BelAir
N E T W O R K S

Cablevision Attracts and Retains Broadband Subscribers with Wi-Fi

Perennial First Mover MSO, Cablevision, Innovates Again… and Customers Stick with Wi-Fi

"love optimum wifi hot spots"

This simple tweet (seen in Figure 1) from October 30, 2009, apparently reflects the sentiments of a lot of Cablevision customers. The Optimum WiFi network has been garnering positive reviews since before it was even launched.

Figure 1. Twitter entry from October 30, 2009.

Optimum WiFi access point locations as at November, 2009 indicated by blue dots

It seems somehow appropriate that news of Cablevision's new Wi-Fi network initially spread not through planned launch activities and press releases, but through the blogosphere. After spotting a "gray box with 2 LED lights and what looked like a wireless antenna attached to the Cablevision line" which he photographed (see Figure 2), and correctly identified as a BelAir100S, CableDude10's May 14, 2008 blog in Cable Rant[1] asked

"Cablevision Wireless WIFI Network is Already Up? Could it be?" and went on to detail the incontrovertible evidence of the new network's existence. CableDude10's opinion of the new network? "I'm excited about this. Free wi-fi (for Cablevision subscribers) is a huge step."

Figure 2. BelAir100S spotted and photographed by CableDude10.

This positive review was read more than 8500 times, not to mention that other influential blogs including Broadband Reports ("Free Cablevision Wi-Fi Install Coming Along") and Wi-Fi Networking News ("Go, Go, Wires! Go, Go, Cablevision!") picked up on the story. Nice advertising for a network that hadn't even been launched yet.

And appropriate, because the trend driving Cablevision's new Wi-Fi network is the mobilizing of the broadband internet, and social media like blogs and Twitter combined with hugely popular smart phones (including the iPhone and new Android-based devices) are playing a major role in supporting this trend.

Why Wi-Fi for Cable Operators:

• No market entry barriers
• Huge demand for access
• Competitive differentiator

Of course, all of this coverage provided great advance publicity leading up to the official September 4, 2008 launch of the first phase of what Cablevision was by then calling their Optimum WiFi deployment," already the largest and most advanced consumer WiFi network in the nation, based on geographic coverage". The Optimum WiFi network continues to enjoy a viral following of bloggers and mainstream media including David Pogue from the New York Times who wrote an enthusiastic review of his discovery of Optimum WiFi at a train station near his home in Connecticut: "I'm happy I discovered it. Free Wi-Fi? Me likey."[2] But, perhaps more important (and indicative of Cablevision's savvy business sense), was one New York Times reader who offered the following comment in response to David's article : "I'll tell you one definite thing about Cablevision's free WiFi: it has kept me from switching to Verizon FiOS."

Why would a cable operator decide to deploy a Wi-Fi network?

When looking at why cable operators are deploying Wi-Fi networks, there are three main points to consider. It is important to note that these are not unique to Cablevision, but apply to most, if not all, major cable operators today.

1) Cable operators have an unfair advantage in wireless:

The three biggest barriers to wireless network deployments are: acquiring mounting sites and rights, powering the wireless units and backhauling the traffic. Cable operators like Cablevision face no such barriers. The strand-mounted, plant powered, DOCSIS® enabled BelAir100S nodes leverage the cable operator's existing infrastructure to quickly and easily extend Wi-Fi services from existing cable plant. BelAir100S nodes are installed and up-and-running in less than 15 minutes. Arguably, a fourth barrier to wireless deployments would be the cost of spectrum. Of course, this is not an issue when leveraging license-free Wi-Fi spectrum.

2) Mobilizing of the broadband internet is driving demand for Wi-Fi access:

In a Time magazine article[3] in June, 2009, Morgan Stanley research described the migration to Internet-connected mobile devices as "one off the biggest opportunities in the history of the technology industry". Laptop computers have had Wi-Fi for years, but it was the advent of smart phones and cool applications (credit to the iPhone App Store for kicking off this mega-trend) that really started to take the internet mobile. A Strategy Analytics report released in Q4'09 revealed that "the number of Wi-Fi systems shipped per year grew from 59 million units in 2005 to 409 million forecast to be shipped in 2009, a seven-fold increase, driven by notebook PCs, Smart Phones and Wi-Fi gaming consoles." These Wi-Fi devices and applications are driving demand for Wi-Fi access wherever people gather, shop and eat.

