Network Service Header (NSH)
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NSH Overview

• Describes a dataplane header used to carry information along a service path.
  – Identifier for service path selection
  – Opaque mandatory metadata fields
  – Optional TLVs

• Creates “service plane”
  – Transport independent (NSH in VXLAN, NSH in MPLS, NSH in UDP, etc.)
  – Service layer OAM
Changes from -02

- New co-author
- Base header is first 4 bytes, includes type field
  - Encapsulated protocol type → 8 bit value
  - Explicit dataplane versioning
  - Critical TLV indicator
- 4 byte service path header
- Added optional metadata TLV (in addition to mandatory fixed context header)
  - TLV Class
Implementation Update

• Opensource implementations
  – OVS dataplane (with VXLAN)
  – OpenDaylight control plane (+ LISP)
• Several vendor specific implementations
• Early deployments underway
Base Header

- 8 bit Next Protocol: support non-ET protocols + reclaim space
- MD type indicates format of header. NSH type = 0x1
- Critical TLV present
Service Path Header

- Represents the rendering of the chain policy
- Simple identifier: does **not** imply a static, explicit path
  - Resolved locally
- Can be changed: branching within a service graph
  - Re-classification (and therefore policy) decision
- Index conveys node within the graph
Chain and Paths
(no load distribution)

Chain1: Firewall $\rightarrow$ DPI $\rightarrow$ IPS

Chain1 is rendered as SFPID = 10
Mandatory Context Headers

- Based on initial deployments: many use cases satisfied with fixed size context headers
- Hardware friendly: easy to parse and skip at high speed
- Opaque, significance allocated via control plane
Optional TLV

- **TLV Class**: describes the scope of the type field
- **Type**: type of metadata carried, includes critical indication
Next Steps

• Continue development
  – Opensource and vendors
• Continued deployments
• Ask for adoption as a working group document: SFC encapsulation

“Generic SFC Encapsulation: This document will describe a single service-level data plane encapsulation format that:
- indicates the sequence of service functions that make up the Service Function Chain
- specifies the Service Function Path,
- communicates context information between nodes that implement service functions and Service Function Chains…”