Upgrade choice not a gamble

Airport gets high returns with Gigabit Ethernet and its bundled air-blown fiber infrastructure.

As the second largest origin-and-destination (non-hub) airport in the world, and the host to 31 scheduled and four unscheduled/seasonal airlines, hundreds of concession customers, and nearly three million passengers per month, McCarran International Airport in Las Vegas has to be ready for just about anything from an IT standpoint. McCarran's network elements include a common-use terminal equipment (CUTE) system, which allows for seamless transfer of gates from one airline to another, and a terminal-wide, bundled air-blown fiber backbone, installed in the mid-1990s, supporting CUTE and all other operations within McCarran's local area network.

Recently, the airport underwent an upgrade to Gigabit Ethernet, further enhancing its security provisions and other network applications, and ensuring operational efficiency.

"We needed to provide the additional bandwidth required for faster transport of video for the Transportation Security Administration, our own security department and to the desktops of airport managers to ensure the quickest response possible in a critical security situation," explains Samuel Ingalls, McCarran's information systems manager. The upgrade would also accommodate the airport's need to test a voice-over-IP pilot program and to improve the speed with which its geographic information group could upload and download data required for mapping information shipped throughout the facility.

In executing the Gigabit Ethernet expansion for an airport-wide security surveillance system, Gerard Hughes, senior network analyst for McCarran, and his network design and installation team from NetVersant-Nevada Inc., discovered that 20 of the airport's 73 intermediate distribution frames were beyond the distance requirements that its gigabit core switch could support. Additional fiber was needed in the 20 closets that spanned from the gates to parking lot locations. This fiber would also need to support 30 additional security cameras and numerous data switches.

Prior to the upgrade, McCarran's air-blown fiber infrastructure from Sumitomo Electric Lightwave consisted of a highway of tube cable, each containing four cells or minitubes. In a continuous point-to-point stream, 18-strand, 62.5-micron multimode fiber bundles had been blown into one of the four cells, leaving three empty cells for future upgrades or expansions. For the current upgrade, installers opened a fiber-termination unit (FTU), where connecting tubes and fiber pathways can be identified and reconfigured. They then "blew" in the new 12-strand, single-mode FutureFLEX fiber bundles from Sumitomo with compressed air to the 20 closets.

At speeds of up to 150 feet of fiber per minute, installers placed 7,000 feet of the new fiber in approximately 1.5 hours. Only one additional tube cell was utilized, leaving another two empty for McCarran's next expansion. The project–from planning and setup to completion–took three days and two installers, with a cost of $13,000.

Hughes estimates that conventional cabling methods would have taken approximately five weeks to complete, employed at least four installers, and would have cost a minimum of $100,000.

In addition, Hughes estimates that had a conventional cable infrastructure been in place, it would have required an increased investment in materials and labor costs for the installation of additional conduit. At $10 per foot of 2-inch conduit, another $70,000 would have been added to overall project costs, he says.

"I don't want to oversimplify the process undertaken to achieve our upgrade, but with our air-blown fiber infrastructure any upgrades, network moves or changes are simple, easy and hassle-free," comments Hughes. "If McCarran had a conventional cable infrastructure, I would have had to worry about building permits for installation crews to pull new fiber cable, work-site and operational disruption caused by the workers, and time delays and difficulties in pulling fiber into our secure and limited access areas."

Since installation of fiber originates at the FTU, blowing fiber requires no work site disruption that would intrude on daily airport operations. From the FTU, fiber is blown wherever it is needed in and around the airport; including limited or no-access locations. When upgrading, McCarran has the option to blow out the fiber being replaced and actually reuse it in another application, saving its original fiber investment.

"The full upgrade to Gigabit Ethernet for administrative and operational network improvements is ongoing, such as the introduction of new flat panel monitors informing travelers of security directives and relaying other important messages," says Hughes.

McCarran's next major undertaking is expanding to a number of new gates. In those areas, installers will extend tube cable into the newly constructed locations, connect the tube cables to those existing with couplers, reconfigure the branching locations in the TDU, and blow in the new fiber, while preserving the integrity of the existing point-to-point, continuous fiber run.

By blowing fiber on demand, McCarran is implementing and paying for the expansions and any network upgrades, moves or changes incrementally in a pay-as-you-go approach. "We may be based in Las Vegas," adds Hughes, "but we just won't gamble with our network."

Air-blown cabling

The FutureFLEX Air Blown Fiber Optic Cabling System allows for easy installation by blowing small fiber bundles through a network of tubes–the pressure source is either compressed air or bottles of compressed nitrogen–at speeds of 100 to 150 feet per minute to anywhere in the LAN. The heart of the system is a highway of tube cable that is installed in place of traditional innerduct, conduit and pull boxes. The tube contains from one to 19 individually numbered tube cells–each with an internal diameter of 6 mm–inside a tough, outer jacket. A variety of tube styles is available, with versions designed to meet the requirements for use in plenum, riser, general purpose and outdoor applications. Outside plant cables are designed to inhibit water intrusion and can be steel armored for direct burial applications. FutureFLEX ABF uses the same type of glass as conventional fiber-optic cables, as well as the same connection and termination. It complies with all premises networking media standards.

For more information from **Sumitomo**: www.FutureFlex.com