

SRv6 Context Indicator SIDs for SR-Aware Services

draft-lin-spring-srv6-aware-context-indicator-03

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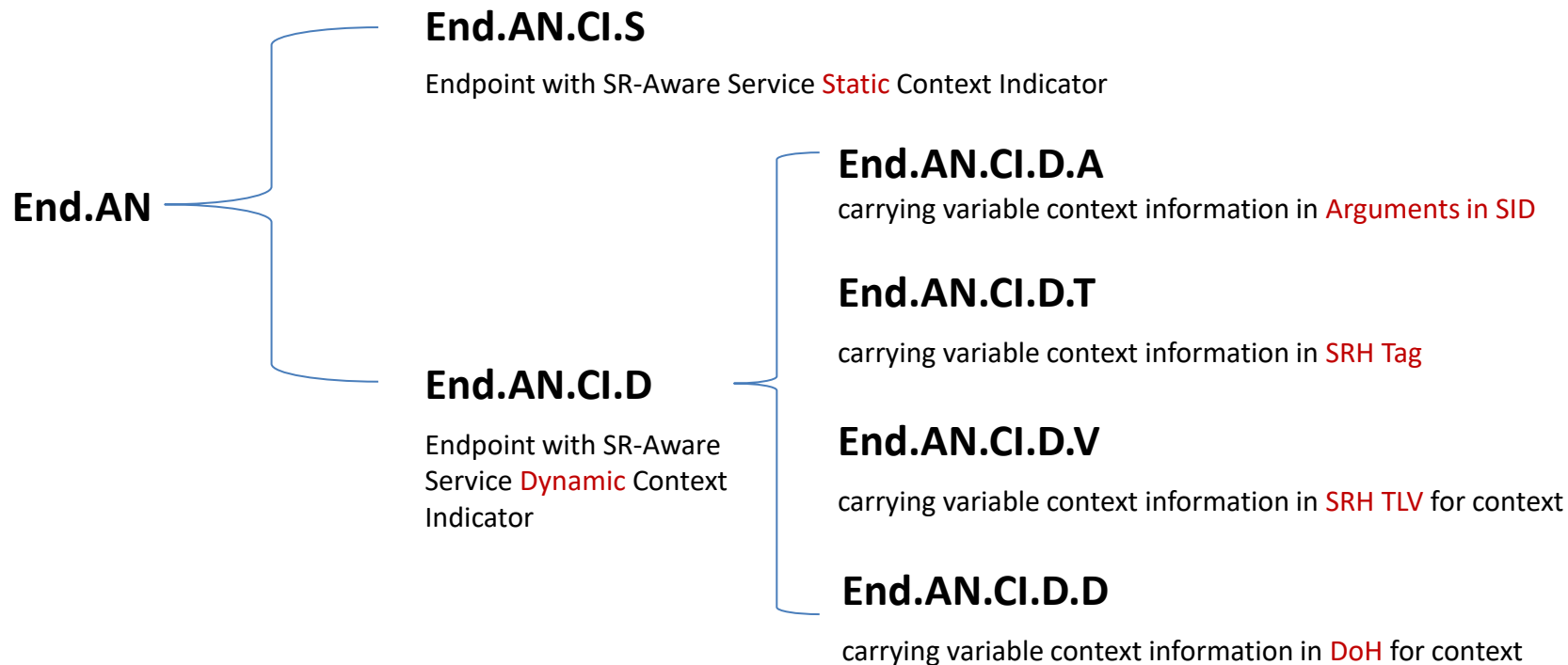
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Background

- An SR-aware service can process the SR information in the packets it receives.
 - e.g. the SR-aware firewall filtering SRv6 traffic based on its final destination must retrieve information from the last entry in the SRH rather than the Destination Address field of the IPv6 header.
- This draft defines new variants of End.AN behavior defined in *[draft-ietf-spring-sr-service-programming-10]* for SR-aware services. The variants could indicate context for SR-aware services.

Background

- Defines two types of END.AN and introduces new END.AN forwarding behaviors to obtain the corresponding context.



Background

End.AN.CI.S: statically associated with one particular context

When N receives a packet with IPv6 DA S, which is also a local End.AN.CI.S SID associated with a local context C:

```
S01. When an SRH is processed {
S02.   If (Segments Left == 0) {
S03.     Proceed to process the next header in the packet.
S04.   }
S05.   If (IPv6 Hop Limit <= 1) {
S06.     Send an ICMP Time Exceeded message to the Source Address
        with Code 0 (Hop limit exceeded in transit),
        interrupt packet processing, and discard the packet.
S07.   }
S08.   max_LE = (Hdr Ext Len / 2) - 1
S09.   If ((Last Entry > max_LE) or
        (Segments Left > Last Entry+1)) {
S10.     Send an ICMP Parameter Problem to the Source Address
        with Code 0 (Erroneous header field encountered)
        and Pointer set to the Segments Left field,
        interrupt packet processing, and discard the packet.
S11.   }
S12.   Set the packet's associated context to C and perform service
S13.   Decrement IPv6 Hop Limit by 1
S14.   Decrement Segments Left by 1
S15.   Update IPv6 DA with Segment List[Segments Left]
S16.   Submit the packet to the egress IPv6 FIB lookup for
        transmission to the new destination
S17. }
```

End.AN.CI.D: dynamically associated with a bunch of local contexts, and additional variable information in the packet used to identify the particular context.

