

Prefix Unreachable Announcement Mechanism

[draft-wang-lsr-prefix-unreachable-announcement-08](#)

A. Wang (China Telecom)
G. Mishra (Verizon)
Z. Hu (Huawei Technologies)
Y. Xiao (Huawei Technologies)

IETF-112, Nov. 2021

PUAM Solution(1/2)

- Upon receiving the node/link failure information, which prefix is within the range of advertised summary address, the ABR or L1/L2 border router will:
 - Generate one new summary address, with the failure prefix associated, but set its originator information to NULL.
 - For ISIS, we use “IPv4/IPv6 Source Router ID” sub-TLV, which is defined in [RFC 7794](#)
 - For OSPF, we use “Prefix Originator Sub-TLV”, which is defined in [RFC 9084](#)
 - Such summary message will be flooded across the boundary as normal OSPF/IS-IS procedures.

PUAM Solution(2/2)

- **For node failure scenario**
 - When node within one area receives the PUAM message from All of its ABRs, it will trigger the switchover of the control plane, which is run on top of it.
- **For link failure/network partition scenario**
 - When only some of the ABRs can't reach the failure prefix, the ABRs that can reach this prefix should advertise the specific route to this PUAM prefix.
 - Same procedures as RIFT.
- ABRs will only send out PUAM messages when all the internal routers support such mechanism
 - ABR can also control when to send out PUAM message based on ACL-like configuration.

Updated Contents

✓ PUAM Capabilities Announcement

- Added back from [draft-wang-lsr-prefix-unreachable-annoucement-04#section-6.3](#)
- Nodes within one area should all support the PUAM to ensure they acts correctly based on PUAM information.

✓ IANA Consideration(For OSPFv2/v3 & IS-IS)

Bit Number	Capability Name	Reference
TBD(0x20)	OSPF PUA Support	this document

Table 1: P-Bit in OSPF Router-LSA Option

Bit Number	Capability Name	Reference
TBD(bit 8)	OSPF PUA Support	this document

Table 2: OSPF Router PUA Capability Support Bit

IANA is requested to register the following in "Sub-TLVs for TLV242(IS-IS Router CAPABILITY TLV)

Type: 29 (Suggested - to be assigned by IANA)

Comparison with “Event Notification Solution”

- ["Event Notification Solution"](#) proposes one general event notification container within IS-IS to delivery the positive or negative PULSE events, based on Flooding Scoped LSP [RFC7356](#)
- Currently, focus only on the same use case as [PUAM](#) draft.
- Based on the discussion online and offline, we think:
 - For PUAM:
 - For current use case, it can accomplish the same effect as “Event Notification Solution”
 - Existing LSP/PDU format, procedures can be utilized.
 - Same procedures for OSPF/IS-IS
 - Easy to implement, deploy and debug in production network.
 - Misbehavior for the unsupported Nodes can be controlled.
 - For “Event Notification Solution”
 - Almost the similar procedure as PUAM. The differences lie mainly how to encode the message.
 - Such solution should be compared with other existing solutions for the potential requirements.
 - Currently, it is immature to introduce the general PULSE mechanism within IGP.
 - For OSPF, there is another solution([OSPF Abnormal State Information](#)) proposed 10 years ago.

Further Actions

- ✓ Enough interests on this topic.
- ✓ Thanks all experts for past reviews □ comments □ suggestions.
- ✓ Request the WG adoption call.

wangaj3@chinatelecom.cn
gyan.s.mishra@verizon.com
huzhibo@huawei.com
xiaoyaqun@Huawei.com

Advertisement of Stub Link Attributes

[draft-wang-lsr-stub-link-attributes](#)

Replace [draft-wang-lsr-passive-interface-attribute](#)

Aijun Wang (China Telecom)

Zhibo Hu(Huawei)

Gyan Mishra(Verizon)

Acee Lindem(Cisco)

Jinsong Sun(ZTE)

IETF 112@Online, November 2021

What The Proposal Want To Solve?

