



SRv6 创新与实践

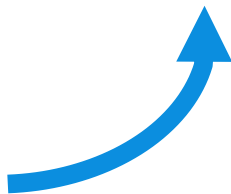
蒋星

思科亚太区首席架构师

简单才是王道



扩展性更好



更多功能

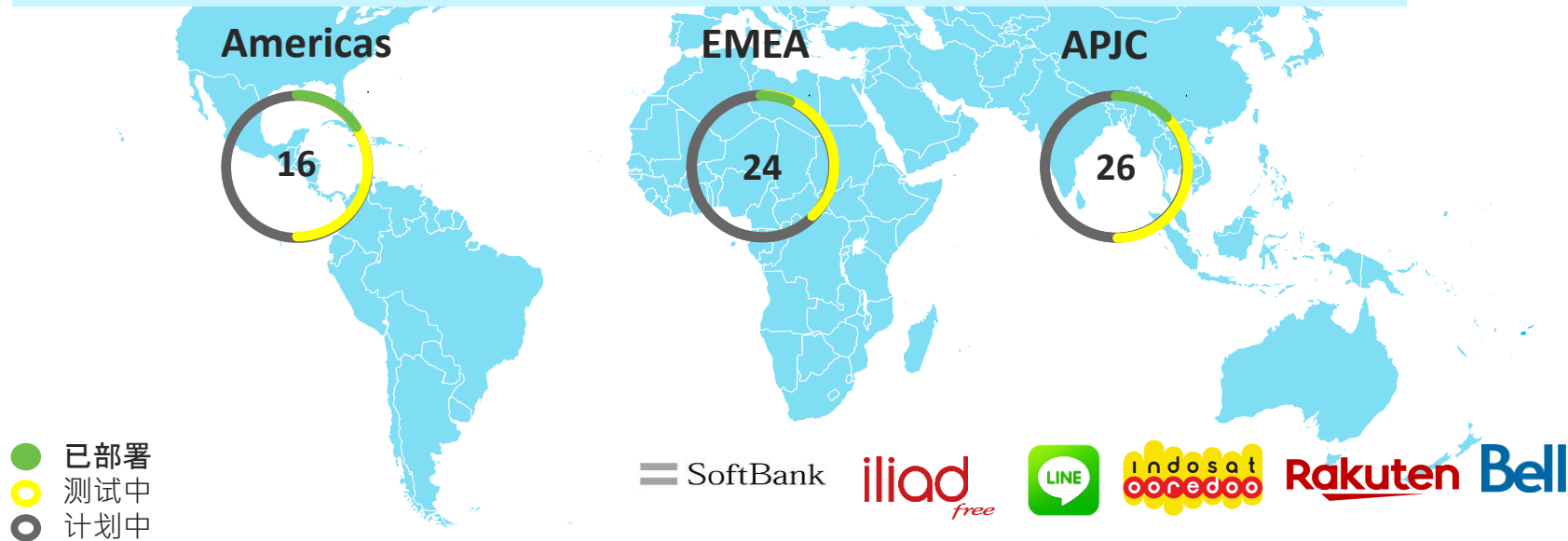


- ~~LDP~~
- ~~RSVP-TE~~
- ~~跨域选项A / B / C~~
- ~~MPLS~~
- ~~UDP / VxLAN~~
- ~~NSH~~

SRv6正在成为行业热点



- 已承载1亿SRv6用户，全球大约100个SRv6生产网，最长2.5年的商业部署时间
- 中国正在广泛部署SRv6

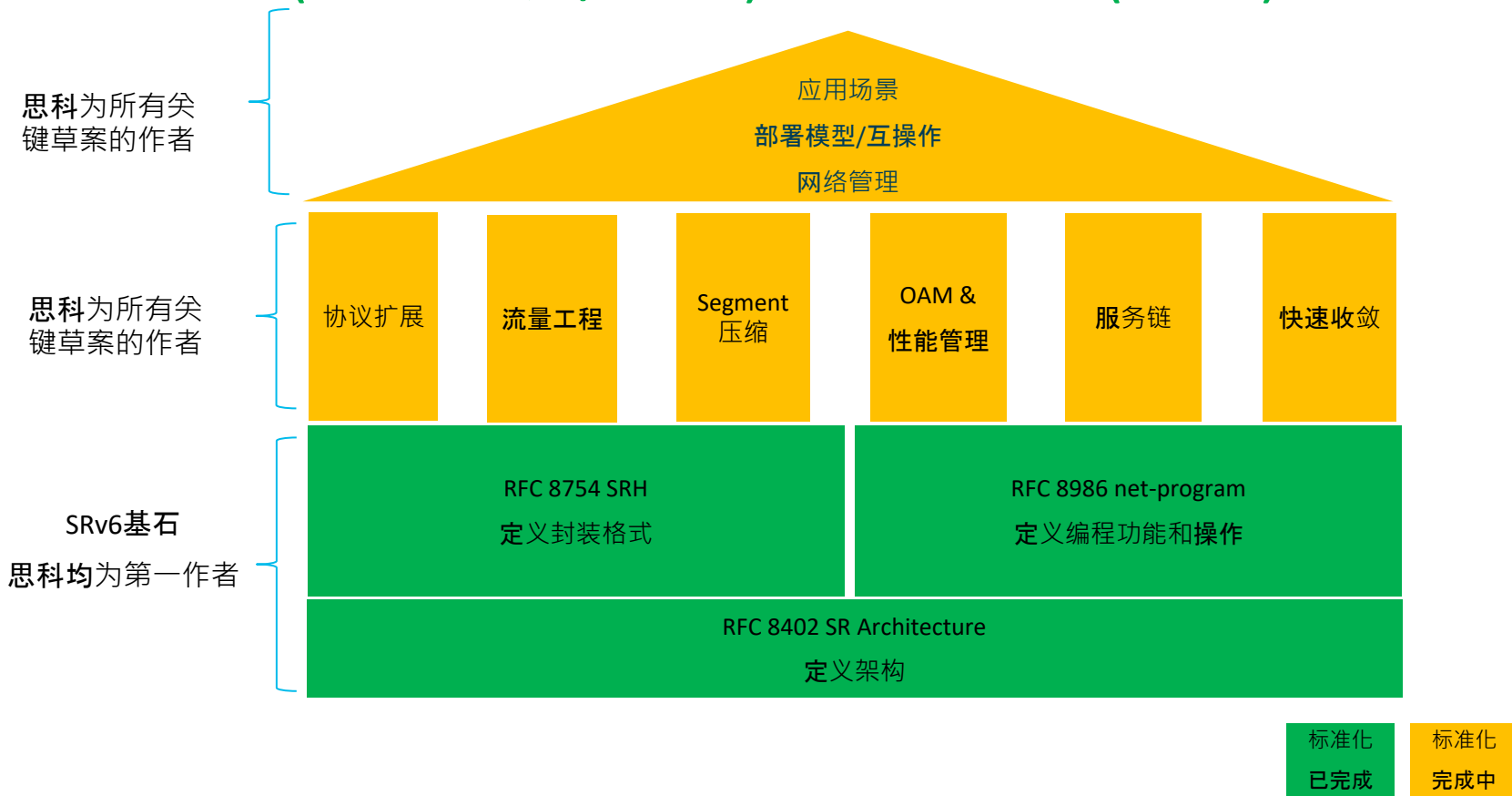


SRv6丰富的生态系统

