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Title: Explorando In-network Computing em Planos de Dados Programáveis
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Software defined networking (SDN) is the next step in the evolution of the network, and it is becoming more significant every day with large companies using it as their main service to control their private network, such as Microsoft, Google, and Intel. Software defined networking and programmable data planes are emerging paradigms that promote more flexibility in the management and operation of networks. On the one hand, SDN decouples the network control and forwarding functions. In this way the network control become directly programmable through the OpenFlow protocol, which defines the SDN interface between the control and data planes. As a result, the control of the network becomes centralized and has a global view of the network, and consequently the management of the network becomes more agile and dynamic. On the other hand, programmable data planes enable switches to perform complex operations on packets by allowing a versatile way to process packets and support various formats and protocols. With the goal of configuring programmable data planes, a specialized language was developed, called Programming Protocol-Independent Packet Processor (P4). The P4 language allows writing custom behavior in the packet processing pipeline of forwarding devices such as routers and switches. A P4 program consists of header definitions, parsers, ingress control, egress control and deparsers. With these functions a set of tables can be implemented that specify fields within the packet and actions to be performed on those fields. My lasts studies focused on an implementation of a load balancer in P4 language. The goal is to ensure flow affinity and balance the load with the resources available on the network switches. There are two ways to implement the algorithm using stateful and stateless solutions, the basic difference is that one is based on the system state and the other is not.