Chapter One

Internet Connection Types

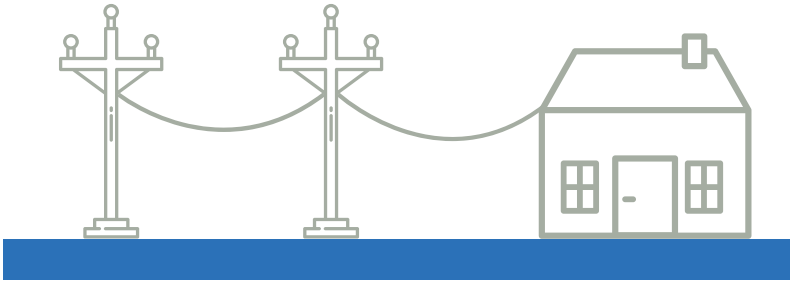
In this chapter you'll learn about the difference between Coax, DSL, Fixed Wireless and Satellite internet connections and what each one means for your speed needs and how you can expect to experience the internet. You'll also learn which WiFi frequency band you should be connecting to based on how you want to use the internet.

Internet Delivery Methods

Coax Cable

Cable Internet is one of the most popular Internet connections. It is the most prevalent option in more densely populated areas. It delivers fast, reliable Internet via a cable straight to your home. The signal travels from a central location called the “head end” and spreads out from there to connect many neighborhoods and homes. Think of a head end as a source, or the signal of origin. The cable goes to your home, then connects to a modem. From there you can either connect to the modem directly or connect a router to provide a wireless connection for your devices.

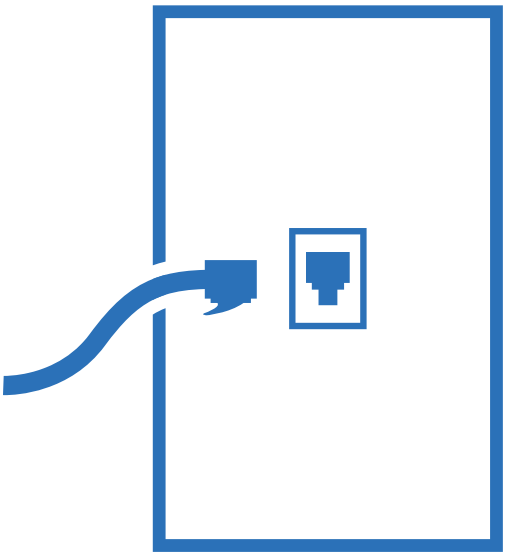
Aerial Cable



Buried Cable

The two ways you could be connected to coax Internet

DSL

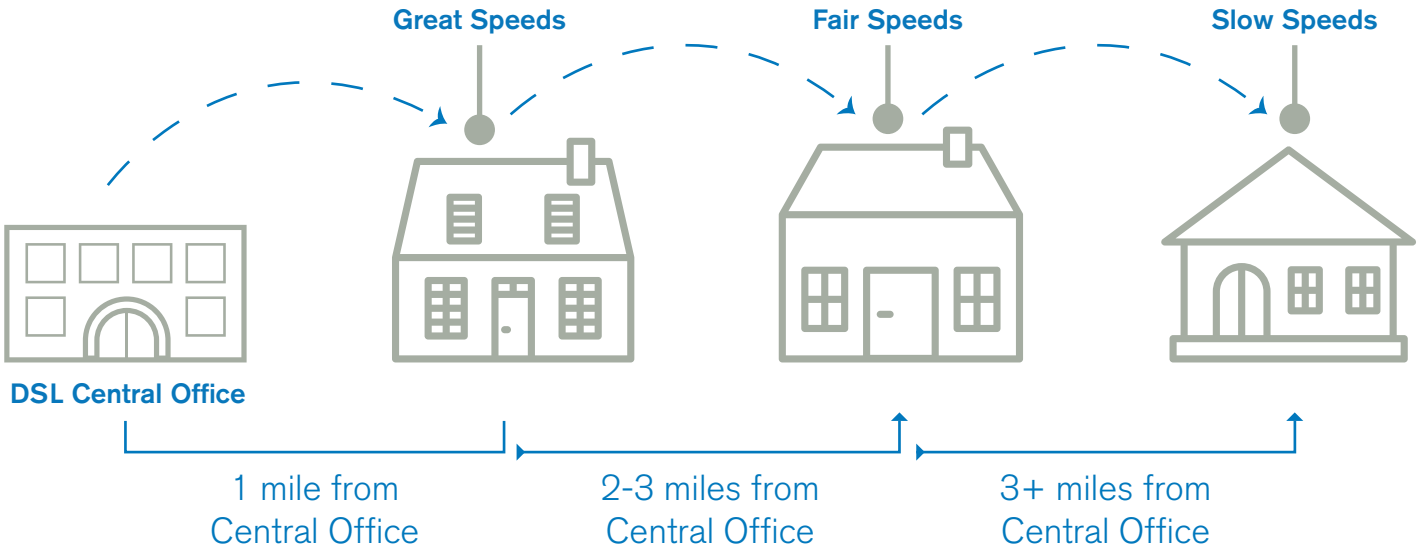


DSL, or Digital Subscriber Line, was great piece of technology when it first came out. It could reach a great number of people and connect them to the Internet. However, it does have a few limitations.

