

# NAT64-CPE Mode Operation for Opening Residential Service

draft-chen-v6ops-nat64-cpe-01

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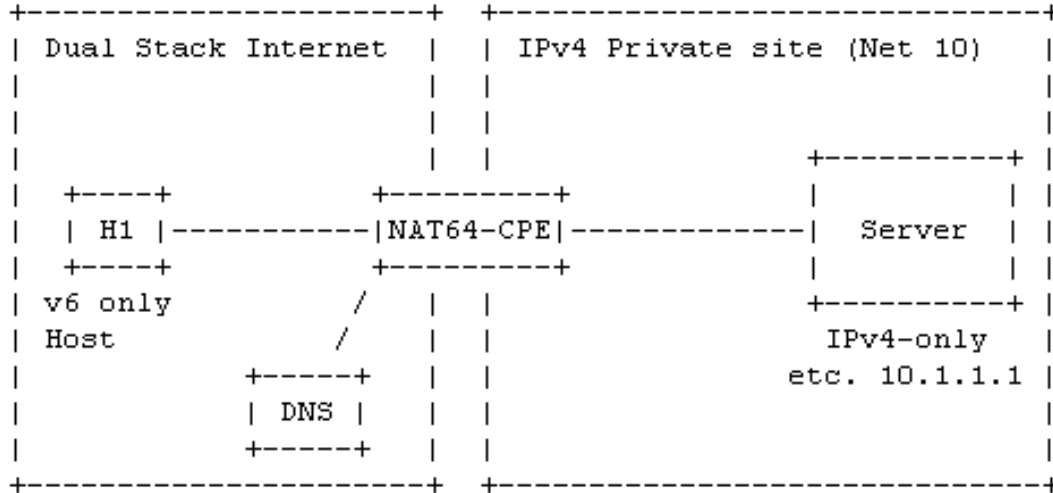
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29-March-2011

# Overviews

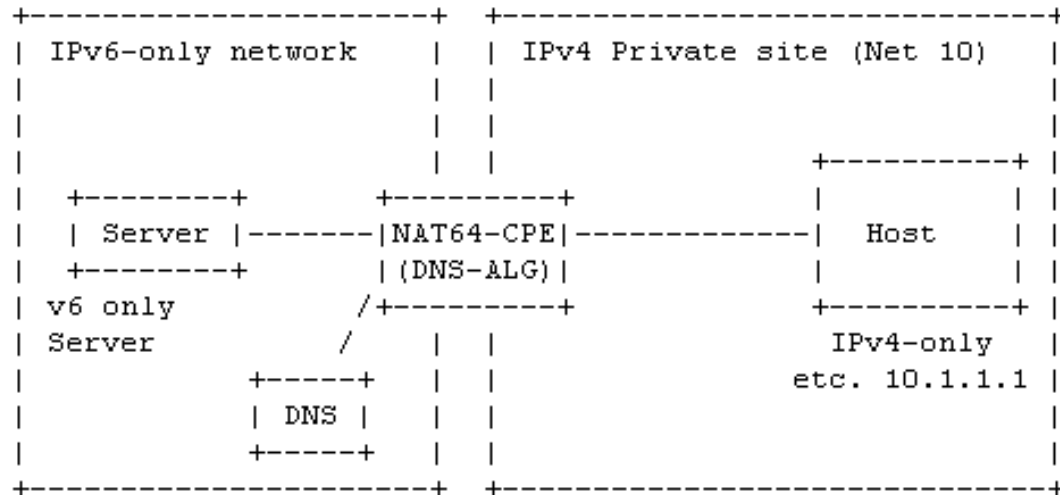
- Stateful NAT64 on CPE.
  - It allows residential service to be accessed by remote peers without DNS64 cooperation
- Stateful NAT46 on CPE
  - It makes IPv4 residential hosts become capable of accessing remote IPv6 services without upgrading legacy hosts

# CPE mode scenarios



**Scenario 1:** IPv6-only client attached to a dual-stack network, but the destination server is running on a private site where there is NAT64-CPE numbered with public IPv6 addresses and private IPv4 addresses.

