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It's No Gamble! ACTTAB Wins With Class F Data Center Communications Solution

Challenge

The ACTTAB (Australian Capital Territory Betting Corporation) sought to upgrade its headquarters by implementing a communication system that will enable its business to meet present and future goals. The agency has 16 retail stores and 37 sub-agencies across the ACT, all linked to HQ. To handle rising volumes of network traffic, ACTTAB required a cabling system that would provide a robust, highly reliable, high bandwidth, flexible and cost-effective end-to-end solution lasting at least 25 years. This had to provide maximum system uptime of better than 99.99 per cent, and support bandwidths up to at least 863MHz.

Strategy

To meet TIA 942 compliance, consultants Face Value Solutions opted for independent testing and review of all standards-compliant Class F suppliers' latest copper solutions. VHFTV, UHFTV and real-time video applications were used to verify performance. After evaluating price and performance of competing cabling systems, the consultancy concluded that the critical criteria could be met only by CommScope's AMP NETCONNECT Communication Outlet (ACO) system, whose Open Architecture accommodates both current and future application requirements.

Results

Driven by high bandwidth cabling systems, ACTTAB will be operating one of the region's most advanced data centers. Based on both copper and fiber cabling, it will be one of the first designed and implemented in accordance with the TIA 942 international standard. Plus it will be backed by a 25-year warranty from CommScope. According to Face Value Solutions Director Jim Young: "Having a flexible, open architecture cabling solution throughout the network will allow ACTTAB to meet all their long term communications needs. They have all the performance necessary to support their most demanding business applications now and into the future."

Established in 1964 to provide legal off-course wagering in the Territory, ACTTAB has accepted over \$2 billion in bets, paid tax and other contributions of \$114 million to the ACT Government, and over \$115 million in distributions to the ACT racing industry. ACTTAB is a licensed Sports Bookmaker and operates Keno and Trackside by virtue of approvals under the Lotteries Act 1964. The agency is a member of the national TAB Sportsbet network, managed by Tabcorp.

In June 2007 there were 53 ACTTAB outlets throughout the ACT, including 16 retail stores and 37 sub-agencies in clubs, hotels, taverns and Casino Canberra, plus three on-course outlets at ACT race courses (thoroughbred, harness and greyhound). More than 4,000 account holders utilize Internet and telephone betting services. These were all linked to the agency's HQ building by a network that required upgrading to handle rising volumes of traffic.

The Challenge



The ACTTAB assigned responsibility for all consultancy services, including communications design, to architectural consultancy Face Value Solutions. Communications were scoped specifically by the ACTTAB to utilize the best copper cabling open architecture solution available. The brief required a cabling system that would enhance business with a robust, highly reliable, high bandwidth, flexible and cost-effective end-to-end solution, lasting at least 25 years.

The system was also required to provide maximum system uptime of better than 99.99 per cent to ensure acceptable levels of business performance and customer satisfaction. The implementation covered a number of demanding projects including the 16 retail stores, a new state-of-the-art office technical fit-out and, most important, the data center.

A critical technical requirement for all projects was the cabling system's ability to support application bandwidths up to at least 862 MHz for telephone and facsimile services, radio, VHF and UHF TV satellite services, as well as real-time video applications, plus any future high speed data requirements. The data center had to comply with the latest internationally recognized data center design standard – TIA 942.

To ensure a world class network infrastructure, Face Value Solutions wanted sample cabling solutions installed at the ACTTAB premises for independent testing and review. The review included all the possible standards-compliant Class F suppliers' latest available copper cabling solutions. VHFTV, UHFTV and real-time video applications were used to verify performance of the competing cabling systems.

The cabling system was required to support these applications efficiently and cost-effectively, requiring minimum specialist client skills and user-friendly interface capabilities. After evaluating price and performance of the alternatives, Face Value Solutions found that the criteria could be met and provided only by CommScope's AMP NETCONNECT Communication Outlet (ACO) System. ACO's main feature is an open architecture, which caters for current and future application requirements in the most cost-effective performance based manner.

The Solution

The unique, scalable ACO solution enables cabling standards ranging from Class D to Class E, E_A, F, F_A to be provided in a single solution. It gives the ACTTAB project a number of unique advantages. It consists of four pair "Category 7_A" (individually and overall screened) cables, characterized to 1200 MHz, high bandwidth edge connectors rated at 2 GHz and end-user interface connectors capable of re-configuration without re-cabling. The distributor is a modular patch-panel that matched the flexibility of the work area interfaces.

These interfaces (called inserts) are available to suit different applications, and enable sheathsharing to maximize the available copper pairs, whenever required. They can be exchanged easily in the field without requiring any cabling to be re-terminated.

The interface cords are standard off-the shelf equipment cords and fly-leads that prove extremely cost-effective compared to competing proprietary cords. They reduced the overall cost of the cabling system cordage by more than 75 per cent compared to the "proprietary cord" solution.



The ACO solution gives the client a bandwidth in excess of present ratified cabling standards (Class F, 600 MHz) as well as the draft Class F_A standard (1000 MHz) that is expected to be ratified sometime in 2007- 2008 – has it been ratified? This copper cabling standard supports not only the recently ratified 10 Gigabit Ethernet standard (Class F already does that), but possibly also the next Ethernet application, expected to be either 40 or 100 Gigabit Ethernet.

