

SRv6 for Mobile User- Plane

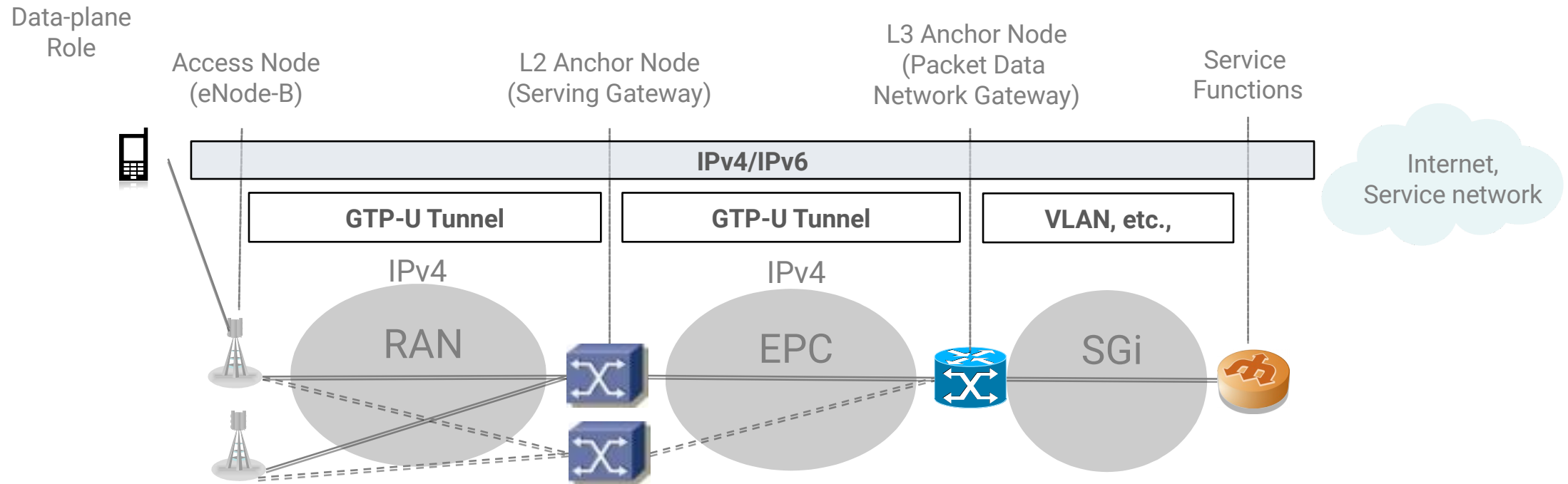
draft-matsushima-spring-dmm-srv6-mobile-uplane

