ANALYSIS OF INFORMATION STRUCTURE MODELING METHODS

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A mathematical model is often used to analyze the information structure of a network. This model has the form of queuing networks. Queuing network – This is a system that performs the service of incoming requests to it. The main elements of the system are the input flow of applications, service channels, the queue of applications, the output flow of applications. Service requests arrive at discrete (constant or random) time intervals. It is important to know the law of distribution of the incoming flow. The channels needed to serve these applications. Service lasts for a while, constant or occasional.

The random nature of the flow of requests and service time leads to the fact that at some moments of time a queue may appear at the input of the queuing networks, and at other times the channels may be underloaded or even idle. If at the time of receipt of the request all devices are busy, the request is copied to the buffer cell and waits there for the start of service. The requests in the buffer make up the service queue. If all buffer cells are occupied, the request is denied service and lost.

The process of queuing networks operation is a random process with discrete states and continuous time. The state of the queuing networks changes abruptly at the instants when events occur (arrival of a new or end of service request, the moment when the request exits the queue). From the applications that are already served, an output stream is formed. Each queuing network, depending on the number of channels, their performance, the nature of the flow of applications, has a certain capacity that allows more or less successfully cope with the flow of requirements [1, 2].

The task of queuing theory is to build models that relate the given operating conditions of the queuing network with system performance indicators that describe its ability to cope with the flow of requirements. The efficiency of a serving system is understood as a characteristic of the level of performance by this system of the functions for which it is intended.

References

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