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Convergent and Hyperconvergent Computing Systems

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In the work the questions of construction of hyperconvergent computer systems and their functioning on the basis of a program-configurable network are considered. The features of the OpenFlow protocol and technological solutions that transfer control of the software-configurable network to a dedicated controller (server) are presented. A graph model of resource management of a hyperconvergent computer system is proposed that meets the requirements of a given quality of service on the one hand and economic requirements on the other. Based on the proposed model, an embodiment of a greedy algorithm for managing a converged infrastructure using the OpenFlow protocol and realizing requests for physical resources using the controller software is considered. The advantages of multithreading routing realized with the environment of hyperconvergent infrastructure are shown, using for its description the minimal Steiner tree. The issues of reliability and safety of hyperconvergent computing systems that make most of today's threats not relevant are considered. The paper shows the possibilities of import substitution and the prospects for switching to a network infrastructure, focused on content.

Key words: converged infrastructure, hyperconvergent systems, import substitution, software defined networks (SDN), OpenFlow protocol, virtual data processing center (VDPC), scheduling of computing resources, greedy algorithms, Service Level Agreement (SLA), Multi-Threaded Routing (MRT), Quality of Service (QoS), DDoS attacks, data interception, Information Centric Networking (ICN).

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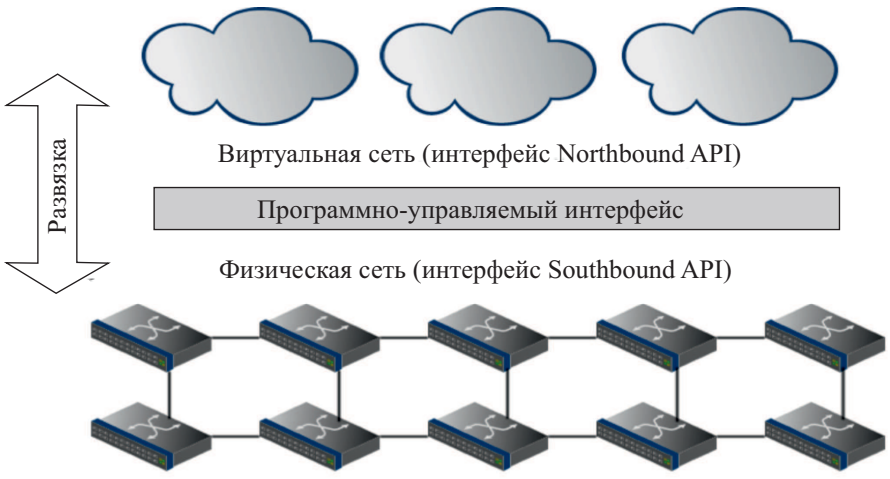

Fig. 1. The architecture of a software-switched network

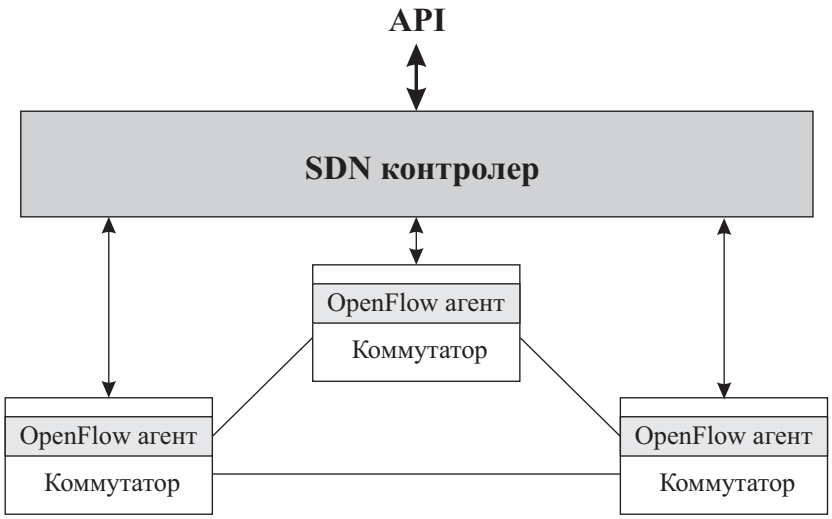

Fig. 2. Structure of the SDN controller

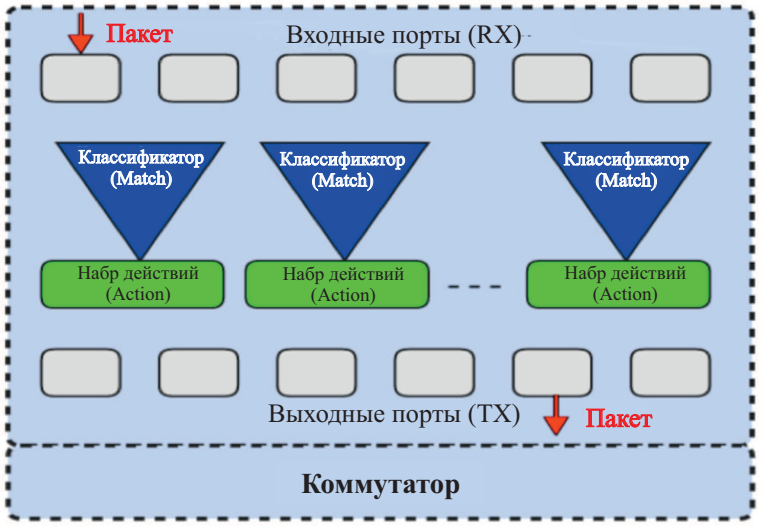

Fig. 3. Structure of the Data Plane Switch

Fig. 4. Information output by means of package analysis in Linux

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