

# China Mobile's end user story

## The "Android application in edge cloud practice" program successfully released the Akraino community R3 version

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At the technical steering committee held by Akraino Edge Stack, an open source project for edge computing of Linux foundation, China Mobile, together with ByteDance, Arm, Ampere, NVIDIA and mozhijun technology co., ltd., launched the "Android application in edge cloud practice" project, which recently successfully passed Akraino R3 version.

Akraino consists of open blueprints for edge infrastructure and applications, covering a wide range of use cases, including 5G, artificial intelligence, edge cloud and Internet of Things, etc., which are suitable for enterprise edge areas. The "Android application in edge cloud practice" project deploys Android cloud game rendering, encoding and decoding, storage and distribution capabilities at edge nodes. This enables low latency access to nearby applications which improves the user experience especially for 5G cloud game computing application scenarios. The establishment of this project will provide mobile terminal applications with Android running environment on Arm architecture at the edge, reducing the deployment and development difficulty of applications on edge cloud, and reduce the cost of Android edge cloud deployments, which are of great significance to further promote the development of Android applications in edge computing. At present, the underlying environment of Android containerization has been built, and the light-load business has been tested, which provides environment preparation for the next end-to-end business performance test of cloud games. In the future, the project will continue to select cloud games as the key scene, explore the complete solution from the underlying hardware, virtualization platform to the upper Android application with the acceleration of GPU/vGPU, and promote the realization of R4 milestone in the community with the strength of Akraino community and industry partners.

## The results of the integrated edge cloud type 5 blueprint project initiated by China Mobile are officially released on Akraino Edge Stack

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Recently, the results of the integrated edge cloud type 5 blueprint project initiated by China Mobile were officially released in the Linux Foundation edge computing open source project Akraino Edge Stack Release 3.

At present, with the rise of new technologies such as the Internet of Things, software-defined networks, blockchain, artificial intelligence, and 5G, the deployment of edge computing has become a key solution to support the development of new technologies. By integrating edge computing technology and cloud closely, it can further promote ultra-low latency network architecture, serve multiple network users, and create a network solution with a better experience.

In the edge virtualization scenario, the current data exchange path between the virtual machine and the network card mainly uses the OVS+DPDK (soft switch) method, which can flexibly configure various flow control strategies (security groups, etc.), can be used as a VXLANVTEP point, and The advantages of no binding of virtual machines, unlimited number of ports, and support for virtual machine hot migration. However, OVS+DPDK has limited processing power and consumes more CPU. Offloading OVS+DPDK related functions to the accelerated network card can not only make full use of the fast characteristics of hardware resources, improve forwarding capabilities, and enjoy the flexibility brought by OVS+DPDK; at the same time, it can reduce CPU resource consumption and improve the network quality of edge computing sites. Networking flexibility and ROI.

Therefore, China Mobile initiated the integrated edge cloud 5 blueprint (IEC type 5) project in the edge computing open source project Akraino Edge Stack to jointly explore and promote the deployment of smart network cards in the edge infrastructure to achieve high performance, low latency, high availability, and high scalability Edge infrastructure solutions that meet security requirements and improve fault management.

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The first release of the integrated edge cloud type 5 blueprint R3 version is the NVIDIA Mellanox BlueField network card OVS offload reference implementation based on the Arm SoC architecture, and merged into the community R3 version. This version offloads OVS-DPDK to the smart network card, which can enhance the throughput performance of the edge network VPC, reduce the packet loss rate, and enhance the management of network card resources to save more computing resources. At the same time, in the future, the performance of 5G UPF network elements deployed in the operator's edge cloud data center can also be enhanced by implementing the uninstall function of the network card.

At present, the deployment code for the OVS-DPDK offload function of the BlueField network card has been open source. In the subsequent release of the version, China Mobile will provide a delivery point environment with the BlueField smart network card, combining the strength of the community and industry to continue to promote the realization of the R4 milestone .