- Stub Interfaces are used commonly in the network
 - Within data center, they are used for the VLAN interfaces that serving the layer 2 broadcast domain.
 - In the inter-AS boundary, they are used to protect each domain from IGP flapping that caused by other domain.
 - In the edge compute scenario that described by [draft-dunbar-lsr-5g-edge-compute](#), the stub interface is used to connect the server to the network.
- But currently, there is no suitable place to advertise the stub interfaces and their associated attributes.

Existing Possible Solutions

- ISIS(RFC5029) defines Link-Attribute Sub-TLV, but this sub-TLV can only be carried within the TLV 22, which is used to describe the attached router.
- OSPFv2(RFC2328) defines link type within Router LSA, the type 3 can be used to describe the stub link(passive interface). But ...
- OSPFv3(RFC5340) has removed type 3 link type.
- **It is necessary to extend the OSPFv2/v3 and ISIS to transfer the stub links and their related attributes**

Updated Solutions

- RFC 5392 defines Inter-AS-TE-v2 LSA and Inter-AS-TE-v3 LSA to carry the TE information about inter-AS link.
- RFC 5316 defines the Inter-AS Reachability TLV to carry the TE information about inter-AS links.
- Stub-Link TLV/Sub-TLV are defined to carry the associated attributes of Stub-Link within the above LSA(OSPF)/TLV(IS-IS).
- Currently, “Link Type” for Stub-Link are defined as the followings:
AS boundary link/Loopback link/VLAN interface link
- Existing sub-TLVs for link attributes can be reused.

The OSPF Stub-Link TLV which is under the IANA codepoint “Top Level Types in TE LSAs” has the following format:

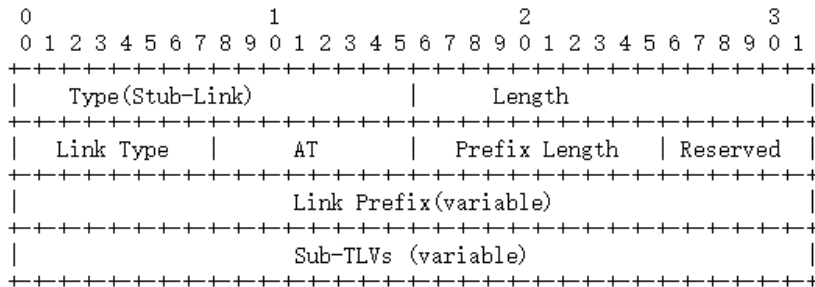


Figure 1: OSPF Stub-Link TLV

The ISIS Stub-Link sub-TLV which is under the IANA codepoint “Sub-TLVs for TLVs 22, 23, 25, 141, 222, and 223” has the following format:

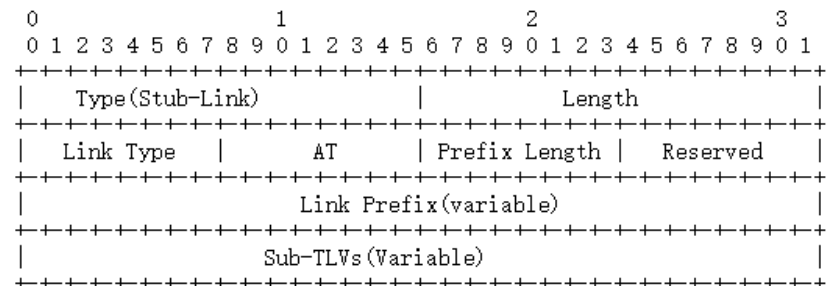


Figure 2: ISIS Stub-Link Sub-TLV

Design Considerations

Why the Link TLV defined in [rfc3630#section-2.4.2](#) can't be used?

- The Link Type sub-TLV should be extended to include more link type
- Currently, only “Point-to-point”, “Multi-access” are defined
- There is no sub-TLV to describe the prefix information for the stub-link.

- There is no Link Type sub-TLV within the corresponding IS-IS TE(RFC 5305)
- We need still to define one new sub-TLV

One new but similar TLV(OSPF)/sub-TLV(IS-IS) is optimal solution.

Further Plan

- Comments?
- Adopt as WG Document?

Wangaj3@Chinatelecom.cn
Huzhibo@Huawei.com
Gyan.s.Mishra@Verizon.com
Acee@cisco.com
Sun.jinsong@ZTE.com.cn

IETF112@Online