Point of View

Profiting from the Rise of Wi-Fi

New, Innovative Business Models for Service Providers

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The Ever-Increasing Rise of Wi-Fi

The amount of mobile data generated globally is staggering and shows no sign of slowing down. This growth is largely driven by insatiable demand for innovative smartphones, tablets, and connected devices, as well as mobile applications and content. As a result, the Cisco® Visual Networking Index (VNI) predicts mobile data traffic will double globally in 2012 and increase another 78 percent by 2014.[1]

In parallel, the Cisco Internet Business Solutions Group (IBSG) is seeing a similar rise in the worldwide popularity of Wi-Fi. The number of Wi-Fi hotspots is expected to reach 2.7 million, with usage growing 200 percent, by 2014.[2] This growth is inspired by new enabling devices, recent technology improvements, public and private availability, and tiered mobile data plans from service providers (SPs). (To learn more about the rise of Wi-Fi, please read Cisco IBSG's recently published paper, "A New Chapter for Mobile? How Wi-Fi Will Change the Mobile Industry as We Know It."[3])

In this environment, consumers are realizing that much of what they do with wireless data occurs in nomadic or fixed locations away from home or workplace, where lower-cost—and often free—Wi-Fi service can be found. As a result, consumers have learned to happily accept Wi-Fi as a complement to their existing 3G and 4G data plans. For example, many of the largest SP Wi-Fi deployments are associated with home broadband providers that exchange free Wi-Fi access for reduced churn of broadband customers and greater market share.

Based on this newfound customer demand and explosion in traffic traversing—and sometimes threatening—their traditional macro cellular networks, many SPs are seriously considering deploying Wi-Fi as a strategic solution for offloading mobile data traffic from their networks, especially given their limited licensed radio spectrums. SPs are starting to think about how Wi-Fi fits within their own domains. Is it a complement to their business or a threat? Is supporting Wi-Fi just the cost of doing business, or can it be a potential profit center? Should they evaluate business models beyond just offloading mobile data? Do they need to deal with Wi-Fi now, or can they wait? And finally, what return can they expect from their investment?

Monetizing Wi-Fi with Innovative Business Models

With these questions in mind, Cisco IBSG has consulted with leading SPs from around the world to develop and evaluate 16 Wi-Fi business models that can provide a reasonable return on investment (ROI). Opportunities for monetization fall into four broad categories: (1) business effectiveness, (2) end-user services, (3) inter-carrier wholesale, and (4) value-added services.

Business Effectiveness

Business-effectiveness models use Wi-Fi access networks to decrease operational costs and improve customer retention and service differentiation.

- **Bundled Wi-Fi.** Bundles a Wi-Fi service with other services such as home broadband or mobile, typically at no additional cost to the consumer. Benefits include reduced customer churn and increased market share of core services through market differentiation.
- **Extended content delivery network (CDN).** Deploys a CDN capability closer to access points (APs) to improve efficiency and customer experience, as well as lower overall content delivery costs.
- **Alternative mobile access.** Offloads cellular data traffic to Wi-Fi to help alleviate network congestion, lower network operating costs, and reduce (or defer) 3G and 4G capital expense (CapEx) investments.

End-User Services

End-user services allow businesses and consumers to connect to the Internet via Wi-Fi using their mobile devices, including smartphones, tablets, and laptops.

- **End-user direct.** Provides consumers and businesses with hotspot access for Internet connectivity. The service is billed as a direct regular subscription, or on an hourly / daily rate.
- **Premium hotspot.** Provides end users with additional hotspot capabilities—including improved security and seamless content access—that enhance the customer experience. Benefits accrue from additional fees, greater customer retention, and service differentiation.
- **Business anywhere.** Delivers a turnkey business solution where SPs install and manage Wi-Fi access for business offices and campuses, and provide access to public hotspot networks outside the business location. Benefits include set-up fees, recurring fees, and up-sell and retention of fixed telecom services.
- **Video over Wi-Fi.** Bundles Wi-Fi access services as well as unique and premium video content at network hotspots. SPs make money from this service through additional subscription fees and by reducing churn on their home broadband services.
- **Managed hotspots.** Offers a managed service for public locations that want to provide Wi-Fi to their customers and employees (e.g., coffee shops, hotels, airports, stadiums). Benefits include set-up fees, recurring fees, and up-sell and retention of fixed telecom services.

Inter-Carrier Wholesale

These models focus on agreements that allow SPs to sell capacity on their Wi-Fi networks to other telecom companies (for example, mobile network operators and other Wi-Fi providers) at wholesale prices.