You can get decent speeds with DSL if you are close to the "central office." Think of a DSL central office as the source, or signal of origin for the Internet connection. From the central office, the connection is distributed out to homes. As the distance increases from the central office, or source of the connection, to your home, the signal weakens, and you may not see the higher speeds.

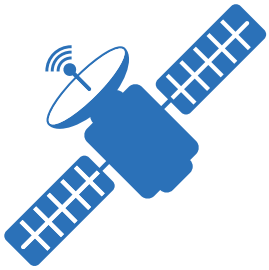
This is where cable has a marked advantage, not only in speeds available, but consistency in the speeds delivered to your household.

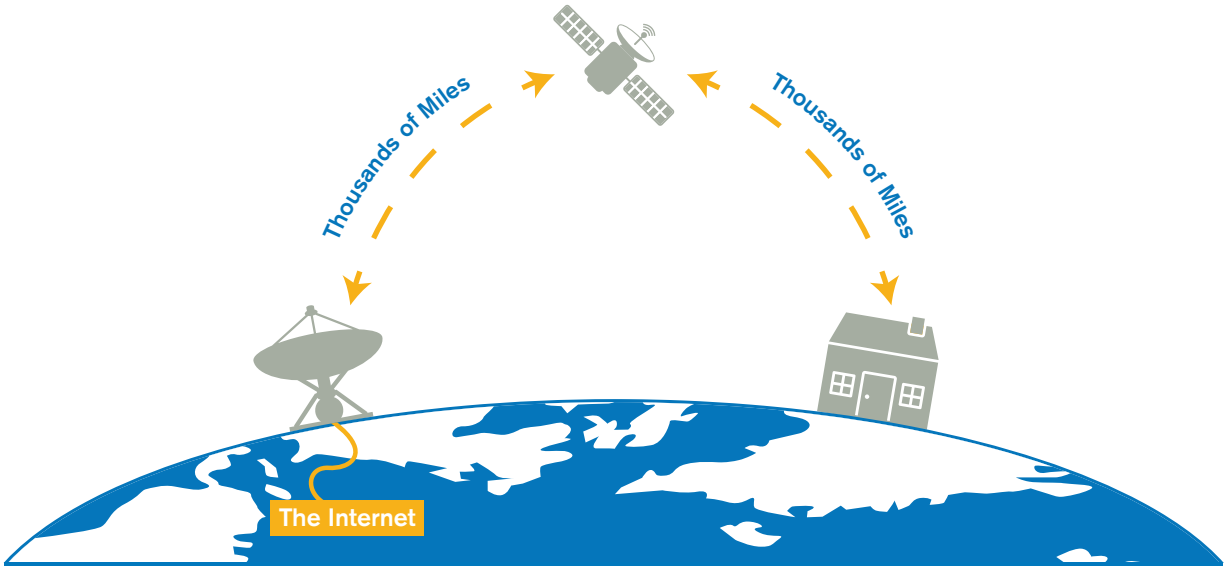
DSL hasn't been upgraded fast enough to meet the needs of speed and technology for today's world. It does do a good job getting a high quantity of people a basic connection, especially in more rural parts of America. At this time, Astrea does not offer DSL internet.



Satellite

Satellite Internet is a two-way signal. Satellites built for Internet usage are capable of two way communication so you can interact with the Internet when shopping, checking e-mail, browsing the news and streaming your favorite movie or TV show. You may think that satellite Internet is the same as satellite TV, but you couldn't be further from the truth. Satellite TV only requires a one-way communication whereas satellite Internet requires that two way-signal. Let's break down how a satellite Internet connection sends and receives information from the Internet and gets it to your home.





Every time you click a link, button, open a page and so-on, you are requesting information. That request must travel from your house, to the satellite to a receiver. The receiver then retrieves the information you're asking for and sends it back to the satellite, back to your house and then it is displayed on whatever device you're using.

The amount of time it takes for that complete process to occur is what makes satellite less ideal for activities like gaming because the information has to travel thousands of miles back and forth. However, when it comes to activities like streaming a movie, satellite can really excel. That's because you only have a single request: view this movie. Your connection is then solely operating to bring the movie to you. There is no back and forth communication that happens until you're ready for your next movie.

