

Economics of WiFi-based Metropolitan Internet Service: A Postmortem on the Wireless Internet Utility

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Introduction

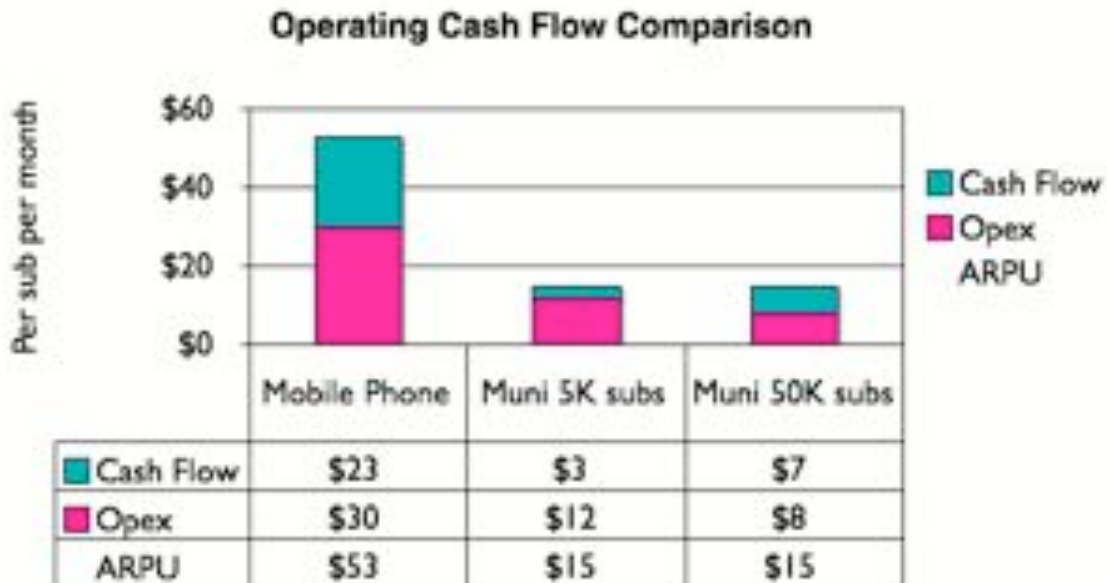
Nearly all of the city-scale, mainly WiFi-based wireless ISPs of the past three years are dead. Some, like Philadelphia, lumber on as zombie ventures. A few small town systems will continue to operate as long as the social and political consensus supports the subsidy required. And there are one or two big city projects that haven't burned through their initial operating capital yet.

But the rest are dead. The disease that killed them was cash flow hemorrhage, brought on by virulent churn.

Cause of Death

Churn measures the percentage of total subscribers who cancel service, and have to be replaced, in a given period of time. It is also used to calculate subscriber lifetime.

In the mobile phone industry, a typical 2.5% monthly churn rate results in an average subscriber lifetime of about 40 months.



Take an ARPU (monthly revenue per subscriber) of, say, \$53, subtract \$30 for the monthly cost of providing service to one customer, and there's sufficient cash flow over that period to pay off a subscriber acquisition cost (SAC) of perhaps \$400 and still have something left over to improve the balance sheet, or grow the business, or even pay dividends. The business model works, although different companies implement it in a variety of ways with a wide range of results.

