Getting Wired for Profits

Are you overlooking profitable options your residential clients will appreciate?

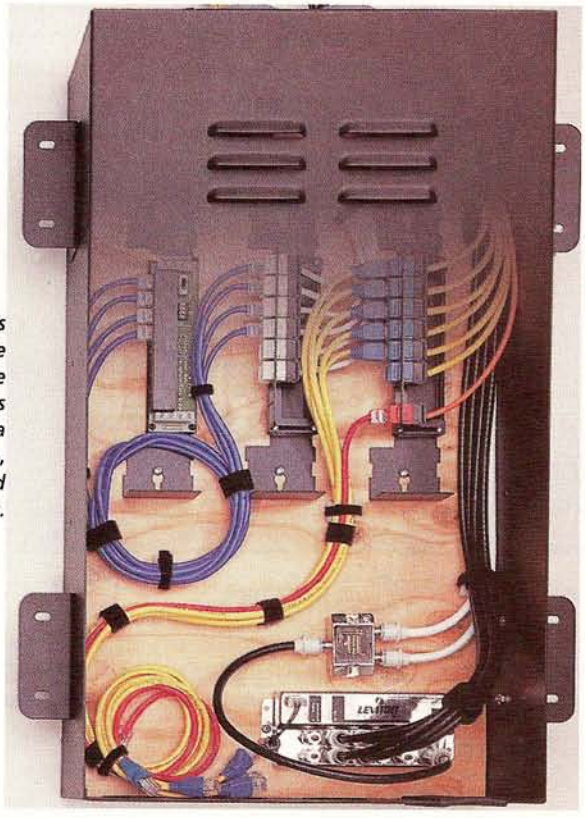
BY MARISA RODRIGUEZ

THERE WAS A TIME, NOT VERY MANY YEARS AGO, when you had to go to a specialty store if you wanted to buy a specialty item. A lot has changed, not only in the consumer goods market but also in the consumer services market. These days, a homeowner no longer needs to call a cable provider to wire for cable television; a telephone company representative to wire twisted pair for telephones, fax machines, and modems; or a digital video technician to install satellite service. Homeowners now have access to one-stop shopping; one contractor who can install any and all of these services.

Not coincidentally, contractors looking for increased business (and who isn't?) should pay special attention to structured cabling installations. Why? Because the number of homeowners who want to be "wired" is gaining, and fast. Consider that last year 40 percent of new homes were prewired for structured cabling, resulting in a 17 percent growth in income potential for residential installations.

"This trend has been mainly driven by the personal computer, the Internet, and the home office market, with 57 percent of households reported to have a home office, 24 percent of homes wired to the Internet, and about 50 percent of homes with at least one PC," says Mike Shatzkin, residential market manager for Leviton Telcom, a telecommunications manufacturing company.

"Home offices, though, aren't the only driving forces behind the need for structured cabling. Homeowners have a newly perceived requirement for safety, comfort, and entertainment in the home, with satellite and cable television, whole-house video, sophisticated home theaters, security alarm systems, and home lighting controls now seen as necessities rather than options," continues Shatzkin.



Leviton Telcom's Media Versatile Panel for the home consolidates incoming media including video, security, data and voice services.

Are these new wiring opportunities a bonanza? Yes, with a caveat. Residential installations require the system designer to take a full wiring systems approach as well as get a handle on aesthetic design, which is not an easy task. That is because in home installations, product specification is not always handled by the contractor or systems integrator, who can take into account both wiring capabilities and aesthetics. "Homeowners who want something attractive but may not know too much about system capabilities have the final say. So it is the designers' and installers' job to be knowledgeable about cabling limitations and guidelines to ensure the installation is built to code," says Shatzkin.

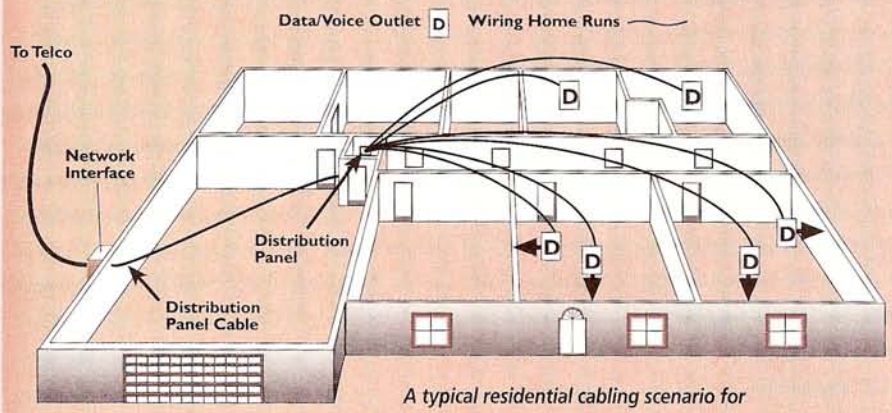
SALES OPPORTUNITIES SEIZED

- 77 percent of builders are offering home offices or home theaters in model homes
- 63 percent of home buyers will precable their homes for something high tech

So How Do You Wire Now?