IETF99

S.Matsushima, C.Filsfils

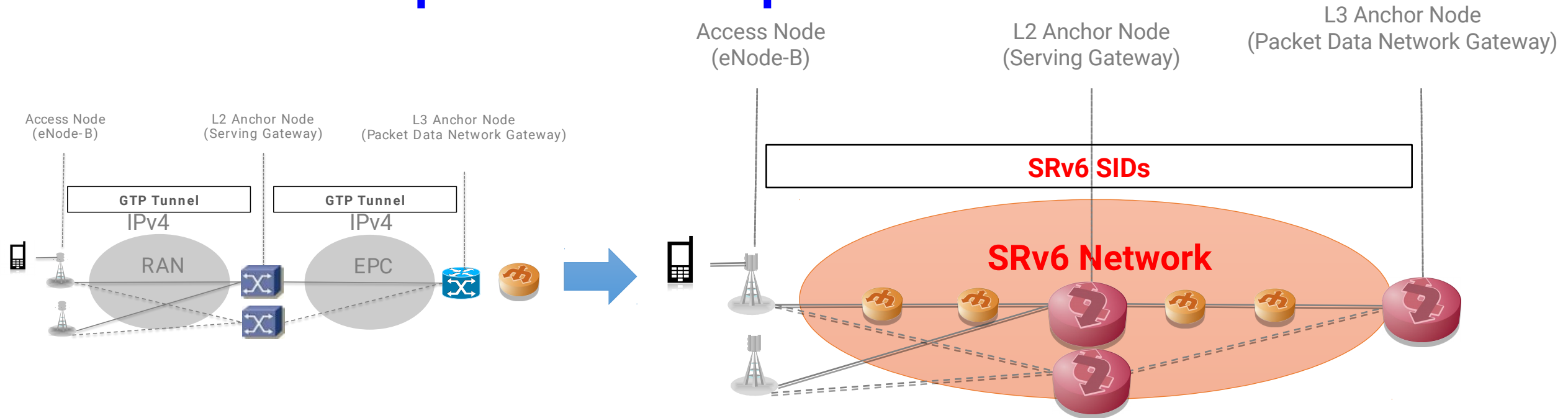
A Current Mobile Network Example

- Well fragmented to RAN, EPC and SGi.
- Per-session tunnel creation and handling.
- Non-optimum data-path.



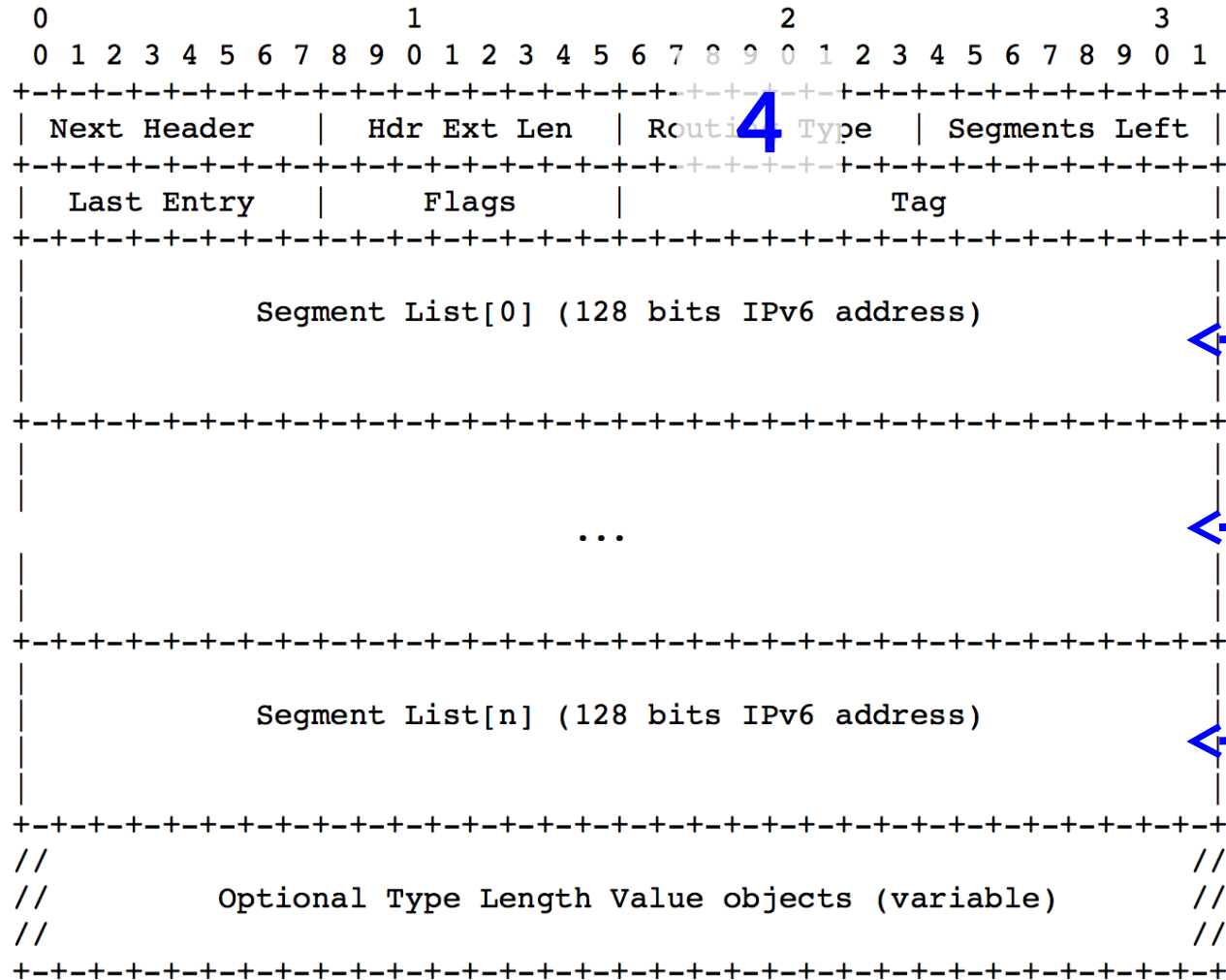
What if SRv6 Becomes An Alternative of GTP-U Tunnel?

