

PERFORMANCE EVALUATION OF MULTI-SERVICE NETWORK WITH ADAPTIVE ROUTING AND ANALYTIC MODELING CALCULATION OF QUALITY OF SERVICE

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In multiservice networks delivery of video and voice must be carried out in real time with the need to prioritize in the case of transport network congestion. However, the network industry never focused on real-time network, data delivered in accordance with the capabilities of the network in a specific period of time.

Furthermore, the development of technologies for network management is closely linked to the mathematical modeling of processes and network management elements. In fact, the presented examination is based on a mathematical model which allows evaluating the basic characteristic of the network performance at the stage of virtual connection setup – the blocking probability for incoming call. Solution of the corresponding system of nonlinear algebraic equations is performed by using an iterative procedure of successive substitutions.

To determinate the parameters of quality of service on the subnet we have made the following assumptions:

- 1) Initial call flows are Poisson;
- 2) Poisson character is stored as streams for redundant and missing for loads;
- 3) The system is in a state of statistical equilibrium;
- 4) System with obvious losses;
- 5) Does not take into account losses in the switching and control devices;
- 6) Setup time is zero.

The main parameter here is the probability of losses in the branches, and other parameters can be easily calculated through these values. Calculation of the loss probabilities on the branches in networks with circuitous directions is complicated by the fact the probability of losses in each branch in general depends on loss probabilities for all other branches.

To conclude, the report presents a proposed mathematical model to calculate the parameters of quality of service (QoS) in multiservice network that enables to significantly improve network performance, prevent network failures during overload traffic information, to determine the optimal direction of bypass traffic; calculate the optimum quality of service parameters of integrated network.