



Understanding Open Access - An Overview



Introduction



We're in a time of change and one of the main things we have learned is that it is no longer enough to just have internet; one must have quality, high-speed access. The future now seems to be dependent on access to gigabits of broadband capacity. That capacity will depend on fiber optics. And for the unserved and underserved, fiber internet access is going to depend on open access fiber networks.

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What is Open Access Fiber?



Open Access is the term for a fiber network that is open with access granted to independent service providers to offer their services on one physical network infrastructure. A true open access network does not sell broadband services, but is the installed network of fiber optics that lets anyone else sell broadband services. This open system lets service providers offer fiber internet to their subscribers without building and installing a costly fiber network on their own. The truly open access network is all about the infrastructure (the fiber optic lines, wireless access points, etc.). The open access network provides the already built infrastructure that anyone else can build on and become a broadband service provider.

The open access network is similar in concept to the highway system. Roads are built with public funds and vehicle taxes, and then used by everyone - delivery drivers, taxi cabs, trucking companies, regular citizens, etc. to deliver services or get around. But the roads are not the source of revenue for the municipalities that built them. The net gain of building the road system (or fiber network), comes in economic development, improvements in quality of life, and other indirect benefits rather than direct profits.



Building open access broadband networks along these same principles fosters competition and produces economic gains and growth in the communities they serve. In the United States, this model has been slow in developing, partly because of government regulations and the power of some corporations to shape policies. The leaders of the telephone and cable TV industries realized that by leveraging existing infrastructure they could control access to the internet. By using a model where they owned the infrastructure and were the only internet service providers operating on that infrastructure, these single-service providers became the only game in town. But with the spotlight on unserved and underserved rural areas that desperately need fast internet, the policies are seeing big changes.

Now there's an alternative to the single service provider. An open access network model is a fiber optic network built and operated as infrastructure by the owner/operator and is then shared by multiple service providers on that single infrastructure.



Why Open Access?

Creating a fiber network is a financial challenge. The installation of the fiber optic cables which includes permissions, excavation, project management, hardware and labor, is costly. However, once the system is built, it's less to run than other systems and less vulnerable to climate and other maintenance issues. Fiber is future proof and will handle internet growth for decades, without any new investment needed. So, while fiber costs a lot at the outset, it will only become more valuable over time. If we have learned anything throughout the global pandemic, it is that high-speed broadband is no longer a luxury, but a necessity. Open-access fiber will ensure this.

Open Access is a workable way to connect areas where service providers can't generate enough revenue to justify building a network infrastructure. Bringing an affordable fiber model to rural communities changes the way those communities do business and helps bridge the world's digital divide. Open access fiber networks can be the foundation for providing fast Internet to unserved areas and for providing services like remote healthcare, e-education and work from home abilities these areas would not ordinarily have.

Open access also has the benefit of not requiring a service provider to pay for the expensive infrastructure. Instead, it gives any provider a roadway to communities that may have been unreachable before. An open access network lets several service providers compete over the same network at wholesale prices, which lets them make money in a shorter timeframe. The community or entity that owns the network, recoups its costs over the long-term while also providing more and better services to its citizens. The infrastructure build is typically financed through low-cost bonds that do not place a financial burden on the community coffers.

Who Owns the Network?

Investment in an open access network is usually a collaboration between the public sector and private businesses, but that raises questions about who controls the network and who makes the decisions about the network. Unlike common network systems, open access separates the physical framework of the network from the services. A community (which is generally, but not always a public entity such as a municipality) owns the network and operates it themselves or contracts with another company to operate it. Once built, multiple ISPs will provide the services on it to the end users. There are two prime types of open access arrangements: two layer and three layer.

Two-layer

In a two layer arrangement, the municipality or community builds, owns, operates and maintains the network. Services are then provided by various ISPs and run on the network.

Three-layer

In the three layer arrangement, the municipality builds and owns the network, but a separate, independent firm operates and maintains the network. The multiple ISPs provide the services to the end users.



Types of Open Access

Open access networks operate in the United States in three distinct models. It's essential for communities to understand the differences among these open access network models in order to make educated decisions about which type of network suits their needs best.

Open Access Dark Fiber Networks

One open access network type is called the unlit or "dark fiber" network. These networks do not have active electronics to push the broadband services to the user's home. The community builds a simple infrastructure to the curb. The end user then selects an internet service provider (ISP), and that ISP finishes the connection to the end user's home or business with its own infrastructure and electronics.

