Generic UDP Encapsulation (GUE) for Network Virtualization Overlay (NVO)

draft-hy-nvo3-gue-4-nvo-00

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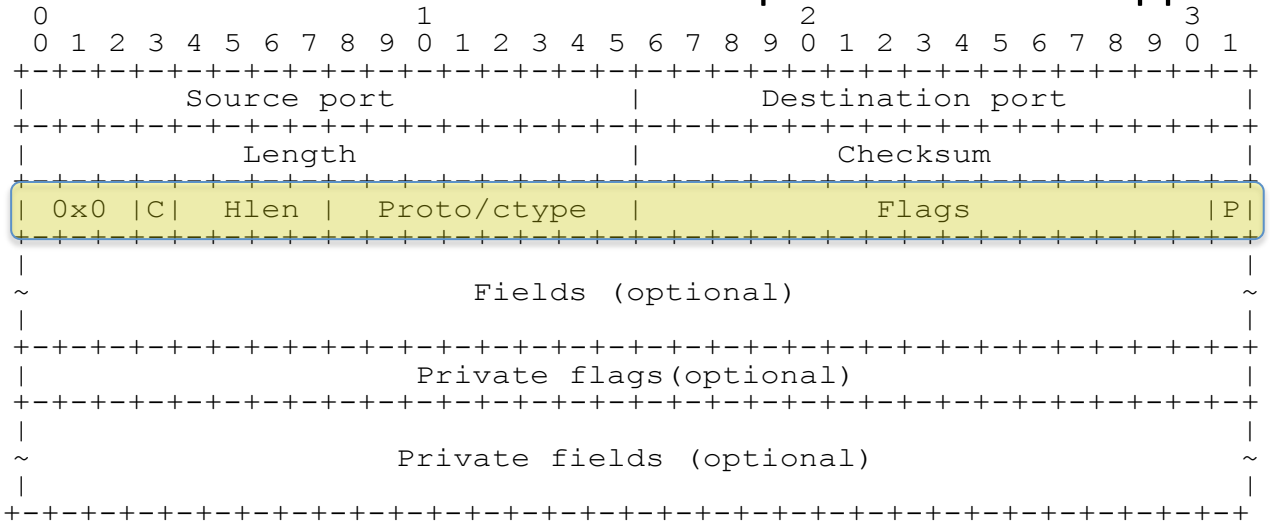
Generic UDP Encapsulation (GUE)

- Design for tunneling a network protocol & network virtualization
  - Generic and extensible for a wide range of UDP tunnel applications
  - Provide enhanced UDP tunnel transport to meet various environments
  - Aim to unified method for DCs, (get rid of many silo methods)
- Have a GUE header after UDP header
  - specify 5 key common fields in base header applying to for all applications
  - provide extensible structure for tunnel transport and tunnel applications

UDP Header

GUE Header

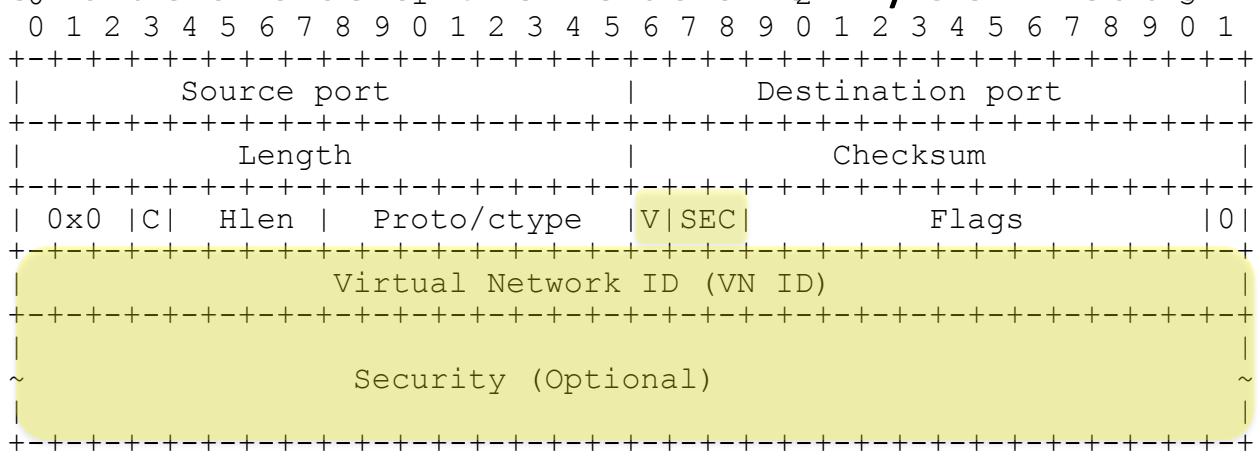


GUE for Network Virtualization

- Allocate one flag bit, ‘v’, from GUE undefined flag field for NVO
- Define Virtual Network Identifier (VN ID) field (32 bits) that associates w/ ‘v’ flag
  - MUST present when flag ‘v’ is set, MUST NOT present when clear
- Specify use of GUE secure transport in NVO (optional)
  - VN ID is critical data for virtual network isolation, need to be secure
- Specify the value choice of the fields of UDP/GUE header for NVO