Benchmarking DSL

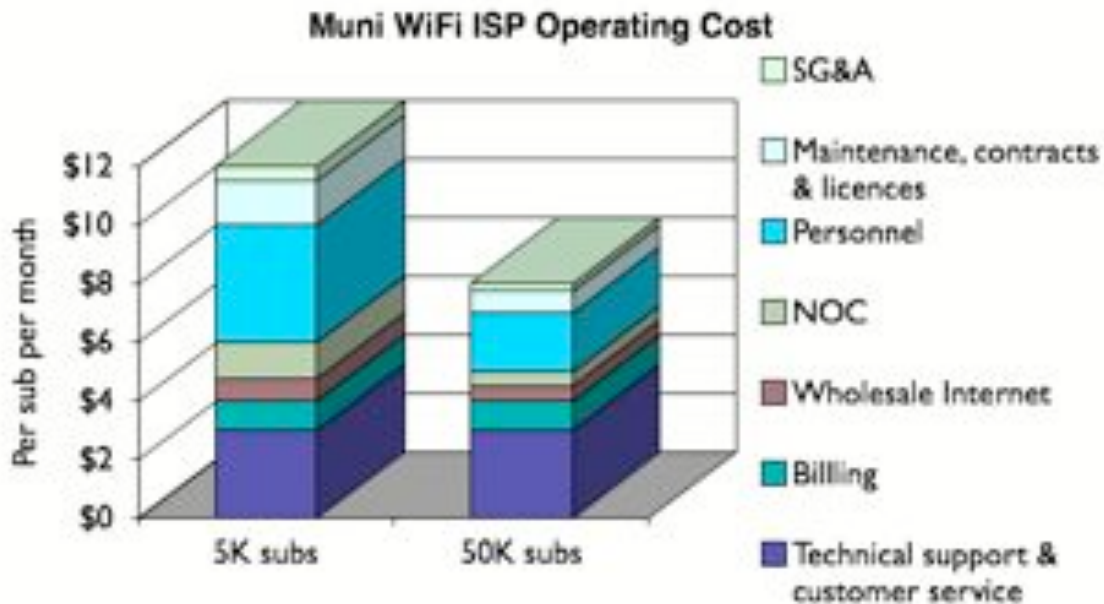
The same equation applies to a municipal (or municipally bounded) wireless ISP (WISP). First of all, monthly subscriber revenue is limited by competition from DSL (digital subscriber line) service offered by telephone companies. DSL is invariably the low-cost wired broadband option in any given market, and it delivers better service than WiFi-based alternatives

DSL's superior performance is constantly debated, mostly by wireless equipment manufacturers and other vendors, but the hard fact is that it's almost always faster, usually has significantly greater effective market coverage and, most importantly, delivers a consistent subscriber experience. DSL customers know what to expect and almost always get it when they surf the Internet. WiFi-based subscribers, on the other hand, might have a blazing fast connection in the morning, a mere trickle later that afternoon and intermittent outages in the evening.

At a typical monthly cost of \$20 (forgetting for the moment promotional rates that are a few dollars less initially), and with performance metrics far superior to WiFi, DSL keeps WISP rates in the \$15 range.

WiFi's Monthly Operating Results

From that \$15, subtract \$12 for a small system (5,000 subs, say) and \$8 for a large system (more like 50,000 subs) to pay for the cost of providing service to one subscriber every month.



These cost figures are highly optimistic; it's very possible to see a monthly operating cost of twice that range. But for the sake of discussion, start with a rosy operating cost

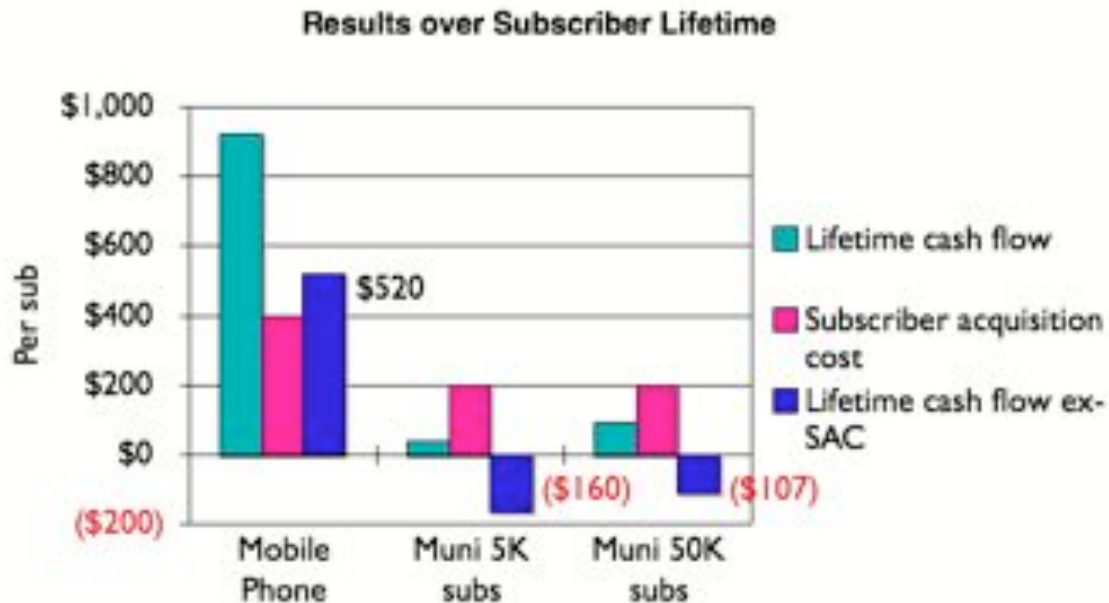
scenario. In the best case, you have \$7 per month left over to pay down SAC, put towards growing your subscriber base and improving your network.

