

# IS-IS Prefix Attributes for Extended IP and IPv6 Reachability

draft-ginsberg-isis-prefix-attributes-00.txt

Les Ginsberg ([ginsberg@cisco.com](mailto:ginsberg@cisco.com))

Bruno Decraene([bruno.dekraene@orange.com](mailto:bruno.dekraene@orange.com))

Stephane Litkowski([stephane.litkowski@orange.com](mailto:stephane.litkowski@orange.com))

Clarence Filsfils([cfilsfils@cisco.com](mailto:cfilsfils@cisco.com))

Stefano Previdi ([sprevidi@cisco.com](mailto:sprevidi@cisco.com))

# Changes since V-00

**There was an alternate proposal in `draft-xu-isis-routable-ip-address-01` to use router capability TLV to advertise source of node addresses. We have reached agreement w authors of that draft to use the mechanism defined in `prefix-attributes` draft (Router-ID sub-TLVs in IPv4/IPv6 reachability TLVs).**

**Minor editorial changes**

**Request to become WG Document!!**



# What prompted us to write this draft?

**SR work demonstrated it is useful to know whether a prefix is directly connected to the advertising router.**

**Since introduction of “wide-metrics” (RFC 5305) IPv4 has lacked an indication that a prefix is external – while IPv6 (RFC 5308) has had such a flag.**

**Various use cases (SR, RLFA) for knowing what addresses a router wants to use as a node address.**

**Some of this has been defined in `draft-ietf-isis-segment-routing-extensions`, but as use cases are for more than just SR it makes sense to define as an independent protocol extension.**

# IPv4/IPv6 Extended Reachability Attributes sub-TLV

## Prefix Attribute Flags

Type: 4 (suggested - to be assigned by IANA)

Length: Number of octets to follow

Value

(Length \* 8) bits.

```
 0 1 2 3 4 5 6 7 . . .  
+--+--+--+--+--+--+--+ . . .  
|X|R|N| . . .  
+--+--+--+--+--+--+--+ . . .
```

(Applies to TLVs 135, 235, 236, 237)

# IPv4/IPv6 Extended Reachability Attributes sub-TLV (2)

## X-Flag

- **Indicates prefix is injected from an external source (redistributed)**
- **Ignored for TLVs 236, 237 (IPv6 already has such a flag)**
- **Preserved when leaked**

## R-Flag

- **Set when prefix has been leaked from one level to another (UP or DOWN)**

## N-Flag

- **Set when the prefix identifies the advertising router i.e., the prefix is a host prefix advertising a globally reachable address**
- **The advertising router MAY choose to NOT set this flag even when the above conditions are met.**
- **Preserved when leaked**

# IPv4/IPv6 Source Router ID sub-TLV

**When reachability advertisement is leaked the source of the advertisement is not known. When prefix has N-flag set source information is useful.**

## **IPv4 Source Router ID**

**Type: 11 (suggested - to be assigned by IANA)**

**Length: 4**

**Value: IPv4 Router ID of the source of the advertisement**

## **IPv6 Source Router ID**

**Type: 12 (suggested - to be assigned by IANA)**

**Length: 16**

**Value: IPv6 Router ID of the source of the advertisement**

**Preserved when leaked**