FRAMEWORKS AND INTERFACES FOR OFFLOAD DEVICE-BASED PACKET PROCESSING

BACKGROUND

[0001] As an increasing number of applications and services are being made available over networks such as the Internet, an increasing number of content, application, and/or service providers are turning to multi-tenant, shared resource technologies. Cloud computing, for example, can provide customers with access to electronic resources through services, such as Web services, where the hardware and/or software used to support those services is dynamically scalable to meet the needs of the services at any given time. A customer typically will rent, lease, or otherwise pay for access to resources through the cloud, and thus does not have to purchase and maintain the hardware and/or software needed.

[0002] Such access comes with risks for providers of these shared resources, however, as there typically will be multiple users accessing the resources at various times. In cases where users have a virtual address space, such that the customer network functions as a single virtual network without the restrictions or additional addresses of one or more additional physical networks, it can be desirable to provide for the processing and routing of packets pertaining to this virtual address space. When customers have access to the devices, however, performing the routing and processing on a device can potentially enable the user to modify the routing or other such processing of the packets. Further, such functionality cannot easily be moved to many existing hardware devices that are not exposed to the user, for reasons such as size restrictions, protocol limitations, etc.

SUMMARY

[0002a] According to a first aspect, there is provided an offload device, comprising: a processor; and memory storing instructions that, when executed by the processor, enable the offload device to: expose the offload device as a hardware device; perform at least a portion of processing of a user data packet received to a physical function associated with the offload hardware device, the processing including at least stripping an inner and outer header of the data packet, performing any packet modification, and forwarding the user data packet to an internal virtual function, the internal virtual function operable to deliver the user data packet to a guest virtual machine.

[0002b] According to a second aspect, there is provided a computer-implemented method for processing data packets in an electronic environment, comprising: under control of one or more computer systems configured with executable instructions, receiving a user data packet to a physical function associated with an offload device; building a lookup key for the user data packet using the offload device; performing a lookup in a rule table for at least one rule for processing the user data packet using the lookup key; performing software-based processing of the user data packet in a trusted domain in response to determining a trap rule from the rule table; performing no further processing of the user data packet in response to determining a drop rule from the rule table; and performing at least a portion of the processing of the user data packet using the offload device in response to determining a forward rule from the rule table, the processing including at least stripping an inner and outer header, performing any packet modification, and forwarding the user data packet to an internal virtual function, the internal virtual function operable to deliver the user data packet to a guest virtual machine.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Various embodiments in accordance with the present disclosure will be described with reference to the drawings, in which:

[0004] **FIG. 1** illustrates an environment in which various embodiments can be implemented;

[0005] **FIG. 2** illustrates an environment for providing access to various resources that can be used in accordance with one embodiment;