting facilities.

Lastly, for a service provider that has built an extensive Wi-Fi network, there are opportunities to sell access to this network to other providers in a **wholesale** capacity. Because this opportunity is typically unique and very few providers are well-positioned to offer wholesale services, either technically or strategically, this paperdoes not cover this area.

Figure 1.   The Wi-Fi Monetization Pyramid
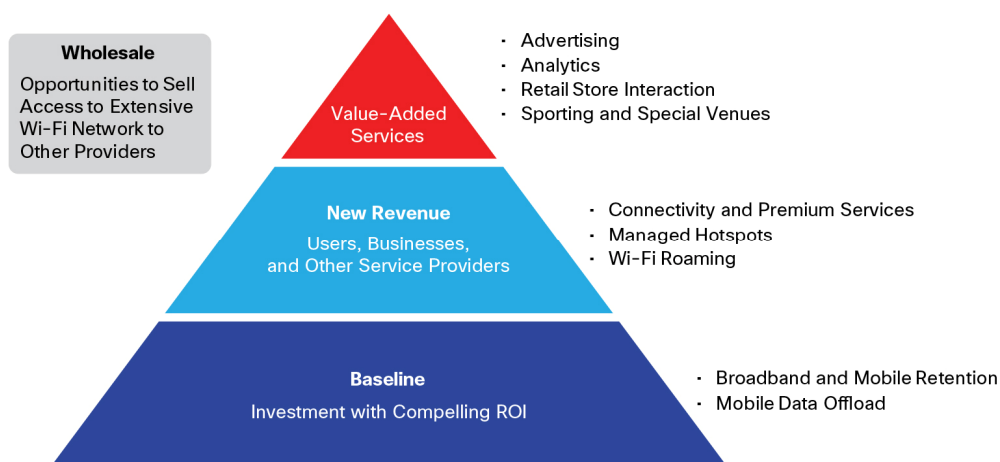
Baseline Wi-Fi Business Models

Baseline business models use the Wi-Fi access networks to decrease operational costs or improve customer retention and service differentiation to create the core, **baseline** financial ROI for Wi-Fi deployment. The two baseline models follow:

Bundled Wi-Fi (Retention)

"Wi-Fi is a churn reduction strategy[9]."
> – Peter Bissonette, President, Shaw

"The evidence we have so far suggests the correlation between churn reduction and Wi-Fi utilization[10]."
> – Robert Marcus, President & COO, Time Warner Cable

Many service providers are now bundling access to a public Wi-Fi service with their broadband or mobile services, typically at no additional cost. Cisco research reveals that operators see significant immediate retention benefits in the first several months after introducing the bundle, followed by an ongoing 10- to 15-percent reduction in customer churn. Ciscomobile research confirms that the availability of Wi-Fi is an effective retention and acquisition tool[11]. Sixty percent of mobile users stated that the inclusion of public Wi-Fi was moderately to very important in their choice of broadband provider. Additionally, a little more thanhalf of respondents indicated that they would leave their current provider if another broadband provider offered free public Wi-Fi.

The economics of customer churn mean that even a small improvement in customer retention translates into huge costs savings through deferred subscriber acquisition costs and retained revenue. In addition, service providers are also finding that bundling Wi-Fi helps them differentiate their core service, allowing them to gain market share and to differentiate their pricing from that of competitors.

Cellular Data Offload

"Our objective for 2014 is that we won't do any small cell or in-building systems that don't include Wi-Fi[12]."
> – John Donovan, SVP, AT&T Technology and Network Operations

To cope economically with massive increases in mobile data traffic and spectrum constraints, many mobile operators are looking to Wi-Fi as an alternative access to mobile cellular access. Offloading some of the mobile data traffic to Wi-Fi allows operators to reduce - or at least defer - capital expenditures (CapEx) from greater 3G and 4G access and helps lower network operating costs.Cisco estimates that operators can save $2 to $5 per GB from mobile data offload.

The Japanese mobile operator KDDI has deployed 220,000 public hotspots in anticipation of offloading half of its mobile data traffic in 2013, up from 43 percent at the end of the previous year[13]. Similarly, AT&T grew its public Wi-Fi network by 10 percent to more than 32,000 hotspots. The company experienced a tripling in the mobile device traffic exchanged on the Wi-Fi network between 2011 and 2012, soaring to more than 5.2 billion MB[14].

