Status of the Draft

• WG item

• Main change from previous version: uses STUN and TURN instead of HIP extensions

• More authors for the draft
  − Old authors acknowledged in contributors section
NAT Traversal using HIP

- Identity/locator split makes it possible to globally name hosts within private address realms
- Try to establish direct communications path between the end-hosts; fallback to relaying
- Both client and server applications can be located behind NAT devices
- Works also with (unmodified) legacy applications
- Reuses ICE/STUN protocol
Efficient, Secure and Universal Solution

Data plane:
- IPv4/IPv6
- UDP
- ESP
- Transport + payload
- Supports both IPv4 and IPv6 applications

Control plane:
- IPv4/IPv6
- UDP
- HIP
- Supports both TCP and UDP
- Integrity, confidentiality and authentication support
- UDP guarantees higher success ratio for hole punching
- Support for both IPv4 IPv6 networks
How Does It Work?

1. Register to Relay
2. HIP base exchange with locators
3. Pair up locators
4. Activate TURN
5. STUN/ICE connectivity tests
6. ESP Data Packets

Initiator
Responder

TURN / Media Relay

HIP Relay Server
NAT Transform Parameter

• Consider a server (Responder) with a fixed, publicly reachable address
  - No need to run ICE connectivity checks
  - UDP encapsulation for ESP is enough

• Responder omits NAT transform parameter from the R1 packet
  - Initiator and Responder omit connectivity checks and use UDP encapsulation for ESP

• Notice: NAT transform is not ”ICE lite”
STUN and ESP Demux Issue

• Demux issue: STUN and ESP messages arriving at the same UDP port (see RFC3948 and RFC3489bis)

• Alternative solutions:
  – Constrain SPI namespace in HIP daemon
  – STUN awareness in IPsec
  – 32-bits of zeroes in the beginning of STUN header
    • For all STUN packets
    • Only for HIP connectivity tests
Implementation Activities

• Ericsson implemented their own STUN/ICE implementation
• InfraHIP/HIPL in HIIT integrating to PJSIP implementation
• OpenHIP starting up implementation work
Design Team Goals for IETF72

• New version of NAT base draft
  ◦ Integrate with draft-rosenberg-mmusic-ice-nonsip
  ◦ Solve demuxing issues
  ◦ More detailed descriptions for STUN, ICE and TURN usage

• New draft on mobility and multihoming for the next IETF
References