- ~~Well fragmented to RAN, EPC and SGI.~~
- ~~Per-session tunnel creation and handling.~~
- ~~Non-optimal data-path.~~
- **IPv6 integrates networks of the mobile and others.**
- **A SID represents data-plane role and function.**



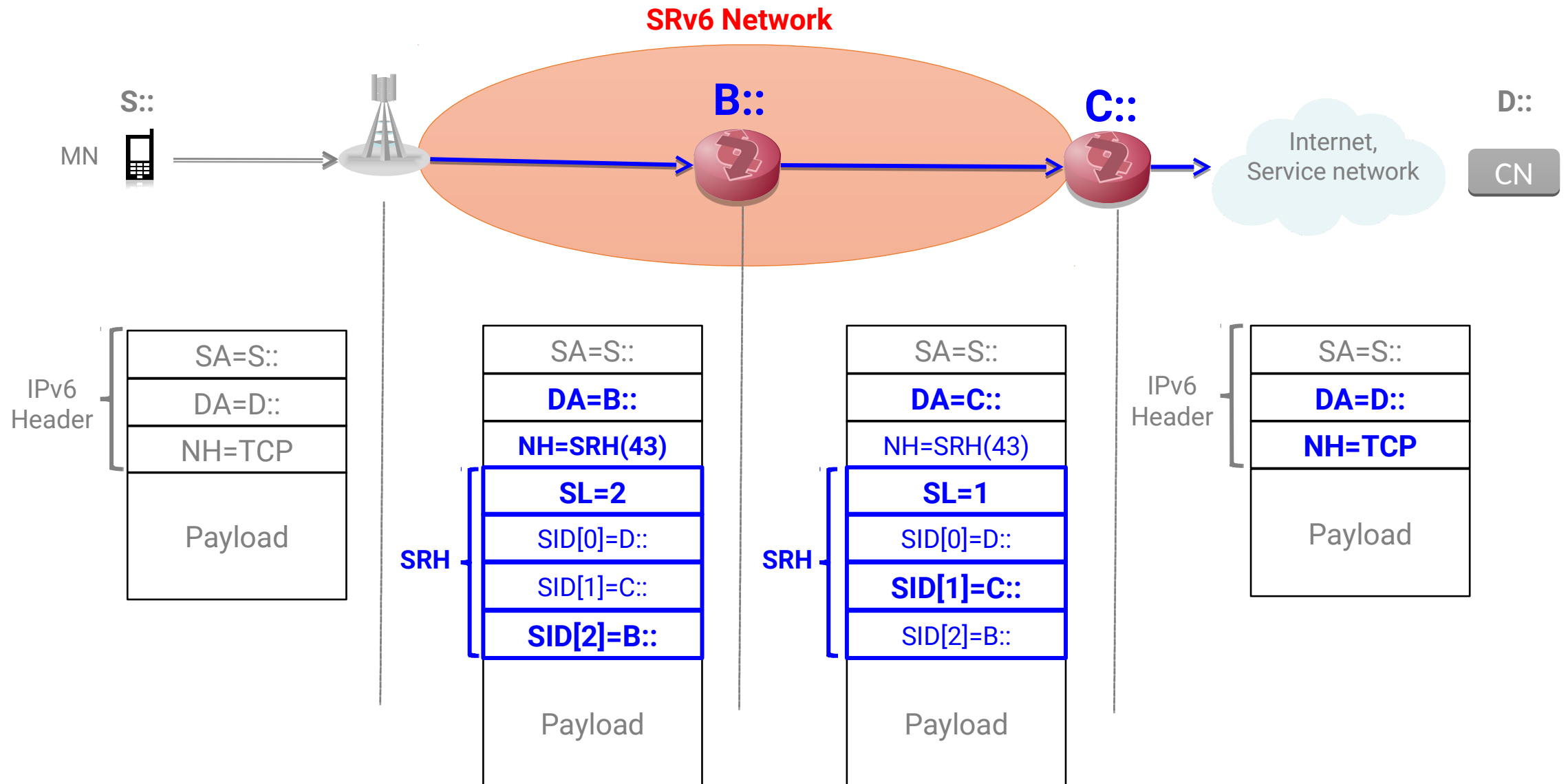
SRv6 in A Nutshell

SRH (Segment Routing Header)



