

SOCKS Protocol Version 6 (update)

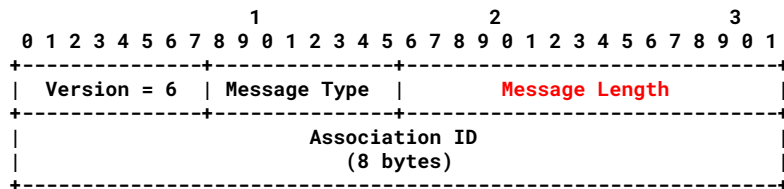
draft-olteanu-intarea-socks-6-10

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New in -09 and -10

- Focus on UDP
 - Add features found in TURN
 - Partial support for ICMP Errors
- Nits...

UDP Relay message format



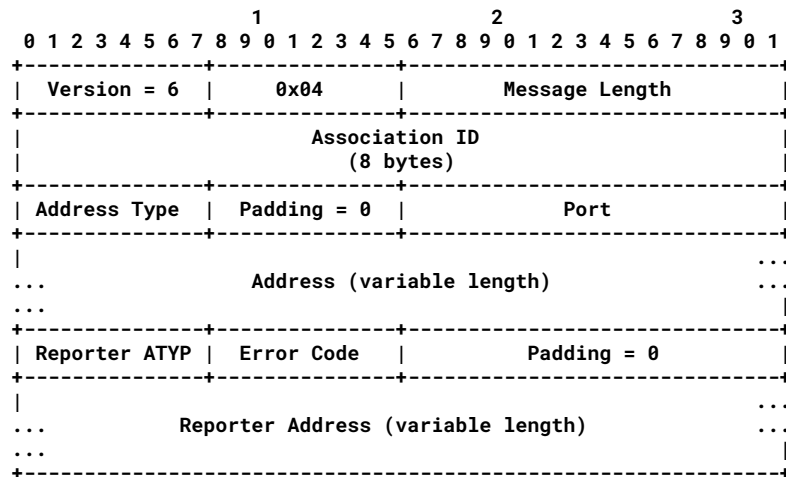
Header for UDP relay messages

- Refactored messages exchanged after a UDP ASSOCIATE command
- New information/concepts in **red**
- Message Type
 - 0x01: Association Initialization
 - 0x02: Association Confirmation
 - 0x03: Datagram
 - **0x04: Error**
- **Message length**
- Datagrams now also allowed over TCP or TLS
 - Useful when UDP is not available

Supporting ICMP

- **Fundamentally, ICMP offers L3 diagnostics, while SOCKS abstracts L4.**
 - 100% ICMP support is out of the question
- ICMP Echo/Echo Reply (future work?)
 - Arbitrary payload; can relay verbatim
 - Similar to UDP
- ICMP Errors (partially supported; optional feature)
 - Payload = truncated IP packets; can't relay verbatim
 - Some are none of the client's business (e.g. Router Advertisement, Bad IP Header etc.)
 - Proxy can't issue on client's behalf
 - Supported: Network/Host unreachable, TTL expired, Datagram too big (IPv6 only)

Translating ICMP Errors

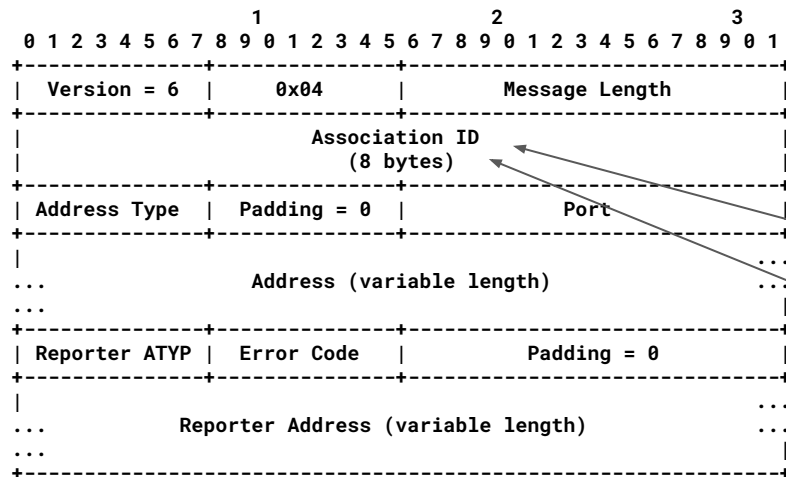


SOCKS Error

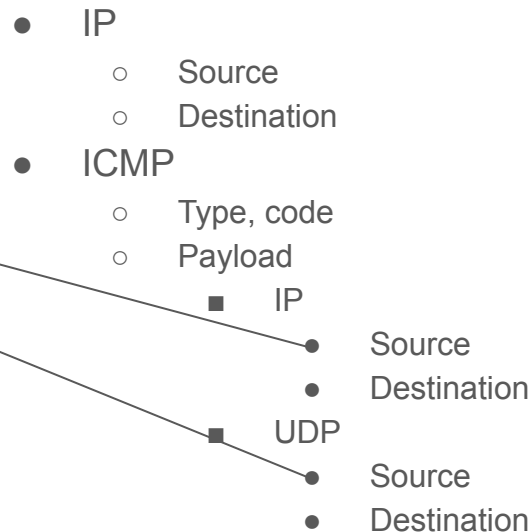
- IP
 - Source
 - Destination
- ICMP
 - Type, code
 - Payload
 - IP
 - Source
 - Destination
 - UDP
 - Source
 - Destination

