Large Scale NAT (LSN)

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The Structure of related Internet Drafts

NAT Function

Network Model

Address

- NAT444-01
- DS-Lite
- NAT-PT
- Other Models (except DS-Lite A+P)
NAT444 Model + Shared ISP Address

Allow customers to access IPv4-only Internet

LSN : Large Scale NAT
DS-Lite Model

Allow customers to access IPv4-only Internet

LSN : Large Scale NAT
Requirement (1/3)

- **Basic Scheme**
  - LSN MUST share Global IP Address for CPEs.

- **High transparency and high connectivity**
  - LSN SHOULD comply with RFCs of NAT behavior.
    - RFC4787(UDP), RFC5382(TCP), RFC5508(ICMP)
Requirement (2/3)

- Fairness
  - LSN SHOULD limit the number of LSN's ports.
    - UDP and TCP, TCP sessions and ICMP.
  - LSN MAY offer some ways for always-available services (SMTP, DNS, etc).
    - Reserving some ports
    - LSN path-through (say after)
Requirement (3/3)

• Translation Log
  – Address
    • destination - translated source – untranslated source
  – Port
    • destination - translated source – untranslated source
  – Timestamp
LSN path-through

• Feature
  – Forwarding packets of particular protocols without NAT
    • LSN does not translate the source addresses of there packets.

• Target
  – To remove particular protocol packets from limiting the number of LSN's ports.

• Additional advantage
  – To save some applications not running under NAT
    • e.x. POP before SMTP, IP Address Authentication (IPAA)

• Constraint condition
  – Not forwarding these packets to the Internet
LSN path-through (e.x. NAT444)

- **IPv4 (G)**
- **IPv6**

**Provider service server** (e.x. SMTP server)

- **Usual protocols** (e.x. tcp 80)
- **Particular protocols** (e.x. tcp25)

**Src addr**: global IP

**Src addr**: shared IP

**CPE**

- **V4(P) + v6**
Future work

• redundancy
  – If some troubles are happened, LSN should keep user’s sessions.
    • active/active or hot-standby model
  – Draft-xu-behave-stateful-nat-standby is written about LSN redundancy.
    • We may merge or add this draft in our draft’s requirements.