Aspects of Creation of the Telecommunication Systems on the Basis of Conception of NGN

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Abstract - **Basic recommendations are certain at planning of the modern telecommunication systems and networks, coming from existent positions of conception of networks of next generation. The analysis of multiservice networks is conducted from point of choice of network technologists. It is found out that the number of criteria of choice of network technology can be diminished due to introduction of the special computer-integrated services and services. The factors of efficiency of introduction of multiservice networks are certain within the framework of base conception of NGN.**

Keywords - **Conception, Flexibility, Adaptation, Network, Mul'tiservisnost'.**

I. INTRODUCTION

It is possible one of basic destinies of the telecommunication systems (TS) of the last generation to count possibility of construction of connection between global informative space and user. The model modern TS must support all of possible types of connection between subscribers, both with establishment of connection and in the conditions of his absence; to offer in theory the possible number of services and services both real-time and at his absence; to give possibility of forming the users of TS of own services and services; to provide different speeds of passing to information; to support functioning of the various special telecommunication equipment for creation and communication of data, their treatment and storage.

Coming from transferred, will consider the basic features of creation of the telecommunication systems on the basis of popular conception-technology of networks of next generation.

II. BASIC FEATURES OF NEXT GENERATION NETWORKS

Development of the telecommunication systems during realization of conception of NGN (Next Generation Network) foresees convergence of networks, their association on the basis of wide using technologies, services, without the decline of general quality of service.

The indicated approach allows to conduct general standardization of the system, however on some parameters can limit expansion of functional possibilities of such system

Except for the association of the systems, the noted conception specifies on the necessity of mutual adaptation of the separate telecommunication systems to the re-created services which are offered family companies in a telecommunication association.

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Property of adaptation of the systems, it is possible to examine and as an obligatory requirement at planning, from swift development of infocommunication technologies and appearance on their basis of new services. This requirement is known in literature under such term, as “flexibility of network”.

It is necessary however to mark that the properties listed above in a great deal are contradictory, because convergence of network, hampers its adaptation to new services and services, and, as a result, there can be technical difficulties on expansion of network, both on the number of potential users and on an in-use equipment. At the same time, as authors suppose from [1], these properties successfully combine in multiservice telecommunication networks.

III. MULTISERVICE NETWORKS. CRITERIA OF USING

A multiservice network is an aggregate of interactive between itself active networkings issues which provide passing to different information between the eventual systems of network with the use of single infrastructure. In other words, a multiservice network is a universal environment, intended for passing to speech, images and information with the use of technology of commutation of informative packages.

A multiservice network differs the degree of reliability, characteristic for public-call networks (in opposition the unassured quality of connection over the internet) and provides the low cost of transmission calculating on unit of volume of information (close to the cost of communication of data on the Internet). The basic task of multiservice networks consists in providing of work of the heterogeneous informative and telecommunication systems and appendixes in a single transport environment, when for the transmission of ordinary traffic (information) and traffic of other information (speeches, video and other) a single infrastructure is utilized.

The construction of multiservice networks is carried out on the base of the most different technologies, both on the platform of IP (IP VPN) and on the base of the selected ductings of connection. At main level infocommunication technologies of IP/MPLS, Packet over SONET/SDH, POS, ATM, xGE, DWDM, CWDM, RPR, are most popular today.

Multiservice networks have certain, as a rule, not model architecture of connection of knots with that to provide another property of the modern telecommunication systems – their flexibility [2]. For creation of multiservice network it is foremost necessary to choose base network technology or their aggregate, and also it is necessary to analyse concrete requirements to the planned network. The basic criteria of choice of network technology followings:

- volume of the given services to the users;
- quality of maintenance of users;
- scaleableness of network (possibility of increase of number of knots and highways without the decline of general carrying capacity of network);
- cost of network (comparison of correlation of cost and network performance);
- recoupment of investments;
- compatibility with the existent system of cable lines and network equipment.

Analyzing the last criterion of choice, it should be noted that the basic physical environment of communication of data in a multiservice network are fiber-optics flow lines.

Thus, at planning of the modern TS on the basis of conception of NGN, including during realization of on principle new methods of construction, drawn on the existent complex of infocommunication technologies. Such approach allows to select the lacks of technologies, in the case of their sharing, and determines recommendation for the most simple creation of network configuration.

By other distinctive feature of development of the TS, it is possible to count their "generalized mobility", that possibility to get access to services and services regardless of change of site of subscribers and terms of environment.

Complications which can arise up at that rate are conditioned swift development of off-wire technologies and network infrastructure of locality which a network or system is designed for. It is thus necessary to take into account also necessary quality of maintenance of QoS (Quality of service) in relation to the offered services. Separately it should be said about character of transferable information in the system, because in the case of transmission audio or videocontent it is necessary to remember that similar information is sensible to the delays of signal.

IV. THE BASIC REQUIREMENTS TO MODERN TELECOMMUNICATION SYSTEM

Coming from aforesaid, it is possible to formulate the basic requirements which a TS must satisfy on the basis of conception of NGN:

- assured quality of maintenance of QoS of users;
- delivery information, to sensible to the delays, real-time;
- communication of data with the required speed;
- centralized management all of resources of the system.

The principles of creation of the modern telecommunication systems considered in-process can be useful at planning of telecommunication complexes of different level of integration and complication.

V. CONCLUSION

1. Basic recommendations are resulted on planning of the perspective telecommunication systems, coming from existent positions of conception of networks of next generation.
2. Basic principles of conception of NGN are expounded.
3. The analysis of multiservice networks is conducted from point of choice of network technologists. It is indicated that the number of criteria of choice of network technology can be diminished due to introduction of the special computer-integrated services and services.
4. The factors of efficiency of introduction of multiservice networks are certain within the framework of base conception of NGN.
5. Limitations which must be taken into account during the lead through of procedures of adaptation and expansion of the existent telecommunication systems are marked.

REFERENCES

[1] И. Г. Бакланов "NGN: принципы построения и организации". – М.: Эко-трендз, 2008. – 430 с.

[2] Ю.В. Семенов "Проектирование сетей связи следующего поколения". – Спб.: Наука и техника, 2005. – 240 с.