ICMP Packet

Translating ICMP Errors

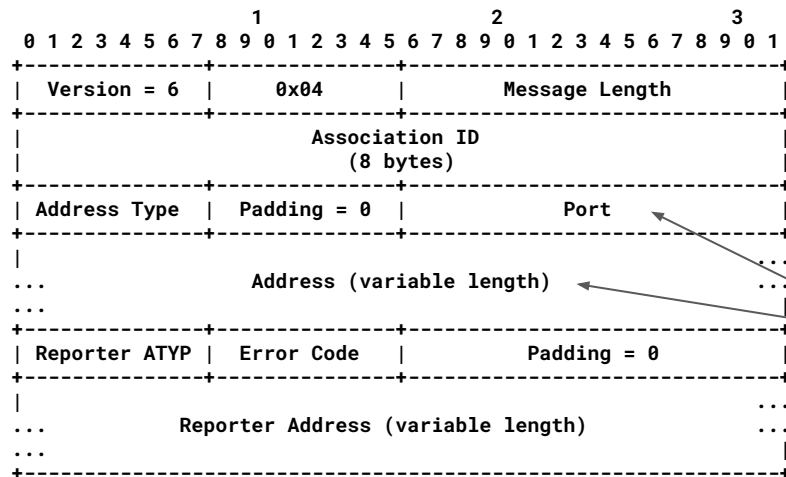


SOCKS Error



ICMP Packet

Translating ICMP Errors

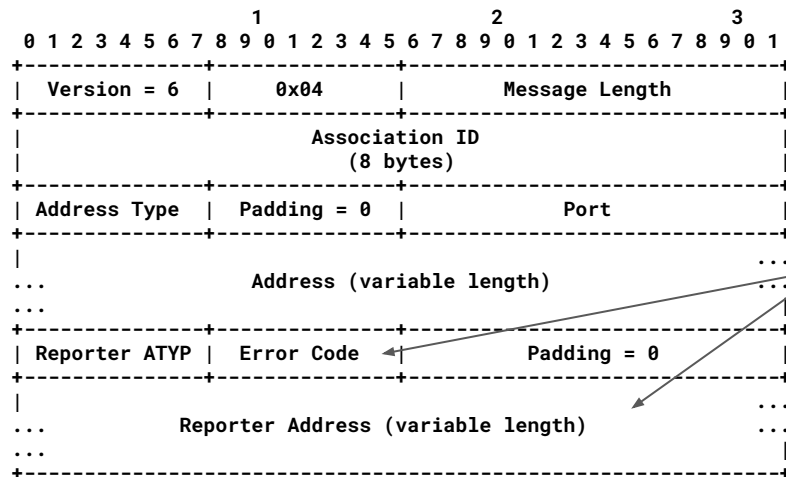


SOCKS Error

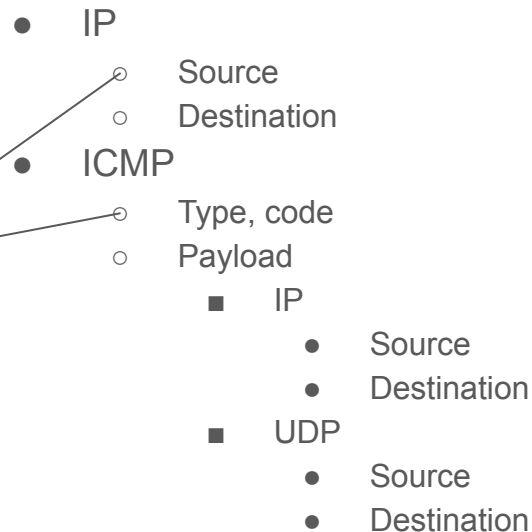
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ICMP Packet

Translating ICMP Errors



SOCKS Error



ICMP Packet

UDP-centric Stack options

- TTL: traceroute
- Don't Fragment
- Port Parity: Real-Time Protocol

Adopt SOCKS v6 as WG item?

- “Legitimize” new use cases. There are non-standard proxies in the wild (e.g. Tor, Shadowsocks)
- UDP: more feature-rich than TURN, arguably simpler
- Almost all features are done; mostly needs polish