



BICSI Fall Conference Field Report

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Conservation efforts have a social cachet and saving dollars proves to be just as important

Drawing more than 3,000 information transport system (ITS) professionals, the BICSI meeting addressed a broad spectrum of industry issues. Topping many an attendee's list of concerns is the convergence of Internet Protocol (IP) networks that can help businesses achieve a greater return on their information technology (IT) investments. Another trend surfacing at the event related to firms looking beyond the voice-over-IP (VoIP) and data traffic to include security systems, building automation, and access control on the network. Retail establishments and other businesses are also rolling out new point-of-sale systems, video conferencing, multimedia, and music, while hotel guests are demanding more in-room services, such as high-definition movies/TV and Internet access.

At the educational sessions as well as in the exhibit hall, the recurring theme of extending the life cycle of installed cabling proved to be a hot topic among attendees. Thus, continuing interest in shielded/foil twisted-pair copper cabling and optical fiber for broadband networks was evident. Much discussion focused on pathway design and sizing to handle the combination of high equipment density and the greater cable diameters needed to support 10 Gb/s transmission with copper. The application standard for 10 Gb/s (1,250-MB/s) Ethernet over unshielded twisted-pair copper cabling, called IEEE 802.3an, was ratified last year.

In addition to these hot topics, much attention was given to educating attendees on green building initiatives and the Leadership in Energy and Environmental Design (LEED) program, demonstrating how both are influencing the architectural, electrical, communications, and mechanical design communities.

Going Green

Learning that the "greening" of the IT industry is about more than saving the planet, attendees at this year's event were also educated on cutting operating costs and boosting profits as demand for computing power soars. Recognizing that power consumption at data centers has doubled in the past six years, suppliers and IT professionals are proposing numerous ideas for reducing energy consumption at data

centers, many of which were presented at the conference.

BICSI

Building Industry Consulting Service International, based in Tampa, FL., is an international telecommunications association providing education, registration and resources for professionals involved in the design and installation of low-voltage distribution systems in commercial and residential buildings as well as outside plant systems.

Learn more at www.bicsi.org.

Some of the technologies put on the table include server virtualization, grid computing, multicore processors, blade servers, and better cooling methods. Virtualization is one of the most effective tools for going green. By dividing each server into multiple virtual machines that run different applications, server utilization soars. More efficient processors are another idea, with Intel, Advanced Micro Devices, and Sun Microsystems now competing on performance per watt.

In the future, solid-state flash-memory drives are projected to replace disk drives, which use more power, generate more heat, have a higher failure rate, and are slower in accessing data. However, flash drives require changes in the architecture of a data center, including controllers and interconnects that will have to be redesigned to optimize flash memory's features.

Blade servers take up less room and use less energy than conventional rack-mounted servers. In addition, they increase the number of processors relative to rack space. These efficiencies garner more processing power in a reduced space compared to rack-mounted servers. Blade servers also can reduce cabling in a data center because the chassis has integrated switching modules, enabling internal port aggregation. On the negative side, the greater density of equipment in the rack calls for denser power, cooling, and weight-bearing requirements.

Because companies and government agencies want to place green criteria in IT requests for proposals, the IEEE created the Electronic Product Environmental Tool, or EPEAT, which is also known as IEEE 1680-2006. Developed over the past three years with funding from an Environmental Protection Agency (EPA) grant, EPEAT currently covers only PCs and monitors. However, coverage of servers, routers, and printers should be completed in 2008. The standard has both required an option criteria for IT vendors in eight broad categories (including energy conservation, recycling or disposal, and packaging) and reduction or elimination of dangerous materials such as lead, mercury, and PVC. Next year, chipmaker Intel's microprocessors will be completely lead-free.

Taking the LEED

In the "LEED and the Impact on the RCDD" presentation, William Weekes, Fancom Network Integrators, Mississauga, Ontario, Canada, described the need for an RCDD to work with a number of different specialists when designing a cabling system and specifying related equipment. On one of his projects, the Canadian Air Force's new Aerospace Warfare Centre, details of the LEED program influenced the architectural, electrical, communications, and mechanical design. Weekes explained basic elements of the LEED rating system, which is the nationally accepted benchmark for design, construction, and operation of high-performance "green" buildings, giving owners and operators the tools they need to reduce costs over a building's lifetime.

