Active OAM in Geneve

draft-mmbb-nvo3-geneve-oam

Greg Mirsky
Xiao Min
Sami Boutors
David Black
Santosh Pallagatti

IETF-108 July 2020

Problem statement

- Active OAM uses specially constructed packets to detect, troubleshoot, localize defects and measure performance in a Geneve network
- Active OAM test packets must not be leaked out of Geneve domain
- Multiple active OAM protocols are required to support fault management and performance monitoring
- Active OAM protocols in Geneve must be clearly identifiable in Geneve

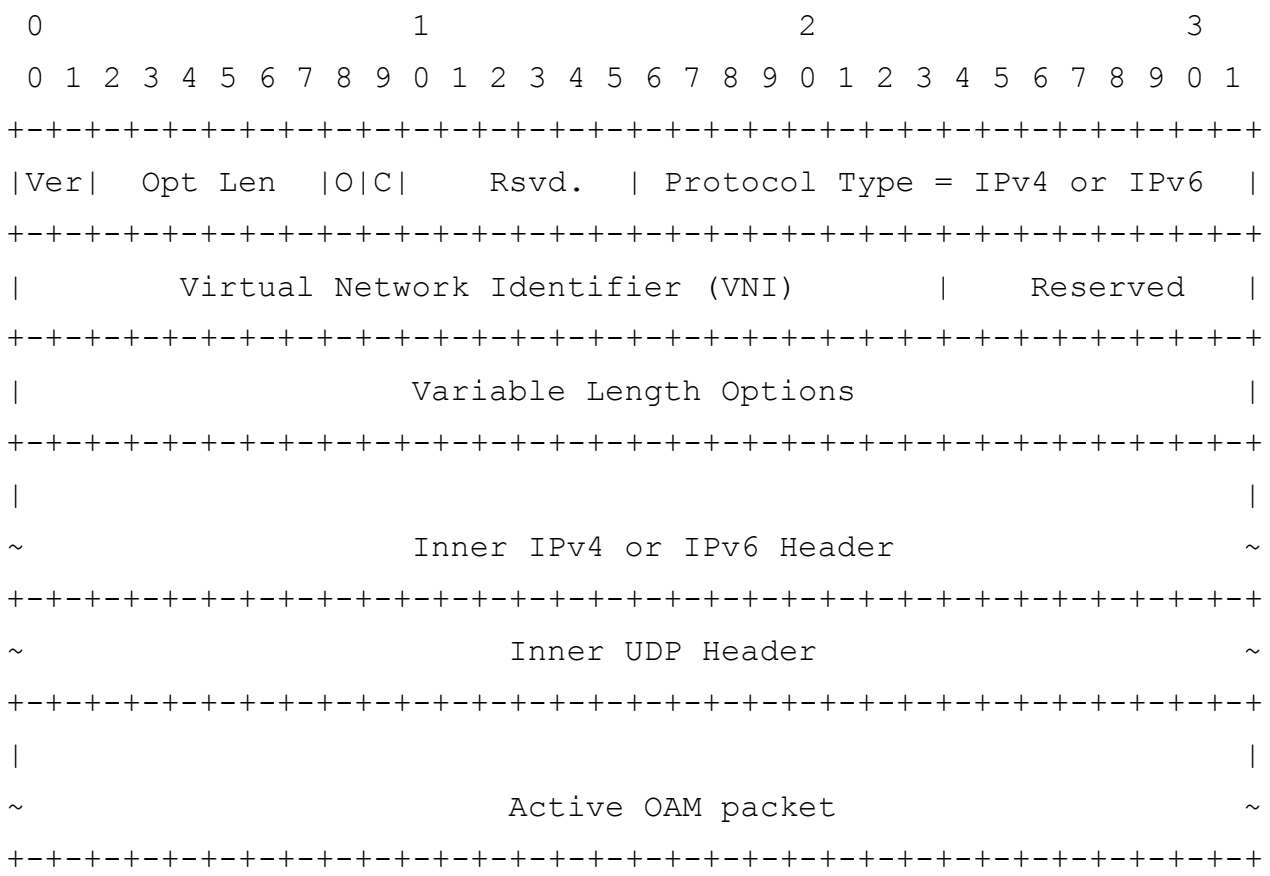
Proposed solutions

- Active:
  - IP/UDP Encapsulation
  - Geneve Associated Channel
- Archived:
  - Direct identifier in the Protocol type field
  - MPLS G-Ach

A Control Channel in a Geneve Network

There's a need for a general control channel between Geneve tunnel endpoints for OAM protocols that can be used for fault detection, diagnostics, maintenance, and other functions. Such a control tunnel is dedicated to carrying only control and management data between tunnel endpoints. Thus, the control channel of a Geneve tunnel SHOULD NOT carry tenant data. As no tenants are connected using the control channel, a system that supports this specification, SHOULD NOT forward a packet received over the control channel. Virtual Network Identifier (VNI) is used to identify the control channel. The value that is associated with this function is referred to as Management VNI. It is RECOMMENDED that the value 1 be used as the default value of Management VNI.

