Types of Access Networks: Cable, FTTH, Dial-Up, and Satellite

Let's discuss a few other common access networks.

WE'LL COVER THE FOLLOWING

Cable Internet

- In the case of cable Internet, the TV cable company is the ISP and it relies on the preexisting infrastructure of cable TV to grant Internet access.
- It runs on *coaxial cable*. Coaxial cable has enough of a frequency range to carry TV channels and a stream of upstream and downstream Internet.

How It Works

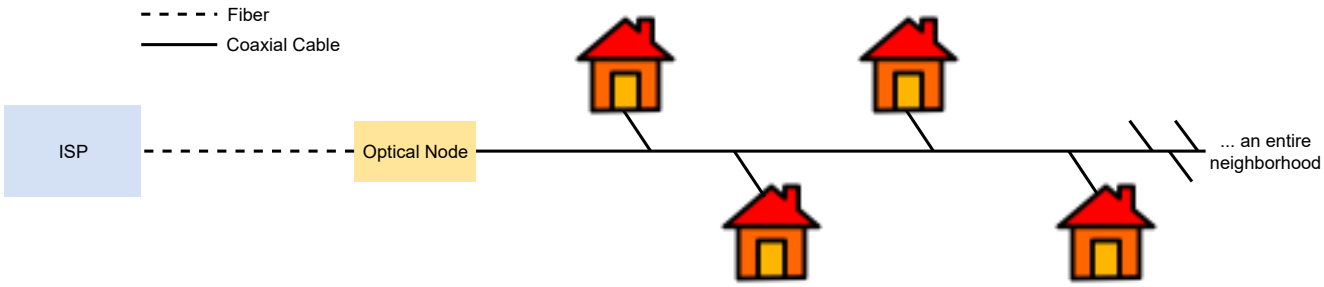
- In essence, cable Internet works very similarly to DSL.
- A device on both the user's end and the ISP's end modulates the analog signals to digital and vice versa.

Slower During Peak Hours

However, cable Internet can be slower during *peak hours*, when a majority of users are online at once. This is because cable Internet is a *shared broadcast medium*: every signal that comes from the ISP is sent to every single home regardless of which one it was meant for.

Hybrid Fiber Coax

Usually, cable Internet works with a combination of coaxial cable and optic fiber (which we'll discuss in the next chapter), where the fiber connects optical nodes that exist in every neighborhood to the ISP and coaxial cable further connects the nodes to the houses. This is sometimes referred to as a hybrid fiber coax (HFC). Have a look at the figure below to see how hybrid fiber coax works.



Hybrid Fiber Coax

Transmission Rate

According to DOCSIS 4.0, cable Internet can now operate in symmetric speeds (where both upstream and downstream channels have the same speed) of up to 10 gbps.

Fiber To The Home: FTTH

Although DSL and cable Internet are incredibly popular, Fiber To The Home or **FTTH** is another access method. Optic fiber cables are claimed to be the cleanest method to transmit data. We'll discuss them in more depth in the next lesson.

Transmission Rate

FTTH can be very fast – up to 2.5 gbps

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Dial-Up

Dial-Up uses a modem over the telephone line, but does not fully utilize the spectrum of the transmission medium. It only uses the traditional voice channel frequencies. Hence, it is slower than DSL.

Transmission Rate

Dial-up is non-broadband and very uncommon now. The speed is at most 56 kbps.

Satellite

The Internet can also be accessed via satellites. This can be beneficial in remote areas where other physical access networks are not available.

Transmission Rate

This would depend on a number of factors including the kind of satellite. Some setups can provide incredibly fast downlink and uplink connections, however, on average, the download rate is at around 1 mbps and the average upload rate 256 kbps.

Quick Quiz!

1 Which access network utilizes telephony infrastructure on the last mile?

In the next chapter, we'll start to look at types of computer networks.