SEAMLESS SR
draft-hegde-spring-mpls-seamless-sr
IETF 110

Shraddha Hegde, Juniper Networks
Chris Bowers, Juniper Networks
Alex Bogdanov, Google
Arkadiy Gulko, Refinitiv
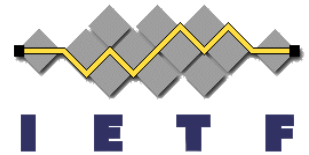Xiaohu Xu, Alibaba Inc.
Jim Uttaro, AT&T
Luay Jalil, Verizon
Mazen Khaddam, Cox communication
Andrew Alston, Liquid Telecom
Luis Contreras, Telefonica

I E T F

Agenda

- Draft draft-hegde-spring-mpls-seamless-sr-04 split into two documents
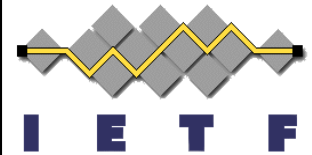
  Requirements & usecases

  - draft-hegde-spring-mpls-seamless-sr-05

  Solution

  - draft-hegde-spring-seamless-sr-architecture-00

AS and IGP domain Requirements

> Multiple AS connected with EBGP

> Single AS, multiple IGP on same border node

> Single AS, multiple IGP, no common border

```
   ----IBGP------EBGP----IBGP------EBGP-----IBGP---
   |          |        |        |         |       |
   +----------+    +-----------+    +-----------+
   |          |    |           |    |           |
   |     ASBR1+--+ASBR2    ASBR3+--+ASBR4       |
PE1+     AS1  | X |    AS2   | X |      AS3   +PE2
   |     ASBR5+--+ASBR6    ASBR7+--+ASBR8       |
   |          |    |           |    |           |
   +-----+----+    +-----------+    +-----------+
        PE3

   |---ISIS1---|      |---ISIS2---|    |---ISIS3---|
```

```
   ----IBGP-----------+----IBGP-------------IBGP----
   |          |        |           |           |
   +----------+    +-----------+    +-----------+
   /          |   \ /         | \ /           \
   |        ABR1           ABR3               |
PE1+   Metro1    +    Core    +    Metro2   +PE2
   |          |        |           |           |
   |        ABR2           ABR4               |
   \          |   /\          |  /\           /
   +----------+    +-----------+    +-----------+
```
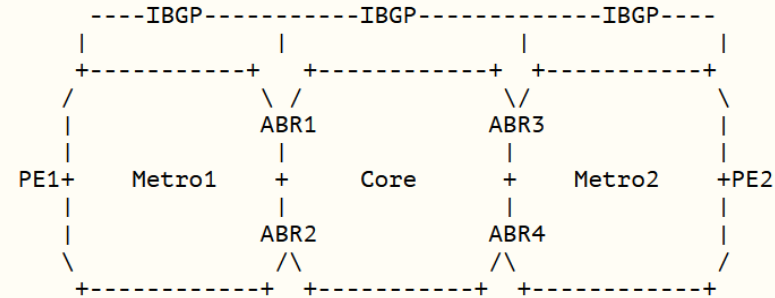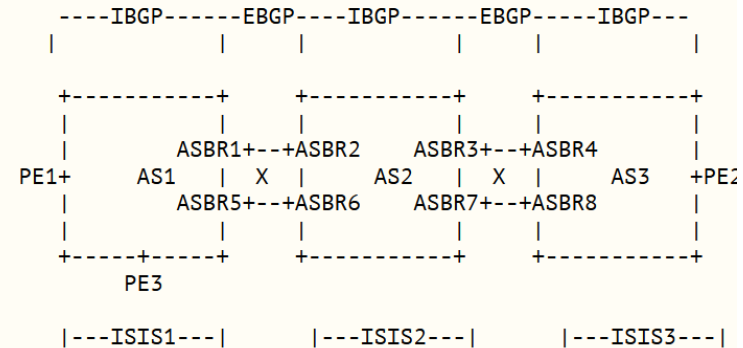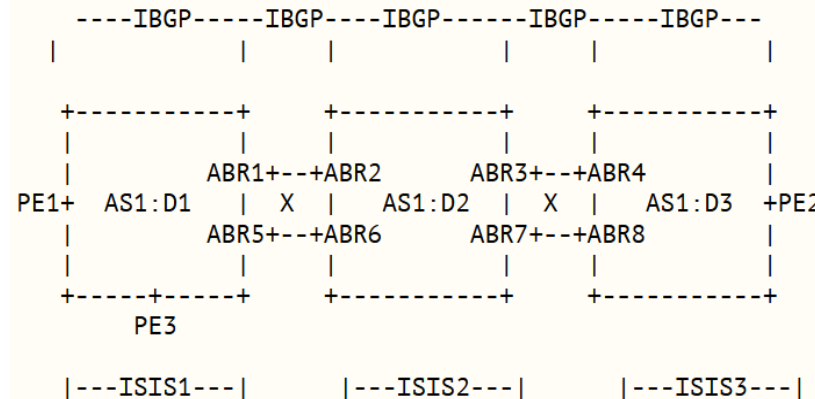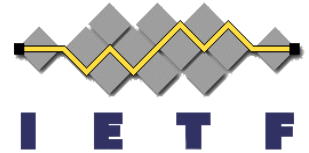
Figure 8: Single AS with Multiple IGP domains

```
   ----IBGP-----IBGP----IBGP------IBGP-----IBGP---
   |          |        |        |         |       |
   +----------+    +-----------+    +-----------+
   |          |    |           |    |           |
   |     ABR1+--+ABR2     ABR3+--+ABR4         |
PE1+  AS1:D1 | X |   AS1:D2  | X |    AS1:D3  +PE2
   |     ABR5+--+ABR6     ABR7+--+ABR8         |
   |          |    |           |    |           |
   +-----+----+    +-----------+    +-----------+
        PE3

   |---ISIS1---|      |---ISIS2---|    |---ISIS3---|
```

