Line Identification in BBF networks

draft-krishnan-6man-rs-mark-{03,04}

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Problem

› Broadband forum supports an n:1 vlan model

  – Multiple subscriber premises on same VLAN

› Edge Router cannot differentiate between multiple subscriber premises

› Edge Router needs to allocate different prefixes for different subscriber premises

Background

› Draft was presented at IETF75 (version -03)

› Received comments that a tunneling based approach would work better

– People were concerned that this BBF specific option will end up being used elsewhere

– Version -04 documents a tunneling based approach

› Draft was updated to describe a tunneling based mechanism

– Unfortunately, this was not acceptable to the operators who would like to deploy the scheme

Objections to tunneling based approach

› There is NO IP stack on the access node

› There is NO IP address allocated to the access node

› Additional overhead on the wire

Way forward

› SLAAC cannot be supported in this scenario absent a line identification mechanism

 – Problem especially acute in cases where bridged residential gateways are used

› Is there anything technically broken in version -03

 – Please send comments to the authors and/or ML

› How do we address the "someone else will use it" problem?

 – Should we even try to address it?

› Adopt as wg item?
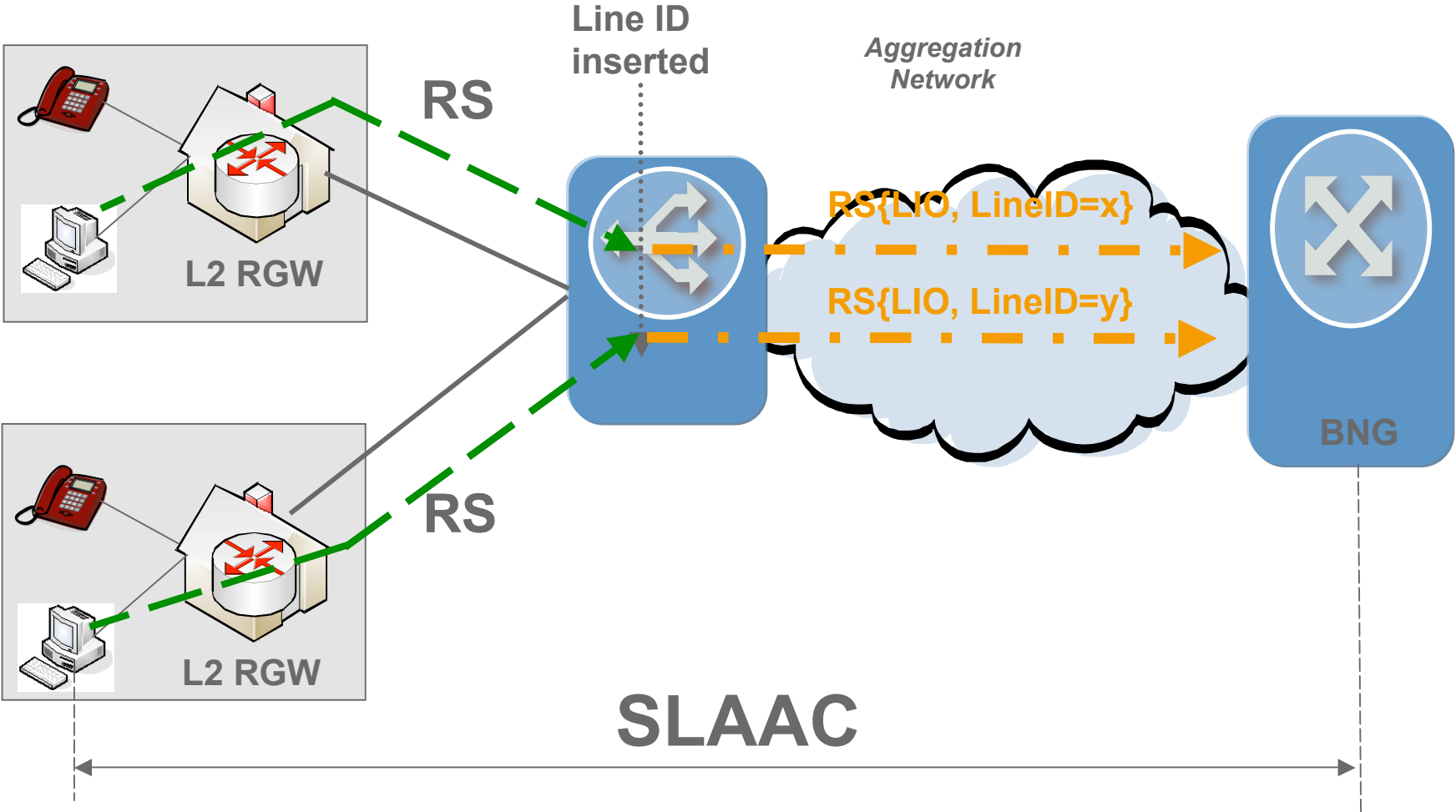
Backup Slides

Proposed solution

› Edge router needs to be able to identify the subscriber line

› Only node aware of this information is the access node

› The proposed solution

– Requires the Access Node to mark the RS packets

– Requires the Edge Router to unicast the RA packets

› Optionally supports marking of multicast RAs

– Requires behavior changes on the AN and the edge router
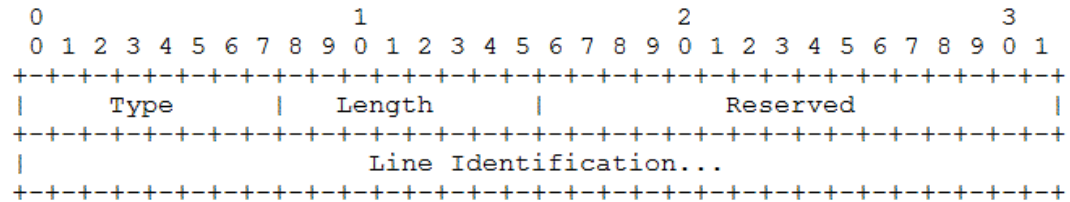
Line ID in Router Solicitations

Line ID inserted

Aggregation Network

RS

RS

RS{LIO, LineID=x}

RS{LIO, LineID=y}

L2 RGW

L2 RGW

BNG

SLAAC

Edge Router Behavior

› Verifies the ICMPv6 checksum of the router solicitation packet with the LIO option present.

› If the checksum is verified to be valid, the LIO option is removed from the packet

› ICMPv6 checksum is then recalculated

› Packet is sent for SEND verification.

Line Identification Option

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     Type      |    Length     |            Reserved           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                    Line Identification...                     
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Type

   8-bit identifier of the type of option. The option identifier
   for the line identification option will be allocated by the IANA.

Length

   8-bit unsigned integer. The length of the option (including
   the type and length fields) in units of 8 octets. The value
   0 is considered invalid.

Line Identification

   In a Router Solicitation:

   Variable length data inserted by the Access Node describing the
   subscriber agent circuit identifier corresponding to the logical
   access loop port of the Access Node from which the RS was
   initiated.

   In a Router Advertisement:

   Variable length data inserted by the Edge Router describing the
   subscriber agent circuit identifier corresponding to the logical
   access loop port of the Access Node on which the RA needs to be
   sent out.