Independent Testing Verifies Network Integrity

By Patrick McLaughlin

Although we may not like to admit it, human error plays a part in every endeavor - whether that endeavor is constructing a building, completing a tax return, or installing a structured cabling system. As a means of ensuring that the workmanship - whatever it is - is of acceptable quality, the final product is usually examined in one way or another. A construction manager reviews the general contractor's work on behalf of a building tenant; the Internal Revenue Service reviews and sometimes audits tax returns to verify their accuracy; and cabling installers test their systems before the end-user plugs in.

In these three scenarios, the cabling installation is the only project in which the same person who does the work verifies that work's accuracy. No independent third party is involved. While this situation opens a door to unscrupulous installers who may choose to modify test results or provide sub-par workmanship for their own benefit, it also increases the possibility for honest human error to adversely affect the verification process.

Intertek Testing Services (Cortland, NY), grantor of the widely recognized ETL verification, has initiated a program aimed at minimizing the human-error factor in structured cabling-system installations. The ETL Field Verification Program is based on the rationale that an independent, third-party evaluation of an installed cable plant will provide an accurate analysis of the network's integrity and will supply end-users with a quality-control measure heretofore absent from most cabling installations.

The program is similar to work Intertek has performed on an as-needed basis in the past, reports Donald Nicholson, Intertek's industry manager for communications products He says that, occasionally, the company has been asked to provide an independent evaluation of an installed network. Those requests typically came when a conflict has arisen between an installer and an end-user, he says, but stresses that the Field Verification Program is not necessarily association with such an adversarial relationship. Rather, Nicholson, says, the program provides "an independent set of eyes" to examine the job. Under the program, Intertek verifies that a cabling plant meets the performance requirements established in the TIA/EIA-568-A commercial building telecommunications wiring standard and any other cable-performance requirements that the end-user specified in the contract.

Field Partner

Integral to the program are Intertek's field verification partners (FVPs), who conduct the actual tests on site, then send the test results to Intertek for analysis. Intertek has established four criteria for a potential FVP. The candidate must:

- have a registered communications distribution designer (RCDD) on staff;
- use an ETL-verified handheld local area network (LAN) cable tester or a calibrated Hewlett-Packard network analyzer. Currently the WireScope 155 from Scope Communications (Marlborough, MA) is the only handheld LAN cable tester with ETL verification;
- prove knowledge of the TIA/EIA-568-A standard through an open-book test;
- be an independent consultant not affiliated with a cable manufacturer or installation firm.

Along with the test results, FVPs send a floor plan of the cabling system, a copy of any applicable warranties on the components and the system, and the system's numbering scheme to Intertek, which then assembles this information and reviews the details to determine the job's pass/fail status.

The four basic tests that FVPs conduct for installation of Category 5 unshielded twisted-pair (UTP) cable, which are subject to change as standard requirements change, are those specified in telecommunications system bulletin TSB-67: attenuation, near-end crosstalk, wire map, and length. For fiber-optic installations, the FVPs verify compliance with the fiber-optic performance requirements set forth in the TIA/EIA-568A standard. Visual inspections include checking all outlets and cross-connection points to ensure that they are properly labeled, checking terminated spaces to see if UTP untwist exceed the 1/2-inch Category 5 limit, looking for excessive jacket abrasion and prohibited splice points within a building, analyzing test results to verify that all workstations have been tested and that they correspond to the floor plans at the time of inspection, and inspecting the cables for jacket removal in terminated spaces.

"The program is designed to be flexible," says Dennis Mazaris, RCDD and president of Concert Technologies of Dulles, VA, the first FVP enlisted by Intertek. He explains that both the testing lab and the FVP will customize test procedures to conform to the end-user's demands. For example, if the customer would like to test characteristics other than the TSB-67 requirements - such as power-sum near-end crosstalk, resistance, return loss, and fiber distance - the FVP will test the cable to ensure that it achieves the electrical and optical performance characteristics specified. Mazaris also points out that the end-user can have the installer conduct an initial test, then have the FVP test the system, or the end-user can forgo the labor cost associated with the initial test by the installer. "If the contractor tested the installation, then there's the possibility that a small percentage of the stations were missed. In an installation of 300 workstations, may 5 or 10 could have been missed. Or each cable-test report may not be thoroughly diagnosed to see if the cabling links have additional headroom for better-performing channels.

As is the case with installing cable, the time it takes to verify the installation depends largely on access to the work-area outlets, according the Mazaris. "The network's layout really determines how long the testing will take, he says. Mazaris states that one of the most important characteristics of the verification program is that it provides an independent evaluation. He also says that a result of the program, for many users, will be solidification of bids. In other words, the sometimes large variances among solicited bids will probably be reduced if all bidders are aware that their work will be independently tested and visually inspected to the TIA/EIA-568A standard and customer specifications.

January Kickoff
The program's official kickoff occurred shortly before BICSI's (Tampa, FL) Winter Conference, which was held January 19 to 22. On January 8 and 9, representatives from Intertek, Concert Technologies, and Scope Communications were present for the verification of the cabling system in BICSI's recently constructed Tampa, FL, headquarters.

"The BICSI building had 83 locations to be tested," Mazaris recalls. "Each location had four Cat. 5 cables and one duplex fiber." He says many installations will have fewer cables per workstation, but Nicholson again emphasizes that under the Field Verification Program, "the customer is king. Whatever they ask us to test, we test."

Structured Cabling System Verification Program