Arguments in SID,
SRH Tag,
SRH TLV for context,
DoH for context

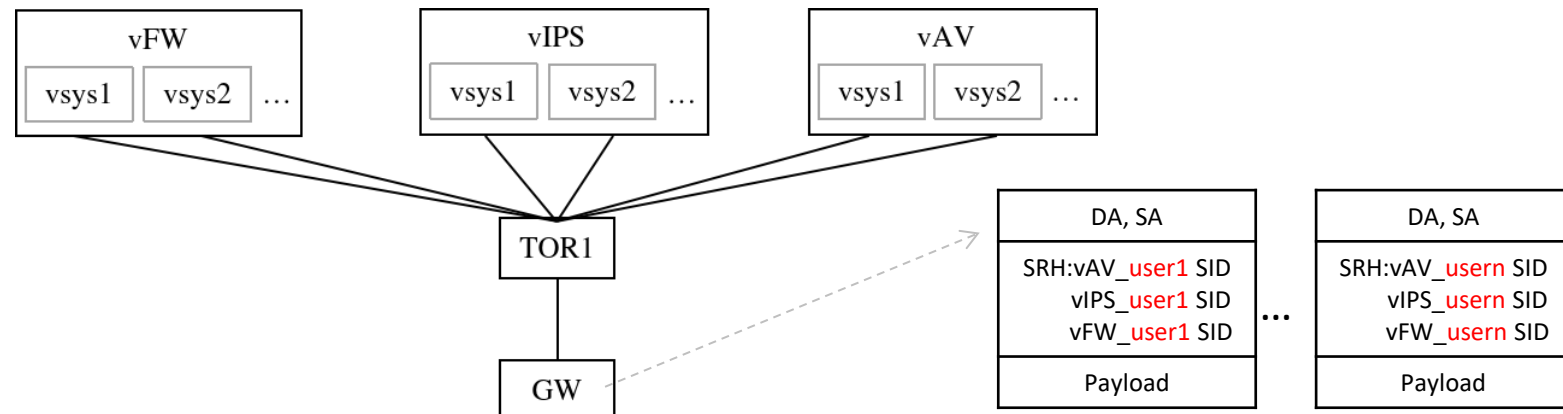
```
S12.   Set the packet's associated context by using variable
        context information carried in the packet and
        perform service.
S13.   If (the context information cannot be understood) {
S14.     Send an ICMP Parameter Problem to the Source Address
        with Code 0 (Erroneous header field encountered)
        and Pointer set to the context information field,
        interrupt packet processing, and discard the packet.
S15.   }
```

Changes in version 03?

- Revise based on comments
- Add Usecases
- Vendor Implementation

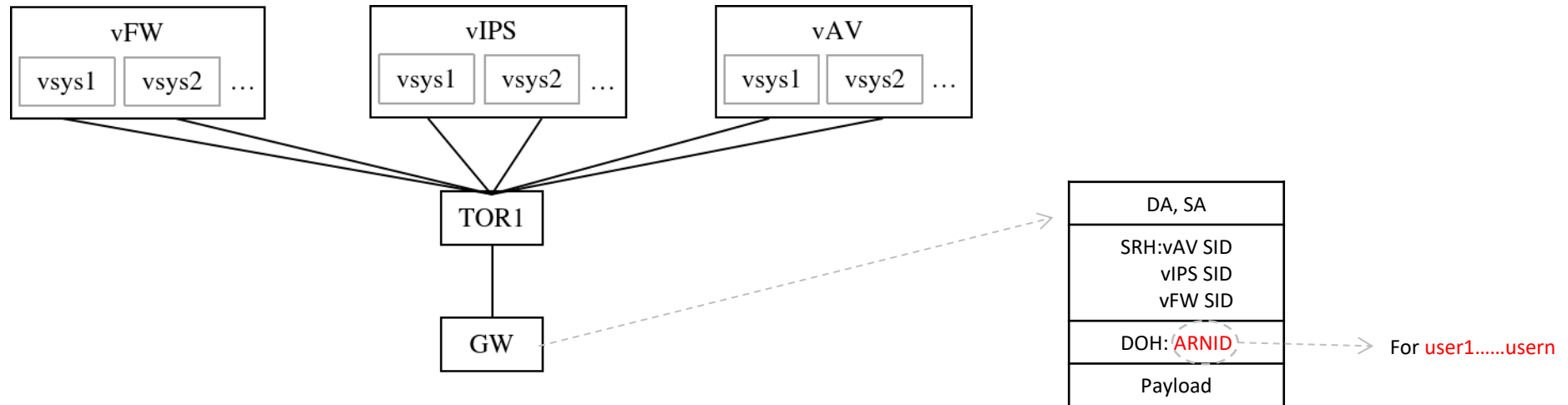
Usecase

- In traditional SFC, sub-interfaces are used to differentiate multi-tenant information.
- With SRv6 support, static SIDs or dynamic SID with additional info in packet distinguish multi-tenant information.
- **Example1:** Use multiple SRv6 SIDs with new forwarding behavior End.AN.CI.S to distinguish tenant-related information
 - SRv6 SID 1 (End.AN.CI.S) → Maps to vsys 1, context 1
 - SRv6 SID 2 (End.AN.CI.S) → Maps to vsys 2, context 2
 -



Usecase

- Example2: Use one SRv6 SID End.AN.CI.D.D on a VAS with additional info in DOH to distinguish tenants
- ARN ID: is generated according to user service subscription information and network information, and is added to packets on user edge or network edge.*[draft-yang-rtgwg-arn-framework-02]*
- GW: encapsulates SRv6 Header according to tenants' service requirements.
- vFW/vIPS/vAV: extracts multi-tenant ID from DOH based on forwarding behavior(End.AN.CI.D.D)



Vendor Implementation

- H3C implemented End.AN.CI.S
- Plan to test after February 2025 (HUAWEI, H3C, NSFOCUS, VENUSTECH, DBAPPSecurity)
- Start commercial deployment after December 2025

Next Steps

- Any questions or comments are welcome.

Thanks