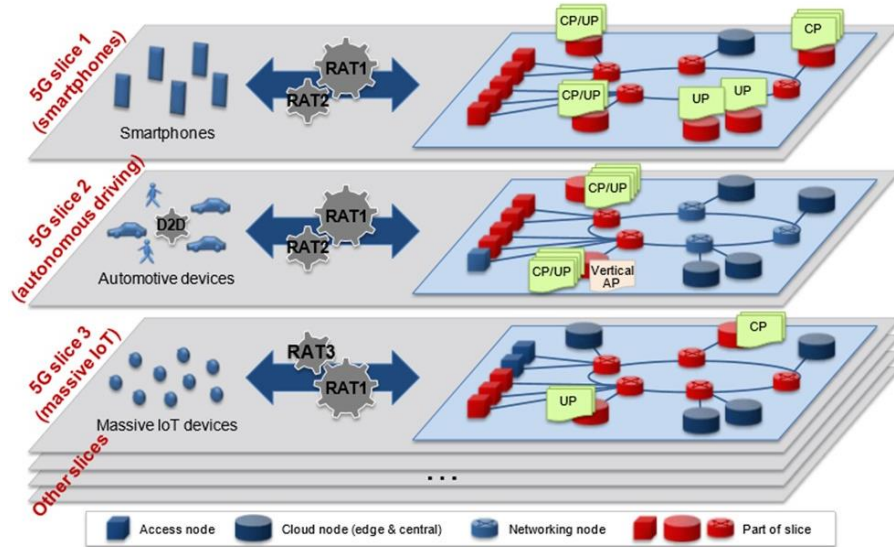


draft-chan-bgp-lu2
Color Operation with BGP-LU
(Slicing by color)

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5G/Metro Network Slicing



- New proposal via color
- Mix of RSVP, SR, LDP
- Controller-less
- Transport service across domain
- Very deterministic path possible
 - e.g. RSVP-RSVP-RSVP



Issues: SR-TE E2E solution with controller

- How to scale the controller, if network size > 10K
 - Up to 300K routers in size
- Remote failure detection
- Label depth at first ingress router
 - Cannot avoid Binding-SID (or alike) in the middle of the network
 - But then, problem is the node failure of the router holding B-SID

Two drafts submitted

- [BGP-LCU](#)
 - <https://tools.ietf.org/html/draft-szarecki-idr-bgp-lcu-traffic-steering-00>
 - New SAFI to include color in NLRI
 - New length field
- [BGP-LU2](#)
 - https://datatracker.ietf.org/doc/draft-chan-idr-bgp-lu2/?include_text=1
 - Use of color extended community for slicing
 - Conserve the original NLRI and hence the length field
 - Reuse RFC8277 (BGP-LU) and extend the support for color
 - Need new BGP capability code

Motivation

- Multiple Transport Service by **Slicing BGP** by **COLOR**
 - Low latency, diversity, BE....
- No need to run SR in all domains – RSVP, LDP, MPLSoUDP compatible
- Predictable label depth
- Remote Failure Signaling
- Scalable to >100k routers in size
- **Controller-less!** But the architecture is still SR controller compatible
- Design for BGP-LU backward compatibility

