
OPEN
DAYLIGHT

IETF 97
Seoul, South Korea
ODL SFC, Implementing IETF SFC

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OpenDaylight SFC Data Model

Service Function Chain (SFC)

- Abstract, ordered list of Service Function Types
  - ex: [DPI, FW, NAT, QoS]

Service Function Path (SFP)

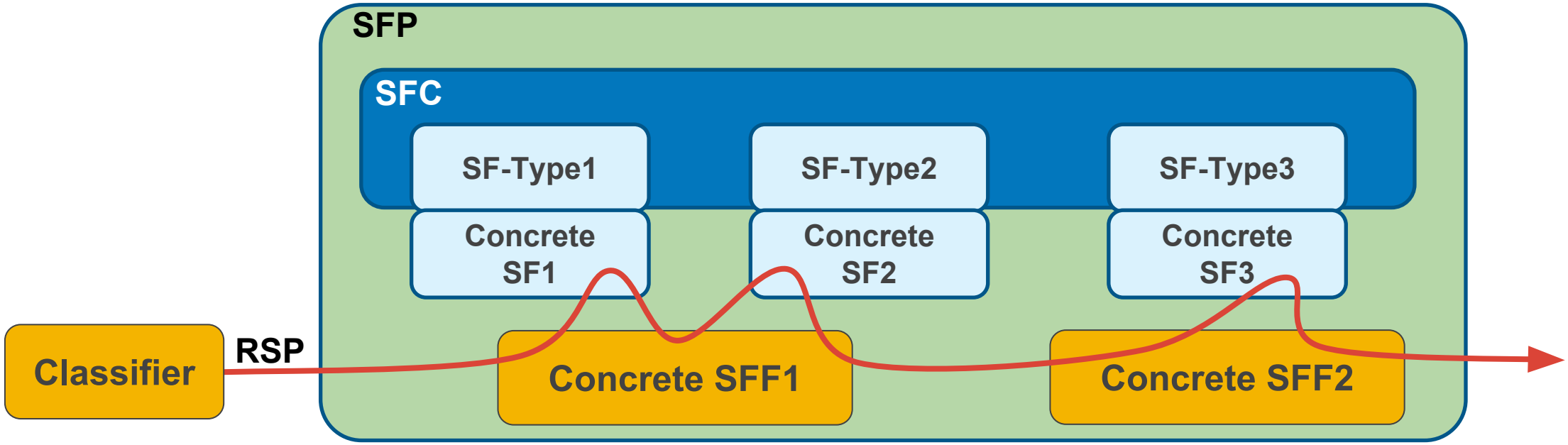
- Concrete, directional details about an SFC
- Specific transport details (VxLAN-GPE+NSH, Eth+NSH, etc)
- Optionally specify concrete Service Functions and Service Function Forwarders

Rendered Service Path (RSP)

- The actual service chain, combining info from the SFC and SFP
- Includes dynamic runtime representation of SFP resulting from load balancing and/or failover

