Tsinghua Lightweight4over6

Configuration Guide

1. lwAFTR & DHCP Server Configurations

1.1. Introduction

lwAFTR and DHCPv4-over-IPv6 Server(TSV) are collocated.

1.2. Basic Info

System Information:

Module	System	Kernel
lwAFTR	Linux (Ubuntu 10.04LTS)	2.6.32
DHCPv4-over-IPv6 Server(TSV)	Linux	

Interfaces Information:

- IPv4 Interface: eth0
- IPv6 Interface: eth1

1.3. lwAFTR Configurations

Enter the folder of TC/tunnel/, there is a shell script called 'load' which launches the virtual NIC and configures it.

You can modify the IPv4 address of the virtual NIC in the script.

1.4. TSV Configurations

Enter the folder of TC/dhcp/server/. There are two related configuration files: dhcpd.conf, open4v6-eth0.sh

1.4.1. dhcpd.conf

```
shared-network network4_eth0 {
subnet 219.243.208.192 netmask 255.255.255.224 {
   option port-set 0x1234,0xF800;                    →Set port set index &
mask
   option routers 219.243.208.193;                   →Set the GW
   option domain-name-servers 8.8.8.8;               →DNS server
   }
   pool {
   range 219.243.208.197 219.243.208.197;            →addr pool
   #range 219.243.208.209 219.243.208.209;
   }
}
```

PS:

About the line of 'option port-set 0x1234,0xF800;' :

The first number is port-set index which is not the actually assigned port-set index but an arbitrary number

The second number is port-set mask which determines the length of the mask.

1.4.2. open4v6-eth0.sh

#!/bin/bash

rm -f dhcpd.leases →Clear old leases

touch dhcpd.leases →Create new dhcpd.leases file

./dhcpd -4v6 -4v6interface eth0 eth1 -p 67 -cf dhcpd.conf -lf dhcpd.leases –f

→The IPv4 address pool to be allocated (in dhcpd.conf file) should be in the same subnet with the IPv4 address of eth0.

→The eth1 is the IPv6 iface which the server listens on.

1.5. Launch the system

1) Enter the folder of TC/tunnel/
2) sudo ./load
3) sudo ./ioctl –c eth1 (Tell the virtual NIC the IPv6 physical NIC is eth1)
4) Enter the folder of TC/dhcp/server/
5) sudo ./open4v6-eth0.sh

1.6. Add static route

The route of allocated IPv4 address should point to the virtual NIC.

E.g.:

If the allocated address is 219.243.208.197, you should add a static route:

219.243.208.197/32 dev public4over6

2. lwB4 & DHCP client + CRA Configurations

2.1. Introduction

lwB4 contains the following modules:

- tunnel module
- DHCP client (support port-set extension);
- Client Relay Agent (CRA)
- NAPT module (iptables)

2.2. Basic Info

System Information:

Module	System	Notes
tunnel module	Linux (Ubuntu 10.04LTS)	Kernel 2.6.32
DHCPv4 client	Linux	
Client Relay Agent (CRA)	Linux	
NAPT	Linux	iptables

Interfaces Information:

IPv6 Interface: eth0

2.3. tunnel module Configurations

Modify the script 'load' in the folder of cpe/tunnel/.

Change the parameters 'GW_IPV6_ADDRESS', 'TC_IPV6_ADDRESS', 'TI_IPV6_ADDRESS' and 'INTERFACE' according to your network and system configurations.

2.4. DHCPv4 client Configurations

There are folders used for dhcpcd, which are specified in dhcpcd/config.h .

Create related folders and put their paths in the config.h file. After that, run 'make clean' and then re-make the programs.

2.5. NAPT Configurations

NAPT functionality is accomplished by using iptables.

- donat.sh

  In the folder dhcpcd/. It will be invoked automatically by dhcpcd after the address and port-set is assigned successfully.

- offnat.sh

  In the folder dhcpcd/. It will be invoked automatically once the dhcpcd process is killed to stop the NAPT function.

2.6. Launch the system

1) Enter the folder of TI/cpe/tunnel/.
2) sudo ./load
3) Enter the folder of TI/cra/.

4) Specify the IPv6 address of lwAFTR and lwB4 when running the CRA. Supposing IPv6 address of lwB4 is 2001::2, while that of lwAFTR is 2001::1.

   sudo ./cra –a 2001::2 2001::1

5) Enter the folder of TI/dhcpcd/.

6) sudo ./open4v6.sh