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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**IPv6 evolution technical requirements - Part 9: Fault protection
for segment routing over IPv6 (SRv6) network**

IPv6 演进技术要求 第9部分：基于IPv6段路由（SRv6）的网络故障保护

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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 9 of GB/T 44887 "Technical Requirements for IPv6 Evolution". GB/T 44887 has already published the following parts.

- Part 1: Reference Architecture;
- Part 2: IP Bearer Networks Based on IPv6 Segment Routing (SRv6);
- Part 3: IPv6 Segment Routing Header (SRH);
- Part 4: Network Programming Based on IPv6 Segment Routing (SRv6);
- Part 5: Virtual Private Networks (VPNs) Based on IPv6 Segment Routing (SRv6);
- Part 6: IPv6 Segment Routing (SRv6) Policy;
- Part 7: Service Chaining Based on IPv6 Segment Routing (SRv6);
- Part 8: Packet Header Compression Based on IPv6 Segment Routing (SRv6);
- Part 9: Network Fault Protection Based on IPv6 Segment Routing (SRv6);

- Part 10.Enhanced Virtual Private Networks (VPNs) Supporting IP Network Slicing;
- Part 11.IPv6 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.

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Introduction

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 expand industry integration and application, and to promote the standardization of large-scale IPv6 deployment and application innovations, China has formulated a series of IPv6 standards.

In China, GB/T 44887 "Technical Requirements for IPv6 Evolution" is formulated to standardize the national IPv6 deployment and is proposed to consist of eleven parts.

- Part 1: Reference Architecture. The purpose is to define the application scenarios of IPv6 evolution technology in the operator and industry sectors, and in...

Deployment in carrier and industry networks.

- Part 2: IP Bearer Networks Based on IPv6 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.

- Part 3: IPv6 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.

- Part 4: Network Programming Based on IPv6 Segment Routing (SRv6). The purpose is to define the data platform for SRv6 network programming.

Surface, control plane, management plane.

- Part 5: Virtual Private Networks (VPNs) Based on IPv6 Segment Routing (SRv6). The purpose is to define SRv6-based VPNs.

The network processing flow and protocol messages include the implementation of Layer 3 services and Layer 2 services.

- Part 6: IPv6 Segment Routing (SRv6) Policy. The purpose is to define SRv6 policies, SRv6 policy routing, and SRv6 policy...

The technical requirements for protection are used to support the development, design, and testing of network devices based on SRv6 policy technology.

- Part 7: Service Chaining Based on IPv6 Segment Routing (SRv6). The purpose is to define the data plane of SRv6-based service chains.

And control plane technical requirements, used to support the development, design and testing of network devices based on SRv6 packet header compression.

- Part 8: Packet Header Compression Based on IPv6 Segment Routing (SRv6). The purpose is to define the segment identifier structure for SRv6 header compression.

Requirements such as structure, data plane forwarding, control plane protocol extension, cross-domain deployment, and protection are designed to support SRv6-based packets.

The development, design, and testing of header-compressed network devices.

- Part 9: Network Fault Protection Based on IPv6 Segment Routing (SRv6). The purpose is to specify SRv6BE links/nodes, SRv6 specifies intermediate nodes, SRv6 tail nodes, micro-loop prevention, and SRv6 end-to-end technologies for SRv6 network fault protection.

Seeking the development, testing, and application of devices with network protection functions in SRv6 networking scenarios, specifically for node/link failures and other fault conditions. Deployment, etc.

- Part 10: Enhanced Virtual Private Networks (VPNs) Supporting IP Network Slicing. The purpose is to define enhanced virtual private networks (VPNs).

The technical architecture of VPN, VPN technical requirements, and the VPN implementation process based on SR.

- Part 11. IPv6 Flow-Based Inspection Technology. The purpose is to specify data plane flow-based inspection technologies applicable to various service carrying scenarios.

The development, testing, and deployment of automated quality measurement of information, as well as the flow detection function of IP network devices.

IPv6 Evolution Technical Requirements Part 9.

Network fault protection based on IPv6 segment routing (SRv6)

1 Scope

This document describes the application scenarios of SRv6 network fault protection technology, and specifies the SRv6BE links/nodes and SRv6 policy-specified intermediate nodes.

Technical requirements for SRv6 network fault protection, including nodes, SRv6 policy tail nodes, SRv6 anti-micro-loop, and SRv6 policy end-to-end.

This document applies to the research, development, and testing of devices with network protection functions in SRv6 networking scenarios, including node/link failures and other fault scenarios. With deployment.

2 Normative references

GB/T 44887.1

3 Terms and Definitions

The terms and definitions defined in GB/T 44887.1 and the following terms and definitions apply to this document.

3.1

The application of segmented routing networks provides topology-independent fault protection capabilities in IGP networks, while also providing protected routes.

The path is consistent with the path after IGP convergence, which is a fast rerouting technology that reduces service interruption.

3.2 local repair point (pointoflocalrepare)

The upstream node of the faulty node in the TI-LFA and specified intermediate node protection scenario.

Note. Implement proxy forwarding and fault protection functions.