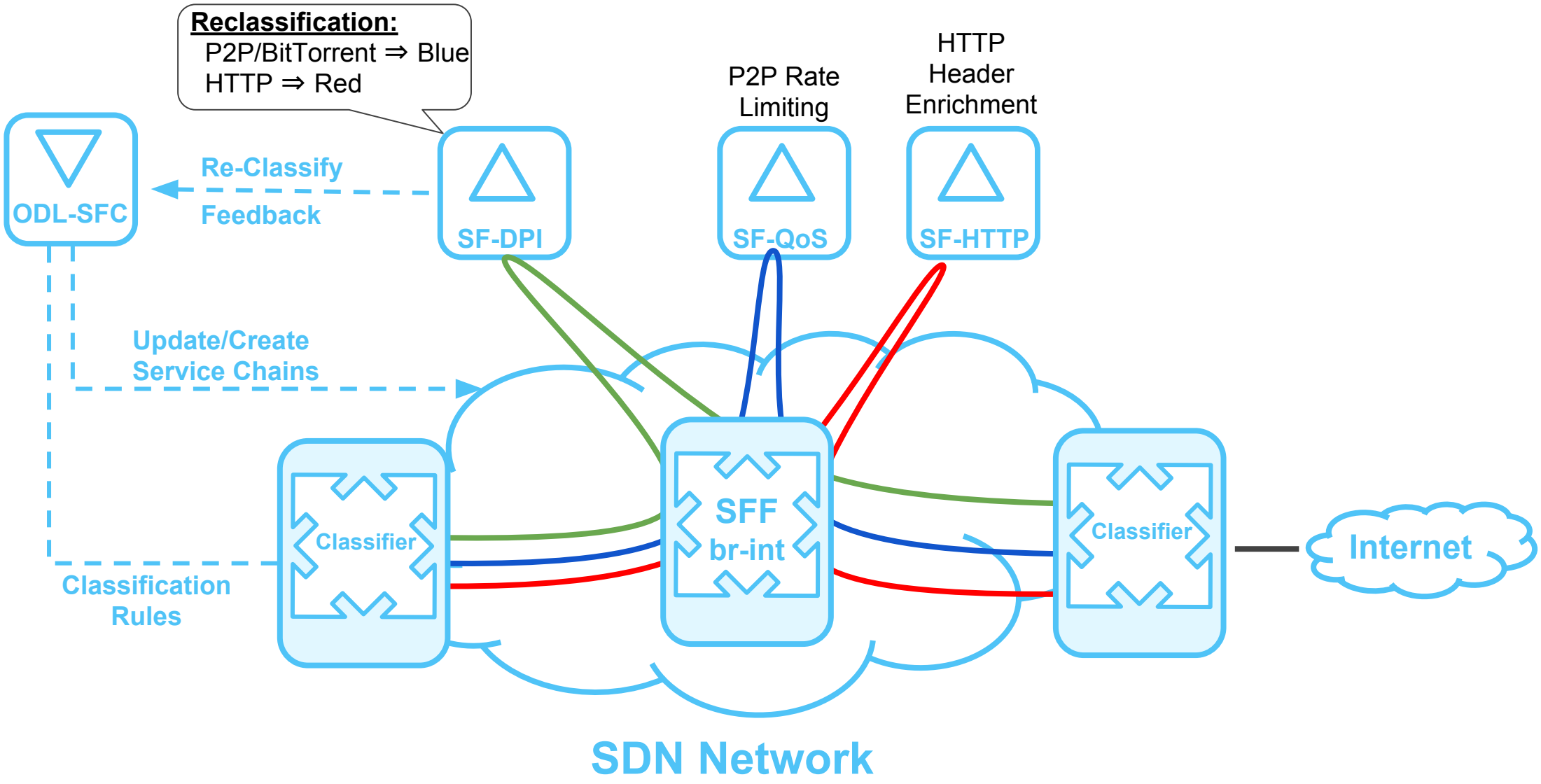
Service Chaining Classification

- Map subscriber/tenant traffic flows to Service Chains
- Applies Service Chain Encapsulation (NSH)
- Uses IETF ACL matching for traffic flow matching