**Segment ID
(SID)**

SRv6 in A Nutshell (Cont'd)



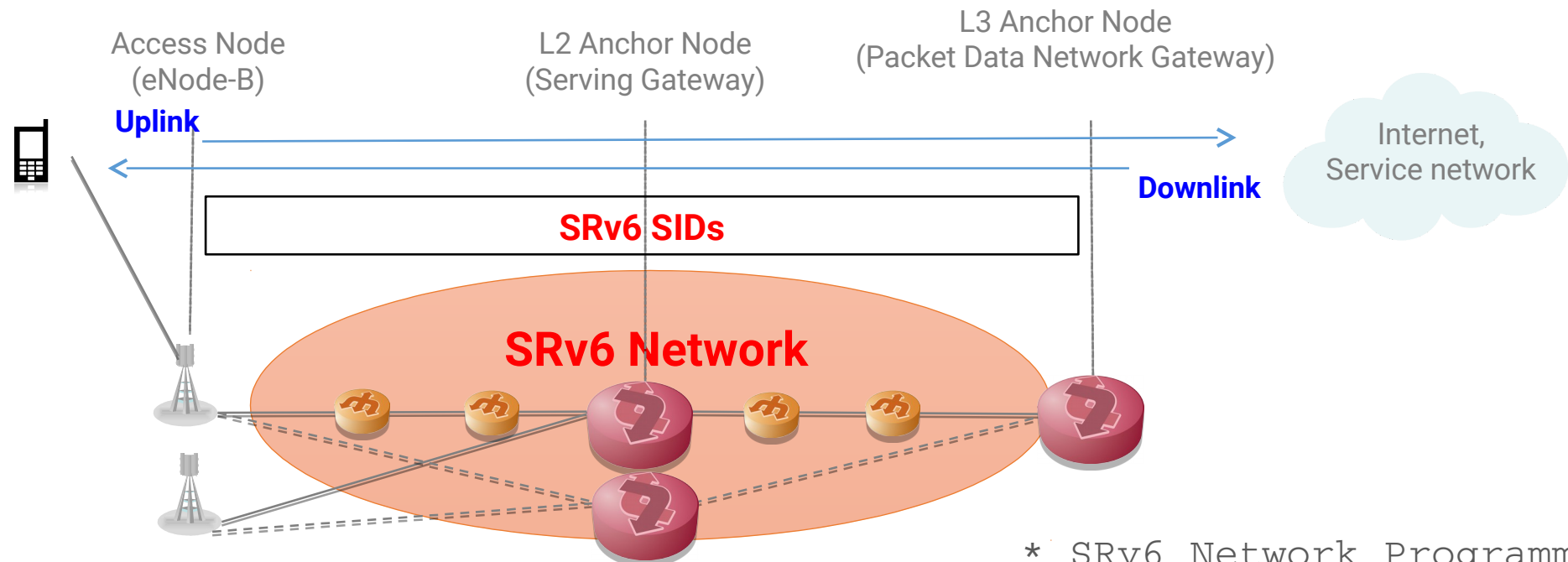
SRv6 in A Nutshell (Cont'd)

SRv6 Function* Name	Forwarding
END	Lookup SRH
END.X	L3 cross-connect to next-hop
END.T	L3 lookup IPv6 table
END.DT6	Decap outer IPv6 hdr and lookup IPv6 table
END.DT4	Decap outer IPv6 hdr and lookup IPv4 table
END.DX6	Decap outer IPv6 hdr and IPv6 cross-connect
END.DX4	Decap outer IPv6 hdr and IPv4 cross-connect
END.B6	Bound to an SRv6 policy(SID list)