IP/UDP encapsulation



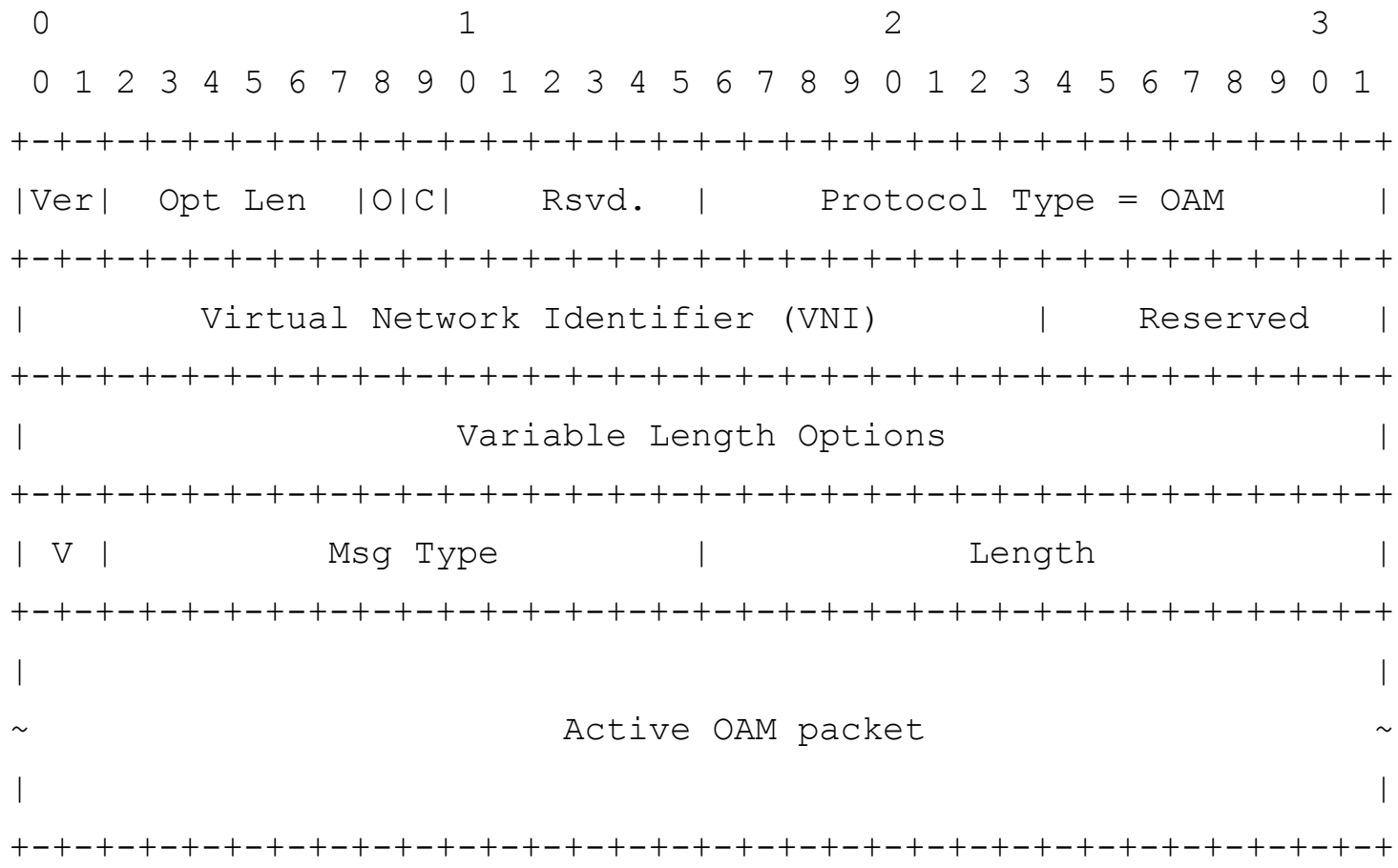
The Protocol Type field of the Geneve header MUST be set to IPv4 (0x0800) or IPv6 (0x86DD) value

Destination IP address in the inner header set to one of the loopback addresses from 127/8 range for IPv4 or one of IPv4-mapped IPv4 loopback addresses from ::ffff:127.0.0.0/104 range for IPV6

Pro: IP-based protocols work out-of-box (almost).

