VXLAN Generic Protocol Extension (VXLAN-GPE)

draft-quinn-vxlan-gpe

- **P. Quinn**, R. Fernando, L. Kreeger, D. Lewis, F. Maino, M. Smith, N. Yadav, Cisco
- P. Agarwal, Broadcom
- L. Yong, X. Xu, Huawei
- U. Elzur, Intel
- P. Garg, Microsoft

IETF 90, Toronto, Canada
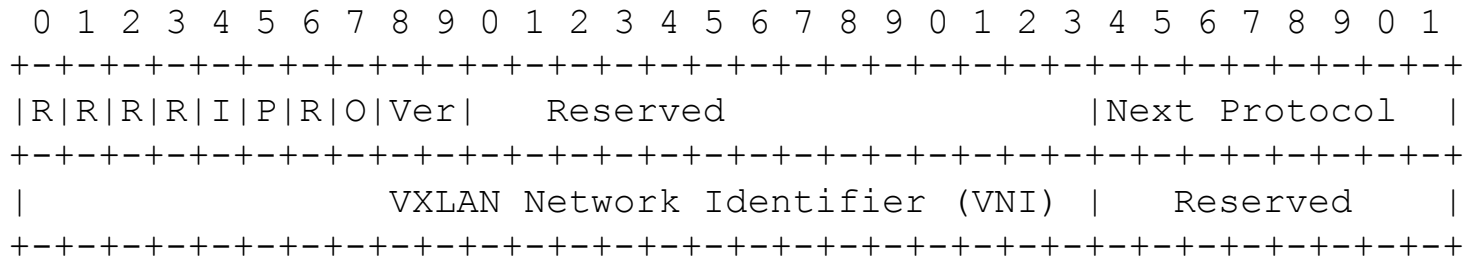
VXLAN-GPE Overview

- Support for encapsulating multi-protocols (beyond Ethernet)
  - IPv4, IPv6, NSH etc.
- Protocol type flag (P-bit)
- In-band OAM signaled by OAM flag (O-bit)
- Version field for future forward compatibility

New in -03

- Added new co-author
- Added OAM Bit (O Bit)
- Added Versioning Bits (for explicit header version control)
- Shortened Protocol Type to 8 bits
  - Lower 8 bits in first word of VXLAN-GPE header define protocol type
- 8 bits recovered for future use
- New UDP port to be requested for VXLAN-GPE
- Continues to align encap with draft-lewis-lisp-gpe
  - Common hardware implementations

VXLAN-GPE-03 Header

- Define lower 8 bits in first word of VXLAN-GPE header as protocol type
- Added OAM and Version bits

```
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|R|R|R|R|I|P|R|O|Ver|    Reserved                   |Next Protocol  |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                  VXLAN Network Identifier (VNI) |   Reserved    |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

VXLAN to VXLAN-GPE Compatibility

- VXLAN-GPE is backward compatible with VXLAN
    - For Ethernet, VLAN-GPE can use the same port as VXLAN
- VXLAN is not VXLAN-GPE forward compatible
    - VXLAN implementations cannot distinguish between GPE and non-GPE
- In mixed environments, VXLAN-GPE should use a new UDP port

VXLAN-GPE can Carry Metadata via NSH

- In cases where additional metadata is needed, the VXLAN-GPE "Next Protocol" field can be used to insert an NSH header containing the metadata