



Homeowners love the flexibility of residential wireless networks. So, why aren't more custom installers installing them?

Staying Connected Through Wireless Installs

Proper placement of routers and access points can be key for user convenience.

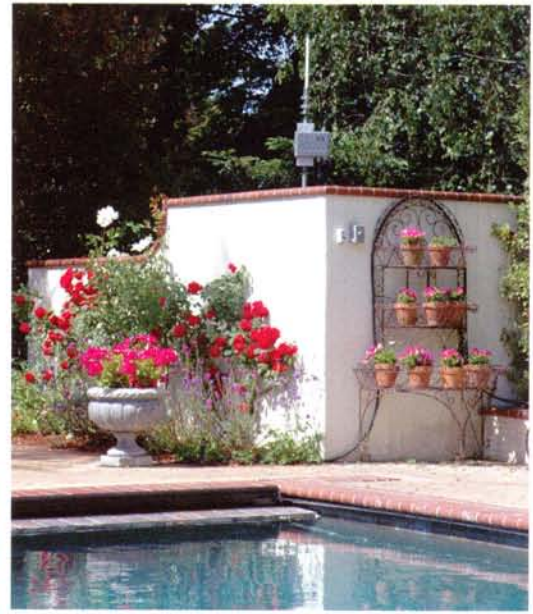
by **Victor Pak**

In the past decade, wireless has grown from an obscure and expensive curiosity to a practical and necessary networking technology for the home. People enjoy the freedom that wireless brings, such as being able to use the computer or other electronics in any part of the home without being limited by access to wires. So, why don't most custom installers offer it? And when they do, why aren't they making money by providing the service?

In a typical case, a customer asks for wireless. The custom installer doesn't push it. Most custom installers don't like the lack of reliability and the low profit margins associated with residential grade wireless products.

Continued on page 112

Expanding a wireless network outdoors may require more commercial-grade equipment. Considerably more testing is done on a commercial-grade product and they also tend to have a longer lifespan.



Continued from page 111

Unreliable Big-Box Equipment

The problem, in a nutshell, is that custom installers are accustomed to using “big box” retailers’ networking brands. While they are reluctant to put their reputations behind unreliable mass volume products, there were, until recently, few better options.

As noted by Martin Seelos, president, Creative Concept Sound Solutions, Aliso Viejo, Calif., clients “expect wireless, but often do not know the range of options and results that can be expected from a professionally-designed wireless home network.” Most consumers are used to paying \$100 for a wireless access point including a rebate. Because of this, custom installers feel obligated to sell big

box networking products with low margins. Service calls increase costs to both the installer and client when the network goes down or when the equipment fails.

Commercial Grade vs. Residential Grade

In comparison, products for the commercial market are designed and built to be more reliable because businesses that use them can’t afford their systems to be down. Considerably more testing is done on a commercial-grade product to ensure it meets certain performance levels. This is especially important for wireless devices, where RF characteristics can vary from unit to unit. Nevertheless, manufacturers can only perform cable testing on a mass volume product and attempt to simulate RF characteristics, hoping the

majority of their products will meet user expectations.

Commercial products also have a longer life span. The chipset/semiconductor products are more stable because the manufacturer wants the product to be predictable and, hence, reliable. Commercial product manufacturers don’t constantly change chipsets to take advantage of a cheaper chipset source. On the other hand, competitive pricing pressure forces mass-product manufacturers to consistently switch to less expensive components in an effort to remain cost competitive.

So, one problem is the quality of residential wireless networking equipment compared with that of the commercial grade. Another problem is that many consumers are reluctant to pay higher

| Wireless Internet

prices to get that commercial grade and do not really understand the benefits. Residential grade products are sold with very low margins. The pricing assumes high volumes and marginal quality. These products are not designed to be "fail safe," but rather to have an attractive price. Businesses, on the other hand, are used to spending 10 times as much as homeowners for wireless connection devices.

Analyze Interference When Tackling Wireless Installs

Installing a wireless network is a great way to add to your bottom line and also a way to distinguish your company. Still, there are not many custom installers who have experience in blanketing an entire house with wireless coverage that is reliable, uniform and virtually invisible. Installing the perfect wireless network is not as straightforward as it first appears.

There is an art involved in creating the optimal wireless network. This is where experience and perseverance really pay off. Installation issues include layout, channel settings and interference from other devices and building materials. It pays to anticipate these challenges. "Training audio/video technicians on home networking is beneficial to our company and clients," Seelos says. "One technician can install and service multiple technologies during a single appointment."

Critical installation information includes: knowing how different building material and walls absorbs radio signals; how radio waves reflect off certain surfaces; which equipment and appliances cause interference; and how building construction and layout can facilitate or interfere with wireless technology.

Location of WAP and Router Are Considerations

Of course, it is possible for a wireless network to be less reliable than a wired network. Wireless networks come with an inherent set of problems ranging from security (anyone can pick up the signal) to varying coverage quality (depending on what interference is in the air at a par-



The locations of the wireless access points and the router are top considerations when installing wireless networks.

ticular time). These problems can be exacerbated if the wireless access points are not selected properly, placed in the right location or configured correctly. Fortunately, these limitations can be overcome if they are considered fully when planning and installing a wireless network.

The main things to think about when planning a wireless installation are the locations of the wireless access points. In most homes, the optimal place to install a wireless access point is in the ceiling. If the finishing aesthetics of the wireless access point are discrete and attractive, the wireless access points can be placed at optimal locations for performance rather than in good hiding places. As with a quality distributed audio system in which the number of speakers depends on the amount of space the sound needs to fill, the number of wireless access points installed should be based on the desired coverage area.

The problem inherent in an all-in-one wireless broadband router is that it is designed to be placed next to the broadband connect entry point, with the expectations that the wireless will cover the entire home. Just as you would never place a speaker in the middle of the

house and blast it to cover the entire square footage of a home with sound, the same caveat holds true for a wireless access point.

In addition to appearance and location, there are other aspects to consider. Look for a solid metal housing and quality components. The better wireless access points will even have heat syncs on key semiconductor components to improve long-term reliability.

A variable high output power rating is another important feature. The higher output power rating is not so much for broadening coverage as it is for providing quality coverage and security. Just as with a stereo amplifier, if you push the amplifier to its limits, undesirable characteristics, such as distortion, appear. The variable power aspect of the wireless access point allows the installer to limit power to the intended area of coverage (i.e., within the house).

After all, if no signal is present outside a house — perhaps on public sidewalks or streets — there is virtually no chance that the wireless network will be penetrated by unauthorized users. **CE Pro**

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