- 主要硬件厂商已支持线速转发
 - 思科, Huawei, Juniper, Nokia, ZTE, Arrcus, Kaloom
 - Broadcom, Intel(Barefoot), Intel SmartNIC, Marvell, Mellanox,
 - Spirent, Ixia
 - 多个互通测试报告
- 11个开源平台/应用已支持
 - Linux, FD.io VPP, P4, iptables, nftables, snort, SERA, ExaBGP, GoBGP, GoBMP, Contive-VPP

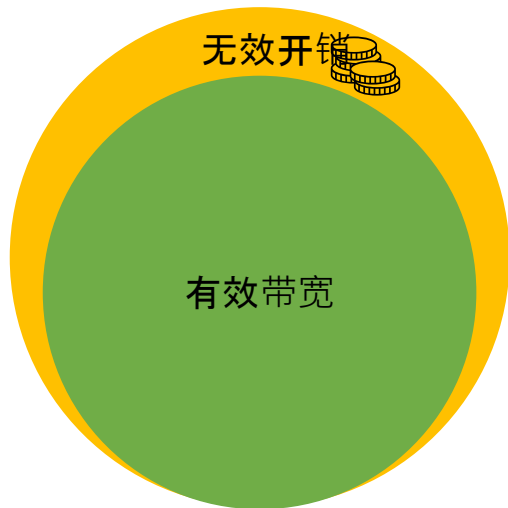
SRv6标准体系完善还需行业共同努力

三大基石(架构封装/操作), 一大关键(压缩)

