# Solution of the Fault-Tolerant Routing Problem on the Edge of IP-Network

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In accordance with the principles of Next Generation Networks (NGN) development, Telecommunication system (TCS) includes a transport network (TN), basically based on IP/MPLS technologies, and a set of access networks (AN). There are several technological solutions used to increase fault-tolerance of TCS such that MPLS Fast ReRoute, IP Fast ReRoute, Fast IGP (BGP) convergence, and Fault-Tolerant IP Routing. However, existing solutions have significant drawbacks. The flow-based nature of network traffic is not considered, and it is not provided consistent solution of related problems "default gateway" selecting and transport network routing. In this regard, it was proposed Fault-Tolerant IP Routing Flow-Based Model.

Protocol responsible for solving formulated optimization problems in dependence with the state of TCS can select interfaces of virtual routers ("default gateways") through which will be connected access networks to transport network. Proposed model with the implementation of presented conditions also provides the support of traffic balancing functions on the virtual router interfaces, which also has a positive impact not only on the availability, but on the productivity of TCS as a whole.

In the case of one of the routers failure, which interfaces are part of the virtual router, solution of formulated optimization problem is performed which allows to select the appropriate "default gateway" and determine the new order of flow routing in the transport network.

To increase fault-tolerance of telecommunication system at the level of transport network it is advisable to supplement the proposed model by the terms of protection schemes Fast ReRoute [1,2]. While to ensure quality of service not only in terms of performance but also in terms of average delay and (or) packet loss probability in the model must be introduced conditions proposed in [2].

1. O. Lemeshko, A. Romanyuk, H. Kozlova, *CADSM 2013*, 202 (2013).
2. O.V. Lemeshko, K.M. Arous, O.S. Yeremenko, *Scholars Journal of Engineering and Technology (SJET).* **3** №4A, 343 (2015).