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[9] http://www.itworldcanada.com/news/more-details-on-shaws-wi-fi-network/144248
[10] http://www.fiercebroadbandwireless.com/story/time-warner-well-more-double-our-wi-fi-hotspots/2013-02-04?utm_campaign=AddThis&utm_medium=AddThis&utm_source=email#.UVMSlXl-gF4.email
[11] "What Do Consumers Want from Wi-Fi?", Cisco
[12] http://www.fiercebroadbandwireless.com/story/att-wi-fi-will-be-all-our-small-cell-deployments/2013-01-09?utm_campaign=AddThis&utm_medium=AddThis&utm_source=email#.UYgYeeq-ogE.email
[13] http://www.kddi.com/english/corporate/ir/library/presentation/2013/pdf/kddi_130128_e_main.pdf?utm_source=Snapshot+list&utm_campaign=49d70eee81-snapshot-2013-02-21&utm_medium=email
[14] http://www.att.com/gen/press-room?pid=23824&cdvn=news&newsarticleid=36066&mapcode=enterprise|mk-mobility-solutions

New Revenue

New revenue business models allow service providers to generate new sources of revenue from the Wi-Fi network by selling services to consumers, businesses, and other service providers.

Connectivity and Premium Access

Although public Wi-Fi may be increasingly free, there are still opportunities to charge for Wi-Fi access. Cisco mobile research found that people are still paying for access in "expense-account-friendly" locations such as hotels, airports, and trains[15]. Equally, providers are making a business in selling Wi-Fi access at sporting venues and selling subscriptions or vouchers to their Wi-Fi networks (for example, BT Wi-Fiand Boingo).

To combat free Wi-Fi access, many providers now offer an added fee for premium access. Many hotels now offer a premium service that provides faster speeds and better quality of service (QoS), particularly targeted to rich-media applications such as video. They may also charge additional fees for the ability to connect multiple devices. The Canadian coffee shop chain Tim Hortons offers an interesting differentiated "Wi-Fi Plus" experience to its users. Customers who provide their email addresses and some personal information get unlimited access, instant device recognition, and faster speeds compared to basic connectivity. Instead of directly charging for the service,Tim Hortons is monetizing the customer information that it collects.Cisco research also found that mobile users are interested in a premium Wi-Fi service that not only provides access to public hotspots but also offers the assurance of a secure connection and access to a digital locker to allow content access from anywhere using any device[16].

Managed Services

Installing, managing, and operating Wi-Fi networks for businesses have been a viable business since the early days of public Wi-Fi. Successful Wi-Fi start-ups such as Wayport and The Cloud provided managed Wi-Fi services to marquee customers such as Starbucks, McDonald's, and Hilton hotels. As the market and technology evolve and mature, managed Wi-Fi services are becoming even more of a relevant opportunity for service providers. Most businesses recognize that offering Wi-Fi access has become a basic requirement - like electricity or public restrooms. However, the technology challenges and often Internet service provider (ISP) regulatory requirements make managing their own Wi-Fi network a complicated and distracting undertaking. As a result, many businesses are now looking to service providers to provide them a managed Wi-Fi network so they can focus on brewing coffee, selling goods, and running hotels.

Managed Wi-Fi services provide service providersnot only new revenue from the service fees but also the sale of addition telecom services and occasionally revenue-share opportunities with the businesses (for example, advertising and mobile data offload). Cisco estimates that basic managed services can deliver $50 to $250 per month in new revenue. Frequently, service providers are being asked to manage not just the public Wi-Fi network but also the private network that businesses use for IT and operations, providing additional sources of revenue. Although most businesses are embracing Wi-Fi,our research and experience indicates that there are many primary and secondary target industries that service providers should consider when developing their managed Wi-Fi services strategies.

