

Solutions for Cell Coverage Issues

Multifamily residents overwhelmingly rely on cellphones – and they won't lease apartments with poor cell coverage. Fortunately, solutions to this problem are at hand.

By Richard J. Sherwin / *Spot On Networks*



How many times have your leasing agents or property managers encountered potential renters concerned about cell coverage? How many times have your leasing agents accompanied a prospective resident who was looking at the number of bars on his or her cellphone?

You are not alone!

More than 20 times per week, someone

in the multifamily industry contacts Spot On Networks for suggestions on how to deal with this very difficult, time-consuming and potentially very expensive issue.

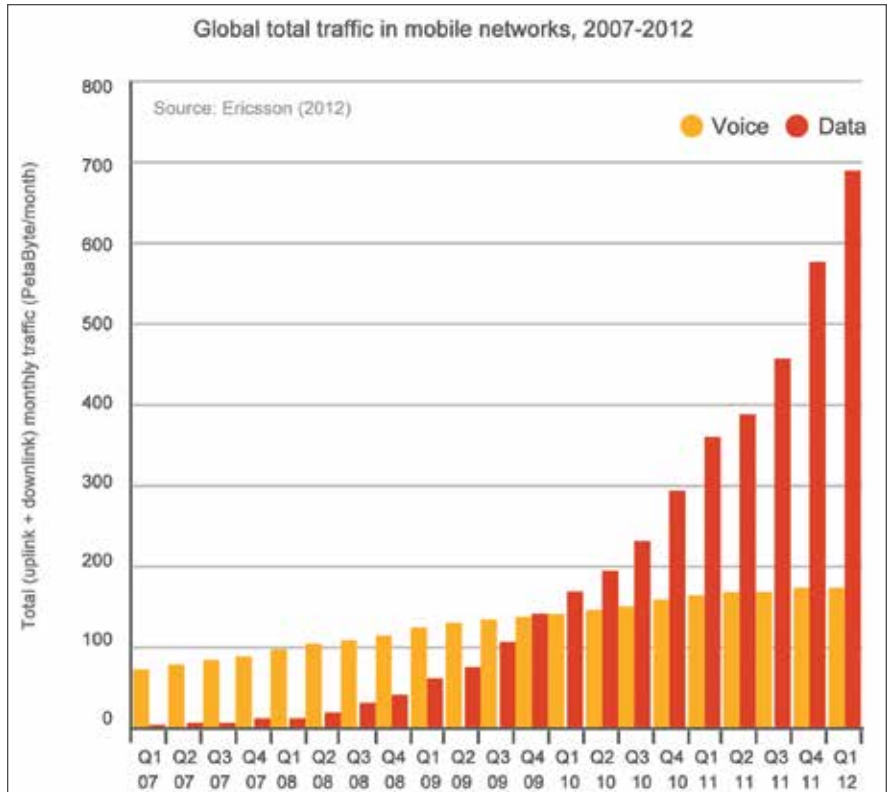
What causes it? What can be done about it? At Spot On Networks, we have done a lot of thinking about this issue, have begun to work on it and have found several avenues to pursue.

**THE CAUSE:
MOBILE EXPLOSION**

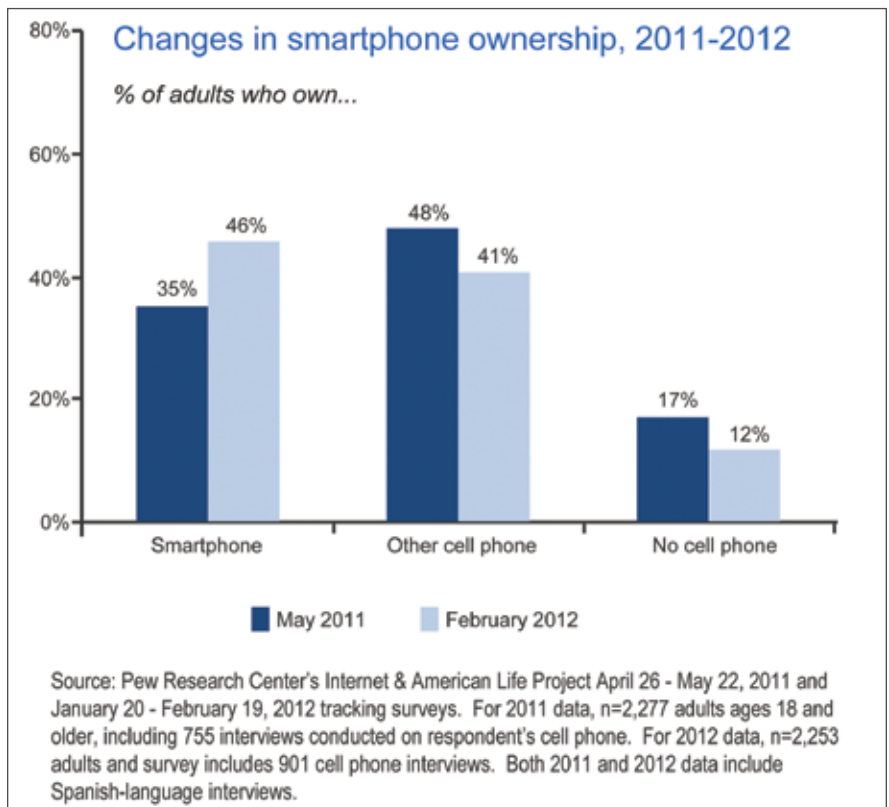
Smartphone usage and tablet usage have increased by unprecedented levels since 2010. The Pew Research Center reports that smartphone ownership increased from 35 percent of U.S. adults in 2011 to more than 46 percent of U.S. adults in 2012, a 31 percent increase in less than one year. However, that doesn't tell the whole story. As Ericsson reported in 2012, from the third quarter of 2009 to the fourth quarter of 2011, mobile data transmissions increased by 600 percent, and projections by Cisco seem to indicate that the trend will continue, especially as more video is delivered over the Internet.