- **Cellular data offload.** Sells Wi-Fi network access to mobile operators on a per-user or per-MB basis. This approach allows SPs to offload some mobile data traffic without needing to build a Wi-Fi network themselves.
- **Hosted small cells.** Co-locates small cells on behalf of mobile operators with Wi-Fi APs. SPs provide installation, management, and the supporting infrastructure, including backhaul, power, and security. This approach is analogous to the managed data center space. SPs typically charge an installation fee, as well as monthly fees per node and backhaul.
- **Wi-Fi roaming.** Allows SPs to sell Wi-Fi network access on a per-user or per-MB basis to other hotspot network operators, enabling customers to roam on their networks at no additional charge. This arrangement facilitates the virtual extension of domestic and international hotspot networks.

Value-Added Services

These models enhance basic Wi-Fi access with additional services and alternative funding that are typically paid for by third-party businesses.

- **Machine-to-machine.** Connects nonhuman endpoints to SPs' Wi-Fi networks to enable services such as meter reading, digital signage, and other types of sensor-based applications. SPs charge a monthly subscription per machine endpoint or for the amount of data used.
- **Subletting.** Provides public Wi-Fi hotspots in large venues such as stadiums and shopping malls that are paid for by retailers or vendors.
- **Advertising.** Offers access to hotspots in public venues that are subsidized by revenue from advertising and sponsorships. Common locations for the advertising model include airports and stadiums.
- **Embedded connectivity.** Allows SPs to embed free public Wi-Fi access in mobile devices, and charges the mobile-device manufacturer or content providers, rather than end users, for network access. This approach is similar to the built-in connectivity used in the Amazon.com Kindle model.
- **Retail store interactions.** Combines the data from wireless access points (WAPs)—for example, location, usage, and presence—with specific customer data, including demographics and shopping history. This allows merchants to deliver targeted marketing offers to customers and enhance their in-store shopping experience. Benefits include set-up fees, consulting services, and monthly fees.

Measuring Business-Model Impact

Using economic modeling, Cisco IBSG has quantified the value of each business model. The benefits fall into three categories of business value: (1) direct revenues to SPs, including revenues from access, services, and managed services; (2) cost savings; and (3) indirect business value through improved customer retention and market differentiation. The estimated values shown in Figure 1 have been expressed on a per-unit, relative basis to demonstrate the possible range of benefits and to allow easy comparison across various types of operators.

Figure 1. Sources of Value and Estimated Returns of Wi-Fi Business Models.

Business Model	Value Metric and Estimated Benefit
Business Effectiveness	
Bundled Wi-Fi	Fixed broadband churn: 10-15% decrease
Extended CDN	Backhaul costs: approximately $0.01 / GB
Alternative mobile access	CapEx / OpEx costs: $2-$5 / GB
End-User Services	
End-user direct	Fees from users: $5-$15 / user / month
Premium hotspot	Fees from users: $3-$5 / user / month
Business anywhere	$10-$15 / user / month
Video over Wi-Fi	Fees from users: $2-$5 / user / month
Managed hotspots	Hosting / management fees: $50-$250 / AP / month
Inter-Carrier Wholesale	
Cellular data offload	Fees from mobile network operators: $3-$10 / GB
Hosted small cells	Hosting / management fees: $500-$600 / year
Wi-Fi roaming	Fees from mobile network operators: $0.5-$1 / GB
Value-Added Services	
Machine-to-machine	Fees from machines: $2-$4 / connection / month
Subletting	Management fees: $50 / AP / month
Advertising	Ad inventory CPM: $0.5-$1 / user / month
Embedded connectivity	Bundled app / access: $0.5 / download
Retail store interactions	Quality of interactions: $100-$150 / store / month

Source: Cisco IBSG, 2012

Further detailed economic modeling will no doubt be required to translate specific business cases to different operators and market conditions. Even so, Cisco IBSG believes the estimates in Figure 1 allow SPs finally to begin evaluating the relative applicability of each model to their specific business and overall Wi-Fi strategies.

Not All Business Models Are Created Equal

While these innovative Wi-Fi business models offer the promise of significant new sources of value, the realization of that value will depend upon operator type, core capabilities, and market position. To help SPs determine the value they can receive from the Wi-Fi business models, Cisco IBSG evaluated the opportunities from the perspective of three types of SPs:

1. **Pure-play mobile operators.** These SPs build and operate telecom services on traditional mobile networks that typically have limited Wi-Fi investments of their own. This is most likely because the cost of Wi-Fi deployment and maintenance is too expensive based on the lack of hanging rights and backhaul.
2. **Wireline providers.** These operators can use existing assets—hanging rights, backhaul, and residential and business broadband services—to deploy Wi-Fi infrastructures at reasonable investment levels.

3. **Integrated service providers.** These large telecom operators offer both fixed and mobile broadband services. They often invest in Wi-Fi to protect their broadband businesses, but the extent of their Wi-Fi networks varies widely.