Cons: IP/UDP overhead

Geneve Associated Channel



Pro: May re-use PW-VCCV OAM and already defined Channel Types (IANA PW Associated Channel Type Registry)

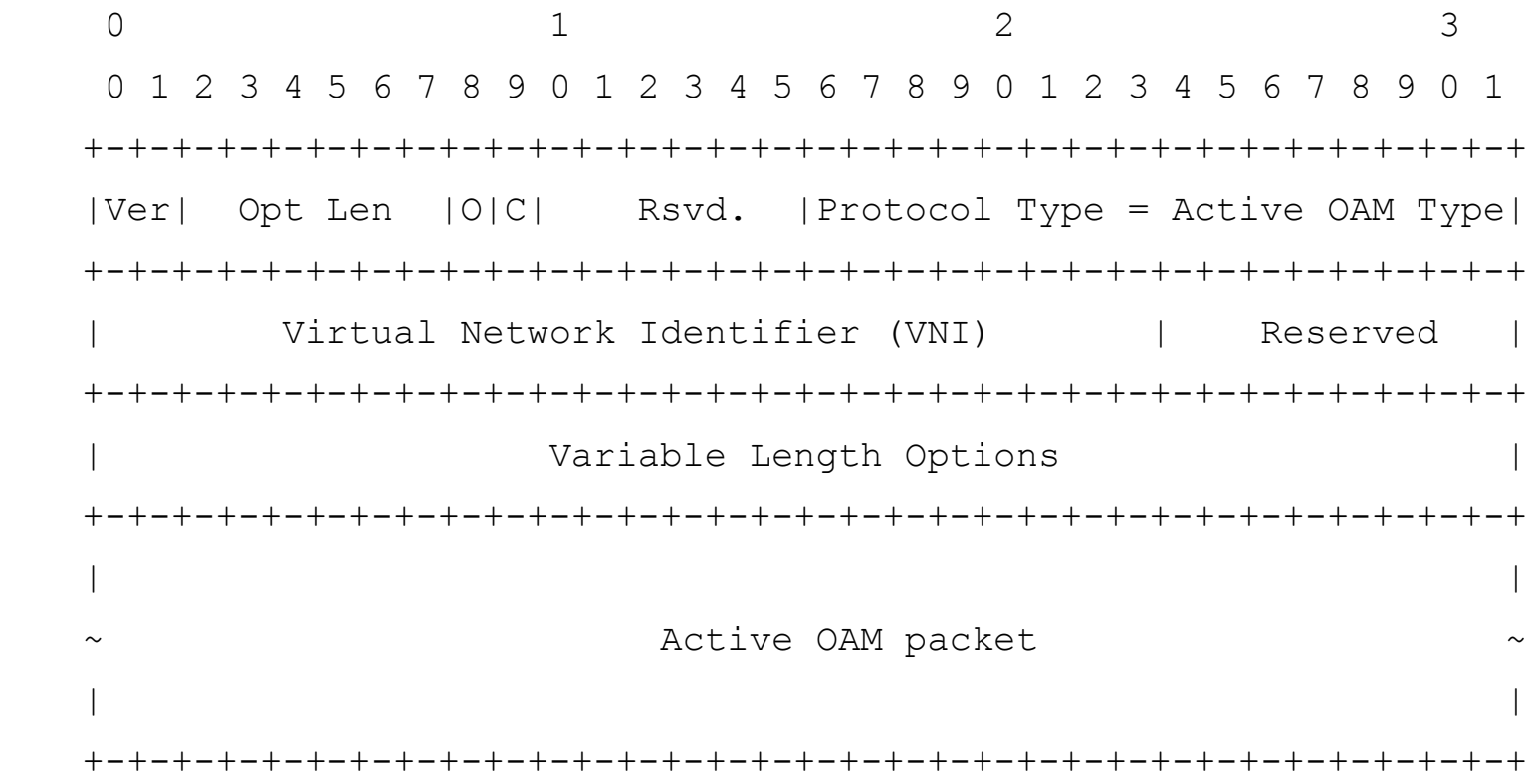
Cons: ?

