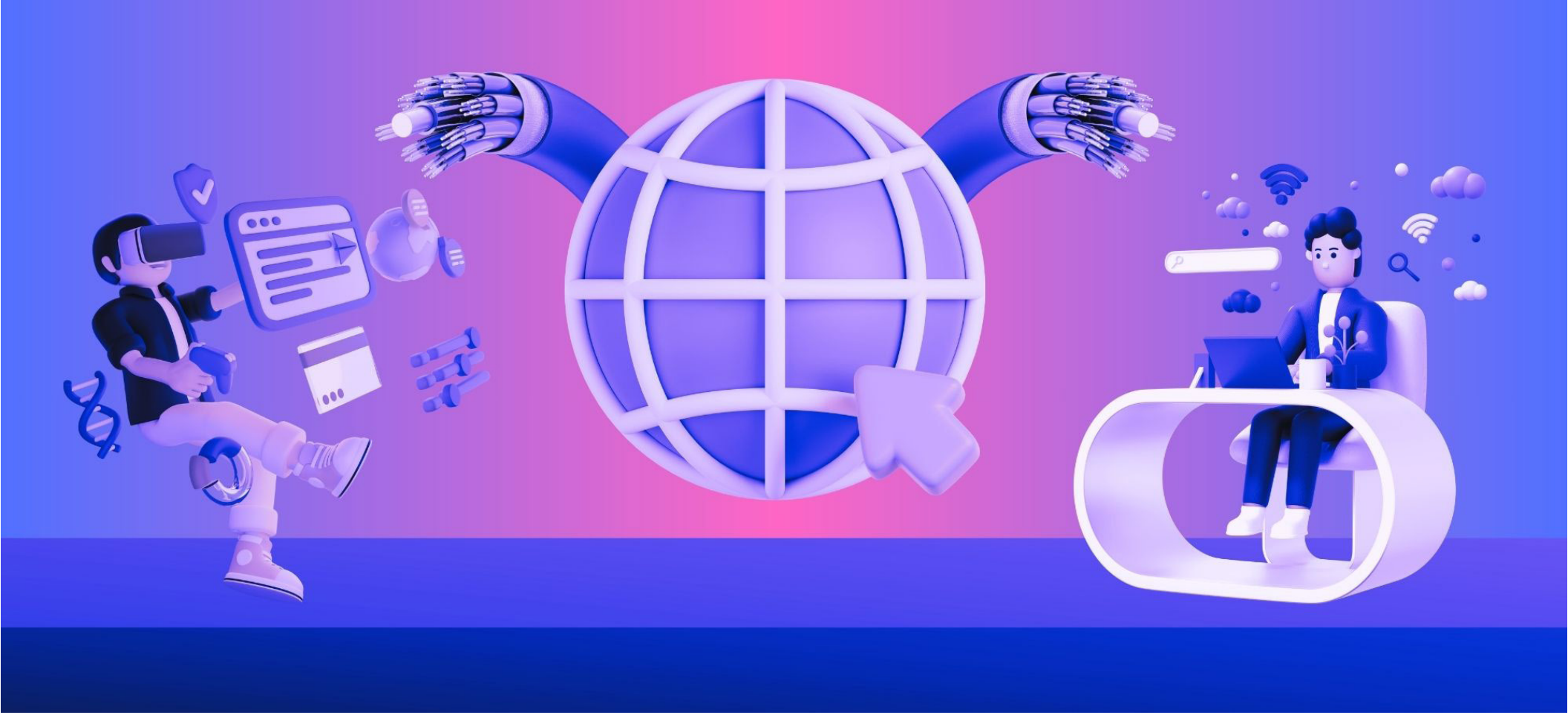
REDBOLT® BROADBAND

How are you CONNECTED?

A guide to navigating internet providers and why your solution is fiber-optic broadband.



INTRODUCTION

Fixed wireless. Satellite. 5G. Fiber optics. What does it all mean? Internet connections and their service providers are advancing rapidly, and making the best choice requires knowledge.