UDP Header

GUE Header



- For the detail, read draft-hy-nvo3-gue-4-nvo

GUE for NVO Design Merits

- Use of unified UDP tunnel transport in DCs
  - With rich set of transport features such as security, offload
- VN ID is in option field, extensible in future, e.g.
  - Define a new option to supersede it or
  - New flag to add more bits, e.g. 64
- No requirement on VN ID structure, local site matter
- Fully compliant with NVO3 architecture
  - Potential for extensibility in future

Read draft-herbert-gue-02 for more information

Generic UDP Encapsulation (GUE) For Secure Transport

draft-hy-gue-4-secure-transport-00

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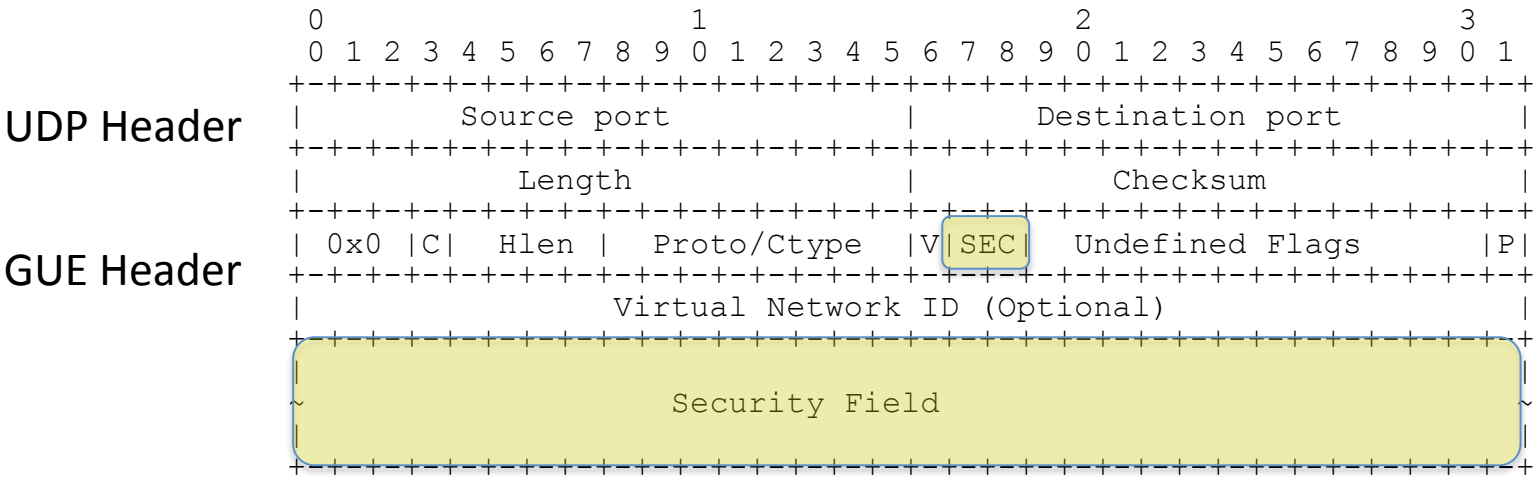
GUE for Secure Transport

- Secure Transport over IP networks is important
- Generic UDP encapsulation provides UDP tunnel transport for arbitrary applications
  - Secure UDP tunnel transport for the applications are very important in some environment
  - Present as optional feature for the applications
- Secure UDP tunnel transport provides integrity and authentication of the GUE header

GUE for Secure Transport Schema

- Allocate two flags ‘SEC’ from GUE undefined flag fields for secure transport
- Specify ‘SEC’ flags as of:
  - 00 - No security field
  - 01 - 64 bit security field
  - 10 - 128 bit security field
  - 11 - 256 bit security field
- Specify the Security field that MUST be present if ‘SEC’ is set



GUE for Secure Transport

- UDP tunnel ingress and egress MUST negotiate the values in the security field of GUE header
- UDP tunnel egress MUST perform security validation before the payload process
- GUE may be used to encapsulate IPsec packets
  - Benefit: providing a flow hash for the inner packets
- The value in GUE security field may be a cookie
- The value in GUE security field may be the secure hash

For the detail, read:

draft-herbert-gue-02

draft-hy-gue-4-secure-transport-00