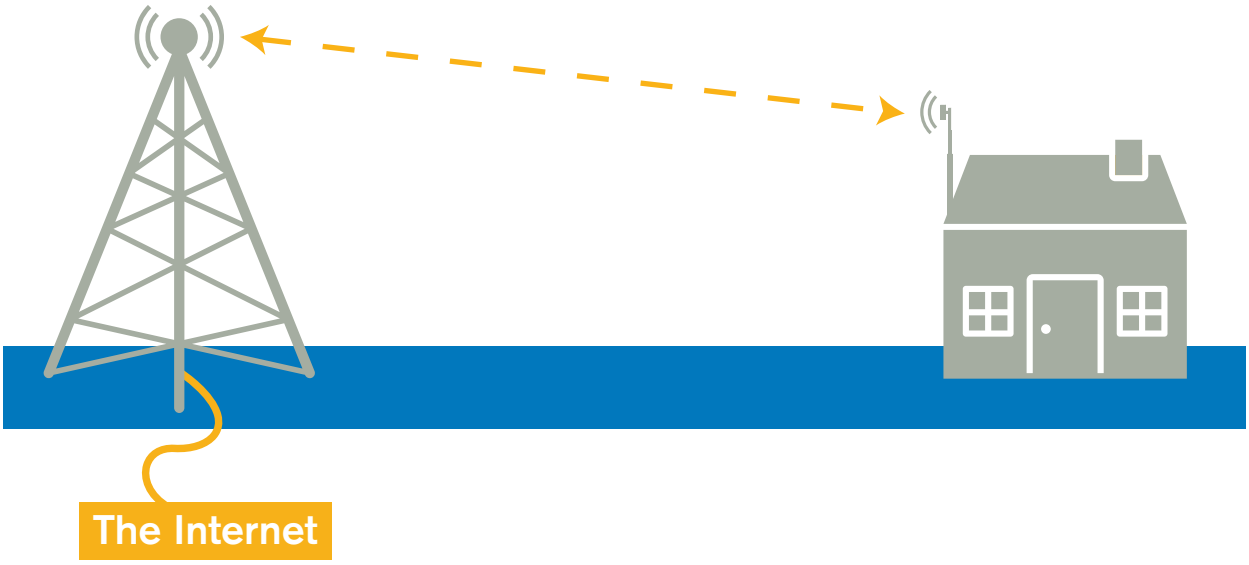
PRO TIP

Satellite performs very well for streaming movies or shows, but may not be suitable for all online game due to higher latency times.

Fixed Wireless

This service uses a narrow and steerable beam which is electronically steered towards each subscriber without affecting latency. Latency is essentially the time it takes for a request to travel to a receiver, or source of the data, and for the receiver to then process that request and show you what you want. Simply, it is the round trip from your browser to your server to show you what you're requesting.

When considering fixed wireless there are different types of technologies that can be used, each with their own advantages and limitations. If you're curious about how your specific fixed wireless connection will work, ask your provider and they should be able to give you those details. Below is a basic illustration of how the technology connects to your home:



At Astrea, connecting rural communities with a Internet service is our passion. That's why we offer several different ways to connect based on where you live including coax, satellite and fixed wireless connections.

In Town?

Coax

Near Town?

Fixed Wireless

Out of Town?

Satellite

See if you qualify for an Astrea connection today:

Check Your Location

www.astreaconnect.com/internet

2.4 vs. 5 WiFi Frequency Bands

When logging into your WiFi network, you'll notice two options available. You'll find a 2.4ghz option and a 5.0ghz option. These are two different frequency bands on your home network and have two different benefits for use depending on what you'd like to do on the internet. **Let's break it down:**

2.4ghz Band

This band is the one that should be used if you need further range when you are not in the same room as the modem or router. Sitting out on your patio or having a fire in the back yard? Buzzing around the house to take care of the kids? You'll want to connect to this band.

Keep in mind, the range and mobility of this connection type does come at a compromise when it comes to speed. On the 2.4ghz connection, you'll be able to pull 70-80mbps max. What does that mean as far as what you can do on your device? Can you shop? Can you send email? Can you stream? Don't worry we'll get there.

Let's talk about how many devices can connect on this band. On the 2.4ghz band, you can connect up to 11 devices depending on the bandwidth usage of the device. However, each device can use different amounts of bandwidth so we don't advise connecting 11 devices at once as speed and performance can suffer.

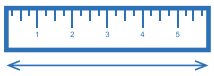
5.0ghz Band

This is the band for speed. Remember, for what you gain in speed, range is reduced. It is not meant to roam around the house, so stay in the room when connected to this frequency band.

Within this band there are 45 channels in which your wireless devices send and receive data, meaning you could have up to 45 devices on this one band. Again, this is not recommended.

Keep in mind, your device may not be capable of seeing or connecting to the 5.0 band. Search for your device specifications online to determine if it is capable of identifying the 5.0ghz band.

2.4ghz Band
Best for Distance



5.0ghz Band
Best for Speed

Band and Speed Connection

These channels also depend upon the speed connection that you have fed into your home. You may have 45 channels on your frequency, however, they are not all going to run at the speed you have purchased.

For example, a device that requires a lot of speed and bandwidth may need to operate on multiple channels. When you have a lot of devices connected on certain bands, they are all competing to use the channels that are available.

Make sure you're connected to the appropriate frequency band for the best experience possible.