Tunneling Requirements

- SR-MPLS tunnels with IPv4 underlay
- SR-MPLS tunnels with IPv6 underlay
- SR-MPLS tunnels with dual stack underlay
- SRv6 tunneling end-to-end
- Segment routing TE tunnels and color-only policies as described in [I-D.ietf-idr-segment-routing-te-policy] (both SR-MPLS and SRv6)
- Flex-algo [I-D.ietf-lsr-flex-algo] (both SR-MPLS and SRv6)
- Pure IP fabric (incapable of supporting MPLS or SRv6 tunneling mechanisms)
- RSVP and LDP based tunnels

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SLA Requirements
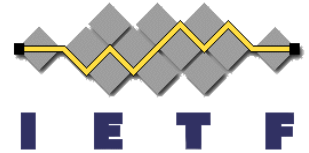
> Latency, Delay Variation, and Link Loss Constraints

> Bandwidth Constraints

> Link Inclusion/Exclusion Constraints

➢ Node Inclusion/Exclusion Constraints

➢ Domain Inclusion/Exclusion Constraints

➢ Diverse Paths

➢ Constraint applicability to a subset of domains

> Service function chaining

Mergers and migrations Requirements

> Interoperate with BGP-LU

➤ Option A and Option B Usecases

➤ Inter-Domain Intent Translation

> Native Support for Best Effort Paths

> Interoperate with Other tunneling Mechanisms

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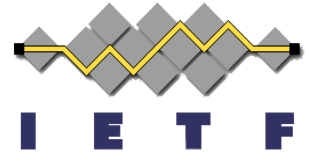
Scalability

➢ Support upto 1 million nodes in the network

➢ Access nodes with low RIB/FIB scale

➢ Scalable response to network events

➢ Minimize service routes on border nodes

➢ Automatic filtering of routes on access nodes

➢ Non-MPLS solutions should support summarization

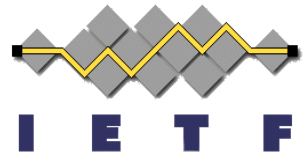➢ Ability to reduce FIB scale on border node

Other Requirements

- Availability

- Operations and automation

- Service mapping (Traffic steering) Requirements

- Interaction with other approaches

- Multicast Requirements
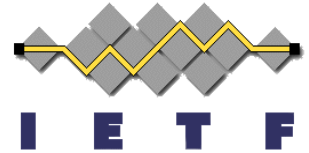
Next steps

- Request review and comments
- On-going discussions with Cisco on merging
  - draft-hegde-spring-mpls-seamless-sr-05
  - draft-dskc-bess-bgp-car-problem-statement-01

Thank you