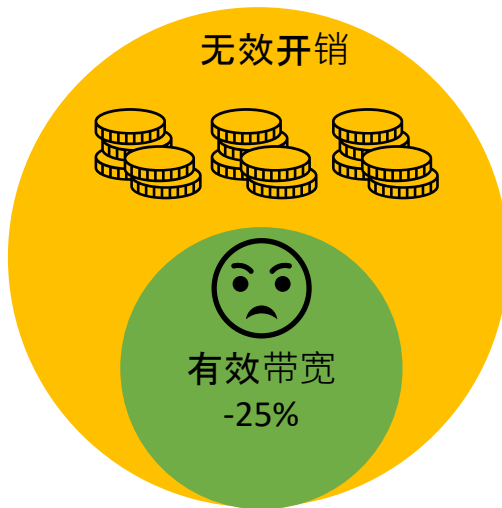


亟待解决的SRv6 包头压缩挑战

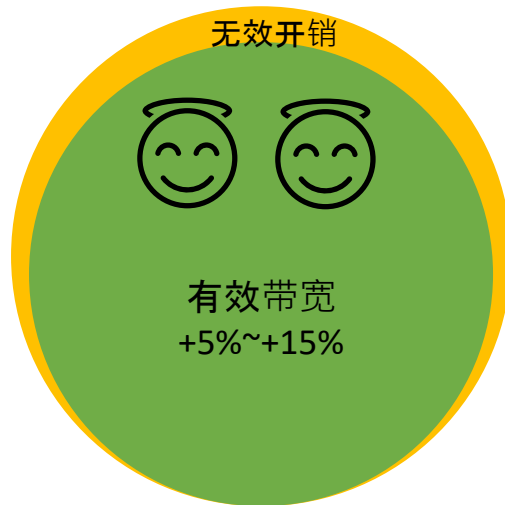
SR/MPLS技术



SRv6 技术



SRv6 uSID包头压缩



思科已支持丰富的SRv6 功能

- 我们在2012年启动了SR-MPLS，在2017年启动了SRv6
- 任何SR部署的核心是SRv6具备与SR相同的功能集
 - TILFA
 - uLoop规避
 - Flex- Algo：低成本/低延迟切片
 - PerfMon：链路延迟（用于低延迟分片）
 - ODN / AS转换为Flex- Algo
 - 具有地址汇总和网络切片功能的跨域SRv6
 - L3VPN（IPv4和IPv6），IPv4互联网，IPv6互联网，PW
 - 用于将“新” SRv6-VPN与传统VPN互通的VPN GW





SRv6部署案例



SoftBank 部署SRv6网络, 为 5G 做好准备

Press Release - <https://newsroom.cisco.com/press-release-content?type=webcontent&articleId=1969030>

Cisco Supports SoftBank on First Segment Routing IPv6 Deployment in Prep for 5G



NEWS PROVIDED BY
Cisco Systems, Inc. →
Feb 24, 2019, 02:00 ET

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BARCELONA, Spain, Feb. 24, 2019 /PRNewswire/ -- Mobile World Congress -- Cisco announced today its collaboration with SoftBank on the world's first Segment Routing IPv6 (SRv6) deployment.

With the anticipation of the coming 5G era, Cisco has been assisting SoftBank to deploy state-of-the-art Segment Routing IPv6 (SRv6) networks nationwide to build a future network architecture that is extremely scalable, with improved reliability, flexibility and agility, all while helping to reduce CapEx and OpEx.

Current mobile networks are deployed as divided networks, with several layers and complicated control plane processing, which makes it difficult to respond to strict quality requirements like in the case of 5G. Deploying SRv6 in a 5G mobile network simplifies network layers and integrates user plane functions from end-to-end with only IPv6 protocol, making things simple, controllable, and flexible.

"Converging 5G features into the end-to-end IPv6 layer with Segment Routing capabilities, is the key to embodying 5G in a simple, scalable architecture," said **Mr. Junichi Miyakawa, Representative Director & CTO for SoftBank**. "With the depth of portfolio and strong network knowledge that Cisco brings to the table, we knew together we could bring our vision to life."

