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President's Message



Edward J. Donelan,
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Planning the Work, Working the Plan

To say that 9 ½ years on the BICSI Board has taught me a thing or two about board processes would be an understatement. I recall the uneasy feeling I had when I first joined the Board—the atmosphere turned dead quiet when I entered the room to introduce myself. Not knowing any of the Board members or the process, and wanting to learn more about the not-for-profit business, I took a deep breath and dove in.

The benefit of learning board techniques, such as *Robert's Rules of Order*, is essential to maintaining a civil and efficient board at all times. Working with board structure and process improvement has enabled me to ensure we are on the right road to achieve our goals. Just the other day my wife asked me a process question for a board she serves on, and the answer rolled off my tongue like second nature.

Working with fellow BICSI Board members and groups from all over the world has been fantastic! Our Board strives to be transparent and open in discussion, dialog and debate, as well to 100 percent advocate for you whom elected us to this office. Being inclusive and democratic has been at the top of the list of fair and equal treatment for our members.

Strategies describe how an organization commits limited resources to make its vision a reality, and they are expressed as activities. Lately, we have been very busy with many activities. Recent action plans, checkpoints and milestones indicate progress towards each goal through our strategies.

Two years ago, when we updated our strategic plan, we established the core ideology, core values and vision and mission statements. Our conditions, trends and assumptions were defined by topics like Financial (boy, did we pick that right!), Changes in the Industry, Technology, Membership, Competition, Member Value & ROI, Volunteers, Advocacy & Public Awareness and Identity of Excellence (BICSI's branding) to name a few.

The strategic direction is not about business as usual—it's about change! These are the things the Board is constantly asking themselves and what you should be asking of us.

- **Credentialing Goal**—BICSI credentials will be regarded as the most coveted and premiere designations in the information transport systems (ITS) industry.
- **Standards & Practices Goal**—BICSI will be the trusted source of global standards and best practices.
- **Knowledge Transfer Goal**—BICSI will be a globally-valued resource of information, insight and learning opportunities essential to achieving BICSI and other industry designations.

(See Donelan, Page 38)



John D. Clark Jr., CAE
jclark@bicsi.org

Turning the BICSI Board Strategic Plan into Reality

One of the cornerstones of a successful and productive association is a clear understanding of the roles of the association's board and staff members. At BICSI, we are very fortunate to have that clear understanding.

Creating a future **Vision & Mission** is clearly a role of the Board. Elected directly by the BICSI membership, our Board men and women look to the future to see where BICSI should lead. Perhaps the most important single step in this realization of

future direction is the BICSI Board Strategic Plan.

The Board Strategic Plan acts as a clear roadmap for BICSI staff to know where to allocate resources and time, and where to focus priorities. Our current strategic plan lists four major areas of focus—Project NxtGEN, Globalization, Localization and Standards. I am happy to report that recent events include several milestones that contribute to the realizations of these goals.

Project NxtGEN took a major step forward with the naming of BICSI's new information transport systems (ITS) credential—Registered Information Transport Professional™ (RITP). More than 2,000 interested people participated in the polling. I want to thank all who participated for their interest and passion. The RITP credential expands BICSI credentialing opportunities, which remain, as always, anchored by our RCDD®.

Time and energy continue to be dedicated to Globalization growth and support. President-elect Brian Hansen recently returned from our South Pacific Board Meeting & Conference in Australia. I myself am looking forward to visiting the BICSI Middle East & Africa Conference in Dubai and, in June, all of us are looking forward to our European Conference in Dublin, Ireland. From Down Under to Dubai and from Ireland to Orlando, just like **ABC's Wide World of Sports**, BICSI is now truly spanning the globe.

Localization continues to blossom. Whether it's Breakfast Clubs, Lunch & Learns, Pub Clubs or Region Meetings, the phenomenon of great BICSI interest is flourishing at the local level. I recently attended the Northeast Region Meeting in Pennsylvania with Northeast Region Director Brian Ensign and was very impressed with the enthusiasm and support for BICSI in the field.

Finally, exciting news continues on BICSI's global standards expansion. ANSI/BICSI-001-2009, *Information Transport Systems Design Standard for K-12 Educational Institutions* is now available. Plus, we created a standards-specific staff position—the BICSI Director of Standards—which shows our commitment to making this Board strategic goal a reality.

Project NxtGEN, Globalization, Localization and Standards—four clear Board strategic goals that our staff is actively pursuing. With our **Power Through Partnership**, the BICSI Board and staff can take the Board Strategic Plan to the next level of implementation and ultimately position BICSI for a future of great growth and relevance. ■

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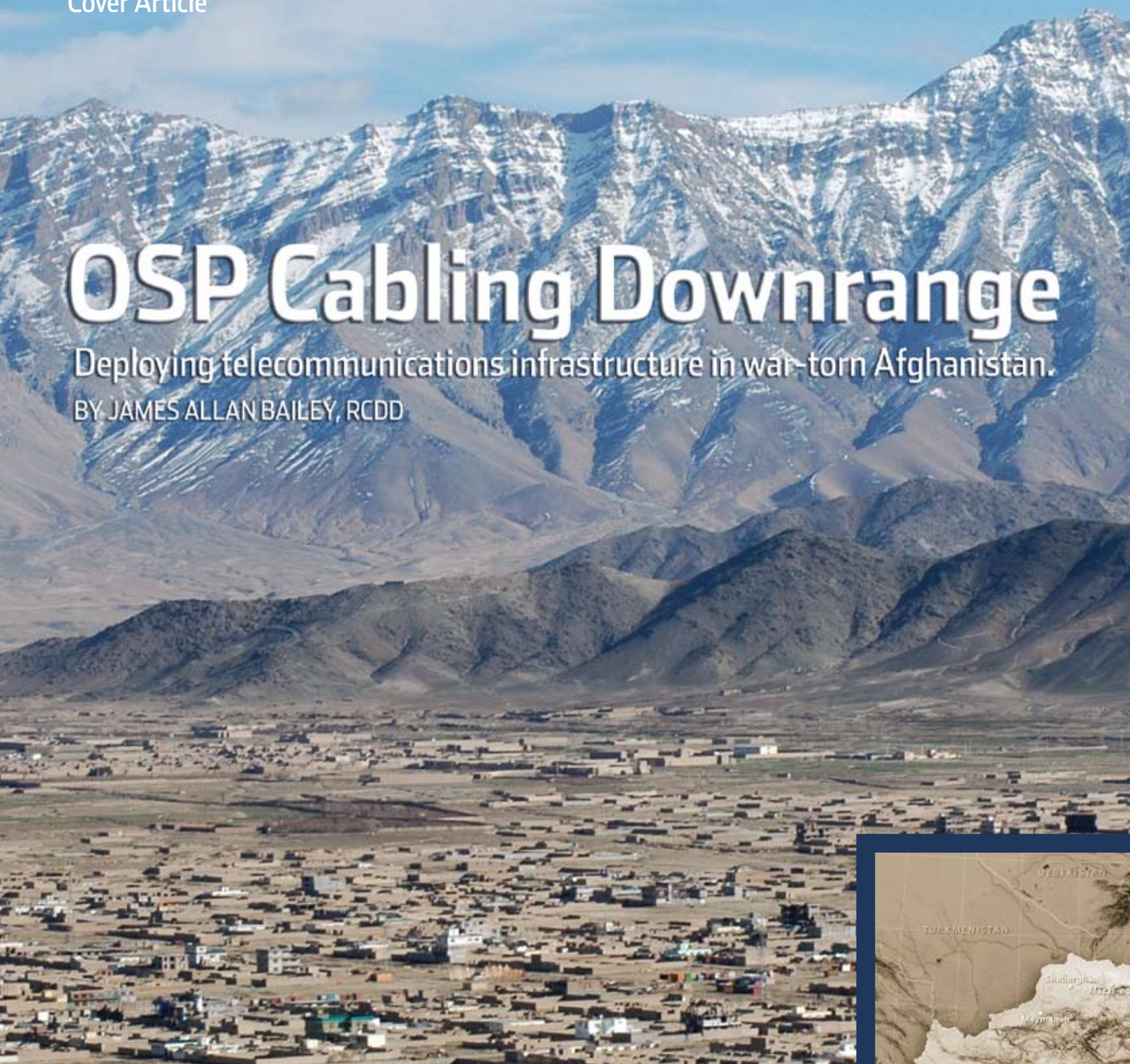
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OSP Cabling Downrange

Deploying telecommunications infrastructure in war-torn Afghanistan.

BY JAMES ALLAN BAILEY, RCDD



The land is barren, rough and unforgiving. Rugged peaks wear a blanket of snow and blinding dust storms blow in from the south. The rock base compacted with boulders and sometimes undiscovered ordnance tests the mettle of the most experienced contractor. This is Afghanistan.





The land has not changed for thousands of years. It is barren, rough and unforgiving. Rugged 18,000-foot peaks of the Hindu Kush wear a blanket of snow, and blinding dust storms blow in from the south, while cold northern winds from Uzbekistan signal the onset of winter. Cities with exotic names like Kandahar, Kabul and Ghazni, so named by Alexander the Great and Genghis Khan, greet you in Southwest Asia along the Old Silk Road. This is Afghanistan. In this formidable environment, we work on projects at remote sites, under adverse conditions, in hostile areas of conflict, to design, install and manage multiple telecommunications services in support of the multinational task force of *Operation Enduring Freedom*.

Unique Challenges

There are a number of unique challenges involved in deploying outside plant (OSP) telecommunications services in a remote environment such as Afghanistan. While minimizing cost, our job is to engineer efficient, effective designs to meet required service levels. During the summer months, temperatures regularly reach above 130 degrees in the southern part of the country. In the winter months, the first 12 inches of ground is normally frozen solid. Then there is the rock base compacted with boulders and sometimes undiscovered ordnance that would test the mettle of the most experienced OSP contractor—now you get a sense of what the environment is like downrange.

To accomplish the objective, the use of local labor is employed from the surrounding countries and towns, creating a global village and at times a managerial challenge. Workers are used as backhoe operators, crane operators and manual labor for cutting and digging of gravel, as well as for removal and disposal of the spoils. Many projects require local labor to assist in the installation of 4-inch PVC Schedule 40 telecommunications duct, rated for concrete encasement. The work crews also place maintenance



The harsh environment of Afghanistan creates many unique challenges for Outside Plant (OSP) contractors.



A detailed statement of work (SOW) to provide a conceptualized, optimized and standard communications package is needed before construction begins.

holes, hand holes, copper trunk cable, OSP optical fiber and associated hardware and materials. All work must be done in compliance with the Information Systems Engineering Command (ISEC) Worldwide Outside Plant Design Guide and Performance Requirements (OSPDPR) standard, dated October 2008.

The inability to acquire OSP equipment and materials locally means that everything is trucked overland through either Pakistan's Khyber Pass or from the north through Uzbekistan. With the various challenges associated with the transportation of equipment through multiple countries, timelines and schedule slips are a constant concern, making project time management critical. Concrete, a major component in OSP deployment, is mixed locally. The environment is important in the curing of the concrete and maintaining structural integrity, which again is impacted by the temperature and conditions of the region.



Temporary “tactical” solutions may be necessary when obstructions or environmental factors interfere with cabling routes.

Getting Tactical

The engineering efforts in Afghanistan start with formalizing technical and implementation aspects of a request from a particular client. A statement of work (SOW) is developed in which a Rough Order of Magnitude (ROM) is established. This process includes, but is not limited to, project drawings, rack face elevations, floor plans, maintenance hole drawing, duct layout, cable run lists and network diagrams. An AutoCAD grid is referenced, which contains plotted information with the level of detail necessary for infrastructure location. All material required for the job is called out in a List of Material (LOM) and selected to provide vendor neutrality and interoperability. A customer briefing package is developed and presented, containing design and budgetary

information. Upon acceptance of the package, a contractor is selected and instructed to proceed with the installation. A project management oversight team is assigned for the lifecycle of the project. The project is not completed until it passes quality assurance and control. The end result is a conceptualized, designed, optimized and standard communications package.

Some of the existing building infrastructure in Afghanistan is temporary; left over from the Russian military era. These buildings are constructed with concrete blocks 12 to 18 inches thick, making penetration and routing copper and single mode optical fiber cable a design and installation challenge. The OSP contractor must perform all actions and provide all equipment and materials required to core drill two, 125 millimeter (mm [5 inch (in)]) diameter holes and provide

all sleeves with bushings. A NEMA-type enclosure is needed to supply this type of structure with OSP, and the installation must meet all military, NEC, and EIA/TIA standards.

Some information transport systems (ITS) are required to be engineered in relocatable buildings (RLBs). The RLBs are steel containers 6 meters (m [20 feet (ft)]) or 12 m (40 ft) in length by 6 m (20 ft) in width. Within this environment, 127 mm (5 in) OSP entrance holes have to be cut. A 1.2 m (4-ft) by 2.4 m (8-ft), 19 mm (¾ in) AC grade plywood backboard, and anything required to mount the backboard, is furnished and installed. The plywood backboard is void free and fire rated, or treated on all sides with at least two coats of fire resistant paint. The treated backboard is then securely fastened to wall framing members to ensure that it can support all attached

equipment. The backboard may also have to be cut to fit. Special attention is required to cut out steel rib member framing in a multiple RLB configuration for the installation of the horizontal pathway.

