

BUILDING A MODEL OF TRAFFIC CONTROL THROUGH ARTIFICIAL INTELLIGENCE IN OPTICAL TRANSPORT NETWORKS

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ANNOTATION

In the current era, the transition to digital television, which provides high quality and noise, is in full swing. The connection to the Internet global network, which has only recently become a dream of many, is being implemented in apartments today by Wired and wireless methods. Not to mention the changes in mobile communication systems, but, it can be said that the biggest change of attention is observed in primary transport networks.

Key words: optic network, transport, structures, generator, signal

INTRODUCTION

Obviously, transport networks occupy an important place within telecommunication networks. In recent years, the application of SDH and xWDM technologies in transport networks, fiber optic cables as a transmission environment has seen a large shift towards the positive in communication remoteness, quality, number of channels (in turn, the speed of information transmission), communication reliability and other important features.

At the latter time, the term optical transport network began to be found more often in the field. First of all, let's clarify this term, relying on foreign technical literature. In the literature written in English, synonyms of this term are found, such as Photonic Network, all-Optical Network, Open Transport Network, Full Optical Network, but at the same time, optical transport network (Optical Transport Network — OTN) refers not to an optional optical network, but to a network built on certain

laws and meeting special recommendations from the International Electrical Communication Union (IEEC).

An optical transport network is a network in which all functions related to processing and conveying information being transmitted are carried out at the optical level, without modifications to electrical signals. In other words, an optical network is a set of optical elements connected by optical communication lines.

According to the above rules, the difference between a "transport network" and an "optical transport network" can be described. Optical communication cables can also be used in a Transport network, but in devices (switching devices, multipliers, demultiplexers, regenerators, etc.) signal processing and delivery is done by modifications to electrical signals.

In this regard, SDH technology, which is now widely used, is not part of the optical transport network, since the signals for processing and delivery in devices of this technology must be changed to electrical appearance. The possibility of building complete optical networks arose due to the application of xWDM technology.

In fact, there has also been little time since SDH technology has been applied in mixed (optical cable and electrical processing device) networks. So why switch to full optical networks? Conventional (incomplete, mixed) optical networks have the following disadvantages:

1. Structurally complex;
2. The regeneration and processing of digital signals is carried out not in the optical range, but in the electrical range (which leads to the complication of the process itself) ;

3. It has a relatively limited speed (for example, as the order of SDH technology flows increases, so do these speed processors, making it more difficult to provide speeds).

These listed and other disadvantages lead to the need to switch to optical transport networks. At first glance, it seems that everything is going smoothly — there are optical cables, it is enough just to change existing devices to optical processors and suppliers, but all this seems to be not as easy as we think. If the transition from traditional transport networks to optical transport networks had been made easy in this way, we would all have the network we dreamed of after technical and software changes. A number of problems await us along the way. The fact that the network under consideration is poorly studied for sufficient novelty, and the features of the optical network as a whole, pose these problems.

These problems include:

1. Optical transport network management.

At the expense of the presence of their control part in mixed (based on SDH technology) networks, it was much easier to manage networks, or, in other words, the network had a "mind". How is optical network management?

2. Research on the parameters of optical transport networks and improve these parameters. It is a saying that research on these networks has not yet come to an end due to the fact that the technology of optical transport networks is much more recent. Parameters such as network reliability, viability, service life, accuracy can provide current modern requirements.

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