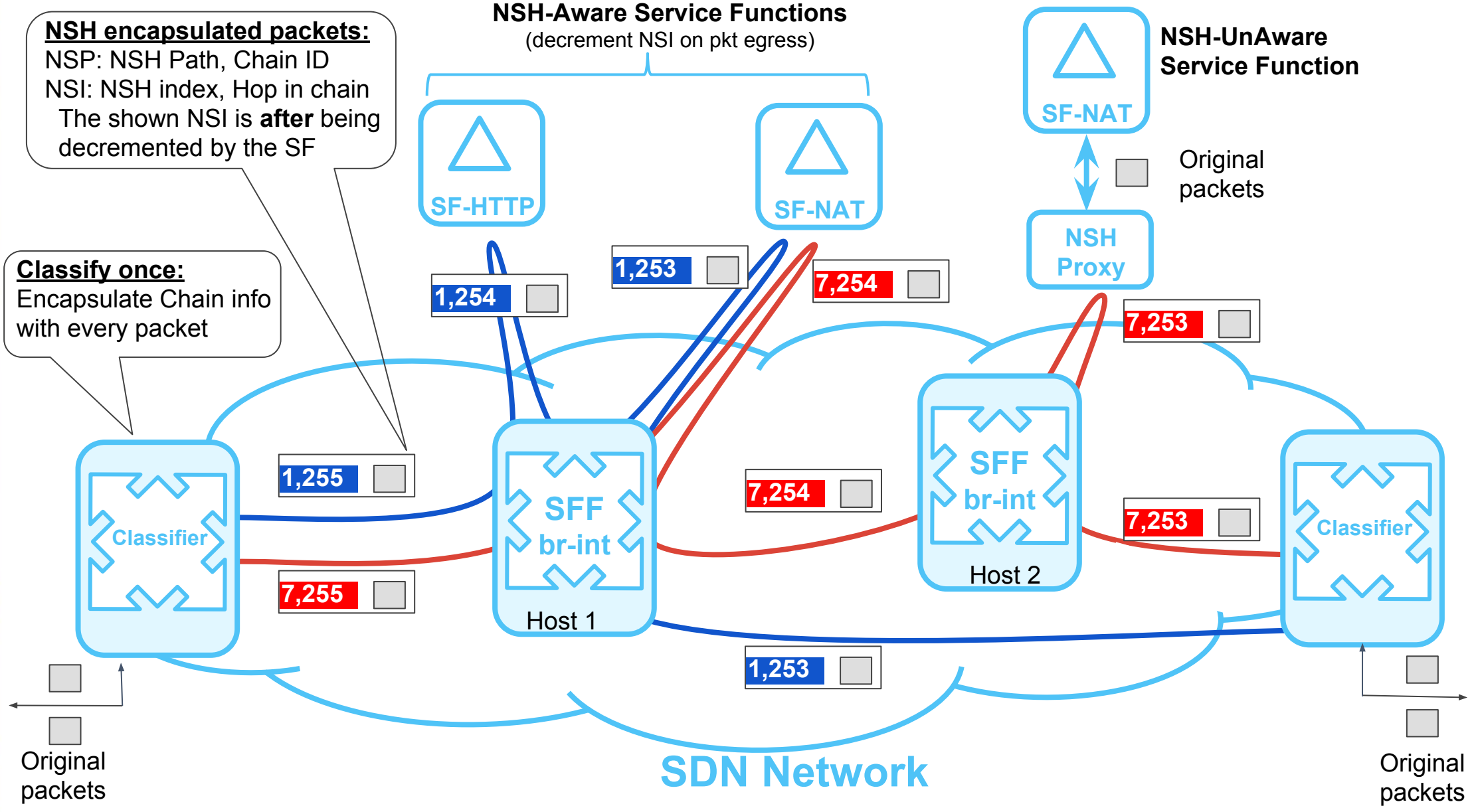


ODL SFC Implementation: https://github.com/opendaylight/sfc/tree/master/sfc-model/src/main/yang

