CONNECT-IP

draft-cms-masque-connect-ip-00

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CONNECT-IP

- Allows endpoints to set up an IP tunnel between one another

- This can be used to implement:
  - A consumer VPN
  - A point-to-point IP tunnel (e.g., overlay mesh)
  - A point-to-network IP tunnel (e.g., corporate VPN)
  - A network-to-network IP tunnel (e.g., Site-to-Site VPN)

- Use-cases detailed in draft-ietf-masque-ip-proxy-reqs-01
Messages
IP_PACKET

- Allows conveying IP Packets when HTTP/3 Datagrams are not available.

```cpp
IP_PACKET Message {
  IP Packet (...),
}
```

- Where 'IP Packet' is full IP packet, from the IP Version field until the last byte of the IP Payload.
ADDRESS_REQUEST & ADDRESS_ASSIGN

- ADDRESS_REQUEST: used to request an IP address
  ADDRESS_REQUEST Message {
    IP Version (8),
    IP Address (32..128),
    IP Prefix Length (8),
  }

- ADDRESS_ASSIGN: used to assign an IP address to the peer
  ADDRESS_ASSIGN Message {
    IP Version (8),
    IP Address (32..128),
    IP Prefix Length (8),
  }
ROUTE_ADVERTISEMENT, ROUTE_REJECTION, ROUTE_RESET

- ROUTE_ADVERTISEMENT: Informs peer it's willing to route traffic to prefix. Message body is:
  ```
  ROUTE_ADVERTISEMENT Message {
    IP Version (8),
    IP Address (32..128),
    IP Prefix Length (8),
  }
  ```

- ROUTE_REJECTION message allows an endpoint to communicate to its peer that it is not willing to route traffic to a given prefix. Message body is identical to ROUTE_ADVERTISEMENT.

- ROUTE_RESET message allows an endpoint to cancel any routes it had previously advertised or rejected.
ATOMIC_START & ATOMIC_END

- ATOMIC_START: used to begin a series of atomic set of messages.

  ATOMIC_START Message {
  }

- ATOMIC_END: used to end a series of atomic set of messages.

  ATOMIC_END Message {
  }
SHUTDOWN

- SHUTDOWN: used to indicate to peer that the endpoint is closing the CONNECT-IP stream, with a string explaining the reason for the shutdown.

```
SHUTDOWN Message {
    Reason Phrase (..),
}
```
Extensibility
CONNECT-IP Extensibility

- Two main extension mechanisms
  - HTTP Headers
  - Stream Chunk types
- Possible extensions
  - DNS servers as a Stream Chunk
  - Authentication/Authorization data as an HTTP Header
  - IP Payload sent as new flow ID
    - Stream Chunk to configure flow ID, set up IP headers
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