LEED recognizes performance in six key areas of human and environmental health: sustainable site development, water savings, energy efficiency, material selection, and indoor environmental quality. The last category is called innovation in design, which could involve the selection of scalable UPS power and cooling systems for a data center. The creation of a points system (up to a total of 70) for achievements in the six categories allows a project to move progressively up the scale in one of four

Sidebar:

Origins of the Green Building

How did the "green" movement get started? The original guiding force could well be the California Code of Regulations, known as the "California Building Standards Code," which emerged some years ago. Part 6 of that code is the California Energy Code (CEC), containing energy conservation standards created by the California Energy Commission. Another document widely used in building codes is the ANSI/ASHRAE/IESNA Standard 90.1 -2004, "Energy Standard for Buildings Except Low Rise Residential Buildings." It sets minimum requirements for a structure and its systems, including electric power, lighting, HVAC, water service, and energy management. The standard also focuses on lighting controls (i.e., occupancy sensors and timers), task lighting, power densities, and outdoor lighting.

categories: certified, silver, gold, and platinum.

In the Canadian Air Force building, extensive use of exposed ceilings was employed to maximize natural lighting, requiring the use of overhead distribution in cable trays. Except for common areas, raised floors are used throughout; therefore, retention of proper bend radius was important when transitioning from underfloor basket tray and conduit into recessed floor boxes. Weekes drew several conclusions in his session, including the following: (1) ITS requirements will not change significantly, but how you implement and coordinate them with architectural, electrical, mechanical, and structural engineers will be increasingly important. (2) In the future, the current LEED points system will look insignificant, as all new facilities reach gold and platinum status, and the LEED program focuses more on data centers. (3) By necessity, the program will become more stringent, and ITS will play a greater role in monitoring new facility management systems. (4) Because IT equipment is now becoming the largest user of energy in most buildings, expect LEED requirements for ITS design and implementation in the future.

Although the LEED program does not define ITS design, Weekes pointed out that new solutions not directly related to ITS may impact future ITS products. Therefore, he recommends that the ITS industry adapt and promote LEED-type initiatives internally. Many corporations, such as the Bank of America, have created a position called the chief environmental officer, and a LEED professional may be part of the construction team in the future. He also recognized that LEED design could raise construction costs 3% to 5%, but that important savings are returned over the building's lifetime.

Conference Session Highlights

The opening presentation of the general session on Tuesday was titled "Best Practices for Network Security." Steve Surfaro, Panasonic Systems Solutions, Secaucus, N.J., and Kent Brown, IBM Internet Security Systems, offered the message that you can never feel content with security. Despite security technology advances, they maintain that you are as vulnerable as ever, describing the lack of awareness regarding cyber security threats among business executives and government officials.

Other Tuesday presentations included "Connectivity: Wiring Trends in High Performance Optical Data Centers," where Rick Dallmann, CXtec, Syracuse, N.Y., described equipment/cabling trends in optical data centers. These trends involve new selections in optical fiber connections. For example, ESCON connectors have given way to MT-RJ connectors, and LC duplex connectors are replacing SC duplex connectors. Along with new connectors come innovative constructions in optical fiber trunk cable that cut the connector's weight and diameter by more than 50% while enhancing performance. The MPO — or MTP — connector, which has 12 fibers in one connector ferrule, uses a push-on/ pull-off design, allowing for easy connection and disconnection. In addition, increased enclosure density complements the greater fiber connector density.

Sidebar: LEED Helps Forge Future Efficient Building Designs

The "green" building revolution is bringing completely new ways of planning, erecting, and maintaining structures. Therefore, the electrical contracting industry — along with the construction industry in general — is facing a radical change. Along with new standards, regulations, and codes, the green transformation creates a new vocabulary of architectural/building concepts, including such terms as sustainable design, light penetration, and thermal mass. More importantly, industry associations (such as BICSI), professional organizations, and government agencies are moving the construction industry toward zero-energy building design, which allows a structure to produce as much energy as it uses. This shift in attitude is a response to a host of negative statistics. U.S. buildings account for approximately 35% of the total energy supply and 60% of the annual electricity supply. They also account for 60% of non-food/fuel raw material use, generating 136 million tons of construction and demolition debris each year. As a nation, we recognize buildings should be both energy efficient and use environmentally sustainable materials.