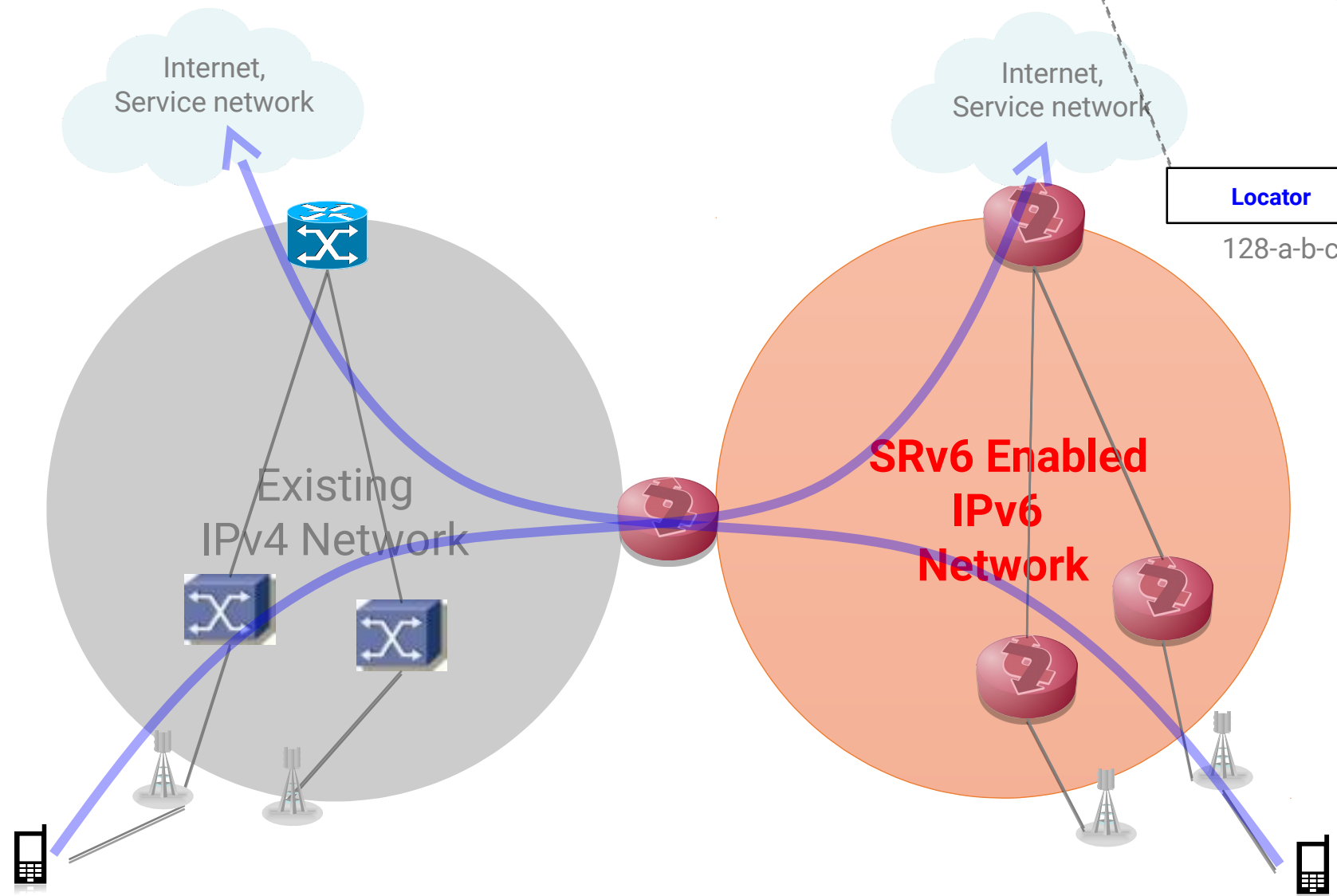
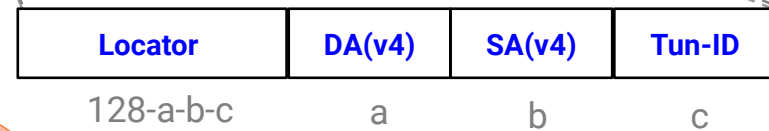
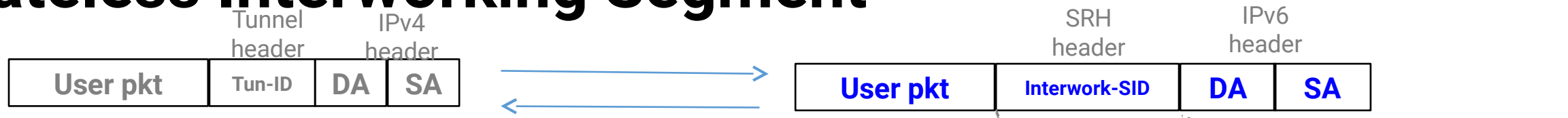
SRv6 Function* Name	Forwarding
T	Pure IPv6 transit
T.Insert	Insert an SRv6 policy (SID list)
T.Encaps	Encap SRv6 policy (SID list) by outer IPv6 hdr