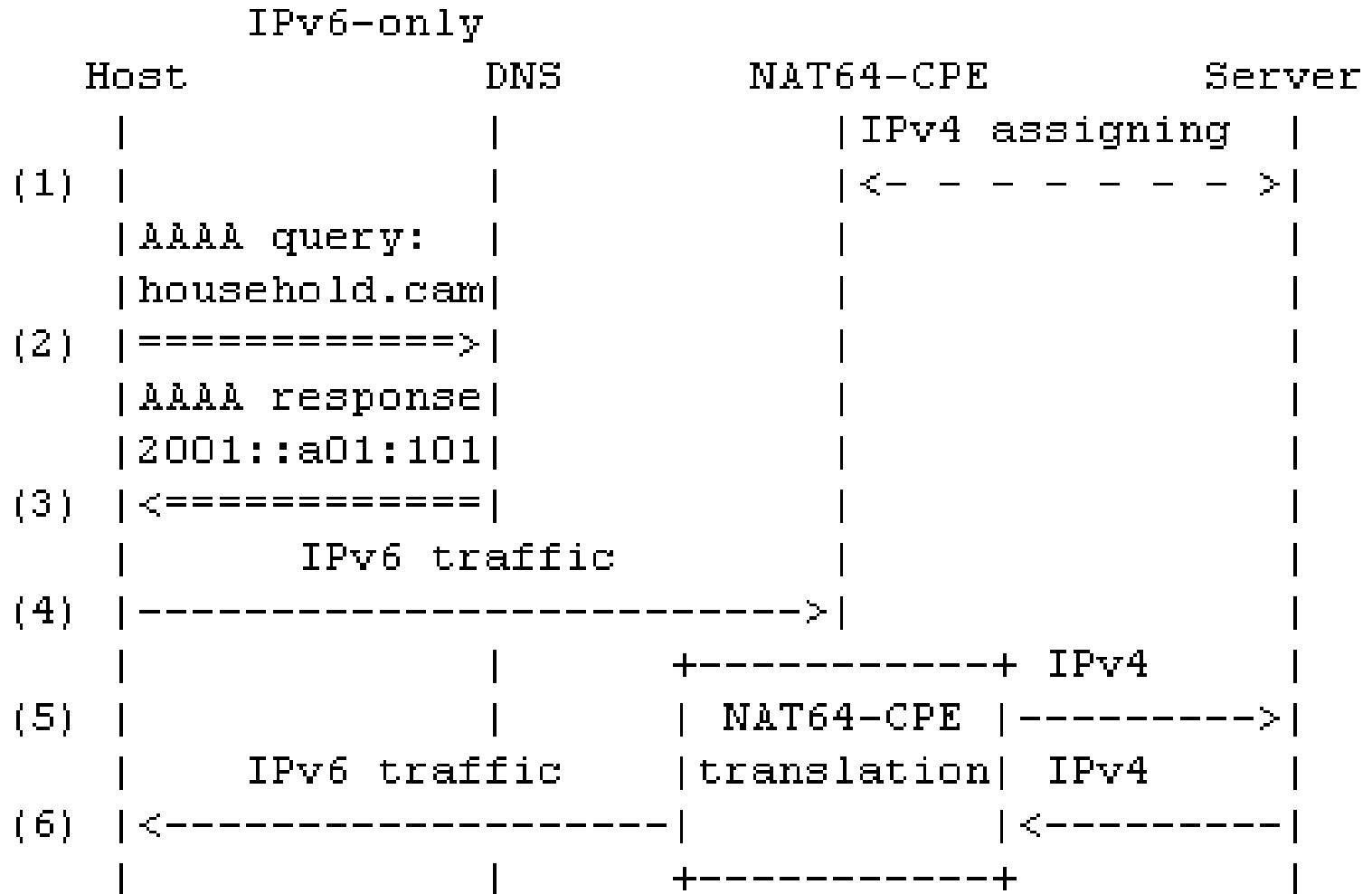
**Scenario 2:** IPv4-only client connects to the CPE, and the destination server is running in IPv6 network. DNS is located in IPv6 network for naming-resolving. CPE will have DNS-ALG capabilities for resolving IPv4 DNS query



# NAT64-CPE Mode Operation

- CPE Functionalities Description
  - It will perform the functionalities that normal CPE does except NAT44 forwarding
  - CPE should carry NAT64 capable mode without integrating DNS64; The NAT64 IPv6 prefix will be NSP
  - ISP will reserve distinct NSP for each CPE
- DNS Configuration Consideration
  - Each residential services should be represented by FQDN format. The corresponding naming resource record should be stored as AAAA.