3) New competitive threat requires new competitive differentiator:

As "telco-TV" services expand their reach, cable operators face competitive threats in their traditional core market. Analysis from Heavy Reading[4] reflects that in the US "approximately 5 million households subscribe to a facilities-based telco-TV service today, and it is available to more than one in every four U.S. homes". So, cable operators are under increasing pressure to differentiate themselves and on-the-go broadband services enabled by Wi-Fi are an excellent way for them to do that. A survey conducted with home broadband subscribers in 2008 by research firm, In-Stat, found that "over 80% of respondents said they had some level of willingness to switch from their current broadband provider to one that combines both home and on-the-go service."

Cable operators find themselves in the unique position of being able to quickly enter the wireless market to address the huge and growing demand for Wi-Fi access in a way that differentiates their service offering, which enables them to attract and retain broadband subscribers.

What are the coverage requirements?

While it is now common to hear discussions of ubiquitous Wi-Fi access, some clarification is required in order to understand where cable operators can derive maximum benefit from their Wi-Fi deployments. When we look at the evolution of Wi-Fi coverage, we see that users are now accustomed to Wi-Fi at home, at work, and at school. We've even seen controversy around whether 'mom and pop' coffeeshops can afford to have Wi-Fi (people nursing a coffee for hours and taking up valuable seating space while they enjoy free Wi-Fi) or can afford not to (customers may choose to go somewhere else). So, where should cable operators focus their Wi-Fi coverage? A Cablevision press release, issued when a new Optimum WiFi coverage area was brought online, reveals a focus on "the places where people shop, dine, commute and meet."[5]

Effectively, that translates to areas of high user concentration which may include any of the following: downtown and retail areas, stadiums and special events, hospitals, university campuses, hotels and convention centers and mass transit trains and stations. So, rather than blanket coverage we're talking about user-targeted coverage. Makes sense? It certainly seems to for Cablevision. That same press release, issued on July 22, 2009, revealed that: "Since its launch in September of 2008, Optimum Online customers have accessed the Internet more than three million times for free over Optimum WiFi, and are averaging more than a million minutes online every day over the network, which delivers speeds of up to 3.0 Mbps downstream."

"One of the biggest opportunities in the history of the technology industry."

Morgan Stanley Research in Time Magazine describing the migration to Internet-connected mobile devices

In addition to regular media announcements, Cablevision keeps their customers up to date through a dedicated Optimum WiFi website at www.optimumwifi.com where users can view a coverage map or search by address.

Determining where to focus Wi-Fi coverage to target high concentrations of users can be accomplished through mapping software that enables filtering by Standard Industrial Classification (SIC) Code, identifying the locations of appropriate types of businesses and points of interest such as schools. BelAir Networks leverages these mapping tools to support cable operators in their business and coverage planning.

Delivering Results

As previously mentioned, in less than a year, Optimum Online customers had accessed the Internet more than three million times over Optimum WiFi. What that statistic fails to reveal is that the two million milestone was achieved by June 11, 2009[6], with the additional million attained less than two months later, reflecting a dramatic increase in adoption rate. In fact, by the end of September, 2009, Cablevision was already stating that "Optimum WiFi has already been used to connect to the Internet more than four million times, with thousands of new customers discovering the service every week"[7] and on October 28, 2009, they announced that they'd passed the five million mark.[8]

In an April, 2009 BusinessWeek article, "Cablevision's New Wireless Bid: Wi-Fi Hotspots", Thomas Eagan, an analyst with equity research firm, Collins Stewart, estimated that "ubiquitous Wi-Fi coverage, offered for free, could cut customer turnover by 15%". So, is the New York Times reader who claimed that Cablevision's free WiFi kept them from switching to Verizon FiOS part of

Figure 3. iPhone screen capture of comcastwifi and optimumwifi SSIDs.

a trend? Well, according to W. David Gardner in a September, 2009, Information Week article: "The Cablevision Wi-Fi network has been an effective weapon in retaining broadband customers as Verizon Communications aggressively enters its service area with its FiOS service."[9]

Wi-Fi expert, Glenn Fleishman, concurs: "From the start, Cablevision has described its plan in terms of marketing. The company is "giving" the service to customers in the interest of reducing churn. Cutting churn by a few percentage points will justify Cablevision's entire expense. Cutting it by double-digit numbers will turn Wi-Fi into a quasi profit center, in that it will offer a return on an investment, even though that's clearly not the precise intent."[10]

Perhaps a good indicator of Cablevision's success is reflected in the fact that, as Marguerite Reardon noted in CNET News, Comcast, the largest cable provider in the US ", also offers a Wi-Fi solution in cooperation with Cablevision…The two companies are deploying Wi-Fi hotspots in train stations and on train platforms along the North East corridor from Philadelphia to New York City. The Wi-Fi access is free to Comcast and Cablevision

Figure 4. BelAir100S deployed on aerial strand.

broadband subscribers."[11] Rich Tehrani, CEO of TMC.net and an Optimum WiFi user, noted the availability of Wi-Fi access from both Comcast and Cablevision in Bronx, New York and provided proof on his blog (see Figure 3.)[12]

Network Design

As briefly discussed, the Wi-Fi network architecture deployed by Cablevision and Comcast alleviates the traditional barriers to wireless network deployment.