Knowing the differences in connection types and how the connections work is the only way to know if you are getting the best product on the market.

WHAT IS BROADBAND?

The Federal Communications Commission (FCC) defines “broadband” as high-speed internet access that allows users to access the internet at download speeds of 100 Mbps and upload of 20 Mpbs at a minimum. High-speed transmission technologies include:

- Fiber to the Home (FTTH)
- Wireless Access
- Satellite Access

THE CONNECTION LIFE CYCLE

Regardless of provider, all online processing is the same. Your device(s) sends data to the service you use via an upload, and the data is sent back to you through a download.

Most providers stress fast download speed in their advertising, when in fact data traffic becomes bottle-necked from slow upload speed. This is why symmetrical upload and download speed is **very** important to a fast connection. Symmetrical speed means upload and download speeds are the same.

Here is an example of how your data is transfered when you log-in to a streaming service:

Upload

1. You log-in to a streaming platform from a device.
2. Your log-in data is sent to your router.
3. Your router directs the data to the transmission node (modem, optical network terminal [ONT], satellite, etc.)
4. The transmission node converts your data into a radio, electrical, or light signal that's then sent to transmission equipment which forwards the signal onto the streaming service.

Download

1. The streaming service approves log-in data. Approval is sent to the transmission equipment.
2. The transmission equipment converts your data into a signal and sends it to your node.
3. Your transmission node converts the signal into data and sends the data to your router.
4. Your router directs the data to your device. Your device is successfully logged in to the streaming platform!

WHAT'S THE DIFFERENCE?

All connection types use fiber-optics to some degree. The closer that fiber-optic cables are to your premises, the stronger your signal is.

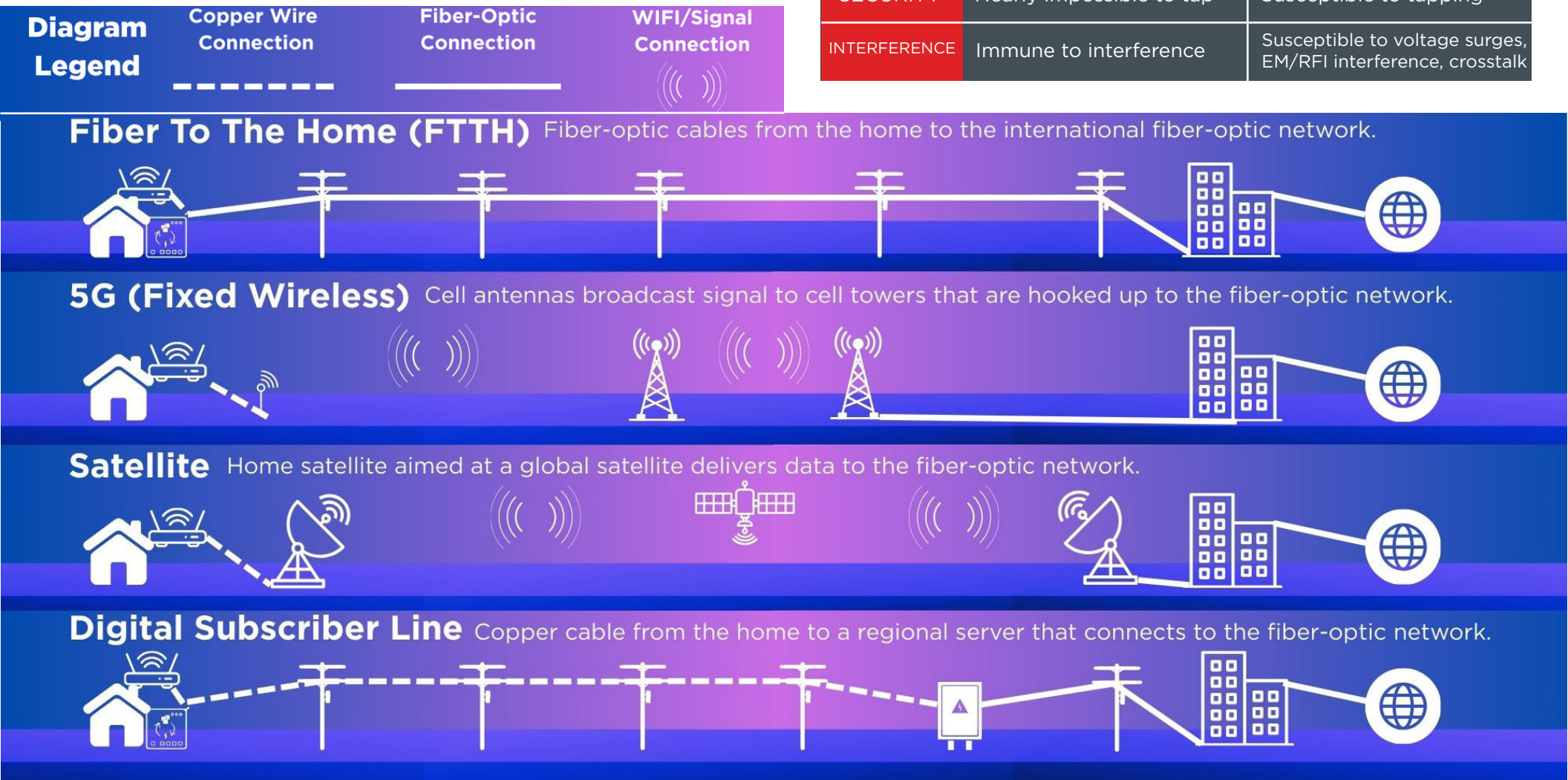
The chart on the right shows the strength of fiber optics.