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[15] "What Do Consumers Want from Wi-Fi?", Cisco IBSG
[16] "What Do Consumers Want from Wi-Fi?", Cisco IBSG

For example:

- Primary industries
  - Hotels
  - Public venues - Airports, train stations, conferences, and sporting events
  - Hospitality - Restaurants, cafés, and fast food
  - Retail
- Secondary industries
  - Banks
  - Transportation - Subways, buses, and trains

Roaming

"Asian bighitters push Wi-Fi and NFC roaming." – Rethink Wireless 3/14/13

"Cable Wi-Fi ties up 50,000 hotspots for cable subscribers to share" – Endgaget 5/21/12

"AT&T and BSkyB team up for UK hotspots for tourists." – Endgaget, 2/21/13

The Wireless Broadband Alliance states that although there are more than 340 million roaming trips per year, the number of users whouse Wi-Fi roaming can be counted in the hundreds of thousands[17]. Many service providers are now forging domestic and international roaming agreements to attack this huge market opportunity. The ultimate goal is to make Wi-Fi roaming as smoothand easy to use as the mobile network. Ciscoresearch found that mobile users are particularly interested in Wi-Fi roaming (52 percentwere either somewhat or very interested) because it would significantly reduce their mobile data roaming costs, and they liked the convenience and the flexibility of location[18].

In entering into roaming agreements, service providers not only see the opportunity to enhance the customer experience,they also recognize the new monetization opportunities that it offers. Service providers can charge customers an additional fee for international roaming, or bundle it as part of an enhanced Wi-Fi or broadband service. Equally, service providers can sell wholesale access to other international providers to allow their customers to roam onto their Wi-Fi network without any additional charges at the time of access.

Value-Added Services

Monetization models that enhance basic Wi-Fi access with value-added services to third parties and mobile users constitute the newest - and rapidly evolving - category of new Wi-Fi business models.

Advertising

Mobile advertising is essentially broken. Although advertising on mobile devices has long been promoted as a significant new revenue opportunity, the reality has not matched the promise. Mobile advertising is typically receiving $1 to $10 cost per mil (CPM) - the typical pricing metric in the advertising business. This amount is no better than the broad-based, online ads and spam that we all ignore. Given the intelligence and location information that is inherent in mobile advertising, mobile should get something closer to the $50 to $80 CPM achieved from video on demand (VoD), or at least closer to the $30 to $40 CPM garnered by local cable TV.

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[17] Wireless Broadband Alliance Wi-Fi Industry Report, November 2012
[18] "What Do Consumers Want from Wi-Fi?", Cisco IBSG

Advertising based on Wi-Fi access promises to change the economics of mobile advertising. Wi-Fi can provide much more accurate user location (typically within 3 to 5m [9.8 to 16.4 ft] or less) than mobile cellular, allowing for much better targeted advertising. Typically, the use of Wi-Fi is opt-in, meaning that customers are much more receptive to advertising than the alternative spam model. Finally, in addition to smartphones, people access Wi-Fi through many larger-screen, more-advertising-friendly devices like tablets. We are observing these differences in the advertising marketplace. Cisco research reveals that one Wi-Fi service provider is achieving a $24 CPM in a mall in Canada and another is commanding $40 CPM for a mall in Singapore. One operator is even reporting a $350 CPM for Wi-Fi-based advertising in a high-end mall in Dubai. Business modeling by Cisco reveals that Wi-Fi-based advertising can conservatively be a multimillion dollar new business for service providers.

Given the location hypersensitivity of Wi-Fi (typically 3 to 5m or less) and good in-building coverage, many opportunities are now available to monetize Wi-Fi location-based services. Shopping malls and other big venues are now using Wi-Fi location services to provide Google-like maps to help people track their way to stores and services in the mall. In addition, they are beginning to layer on other location services such as targeted advertising and promotions. MGM Resorts offers a great example of how businesses are effectively using Wi-Fi-based location services and advertising to improve the customer experience and MGM's profitline (refer to insert).

MGM Resorts: Differentiating the Guest Experience Through Wi-Fi Services

MGM Resorts owns a remarkable 17 hotels and casinos in Las Vegas, including such marquee resorts as the MGM Grand, Bellagio, and Mandalay Bay. Finding your way around the more than 800 acres of property can be a challenge at best. In order to improve the guest experience, MGM deployed Wi-Fi and an easily downloadable application. Not only does the application help you find a favorite restaurant, nightclub, or show, it also can give you step-by-step directions for how to get there. In addition, based on your user information and location, MGM can offer you a coupon for an early evening happy hour at a nearby new nightclub or a promotion to a restaurant that you might like.

