

## TOPOGRAPHIES OF PASSIVE OPTICAL INPUT NETWORKS

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The passive splitter is a key element of PON systems. This is a small and simple device that distributes an incoming light flux across multiple fibers.

Splitters are passive devices because they do not contain electronics that perform analysis and redirection of the incoming signal. These devices do not use optical transmitters and do not require power supply.

Accordingly, the signal strength at the outputs will be weaker, so manufacturers must consider the power budget when determining the number of output paths and contact distances. Disambiguation pages with short descriptions In addition, when connecting subscriber no key is needed. In PON communication system, the subscriber device is called ONU (Optical Network Unit), another name for the subscriber terminal is called ONT (Optical Network Terminal).

An optical line terminal (OLT) is located at the input node. This device communicates with the ONU. In OLT and ONU, WDM multiplexers work to separate input and output streams.

There are four main topologies for building optical communication networks. "ring", "point to point", "active node tree", "passive". a tree with knots."

**"ring" topology.** The SDH-based ring topology is best used in urban telecommunications networks. However, communication networks have their drawbacks. If the arrangement of nodes in the construction of the city highway is planned at the project level, it will not be known in advance where, when and how many subscriber nodes will be installed on communication lines.

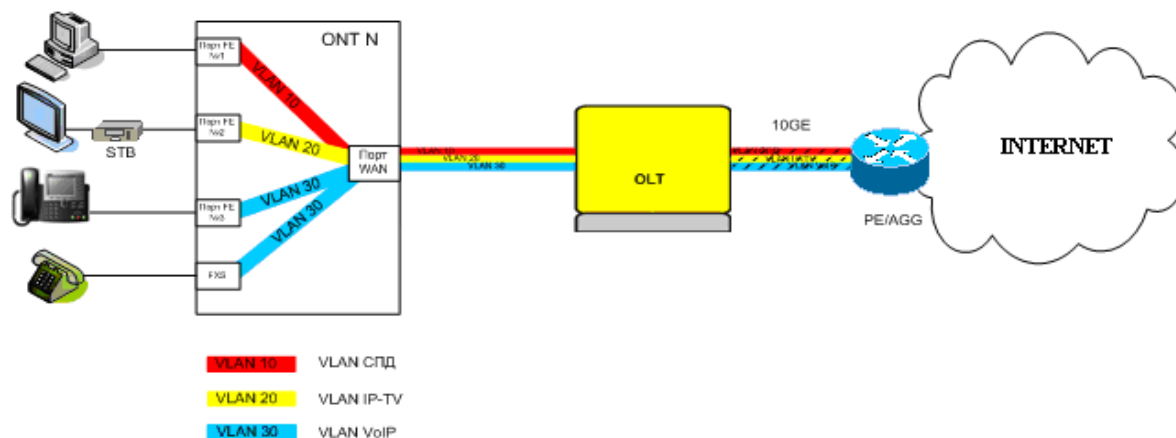


Figure 1. Internet connection based on PON architecture

In the case of a random regional and temporal connection of subscribers, the topology of the ring can become a very broken ring with many branches, adding new subscribers is done by breaking the ring and placing additional segments.

**The P2P topology** does not limit the network technology used. P2P can be implemented for any network standard, e.g. using a .

In terms of security and protection of transmitted information, maximum protection of subscriber sites is ensured during the P2P connection. Due to this, this method is especially expensive and mostly interesting for large subscribers.

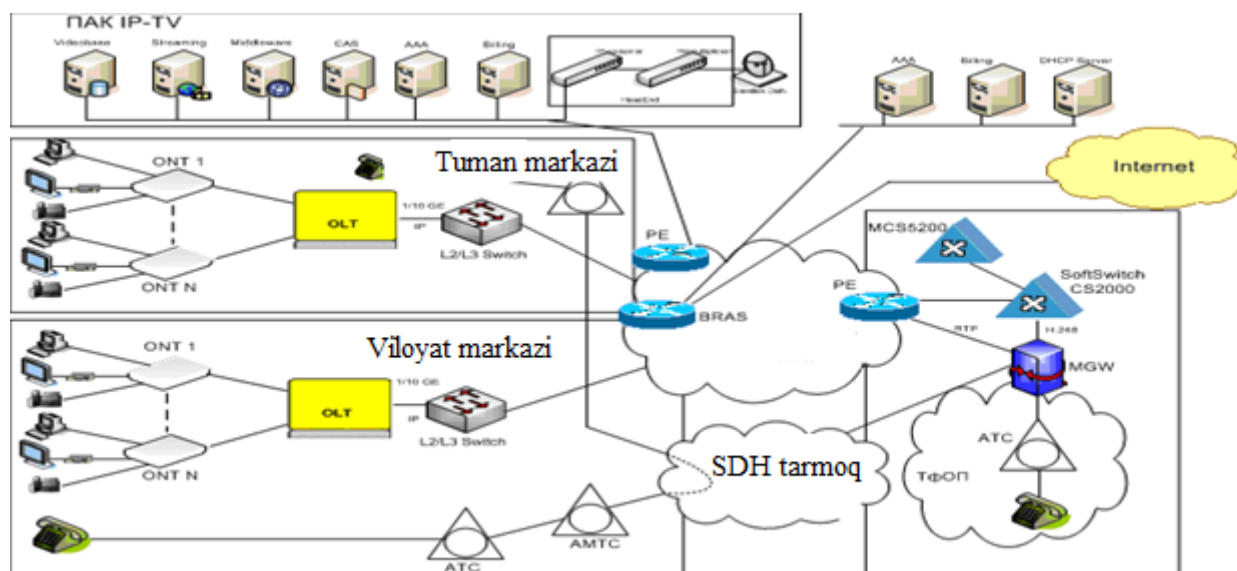


Figure 2. Providing services based on optical communication system

Tree topology. This is a cost-effective solution from the point of view of the use of wood fibre with active compounds.

This solution fits well within the boundaries of the Ethernet standard with rate hierarchy of 1000/100/100/10 Mbit/s (1000Base-LX, 100Base-FX, 10Base-FL) from central node to subscribers. At the same time, each node in the tree must have an active device (compatible with IP networks, switches, or routers).

Small, completely passive optical separators (separators), which do not require power supply and maintenance, are installed at the intermediate nodes of the tree.

1. "Passive sites available wooden" architecture advantages. The structure is optimal according to the number of fibers;
2. The optical receiver is solved by the number of receivers ;
3. The number of new subscribers is easy to connect, light and easy to maintain;
4. There are no medium-active sites;
5. The complexity of networking is average.

It is possible to analyze all the technologies and decide which GPON technology

is the most optimal.

### **LIST OF REFERENCES**

1. Resolution of the President of the Republic of Uzbekistan dated April 18, 2018 No PP-3673 "On organizational measures for the implementation of innovative projects and accelerated integration of departmental information systems" (text of the document is given in Russian)
2. R.Kh. Djuraev, Sh.Yu. Djabbarov "Documentary telecommunication systems and networks" Textbook. Tashkent. TUIT 2006 year
3. N.B. Usmanova Data transmission systems and networks. Study guide. Tashkent TUIT.2006 year
4. Held G. Technologies of Data Transmission. 7th ed. - St. Petersburg Piter, K.: Izd. BHV Group, 2003