SID Functions* for Mobile Data-Plane Roles

	Uplink	Downlink
Access Node	T.Insert, or T.Encaps	END.X/END.DX{6 4}
L2 Anchor Node	END, or END.B6	END, or END.B6
L3 Anchor Node	END.T/END.DT{6 4}	T.Insert, or T.Encaps

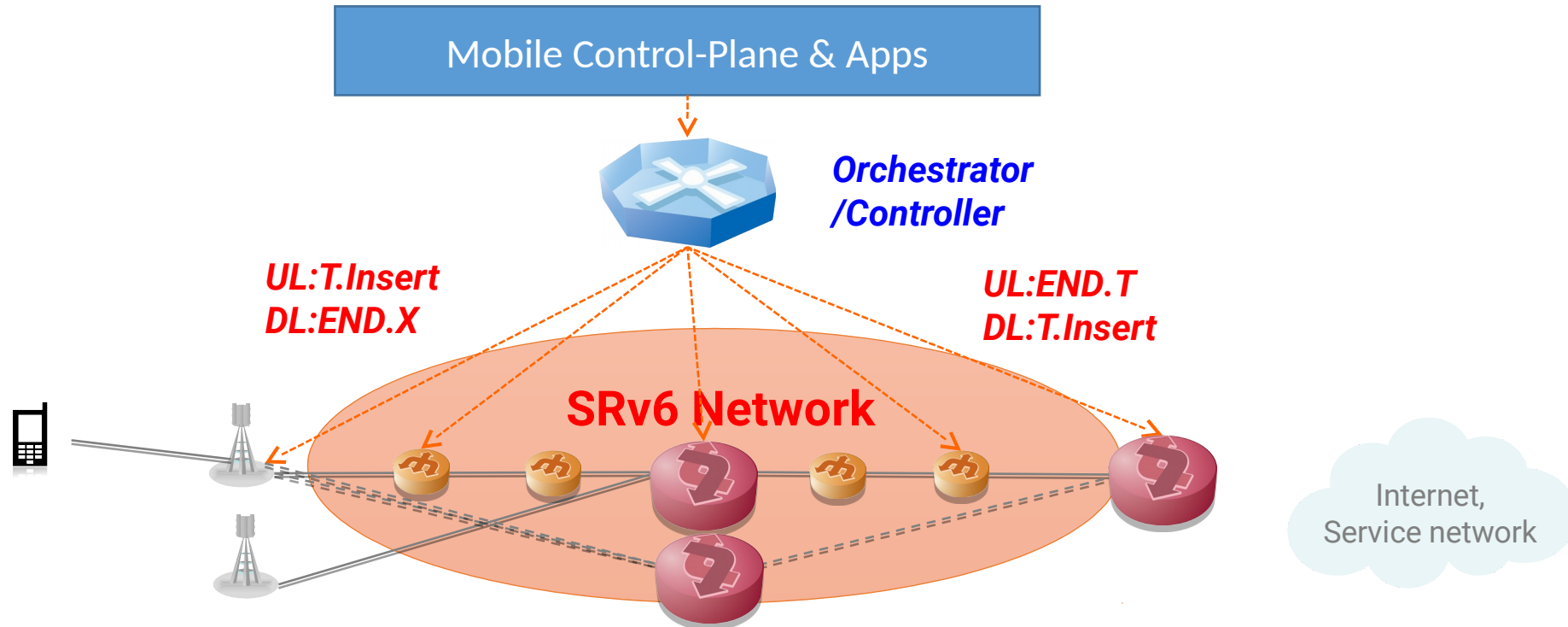


Stateless Interworking Segment