Start with SAC. Take just the cost of providing and supporting the installation of CPE (customer premise equipment). For a WiFi-based system, this equipment is a wireless bridge that every subscriber needs to access the service reliably from homes and businesses. Then add in the direct cost of selling and activating a new customer, and a little indirect marketing cost, and SAC is well over \$200. But let's say \$200 for the sake of discussion.

With \$7 of operating cash flow, you'll need 26 months just to break even on the average subscriber. If you can hang on to that subscriber for as long as a mobile phone company does, you have a makable business case.

High Churn Rate is Inevitable

Unfortunately, WISPs don't, and can't, manage that essential trick. WISP churn rates are 2, 3, 4 times and more that of mobile phone companies. At a 7.5% monthly churn rate, which is not particularly high for a WISP, a subscriber lifetime is only 13 months, half what you need to pay the cost of getting and serving a sub. Even a 5% churn rate won't get you there, and that's a wildly optimistic figure.



It's easy to build a spreadsheet and plug in numbers that make it work – lower churn, lower operating cost, lower SAC, higher ARPU. And dozens of would-be municipal wireless ISP operators did just that. But the real world doesn't pay attention to spreadsheet models and powerpoint presentations.

An \$8 operating cost, \$15 monthly rate and a \$200 SAC are difficult to achieve, but possible. What's not possible is a monthly churn rate much under 7% or so. And that kills

the business model. The annual loss (or subsidy) is in the hundreds of thousands of dollars for a small system and in the millions for a large one.

The high churn rate is a direct and inevitable consequence of the competitive position of a WISP versus DSL and other wired technologies. If significantly superior service is available for \$20 a month – and it is – people who rely on Internet access (nearly everyone, these days) will pay the extra \$5 if they can afford it. Or unless they don't want to sign up for a minimum term of a year or can't pass the phone company's credit check standards.

So as a competitive tactic (and often as a matter of public policy), WISPs either adopt easier credit standards and shorter terms or, more usually, all but eliminate those requirements. As a result, the core subscriber profile leans heavily towards households with lower disposable income and credit scores, and people who don't plan to be in town very long. With this subscriber profile, even a well designed and operated WISP is going to have a high churn rate, and remain well out of reach of achieving a sustainable enterprise.

The End of the Road

Mobile workers are touted as the sweet spot for municipal broadband, but for a couple of reasons they tend to churn out too. First, WiFi-based WISPs are not optimized for truly mobile service. When you're driving around in a car, for example, handoffs from one access point to another are problematic.

Second, service ends at the city limits, and it's a rare private sector or government worker whose job is limited to a single city, except for city employees themselves. Mobile data service from cellular providers is a far better solution to both problems, and people with job-related needs quickly migrate to those platforms.

The grand municipal WISP ventures of the past three years died when the cash transfusions stopped. In some cases, they simply ran out of capital. In others, they had unworkable business models, often resulting from unrealistic expectations of free service and various other perks. When the subsidies stopped, the systems went dark. RIP.

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