



# INSTALLING TO UNIQUE CUSTOMER SPECIFICATIONS

By Carol Everett Oliver, RCDD

**I**f you're a cable specifier or contractor, it's no trade secret that you have your preference in cable and connectivity product brands, partnerships, as well as network layout. There are many different solutions to choose from, but you stick with what is most familiar and usually specify the products for which you have been trained. Who wants to install an unfamiliar system that may create doubts and concerns during the installation and possibly result in the unreliability of the network? The installer who is willing to take on the challenge of learning new products, technologies and techniques will win out in the long run – that's who.

When ComNet Communications, LLC, a full-service, nationwide network design and installation firm, was presented with an opportunity to bid on the installation of a comprehensive, and somewhat "out-of-the-box," networking architecture for the North American headquarters of Diageo, they were eager to meet the challenge. Diageo, the world's leading premium drink manufacturer of spirits, wine and beer, recently built their North American headquarters in Norwalk, CT, that included a LAN and WAN network fashioned after a system installed in their European headquarters. Diageo's U.S. headquarters consolidated six other East Coast locations into a seven-story facility to house the corporate offices for management, mar-

**All the data and voice patching fields in the telecom room for the horizontal distribution were located on the backside of the panels.**

keting, accounting, human resources and I.T. With 800 employees at this hub, their networking system was key for the day-to-day worldwide operations of the company.

"Although there are cabling standards in this industry that we adhere to, no two installation sites are the same and there is no such thing as a standard site," states Frank Sullivan, account executive for ComNet Communications. "Diageo presented us with a unique system design which included challenging pathways and a LAN system that incorporated some of today's newest technology, including 10 Gigabit, Voice over IP (VoIP), an Intelligent Physical Layer Management Solution (IPLMS) and a passive wireless access system utilizing leaky coax cable," he adds.

## GOOD PLANNING PRACTICES

Good planning practices of the Diageo installation started with the I.T. department at Diageo and carried through to the consultants, Communications Project Management, Inc. (CPM) who has offices in Connecticut and New York, NY, and to ComNet, the installer. Unlike most installations where the installer is a sub-contractor of the general contractor, Diageo's I.T. team took full charge of the cabling infrastructure portion of this construction project and worked hand-in-hand with the installer.

The choice of active and passive equipment for their LAN network was dictated by the system designed and installed at their worldwide headquarters in the U.K. "We wanted to manage the

cabling infrastructure to assure it would correspond with the system installed at our headquarters. In doing so, we requested that CPM to select an experienced team of low-voltage installers; not to tag this responsibility onto the electrical installation team,” notes Ann Truskowski, infrastructure project manager for Diageo. Diageo I.T. provided the project specifications to CPM, Inc. who selected five installation companies for the bid. “ComNet was selected due to their experience, price and most importantly, willingness to become certified in new technologies to adhere to the customer specifications,” notes Austin Chavous, account representative for CPM, Inc.

### CREATIVE PREMISE PATHWAYS AND CLOSETS

Building the backbone, wiring closets (labeled “IDFs”) and horizontal infrastructure was challenged by the construction schedule, as well as the unique open layout of the floors, which consisted of cubicle offices, a centrally

**The leaky coaxial cable serves as the antenna from the multiple wall-mounted Cisco® wireless access points which are located in the telecom rooms on each floor.**



located service beverage bar and video conference rooms. The IDFs on each floor were vertically stacked and located adjacent to the elevator shaft. The building included a Development Lab and a Server Room. The Server Room is the centralized distribution point for all voice and data services within the building.

The data backbone (riser) cable consisted of a 50-micron armored fiber optic cable, manufactured by CommScope. “The backbone pathways were fairly common in layout in that the cables ran down the corridor from the Server Room, suspended by “J” hooks, to the IDF and then ran vertically through the IDF to each floor,” explains Lou Meola, senior project manager for ComNet Communications.

Close to one million feet of horizontal Category 6 cable was pulled to the workstations. This includes an average of 200 drops per floor with a total of 1,912 dual drops. Because of the VoIP solution, Diageo was able to install two cables per workstation outlet, reducing the overall number of cables runs.

“The horizontal pathways for the plenum Category 6 cable were homerun above the ceiling like the spokes of a wheel and ran down columns around the perimeter of the building and down

interior walls to the workstation clusters (outlets),” Meola explains.

