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Contact: Dan Luo
 Ministry of Industry and Information Technology (MIIT) China
 Tel: 86-10-62305627
 E-mail: luodan1@caict.ac.cn

Contact: Xiaoyu Wang
 Ministry of Industry and Information Technology (MIIT) China
 Tel: +86-10-62301861
 E-mail: wangxiaoyu@caict.ac.cn

Contact: Chuan Liu
 State Grid Corporation of China
 Tel: +86-13913942004
 E-mail: liuchuan@geiri.sgcc.com.cn

Contact: Cancan Huang,
 China Telecom,China
 Tel: +86-20-38639366
 E-mail: huangcanc@chiantelecom.cn

Contact: Minrui Shi
 China Telecom,China
 Tel: +86-20-68540571
 E-mail: shimr@chinatelecom.cn

Abstract: This document is the baseline text of draft new technical report “Method for Performance Monitoring of SRv6 Network” which is initiated at Q13/11 meeting held on 10-19 May 2023 in Geneva.

The following table shows discussion results for input documents.

Document Number	Source	Title	Meeting results
C143	Ministry of Industry and Information Technology (MIIT) China,	Proposal to start a new work item on Performance Monitoring Requirements and Methods of SRv6 Network	Agreed with modification

Draft new Technical report ITU-T TR.MPM-SRv6

Method for Performance Monitoring of SRv6 Network Proposal Monitoring

Summary

With the evolution of IPv6+, through SRv6 Network Programming model can offer more flexible means to satisfy the complex needs of transport networks in different contexts. With the SRv6 Network Programming model, it is possible to support valuable services and features such as layer 3 and layer 2 VPNs, Traffic Engineering, fast rerouting, etc.

Performance Monitoring (PM) is a fundamental function to be performed in a software-based network. It allows operators to detect issues in the QoS parameters of active flows that may require immediate actions and to collect information that can be used for the offline optimization of the network.

SRv6 PM specifies requirements based on data plane and control plane. It is necessary to standardize data management infrastructure and propose methods for measuring and collecting data related to nodes and individual traffic based on SRv6 in the network. Both these aspects are considered in this Technical report. This Technical report include:

- Description of function about Performance Monitoring of SRv6 Network.
- Description of different progress about PM of SRv6 Network in different standard organizations.
- The monitoring architecture for Performance of SRv6 Network.
- Exploring SRv6 Network Performance Monitoring Methods.

Keywords

PM; SRv6; architecture

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Method for Performance Monitoring of SRv6 Network Proposal Monitoring

1. Scope

This technical report studies methods for Performance Monitoring of SRv6 Network.

The scope of this technical report includes:

- Scope for Performance Monitoring of SRv6 Network
- Relationship with other related standard groups for PM of SRv6 Network
- The monitoring architecture for Performance of SRv6 Network
- Prospects for SRv6 Network Performance Testing

2. References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

TBD

3. Definitions

3.1. Terms defined elsewhere

This technical report uses the following terms defined elsewhere:

TBD

3.2. Terms defined in this Recommendation

This technical report defines the following terms:

TBD

4. Abbreviations and acronyms

This technical report uses the following abbreviations and acronyms:

PM	Performance Monitoring
IP	Internet Protocol
IPv6	Internet Protocol version 6
OAM	Operation, Administration and Maintenance
SRv6	Segment Routing version 6
VPN	Virtual Private Network

5. Conventions

In this technical report:

The keywords "is required to" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.

The keywords "is recommended" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.

The keywords "can optionally" indicate an optional requirement which is permissible, without implying any sense of being recommended. This term is not intended to imply that the vendor's implementation must provide the option, and the feature can be optionally enabled by the network operator/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with this Recommendation.

6. Overview

Editor's note: this section presents the overview of PM of SRv6 Network.

With the evolution of IPv6+, through SRv6 Network Programming model can offer more flexible means to satisfy the complex needs of transport networks in different contexts. With the SRv6 Network Programming model, it is possible to support valuable services and features such as layer 3 and layer 2 VPNs, Traffic Engineering, fast rerouting, etc. Moreover, large networks usually consist of hundreds of nodes generating a huge amount of data, and a new class of problems arises when considering the required storage and elaboration capacity. This scenario calls for the integration of a Cloud Native Big Data solution with the ability to support common management tasks. Several Network management solutions comprise a cloud ready architecture, and in there are also few proposals that specifically tackle the requirements of performance monitoring systems.

Performance Monitoring (PM) is a fundamental function to be performed in a software-based network. It allows operators to detect issues in the QoS parameters of active flows that may require immediate actions and to collect information that can be used for the offline optimization of the network.

Regarding the Performance Monitoring data plane subsystem for SRv6, two Internet Drafts have been proposed and are currently under discussion in the IETF SPRING WG. These drafts rely on existing methodologies for performance measurement in general IP and MPLS networks. They propose the extension of such methodologies to the SRv6 PM case. Both proposed solutions focus on system architecture and protocol specification, but the actual system implementation and integration in the network data plane must still be defined and validated in the field. In view of this, the research on methods for PM of SRv6 Network is of great significance.

7. Standardization progress for PM of SRv6 Network

Editor's note: description different progress about PM of SRv6 Network in different standard organizations will be presented in this section.

7.1. Progress about PM of SRv6 Network in ITU-T

- The research progress of collection SRv6 Network contributions related to ITU-T Recommendations.
- The requirements of collection and analysis PM of SRv6 Network contributions related to ITU-T Recommendations.

7.2. Progress about PM of SRv6 Network in IETF

- The research progress of collection SRv6 Network contributions related to IETF Recommendations.
- The requirements of collection and analysis PM of SRv6 Network contributions related to IETF Recommendations.

8. Research for Performance Monitoring of SRv6

Editor's note: This clause specifies the specifications for SRv6 network performance monitoring based the data plane and control plane.

8.1. Requirements for Performance Monitoring of SRv6 data plane

Editor's note: This clause specifies the specifications for measuring, collecting, and reporting data related to SRv6 nodes and individual traffic based on modules and protocols in the data plane.

8.2. Requirements for Performance Monitoring of SRv6 control plane

Editor's note: This clause aims to provide a testing method for SRv6 network performance monitoring based on the execution of commands issued by the control plane and data plane in the SRv6 network. It should include testing objectives, testing conditions, and testing configurations.

9. The monitoring architecture for Performance of SRv6 Network

Editor's note: This clause aims to provide performance monitoring based on the new characteristic brought by transferring between SRv6 devices Test objective, test conditions, test components should be included.

10. The methods of PM system implementation

Editor's note: This clause aims to provide performance monitoring based on the new characteristic brought by transferring between SRv6 devices test configurations, test procedure, test requirements should be included.