When it is not possible to maintain a cabling route due to obstructions or environmental situations, it is necessary to get “tactical” verses following standard OSP implementation. Tactical solutions are often considered temporary and may consist of lashing cable to the side of a building; running optical fiber and copper over ground and securing them with sandbags; running EMT between buildings; deploying aerial runs of optical fiber; or using innerduct to feed a structure from maintenance holes containing optical fiber and copper.

Closing Thoughts

The continued development of telecommunications infrastructure in Afghanistan will be driven by many factors. First, there is always changing political and resource issues related to funding, speed of execution, life support, management and logistics. Second, the challenge of the OSP contractor working downrange is to find a method of implementing the customer’s requirements while ensuring standards will be maintained. Project schedule and scope are affected by changing weather conditions; equipment availability needs must be addressed with an eye on local laws and policies governing the acquisition of machinery; and labor, language, customs and schedules all have to fall into the project manager’s scope for smooth daily progress to be maintained throughout the lifecycle of the project.

All of these factors, as well as many other unforeseen issues, make being an OSP contractor working downrange an educational yet rewarding experience. ■



James Allan Bailey, RCDD
James is an ITS engineer supporting Special Forces in Afghanistan. With 34 years of telecommunications experience, he received his FCC first class license in 1975 and acquired his BICSI RCDD in 2007.

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Access on the High Seas

The challenges of satellite communications links.

BY KENNETH M. CHIPPS, PH.D.



Satellite communications links are used all over the world for functions ranging from approving a credit card sale at a gas pump to providing Internet access to passengers on a cruise ship at sea. Satellite-based communications links typically are employed when either consistency in the type of link is desired or nothing else can be used.

Operation Overview

Operating a satellite link requires a ground station at each end and a satellite in the middle. A communications satellite essentially functions as an overhead wireless repeater station, connecting two sites that cannot see each other. To accomplish this, each satellite is equipped with a set of transponders that consist of a transceiver and an antenna tuned to a specific frequency.

Satellite links can operate in various frequency bands. The C band has been used the most and will remain dominant for quite some time. However, this band is getting crowded as terrestrial microwave links also use these frequencies. Alternatives include the higher frequencies of Ku and Ka bands, but attenuation caused by rain is a major problem in both of these bands due to the higher frequencies. In addition, higher

frequencies make the equipment very expensive, and the cost to use these satellites is higher.

Satellites operate in three levels:

- Low Earth orbit (LEO) around 1,000 kilometers (km [621 miles (mi)])
- Medium Earth orbit (MEO) from 8,000 to 20,000 km (4,971 to 12,427 mi)
- Geostationary Earth orbit (GEO) at 35,786 km (22,236 mi)

LEO systems are often discussed but rarely used as it takes quite a few satellites to cover the entire surface. Being near the surface, their coverage area (footprint) is small. MEO satellites typically are used to cover the two polar areas due to their orbital shape. GEO satellites sit at various locations on the equator, which makes them appear stationary to an observer on Earth. Each GEO satellite can cover about one third of the Earth's area. Transponders on satellites can be tuned to provide general coverage to a large area or spot coverage.

Unique Challenges

Satellite-based services pose some unique issues to the network designer and installer, including:

- Look angle
- Latency
- Bit error rates (BERs)

Cruise ships, a common user of satellite links, are ideal for illustrating these issues because the problems they encounter are likely to be worst-case scenario. For this example, we will assume that the cruise ship will tune into the general beam of one of three satellites—Intelsat 903, Intelsat 906 or NSS-5. These three satellites can provide coverage for the entire globe. Ships use these global coverage satellites when they are at sea.



Satellite dish domes on a cruise ship.

Nearer to shore, they use the regional coverage C band satellites because of their higher signal strength. The smaller footprint of the regional satellites is not a problem when operating in a limited area near shore.

Also available to cruise ships are the regional coverage Ku band satellites, which are used as a backup to the C band links. In many areas, C band connections are subject to interference when the ship is near shore as the primary licensed users of these frequencies are point-to-point microwave links. Therefore, the satellite user must accept any interference these links cause.

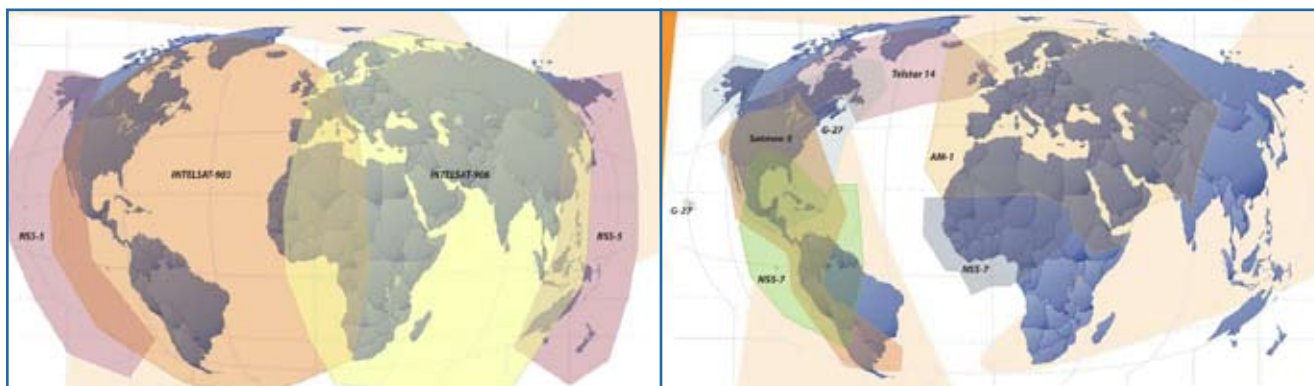
Look Angle and Latency Issues

The look angle is the angle between the satellite in orbit and the ground station. With the ground station being the cruise ship, the look angle constantly changes. For this example, the ship has been cruising South America, but the season is now over, and it's time to cruise

around Greenland, Iceland and Norway. As we leave South America to head north, we will generally follow the 35-degree west longitude line. Assume for Internet access that we have been assigned space on Intelsat 903 satellite, which is located at 325.5 degrees east or 34.5 west as shown in the picture on page 12.

We calculate the angle between the antenna onboard the ship and the satellite, and this is the direction in which we point the dish. As we set out headed north on our course, we pass the equator, and the dish is pointed up at an angle of 89.411 degrees, almost straight up. (Open source programs are readily available on the Internet to compute the angles.)

Regardless of the look angle, physics intrudes in the form of latency, or delay, which is the time a frame takes to travel from the source station to the final destination. Humans are only happy if latency is 100



Regional C band satellites used by cruise ships.

Regional Ku band satellites.



Intelsat 903 satellite location. Courtesy of SeaMobile Enterprises.

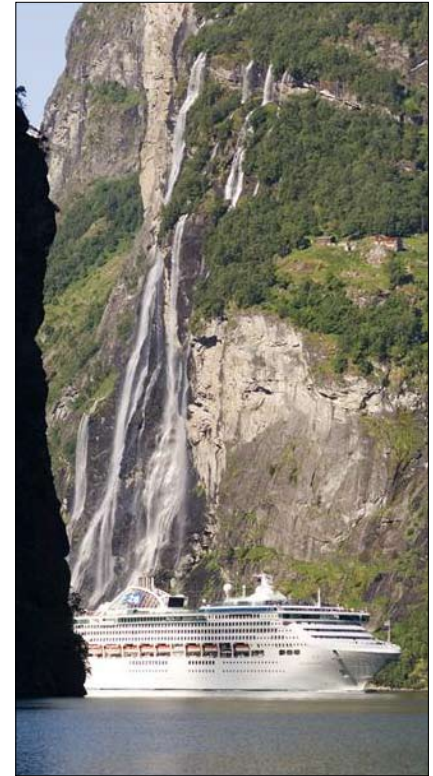
milliseconds (ms) or less. Unfortunately, we cannot meet this goal. In the best-case scenario when we are directly under the satellite, the time required for a transmission is about 500 ms for a round trip, and that is just from antenna to antenna. In reality, the end-to-end time is more like 660 ms to 2.3 seconds. For example, during a cruise from Montreal to the northern edge of South America on the cruise ship *Crystal Symphony*, the average response time was 700 ms, and the worst response time was slightly over 1,400 ms. In rough seas, retransmissions are common, which adds to the perceived latency experienced by the users.

Let's see what happens as we sail farther north. Off the American coast at latitude 32 north, the look angle is 52.742 degrees. In other words, we are leaning the dish down toward the deck. As we cruise Greenland around the Arctic Circle at 70 north, the angle drops to 11.474 degrees. As the angle drops, a new problem appears. When you look at a photograph of the dome that contains the antenna on the ship, you can see that if the housing on the side of the ship, or even worse the funnel of the ship, is in the same direction as the satellite, then no signal or at best a

very weak signal may be received as these structures block the signal. This leads to outages and retransmissions. Sometimes the captain will have to change course to let the transmissions through for a while.

The look angle can also be a problem near shore, such as in a Norwegian fjord. This same problem may happen in port if the dock is surrounded by tall buildings.

The *Crystal Symphony* has two antennas—the midship antenna is for TV only, and the forward antenna handles Internet, voice over Internet protocol (VoIP) and cellular service. There is a 56K dial backup for use at latitude 82 and higher. On the *Crystal Symphony*, the satellite dish is blocked by the mast when the azimuth is between 175 and 185 degrees. This delay is enough to cause problems for transmission control protocol/Internet protocol (TCP/IP). This can be dealt with to some extent by increasing the TCP/IP window size, but there is a limit to this. Typically, a device called a gateway is inserted between the user and the satellite to handle these functions for all users. This precludes the need to alter the TCP/IP stack settings for every user device.



Cruise ship in a Norwegian fjord can cause look angle problems.

Bit Error Rate

Another problem is due to bit errors, caused when any bit in a frame is damaged in transit. When this occurs, the frame must be resent, slowing down transmission. Satellite links are very prone to high BERs, but what BER is acceptable?

The minimum acceptable BER for a satellite link is 1 in 10^7 , which is equal to one bad bit in every 10,000,000 bits. That sounds pretty good doesn't it? Keep in mind that if even one of the bits in a frame is bad, the whole frame is thrown out. Therefore, protocol data unit (PDU) error rates are more important than BERs. But how many bits are in a frame? It depends on the size of the frame or the maximum transmission unit used by the link. The minimum frame size on a local area network (LAN) is 64 bytes. The maximum

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frame size on a LAN is 1,518 bytes. The total number of bits ranges between 512 and 12,144, which means that one in every 19,531 frames (at best) to one in every 823 frames (at worst) could be lost. Each of these frames must be resent, which slows down transmission even more. If the BER is better than 1 in 10⁷ then not so many frames need to be resent. Satellite networks are designed for a 10⁹ environment but can see BERs as bad as 10⁶.

Satellite links are so prone to high BERs primarily because of the look angle and the effects of the sun. We have already discussed the look angle problem, but what does the sun have to do with this? The sun affects satellite-based telecommunications in several ways. The most basic are outages when the sun is emitting strong microwave signals. To the satellite, the microwave signals are seen as noise. This always happens two times per year when the sun passes directly behind the satellite. The timing and duration of the outage depend on the:

- Ground location
- Satellite location
- Beamwidth of the antenna

This sun problem is a gradual transition that occurs around the equinoxes in March and April and

Sun Outage Prediction for NSS5 at 183.00 Degrees East During September Equinox			
Site Longitude: 183.00 Degrees East Antenna Diameter: 2.40 m		Site Latitude: 0.00 Degrees North Frequency Band: C	
Date	Start Time (UTC)	End Time (UTC)	Duration (min)
17 Sept. 2008	23.39	23.45	6
18 Sept. 2008	23.37	23.47	10
19 Sept. 2008	23.35	23.48	13
20 Sept. 2008	23.34	23.48	14
21 Sept. 2008	23.33	23.48	15
22 Sept. 2008	23.33	23.48	15
23 Sept. 2008	23.33	23.47	14
24 Sept. 2008	23.33	23.47	14
25 Sept. 2008	23.34	23.45	11
26 Sept. 2008	23.35	23.43	8

Equinox outage calculation for NSS-5 for September 2008.

UTC = Coordinated universal time.

in September and October. In the Northern Hemisphere, the effect is more pronounced in March and October. In the Southern Hemisphere, April and September are the worst months. See the table of the outage prediction for NSS-5 for September 2008. This is the satellite that provides Internet access over the Pacific Ocean.

In addition to these expected outages, the sun can cause other problems that are due to solar activity like sun spots. Unfortunately, a new cycle of solar activity began in March 2008 and is predicted to last for 11 years. This activity shows up as higher noise that results in higher BERs, more retransmissions and lower throughput rather than a complete blockage of the signal. Right now we are in a period of relatively low solar activity, and communication is stable. The telecommunications manager can keep up with this activity by checking the space weather reports at www.sec.noaa.gov.

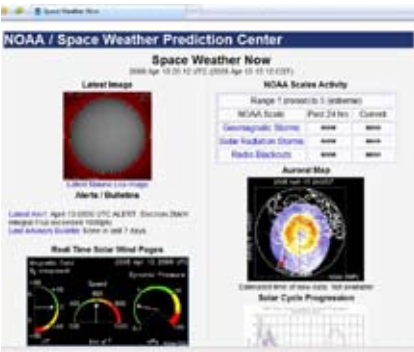
Common Solutions

There are four common approaches to fixing the various problems with satellite communications—bandwidth, compression, caching and quality of service (QoS).