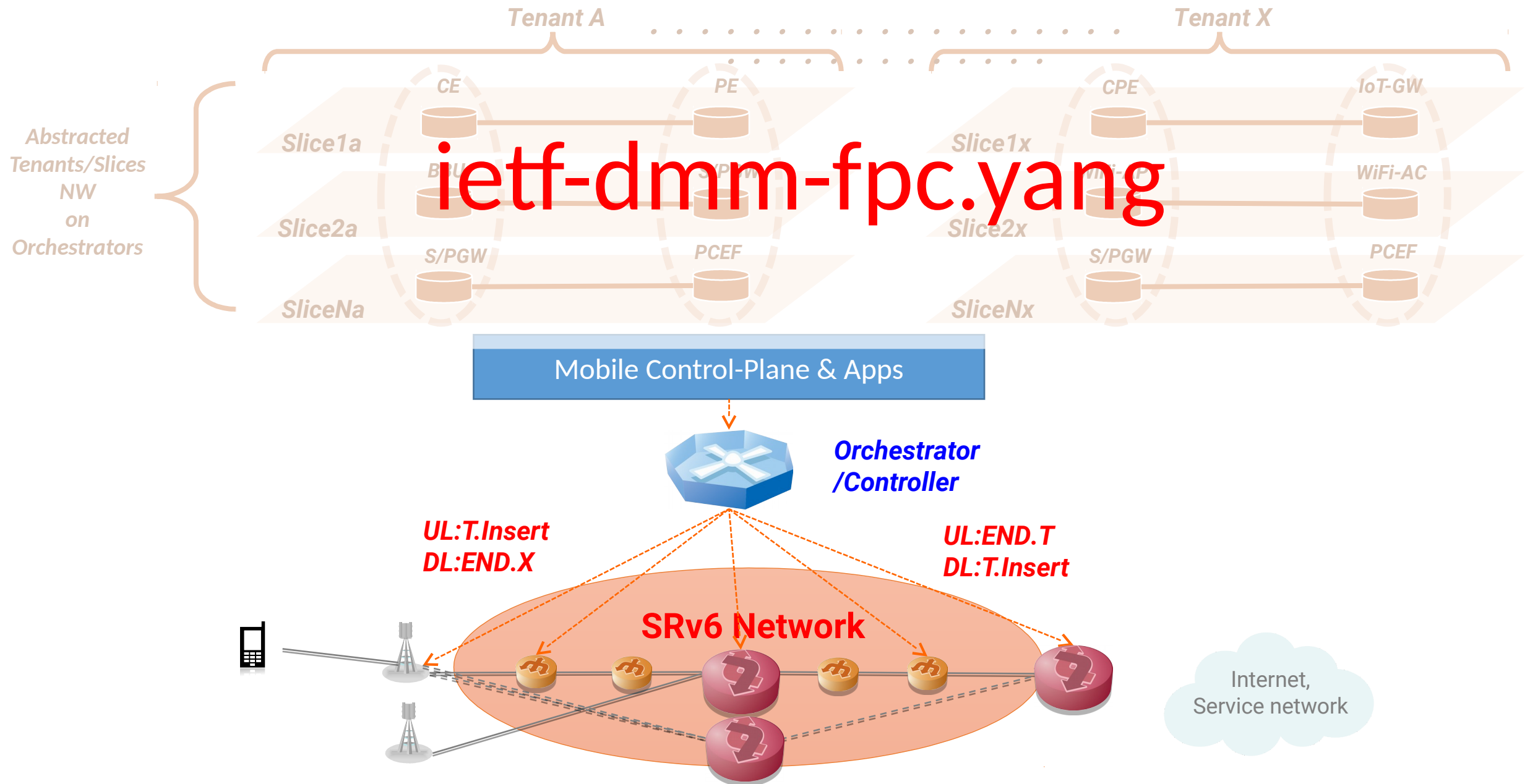


E2E Mobile Orchestration with SRv6

- **Data-plane nodes are NOT dedicated to specific roles.**
-> **SID represents each data-plane role.**
- **Orchestrator puts SIDs to the nodes with its functions**
-> **It requires some data models to instantiate the data-plane**

