

SoftBank Corp. Succeeds in Developing SRv6 MUP Technology to Implement MEC and Network Slicing Affordably at Scale

SoftBank Corp. ("SoftBank") announced that SoftBank developed SRv6 Mobile User Plane (MUP) technology that is completely IP-native and capable of implementing a complete mobile user-plane (U-plane) across commercial SRv6 networks.

SoftBank will lead a proof of concept (PoC) demonstration of SRv6 MUP at Mobile World Congress Barcelona 2022 (MWC '22), which is scheduled to be held from February 28 to March 3. Partner companies are supporting this SRv6 MUP initiative in the PoC. At MWC '22, the SoftBank-developed SRv6 MUP PoC will be demonstrated using Arrcus Inc.'s ("Arrcus") ArcOS, a native SRv6 MUP implementation combined with Intel Corporation's ("Intel") hardware platform at Intel's virtual booth*1. VMware, Inc ("VMWare"), which is also hosting the SRv6 MUP demo system at its MWC '22 booth, is providing cloud platform support for SRv6 MUP.

1. Overview and features of SRv6 MUP

SRv6 MUP enables the easy deployment of key 5G technologies, such as Multi-access Edge Computing (MEC) and network slicing, at low costs and with a much simpler architecture. While 5G promises MEC roll-out and network slicing, costly deployments and operations are inevitable, especially in large-scale deployments as legacy mobile U-plane requires many session states to be maintained in a User Plane Function (UPF), as well the necessity of a high number of costly UPFs in a distributed MEC. SoftBank developed a SRv6 MUP that eliminates the pain points of the legacy U-plane and can deliver MEC and network slicing at high-cost efficiency.

SRv6 MUP is a standard IP routing based U-plane technology that leverages network programmability of SRv6 to integrate mobile sessions in IP routing. In other words, SRv6 MUP enables MEC and network slicing as one of the various functions supported by merchant network chipsets and whitebox switches in SRv6 networks. SRv6 MUP can be easily applied to SRv6 networks that SoftBank began operating in its commercial network in 2019.

2. Comments from SRv6 MUP partner companies

"SRv6 is not a mere IP layer for U-plane tunnel transport, but a full U-plane networking solution for a mobile cellular network. We are actively looking into IP and cloud-native technologies for telecom to achieve higher cost efficiencies. SoftBank with its partners will continue to further improve SRv6 MUP to make it even more light-weight and cost efficient," said Hideyuki Tsukuda, SoftBank Corp. Executive Vice President & Chief Technology Officer (CTO).

A validation system for SRv6 MUP is provided by Arrcus' ArcOS, hardware platform with the Intel Tofino Intelligent Fabric Processor and Intel Xeon Scalable Processor, and VMware's Telco Cloud Platform. Comments from the validation partners Arrcus, Intel and VMware are as follows.

"The emergence of 5G and corresponding demand from new applications call for increased capacity and coverage capabilities with greater efficiency. Arrcus' ACE 2.0 platform supported by ArcOS provides service providers with a scalable, performant, secure and cost-effective transport networking solution. We are excited

to support SoftBank's vision for a modernized networking platform through the innovative use of SRv6 MUP technology," said Shekar Ayyar, Arrcus CEO and chairman.

"The SoftBank SRv6 mobile user plane (MUP) proof of concept is a strong validation of the power of P4 network programmability. Bringing these technologies together from Intel, Arrcus and SoftBank provides flexibility, giving customers the potential to scale more efficiently to large scale distributed edge computing for 5G and beyond," said Ed Doe, Intel Vice President and General Manager, Switch and Fabric Group.

"The next generation of modern apps requires a modern networking architecture. The architecture that SoftBank envisions can deliver more reliable scale, predictable performance, and seamless orchestration. Running Arrcus ACE 2.0 on VMware Telco Cloud Platform, as in the demonstration with SoftBank at Mobile World Congress, can give service providers the ability to program their network and become more dynamic, scalable, and efficient," said Stephen Spellicy, VMware Vice President of product marketing and business development, Service Provider & Edge.

Comments from partners supporting the SRv6 MUP are as follows.

"Enabling SRv6 MUP to the mobile network with SoftBank is an ideal collaboration for Broadcom. Our Jericho2's merchant silicon enhances the SRv6 MUP flexibility and performance applied in MUP Gateway and PE, allowing the acceleration of mobile operators deployments, and enabling much higher bandwidth at maximum cost efficiency," said Ram Velaga, Senior Vice President and General Manager of Core Switch Group (CSG) at Broadcom.

Cisco, a long-time partner of SoftBank and leading SRv6 technology, including supporting SoftBank's world's first commercialization of SRv6, also commented on SRv6 MUP:

"We are excited to co-work with SoftBank for SRv6 MUP. The cost-efficiency, the flexibility and the simplicity of SRv6 network programming will surely help to simplify the mobile architecture toward beyond 5G and will give network operators a greater freedom of choice for their mobile network systems," said Clarence Filisfilis, Cisco Fellow.

F5 has been a strategic partner for SoftBank, working jointly on strategic initiatives including SRv6 and 5G MEC, commented on SRv6 MUP:

"F5 shares SoftBank's vision of creating an IP-native mobile core network through leveraging SRv6 mobile user plane (MUP). We were an original proof of concept partner during SRv6 MUP development and support it on our new F5 Distributed Cloud Platform. We are working closely with SoftBank to drive SRv6 MUP development and worldwide adoption both at the edge and 5G core," said Ankur Singla, SVP, Security & Distributed Cloud Product Group, F5.

"BBIX has been providing Roaming Peering eXchange (RPX) to Mobile Network Operators (MNOs) since 2014 to support MNO's All-IP based backbones using its own Internet Exchange (IX) service. By enabling SRv6 MUP protocol, MNOs will be able to use ordinary IP backbones controlled by BGP as a part of their mobile core network. BBIX is planning to provide SRv6 MUP capable solutions with its subsidiary BBSakura Networks," said Hidetoshi Ikeda, Representative Director, President & CEO, BBIX, Inc.

"We feel that SRv6 MUP has unlimited possibilities. We'll be able to transform stateful legacy network architecture to scalable and pure IP based networks by using SRv6 MUP. We're excited to be working with SoftBank to develop the next generation mobile network for the Beyond 5G era," said Hideyuki Sasaki, Representative Director, President & CEO, BBSakura Networks, Inc.

SoftBank will work with its partners to standardize the underlying technology with the aim of achieving early

commercial adoption of SRv6 MUP and widespread use in the telecommunications industry. In collaboration with various technology companies and telecom operators in various countries, SoftBank will contribute to the more efficient realization of MEC and network slicing through the use of SRv6 MUP. SoftBank plans to roll SRv6 MUP out in its 5G SA commercial network in the future.

[Notes]

*1 Intel's online exhibition booth can be viewed [here](#).

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