Next steps

- Discuss
- Decide
- Echo Request/Echo Reply

Thank you!

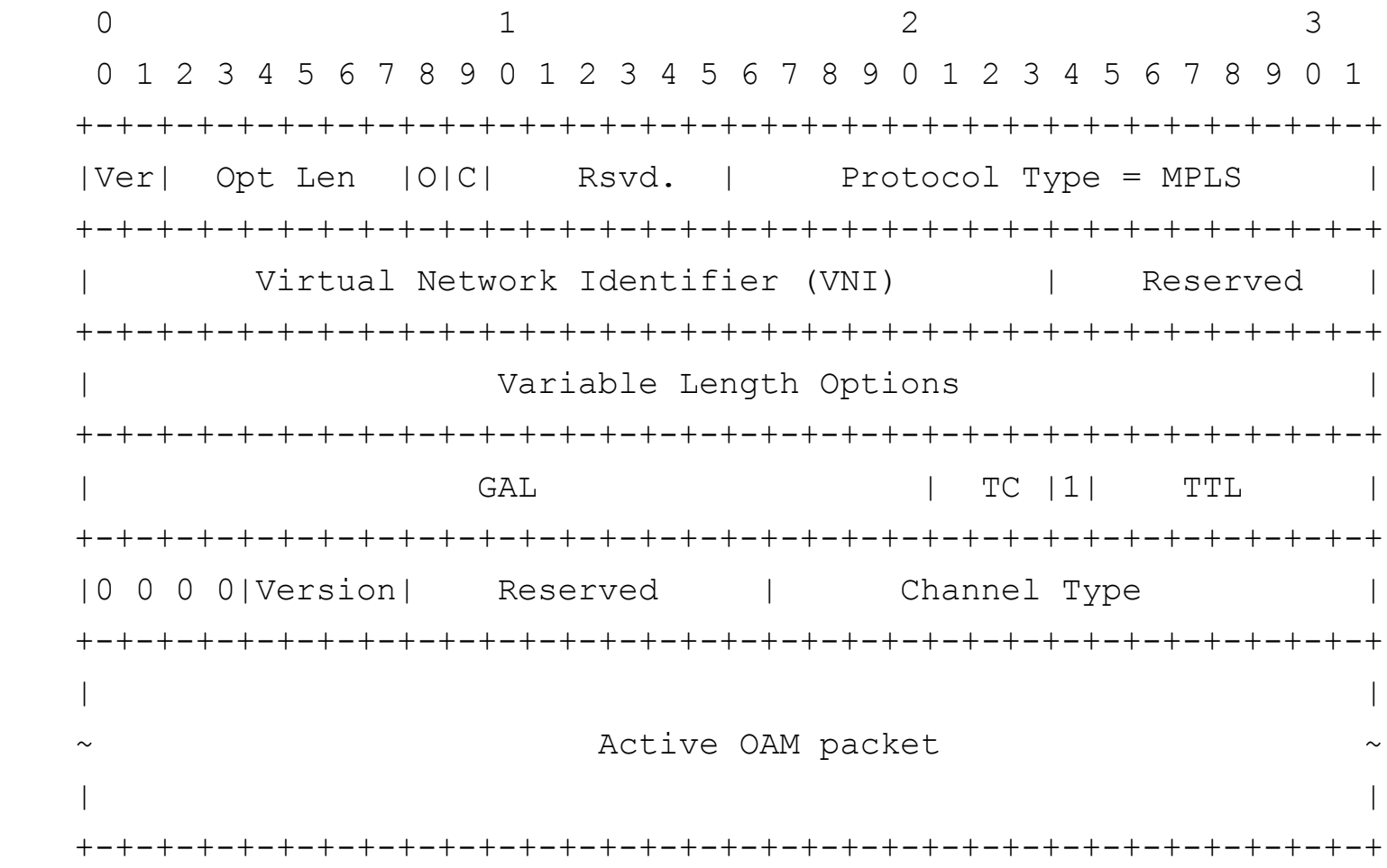
Direct encapsulation



Pro: No overhead

Cons: Will require several new Protocol Types

MPLS G-ACh



Pro: Re-use PW-VCCV OAM and already defined Channel Types (IANA PW Associated Channel Type Registry)

Cons: MPLS is required in Layer 3