

Export of Network Resource Partition (NRP) Information in IP Flow  
Information Export (IPFIX)  
draft-liu-opsawg-ipfix-network-slice-00

Abstract

This document introduces new IP Flow Information Export (IPFIX) Information ~~Elements-Element~~ to ~~identify-report~~ the Network Resource Partition (NRP) ~~over which that the network slice traffic can~~ observed flow is ~~related with~~forwarded.

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Commenté [BMI1]: I know the file name is not important, but this draft is about NRPs.

Commenté [BMI2]: Only one is defined

Commenté [BMI3]: To avoid that this is interpreted as the slice identification itself can be inferred from the NRP-ID.

Please remember that NRP is an optional component + many slices can use the same NRP + connectivity constructs of a slice can use distinct NRPs.

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## 1. Introduction

The definition of the IETF Network Slice, a framework, and the general principles

of network slicing in the IETF context are ~~specified~~discussed in [I-D.ietf-teas-ietf-network-slices]. As described in [I-D.ietf-teas-ietf-network-slices], an IETF Network Slice Service enables

connectivity between a set of Service Demarcation Points (SDPs) with specific Service Level Objectives (SLOs) and Service Level Expectations (SLEs) over a common underlay network. To meet the connectivity and performance requirements, network slice services ~~needs map to~~ be mapped to a Network Resource Partitions (NRPs). An

NRP is a collection of resources (bufferage, queuing, scheduling, etc.) in the underlay network.

As introduced in [I-D.ietf-teas-ns-ip-mpls], ~~each an~~ NRP can be identified using a unique NRP-ID in control plane and management plane. ~~And the~~ NRP-ID may also be encapsulated in data packets to guide the NRP-specific packet forwarding.

This document defines new IPFIX Information Elements within the "IPFIX Information Elements" ~~registry~~ [RFC7012] to identify-report the ~~Network Resource Partition (NRP) that the network slice traffic is related with~~ this associated with a Flow.

## 2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119][RFC8174] when, and only when, they appear in all capitals, as shown here.

This document uses the IPFIX-specific terminology (Information Element, Template, Collector, Data Record, Flow Record, Exporting Process, Collecting Process, etc.) defined in Section 2 of [RFC7011]. As in [RFC7011], these IPFIX-specific terms have the first letter of a word capitalized.

## 3. New IPFIX Information Element

This section defines ~~and describes the~~ the following new IPFIX IE-:

- \* Name: ~~nrpIdentifier~~NRPIdentifier
- \* ElementID: TBD1
- \* **Description:** The NRP ID as defined in [I-D.ietf-teas-ns-ip-mpls].
- \* Abstract Data Type: unsigned32
- \* Data Type Semantics: identifier

**Commenté [BMI5]:** I'm afraid this is too brief.

**Commenté [BMI6]:** This ID is defined ins sevrall I-Ds. Please check

<https://datatracker.ietf.org/doc/html/draft-boucadair-teas-ietf-slicing-overview-01#name-nrp-6>

Where an implementation has to look to export the ID? These matters are not defined in ip-mpls spec.

**Commenté [BMI7]:** Please note that some variants do not use a 32-bit identifier. There is a need to sync and have consistent encoding. This is beyond this draft.

#### 4. Use ~~cases~~Cases

A typical use\_case scenario is to monitoring the network slice traffic that is forwarded based on NRP specific resource-aware segments [I-D.ietf-spring-resource-aware-segments] that operate over SR-MPLS or SRv6 ~~data planes~~~~dataplanes~~. By looking at the SID itself, it is not always clear as to which NRP it belongs.

Another use\_case is the monitoring of the network slice traffic whose NRP-ID is encapsulated in data packet to determine the Network Resource Partition Per Hop Behavior.

By using ~~nrpIdentifier~~~~NRPIIdentifier~~ (TBD1), and some counters ~~information~~, it is possible to answer the following questions (amongst others):

- \* How many packets are forwarded or dropped?
- \* If dropped, for which reasons?
- \* Which NRP is the traffic related with?

#### 5. IANA Considerations

This document requests IANA to add a new IE to the "IPFIX Information Elements" registry [RFC7012] available at [IANA-IPFIX].

ElementID	Name	Reference
TBD1	NRP-ID	This document

#### 6. Security Considerations

There exists no significant extra security considerations regarding the allocation of these new IPFIX IEs compared to [RFC7012].

#### 7. References

##### 7.1. Normative References

- [I-D.ietf-teas-ns-ip-mpls]  
Saad, T., Beeram, V. P., Dong, J., Wen, B., Ceccarelli, D., Halpern, J. M., Peng, S., Chen, R., Liu, X., Contreras, L. M., Rokui, R., and L. Jalil, "Realizing Network Slices in IP/MPLS Networks", Work in Progress, Internet-Draft, draft-ietf-teas-ns-ip-mpls-02, 13 March 2023, <<https://datatracker.ietf.org/doc/html/draft-ietf-teas-ns-ip-mpls-02>>.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.

**Commenté [BMI8]:** The use cases are similar to the use of other IEs.

I'm not sure there is a value in having this section.

- [RFC7012] Claise, B., Ed. and B. Trammell, Ed., "Information Model for IP Flow Information Export (IPFIX)", RFC 7012, DOI 10.17487/RFC7012, September 2013, <<https://www.rfc-editor.org/info/rfc7012>>.
- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

## 7.2. Informative References

- [I-D.ietf-spring-resource-aware-segments]  
Dong, J., Bryant, S., Miyasaka, T., Zhu, Y., Qin, F., Li, Z., and F. Clad, "Introducing Resource Awareness to SR Segments", Work in Progress, Internet-Draft, draft-ietf-spring-resource-aware-segments-07, 31 May 2023, <<https://datatracker.ietf.org/doc/html/draft-ietf-spring-resource-aware-segments-07>>.
- [I-D.ietf-teas-ietf-network-slices]  
Farrel, A., Drake, J., Rokui, R., Homma, S., Makhijani, K., Contreras, L. M., and J. Tantsura, "A Framework for IETF Network Slices", Work in Progress, Internet-Draft, draft-ietf-teas-ietf-network-slices-21, 15 June 2023, <<https://datatracker.ietf.org/doc/html/draft-ietf-teas-ietf-network-slices-21>>.
- [IANA-IPFIX]  
"IANA, "IP Flow Information Export (IPFIX) Entities"", <<https://www.iana.org/assignments/ipfix/ipfix.xhtml>>.

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