Regardless of segment, SPs need to consider a number of opportunities and challenges prior to investing in Wi-Fi:

- **Mobile operators** must evaluate whether to view Wi-Fi as a complement or a threat to their existing licensed cellular services. Assuming Wi-Fi is a complementary service, SPs must think through the various architectural options and the impact of their investment strategy. Next, SPs need to decide if it makes more sense to invest in-house or to partner with another Wi-Fi provider to lower investment costs and reduce complexity.
- **Wireline providers** need to think about how best to utilize their key control points—rights of way, power, and business customers—to determine their strategic options. If these SPs decide to build out Wi-Fi aggressively, options exist to federate with local and international partners. Wireline providers must also determine what to do with all the data crossing their holistic networks, and whether it would be of value to try to improve their customers' experience or to resell Wi-Fi services to third parties.
- **Integrated service providers** should think about bundling Wi-Fi with their existing broadband services as well as their television and video services. These providers should also consider integrating their fixed and mobile solutions to realize the full benefits that Wi-Fi can deliver. Moreover, integrated providers should plan to take advantage of their fixed presence in locations that have the most wireless congestion.

Of course, not all business models work well together. For example, it is unlikely that an SP could charge a recurring subscription fee for access to its Wi-Fi network while receiving the full benefits of churn reduction. In addition, it's doubtful that wireline providers would receive any benefit from deploying the alternative mobile access business model.

Setting Priorities

For each SP segment, determining the optimal starting point and creating a roadmap for investing 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.

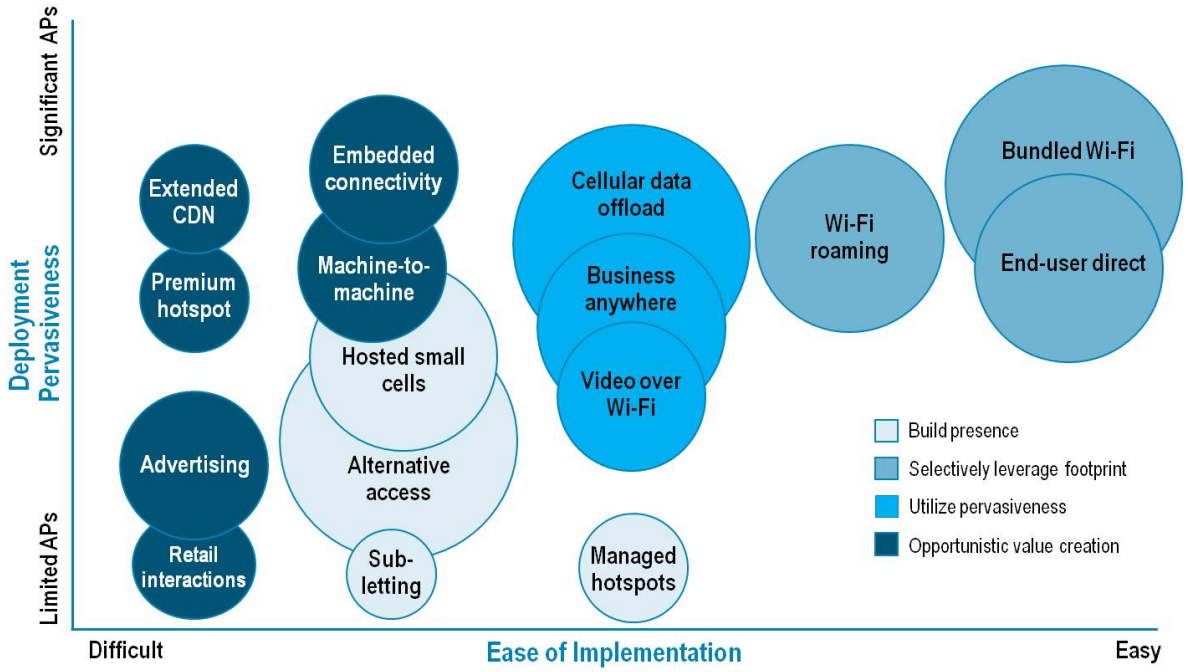
In thinking about business-model prioritization, three key questions should be considered:

1. **How much revenue will the business model generate?** SPs should determine if the amount of income generated from the new model is sufficient to justify the investment costs. If not, SPs should consider deploying a complementary or additive model that offers more substantive benefits.
2. **How difficult will it be to implement the business model from both an internal and external perspective?** These factors include the cost of using internal technologies and the amount of work needed to select and engage external partnerships.
3. **What level of Wi-Fi deployment is required to implement the business model?** SPs should determine the number of APs and locations required to deploy the selected service.

The following selection variables can help SPs assess which model is most attractive for meeting their business goals and for setting broader strategic priorities.

