# ABSTRACT

Master dissertation: 97 pp., 17 fig., 25 tables, 1 app., 37 sources.

**Actuality**. In recent years, there has been an extremely rapid increase in the amount of data transmitted and used on the Internet worldwide. It is driven by the latest trends in information and communication technologies, such as the constant increase in the number of mobile devices and the popularity of social networks, the accumulation of large amounts of data of different formats collected from different devices, the rapid accumulation of various multimedia content and the rapid use of cloud technologies in everyday life. Due to this, the dimension of networks and data volumes is constantly increasing and in order to provide the necessary bandwidth and productivity for processing, transmitting and storing such amount of data, it is necessary to increase the network infrastructure. But this solution makes the network setup and management process much more complicated, since networks, in most cases, work with devices of different types and from different manufacturers. In order for them to meet traffic requirements and changes in the network, network operators must manually configure them by wasting valuable time. Therefore, the traditional approaches that are currently being used to manage and manage the network quickly accumulate a variety of multimedia content and will become ineffective in the near future. On this basis, there is a need to find and adopt new network models that will meet the needs.

Software-Defined Networking (SDN) is one of the most promising solutions to these problems. This is an approach to network architecture that greatly simplifies network management. It provides flexible and centralized control over it, increasing network utilization, reducing operating costs, and fostering innovation. This is achieved by the fact that the control layer is separated from the network devices and brought to a separate device - the controller, which acts as a caretaker over the entire network.

Considering that traffic engineering (TE) is one of the main methods for optimizing work and improving network reliability, existing technologies in this area do not take into account the unique features of SDN and therefore are not effective enough for them. Therefore, today it is an urgent task to develop new traffic engineering technologies that can use the full potential of the benefits of software-configured networks.

**Relationship of work with academic programs, plans, themes**. The work performed in accordance with the plan of the department of automated data processing systems and management of the National Technical University of Ukraine "Igor Sikorsky Kyiv Politechnic Institute" within the research theme «Efective Methods for Solving the Problems of the Theory of Schedules» (No. DR 0117U000919).

**The purpose of the study** is to improve the reliability of traffic design in software-configured networks by modifying the way traffic is constructed on the network.

To achieve the goal must perform the following **tasks**:

* review and analyze existing methods of routing and traffic design in software-configured networks;
* develop a method of TE using multi-path routing to reduce the amount of data loss;
* develop software implementation of the developed method of traffic design;
* investigate the effectiveness of the developed method and analyze the results obtained.

**The object of the research –** process of marching traffic on a software-configured network.

**The subject of the research –** methods of choosing the best path for data transmission on a software-configured network.

**The research methods –** graph theory, optimization theory.

**The scientific novelty is the following:** A method of routing on the SDN network is proposed and justified, which differs from the existing lower speeds on traffic re-routing and allows to reduce the percentage of packet loss in a software-configured network.

**Publications.** The materials of the work are published in the abstract of the report and submitted for publishing scientific articles.

1. O.M. Truba. Improving the reliability of traffic construction in a software-configured network / OM Pipe, A.V. Kogan // Proceedings of the Third All-Ukrainian Scientific and Practical Conference of Young Scientists and Students "Information Systems and Technologies of Management" (ISTU-2019) - Kyiv.: NTUU "KPI them. Igor Sikorsky, November 20-22, 2019 - P. 39-42.

2. Y.O. Kulakov. Designing traffic in wireless software-configured networks / Y.O. Kulakov, A.V. Kogan, M.O. Sperkach, O.M. Truba // Eastern European Journal of Advanced Technology.

SOFTWARE-CONFIGURATED NETWORK, ROUTE, traffic engineering, DATA TRANSFER.