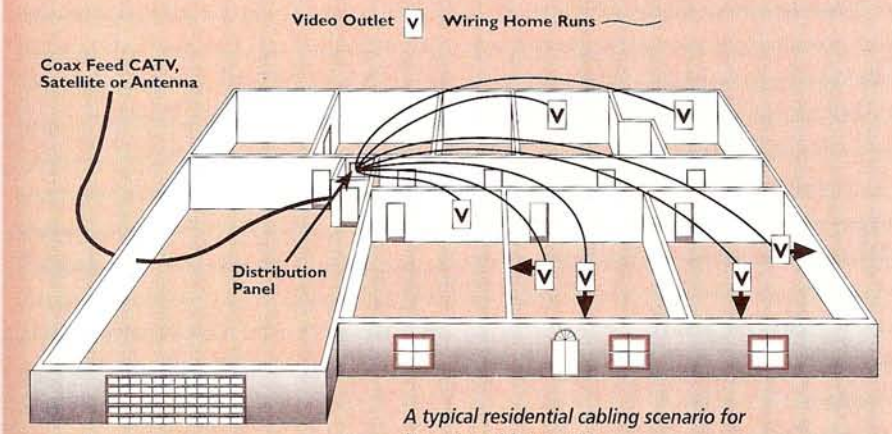
Essentially, there are two distinct types of communications wiring in demand in the residential market: unshielded twisted pair (UTP) cabling and coaxial cabling. Of these two types,

TYPICAL DATA/VOICE WIRING SYSTEM



A typical residential cabling scenario for incoming data service.

TYPICAL VIDEO WIRING SYSTEM



A typical residential cabling scenario for incoming video service.

UTP promises to be the most growth-driven, according to Shatzkin. UTP cabling is used for basic communications in the home, with faxes, modems and multiple telephone lines leading the pack. UTP is also used for home automation, such as lighting controls and security and alarm systems. With the use of appropriate adapters or electronics, UTP can also be used for wiring home theaters, satellite and cable television, and whole-house video.

Coaxial cable, meanwhile, can be used with two types of connectors for different purposes in the home. When used with an F-type connector, "coax" distributes radio frequency (RF) signals for cable services, satellite services and audio/video services, and a VCR. When used with a Bayonet-Neill Concelman (BNC) connector, coax cable can be used for closed circuit TV, high-end video, and baseband data transmission.

Telecommunications Market Grows

In 1998, 11 percent of households had multiple access telephone lines; this figure is expected to rise 4 percent by 2002.

Also in 1998, half of all homes had one PC and 24 percent were connected to the Internet.

In three years, an estimated 7 to 8 million cable modems will be used and 15 million homes will be satellite subscribers nationwide. By then, 14 million homes will be digital set top TV subscribers; this is growing 7 to 8 percent per year.

Cable Bandwidth Considerations

Clearly, in-home services using UTP and coaxial cable are in high demand. Subsequently, more and more space is used on both types of cable. This space is called the cables' bandwidth capacity. In the realm of UTP cable, higher categories of cable have higher bandwidth capabilities, and fiber optic cable provides more bandwidth at greater distances. "For most, Category 5 or higher cabling in the home is the smarter choice for those bandwidth-needy in-home applications," says Shatzkin. "With Category 5 and especially with fiber optic cables, homeowners will be able to accommodate virtually any applications imaginable in a home in the foreseeable future," he adds.

"The amount of bandwidth on coaxial cables is also important," notes Shatzkin. Coax is increasingly being used for very high bandwidth applications such as satellite and digital TV and by access providers who will provide telephone, data and CATV over this type of cable.

"The current recommendation," he says, "is for the use of Series 6 (RG-6) cable which has a higher bandwidth and lower frequency loss per foot than the old standard, Series 59 (RG-59)."