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Finally, to simplify moves, adds, and changes, the use of a central patching location (a passive patch panel) is recommended. This achieves several goals. It allows the use of multi-fiber trunk cables (as opposed to numerous discreet cables), eliminates the need to access the raised floor to accomplish these moves, creates protected pathways to route cable, and consolidates the physical connectivity of all server, switch, and input/output ports into a single main distribution area, making it easier to manage the structured cabling in the center.

On Wednesday, conference attendees were able to select a schedule of presentations from more than 16 various breakout sessions. In "Your Sustainable Competitive Advantage," Kevin Cheong and Aleks Milojkovic, Stantec Consulting Ltd., Vancouver, British Columbia, Canada, stressed the idea of the IT professional becoming a leader in the evolving field of sustainability, which is changing the way society thinks about energy. Additionally, sustainability in the IT world should stress three ideas: reduce, reuse, and recycle.

For example, by consolidating VoIP, PoE, and wireless LAN technologies on a cabling system, the need for separate Cat. 3 (voice circuit) cabling and PBX equipment is eliminated, thus reducing material costs. Modular pre-terminated cord sets and cabling can be reused in the equipment room and elsewhere, thereby lessening the amount of scrap material entering the waste stream. Also, the use of zone cabling generally can decrease the quantity of cabling required.

In "Best Practice in Design Maintenance and Economic Evaluation of Critical Fiber Optic Networks," David Harney and Tom Schiltz, Molex Premise Networks, Lisle, Ill., and Joe Graham, US Conec, Hickory, N.C., explored optical connectivity solutions that active equipment manufacturers are putting into their products. The team also examined various construction and performance options for multi-fiber terminations. In "The Growing Value of Cabling Systems," Herbert Congdon, Tyco Electronics, Conover, N.C., and Phil May, Wake Forest University, Winston-Salem, N.C., presented the case for seeing the cabling infrastructure not as an expense but as an investment, because building automation, security, RFID, and asset management systems can share the

LEED Sidebar- continued

The moving force to raise the operating efficiency of building is the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. Launched in 1998, LEED is a program that uses a checklist of prerequisites and credits, each reflecting an aspect of green performance, for six categories: sustainable sites (exterior lighting is included), energy & atmosphere, materials & resources, indoor environmental quality, innovation & design processes, and water efficiency. Electric lighting, lighting controls, and day-lighting are major parts of the initiative, and lighting designers/electrical contractors can be involved in all of the categories except the last. Becoming a LEED-accredited professional involves attending a one-day training session, studying a reference guide, and passing a test. Realistically, an electrical contractor should have at least one project manager who is a LEED-accredited professional.

The LEED project is managed by members of the nonprofit U.S. Green Building Council (USGBC), made up of more than 8,500 building industry organizations. Currently, more than 7,000 LEED projects are registered. What's more, according to the USGBC, 11 federal government agencies, 17 states, and more than 50 municipalities require buildings to meet their green standards.

USGBC also has a LEED rating system for schools, a pilot program of LEED for Neighborhood Development (LEED-ND), and a LEED for Homes (LEED-H) is almost ready to launch

same cabling system. At Wake Forest, the IT department is helping the police department reduce theft in school buildings by using RFID tags in conjunction with security cameras at entrances. In "Optical Connectivity in the Data Center," Doug Coleman, Corning Cable Systems, Hickory, N.C., discussed the technology behind 850nm vertical cavity surface emitting lasers (VCSELs) and multi-mode optical fiber, ideally the laser-optimized type, 50-micron construction, called OM3 fiber. This cable type provides bandwidth capacities for present and future data rate applications (such as 16G to 100G and beyond), optimizes pathway utilization, simplifies installation and testing, and supports high patch-panel densities.

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