The diagram below shows how each connection type differs:

THE STRENGTH OF FIBER-OPTICS

When it comes to hardwired connections, internet can travel through copper wires and fiber cables. The chart below shows their differences:

	FIBER-OPTIC CABLE INFRASTRUCTURE	COPPER WIRE INFRASTRUCTURE
BANDWIDTH CAPACITY	60 Terabits per second *1 Terabit = 1,000,000 Megabits*	10 Gigabits per second *1 Gigabit = 100,000 Megabits*
ENERGY NEEDS	2 Watts per User	>10 Watts per User
SECURITY	Nearly impossible to tap	Susceptible to tapping
INTERFERENCE	Immune to interference	Susceptible to voltage surges, EM/RFI interference, crosstalk



CONTRACTS SAY IT ALL

Did you know your speed and service can be directly affected by your contract?

It's important to know what to look for in a service agreement to ensure you receive the speed and service you pay for. Here are some phrases and topics to be cautious of before signing your agreement:

"SPEEDS UP TO ..."

The speed that providers say your service is capable of does not take into consideration the provider's network capacity. For example, lets say a 5G cell tower can handle 50 users. If more than 50 users log onto the network at the same time, everyone's speeds will be throttled.

EMERGENCY TRAFFIC

In the event of an emergency like a community wildfire, storm, or other disaster, providers will de-prioritize an area's network speed to enhance emergency services' ability to receive crucial communication. Even users who are not in the path of the emergency event can experience de-prioritization. For example, if a cell tower covers multiple cities and a wildfire breaks out near one them, then the other two cities will have their bandwidth cut to enhance emergency service.

SHARED NETWORK INFRASTRUCTURE

Many providers pay to use fiber lines, cell towers, and other industrial-grade communications equipment to provide their service to users. In some cases, the third-party provider paying for use will have their service de-prioritized by the equipment owner. Look for language that mentions "prioritization to data provider."