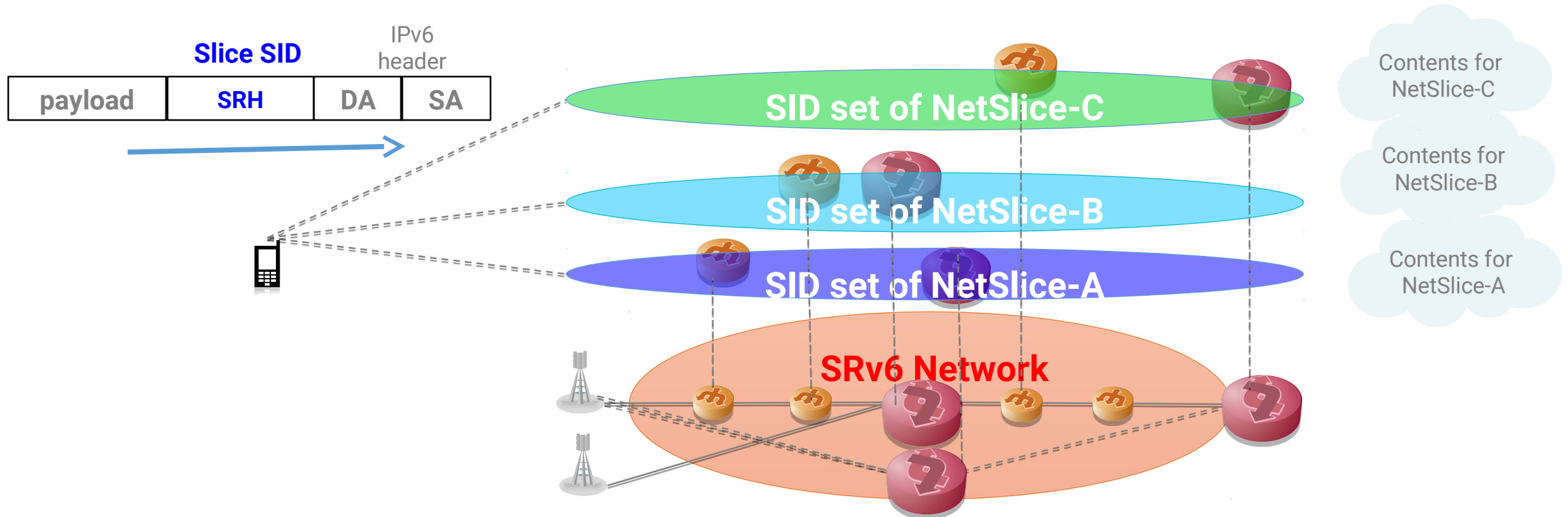


Data Model for Mobile Orchestration with SRv6



SRv6 for Network Slicing

- **A set of SIDs represents Network Slice.**
 - > **Sharing same prefix among SIDs in a slice would work.**
- **Then user packets could also indicate Slices by SID.**
 - > **Applications in a MN could be able to use SID to do that.**



Summary

- SRv6 is expected to make mobile network to be:
 - Simple to operate in E2E basis.
 - Flexible where to deploy various functions.
- SID Functions for mobile data-plane can be considered:
 - Access-node, L2 Anchor-node and L3 Anchor-node.
- To orchestrate mobile user-plane network, SRv6 needs to be integrated into:
 - Data model for mobile data-plane.
 - 5G related standards.
- Network Slicing could take advantage of SRv6.

Nest Step

- Studies for supporting more user-plane functions with SRv6.
 - QoS
 - Accounting
 - etc.,
- Update the I-D with:
 - Outcomes from the studies
 - Figure out the sets of SRv6 functions for mobile user-plane which could be standardized.
- Collaborations.
 - DMM WG items
 - Other WG in the IETF (Spring, if any)
 - Both operators and vendors those who are interested in SRv6 are welcome.

References

- IPv6 Segment Routing Header (SRH)
 - [draft-ietf-6man-segment-routing-header](#)
- SRv6 Network Programming
 - [draft-filsfils-spring-srv6-network-programming](#)
- ietf-dmm-fpc.yang
 - A SDO neutral mobile data-plane model as a part of the FPC work in IETF DMM working group.
 - [draft-ietf-dmm-fpc-cpdp](#)