More than 80 percent of multifamily residents now use cellphones as their primary or only phones. As cellphone companies try to wring as much revenue as they can out of their networks, they have shifted to a new model: data usage fees and unlimited talk time. This increases total monthly bills, now that data usage exceeds voice communications on cellular networks, but it also

More than 80 percent of multifamily residents rely primarily or entirely on cellphones – but property developers have constructed new buildings using energy-conserving materials that block cellular signals.



Cellular data traffic has increased exponentially over the past several years.



By early 2012, smartphones outnumbered other mobile phones in the United States.

Owners can choose among distributed antenna systems, Wi-Fi or femtocell solutions to boost cellular coverage inside their buildings. The right choice for any community depends on building construction, cost and the convenience that residents require.

reduces the marginal cost of voice communications to zero and thus eliminates any justification for buying landline service.

Complicating things is the issue of cellphone reception inside buildings. As landlords and developers focused on energy conservation, they favored certain building materials that are particularly resistant to penetration by cellphone signals. This exacerbates the familiar “Can you hear me now?” reception issues and often leads to cellular problems that tenants won’t tolerate. Do you remember hearing the telephone ring and running inside to answer it? Today, many people have to run outside to answer their phones.

If residents don’t have cellphone service inside their homes, how will they make calls to friends and family? Even more important, how will they call 911?

THREE POSSIBLE CURES

There are several possible solutions. The right solution for any building depends upon the situation, the cost and the convenience residents require.

DAS. Implementing an active distributed antenna system (DAS) is an expensive solution to the reception problem, which is the No. 1 issue (though some less-expensive DAS solutions, such as Spot On’s CellBoost services, are available). However, DAS will not necessarily, or even usually, help with the capacity problem. A DAS uses only the frequencies allocated to the base station or microcell to which it is connected. As a result, the channels have narrower bandwidth and therefore

significantly less capacity than Wi-Fi.

Existing Wi-Fi applications. If Wi-Fi is available in a community, residents can use a mobile VoIP application such as Skype as an alternative phone service. Conditional call forwarding is available with most cell carriers. Incoming calls can be routed to the Skype number, and outgoing calls can be made easily and even appear to come from the smartphone’s caller ID. The cost of such service is extremely attractive compared with cell service, especially for a resident who makes international calls. Residents can make emergency calls with Skype and similar applications, although their locations are not as visible as they otherwise would be.

For texting, an application called WhatsApp can be used for messaging over Wi-Fi. WhatsApp and similar applications are available for most smartphones and are relatively easy to use.

A new service has recently become available from the mobile virtual operator Republic Wireless. This service routes calls over the Sprint cell network normally when no known Wi-Fi service is operating and automatically switches to a recognized Wi-Fi network when such connectivity exists. If a Wi-Fi network is operating in a residential complex, residents can make and receive calls, messages and data without a cumbersome process involving sign-ons and multiple dialers.

Femtocell. Don’t forget the lonely femtocell – a small, low-power cellular base station designed for in-home use. Although each carrier has a different

name for the device, all versions operate in pretty much the same way: Plug in an Internet cable, and use cell service from a single carrier (thus lonely) in an individual apartment, for a fee.

THE FUTURE: HOTSPOT 2.0

Within a few months, the Wi-Fi Alliance and the Wireless Broadband Alliance will release a compatible set of protocols and procedures that make Wi-Fi networks complementary to cell carrier networks. The service, called Hotspot 2.0, uses the Wi-Fi Alliance’s Passpoint 2.0 certification procedure for product certification to promote secure, seamless roaming between cell services and Wi-Fi networks.

The first Hotspot 2.0 solution is expected to be introduced during 2013. Some access points are already Passpoint 2.0 certified, as are some models of the Samsung Galaxy S III, but device availability has held up trials so far, and testing has had to be done with prototype handsets. Operators, including BT and AT&T, are involved in ongoing trials, Orange France and Smart in the Philippines have already successfully tested Wi-Fi roaming and authentication and another Wireless Broadband Alliance trial this year will use preproduction and shipping handsets to test the billing interfaces on a live network.

Because AT&T and Wi-Fi controller manufacturer Pronto Networks are already testing these protocols and procedures, I am confident that some operators will have the first commercial Hotspot 2.0 networks in the first half of 2013.

Soon, residents’ smartphones could be seamlessly connecting over Wi-Fi, eliminating cellphone coverage issues entirely. ❖

Richard J. Sherwin is the founder and CEO of Spot On Networks LLC, a provider of Wi-Fi telecommunications. He has been involved in the development of wireless communications and radio frequency transmission for 30 years. You can reach him at rsherwin@spotonnetworks.com.