

ADVANTAGES AND DISADVANTAGES OF BUILDING THE NETWORK ON THE BASE OF GPON TECHNOLOGY

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ABSTRACT

Services such as IP television (IPTV) and watching and downloading high-quality videos over the Internet require high network bandwidth from the Internet channel. ADSL and XDSL technologies have some limitations on cable length and channel bandwidth.

Keywords: IP television (IPTV). GPON (Gigabit passive optical network)

GPON (Gigabit passive optical network) - Gigabit passive optical network is a technology for connecting Internet, digital television and IP telephones through one wire. The difference from other technologies for connecting communication services is high-speed data transmission. Through the Gigabit PON network up to 1 Gb / s, that is, the process of receiving a movie in HD quality takes more than five minutes. Gigabit PON is a type of fiber-optic communication network that provides cable laying directly to the subscriber's residence and allows receiving several communication services at the same time through a wired cable. ISPs use GPON to transition their customers from an aging copper wire network to faster and more reliable fiber optic lines. What does this mean? Previously, an electrical signal was used for data transmission. Due to the fact that data was transmitted through copper cables, there were shortcomings that affected the speed and quality of communication. Later, a system was created for signal transmission using light-based optical fiber communication lines. The speed of data transmission has increased, it became possible to use one wire to connect several communication services at the same time - internet, television and telephone. You can

use different services at the same time: for example, watching TV in high resolution format and downloading movies from the Internet. At the same time, even if several devices are connected to the network, the quality and speed of data transmission will be high (Figure 1).

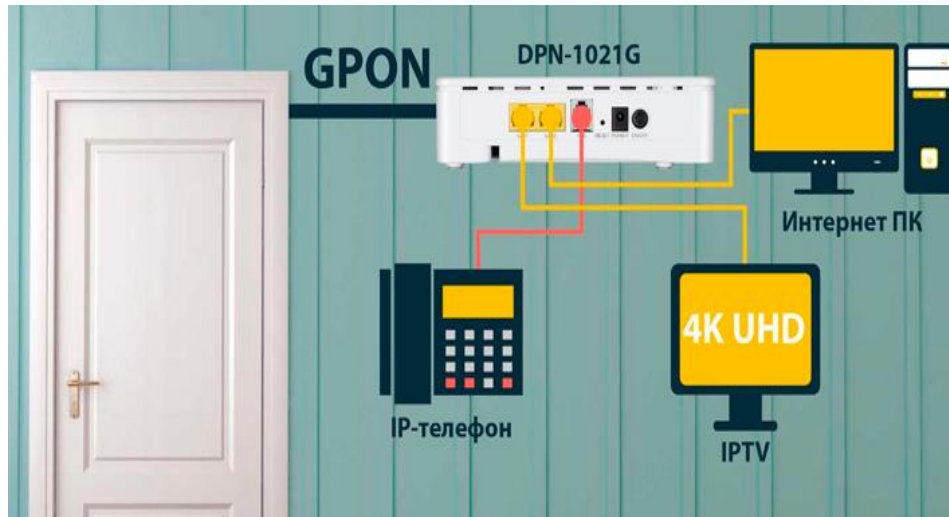


Figure 1. The final view of GPON technology.

Here, the meaning of the term "Passive" is that there are no switches or reconnection devices in the distribution network from the communication stations to the subscriber, and no additional electricity is consumed, and means that it does not require excessive management and control.

Main features of GPON:

- high speed;
- ease of installation and maintenance;
- low price;
- QoS support for quality of service.

A central unit (OLT) is used to organize network access. In subscribers (ONU) - subscriber equipment is installed.

To provide telephone communication services, household gateways are used that provide the following:

- connect several devices;
- telephone connection (VoIP);
- Creating a local network in the apartment based on Wi-Fi;
- VoIP subsystem;
- VoIP subsystem consists of IP PBX and home gateways.

The disadvantage of GPON is the complexity of the multi-level system and management. It is much more expensive compared to EPON.

Thus, GPON can support all current services, in addition to new services for the interaction of subscribers, and in addition, it can meet the requirements of business customers. The transfer of telecommunication networks of our country to networks built on the basis of PON technology provides a wide range of services. This speeds up the process of information exchange between users.

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