If the network contracts more than one ISP, then duplicate equipment overbuilds are made. The initial cost for the network owner (community or other entity) is lower, but with this model, the community doesn't control the full path to the end user, which means your network's fate is in the controls of others (the ISPs).

And by giving up control over that last section from the curb to the home, the dark fiber network defines the usability of each strand of fiber. For the end user at home, that means there's no way to connect to other services like telemedicine, education, or smart grid communications that may be available from many other service providers. The dark-fiber model also may not scale easily because of difficulty in anticipating the required fiber count to meet demand. This can generate complications for the network operator.





Open Access Middle Mile Networks

An open access middle mile network is a long distance network that usually has extremely high capacity and serves as a central pathway and includes technology arteries into communities to bring services that can be used by multiple service providers. These long networks lease access to local, regional, and national ISPs so the ISPs don't have to make the massive investment of network deployment across vast distances. The network owner and operator builds and maintains the road. Everyone who wants to use it pays a fee to the owner.

In contrast to the dark fiber model, manual open access takes the network past the curb. This gives the network owner/operator control of both ends of the network. This model lets end users switch service providers through a web portal, increasing their choices of provider. However, this is a manual open access network and is more complicated than the single ISP network of the dark fiber model. Humans manually manage network tasks and any time more service providers are added to the network it adds to network complexity.



Lit Open Access Networks

A lit (the fiber optics are active) open access fiber to the home network means the network is open to many service providers all the way to the home or business. In this third model, the network operator places electronics at both ends of the network, and subscribers can select service providers in real time. This means that the entire network is prepared for several service providers to hop on and deliver services independently across a single wire all at the same time. This is done without making any major infrastructure investments. When the end user selects a new service provider, the switch happens on demand.

The ability to switch ISPs on demand provides choice and encourages competition for delivering services to end users. However, for this type of network deployment, the initial cost to the network owner is higher.

Regardless of the type of open-access network used, it will be far better than the siloed ISP networks. A fiber optic, open access network gives a community a robust broadband network that can serve all of its communication needs. Such a network is also more likely to advance community equity because the resulting lower costs will increase access for all households.

The Benefits of Open Access Fiber Networks

Open access fiber has been gaining ground over the past few years as governments and municipalities are noticing the many advantages that it provides. Open access is one of the most efficient and practical ways to connect rural areas, where service providers usually find it difficult to generate enough revenue to justify the investment.



Competition and Choice

For years, the lack of competition in internet provider choices is a major frustration for consumers and a key factor that protects premium prices for the big ISPs.

Alternatively, open access networks are presenting communities with multiple provider choices. These various providers are all delivering services simultaneously and on equal terms on the same fiber infrastructure. This gives customers an actual choice in an industry where true competition is almost nonexistent.

Inconsistent quality of the service for residents and businesses has also been a problem and customers had no choice but to live with the poor service. Competition is one means of ensuring high quality. If people can easily switch away from their ISP, that ISP has an incentive to provide better services since they are competing with other providers on the same network.

Another competitive advantage is that in an open access network a single ISP doesn't own the infrastructure, so it can't leverage the infrastructure to protect its pricing or block outside competition.



Better End-User Experience

Fiber broadband, without a doubt, ensures a better customer experience for the end user. Open access fiber gives end users high speed internet at an affordable price.

Aside from the ultra-high speeds, open access networks increase the actual quality and variety of services they have to choose from. The ISP will have opportunities to upsell content, such as new streaming partners, or service bundles. This benefits both the ISP and the consumer. In this environment, ISPs are competing for customers with other ISPs and this gives them incentives to innovate with new services and rate plans rather than locking out competitors with a monopoly. This makes the network more attractive and delivers a higher number of subscribers, which is the number one value driver.



Economy

An open access network project is a boost to a community and the local economy, spurring development and creating an attractive environment for both businesses and residents to thrive.

First, it improves the economics of deploying fiber because more consumers are subscribing. Instead of a typical subscriber rate of 20% to 30% for fiber deployment, the open access network model can see rates of up to 60% because customers of the various service providers are accessing the same fiber cables.

