Mining companies turn to fiber to retain staff

The situation

The accommodation villages built by resource and mining companies are home to their workforce while they are on roster. They are often situated in remote and barren locations and need to provide a comfortable and congenial environment for staff off duty. Because there is little difference in working conditions between mines, the quality of facilities on offer can become an important differentiator to help attract and retain staff. Hiring costs can be as high as 25% of salary, so companies are focused on retention projects such as offering enhanced in-room entertainment and communications facilities.

The solution

In the past, TV connections were provided via Coaxial cable and a separate Ethernet cable if Internet was offered. Copper cabling is limited in its reach and can become both complicated and costly when active switches and over voltage protection need to be installed. The solution preferred by mining company engineers is to implement optical fiber access networks.

The outcome

Fibre access networks offer great flexibility, allowing companies to deploy appropriate services on a common cabling infrastructure. In some instances, this can include different levels of service to different parts of the village. They can also easily add or upgrade services as they see fit. Being able to offer their staff connection to families back home, as well as entertainment and information services, is a significant retention incentive.

"The strong product portfolio we have has enabled us to work with the engineers to create solutions for the unique environment and cabling topology encountered in the villages."

Jason Pullman, Enterprise Sales Executive, CommScope.

Solution specifics

CommScope offers a range of fiber products suitable for a mining accommodation village, including:

- Loosetube, nylon jacket, sacrificial cable

- Pre-termination of cables

- Fibre Entrance Cabinets suited to splicing large numbers of cables

- FL2000 Fibre Distribution Frames with integrated patch cord management

- FL2000 Termination Panels and WDM Chassis with clear port identification and cable management

- FiberGuide® for patch cord protection and management

- Fibre Distribution Hubs to house passive optical splitters and fiber ports for G-PON deployment

- Passive splitters and WDMs

"We work with mining company engineers to enhance the living conditions for their staff, but this isn't exactly a suburban environment. The strong product portfolio we have has enabled us to work with the engineers to create solutions for the unique environment and cabling topology encountered in the villages." Jason Pullman, Enterprise Sales Executive, CommScope.

Extreme conditions call for tough solutions

The Pilbara environment is not for the faint hearted. Extreme heat, fine pindan dust, frequent lightning strikes, occasional cyclones and prolific termites provide significant challenges for both people and equipment. When it comes to access network cabling, mining company engineers want a solution that can withstand these difficult conditions, is straightforward to install and requires little maintenance. As a result, many sites have adopted a policy of using optical fiber to build their residential connectivity networks.

Conventional installations specify Coaxial cable for TV connections with separate Ethernet cabling for Internet services, but this solution comes with inherent complexities. Being copper, overvoltage protection is a necessity for personal safety and equipment safeguard. Ethernet cabling also has a limitation of max. 100m channel length, which is cumbersome in accommodation camps where there are many buildings in a large area. Active switches need to be distributed around the village and each switch requires an IP rated enclosure, power and cooling. In short, conventional cabling can be costly and complex to install and maintain.

Optical fiber, on the other hand, has some significant advantages. It offers much greater bandwidth, allowing Triple-Play services to be provided to each room (Phone, Internet and TV). There is no limitation on distance between points in a village, it is termite resistant and does not require lightning protection. For remote and difficult environments needing high levels of reliability, carrier-grade optical fiber is the solution of choice.

CommScope in WA worked with local engineers and contractors to develop a tailored solution for the mining villages. "We spent time with the clients to understand the details of the various locations and the issues that needed to be addressed in the solution concepts. This allowed us to define a suitable product set and minimise onsite labour by using pre-terminated cables," said Jason Pullman from CommScope.

A number of mining sites in the Pilbara now have CommScope optical fiber networks based on carrier-grade product families. These have been specifically adapted to handle the tough environmental conditions and unique topology. Some villages have a Point to Point architecture using the FL2000 Fibre Frame with integrated slack storage. This solution makes it possible to standardise on a few set lengths of patch cords between all active equipment ports and the access network termination panel.

Other sites have installed G-PON with passive splitters. Each topology requires a different approach and CommScope's KRONE portfolio includes proven solutions for both.

Integration and support

Once a network is built and tested, it is handed over to integration companies. They design the active equipment layer including systems to deliver Video, IP and Voice services, and connection to the backhaul. These companies are often also responsible for the ongoing support of the network.

Netwire Pty Ltd designed, commissioned and managed the communications networks at several of the mining sites. Pravin Bechar had a defining role in the selection of technology and the services provided. "The design of a fiber network is largely based on the site layout. CommScope offers a flexible product suite that allows us to provide our customers with a consistent approach and quality of service. It also removes the overheads associated with copper cabling in the outside plant. The reduction of active field components can have a large impact on the total cost of ownership," said Bechar.

"The underlying infrastructure needs to be very reliable at these remote sites to avoid disruption and service calls."

— David Spencer
Operations Manager, Swift

Pre-terminated sacrificial sheath cable is used to prevent termite damage

Pre-terminated fiber cables from the FL2000 Distribution Rack connect to the Fibre Entrance Cabinet for splicing to outside plant cables

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Swift Networks also provided some of the sites' content solutions and integration. David Spencer, Operations Manager for Swift, was impressed with CommScope's KRONE cable solution: "We offer a leading edge IP Digital Entertainment solution delivered over optical fiber. The underlying infrastructure needs to be very reliable at these remote sites to avoid disruption and service calls."

Working with local expertise

Several companies worked with CommScope to install these access networks:

OTOC Australia offer complete one stop solutions for mine camps. "The KRONE pre- terminated solution has reduce the onsite costs associated with deploying a FTTX network" Travis Young, Communications Manager, OTOC.

Cable Logic Pty Ltd leveraged their extensive fiber experience to cable three villages. "We see FTTX as a growth area and appreciate the experience and local support provided by CommScope." Brett Easton, Director, Cable Logic.

Another company that has embraced the growth of FTTX is distributor **OSA (Optical Solutions Australia)**. State Manager Eugene Botha said: "Our focus is on fiber solutions, both passive and active. We have had extensive training from CommScope to ensure we stay at the forefront of this technology. We supplied CommScope's KRONE solution for the first mining village and have done several since."

For more detailed information, please refer to the "Communications and entertainment cabling for accommodation villages" white paper by CommScope.

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