

# Enhancing CNF performance for 5G core network using SR-IOV in Kubernetes

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**Abstract**—Cloud-native containerization is replacing Virtual Machine (VM) as the preferred method of application deployment. However, the network requirements involved, including high performance and low latency, prove to be a barrier to the deployment of fifth-generation (5G) telecommunication applications. Cloud-native Function (CNF) enables network functionalities to run in containers instead of on traditional baremetal servers. The success of integrating Single Root Input/Output Virtualization (SR-IOV) into Network Function Virtualization (NFV) on VMs has motivated our research into using SR-IOV in CNF, in order to address the strict network demands. When applied to the Charging Function (CHF) in the Cloud-native 5G architecture, our solution resulted in a 30% increase in network throughput, compared to the Kubernetes deployment using Calico. Therefore, SR-IOV and CPU-Pinning have shown potential in optimizing the performance of Cloud-native container-based applications.

**Keyword**—CNF, SR-IOV, Performance, 5G, Cloud-native



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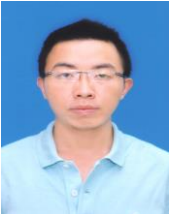
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