

Fibre access - standing on the shoulders of giants

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Fibre access is being used in a wide variety of locations worldwide to deliver ultra high-speed broadband services. Gigabit services over fibre have been deployed efficiently and effectively in some of the most challenging situations.



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In every corner of the world, we are seeing exponential growth in communications bandwidth driven by the emergence of an all-digital, all-video world. Communities, urban and rural, public and private, in both developed and less-developed regions, are increasingly looking at the varied methods they can employ to meet the demand generated by this shift, and bring gigabit speeds into homes and businesses.

I have always been impressed by the creative solutions that service providers, communities, and enterprises invent to meet the broadband needs of their subscribers while balancing their business requirements. Whether deploying projects in some of the most remote regions of North America, Europe, and Australia, or serving the broadband needs of the densely populated cities of Africa, Asia, and South America,

broadband communities have adapted to their unique circumstances and applied innovative solutions in truly inspiring ways.

Rural environments

A typical example is the Cybermoor project, which is bringing gigabit speeds to one of England's most remote communities. Situated in the heart of the Pennines, Cybermoor serves Alston Moor, England's highest market town. The project was launched in response to a UK Government initiative and was set up as the UK's first broadband community cooperative.

The project utilizes powerful Gigabit Passive Optical Network (GPON) technology, a flexible, highly versatile technology that is now becoming widely available, to drive advanced services throughout the community.

This advanced broadband network is capable of delivering a host of new services to the community, including high-definition video, faster movie downloads, and access to telehealth, e-learning and other e-services.

In central Sweden one cable TV operator has adopted a decidedly different approach to providing advanced broadband services in its mixed urban and rural environment. In Köping, the local cable TV operator, Köpings Kabel TV is providing a fibre-based network that will deliver broadband and e-services to the community by using the existing cable ducting and infrastructure to deploy fibre throughout the network. Pulling fibre to each building using traditional hybrid fibre coax routes, Köpings Kabel TV has replaced its traditional cable TV offering with a superfast fibre-based service that delivers an array of new services. Taking advantage of

a unique situation where its parent company operates multiple dwelling units (*MDUs*) throughout the city, K pings Kabel TV is using its advanced network to not only offer over 100 channels of HDTV, super high-speed data services, and VoIP, but also to conduct surveillance, monitoring, and remote adjustment of boiler rooms for heating, ventilation, and alarm systems.

Meanwhile in North America, the U.S. Broadband Stimulus program has revealed a large number of interesting fibre access projects that have changed the face of their communities. In North Dakota, for example, a variety of local telephone companies have banded together to bring live local high school sports to over 23,000 households over an area of over 6000 square miles. Local students perform the filming, and content ranges from local youth sports to church services and community government, educational, and cultural events. A truly local cooperative initiative, these companies have leveraged their fibre infrastructures for social purposes, and in doing so created a new generation of technology savvy youth.

In another scenario, in the mountains of Northern California, Volcano Communications is providing over 10,000 access and 5000 broadband lines to mountain-top ski resorts located in some of America's harshest terrains.

A host of other examples across the USA demonstrates communities transforming their networks by migrating from copper to fibre, or combining both to deliver new high speed services. In Minnesota, Arvig serves over 60,000 subscribers enabling advanced services for rural businesses and anchor institutions, whilst in the same state Paul Bunyan Communications is utilizing a new GPON architecture to introduce new operational efficiencies for business and advanced broadband services.

On the other side of the world, a small iron ore mining settlement in the Australian desert now has state-of-the-art broadband connectivity thanks to fibre access technologies. Situated in one of the most remote locations on the planet - four hours by four-wheel drive from the nearest airstrip - it is an environment that is characterized by extreme heat (50 to 55 C), drought, dust from the mining operations, vibration from explosives and heavy lorries, and challenging weather conditions. Yet the fibre network installed there is delivering GPON-based triple play voice, video and Internet access

for around 2500 miners, managers and family members, video surveillance and information transmission inside the mines, and the vital link for supplies and transportation arrangements and so on with the outside world. It is one of the toughest projects on the planet, but its success shows how the broadband gap between urban and remote users can be bridged using leading edge optical technology.

Business communities


At the other end of the scale, in densely populated Belgium, Num ricable is an example of a cable operator that is seizing the capabilities of fibre to deliver advanced services to the business community. The company has over 1000 business customers, including over 90 per cent of all the hotels in Brussels. Accordingly, the hospitality sector will be one of the first to benefit from the GPON technology the company is deploying. The network will enable hotels to offer high speed Internet services and IP telephony alongside the traditional analogue television services in guest rooms, including personalized and interactive TV services. With an extensive fibre network already in place, the new GPON solution will significantly increase the number of customers connected over each fibre, resulting in an estimated reduction in costs to around one-third of the price of other telecoms operators in the region. Num ricable's advanced networks support GPON and point-to-point Gigabit Ethernet technologies to deliver world-class broadband services, including Internet Protocol Television (*IPTV*) and RF video, on-demand audio and video, IP telephony, instant messaging, and broadband speeds of up to 1 Gbps over fibre. For businesses, this opens the possibilities of interactive and high-definition digital video streaming, allowing video conferencing and video surveillance applications. It will also support multi-site connectivity enabling LAN-to-LAN and VPN networks, high-speed data communications, file transfer, and extensive use of the cloud.

Recent studies utilizing data drawn from dozens of these deployments show Internet data traffic across the networks monitored is increasing at a rate of over 50 per cent per quarter. Fibre access, with its virtually unlimited bandwidth, is the only technology that can keep pace with this accelerating demand.

Service providers agree that all-IP services, via Ethernet, over fibre and

wireless will be the ultimate network infrastructure of the future. The challenge has always been how to get to this state efficiently and effectively. Communities across the globe have consistently found ways to make fibre deployment work - primarily because it was the right thing to do for their networks, their businesses, their subscribers, and their communities.

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