

1 Unified Virtual Layer

In order to achieve universal RDMA virtualization for containers and virtual machines, while taking into account the performance and management goals of RDMA virtualization, this paper designs a uniRDMA software virtualization framework. The vRNIC constructed by uniRDMA based on the user space virtualization layer provides unified virtual RDMA services for different virtual machines or container instances.

As shown in Figure 4-1, uniRDMA is generally divided into two parts: uniRDMA user space virtual layer and uniVerbs interface. The former is responsible for the establishment and management of virtual RDMA services. The specific work includes the construction of vRNIC, the mapping management of vRNIC to hardware virtualization interface VF, and the virtual RDMA network management of vRNIC, such as grouping and routing establishment; the latter is responsible for virtual layer vRNIC and container or The interaction of virtual machine RDMA applications includes the construction of universal interfaces and the optimization of interface performance.

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