BGP-LU and BGP-LU2

BGP-LU



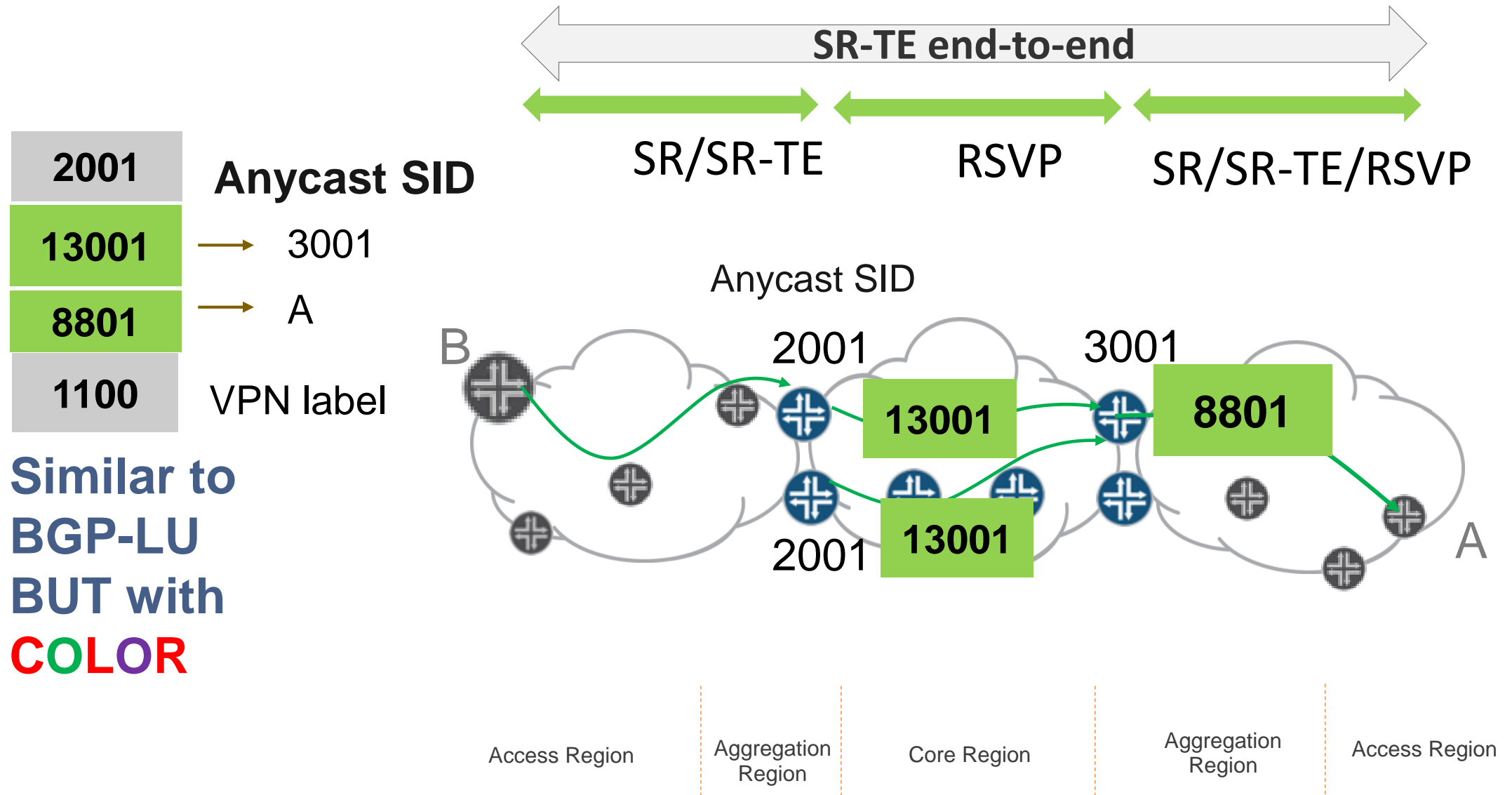
Single label

Multiple labels

BGP-LU2

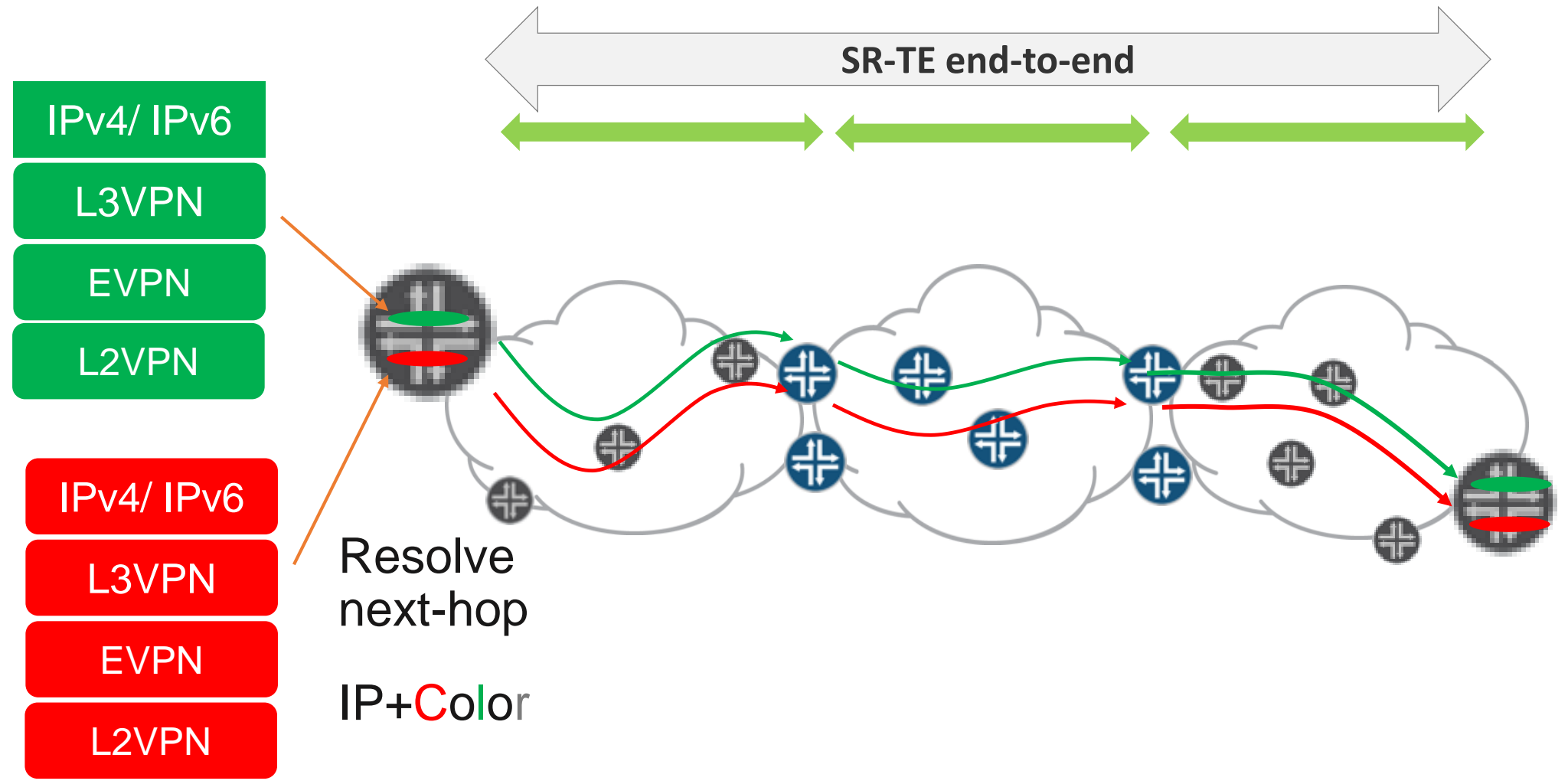


E2E – A BGP proposal (aka LU2)



Similar to
BGP-LU
BUT with
COLOR

Service Mapping Method



Based on "color" attribute embedded

Choices of color encoding

- Use of Path Attribute for color – as in the current draft
 - Save byte count for the same advertisement
 - Not normal BGP operation
- Use of new Attribute to prepend to NLRI
 - Just like add path
 - Prepend 4+2 byte (color + 2 reserved byte)
 - Repeat the same info
 - Additional 6KB for 1000 prefixes

Alternatives: Prepend Color info Similar to Add-path

```
+-----+
| Color Slicing ID (4 octets) |
+-----+
| Reserved (2 octets) |
+-----+
| Path Identifier (4 octets) |
+-----+
| Length (1 octet) |
+-----+
| Label (3 octets) ~
+-----+
~ Label (3 octets) |
+-----+
| Prefix (variable) |
+-----+
```