Modern network interface controllers allow the host to offload packet processing to hardware in order to improve performance. At the present time, the advanced features are utilized in the Linux kernel by offloading the Traffic Control subsystem. Since this subsystem has been designed for a completely different purpose, its usage for hardware offloading is impractical and unreliable. Furthermore, in its current state the subsystem is not capable of utilizing all hardware features, which are often poorly documented.

The presented work adopts a different approach to the problem. Five high-end controllers and their packet-processing pipelines were examined in detail. Accounting for their projected future development, common traits and features were identified. The researched information was used to draft a proposal for a new Linux subsystem, more compatible with hardware offloading than the current solution. The proposed subsystem defines a sufficiently descriptive interface to utilize the majority of hardware-offloaded features while avoiding common problems caused by excessively generalized approach of Traffic Control.