- **Business value.** The overall potential market size for the business model based on the economic analysis in Figure 1, and extrapolated to determine the total addressable market.
- **Implementation complexity.** An assessment of both the internal and external levels of complexity required to implement the proposed business model in a reasonable amount of time. Internal complexity includes factors such as application development costs, operations support systems (OSS) and business support systems (BSS) challenges, and architectural fit. External challenges include supplier availability, sales channel and partner management, and customer acceptance.
- **Deployment pervasiveness.** A measure of the degree of Wi-Fi coverage available to users from home, business, and public Wi-Fi networks. Pervasiveness is determined by access levels and location, as well as where people actually spend their time. For example, if people can access their service almost 100 percent of the time, the solution is considered fully pervasive. If, however, users can access Wi-Fi only from their local coffee shop, the service is regarded as less pervasive. Many of the business models require an extensive or pervasive Wi-Fi network to be viable, whereas others can be successful as point solutions.

Figure 2. Cluster Analysis Helps Determine Where To Focus Wi-Fi Efforts.



Source: Cisco IBSG, 2012

Prioritization Analysis

Figure 2 (above) reveals how the business models map against each of the selection criteria described above. The size of each ball represents the overall potential revenue opportunity for that business model. Business models in the upper part of the graph require a more extensive and pervasive Wi-Fi network to be successful. Business models on the left side are harder to implement, while those farther to the right are easier to deploy.

While individual priorities and strategic directions will vary greatly depending on market conditions, the SP segment, and existing capabilities, Cisco IBSG believes the business-model analysis in Figure 2 offers several interesting insights into priorities and timing that should be considered when deciding on the best Wi-Fi model (or models) to pursue.

1. **Build presence.** These business models do not require significant AP coverage and are not overly complex to introduce. For new, greenfield strategies, this approach can offer an immediate monetization stream with a limited amount of investment. These opportunities are also attractive extensions for current Wi-Fi network providers since they enlarge the number of APs that take advantage of existing capabilities and provide new sources of revenue. *Business models in this group include hosted small cell, alternative access, subletting, and managed hotspots.*
2. **Use footprint selectively.** For SPs with existing Wi-Fi solutions, or those committed to building Wi-Fi capabilities, these business models offer significant returns with limited additional complexity. Cellular data offload, for example, is rapidly becoming more attractive to mobile network operators as the amount of data traffic grows and offload potential becomes more substantial. *Business models in this category include cellular data offload, business anywhere, and video over Wi-Fi.*
3. **Utilize pervasiveness.** While these business models are often attractive in terms of ROI, they typically require an extensive network and a high level of Wi-Fi pervasiveness to be delivered successfully. Mobile and nomadic users will view these services as valuable only if they are guaranteed a high degree of connectivity. *Business models in this group include Wi-Fi roaming, bundled Wi-Fi, and end-user direct.*
4. **Opportunistic value creation.** Once SPs are in the Wi-Fi business or committed to building Wi-Fi capabilities, a range of additional services can provide new sources of revenue. While these services are more complicated in terms of new technologies, business partnerships, and time to implement, they complement other initiatives and provide new sources of revenue to cover Wi-Fi investments. *Business models in this category include extended CDN, premium hotspot, embedded connectivity, machine-to-machine, advertising, and retail interactions.*

Making Money Without Wires

The rapid growth of mobile data and the popularity of Wi-Fi have created a number of new and innovative money-making opportunities for SPs. While mobile data offload, wholesaling access, and bundling public Wi-Fi with other services are by far the biggest sources of immediate value, Cisco IBSG has identified at least a dozen other opportunities for SPs to create new business value.

The question is no longer "Can SPs make money from Wi-Fi?" Rather, it is "Where should they focus their efforts, and when should they deploy?" To be successful, SPs will need to develop a

comprehensive Wi-Fi strategy that accounts for strategic direction, key business objectives, and required capabilities. The pros and cons of individual business models must be carefully evaluated and balanced against the amount of time and investments required to achieve the desired returns.

Cisco IBSG strongly believes that SPs can make money in Wi-Fi, and that many business models can create new revenue sources to justify investments in building robust Wi-Fi networks and operational capabilities. By taking the time to identify and evaluate these various options, SPs can develop winning strategies that allow them to accelerate and benefit from their Wi-Fi deployments, while reducing overall business risks.

For more information, or to discuss Wi-Fi strategies for your business, please contact:

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Endnotes

1. Source: Cisco Visual Networking Index (VNI), February 14, 2012.
2. Source: In-Stat, 2010.
3. Source: "A New Chapter for Mobile? How Wi-Fi Will Change the Mobile Industry as We Know It," Stuart Taylor, Cisco IBSG, http://www.cisco.com/web/about/ac79/docs/sp/New-Chapter-for-Mobile.pdf

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