Pricing is an important consideration, too. "Aside from the advantage of delaying cabling system obsolescence, prewiring any home with higher bandwidth cabling provides a marked cost differential," says Joe Kokoska, president of J.K. Electric of Central Florida, Inc. Wiring a new home with cable and associated hardware costs anywhere from $500 to $2,000.

By contrast, retrofitting to catch up with bandwidth needs requires tearing open walls to access old cables and install new cabling. This type of installation easily runs twice as much as a new installation. "It doesn't take an accountant to figure out the advantages and cost savings in the up-front installation of higher bandwidth cabling," continues Kokoska.

How Do You Start? Know the Standards

The Electronic Industries Alliance/Telecommunications Industry Association (EIA/TIA) is currently updating the minimum standards for wiring the home to reflect this need for higher bandwidth capabilities. Called EIA/TIA-570-A, this standard encompasses premises cabling systems and their related pathways and spaces for single or multitenant residences, cabling within and/or between buildings, component specifications, installation requirements, and field test requirements.

In general, EIA/TIA-570-A calls for several guidelines to be strictly followed. Most notably, all residences must be wired with four-pair UTP cable terminated onto category-rated jacks. Twisted pair copper wiring is the most

prevalent telecommunications wiring. Many newer telephones and sophisticated telephone systems will not work properly unless connected to unshielded twisted-pair wire. Each pair is twisted together to reduce interference (i.e., induction and crosstalk) from other pairs in the same cable bundle, and from outside sources like power circuits and motors.

EIA/TIA-570-A also calls for the use of 75 ohm coaxial cable, specifically the higher bandwidth Series 6 (RG-6) cable. RG-6 is considered the cable of choice for digital television, which will be fully instituted by the year 2006, when the Federal Communications Commission will require that all television stations broadcast digitally. Additionally, EIA/TIA 570-A also calls for a distribution device in each residence to be used as a common point for terminating connections from service providers and to facilitate moves, adds, and changes. "The need for this type of gateway for incoming services, be it a patch panel or some sort of incoming services organizer panel, is becoming more and more necessary, as homes become more high tech," contends Kokoska. "The panel's purpose is multifunctional: on one hand, it will help incorporate UTP cable, coaxial cable, fiber, audio, and other media, as well as provide bridging and switching functions for video components. On the other hand, it will allow for connection to other services or applications such as home automation, audio, intercom and security systems," he says.

The newly revised standard discusses in detail the amount of space that should be allocated for the distribution device, as well as the need for electrical power at the distribution device—two very important considerations.

TIA Defines Two Cabling Options

The newest draft of TIA-570-A addresses all these standards in Section 4. This section also discusses the two grades of telecommunications cabling appropriately specified for residences.

Grade 1 sets the minimum requirements for a basic telecommunications system in a residence, including telephone, satellite, cable television, and data services (basically any outside provider service). It calls for the installation of four-pair 100 ohm UTP cable that meets or exceeds Category 3 transmission requirements and 75 ohm RG-6 coaxial cabling. Installing Category 5 cable is highly recommended.

Grade 2 sets the requirements for true multimedia telecommunications services, including environmental controls, security alarms, data networks, home automation systems and fiber optic cabling. Due to the higher performance expectations in Grade 2, each cabled location now requires the installation of two four-pair 100 ohm UTP cables that meet or exceed requirements for Category 5 cable and two 75-ohm RG-6 coaxial cables. Optical fiber cabling is optional in Grade 2 installations.

To some, the Grade 2 cabling scenario may seem to be cabling overkill. Yet, many new residential housing developers will install nothing less than Category 5 cabling. It is considered a requirement to keep up with technological developments, many developers agree.

The following indicates consumer interest levels:

- Two of three consumers are interested in distributing cable or satellite TV to multiple television sets.
- Two of three consumers are interested in using their TVs to see who is at the door.
- One of every two consumers is interested in controlling lights and electronics within the home when the security system is armed.

Of course, no cabling job is complete without a rigorous testing procedure to ensure everything is functioning to standard. Field testing for UTP cable consists of wire map tests to ensure correct wiring procedures, length, and attenuation, as well as near-end "crosstalk" (NEXT), and link and channel tests to assure Category 5 performance.

So Did You Know as Much as You Thought?

Here's one more tip: If you educate yourself now, extra income could be yours for the taking.

To purchase TIA standards documents, contact Global Engineering at 1-800-854-7179. Alternatively, Leviton Telcom publishes a booklet called "Wiring Strategies for Voice and Data Systems" for $10. For more information, call (800) 922-6229. EC

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