"SoftBank has kept an intense focus on improving service quality for its customers, which can be challenging when trying to reduce costs," said **Sumeet Arora, Senior Vice President of Service Provider Networks, Cisco**. "With the launch of SRv6 network programming, it is pioneering the next phase of IP networking through automation, and championing

凭借 SRv6 网络编程功能，
Iliad 将通过提供真正创新的
服务产品进一步颠覆移
动市场

Iliad 的 NodeBox 支持 SRv6

Press Release - <https://newsroom.cisco.com/press-release-content?type=webcontent&articleId=1978361>

iliad
free





Indosat Ooredoo 和 Cisco 将 SRv6 与SDN 融合承载网带到印度尼西亚

Press Release - <https://indosatooredoo.com/en/about-indosat/corporate-profile/press-release/indosat-ooredoo-dan-cisco-menghadirkan-jaringan-transport-dengan-srv6-dan-sdn-terkonvergensi-di-indonesia>

Jakarta, 10 November 2020 - Indosat Ooredoo is proud to announce that they are now ready to build a 5G-ready transport network based on new converged Software-defined Networking (SDN) and Segment Routing IPv6 (SRv6) architecture, powered by Cisco. Indosat Ooredoo and Cisco will continue their decades-long partnership to deliver the advanced transport platform in West and Central Java.

The transformation to a converged SDN transport network simplifies the network, optimizes capacity and improves scalability while maintaining a consistent and superior network latency. The SDN transport network is capable of concurrently supporting enterprise, business and consumer broadband as well as fixed and mobile services.

The new network is end-to-end IP enabled with segment routing IPv6, providing a unified, policy-aware network architecture with seamless integration between the transport and the data center domains. Segment routing also provides the network with the most cost-effective end-to-end network slicing and low latency capabilities, which are key 5G requirements.

This critical milestone will completely transform Indosat Ooredoo's transport network architecture, delivering on its promise to build one of the most modern transport networks in Southeast Asia. With this transformation, together with on-going extensive fiber optic deployment, Indosat Ooredoo's transport network will be ready for future demands of high quality and scalable connectivity services with consistent, superior customer experience to both consumers and enterprises.

Cisco 5G Converged SDN Transport



乐天移动与思科合作推进 其 5G 和物联网服务网络

Press Release - <https://newsroom.cisco.com/press-release-content?type=webcontent&articleId=2174308>



TOKYO, JAPAN, June 25, 2021 – Cisco and Rakuten Mobile, Inc. today announced a major milestone for Rakuten Mobile’s network infrastructure in support of efforts to build a better, more inclusive internet for the future.

With the implementation of Segment Routing over IPv6 (SRv6) and Cisco Routed Optical Networking, Rakuten Mobile plans to expand its capabilities to support enterprise customers with 5G and IoT services.

To support its future 5G SA services with network slicing capabilities, ***Rakuten Mobile will introduce SRv6 micro-segments***, an extension to the SRv6 network programming model that is key to addressing multi-domain 5G deployments across its network.

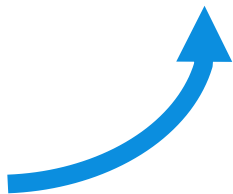
Transitioning to SRv6 will help Rakuten Mobile increase network resiliency and support a wider range of Service Level Agreements (SLAs) that are foundational for upcoming 5G and IoT services.

“Reimagining mobile networking is at the very heart of Rakuten Mobile’s strategy, and our decision to go full-speed ahead on SRv6 and Cisco Routed Optical Networking demonstrates our effort to take advantage of technology innovation at every layer of the stack,” said **Tareq Amin, Chief Technology Officer, Rakuten Mobile**. “We knew that Cisco would walk in lock-step with us as we worked through each phase needed to implement this new technology and align it to our business goals.”

总结：简单就是王道



扩展性更好

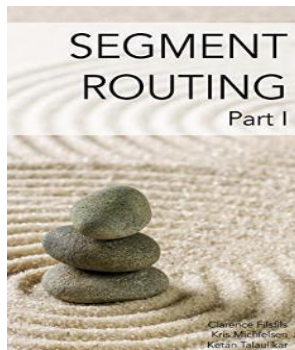


更多功能

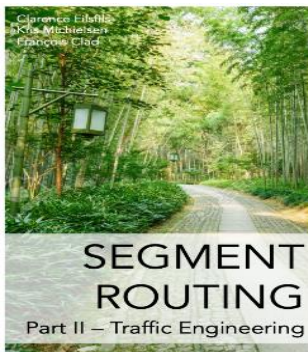


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持续更新



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SRv6第III卷
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谢谢！

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