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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 44887.4-2025

IPv6 evolution technical requirements - Part 4: SRv6-based network programming

IPv6 演进技术要求 第4部分：基于IPv6段路由（SRv6）的网络编程

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Standardization Administration of the PRC

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 4 of GB/T 44887 "Technical Requirements for IPv

6 Evolution". GB/T 44887 has already published the following parts.

1.Reference Architecture;

---Part 2: IP Bearer Networks Based on IPv

6 Segment Routing (SRv6);

6 Segment Routing Header (SRH);

1 Scope

GB/T 44887.4-2025 is the Chinese national standard covering SRv6 - encoding the path and the functions to perform into the IPv6 address itself, the segment identifier structure and the behaviours it can name, the header processing at each node, and the scaling and the MTU cost of carrying the list. Part 4 of the series, first edition. In force from 1 May 2026. Issued on 5 October 2025, it has been in force since 1 May 2026.

This document specifies the network programming technical requirements based on IPv6 segment routing (SRv6), including SRv6SID endpoint behavior and SRv6 policies. Header node behavior, control plane behavior publishing, etc. This document applies to the development, design, and testing of network devices that support SRv6 functionality.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document. GB/T 44887.1-2025 IPv

3 Terms and Definitions

The terms and definitions defined in GB/T 44887.1-2025, as well as the following terms and definitions, apply to this document.

3.1 Segment identifier; SID Identifier for a specific segment within a segmented routing domain.

Note. In SRv6, a SID consists of three parts. Locator, Function, and Argument, encoded in the form of an IPv6 address. The SID list is represented as < S1,S2,S3> and is used to indicate the packet forwarding path.

3.2 The technology of establishing private networks over public networks.

Note. This technology is widely used in enterprise networks. VPN gateways enable remote access by encrypting data packets and converting the destination address of the data packets.

3.3 VPN technology is used to enable Layer 2 network communication.

Note. By extending the NLRI of the BGP protocol, several new types of BGPEVPN routing types have been added to advertise host MAC addresses between different sites. Address and IP address information.

4.Abbreviations The following abbreviations apply to this document.

4 Network Programming Based on IPv

6 Segment Routing (SRv6);

5 Virtual Private Networks (VPNs) Based on IPv

6 Segment Routing (SRv6);

6 Segment Routing (SRv6) Policy;

7 Service Chaining Based on IPv

6 Segment Routing (SRv6);

8 Packet Header Compression Based on IPv

6 Segment Routing (SRv6);

9 Network Fault Protection Based on IPv

6 Segment Routing (SRv6);

10.Enhanced Virtual Private Networks (VPNs) Supporting IP Network Slicing;

6 Flow Detection Technology. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the Ministry of Industry and Information

Technology of the People's Republic of China. This document is under the jurisdiction of the National Telecommunications Standardization Technical Committee (SAC/TC485). This document was drafted by: China Telecom Group Corporation, China United Network Communications Group Co., Ltd., and Huawei Technologies Co., Ltd. China Mobile Communications Group Co., Ltd., ZTE Corporation, China Academy of Information and Communications Technology, and China Information and Communications Technology Group Corporation Limited Liability Company, H3C Technologies Co., Ltd., and Beijing Engineering Research Center for Key Technologies and Evaluation of Next-Generation Internet Co., Ltd. This document was drafted by: Wu Youming, Gong Xia, Zhu Yongqing, Yang Bing, Zhang Shuai, Peng Shuping, Cheng Weiqiang, Liu Yao, Liu Jialiang, Liu Jianhua, and Lin Changwang. Yu Haisheng, Tan Ren, Wei Yuehua, Zhang Yuhua, Han Zhen.

According to the "Notice on Accelerating the Large-Scale Deployment and Application of Internet Protocol Version 6 (IPv6)," in order to accelerate the transformation of government applications... To create and expand industry-wide integrated applications and promote the standardization of IPv6 large-scale deployment and application innovations, my country has formulated a series of IPv6 standards. In China, GB/T 44887 "Technical Requirements for IPv

6 Evolution" is formulated to standardize the national IPv6 deployment and is proposed to consist of eleven parts.

1.Reference Architecture. The purpose is to define the application scenarios of IPv6 evolution technology in the operator and industry sectors, as well as... Deployment in carrier and industry networks.

---Part 2: IP Bearer Networks Based on IPv

6 Segment Routing (SRv6). The purpose is to define IP bearer networks based on SRv6. Overall architecture, SRv6-based device layer technical requirements, and SRv6-based control layer technical requirements.

6 Segment Routing Header (SRH). The purpose is to define the format of the IPv6 segment routing header (SRH), and... SRH's technical requirements for node processing.