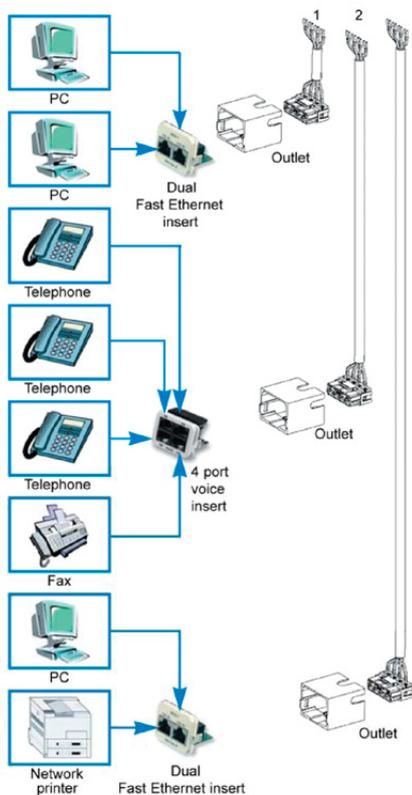
Other applications that could be implemented by the client include Power-Over-Ethernet and Voice-Over-IP. The ACO solution is well suited for these applications. Face Value Solutions decided early in the project that a shielded solution was the lowest risk cabling system, in an environment where communication systems are critical. Shielded cabling will overcome EMI issues during the system's lifetime, and reduce power requirements of the application equipment.

The Implementation

Retail ACTTAB Shops

A total of 16 retail ACTTAB shops will eventually be commissioned as part of this long term project. Already, 2 of these projects have been completed and commissioned.

The cabling in these shops utilizes the ACO capability of having one cable type ("Category 7_A") and the edge connectors to support different applications such as voice, data, UHF TV and VHF TV as well as real-time video. This elegant solution enabled the client to sheath-share the data, TV and video applications on one cabling channel.



Above: ACO solution allows you maximum utilisation of installed cabling plant

Data Centre

The most important criterion for this project was customer's need for maximum uptime, to be achieved within budget. It was determined that a Tier 3 (99.82% of the time) design for essential communications services - requiring N+1 component redundancy, Tier 2 for power and cooling requirements (99.749% of the time) – would achieve this. Three independent communication service supplies using diverse routes from different exchanges are provided to guarantee a downtime not exceeding 1.6 hours a year.

Supplementary support services including Electrical, Mechanical, Fire and Security services were of a critical nature, and were implemented as part of the Services Facilitation and Value Management process both in design and construction.

The integration and installation of a Marriof Hi Fog Water Mist System was implemented for secondary level protection of electronics and protection of the data center both within the Patch Cabinets and the sub-floor areas. A marine application used in a Data Center is innovative in its application and implementation.

The cabling system is laid out in accordance TIA 942 topology, with the main distributor connected to patch panels in the equipment distribution area using Category 7_A horizontal cables. The ACO patch panels are loaded with the appropriate inserts to suit various applications running in the switches and servers.

Over 2,300 inserts were required for the data center. The types included single ports, dual ports, quads and blank inserts. The blank inserts reduce initial costs and allow the client to use the appropriate interface when required when the system is operational. More than 9 km of 7_A, 1200 MHz PiMF LSZH cable was used. The low smoke zero halogen cable was selected to reduce toxicity and halogen emissions in case of fire.

The office horizontal cabling sub-system and Call Center

In this segment, the ACO Class F_A provides the benefit of sheath-sharing by providing voice and data services over one four-pair cable. The horizontal cable is terminated on 2 GHz edge connectors mounted on shielded housings in Clipsal faceplates at the work areas and patch panels at the distributor.



Installation Requirements



The "Class F_A" installation is a shielded balanced pair-cabling system that is gaining acceptance in the Australian market place as a future-proofed copper cabling solution. The cabling reticulation is supported in appropriately designed cable pathways.

The ACO system enables the number of cables to be reduced if required, minimizing congestion in the pathways, especially in the workstation channels and skirting ducts. The minimum bending radius of the Category 7_A cable needs to be considered in selecting appropriate pathways. Less cable helps in reducing a potential overcrowding problem. Terminating the shielded cable on the edge connectors in the work stations is simplified by the ACO connector's ability to provide for right angle entry. This eliminates any potential problems with the minimum bending radius. The ACO outlets are terminated on to Clipsal single port faceplates, specifically designed to suit these housings.

The installation company, Diverse Data Communications Pty Ltd, was selected after an exhaustive process in which they were required to demonstrate their understanding of the client's requirements as defined by Face Value Solutions, and provide the most cost-effective implementation. People from Diverse Data Communications attended the training courses in design and installation, required for their accreditation.

The Results



One of the main goals of this project called for the best long term return on investment throughout the communications infrastructure. Face Value Solutions realized the client's fundamental dependence on a reliable and robust communications system to deliver the business outcomes. The CommScope solution delivers a communication cabling system that offers the best bandwidth on copper and optical fiber, both for the present and well into the future.

The data center, administration, call center and retail outlet are all able to support the same applications as a consequence of using the same design philosophy and implementation.

ACTTAB was impressed by the attention to detail and professionalism demonstrated by Face Value Solutions. Criteria for flexibility, simplicity and future proofing in the cabling solution has been demonstrably satisfied. All criteria for the various parts of the project satisfy the client's requirements. ACTTAB has a long term 25 year warranty, backed and supported by a large solution vendor.



ACTTAB IS NOW operating one of the most advanced Data Centers in the region as a result of the high bandwidth CommScope communication cabling systems. The agency's data center is believed to be one of the first to be designed and implemented in accordance with the TIA 942 international standard for data centers. Face Value Solutions concluded that it was the best engineered cabling solution for ACTTAB requirements. Face Value Solutions Director Jim Young said: "Having a flexible, open architecture cabling solution throughout the network will allow ACTTAB to meet all their long term communications needs. I'm satisfied that the agency has all the performance necessary to support the most demanding business applications, now and into the future."

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