The bandwidth of a telecommunications link is similar to the number of lanes on a freeway. The more lanes there are, the faster the traffic. Most cruise ship Internet links are 128 kilobits per second (kb/s) and up, with a common speed of 1 megabit per second (Mb/s) that can burst up to 2 Mb/s. Unlike the typical 53 kb/s analog link costing around \$16 a month, a cruise ship Internet bill reaches \$10,000 to \$15,000 a month. Cruise lines are therefore reluctant to increase the bandwidth due to the high cost of these types of satellite links. In their defense, other methods than increasing the link speed do more to improve the customer experience.

The most basic and easiest solution to improve the user experience is to compress the data being sent. In general, all compression methods use a single symbol to represent common elements. For example, this page is mostly white space. Instead of sending all of this white space, we could use a single symbol to represent any white space and only one other symbol to indicate how much white space.

Another solution, caching, is simple in concept. This involves tracking what most users are looking



National Oceanic and Atmospheric Administration (NOAA) space weather report at www.sec.noaa.gov.

at and then keeping that on a local drive. When the next user asks for it, the answer comes from the local storage, and there is no need to ask for it again from the source. This is what Crystal Cruises says about the impact of using compression and caching:

Before installing compression and caching, the top speed Crystal Cruises could hit on its satellite Internet links was 664 kb/s to 710 kb/s, and that was for a mere two to three hours per day for 18 to 27 days per month. After installing compression and caching, the company saw Internet throughput shoot to 2 Mb/s to 3 Mb/s for 12 to 13 hours per days, a full 30 days per month—an improvement of roughly 300 to 500 percent.

How exactly is this done? All Internet traffic flows through the system, which caches Web pages the first time they're accessed. All subsequent hits to the same page are lightning fast, since they are supplied from the cache. The system also provides a high level of compression, which reduces the amount of traffic that has to traverse the satellite links.

QoS that puts some traffic in front of other traffic is yet another solution. For example, voice traffic that is delay sensitive is put in front of traffic that can handle delays such as e-mail.

In summary, satellite links are used where nothing else can be used because of the connection limitations and costs. The proper design and installation of these links will go a long way toward producing the highest throughput. ■



Kenneth M. Chipps, PH.D.

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Infrastructure Management for a New Year, New Challenges

How intelligent infrastructure management systems can reduce costs in today's business environment. **BY ODED NACHMONI**

> A new year normally commences with optimism and confidence; at least that is how 2008 started. But it is fascinating how quickly this feeling of exhilaration and hope can change. One day bankers and financial experts are happily walking down Wall Street to their offices, and the next day they are making their way home carrying only their personal belongings. The recent global financial crisis continues to have ripple effects, starting with the very wealthy and being felt all the way down to the destitute who have relied on the many now nonexistent, nonprofit organizations to sustain them. Every day the newspapers are filled with more companies and enterprises cutting back costs and laying off hundreds, if not thousands, of workers. Unlike years past, 2009 unfortunately has not kicked off to a very encouraging start.

A Gartner study among chief executive officers (CEOs) revealed that the word for 2009 is expected to be "restructuring."¹ This involves organizational restructuring (i.e., layoffs), financial restructuring (i.e., deleveraging to operate more on a cash basis) and corporate restructuring (i.e., spinoff units, acquiring troubled companies or preparing to be acquired). Perhaps by the end of 2009, entire industries will be completely remodeled.

Information technology (IT) budgets have not escaped the wrath of this financial crisis. A TechTarget survey recently revealed that two-thirds of chief information officers (CIOs) plan to delay or cancel nonessential upgrades, 40 percent will cancel non-revenue-generating projects and 34 percent said they expect to reduce staff, with 27 percent confirming they will outsource more.²

In comparison with the last recession where technology caused the burst, business leaders are now looking to IT as a means to help reduce costs, streamline business processes, boost productivity and perhaps even generate revenue. A recent study showed that 82 percent of business leaders view technology as a core component of their enterprises, as a differentiator (72 percent) and as an instrument for reducing the cost of business operations (66 percent).³ With this in mind, CIOs no longer have the same worries they had in 2001 of proving the value of IT. Rather, the challenge now lies in cutting costs while matching the organization's changing business priorities with IT.

A "Must Have" IT Application

Applications that guarantee business uptime have become essential. Solutions that help automate and speed business processes, increase their accuracy and integrate between systems are among the "must haves" for 2009. These systems include:

- **Asset management**—Keeps track of and manages the life cycle of equipment, including everything from office tables and chairs to network assets and equipment.
- **Fault management**—Reduces the meantime to repair problems, a common cause of downtime.
- **Safety and security**—Protects the assets and facilities to help ensure business continuity.
- **Reporting**—Guarantees easy access to a trusted and secure source of data.
- **Compliance**—Ensures that adequate processes for reporting are in place.

■ **Provisioning and change management—**

Allows automated and fast optimized planning, implementation and maintenance.

Fortunately, an intelligent infrastructure management system (IIMS) solves many of the above requirements and offers a more holistic approach to managing IT infrastructure. IIMS provides the connection between real-time network management systems and the increasingly complex infrastructure that enables the network devices to function. IIMS allows IT personnel to manage resources, processes and users as one collaborative unit. With the current situation requiring many organizations to accomplish more with less, an application that brings control, efficiency and productivity is both practical and economical.

IIMS also improves provisioning and change management. On a daily basis, IT departments spend large amounts of time dealing with various tasks that range from moving a single PC or two to installing hundreds of servers. Without an IIMS, information is not always consolidated and there is often no adequate synchronization. Furthermore, with no automated

processes and various teams in charge of different aspects of the IT infrastructure, human error can occur. This can lead to costly errors, and in today's economic climate, careless mistakes are no longer something organizations can afford to make.

Provisioning processes deployed today range from completely manual all the way to fully-automated solutions. Fully-automated provisioning tools provide IT managers with various means to automate and speed deployment processes and reduce time spent on planning and implementing tasks. It enables IT managers to assign system and network resources and privileges to users in a fully automated environment. Usually, an IIMS is also integrated with other key systems such as purchasing, help desk and asset management. With databases updated in real time, this helps ensure that an accurate picture of the organization is always maintained and available.

Provisioning in Data Centers

The provisioning and change management feature of IIMS is a key advantage for data centers as well as workspace environments. With data centers increasingly

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playing a vital role in large corporate enterprises, organizations need a system that responds quickly to moves, adds and changes (MACs).

To provision a server in a data center, an IT manager needs to consider various key components, including:

- Space requirements (size, elevation, etc.).
- Power (including specific considerations per equipment type).
- Cooling.
- Connectivity (per each network connection).
- Weight.
- Software and application installation.
- Switch port configurations.

Without an IIMS in place, all this information needs to be collected manually from many unsynchronized systems. This takes a substantial amount of time to complete and often leads to mistakes, delays and most important, unnecessary expenses. With highly advanced workflow, database and integration capabilities, an IIMS offers the ability to automatically collect and analyze all the necessary data. It also can calculate the optimal resource allocation and produce a multiteam work order that can be tracked until it is completed.

With the IIMS automating the entire procedure, work orders become straightforward and effective, guiding the users as it generates all the relevant tasks needed to complete the process. For example, installing a new server typically involves allocating the right cabinet and considering the necessary space, weight, power, cooling, connectivity and services requirements. IT managers then need to allocate relevant tasks to each team and manage work order execution. By automating the process with IIMS, the IT manager can effortlessly address any MAC without the hassle of going backward and forward from the desk to the field to make sure the procedure is accurately carried out.

Some of the automated provisioning tools of IIMS include hand-held devices to provide the engineer in the field with an interactive user-friendly application. The hand-held device interacts with the main IIMS and enables online access to all the required information. This can help to further optimize the work and prevent additional human errors.

System performance is also an important consideration, and medium to large enterprises and data centers have several parameters to consider when planning an implementation. The IT manager, or even a medium-range performance system, is not always capable of effectively taking into account all of the parameters. Only a high performance system with advanced capabilities is able to fully carry out all the necessary



Hand-held devices that come with some IIMS are vital tools for IT professionals and infrastructure engineers on the move, bringing advanced management capabilities out into the field.

calculations in accordance with the customer's specific requirements.

With an advanced provisioning solution, two procedures take place—filtering and grading. Filtering analyzes an entire set of possibilities, sometimes reaching into the millions for a single provisioning decision. It then narrows this set using smart customer-tailored policy rules. The system then uses grading to grade the filtered result set and offer the IT manager the optimal choice, as well as a set of alternative choices prioritized by suitability. This ensures that the entire facility is always expanding or changing in the most optimized manner according to the customer's priorities.

During a single device move request, an advanced IIMS creates a work order, recommends a link to every port of the device based on filtering and grading policies, automatically creates a task list and suggests an alternative link if the user is not happy with the link suggested.

Significant Benefits

Several companies today are benefiting from IIMS. With a report of all Internet protocol (IP) assets in the network urgently needed, one financial corporation quickly discovered the benefits of the IIMS. In one of their locations where an IIMS was installed, the corporation reported that the task to report all IP assets took one person three hours with the accuracy of the data guaranteed. In the corporation's other location without an IIMS in place, it took several people an entire week to complete the task, and the accuracy of the information was questionable.

Another Fortune 100 company recently realized that one advantage of IIMS is bulk data migration and buildup

management. Needing a new data center, the company decided to introduce IIMS to their operations. They had a database that was severely outdated and therefore had to build a new database from scratch. With IIMS, the process of building the database required significantly less time and prevented human error. Moreover, the documentation process of the IIMS' automated provisioning tool saved several months of manual labor.

The benefits of IIMS are significant, offering numerous advantages that go beyond the scope of this article and further help streamline business processes. These include:

- Combination of automation with the right balance of user control to enable the best business critical processes.
- Online IP asset management.
- Joint communication infrastructure between various departments.
- Resource optimization.
- Enhanced and accurate documentation of the essential processes.
- Quicker task completion time with a significant reduction in the number of errors.

As the financial crisis continues to deepen, CEOs, chief financial officers (CFOs) and CIOs will be pressed to find and reduce unmanaged costs. This means that IT will be looking to manage service levels, enhance resource utilization and handle an increasing amount of risk. An IIMS can play a vital role in efficiently managing IT network infrastructure while helping to reduce IT costs and responding to the ever changing business environment. ■

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Digital Signage Systems

AV design considerations beyond cabling.

BY M. PAXSON LAIRD, CTS-D & GONZALO RODRIGUEZ, CTS-D

As convergence between the AV and information transport systems (ITS) industry increases, the lines between the responsibilities of the AV designer and those of the Registered Communications Distribution Designer (RCDD) or installer have become increasingly blurred. With current industry trends, this will likely continue, making it even more important for each group to have a better understanding of what the other is doing.

Along with other enterprise systems such as video conferencing and IPTV, digital signage is emerging as one of the most prominent examples of convergence. A digital signage system is a series of video displays distributed throughout a space or campus to provide information or entertainment. This system typically uses a distribution method that is familiar to the communications specialist but connects to devices that are familiar to the AV specialist. So, who should design and install these systems?

There are many of us that want to cross-pollinate and work with both parts of the system. In reality, the two groups should work together and divide the responsibilities depending on the expertise required.

If you regularly receive this publication, it is probably safe to assume that you are comfortable working with the required cable but you may be less familiar with video displays. There are many issues that are considered by an AV designer



when selecting a display; two of the most fundamental issues are size and brightness.

How big does it really need to be?

Sometimes bigger is better, but in the instance of video displays, this is not always the case. Anyone that has sat in the front row of a movie theater has suffered from a display that is too large. I recently had the misfortune of watching a movie from the center of the front row and had to constantly turn my head to keep track of what was happening on the screen. About half way through the movie, I developed a very uncomfortable crick in my neck, caused by leaning my head back to see the top portion of the screen.

Just as a viewer will be dissatisfied if the display is too large, the viewer will be equally dissatisfied if it is too

small. To determine the size of the video display, there are a few matters that need to be considered:

How close will the nearest viewer be to the display?

The person closest to the video display is typically considered the most favorable viewer (MFV). In digital signage applications, the viewers are often not in fixed seats. However, even when the intended audience is in motion, a viewing area can be defined. To avoid the issue of the viewer having to turn his head to the left and right, the MFV should not be closer than the width of the video image as shown in Figure 1. However, this will not necessarily limit the need to tilt the head back to view the top portion of the image. To ensure that viewers are not going to develop sore necks, the angles from the viewers' eyes to the center and top of the image need to be

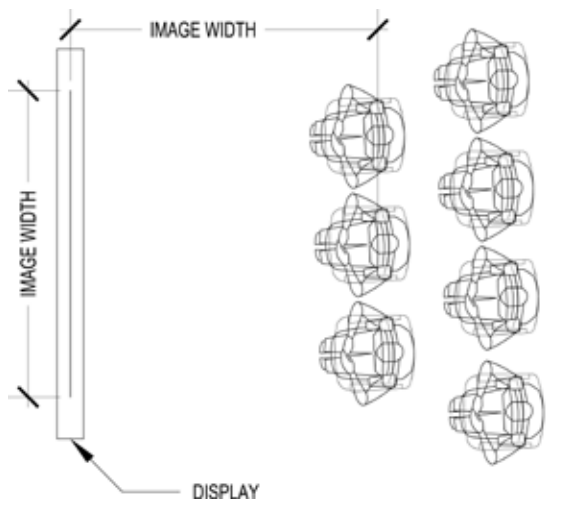


Figure 1: The most favorable viewer (MFV) should not be closer than the width of the video image.

