

Generic Network Virtualization Encapsulation

draft-gross-geneve-00

Pankaj Garg

pankajg@microsoft.com

Jesse Gross

jgross@vmware.com

Agenda

- Present
- Goal
- Proposal
- Call to Action

Present

Network Virtualization is the key to Multi-Tenant Datacenters and Software Defined Networking

It is driving renewed interest in tunneling, tagging and encapsulation schemes

Hardware endpoints, software endpoints and controllers can evolve at different rates, but existing formats don't provide that flexibility

Existing Formats (VXLAN, NVGRE, STT)

- Lack extensibility to allow data plane innovation
 - No support for carrying meta data
- Tie in control plane that limits control plane innovation
 - Flood and learn, or other control plane semantics

Goal

Extensible Encapsulation Format

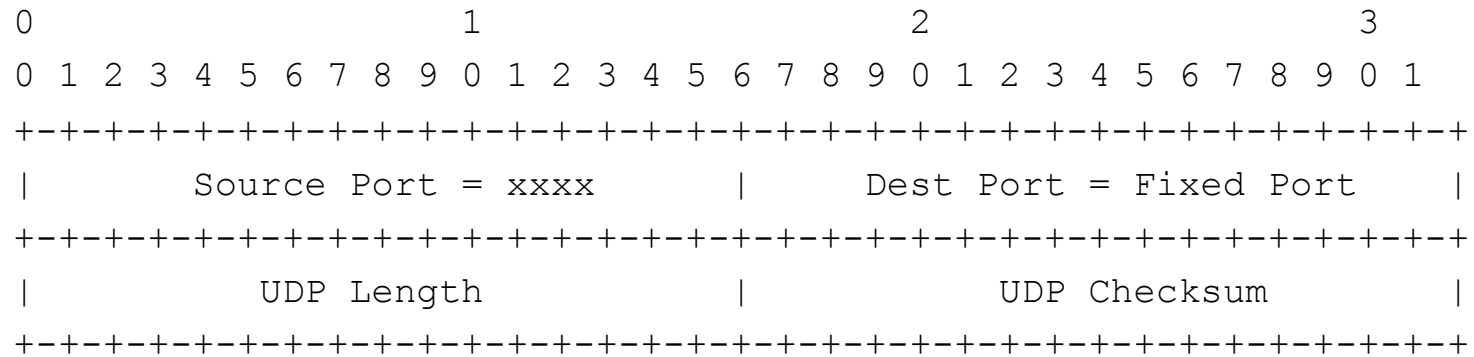
- Allows data plane (hardware, software) and control plane to evolve and innovate at different rates
- Allows those innovations to be standardized later

Extensibility

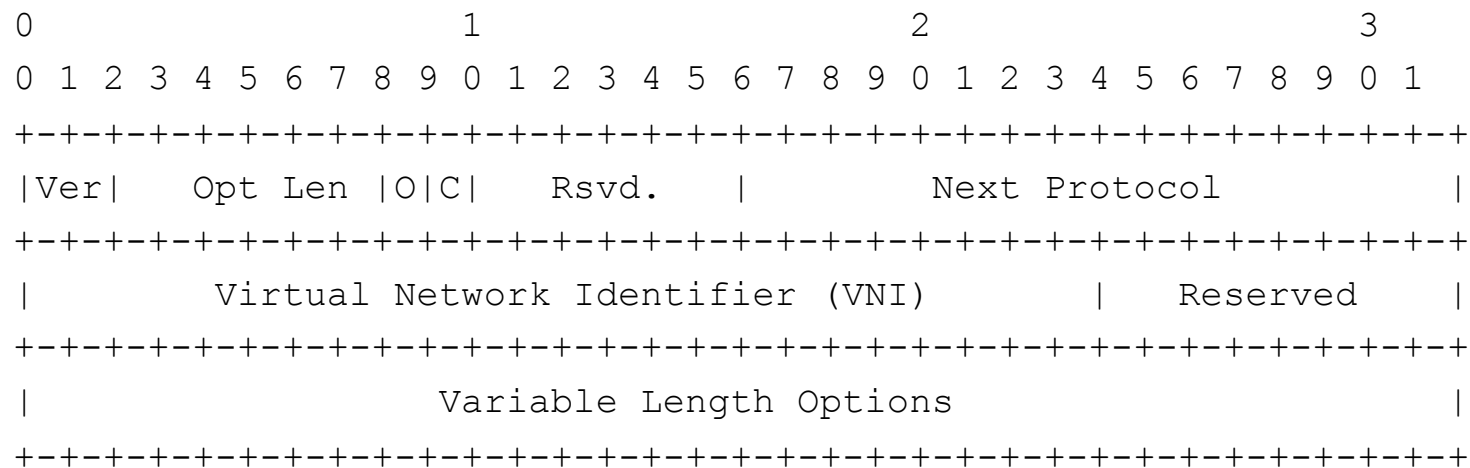
- Many extensions have already been proposed for VXLAN and NVGRE: protocol type, OAM, security, etc.
 - Evidence of need for extensibility rather than a counterargument
- VXLAN and NVGRE are fundamentally not extensible: pushing beyond the limited header space requires all supporting devices to update
 - Ecosystem need to avoid fragmentation

Proposal

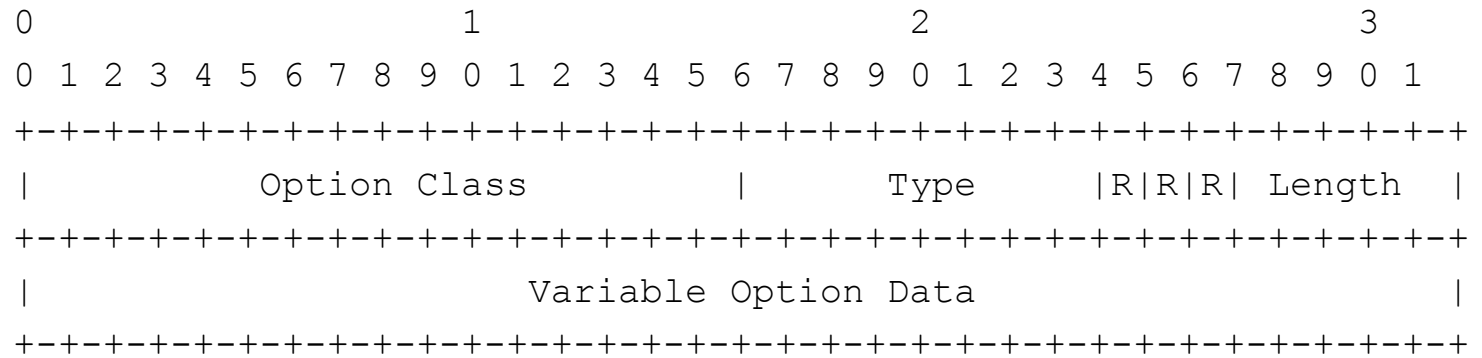
Outer UDP Header



Geneve Header



Geneve Options



Call to Action

Consider Geneve as a candidate solution to address extensibility and decoupling of control/data plane requirements as input to the gap analysis draft.