### INTELLIGENT PATCHLESS PATCHING

Diageo’s standard for the horizontal channel solution was RiT PatchView® (cable, termination hardware and patch cords) that incorporates an Intelligent Physical Layer Management Solution (IPLMS). This consists of a comprehensive, standards-based, end-to-end structured cabling system with intelligent patch panels connected to RiT scanners. A comprehensive software program provides a complete real-time view of physical layer connectivity and its relation to the logical layers. A Web-based application integrates all the information, enabling customers to better control and utilize the network. On a day-to-day basis this system monitors the connectivity status and tracks users by connections, which aids in enhancing network security. The software enables I.T. personnel to identify endpoints in the system and expedite troubleshooting through real-time tracking. Long-term, this system allows taking network planning capabilities to the next level, generating accurate, real-time data and audit trails.

“The actual layout of the RiT connectivity system, particularly the patch panels, is unique because of the toggle switches on the front side, which allows all the patching to be located on the back side,” explains Meola. This is known in the industry as a “patchless environment.” In the Server Room and IDF, when looking at the patch panel, no patch cords are visible on the front since all connections (station cables and patch cords) are made to the rear of the patch panel onto 110-type hardware. The RiT logic for the switched 48-port patch panel is ports 1 and 25, ports 2 and 26, ports 3 and 27, etc. are internally connected within the patch panel. The connection of the associated ports is controlled by the toggle switch.

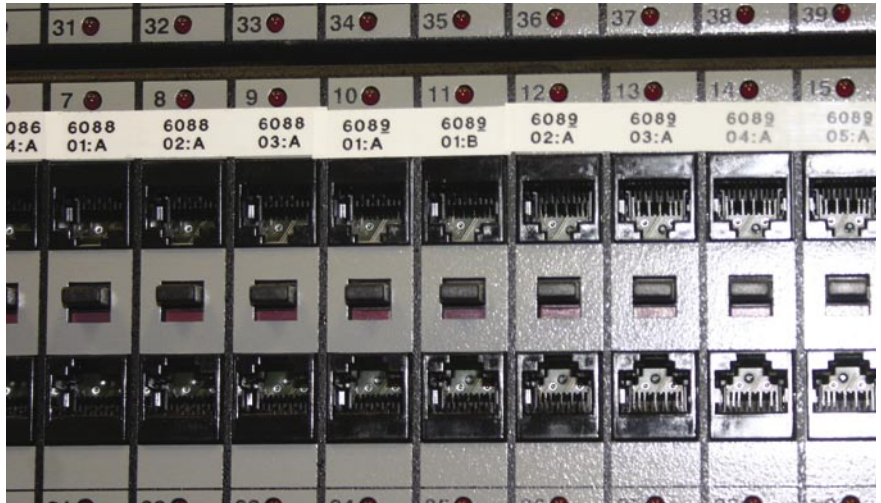
**The toggle switches on the front of the patch panels allow all the patching to be on the backside. This is known as a “patchless environment.”**

“Because one of the fundamental principles of ComNet includes satisfying all customer requirements necessary to maximize their ROI, we are committed to learning all new technologies presented to us. We had never installed a RiT system and so to understand the installation procedures and ultimately warrant the channel, we sent 13 of our on-site technicians and installers to the certification training,” notes Glenn Wagner, vice president of the Northeast division of ComNet Communications.

This type of system also relies on a RiT-certified crafts person to make any moves, adds, or changes as these ports are tied into a sophisticated cable management system.

**INTEGRATING A PASSIVE WIRELESS SYSTEM**

Amidst the wired network installation, ComNet was also challenged with installing a passive wireless distribution system for both data and voice. This platform, from InnerWireless®, Inc., is a coaxial-based, broadband antenna



system designed for the transmission of multiple Radio Frequency (RF) devices simultaneously over a passive antenna infrastructure. The “antenna” which runs both horizontally and vertically throughout the building, combines a series of broadband antennas and radiating (leaky) cable to support cellular, PCS, BlackBerry, and WiFi applications for all employees. Presently, four wireless service providers have installed nodes in the Server Room and have been integrated into the wireless network to improve signal reception in the facility.