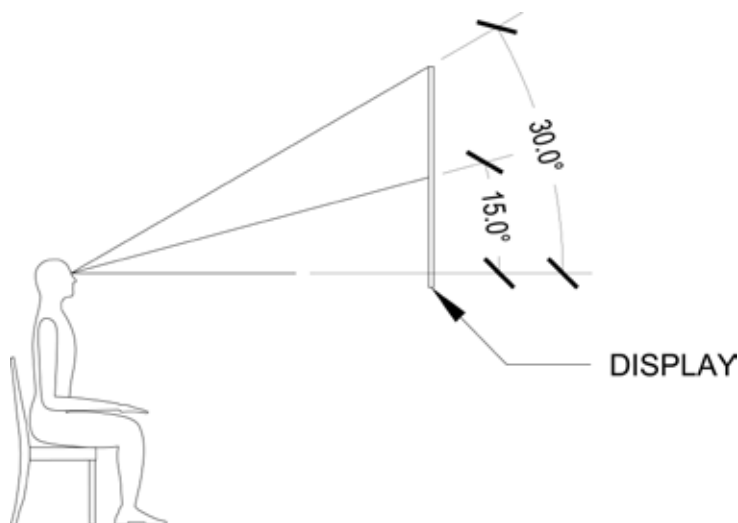


Figure 2: Viewers should have no more than 15 degrees of eye rotation to the center and 30 degrees to the top of the image.

considered. To view a video image for an extended period of time, a viewer should have no more than 15 degrees of eye rotation to the center of the image and 30 degrees to the top of the image as shown in Figure 2.

This 15-30 degree rule can be modified or broken if the display will be used for short messages. For example, a digital signage display placed at a store entrance to alert customers of a big sale could be placed at a higher elevation, as customers will only glance at it as they enter the store. However, for a display in a hospital waiting room to entertain people as they wait, possibly for an extended amount of time, one should consider the angle of eye rotation. Regardless, in any scenario, if the display can be placed at an elevation that requires minimal eye rotation, it will attract more attention and achieve a better overall effect.

How far will the furthest viewer be from the display and what content will be displayed?

These questions need to be asked together because one answer could determine the other. To establish

how large the video image needs to be, the type of content and the level of clarity that the viewer will require need to be considered. When planned correctly, the content to be displayed will determine how large the video image needs to be. Conversely, the content displayed may limit how far the viewer can be and still interpret what is displayed.

While the viewer closest to the video display is the MFV, the viewer furthest from the display is considered the least favorable viewer (LFV). In the past, this calculation was based on the diagonal dimension of the image; however, due to the different aspect ratios commonly used today, this calculation is now based on the height of the video image. To determine how large the image needs to be to be effective, take the ratio of the distance of the LFV to the image height.

Now that a calculation has been made, it can be applied by dividing the types of content into three basic categories—inspection viewing, detailed viewing and general viewing as described below and shown in Figure 3 on the following page.

- *Inspection viewing* should be considered when very intricate or precise content is to be displayed. Examples include maps, spreadsheets or text with about a 14-point font. When the content fits into this category, the ratio of the distance of the LFV to the image height should be no greater than 4:1. In other words, the furthest viewer can not be any further from the display than 4 times the height of the image.
- *Detailed viewing* should be considered when the content needs to be read but can be set to a larger size, typically between a 14 and 22-point font. A typical PowerPoint® presentation would be considered detailed viewing. For detailed viewing, a LFV-to-image height ratio of 6:1 should be considered.
- *General viewing* should be considered for motion video, some PowerPoint presentations and advertisements with large text. General viewing is loosely

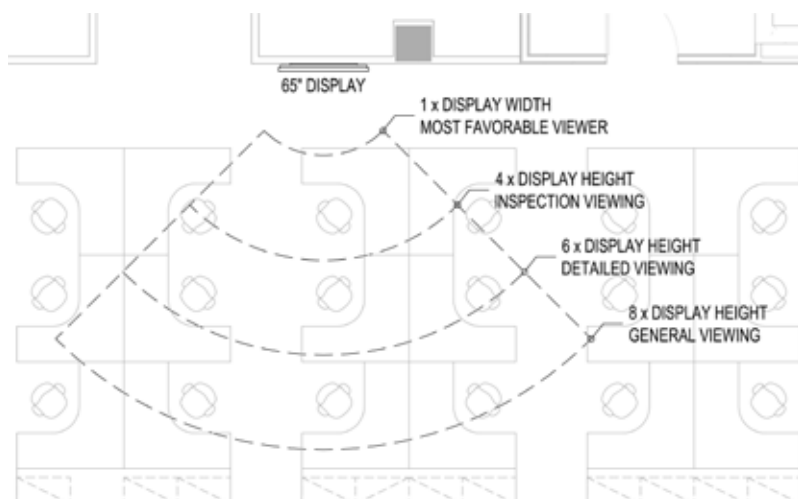


Figure 3: Inspection viewing, detailed viewing and general viewing content types determine how large an image needs to be.

calculated with an 8:1 ratio. The rules for general viewing can be stretched depending on the content and detail required. If the video display is placed in an executive boardroom where the CEO is intending to watch CNN, the 8:1 ratio should be observed. However, if the display is placed in a doctor's waiting room for general television viewing for patients while they wait, a ratio of 12:1 or even 14:1 could be used and still accomplish the desired effect.

How bright does it really need to be?

Just as bigger is not always better, brighter is not always better. The brightness of the video image will be dependent on how much light is in the room and on the display. Considering the movie theater example, the ambient light in the room is well controlled and low. Therefore, the image on the screen does not have to be exceptionally bright to appear bright to the viewer.

For a fair contrast there should be at least a 10:1 ratio between the amount of light that the display produces and the quantity of

ambient light that hits the display. There is an important distinction—it is not the ambient light in the room that we are considering but the ambient light that is actually on the display surface. Obviously, if the amount of light in the room is low (as in the movie theater example), it is easier to control the amount of ambient light on the screen. A good lighting design will allow the appropriate amount of general and ambient light for the occupants in the room while keeping the level of light on the display as low as possible.

It is true that brighter can be better, but only to a point. It is possible to create eye fatigue with an image that is too bright or too dim. The amount of light that is provided for the viewer to accomplish other tasks in the room needs to be considered. If the viewer is looking from materials on a desk to a video image on a display, the amount of light should not exceed a 3:1 ratio, meaning the display should not produce more than three times the light on the desk and the amount of light on the desk should not be greater than 3 times the amount of light produced by the

display. In either scenario, as the viewer looks from one to the other, if the amount that the viewer's eyes are required to adjust is too great, this will cause eye fatigue.

Again, who should design and install these systems?

There are many factors that need to be considered when choosing the correct display in digital signage systems, but ultimately the AV designer will need to determine what is appropriate for each unique space and application.

Although AV systems, along with other low-voltage trades, such as fire alarm and building automation, are now using the same infrastructure, the truth is there will not likely be a full convergence. Each has its own user needs and solutions that require expertise, which separates the AV and ITS industries. However, efforts should be made by both AV and ITS professionals to educate themselves about the other—vast opportunities are available for firms in these two industries who forge strategic partnerships with one another. ■



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Modern Advances in Firestop Technology

New generation products provide flexibility and compliance.

BY JAMES P. STAHL JR., CFPS

Firestopping is a fairly well defined process these days. The average contractor is aware of the need to properly seal penetrations made within fire-rated floors and walls. Not only is it an important step from a life safety and property protection perspective, but it is also code mandated.

Publications such as the BICSI *Telecommunications Distribution Methods Manual (TDMM)*, as well as other BICSI documents, do a very good job of educating designers and installers about the importance of proper planning, design and installation of firestop systems. Still, mention firestopping and most people think of the ubiquitous red caulk applied around cables, conduits and other building service elements passing through fire-rated floors and walls. While firestop caulks or sealants are one product that can be used for sealing penetrations of fire-rated floors and walls, newer generation products have been specifically

designed with the cabling contractor in mind. These newer generation products provide maximum flexibility in terms of pulling cable while still meeting all code-related requirements for firestopping.

Prefabricated Sleeve Kits

Prefabricated cable sleeve kits are commercially available. These kits consist of a metal sleeve sized to match the dimensions of a similarly sized section of electrical metallic tubing (EMT) or conduit, metal escutcheon plates to lock the sleeve into place, bushings to prevent cable damage and a pre-metered dose of intumescent (expandable) firestop putty sufficient to firestop each end of the sleeve after cable installation. Additionally, some of the prefabricated sleeve kits also include fire-rated gaskets that are installed behind the escutcheon plate to provide additional fire and smoke resistance. Some prefabricated sleeve kits feature a sleeve with a rolled lip integral to the design of the sleeve. The rolled lip performs the same function as a bushing with the additional benefit of not being able to be removed or dislodged as the cable bundle is pulled through the sleeve.

Prefabricated cable sleeve kits are an excellent choice to save on both labor and materials. Additionally, with escutcheon plates locking the sleeve into place compared to

conventional field-fabricated sleeves, the sleeve is stable and secure to put up with the rigors of pulling larger cable bundles through. This also ensures code compliance with Section 712.2 of the *International Building Code* (2006 Edition) where sleeves are required to be “securely fastened to the assembly penetrated.” Section 712.2 also requires both the inside of the sleeve to be sealed, as well as the space on the outside of the sleeve between the sleeve and periphery of the opening. Prefabricated cable sleeve kits with fire-rated gaskets and a pre-metered dose of firestop putty meet this criterion.

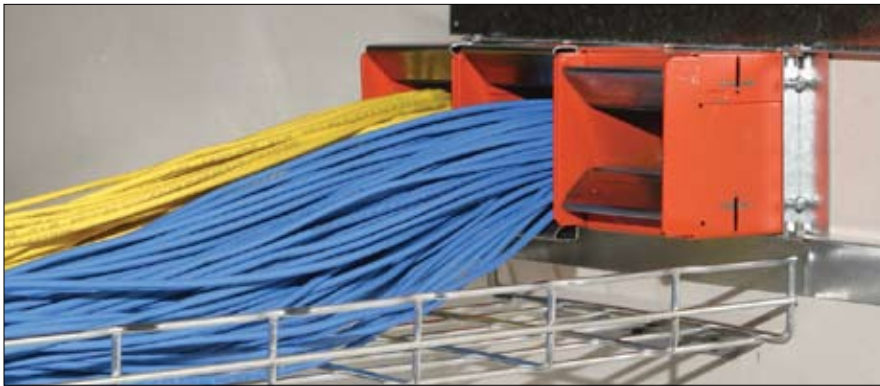
Fire-Rated Pathway Devices

While prefabricated cable sleeve kits make the process of code-compliant firestop and sleeve installations easier, fire-rated pathway devices take it a few steps further. A prefabricated sleeve kit still requires the installer to properly install the putty into each end of the sleeve to the required depth. The putty is re-enterable, allowing for future cable moves, additions and changes. However, this creates the potential for the putty to be removed and not replaced or simply not installed properly in the beginning.

Fire-rated cable pathway devices eliminate this issue. This class of products represents devices that have



Prefabricated cable sleeve.



Fire-rated pathway devices.

been specifically engineered for use in environments where frequent cable moves, additions and changes are the norm. These devices often have the sealing system integrated into the device so that it can never be removed and forgotten. Virtually all pathway products on the market allow for the cable fill to range from zero to 100 percent. So whether a pathway is being installed empty to allow for future use or loaded to full capacity, it will provide full fire protection capabilities.

Many designers and facilities standardize on pathway products that do not require additional steps to maintain compliance. Such products are characterized as zero-maintenance solutions. A zero-maintenance solution should not require any action to activate the fire and smoke protective characteristics of the device. The advantage to these types of products is that the cabling contractor can focus on pulling cable without having to take additional steps to ensure for fire and smoke protection.

Some pathway products are designed to nest very tightly together, while some can even be ganged much like electrical boxes for switches and receptacles. This allows for greater cable capacity while minimizing the size of the opening that needs to be made through a fire-rated floor or wall. While this is clearly advantageous from a structural perspective, there is a commercial advantage as well,

particularly for devices installed through floors. In floors, the more cables that can be routed through a relatively compact area, the more usable floor space remains. This can be particularly important in areas where leasing office space is expensive, and tenants wish to have as much usable space as possible for offices and conference rooms.

Like the prefabricated cable sleeve kits, most of the commercially available fire-rated pathways include barrier plates to lock the device in place. From the perspective of pulling cables through a device, as well as code compliance with Section 712.2 of the IBC discussed in the preceding sections, the end user is covered.

Another benefit of fire-rated pathways is how they ease the inspection process. Unlike caulks or putties and field-erected sleeves, a fire-rated pathway is very easy for an inspector to identify and verify code compliance. Most are uniquely colored to aid in the identification process. Having a fixed loading area also eliminates the need to physically count the number of cables and perform calculations to determine whether the maximum cable loading fill percentage has been exceeded.