OpenDaylight SFC Use Case:
SF Reclassification and branching

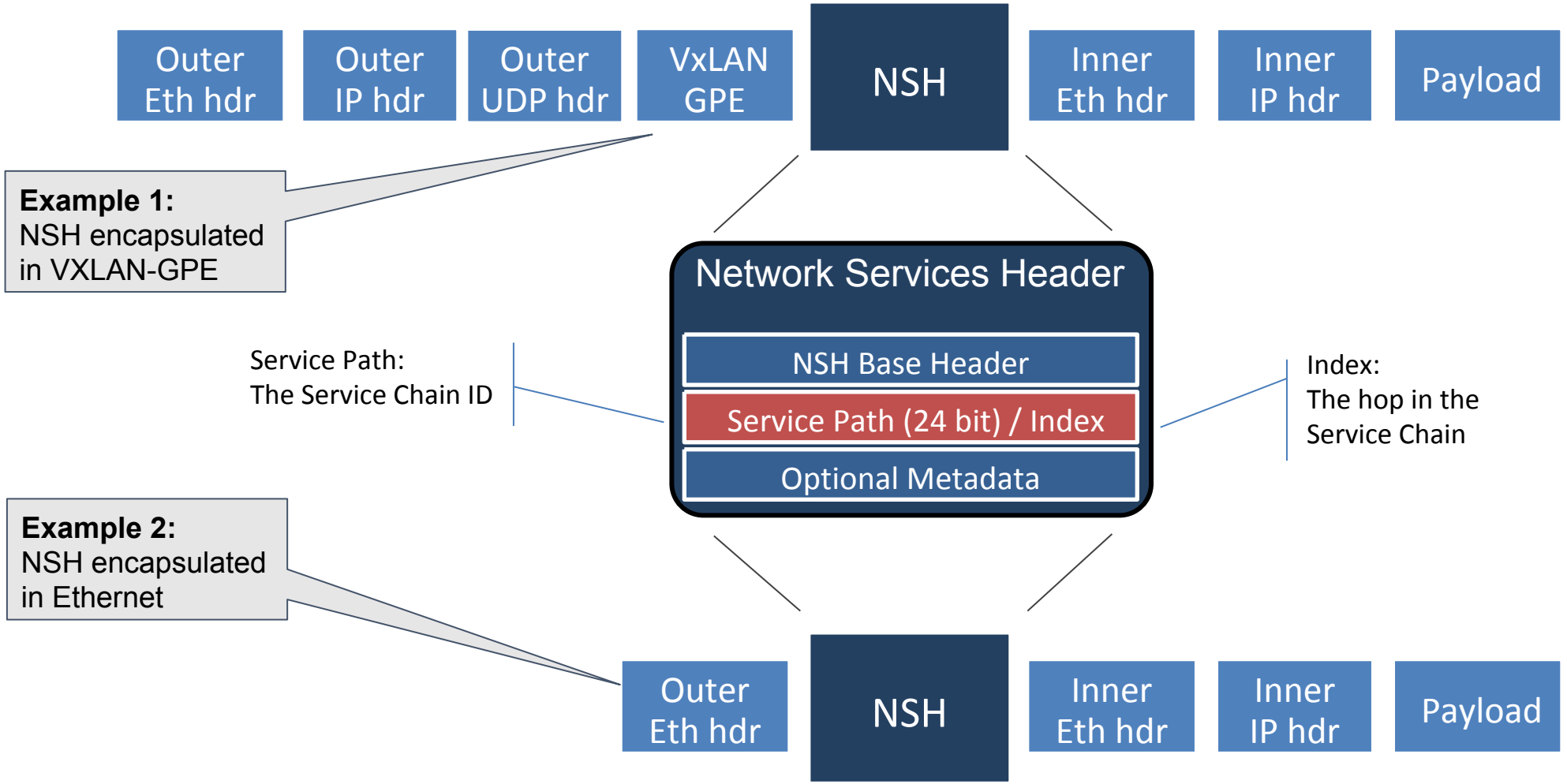


Service Chaining Encapsulation: Network Service Headers (NSH)

