

Provider Provisioned VPN WG
Internet Draft

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Global Unique Identifiers (GID)

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Abstract

The existing VPN solutions [VR, 2547, L2VPN-Kompella] use in their control plane globally unique identifiers. This document describes the format of these identifiers (called GIDs). If any future VPN solutions require globally unique identifiers, they can re-use the format described in this document.

ID Summary

RELATED DOCUMENTS

[[RFC2685](#)], [[RFC2547bis](#)], [VR], [[L2VPN-Kompella](#)]

WHERE DOES IT FIT IN THE PICTURE OF THE SUB-IP WORK

Fits the PPVPN box.

WHY IS IT TARGETED AT THIS WG

This ID proposes a format for generating unique global identifiers.

JUSTIFICATION

This draft proposes a format for generating unique global identifiers to be used by various VPN proposals.

1. Introduction

The existing VPN solutions [VR, RFC2547bis, L2VPN-Kompella] use in their control plane globally unique identifiers. This document describes the format of these identifiers, called GIDs. If any future VPN solutions require globally unique identifiers, they can re-use the format described in this document.

The GID is based on BGP extended community format. No assumption is made on the usage of the GID. It is up to the VPN solutions to describe the usage of the GID. However, it is important to stress that GIDs have to be unique only within the context of their particular application, but need not be unique across applications. An application can interpret the GID structure according to its own usage.

This draft doesn't describe a complete list of all possible ways of forming GIDs. In fact, IP addresses, DNS names, URLs, etc, could be used to form GIDs as well.

2. Global Identifier Format

Each GID is encoded as an eight octet quantity, as follows:

- Type Field : 1 or 2 octets

- Value Field : Remaining octets

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Type Field:

The value of the high-order octet will determine if it is a regular type or extended type. The size of the Type Field for regular types is 1 octet and the size of the Type Field for extended types is 2 octets.

All GID types must have a unique high-order octet.

The high-order octet of the Type Field is as shown below:

First bit (MSB)	:	IANA authority bit
		Value 0 : IANA assignable type
		Value 1 : Vendor-specific types
Second bit	:	Reserved
Remaining 6 bits	:	Indicates the structure of the GID

Value Field:

The encoding of the Value Field depends on the "type" of the GID as specified by the Type Field.

This document introduces a few types and defines the Value Field for those types.

- Type 0x00:

This is an extended type with a Type Field comprising of 2 octets and Value Field of 6 octets.

The value of the high-order octet of this extended type is 0x00 and the low-order octet of this extended type is used to indicate subtypes.

The Value field is structured as follows:

- * Administrator sub-field: 2 octets
- * Assigned Number sub-field: 4 octets

The Administrator sub-field must contain an Autonomous System number. If this ASN is from the public ASN space, it must have been assigned by the appropriate authority (use of ASN values from the private ASN space is strongly discouraged). The Assigned Number sub-field contains a number from a numbering space which is administered by the enterprise to which the ASN has been

assigned by an appropriate authority.

- Type 0x01

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This is an extended type with a Type Field of 2 octets and a Value Field of 6 octets.

The value of the high-order octet of this extended type is 0x01. The low-order octet of this extended type is used to indicate subtypes.

The Value field consists of two sub-fields (6 octets):

- * Administrator sub-field: 4 octets
- * Assigned Number sub-field: 2 octets

The Administrator sub-field must contain an IP address. If this IP address is from the public IP address space, it must have been assigned by an appropriate authority (use of addresses from the private IP address space is strongly discouraged). The Assigned Number sub-field contains a number from a numbering space which is administered by the enterprise to which the IP address has been assigned.

- Type 0x02

This is an extended type with a Type Field of 2 octets and a Value Field of 6 octets.

The value of the high-order octet of this extended type is 0x02. The low-order octet of this extended type is used to indicate subtypes.

The Value Field consists of two sub-fields.

- * Administrator sub-field: 4 octets
- * Assigned Number sub-field: 2 octets

The Administrator sub-field must contain a 4-octets Autonomous System number. If this ASN is from the public ASN space, it must have been assigned by the appropriate authority (use of ASN values from the private ASN space is strongly discouraged). The Assigned Number sub-field contains a number from a numbering space which is administered by the enterprise to which the ASN has been assigned by an appropriate authority.

- Type 0x04

This is a regular type with a type field of 1 octet and a Value Field of 7 octets.

The Value Field consists of two sub-fields.

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- * Administrator sub-field: 3 octets
- * Assigned Number sub-field: 4 octets

The Administrator sub-field must contain a 3-octet Organizationally Unique Identifier, as defined in [OUI]. Assignment of OUIs is carried out by the IEEE [OUI-Registry]. The Assigned Number sub-field contains a number from a numbering space which is administered by the enterprise to which the OUI has been assigned.

3. IANA Considerations

We suggest that within the context of a particular application that uses GIDs, the GID Type Field space be partitioned as follows. The Type Field values 0x00-0x3f (0x0000-0x3fff when expressed as extended-types) be assigned by IANA using the "First Come First Served" policy defined in RFC 2434. Type values 0x80-0xbf (0x8000-0xbfff when expressed as extended-types) are for vendor-specific types, and values in this range are not to be assigned by IANA.

4. Security Considerations

This document defines the format for generating global identifier without specifying usage.

5. References

- [BGP-COMM] Ramachandra, Tappan, et al., "BGP Extended Communities Attribute", [draft-ramachandra-bgp-ext-communities-09.txt](https://datatracker.ietf.org/doc/draft-ramachandra-bgp-ext-communities-09.txt)
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- [L2VPN-Kompella] Kompella, K., et al., "Layer 2 VPNs Over Tunnels", [draft-kompella-ppvnp-l2vpn-01.txt](https://datatracker.ietf.org/doc/draft-kompella-ppvnp-l2vpn-01.txt).
- [RFC2547bis] Rosen E., et al, "BGP/MPLS VPNs", work in progress.
- [RFC-2685] Fox B., et al, "Virtual Private Networks Identifier", [RFC 2685](https://datatracker.ietf.org/doc/rfc2685), September 1999.
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- [OUI] ANSI/IEEE, Std 802-1990 "IEEE Standards for Local and Metropolitan Area Networks".
- [OUI-Registry] "http://standards.ieee.org/regauth/oui/index.shtml"

5. Author's Addresses

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