“Leaky” coaxial cable, also known as “radiating cable,” provides excellent radio frequency (RF) signals in confined spaces and is most often installed in

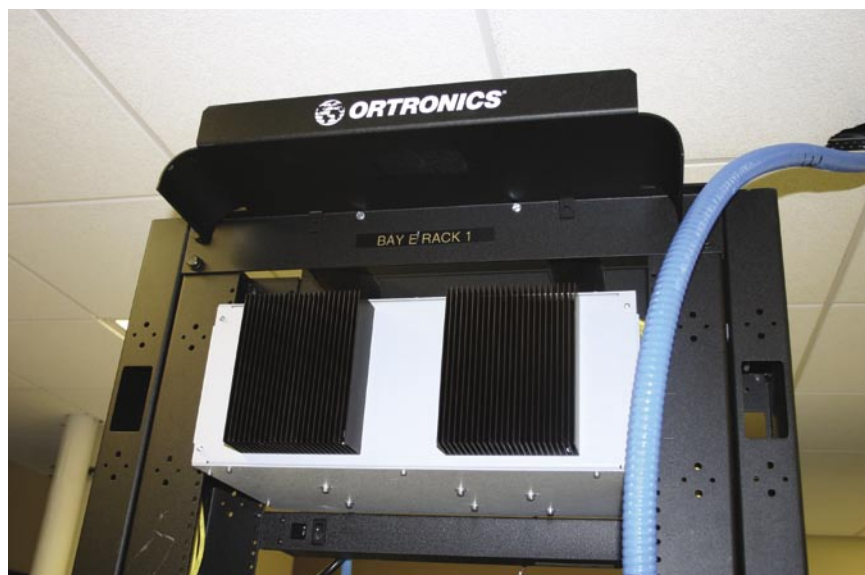
spaces such as above the finished ceiling, stairways, hallways, elevator shafts, steam tunnels, and so forth. It is a 50-ohm coax with a center conductor of solid copper, foam polyethylene dielectric, and a foil shield. The leaky coaxial cable serves as the antenna for the Cisco® wireless access points which are located in the IDF on each floor.

Although the coaxial system is simple, the network planning and cable routing is complex. “Because this was a totally separate network, we had to install it in separate pathways after the walls were already installed,” explains Meola. “Because of the rigidity of the cable and the weight, it took six guys to push the cable and six to pull at any given run,” he further describes.

“In addition to the weight of the cable, the aesthetics and architecture of our facility created a pathway challenge for the cable,” explains Truskowski. “Diageo utilizes metal domes in one of the office areas. The original layout was to install the leaky cable above the domes, but that would not work because of RFI, so ComNet quickly redesigned the antenna pathway to circumvent these metal domes,” she further states.

**UNDER THE WIRES**

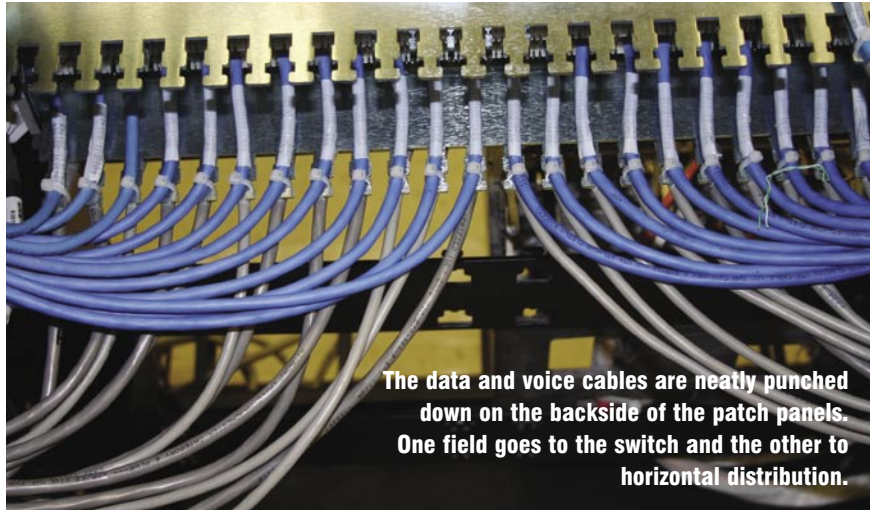
The entire cabling infrastructure was installed and completed at an exhausting pace. Time was critical because of the consolidation of offices from other locations.



**The wireless infrastructure is a totally separate network connecting from hubs in the Server Room to the access points in the telecom room with a robust leaky coaxial cable backbone.**

At any given point in the construction process there would be up to 25 ComNet cable installers and technicians on site. "We are like Rodney Dangerfield on the job site, as we get very little respect and have to work under the confines of the building construction schedule," chides Sullivan.

However, Truskowski and her I.T. team realize the importance of contractor-vendor relationship, in getting the installation done in a timely manner and done right. "The biggest compliment is when there are no complaints. Diageo's senior management commented at the opening celebration that this was the first time they have moved into a new facility where all the phones and computers were working perfectly on Day One," states Truskowski. ■



The data and voice cables are neatly punched down on the backside of the patch panels. One field goes to the switch and the other to horizontal distribution.

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