# NAT64-CPE Mode Operation Example

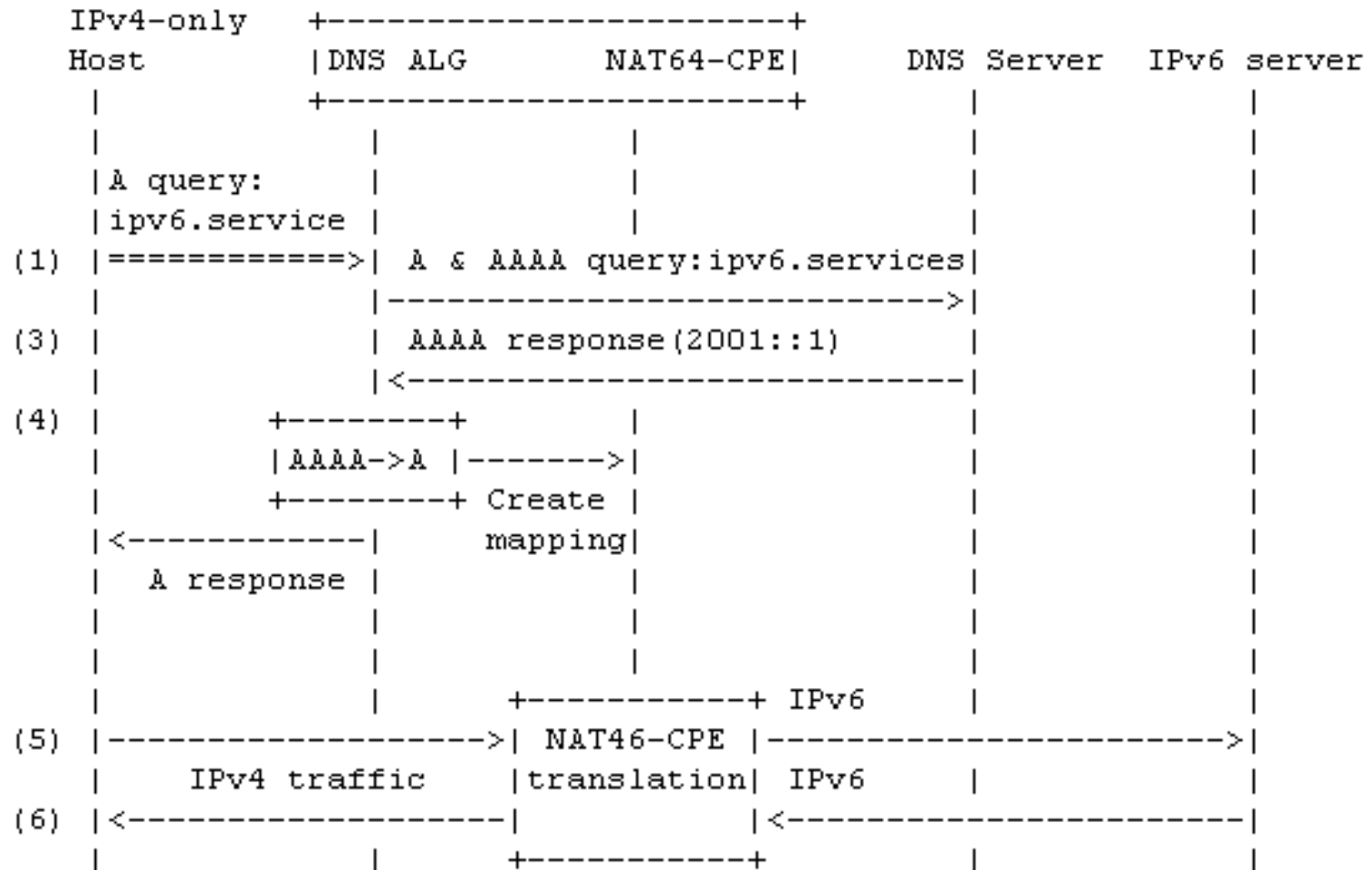


# NAT46 CPE Mode Operation

- CPE is integrated with DNS-ALG, which will accept IPv4 DNS A query and translated into A and AAAA. After name-resolving is finished in IPv6 network, DNS-ALG take different actions according to DNS responses

DNS response	DNS-ALG operation	Subsequent CPE operation
AAAA	translate from AAAA to A; Create IPv6<->IPv4 mapping for server	If destination address & port matches entry in NAT cache, CPE would take IPv4->IPv6 translation
AAAA & A	Return A to IPv4 hosts; do not need to create additional states	Will do NAT44 forwarding
A		

# NAT46-CPE Mode Operation Example



# Next step

- Residential CPE can provide "An IPv4 Network to the IPv6 Internet", which is not yet standardized in BEHAVE
- Should we work on this item?