Analytics

Location-based services also provide a host of analytics and big data that the venues can use to improve their operations or sell to third parties. Aggregating the information available from the Wi-Fi access points provides unique insights into where people go, their common paths, and most visited places. Mall owners, for example, can then use this detailed data to justify higher rents for stores in high-trafficked areas or to measure the impact of signage on customer traffic patterns. Trend analysis and history comparisons of data can show the effectiveness of changes in marketing of store layout. In addition to shopping malls, other large venues such as airports and stadiums can use the data to help improve operations and security. The Copenhagen Airport provides a good example of how venues can use Wi-Fi-based location services to improve their operations and reduce costs (refer to insert).

Copenhagen Airport: Improving Business Operations Through Real-Time Analytics

Last year 23.3 million passengers passed through the Copenhagen airport - more than 62,000 travelers per day. Congestion and long waits in check-in and security lines not only led to passenger dissatisfaction, they also cost the airport money. Using the extensive information from the Wi-Fi access network throughout the airport, the operations center can now monitor wait times in check-in, security, and customs in realtime and make staffing and traffic-flow changes immediately to reduce delays. Because third parties provide many of these services, this real-time analysis provides a useful tool for monitoring their performance and compliance with service-level agreements (SLAs). Trend analysis of historical data allows the operations team to make longer-term changes to the airport configuration, staffing schedules, and policies to ensure more permanent improvements. Future enhancements will feature location and mapping services and advertising and promotions centered on the shopping aspect of the airport.

Service providers now realize the valuable asset that they hold in the data and analytics that sit in their mobile and Wi-Fi networks. At least four different providers around the world (Verizon, Telefonica, Sprint, and SK Telecom) have set up separate business units to monetize this valuable network and user data. These units are collecting, analyzing, and packaging this rich data for sale to third parties to be used for marketing, operations, and strategic reasons. Operators are selling a range of services from one-time reports or data subscription services to ongoing query-able data platforms.

Although still very early in use of this business model, Cisco analysis reveals that selling unique network and user data analytics represents a potential multimillion dollar new business for many service providers.

Retail Store Interactions

Despite concerns of show-rooming and loss of in-store sales to online purchases, many leading retailers are embracing mobility and including it as an integral part of their strategies. And many are outfitting their stores with public Wi-Fi access as a cornerstone of those strategies. Retailers are combining the location and user information from the Wi-Fi access points together with customer relationship management (CRM) and customer loyalty data to provide personalized experiences and offers to shoppers at points of purchase in the stores. Equally, retailers are combining location-based services and shopper services to provide additional product information and help customers navigate throughout the store. Our research confirms that shoppers are interested in an enhanced in-store shopping experience (52 percent were either somewhat or very interested) because they thought that it would make them more efficient and enhance their shopping experience[19]. Mobile users particularly liked the idea of personalized deals and coupons that would be presented when they were looking to buy something, rather than before or after as is now typically done.

Retailers are also experimenting with using Wi-Fi-enabled check-out and payments to streamline the check-out process and make it more customer-friendly. Finally, mobility gives retailers an opportunity to improve store operations,reduce costs, and improve the shopping experience to make them more competitive with online alternatives. For example, Wi-Fi-enabled devices and applications allow store associates to be more flexible, knowledgeable, and available to serve customers.

Sporting and Special Venues

One thing that operators agree on throughout the world is that sporting and other special venues present them with both huge challenges and potential opportunities. The tens of thousands of excited fans with their multiple mobile devices who descend upon a sporting venue all at once present mobile operators with a huge nightmare:how can they possibly provide the coverage and bandwidth required to serve this mobile data-hungry population? Many venues from the Super Bowl to the London Olympics are now outfitting their venues with Wi-Fi,often with service providers, to offload much of the mobile data traffic and give their fans a good mobile experience. In most instances basic access is free, but there are many additional monetization options that enhance the fan experience, create new revenue-generating opportunities, and improve the venue operations. Loyal sports fans are willing to pay for unique video and player information, interactive live video, and different camera angles.

Additional services include everything from ticketing to in-seat ordering, to food and beverages, to betting services. Some of these services may be monetized by direct fees, but there are also opportunities for additional revenue from advertising, commissions, and revenue-sharing. Wi-Fi location-based services and analytics allow these venues to monitor and improve crowd flow and security to improve operations.

