



What is the Difference Between EPON and GPON?

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GPON vs EPON...do you know the difference and how they affect your Internet experience? Let's explore these two technologies. [GPON \(Gigabit Passive Optical Networking\)](#) and EPON (Ethernet Passive Optical Networking) are variations of [PON \(Passive Optical Networking\)](#) technology, or Fiber to the Home (FTTH) networks being deployed by Internet Service Providers (ISPs). With PON as the access technology for fiber networks, GPON and EPON are essentially similar in the function they offer Internet Operators but each have their differences in features and services that play into the deployment choice made by each Internet Operator.

EPON stands for Ethernet passive optical network. EPON uses Ethernet packets instead of ATM (Asynchronous Transfer Mode) cells. EPON also uses Internet Protocol (IP) to carry data, voice, and video data. It generally delivers 1G symmetrical bandwidth, which makes it a popular choice.

GPON stands for Gigabit Ethernet passive optical network. GPON uses ATM for voice, Ethernet for data, and proprietary encapsulation for voice. It offers faster Gbps than EPON on downstream and upstream bandwidths.

These sounds similar, but there are key differences.

PON, EPON and GPON explained

Here are the differences between PON, EPON, and GPON:

PON takes advantage of wavelength division multiplexing (WDM), which means using one wavelength for downstream traffic and one wavelength for upstream traffic on a single fiber. Both EPON and GPON operate similarly since they are a type of PON, but there are differences.

GPON is based on a standard for new-generations of broadband passive optical access. GPON is widely deployed in fiber-to-the-home (FTTH) networks. GPON provides:

- Up to 2.5 Gbps
- Quality of Service (QoS) full business protection and advanced security
- Full operations, administration and management (OAM) functions

- Ethernet access to user

EPON rivals GPON by using Ethernet packets instead of the ATM cells GPON uses. EPON is deployed as point-to-multipoint in fiber-to-the-premises (FTTP) networks or fiber-to-the-home (FTTH) networks. EPON uses a single optical fiber to serve multiple premises or users. EPON provides:

- Data rates of 1 Gbps upstream and downstream
- Access to data like Internet, voice, and video service.

You may have noticed that both GPON and EPON deliver Ethernet to the user. So, then what is the *difference*?



The Differences

GPON is purposely built as a point-to-multipoint protocol.

EPON calls upon Ethernet to function the same as GPON.

In other words, GPON is efficient and EPON is not.

Comparing GPON & EPON offerings: GPON:

- Usable bandwidth: Up to 2.5 Gbps downstream and upstream
- Reach: Up to 128 ONUs
- Subscriber cost: Higher than EPON
- Encryption: Downstream only
- Popular deployment area: US

EPON:

- Usable bandwidth: 1 Gbps upstream and downstream
- Reach: Up to 32 ONUs per OLT
- Subscriber cost: Lower than GPON
- Encryption: Upstream and downstream
- Popular deployment area: Asia and Europe

As you can see in the comparison lists above, GPON and EPON each have advantages and disadvantages, so it is hard to say which is best to use. Both are still in use. Depending on where you are located, your ISP and your situation can influence whether you have GPON or EPON deployed.



Scale up to a future-ready network today with Hitron's family of 10G PON ONT/ONU solutions. Ask your ISP about [Hitron's offerings](#) today.

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