By leveraging existing cable plant for mounting assets, cable operators avoid the delay and cost associated with tower or roof-based site acquisition. This is especially relevant as communities are increasingly opposing new cellular towers, potentially delaying construction for years. The strand-mounted BelAir100S Wi-Fi nodes are barely noticeable (see Figure 4), creating no negative aesthetic impact in the neighborhoods where they are deployed. Additionally, this microcellular approach provides better coverage, bandwidth and spectrum utilization than the traditional macrocellular architecture associated with tower or roof-based deployments.

Because the units are efficiently powered directly from the cable plant, cable operators avoid a key challenge encountered in traditional pole-mounted Wi-Fi deployments. Streetlights are often powered by bank switches so there's no way to provide power to the poles without leaving the lights on all day. By supporting their own power requirements, cable operators also avoid time-consuming negotiations with local utility companies.

Providing sufficient backhaul is a perennial issue in wireless network deployments, but a non-issue for cable operators whose existing cable plant provides an ideal backhaul solution for any type of wireless network, including Wi-Fi. The BelAir100S is DOCSIS enabled to provide direct connectivity to the hybrid fiber coax plant.

With each BelAir100S node able to be installed and activated in less than 15 minutes, it's easy to see how Cablevision has been able to deploy and expand their Optimum WiFi network so quickly and effectively to become the largest and most advanced WiFi network in the country by geographic coverage, spanning many thousands of access points across their New York, New Jersey and Connecticut service areas. But cable strand isn't always aerial. In both downtown areas and residential neighborhoods, pedestals, cabinets and even underground vaults may provide access to the cable plant. The BelAir100S has been designed to accommodate all of these mounting options, as shown in Figure 5.

Figure 5. BelAir100S vault and pedestal installations.

Of course, bringing Wi-Fi to the places where people shop, dine, commute and meet may also involve extending Wi-Fi to indoor areas. While in many cases outdoor nodes provide some indoor coverage, the BelAir20 AP (see Figure 6), installed alone or as part of a larger Wi-Fi network, has been specifically designed to extend Wi-Fi coverage in indoor environments.

Figure 6. Indoor BelAir20 mounted on ceiling.

Whether indoors or outside, the actual installation of the Wi-Fi equipment is only part of the networking story. Critical to the implementation is the integration of the Wi-Fi network into the cable operator's existing back office infrastructure to enable faster and easier deployment and reduced network commissioning. The BelAirOS operating system common to all BelAir Networks products enables auto-configuration (fully integrated into Cablevision's network) as well as remote configuration and management. BelAir Networks products are also fully integrated with Cablevision's management solutions. Specialized features, developed by BelAir Networks, enhance subscriber and device management, authentication and location-based services.

Figure 2, the iPhone screen capture showing comcastwifi and optimumwifi SSIDs, provides a graphic illustration of BelAir Networks ability to offer virtual AP capabilities to enable multiple services or multiple virtual service providers. Cablevision partnered with Comcast to give both "Cablevision and Comcast customers the ability to access their company's respective WiFi network at any of the New Jersey train stations that have been activated for service by either company".[13] BelAir Networks supports multiple BSSIDs, both broadcast and private (ie hidden or suppressed). Separate encryption and authentication is supported for each SSID, as well as separate VLANs and QoS levels.

What does the future hold for Cable Operators and Wi-Fi?

When asked about plans for wireless voice services during Cablevision Systems Corporation's Q2 2009 Earnings Call, Tom Rutledge, Chief Operating Officer, Cablevision replied: "I think that a wireless voice network riding on top of a wireless data network is inevitable."[14] However, no definitive announcements have been made. In October 2009, Kevin Curran, Cablevision's senior vice president of wireless product development provided some further clues about the future of Optimum WiFi: "The value and convenience we are delivering today through Optimum WiFi is exceeded only by the potential of the network to transform how our customers interact with all of our digital services in the future."[15]

What's certainly clear is that from Twitter to bloggers to A-list journalists and Tier 1 news publications, Optimum WiFi is getting consistently positive reviews. And Cablevision customers are making very good use of the network.

Perhaps we'll give the last word to Rich Tehrani: "Do all cable companies need to build out WiFi services across their areas of coverage? Probably."

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