Most fire-rated cable pathway products can be easily identified from a distance. Furthermore, many devices come with convenient barrier labels that identify additional information such as cable type, installer and appropriate UL Systems.

Essential Planning

Prefabricated cable sleeve kits and fire-rated pathways make the lives of the installer, the inspector and the owner easier by eliminating guesswork and providing a higher degree of probability that a building will be properly firestopped the first time and continue to remain firestopped as time goes by. Good planning up front is always essential, and as good as these products are in terms of removing the element of human error to a degree, a little bit of planning up front makes their use that much more effective.

An important part of the planning process is to determine the number of sleeves or pathways that will be required. It is vital to not only consider the present cabling requirements, but also future growth. A rule of thumb is to calculate sleeve or pathway requirements based on present capacity requirements and then, at a minimum, triple that number. Aside from simply having room for future cabling growth, an additional advantage of having greater capacity is being able to segregate cabling by type or use; or in larger facilities, even by vendor.

With the advent of modern firestopping products, firestopping is no longer a chore best relegated to the least skilled labor on the job. Today's products provide excellent balance between ease of pulling cables and maximum code compliance. ■

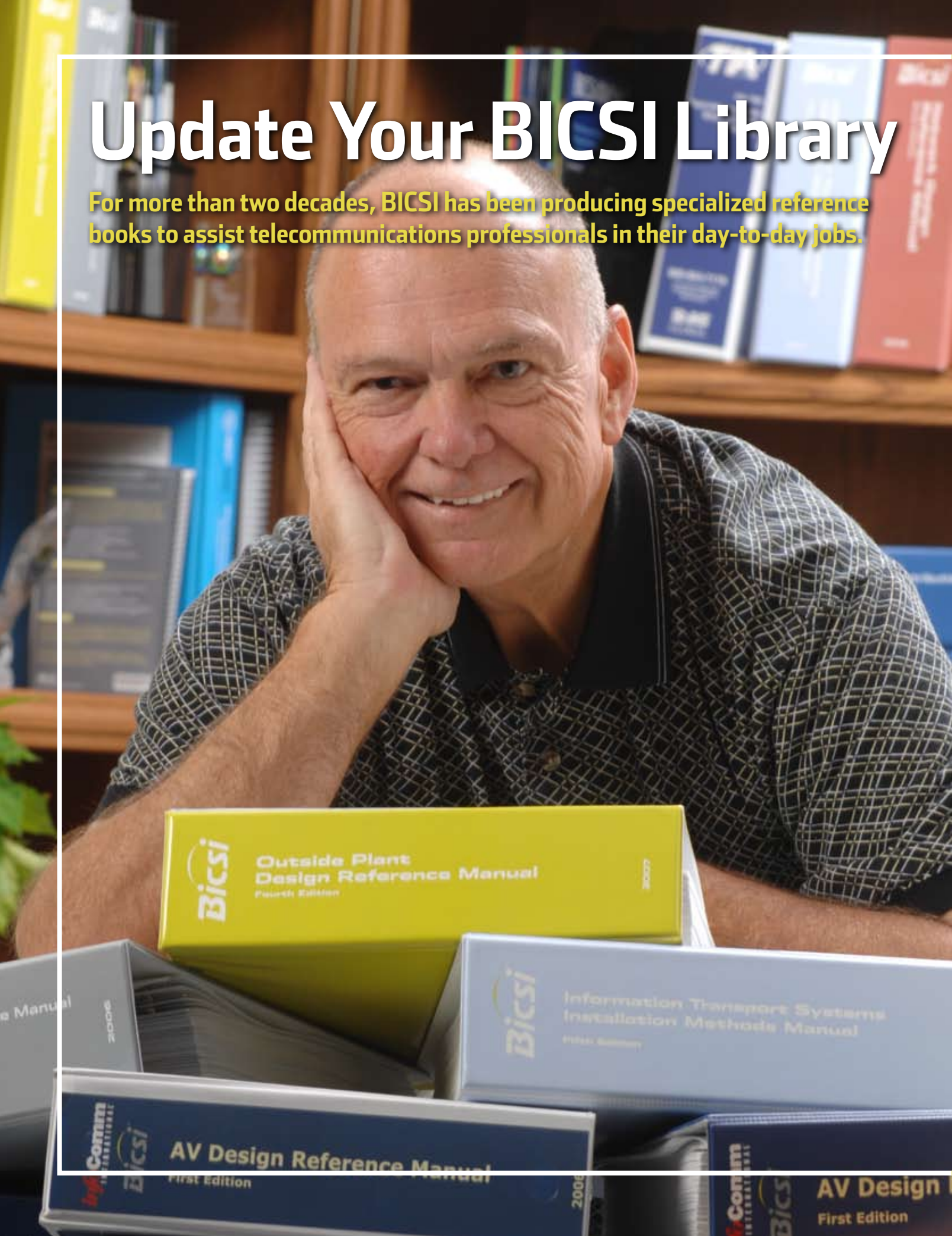


James P. Stahl Jr., CFPS, CDT

James is the director of engineering and technical services at Specified Technologies, Inc., a manufacturer of firestopping products. He also serves on BICSI committees as a subject matter expert team leader (SMETL) for firestopping. James can be reached at jstahljr@stifirestop.com.

Update Your BICSI Library

For more than two decades, BICSI has been producing specialized reference books to assist telecommunications professionals in their day-to-day jobs.



Today's BICSI library includes eight technical publications

- *Telecommunications Distribution Methods Manual (TDMM)*, 11th ed.
- *Network Design Reference Manual (NDRM)*, 6th ed.
- *Outside Plant Design Reference Manual (OSPDRM)*, 4th ed.
- *Information Transport Systems Installation Methods Manual (ITSIMM)*, 5th ed.
- *Wireless Design Reference Manual (WDRM)*, 3rd ed.
- *Electronic Safety and Security Design Reference Manual (ESSDRM)*, 1st ed.
- *AV Design Reference Manual (AVDRM)*, 1st ed.
- *BICSI ITS Dictionary*, 3rd ed.

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Our newest manuals

All BICSI manuals follow a structured revision schedule to ensure contents remain fresh and timely. Most recently, BICSI released two new manual editions:

Information Transport Systems Installation Methods Manual (ITSIMM), 5th ed.

Coordinated with the release of the updated BICSI ITS Cabling Installation Program, the new *ITSIMM* provides cabling installers worldwide with access to the best practices for ensuring a solid foundation of their clients' ITS requirements.

The manual has undergone significant changes since its last edition, including new and modified text and significant formatting changes. Optical fiber and copper cabling installation methods have been separated into two distinct chapters to ensure that these critical topics receive sufficient coverage.

Wireless Design Reference Manual (WDRM), 3rd ed.

The *WDRM* incorporates the latest technologies needed to plan, design and implement a wide spectrum of wireless design projects. The new 3rd edition provides new and updated information on such topics as:

- WiMAX
- Wi-Fi
- 4G cellular communications
- Distributed antenna systems (DAS)
- New chapter on wireless project management



The Changing Face

Identifying strategies and solutions to a simple problem.

Ask around at any BICSI conference and it won't take long to figure out where many of the longtime Registered Communications Distribution Designers (RCDDs) got their start. There will be a variety of responses, but a large percentage began working either with or for the telephone company. Others were employed by large end users, manufacturers, distributors, rep firms, integrators or electrical and voice/data contractors who had the vision to sponsor that individual's multiyear quest for this industry's gold standard information transport systems (ITS) design credential.

ITS installers and technicians have a similar range of employers and sponsors, including the military, end user corporations and a variety of electrical and voice/data contractors. The financial and time support from these employers has always been critical in motivating design and installation professionals to become certified and stay in the industry. These employers and customers have been fundamental in driving the demand for ITS jobs over the past few decades.

As a significant number of ITS design and installation professionals near retirement, some nagging

questions have presented themselves. First, many of these pillars of the ITS community came from the telephone companies or major computer and integration stakeholder giants of the 1970s and 1980s. Will the more cost-conscious companies of today and tomorrow be willing to spend the time and money to support candidates for ITS design and construction positions? Secondly, in the absence of on-the-job training and certification-friendly employers, are we faced with the chicken and egg scenario of, "I don't have the experience, training or finances to go after the BICSI RCDD or Technician certification, but no one

Fear is not an option when looking for job opportunities.

Fear is a strong emotion that keeps us safe from harm, but it can also keep us from success. In this economy, many are fearful about finding a job or keeping the doors open and business coming through those doors. They're fearful about what is going on with the information transport systems (ITS) industry and what they can expect in the next year.

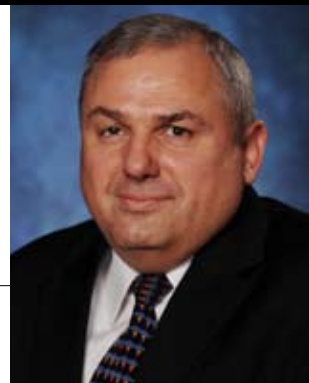
In its latest report, the Department of Labor indicated that telecommunications services will continue to increase at a rate of 5 percent until 2016, which is good news. The largest sector at 49 percent includes telecommunications carriers, which primarily consists of providing telecommunications services through wire and cable that connect the customer premises to the central office. Another 21 percent is made up of wireless telecommunications carriers, and 15 percent is made up of cable and other program distributors. The remaining jobs are available through satellite telecommunications and resellers.

More than half of these employers work in small to medium-size establishments that employ between 5 and 249 workers. You can find telecommunications businesses anywhere in the United States, but most companies are located in larger cities that have a sizable concentration of industrial and business establishments. About 56 percent of those employed in the telecommunications industry are in installation, maintenance and repair occupations or in office and administrative support occupations. Another 17 percent are professionals who include engineers, designers, sales people and computer specialists.

In past years, having a certification alone would have been enough to acquire employment, but now most large organizations, federal agencies, universities and local government agencies are looking for people who have degrees, experience and industry-related designations. It is this triple play individual that human resources departments look for first. This does not necessarily mean that you will

of ITS Jobs

BY JERRY BOWMAN, RCDD, NTS



Jerry L. Bowman, RCDD, NTS, CISSP, CPP, TPM, SPM, is BICSI's U.S. North-Central Region Director and Chair of the BICSI NxtGEN Committee. Jerry can be reached at jbowman@bicsi.org.

will hire me without it?"

The problem is simple; the answer is a little more elusive. If many of our existing ITS design and installation professionals came into the ITS industry as a second career, how will those seeking entrance into the industry do it tomorrow? Although some analysts predict that the ITS industry won't be hit as hard during the global economic downturn, it may still impact both the demand for ITS jobs and the opportunity for design and installation candidates to find the support they need.

A number of strategies are under consideration within BICSI

to help the ITS industry address the new challenges of both design and installation candidates and employers of ITS professionals. Some of those include making training and certification more available through the Internet, podcasts and alternative media. Others include reducing the time and financial investment that employers and candidates must make by offering various BICSI specialties without requiring an RCDD. Enhanced marketing to create demand for ITS jobs is another method. Finally, there are ongoing discussions about ways to provide mentoring programs that would permit candidates with little or

no experience to obtain their training, experience and certification through a BICSI-managed mentoring program.

Regardless of how we address the changing face of ITS jobs in our industry, it is important for all of us to be aware that it is changing and to understand the impact on employers and customers of the ITS professional. Most importantly, we need to get ahead of those issues as an organization and help our members, design and installation professionals, employers and other stakeholders be prepared for the future of a still healthy and growing industry. ■

be left out if you do not have a degree. There are still hot opportunities on the job horizon.

The color for this year is green. If you are currently in or entering the energy conservation or energy management industries, you will likely be busy. These are ranked as the fastest growing industries in the United States. Be on the lookout for many programs and incentives to help organizations become greener or that train companies and individuals who need specific job skills or certifications in this area. Data center has been a buzz word around BICSI for the past few years. Having a working knowledge in making data centers greener and more efficient also could lead to success in today's economy. In addition, security is key to unlocking success in both government and large corporations. Those companies and individuals that specialize in and understand electronic surveillance and security systems will likely find opportunities.

CNN tells us to "Ignore doom and gloom news" and that it is not relevant to any one person's search. So it is important to look beyond your current industry to areas

that are still economically strong. Networking is one simple way to help find these jobs. The advantage of an association like BICSI is that opportunities are made available to members. Thousands of people attend the BICSI conferences not only to get information but also to find jobs or work opportunities. Besides, we all know that most jobs today are not listed in the newspaper or online—they come from personal contacts and networking. While online networking programs are new to many, they allow you to join with individuals who are like minded, and it does not take long to let people know that you are available. Throughout the country, BICSI is sponsoring breakfast and lunch region meetings specifically to help you network.

Training and diversity will help organizations and individuals keep up with changes in the industry. Those who retool or reinvest are the ones who will be better able to outlast the downslide in the economy. So put down the newspaper, turn off the news, let go of your fear and get out there—that is how you will find your next job opportunity.