Creating a Monetization Virtuous Circle

Approaching the fundamental question of Wi-Fi monetization as a pyramid or series of layers of business opportunitiescreates not only significant new business value for a service provider, but also a virtuous circle that leads to ever-increasing sources of new Wi-Fi value. As the Wi-Fi Monetization Virtuous Circle outlined in Figure 2 shows, the reinforcing network and scale effects of Wi-Fi investments not only deliver unique business benefits at

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[19] "What Do Consumers Want from Wi-Fi?", Cisco

each of the levels, but also establish a valuable platform to exploit additional monetization opportunities at the next level.

As we have seen, deploying an initial public, home, and business Wi-Fi network provides a compelling ROI through **Baseline** business models. However, after this initial network is established there are now **new revenue** opportunities that can be built on this platform. And, expanding the network through managed services and roaming agreements at key venues allows service providers to offer additional **value-added services** to extract new sources of value from the Wi-Fi network. Now we have come full circle: Expansion of the network to new venues and the addition of new services make the network even more valuable to end users, making the ROI for the baseline models even higher.

Figure 2. The Wi-Fi Monetization Virtuous Circle
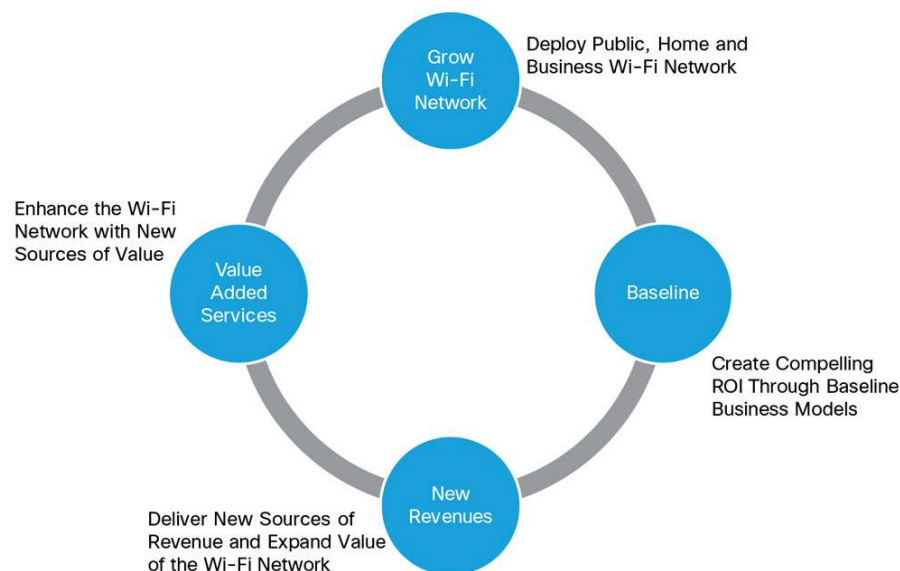
Charting a Path to Wi-Fi Profitability

The rapid growth of mobile data and the popularity of Wi-Fi have created many new and innovative money-making opportunities for service providers. The question is no longer "Can service providers make money from Wi-Fi?" Rather, it is "Where should they focus their efforts, and when should they deploy?" For each service providersegment, determining the optimal starting point and creating a roadmap forinvesting in Wi-Fi are of paramount importance in business-model development.

Clearly,choosing the wrong business model at the wrong time can be disastrous. On the other hand, correctly deploying the right model can lead to significant business benefits.

In charting a path to Wi-Fi profitability andthinking about business-model prioritization, service providers should consider four key areas:

1. Market evolution and positioning: Where is the Wi-Fi marketing heading? What are the key opportunities and challenges? How do we best position for success?

2. Monetization models and offers: What are the best Wi-Fi monetization models and offers? What are the Wi-Fi products and services that customers want? What are the priorities and roadmap timing?

3. Economics and business model: What is the potential market size and adoption? What are the expected business effects? What are the economics of the new service and key levers and sensitivities?

4. Technical architecture and capabilities: What is the technical architecture to deliver the strategy? What capabilities and opportunities does the architecture offer? What additional business and operational capabilities are required?

Based on Cisco first-hand experience and research, we strongly believe that service providers can make money with Wi-Fi. By methodically climbing the layers of the Wi-Fi monetization pyramid,service providers can create compelling new business models and sources of revenue and business benefits to readily justify investments in building robust Wi-Fi networks and operational capabilities.

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