PRICE CONDITIONS

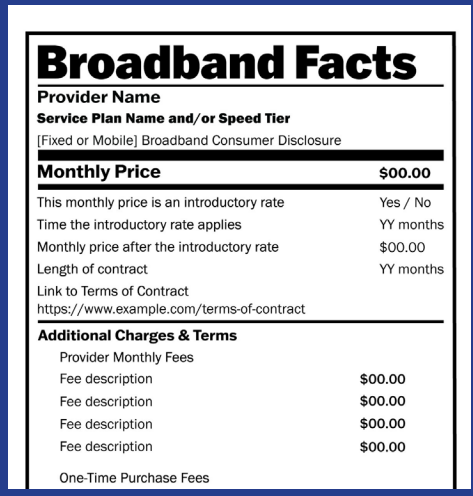
Some providers require you to bundle services to receive advertised pricing or enroll in things like auto-pay. Usually they will advertise this to the effect of:

"300 Mbps for $35.00/month with applicable phone service."

CONTRACT BUY-OUTS

Providers with contract terms often make canceling more expensive than the service itself. Make sure you can afford to leave.

USE BROADBAND NUTRITION LABELS TO EASILY COMPARE SERVICES



Broadband Facts

Provider Name
Service Plan Name and/or Speed Tier
[Fixed or Mobile] Broadband Consumer Disclosure

Monthly Price	**$00.00**
This monthly price is an introductory rate	Yes / No
Time the introductory rate applies	YY months
Monthly price after the introductory rate	$00.00
Length of contract	YY months
Link to Terms of Contract https://www.example.com/terms-of-contract	

Additional Charges & Terms

Provider Monthly Fees	
Fee description	$00.00
Fee description	$00.00
Fee description	$00.00
Fee description	$00.00
One-Time Purchase Fees	

The FCC requires all broadband service providers to post labels like the one to the left on websites to help consumers compare fee structures, actual speeds, and link to provider policies. Use these as a tool in your decision-making to better understand what you're paying for.

GLOSSARY

BROADBAND - (Broad Bandwidth) A high-speed network connection capable of supporting a wide range of frequencies.

"FIXED" BROADBAND
Broadband provided to a single location. (Includes cable, fiber optics, DSL, and fixed wireless).

"MOBILE" BROADBAND
Device-based broadband provided through cell service. (Includes 3G, 4G, and 5G).

BIT - The smallest unit of data measurement. A bit only has values of "0" and "1." Short for "binary digit."

MEGABIT - One million bits, used to measure data speed.

BYTE - A group of eight bits that represent a character. Computer memory and space is measured in bytes.

MEGABYTE - One million bytes, used to measure data storage space.

DOWNLOAD - Receiving data from one online system to another.

UPLOAD - Sending data from one online system to another.

SYMMETRICAL - Type of internet that offers the same download and upload speeds.

SERVER - A computer that provides a specific service to another computer, known as a client over a network. Servers can be used to host group activities or store information off-site.

NETWORK -
The connection of two or more computers together so that they can share resources.

INTERNET -
A global computer network providing a variety of information and communication facilities.

TAPPING - (Also known as network tapping) inserting a physical device into network hardware (generally cables) to intercept and monitor data.

ROUTER - a device that directs data to the appropriate parts of a computer network.

MODEM - a device that converts digital data of a computer to and from analog signals of a copper line.

OPTICAL NETWORK TERMINAL (ONT)
Equipment that converts light signals into digital data.

TRANSMISSION NODE
Smaller communication equipment that communicates with larger, industrial-grade communication equipment. (Includes modems, ONTs, satellites dishes, 5G antennas).

TRANSMISSION EQUIPMENT
Large communication equipment that relays a signal to smaller communication equipment. (Includes, cell towers, outer-orbit satellites).

STREAMING - A technique where audio or video transferred over a network immediately begins to play while the rest of the file is still downloading.

THROTTLE -
The automatic slowing down of functions. Purposely, slowing down of a network connection to conserve bandwidth.

BANDWIDTH -
The maximum amount of data that can be sent over a connection in a given amount of time. It's often measured in megabits per second (Mbps) or gigabits per second (Gbps).

WIFI - A wireless networking technology that uses radio waves to provide wireless internet access.

5G - The 5th generation of wireless technology. Uses radio waves to connect devices to cell towers and data hubs.