- By Rick Westcott, BICSI Services Consultant, rwestcott@bicsi.org

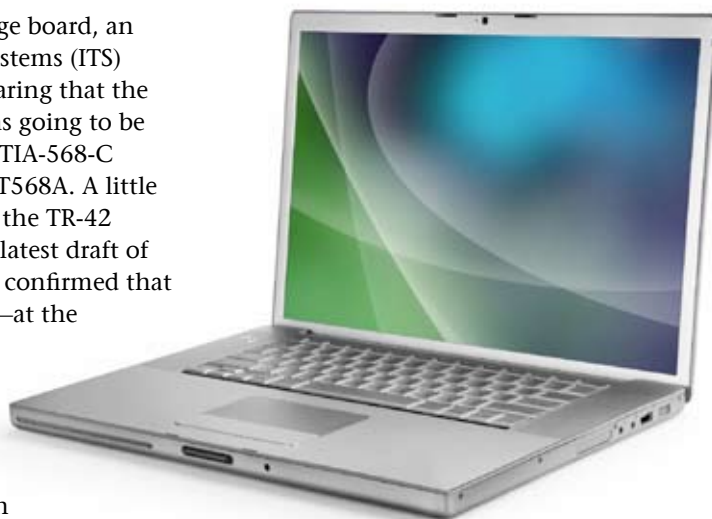
GETTING TECHNICAL

Harnessing new methods to help with technicalities. **BY FELIX ZAYAS**

Perhaps you have been to a conference and heard someone say, “Yeah, single-mode fiber is cheaper, but it is the electronics that cost all the money.” But what are these electronics they speak of, and how much do they really cost? Or what about the term RJ45? We know the correct terminology is eight position eight-contact (8P8C), so where did the RJ45 terminology come from, and why do people still refer to the interface as RJ45?

A while back on a message board, an information transport systems (ITS) professional reported hearing that the T568B wiring scheme was going to be removed from the ANSI/TIA-568-C standard, only allowing T568A. A little while later, a member of the TR-42 committee who had the latest draft of the standard on his desk confirmed that this in fact was not true—at the time, both the T568A and T568B wiring schemes were in the latest version of ANSI/TIA-568-C. Where did this confusion originate, and how many people read and believed this misinformation and then passed it on to colleagues and clients before it was cleared up? How often does misinformation travel this way throughout the ITS industry?

There is plenty of incorrect nomenclature being thrown around in our industry, and many assumptions are made with only surface knowledge based on hearsay. In today’s day and age, a thorough knowledge of products, techniques and technologies can help make the ITS professional competitive in this ITS haystack. For example, how valuable would it be if the ITS designer or installer could respond with an answer backed up by research and actual fact comparisons when a client asks why they should or should not deploy single-mode over multi-mode? Just think how impressive it would be if an ITS installer



correctly referred to that plug at the end of the patch cable as an 8P8C modular plug. What if a designer laid out a floor plan with wireless access points (WAPs) using predictive RF CAD modeling software and improved the performance of the network by calculating an optimal signal-to-interference ratio (SIR) and drastically cutting the number of WAPs needed instead of going with the poker chip design?

Understanding the theory and history behind recommendations and implementing creative, cost-saving solutions into designs will make you stand out as an ITS professional. While there are ways to boost your knowledge base and gain expertise to respond to technical questions, none of them are effortless. Some of the following tips will assist

you in furthering your technical communications skills. By investing a little extra time and effort in learning to use the latest methods available, your knowledge will grow and ultimately set you apart from the rest.

Get the right answers

Write down acronyms, terms or other items that you want further information about. Keep a notebook or an electronic document of these items, and organize them on a need-to-know basis. Draft up a question for each item, and imagine the question being asked to you. Can you interpret the question to mean something else? Can part of the question be answered while leaving your main curiosity unanswered? Now try and answer the question by looking it up in design reference manuals, standards, codes, the Internet or any other available literature on the topic. After studying the facts, read your own question again and reword it knowing what you now know. Only now will it be time to actually ask your question.

Log onto the BICSI forum message boards, the LinkedIn group or other message boards and post your questions. It would be a good idea to first search the forum as a courtesy to ensure that the same question has not been asked before—no one wants to see the same question asked over and over or answer the same question multiple times. Record the answers and share them on message boards.

If a sales representative says that you can easily integrate their new product into a certain system, ask them how this is accomplished? Ask for cut sheets and literature on the product. By doing these you can sit in your next meeting and explain that you can integrate the client's system into the existing network, and that you know exactly how it is done. By asking the right questions and getting the right answers, you will hold the knowledge to uncap

that marker and draw typical wiring connections down to the connectors if necessary. You will know the protocol being sent down those conductors and how it will interface with a client's existing network, giving you the expertise to field almost any question with certainty.

Network through contacts and groups

Join networking websites, such as LinkedIn, and join the groups that interest you. Start up conversations with people and learn more about them and what they do. Creating a wide geographical network can be done quickly and easily, opening up all kinds of possibilities.

Imagine receiving an e-mail with some specifications that came across the desk of a buddy of yours halfway across the country who thought you would appreciate a read through. Or

imagine being flown to a firm for an interview where the lead came from knowing the owner of the company through an online message board. In these trying economic times, your presence on the information grid is more mandatory than optional.

Get electronically organized and tag resources

Create a bookmark collection, organize it, and make arrangements so you can synchronize between work and home. There are a number of ways to do this through technology. If you use Firefox® browser, for example, you can use the Foxmark® add-on feature. With Windows Mobile®, you can synchronize favorites with your phone. If you have a Google™ account, you can use their online bookmark utility and have access to your bookmarks wherever you

Two More Conferences in 2009



2009 BICSI European Conference & Exhibition

June 22-24 Citywest Hotel, Dublin, Ireland

2009 BICSI Fall Conference & Exhibition

September 20-24 MGM Grand Hotel & Convention Center, Las Vegas, Nevada, USA

For more information on BICSI conferences, visit www.bicsi.org/conferences.

have an Internet connection. Another add-on for Firefox, called GBookmarks®, will integrate your Google bookmarks into Firefox's pull down menu. Internet bookmarks allow you to apply multiple labels to each link. For instance, www.bicsi.org can be labeled as "Organizations" and "Current Memberships." This labeling, or tagging, is very popular on many Web sites and even in software programs. Taking the time to tag items will make finding and displaying them a lot easier.

It is important to organize everything—information for certain people, notes, spreadsheets, cut sheets, tables, standards, design guidelines, codes and many other types of documents. It is a good idea to create a folder and filename guidelines for an organized file hierarchy, so if you move things later on you will not break the links.

In addition to a well maintained file hierarchy, one of my favorite solutions for organization is called TiddlyWiki. A wiki is a page or collection of web pages designed to enable anyone who accesses it to contribute or modify content. The largest and most famous wiki today would be Wikipedia®. TiddlyWiki is a single HTML file that has all the characteristics of a wiki, including all of the content and functionality. It can be stored on a local hard drive or flash drive for portability. You can create entries called Tiddlers, which are similar to Wikipedia entries. You can add multiple tags to each Tiddler, making item searches much easier. There is also a fast search function in TiddlyWiki that allows you to see the results of your search as your typing them in.

The Tiddler itself can be text, pictures and links to website, links to documents or links to certain pages within documents. For example, a Tiddler on pull boxes could have some text, which could be notes to yourself about how you've done things in the past, things you want

to try or anything else. It could also have a link that opens to a certain page of a design manual that discusses pull boxes, or a link that opens to a trade magazine's article about pull boxes.

Subscribe to RSS feeds

Really simple syndication (RSS) is used to publish frequently updated blog entries, news headlines, audio and video in a standardized format. Look for the RSS logo on Websites and subscribe to those feeds with your RSS reader of choice. An RSS reader, also known as an aggregator, will look for new content at intervals and provide you with updated content in one easy to handle format. This eliminates the need to visit multiple Web sites on a regular basis to check for new content. There are client-based aggregators that need to be installed on the local computer, and there are Web-based aggregators that do not need installation. With RSS feeds, you can stay on top of the latest news and information in much less time than the traditional method of bookmarking sites and visiting them one at a time.

Create a library of electronic catalogs

Some manufactures have a complete listing of all of their products on their Web site, and others have full catalogs in PDF format for downloading. While some manufacturers do a great job at producing a hard copy catalog, a catalog library can be mostly digital these days—it is quicker to find the product you are looking for in digital format and much easier to maintain your library. Updates to your library take minutes and can be downloaded or e-mailed to you directly.

Save and keep track of important e-mails

If you were to save every piece of e-mail you received for the last year, how much space would it take up? If you do not know, give it a try.

For one month, save every piece of e-mail that you would have even the slightest possibility of wanting to look at again and see how much space it actually takes up. Then look at the size of your hard drive, and ask yourself how many months it will take before there is no more available space.

Your e-mail might be stored on a server where rules were created to limit disk space. In that case, you may need to get creative. If you use Microsoft Outlook®, for example, you could create a local PST file and create rules to copy all incoming mail to one folder and another rule to copy all outgoing mail to another folder both within that local PST file.

Conclusion

There are many business technology solutions being developed every day, and the ways of the world are changing. It can be easy to stick with the old way of doing things—it has been done for years, it works and it is difficult to stay on top of new solutions and choose them based on hearsay and experimentation. However, putting time into learning the new ways to save and organize information is crucial to your success as an ITS professional. Ultimately, whatever technology works for you is the right solution.

People that are already making technology work for them are always looking for faster and better ways of doing things—these are the people who will take the time to implement new business solutions and the people who will stand out. ■



Felix Zayas

Felix is a technology designer at BVH Integrated Services, a multi-disciplined consulting engineering firm. He can be reached at felixz@bvhis.com.

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Betsy Ziobron
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Channeling the Anger

The economic situation is depressing, frustrating and infuriating. If we were any other country, people would have taken to the streets in protest, marching wildly on Wall Street and Pennsylvania Avenue with signs and shouts of anger at bail-outs, bonuses, bureaucrats and blunders—much like they're doing across Eastern and Western Europe.

I started to wonder why we don't protest. Is it fear? Is it apathy? Is it cynicism? I don't think this country has seen a significant protest in nearly 45 years. This past January, more than 1.5 million people descended on the National Mall to witness the inauguration, yet just a few thousand (who most of us write off as foolish) are carrying signs in protest over the financial fiasco. As one cynical blogger pointed out, "Instead of protesting, Americans sulk and whine."

Then there's the fact that large protests require a lot of poster board and markers (not to mention risk and finding a decent place to eat and sleep.) And let's face it; that's no longer us. We're now a country of Blackberry-using Internet surfers who'd rather stay home and communicate through e-mail, LinkedIn, Twitter and Facebook. When was the last time any of you used poster-board and markers for anything other than your kid's latest school project?

That got me wondering—is technology partly to blame? Do we lash out in anger on blogs instead of streets? I ran a Google search on "Bail-out" and "Blog" and came up with more than 16 million places to shout out (that is, type out) my anger. Who says technology hasn't changed us? Perhaps it's for the better—sounding off online vs. the streets is safer and more peaceful. But is online chatter heard and does it work? I guess only time will tell... Ultimately, I decided that blogging the same rhetoric I read everywhere else was pretty much a waste of my time, and I should get back to work.

I know I am lucky to be working, but my contractor husband has barely any work, so I, too, am feeling the pain. The small amount of work he has gotten has all been through networking (clearly no one is looking through stacks of resumes these days). It seems to me that networking is the key; as Jerry Bowman, Rick Westcott and Felix Zayas point out in this issue of *BICSI News*. If you're angry, instead of sulking, whining or blogging, I recommend that you follow their advice and take advantage of the networking opportunities BICSI has to offer—conferences, region meetings, breakfast clubs, LinkedIn, ITS-Jobs.com and more.

And if you're waiting for work, use your time wisely—take an online training course through BICSI CONNECT, learn a new skill or, "Hey!" read *BICSI News*. In this and subsequent issues, look for content that addresses the current ITS job situation, highlights methods for staying successful and introduces new business opportunities and technologies that can improve your and your customers' bottom line. We'll also be making sure you stay abreast of standards and all the goings-on in our industry, so that when the work does pick up, you're not left behind.

So don't let your anger hold you back—channel it. Start networking, start learning and start reading your *BICSI News*! ■

New Benefits, More Options Available with BICSI Corporate Connection Program

BICSI's commitment to better serving its members is exemplified with the introduction of the Corporate Connection Program. This set of tiered company membership options offering significant benefits on each level has quickly become the premier membership program in the ITS industry.

Within the Corporate Connection Program, companies have the opportunity to become involved on six different levels that each offer a group of individual BICSI memberships coupled with a variety of discounts and benefits. Many of these company-owned memberships can be transferred to any employee in the company at any time, giving all employees the ability to enjoy BICSI's many individual member benefits, such as member discounts on classes, manuals and conference registrations.

"The Corporate Connection Program engages the entire company, from the entry-level employee to the CEO, creating more access to training, credentialing and conference attendance," said John D. Clark Jr., CAE, BICSI Executive Director & Chief Executive Officer. "With transferable memberships, everyone in the company has the opportunity to take advantage of BICSI member discounts and benefits."

Other perks within some tiers include complimentary conference registrations and BICSI training (including BICSI CONNECT courses), a BICSI banner for your work site, use of a Corporate Member search and access to a Corporate Members-Only Forum.

"We're really excited about the Corporate Connection Program and what it has to offer to our members," said Ed Donelan, RCDD, NTS, TLT, BICSI President. "The multilevel approach makes it easy for companies of any size to take advantage of the program and obtain significant benefits required for business growth."