It is also a network that other companies can use, reducing the need for numerous companies to build and disrupt streets with separate disparate fiber networks. It lets the infrastructure owners have just one or two communications attachments to their existing poles, reducing the number of poles that need to be installed or replaced, which is a high cost for deploying aerial fiber projects.

An open access network deploying in low population density areas is more workable and affordable because of the high costs associated with trenching, right-of-way permits, and the required network infrastructure.

Challenges for Open Access Networks

However, while the advantages of an open access fiber network are many, it still comes with its own unique set of challenges.

Challenge 1: Attracting the Service Providers to the Network

There's not much of a benefit for an open access network without service providers offering a variety of competitive services. In order to ensure the network's success, there should be at least one core provider at the start. Some community networks begin with an operator who also acts as the ISP. For a set period of time, the operator will be the sole ISP before opening up the network to other ISPs.

It may take time for ISPs to join the network. While the larger incumbent ISPs rarely want to do business in an open access model, other smaller, local ISPs may sign on. Some communities hire a specialized person, such as the network director, to recruit the service providers. Others wait for a network's reputation for speed and reliability to entice ISPs to the new market.

Challenge 2: Building and Maintaining a Reliable and Dependable Reputation

After contracting with service providers, the community must build up and maintain the reputation of the network. In some cases where an ISP acts in bad faith, a network's reputation will struggle to rebuild its brand and attract new, better ISPs. Researching track records of the private ISPs will avoid those that over promise and under deliver so the network's reputation isn't compromised.

Challenge 3: Preventing Competition Based Only on Price

If the sole difference between service providers is price, then eventually people will simply choose the cheapest plan and the ISPs will start to consolidate. This will diminish the options for the subscriber, leading to the situation that open access is meant to avoid. ISPs will have to differentiate their services, preferably by providing the best customer support and the newest services in order to stay competitive and in business.

Conclusion

The future of fiber doesn't belong to one company. Connectivity for homes, businesses and schools will be enabled by many service providers through a common infrastructure. Many ISPs will have the ability to offer plans in new markets, and subscribers will pick the one that they like best. This creates competition in an area where it is severely lacking.

However, open access isn't just about networks. This is about communities understanding how connectivity enhances innovation and provides value to the entire community through the network services. By understanding what is possible, communities can grow, take advantage of opportunities for improvements and make informed decisions about the future.

How ZCorum Can Help

Planning a fiber broadband network is a large undertaking, but it doesn't have to be overwhelming. With guidance and structure, you can overcome objections such as 'We don't have the personnel to do that.' 'How do we manage the infrastructure buildout?', 'How do we keep up with all those calls for service?'

ZCorum has the tools and the expertise to help you manage your network and end user support to take care of your subscribers and keep them happy. We already do it for many other communities.

Practical Questions for Potential Open Access Providers

When you're exploring broadband network options, we advise you to ask lots of questions to see what makes the most sense for your community's needs. Here are some simple questions that you can ask any potential open access network builder to understand their network model more fully and avoid potential errors in selection.

1. Can multiple different service providers deliver services at the same time over the network?
2. Can end users see these services and choose from them?
3. Can ISPs create new services and easily add them to the online service choices to end users with no assistance? (For example, an ISP should be able to create and add a new service, such as a 100Mbit/s package, to their list of offers to end users automatically without any additional network development).
4. Is it possible to talk to some existing customers? A good open access partner will be happy to let you talk to customers.
5. Is the network hardware interchangeable? If not, the network could be tied to one hardware vendor. Such lock-in can lead to higher prices or to problems if the vendor experiences difficulties down the road.
6. How will the network be maintained?
7. What track record does the provider have? It's better to work with someone that has seen and done it all before. If the provider can't deliver against the above, then you're risking having lower penetration and unhappy customers that don't have the control or range of services they desire.



**4501 North Point Parkway,
Suite 125
Alpharetta, GA 30022
1-800-909-9441
info@ZCorum.com**

ZCorum provides broadband Internet and communication solutions to telcos, cable companies, utilities, and municipalities, assisting in all facets of broadband implementation, integration, engineering and consulting, network monitoring and diagnostics. ZCorum also offers wholesale, privately labeled Internet services, including data and VoIP provisioning, email, Web hosting, and 24x7 support for end-users, enabling service providers to compete effectively in their local rural and suburban markets. ZCorum is headquartered in Alpharetta, GA.