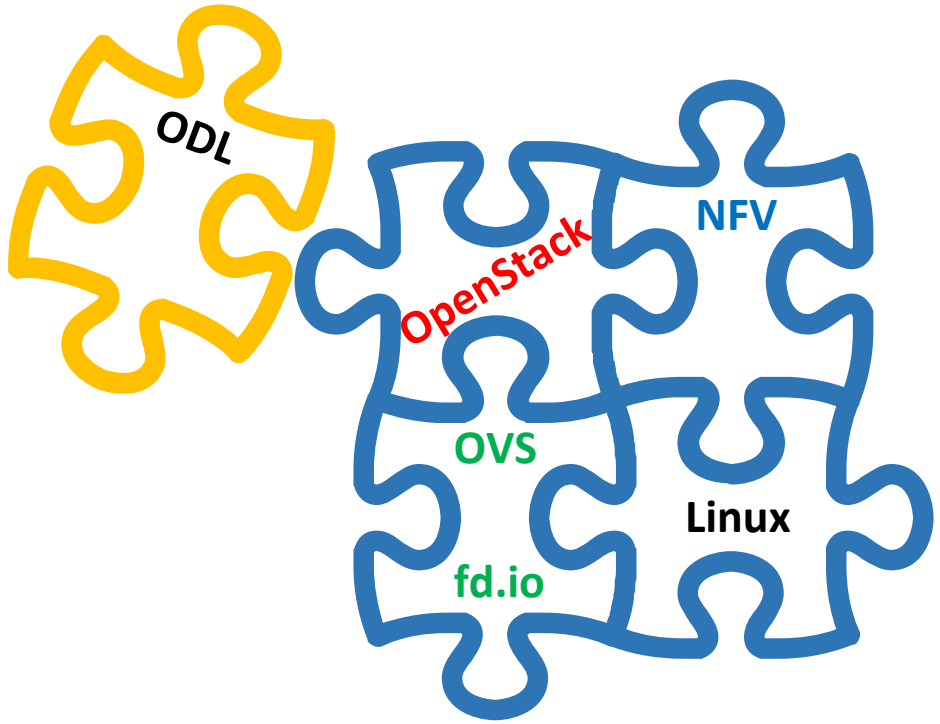


NSH Header and transport details

As supported and implemented in ODL SFC



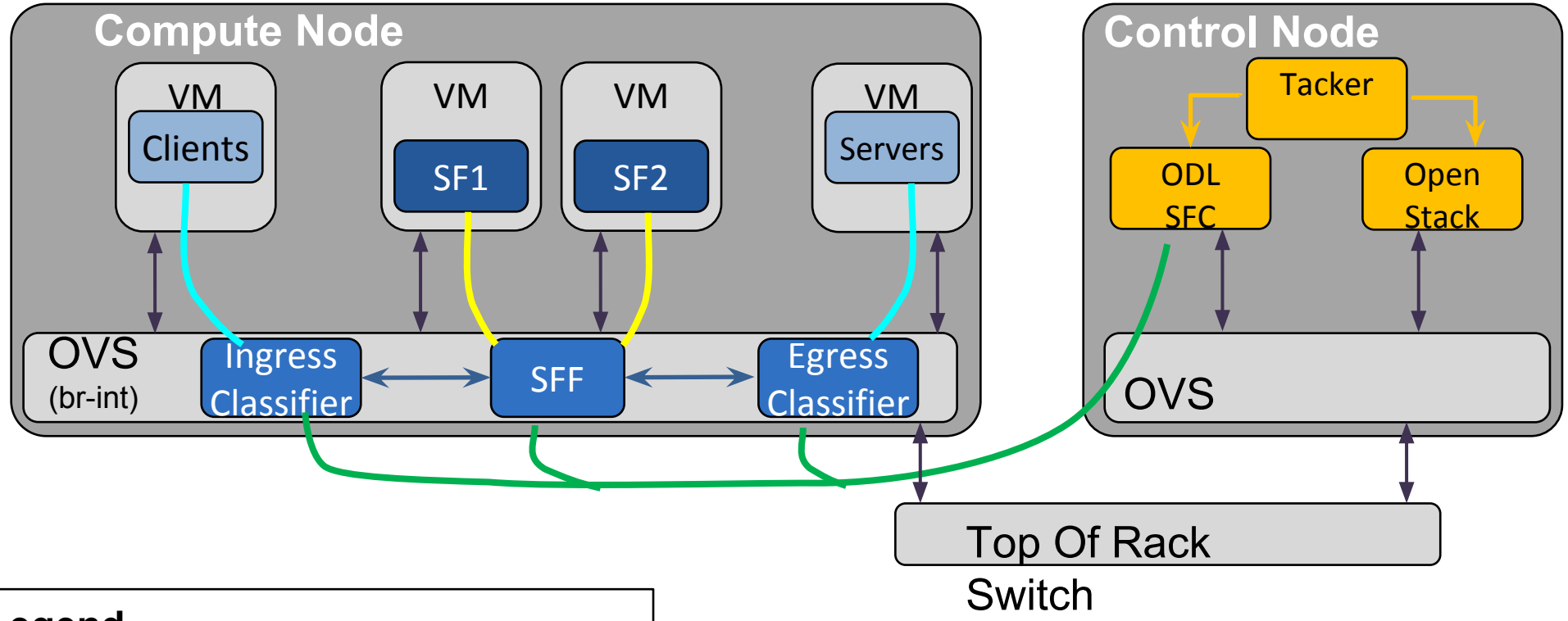
OpenDaylight: Just 1 piece of the puzzle



OPNFV

- OPNFV: Integrating it all together
  - https://www.opnfv.org/
  - https://wiki.opnfv.org/display/sfc/Service+Function+Chaining+Home

OPNFV SFC



Legend

- VxLAN tunnel SF/SFF
- OpenFlow 1.3/OVSDB
- Classifier encaps VxLAN-GPE NSH
- Original packets, no encap

IETF SFC RFC: future focus areas

- Terminating SFPs and handling SFP egress
  - rfc7665 - Section 4.3, point 2
  - The specification mentions that the last SFF should remove the SFC encapsulation and send the packets back to the network.
    - This could be done by any “SFC egress boundary node”, and should not be required to be performed only by the last SFF.
  - Its not always feasible for the last SFF to know what to do with the original packet.
  - When using GBP and Netvirt classifiers in OPNFV SFC, the “egress classifier” removes the SFC encapsulation, thus acting as an SFC egress boundary node
    - In OPNFV SFC, if the packet is sent back to the network (OpenStack br-int bridge) without the SFC encapsulation, and it enters the classifier again, then there will be a loop

IETF SFC RFC: future focus areas, continued

- Proxy Service Functions
  - TCP Proxy
    - How to handle the case when the SF generates traffic?
    - The SF terminates the TCP connection with the client and establishes another with the server
  - Transparent Cache
    - How would this work with reclassification?