The original Corporate Membership option is still open as the base level of the new tiered program; however, the Prestige Corporate Membership program is no longer available. Prestige Corporate Members will still have their membership honored through its expiration date.

Additionally, BICSI will begin releasing a Corporate Buyers Guide. Corporate Connection Members will have the opportunity to participate in this new publication for BICSI members and ITS professionals. The Corporate Buyers Guide, published on an annual basis, highlights BICSI Corporate Members and their products and services.

For more information and a breakdown of each membership tier, visit www.bicsi.org/corporate or call BICSI at +1 813.979.1991 or 800.242.7405 (USA and Canada toll-free).

RITP—The New Information Transport Credential for BICSI Professionals

BICSI is pleased to announce the new Registered Information Transport Professional (RITP™) credential that will be released next year. The RITP will allow individuals with formal education and industry-related qualifications to obtain a BICSI information transport systems (ITS) credential.

"The RITP represents a major step for BICSI in clarifying the roles and qualifications of the ITS professional," said Jerry Bowman, RCDD, NTS, CISSP, CPP, TPM, SPM, BICSI's NxtGEN Committee Chair. "Having this professional credential will enable sales, educational and management professionals to proudly instill the same confidence in their industry knowledge and professionalism that RCDDs have for decades."

Following an opportunity at the 2008 BICSI Fall Conference for BICSI credential holders to suggest names for this new credential, six options were selected by industry experts. The balloting for the new name was held in February 2009, and more than 2,000 votes resulted in RITP as the most preferred name. All voters were entered into a special drawing to win an Apple® 16GB iPod® Touch, and the winner was Donald Wilkinson, RCDD, from Georgetown, California.

The application process and requirements for the BICSI RITP credential will be announced soon. In the meantime, interested professionals can get a head start on the process by completing the ITS Fundamentals exam that is currently available online through BICSI CONNECT. Also available through BICSI CONNECT are five ITS Fundamentals courses designed to prepare applicants for the ITS Fundamentals exam.

"This new credential opens the doors to the next generation of information transport professionals," said Ed Donelan, RCDD, NTS, TLT, BICSI President. "We are excited to offer this opportunity to our existing members and credential holders in the ITS industry and also to bring new talent into our organization. It's going to be the added exchange of knowledge and education across many levels of the industry that will help us advance our members' business success and expand our profession's reach globally."

NEW MANUAL. NEW FOCUS. NEW CREDENTIAL. BICSI releases ESS credential details.

The convergence of security systems like access control and surveillance onto the network places much of the responsibility for future security designs into the hands of the BICSI membership. BICSI is ready to prepare you for this significant shift in the information transport systems (ITS) industry. In the coming year, BICSI will be releasing:

- The 2nd edition of the *Electronic Safety and Security Design Reference Manual (ESSDRM)*.
- Three courses focused on electronic safety and security (ESS) design.
- The ESS credential.

MANUAL INFORMATION

The 2009 BICSI Spring Conference marks the release of the 2nd edition of the *ESSDRM*. Now you can stay current on global best practices for the design and integration of different ESS systems. With significant changes from the first edition, the new manual provides key elements

essential to anyone in ITS design, including:

- Principles of security
- ESS design process
- Access control
- Surveillance systems
- Intrusion detection systems
- Fire detection and alarm systems
- Notification, communication and display devices
- Special systems
- Network security
- Systems integration
- Project management
- Systems operation and commissioning
- Codes, standards and regulations
- Legal aspects of ESS design

ESS EXAM DETAILS

Under BICSI's NxtGEN Program, the Registered Communications Distribution Designer (RCDD) credential will not be required as a prerequisite for the new ESS credential. However, applicants not holding a current RCDD credential must

first complete the ITS Design Fundamentals Program before sitting for the exam.

Take your first step toward becoming an ESS Specialist by enrolling in the BICSI CONNECT fundamentals courses or exam. Visit www.bicsi.org/fundamentals for more information.

The exam will be based on the 2nd edition of the *ESSDRM*. The first opportunity to sit for the exam will be at the 2009 BICSI Fall Conference in Las Vegas. More information, including additional exam dates and exam applications, will be released on www.bicsi.org/ess.

COURSE ADDITIONS

Based on the 2nd edition of the *ESSDRM*, three new courses focusing on ESS will be added to the BICSI catalog. These courses will be released in late 2009. More information will be announced closer to the course release dates. Visit www.bicsi.org/ess for more information.

Build Your BICSI Library Today!

Purchase the 2nd edition *ESSDRM* and receive a complimentary 1st edition! What better way to archive industry advancements than to keep all the BICSI manuals on hand. Visit www.bicsi.org/publications to order your copy.



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Planning the Work, Working the Plan

Donelan continued from page 3

- **Community Goal**—BICSI will enable the development of unique, relevant and dynamic professional member communities around the world.

Our **Value Proposition** describes what BICSI will offer and includes:

- Provide leading-edge innovative forums for knowledge exchange, professional development and positive and enjoyable member experiences.
- Understand what members will need to be successful in the future, that they don't even know they need yet.
- Develop the vision of what the ITS industry will look like in the future.
- Create new applications of existing programs.
- Deliver programs through a variety of formats (face-to-face and virtual).
- Build a reputation of providing leading-edge programs with excellence.
- Commitment—simply put, providing the very best.

The **Value Discipline** identifies what BICSI must do and includes:

- Develop a culture that supports innovation and risk-taking in

order to provide leading-edge and innovative programs.

- Accept possible mistakes and move on.
- Develop scanning mechanisms to know where the ITS industry is going in the future.
- Create an efficient process for developing and delivering programs and services.
- Design current programs to be a step ahead of competitors.
- Operate with financial stability and security.
- Provide quality member service.

Working within these guidelines has enabled BICSI Board and staff members to work with committees and volunteers and move rapidly ahead with many of the new programs you read about in the variety of press releases, announcements and e-mail blasts you receive. The new design credential of the Electronic Safety and Security (ESS) industry is available this fall. The education-based credential—Registered Information Transport Professional (RITP™)—is the newly elected name for those seeking credentials without the required RCDD® industry experience.

Just this year, BICSI formed excellent

working relationships through our outreach program with great associations like the National Burglar & Fire Alarm Association (NBFAA) and Construction Specifications Institute (CSI). These working win-win relationships provide you with new benefits. We even established our first sustainable building group, the Green Building Technology Alliance (GBTA). Our government relations consortium enables us to share your concerns with the likes of Infocomm, National Systems Contractors Association (NSCA), Custom Electronic Design & Installation Association (CEDIA), NBFAA and the Satellite Broadcast Association (SBA).

I know that the experience I have gained on the BICSI Board has assisted me in many ways, but when I suggested to my wife that we establish a Donelan Family Strategic Plan, I think she may regret some of my passion for BICSI. Nonetheless, we press on with planning the work and working the plan!

Please share in the well deserved praise of our volunteer Board members and Committee members—both past and present—who dedicate their time and talent for the benefit of all of us in the ITS industry. Thank you for all your hard work! ■

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JUNE 2009

1-3	DC110	Data Center Design Best Practices, Coraopolis, PA
1-3	DD120	Grounding and Protection Fundamentals for Telecommunications Systems, Coraopolis, PA
1-4	DD200	Telecommunications Distribution Design Review, Salt Lake City, UT
1-4	FO110	Fiber Optic Network Design, Tampa, FL
1-5	IN101	BICSI ITS Installer 1 Training, Tampa, FL
4-5	DD100	Introduction to Voice/Data Cabling Systems, Coraopolis, PA
8-9	DA100	Introduction to Networks, Tampa, FL
8-10	DC110	Data Center Design Best Practices, Halifax, NS
8-11	DD200	Telecommunications Distribution Design Review, Halifax, NS
8-12	IN225	BICSI ITS Installer 2, Copper Training, Tampa, FL
8-12	OSP110	Cable Plant Design, Halifax, NS
10-12	DC110	Data Center Design Best Practices, Tampa, FL
15-19	DA110	Designing Networks, Tampa, FL
15-18	DD200	Telecommunications Distribution Design Review, Tampa, FL
15-19	IN101	BICSI ITS Installer 1 Training, Boise, ID
15-19	IN101	BICSI ITS Installer 1 Training, Dayton, OH
15-19	IN250	BICSI ITS Installer 2, Optical Fiber Training, Tampa, FL
22-27	DD102	Designing Telecommunications Distribution Systems, Honolulu, HI
22-26	IN225	BICSI ITS Installer 2, Copper Training, Boise, ID
22-26	IN225	BICSI ITS Installer 2, Copper Training, Dayton, OH
22-26	OSP110	Cable Plant Design, Tampa, FL
22-26	TE350	BICSI ITS Technician Training, Tampa, FL
22-26	WD110	Designing Wireless Networks, Tampa, FL
29-30	PM100	Telecommunications Project Management Fundamentals, Tampa, FL
29-7/3	PM125	Telecommunications Project Management Program, Tampa, FL

JULY 2009

1-3	PM120	Telecommunications Project Management, Tampa, FL
1-3	PM121	Information Technology Project Management, Tampa, FL
1-3	PM122	Outside Plant Project Management, Tampa, FL
1-3	PM123	Wireless Project Management, Tampa, FL
6-10	DA110	Designing Networks, Tampa, FL
6-7	DD100	Introduction to Voice/Data Cabling Systems, Tampa, FL
6-10	IN250	BICSI ITS Installer 2, Optical Fiber Training, Scottsdale, AZ
6-10	IN250	BICSI ITS Installer 2, Optical Fiber Training, Okemos/Lansing, MI
7-12	DD102	Designing Telecommunications Distribution Systems, Tampa, FL
8-9	OSP100	Introduction to Outside Plant, Tampa, FL
10-11	DA100	Introduction to Networks, Tampa, FL
12-17	DD102	Designing Telecommunications Distribution Systems, Houston, TX

DD = Distribution Design
DA = Data Distribution Design
IN = Installation

TE = Cabling Installation
WD = Wireless Design

OSP = Outside Plant Design
PM = Project Management

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CONTINUED JULY 2009

13-15	DA200	Network Design Specialty Review, Tampa, FL
13-16	DD200	Telecommunications Distribution Design Review, Tampa, FL
13-16	DD200	Telecommunications Distribution Design Review, Houston, TX
13-17	IN225	BICSI ITS Installer 2, Copper Training, Tampa, FL
13-17	PM125	Telecommunications Project Management Program, Houston, TX
13-17	TE350	BICSI ITS Technician Training, Scottsdale, AZ
13-17	TE350	BICSI ITS Technician Training, Okemos/Lansing, MI
19-24	DD102	Designing Telecommunications Distribution Systems, Centennial/Denver, CO
20-22	DC110	Data Center Design Best Practices, Centennial/Denver, CO
20-21	DD100	Introduction to Voice/Data Cabling Systems, Centennial/Denver, CO
23-25	DD300	Telecommunications Distribution Methods Manual Update Review, Centennial/Denver, CO
27-31	TE350	BICSI ITS Technician Training, Tampa, FL

AUGUST 2009

3-4	DD100	Introduction to Voice/Data Cabling Systems, Tampa, FL
3-7	IN101	BICSI ITS Installer 1 Training, Meriden, CT
3-7	IN101	BICSI ITS Installer 1 Training, Tampa, FL
5-6	OSP100	Introduction to Outside Plant, Tampa, FL
7-8	DA100	Introduction to Networks, Tampa, FL
9-14	DD102	Designing Telecommunications Distribution Systems, Albuquerque, NM
10-12	DC110	Data Center Design Best Practices, Los Angeles, CA
10-13	DD200	Telecommunications Distribution Design Review, Los Angeles, CA
10-13	DD200	Telecommunications Distribution Design Review, Honolulu, HI
10-13	DD200	Telecommunications Distribution Design Review, Albuquerque, NM
10-14	IN225	BICSI ITS Installer 2, Copper Training, Meriden, CT
10-14	IN225	BICSI ITS Installer 2, Copper Training, Tampa, FL
10-11	PM100	Telecommunications Project Management Fundamentals, Albuquerque, NM
10-14	PM125	Telecommunications Project Management Program, Albuquerque, NM
12-14	PM120	Telecommunications Project Management, Albuquerque, NM
12-14	PM121	Information Technology Project Management, Albuquerque, NM
12-14	PM122	Outside Plant Project Management, Albuquerque, NM
12-14	PM123	Wireless Project Management, Albuquerque, NM
17-19	DC110	Data Center Design Best Practices, Tampa, FL
17-20	DD200	Telecommunications Distribution Design Review, Tampa, FL
17-21	IN250	BICSI ITS Installer 2, Optical Fiber Training, Tampa, FL
23-28	DD102	Designing Telecommunications Distribution Systems, Seattle, WA
24-25	DD100	Introduction to Voice/Data Cabling Systems, Seattle, WA
24-27	DD200	Telecommunications Distribution Design Review, Seattle, WA
24-28	TE350	BICSI ITS Technician Training, Tampa, FL
26-28	DC110	Data Center Design Best Practices, Seattle, WA
30-9/4	DD102	Designing Telecommunications Distribution Systems, Tampa, FL
31-9/3	DD200	Telecommunications Distribution Design Review, Tampa, FL

