

# Scenarios of IPv4 sunseting

## draft-zhou-sunset4-scenarios-01

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# Intention

- IPv4 address exhaustion & IPv6 deployment
  - How to turn off IPv4 service and advance IPv6?
- Focus on the scenarios applicable to IPv4 only
  - Subscriber site
  - Carrier site
  - Enterprise site
- Problems/gaps in these scenarios
  - New work items needed?

# Subscriber Site Scenarios

- IPv4 address release
  - V4 address exhaustion does not change user experience.
  - Release control: WT-242 (PPP) or DHCP extension?
- In NAT scenarios, how to close IPv4 at CPE?
- Dynamic DNS scenario
  - when a subscriber equipment reboots it may be assigned a new IP address different from the previous one. DDNS is used in this case.
  - If NAT is used in subscriber premise, static port-forwarding can be configured for a specific service to make DDNS work.
  - Static port forwarding at CPE in NAT scenario brings operational work and possibly address/port conflict
  - One possible solution: dynamic DNS works with NAT traversal technologies, e.g., uPnP/PCP? <http://tools.ietf.org/html/draft-deng-pcp-ddns-01>

# Carrier Site Scenario (1)

- Traceback scenario
  - [I-D.boucadair-intarea-nat-reveal-analysis] : identify each host sharing the same IP address with a unique host identifier.
  - Logging architecture to maintain records of the relation between a customer's identity and IP/port resources?
  - Port allocation algorithm? In the random-based case, the algorithm should be reversible in order to trace the host.
- Stateless CGN: NAT44 CGN to become completely stateless. <http://tools.ietf.org/id/draft-tsou-stateless-nat44-01.txt>

# Carrier Site Scenario (2)

- High Availability
  - Single point failure in CGN leads to service interruption and degradation.
  - Redundancy capability of CGN is needed (Hot and cold standby)
  - [I-D.xu-behave-stateful-nat-standby] may be a possible way? Or pre-configuring a pool of public IPv4 addresses to the CGN device when it is in failure?
- ALG
  - ALG in CGN for large number of sessions brings burden on CGN and bad performance
  - ALG in CPE or flexible way to make ALG at either CPE or CGN?

# Enterprise Site Scenario

- Part of the web servers are required to open publically to provide one domain name and corresponding IP address :
  - The enterprise has its own DNS server;
  - If the enterprise has no DNS server and needs to publicize one public address, NAT device is required to support this specific case.
- Enterprise users record the NAT translation information to access Internet
- Some basic NAT scenarios:
  - NAT traceback, port range allocation and NAT standby

# Next Steps

- Ways to go with draft-dionne-sunset4-v4 gapanalysis? Merge?
- Accept as WG item?