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U.S. Northeast

- June 26, New York, NY
- October 15, Sturbridge, MA

U.S. North-Central

- November 20, Columbus, OH

U.S. South-Central

- July 23, Memphis, TN
- December 15, Dallas, TX

Canadian Region

- May 28, Toronto, ON
- October 22, Ottawa, ON

2009 Breakfast Club Meetings

U.S. South-Central

- July 16, Wichita, KS
- July 17, Kansas City, MO
- October 15, Wichita, KS
- October 16, Kansas City, MO

U.S. Northeast/North-Central

- May 19, Indianapolis, IN
- May 20, Columbus, OH
- May 21, Cleveland, OH
- July 28, Pittsburgh, PA
- October 6, Pittsburgh, PA
- October 15, Wichita, KS
- October 16, Kansas City, MO

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SEPTEMBER 2009

8-9	DD100	Introduction to Voice/Data Cabling Systems, Tampa, FL
14-18	IN101	BICSI ITS Installer 1 Training, Tampa, FL
14-18	IN250	BICSI ITS Installer 2, Optical Fiber Training, Las Vegas, NV
14-18	IN250	BICSI ITS Installer 2, Optical Fiber Training, Richmond, VA
15-20	DD102	Designing Telecommunications Distribution Systems, Las Vegas, NV
16-17	DA100	Introduction to Networks, Las Vegas, NV
16-20	DA110	Designing Networks, Las Vegas, NV
16-19	DD200	Telecommunications Distribution Design Review, Las Vegas, NV
16-20	OSP110	Cable Plant Design, Las Vegas, NV
16-17	PM100	Telecommunications Project Management Fundamentals, Las Vegas, NV
16-20	PM125	Telecommunications Project Management Program, Las Vegas, NV
16-20	WD110	Designing Wireless Networks, Las Vegas, NV
18-20	DA200	Network Design Specialty Review, Las Vegas, NV
18-19	DD100	Introduction to Voice/Data Cabling Systems, Las Vegas, NV
18-20	PM120	Telecommunications Project Management, Las Vegas, NV
18-20	PM121	Information Technology Project Management, Las Vegas, NV
18-20	PM122	Outside Plant Project Management, Las Vegas, NV
18-20	PM123	Wireless Project Management, Las Vegas, NV
18-20	WD200	Wireless Design Specialty Review, Las Vegas, NV
19-20	OSP200	Cable Plant Design, Las Vegas, NV
21-25	TE350	BICSI ITS Technician Training, Las Vegas, NV
21-25	TE350	BICSI ITS Technician Training, Richmond, VA
25-28	DC110	Data Center Design Best Practices, Las Vegas, NV
25-27	DD120	Grounding and Protection Fundamentals for Telecommunications Systems, Las Vegas, NV
25-28	FO110	Fiber Optic Network Design, Las Vegas, NV
25-26	OSP100	Introduction to Outside Plant, Las Vegas, NV
25-26	WD100	Introduction to Wireless, Las Vegas, NV
26-27	DD100	Introduction to Voice/Data Cabling Systems, Charlotte, NC
27-10/2	DD102	Designing Telecommunications Distribution Systems, Charlotte, NC
28-30	DC110	Data Center Design Best Practices, Charlotte, NC
28-10/1	DD200	Telecommunications Distribution Design Review, Charlotte, NC

OCTOBER 2009

4-9	DD102: Designing Telecommunications Distribution Systems, San Mateo, CA
5-7	DC110: Data Center Design Best Practices, San Mateo, CA
5-6	DD100: Introduction to Voice/Data Cabling Systems, Tampa, FL
5-8	DD200: Telecommunications Distribution Design Review, San Mateo, CA
5-8	DD200: Telecommunications Distribution Design Review, Tampa, FL
5-9	IN225: BICSI ITS Installer 2, Copper Training, Tampa, FL

For a complete list of October classes, visit www.bicsi.org/training

DD = Distribution Design
DA = Data Distribution Design
IN = Installation

TE = Cabling Installation
WD = Wireless Design

OSP = Outside Plant Design
PM = Project Management



Robert Faber, RCDD,
NTS, BICSI Standards
Committee Chairman
rfaber@bicsi.org

BICSI Publishes Its First ANSI/BICSI Standard

As chairman of the BICSI Standards Committee, I am proud to announce the approval and publication of ANSI/BICSI-001-2009, *Information Transport Systems Design Standard for K-12 Educational Institutions*. This publication represents countless hours and effort by nearly two dozen expert volunteers under the leadership of K-12 Standard Subcommittee

Chair Terry Hochbein, RCDD, NTS, OSP.

Work on this standard began in 2004 when TJ Roe, BICSI Standards Committee Chairman at the time, appointed Hochbein as chairman of the K-12 Subcommittee to gather a number of experts to write the industry's first design standard for K-12 institutions. Hochbein selected John Kacperski, RCDD, OSP, to serve as his subcommittee secretary and Todd Taylor, RCDD, NTS, OSP, to serve as the document editor.

When asked why this work was undertaken, Hochbein replied, "As the director of technology design for a firm specializing in K-12 education, it was apparent to me that

TIA-568, *Commercial Building Telecommunications Cabling Standard* did not address the diverse types of spaces found in K-12 facilities. As a member of the BICSI Standards Committee, I proposed that we develop a cabling design standard to specifically address these spaces."

After nine subcommittee drafts, three public reviews and subsequent ballot resolutions, the standard was completed and approved by the K-12 Standard Subcommittee and the BICSI Standards Committee. According to Hochbein, the standard addresses many types of educational spaces, including classrooms, science rooms, computer labs, media centers, music rooms, auditoriums, cafeterias and gymnasiums.

When asked about the industry need for the standard, Taylor said, "I have been in the industry for over 20 years and have seen standards bodies doing a great job of relaying information such as performance and space planning. What I have not seen are specialized design documents to enhance these typical standards and provide updated guidance for owners, installers and designers."

The BICSI Post Secondary Standard Subcommittee is working on an Information Transport Systems Design Standard for Post Secondary Educational Institutions. Any industry experts wanting to volunteer to contribute to its development are invited to contact Post Secondary Standard Subcommittee Chair Terry Hochbein at thochbein@atsr.com. ■



Donna Ballast,
RCDD
dballast@bicsi.org

BICSI-002 in 2nd Ballot

BICSI is seeking approval of BICSI-002, *Data Center Design Standard and Recommended Practices*, as an American National Standard (ANS) under the accredited canvass method of the American National Standards Institute (ANSI).

BICSI-002 is primarily a design standard with installation requirements and guidelines related to implementing a design.

BICSI-002 provides a best practices and implementation standard that will complement TIA, CENELEC, ISO/IEC and other published data center standards.

Ballot responses are due by April 27, 2009, at 5 p.m. EDT. Ballot comment resolution will begin May 10, 2009, at the Baltimore Convention Center during the BICSI Spring Conference.

OM4 Development

Today, three standardized types of multimode fiber are in use within premises networks—62.5 μm multimode fiber (OM1), 50 μm multimode fiber (OM2) and laser-optimized 50 μm multimode fiber (OM3). OM3 is described as laser-optimized because it is specifically designed for use

with vertical cavity surface emitting lasers (VCSELs).

Over the past five years, designers have moved to OM3 fiber to support higher data rates and longer distances. However, now Fibre Channel and IEEE 802.3 are interested in multimode fiber with a higher data rate than OM3 fiber.

By precisely controlling the refractive index profile of a fiber, it is possible to minimize modal dispersion or differential mode delay (DMD). By limiting DMD, all modes in the fiber arrive at the transceiver at the same time. This minimizes pulse spreading and maximizes bandwidth.

OM3 fiber has a minimum effective modal bandwidth (EMB) of 2,000 megahertz kilometer (MHz•km) at 850 nm using VCSEL transceivers. TIA/EIA-492AAAD, *Detail Specification for OM4 850-nm Laser-optimized, 50- μm Core Diameter/125- μm Cladding Diameter Class 1a Graded-index Multimode Optical Fibers*, is currently under development in the TR-42.12 Optical Fibers and Cables engineering subcommittee. OM4 fiber is expected to specify a minimum EMB of 4,700 MHz•km at 850 nm, which is more than twice the bandwidth of OM3.

OM3 fibers are backward compatible and can support legacy applications that use light-emitting diode (LED) transmitters operating at either the 850- or 1300-nm wavelength. As for backward compatibility of OM4, we will have to wait for the release of the final specifications later this year. ■



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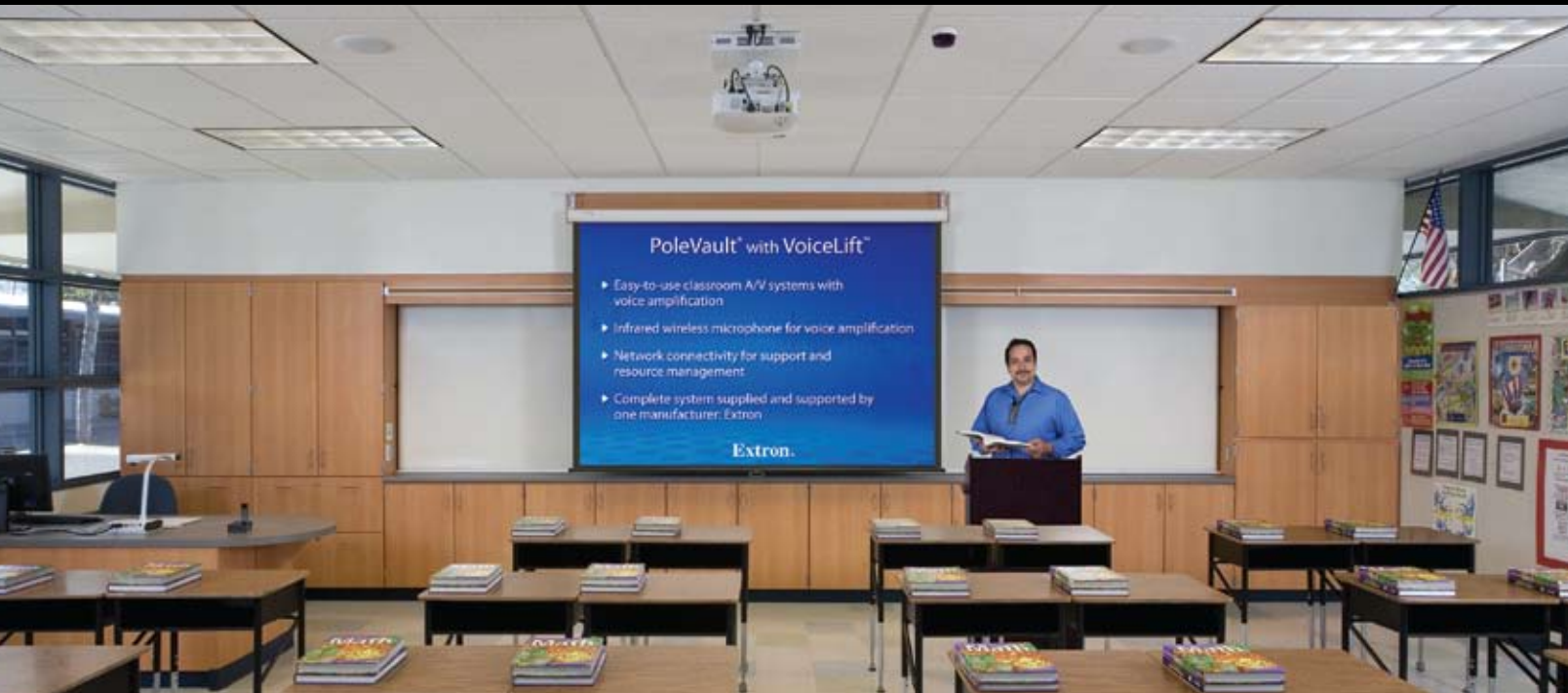


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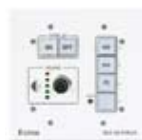
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Speakers

Easy-to-install Classroom A/V Systems Send A/V Signals over CAT 5

PoleVault® Systems are all-inclusive, complete A/V systems that are easy to install, use, and support. All the switching and audio amplification components mount securely above the projector making them ideal for single-projector classrooms.

The new Extron VoiceLift™ Microphone option integrates seamlessly into the PoleVault System to amplify and evenly distribute the teacher's voice throughout the classroom.

Each PoleVault System includes all the projector control, mounting hardware, switching, speakers, wall plates, and cabling needed for a complete A/V system. Everything is made, supplied, and supported by one manufacturer: Extron, where your satisfaction is guaranteed. All that remains is to add the video projector, projection screen, and sources.

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- Complete, centralized A/V switching and control system with stereo/mono amplifier using CAT 5 cable from wallplates to the switcher
- **VoiceLift Microphone** option - wireless microphone works with PoleVault to evenly distribute the teacher's voice throughout the room:
 - Features easy-to-use volume control on the microphone
 - Operates for an entire school day on a single, included rechargeable AA battery; also works on a regular alkaline battery
- Network ready with integrated IP Link® and free GlobalViewer® software for campus-wide control, asset management, lamp hour tracking, and help desk support
- Unique pole-mounted enclosure provides tamper-resistant theft deterrence and takes up no floor space
- Instant Alert messaging capability enables the teacher to request assistance

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