IP Transitioning in CE Routers
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Two Choices:

1. **Multihoming**: Multiple active interfaces are allowed, router decides which WAN interface to use for upstream traffic based on IP forwarding metrics.

2. **Forced single-homing**: Router is “allowed” one and only one active WAN interface at any time.
IPv6 Internet

Native IPv6

Tunneled IPv6

IPv4 6rd

Same Two Choices:
1. Multihoming
2. Forced single-homing
Boot

- Configure native IPv6
  - OK? yes
    - IPv6 service
  - OK? no
    - No IPv6 service

- Configure native IPv4
  - OK? yes
    - IPv4 service
  - OK? no
    - No IPv4 service
Boot

Configure native IPv6

OK? no

Wait

timeout

ok

6rd option? no

OK? no

No (IPv4) service

yes

IPv4 only service

Native IPv6?

yes

Native dual stack service

no

Configure native IPv4

DS-lite option? no

Initiate IPv4 over DS-lite

yes

Initiate IPv4 over 6rd
Boot

Configure native IPv4

OK? no → Wait timeout

OK? yes → Configure native IPv6

6rd option? no → Configure native IPv6

6rd option? yes → Initiate IPv6 over 6rd

OK? no → No (IPv6) service

OK? yes → DS-lite option?

DS-lite option? no → IPv6 only service

DS-lite option? yes → Native IPv4?

Native IPv4? yes → Native dual stack service

Native IPv4? no → Initiate IPv4 over DS-lite
IPv6 Forwarding w/Multiple Exits (Multihoming)
IPv4 Forwarding w/Multiple Exits (one example)

CPE NAPT Table

Dynamic:
Flow 1 (5-tuple) – Intf 1
Flow 2 (5-tuple) – Intf 1
Flow 3 (5-tuple) – Intf 2
Flow 4 (5-tuple) – Intf 2
Flow 5 (5-tuple) – Intf 1
Flow 6 (5-tuple) – Intf 1
Flow 7 (5-tuple) – Intf 2
Flow 8 (5-tuple) – Intf 2
Flow 9 (5-tuple) – Intf 1
Flow n (5-tuple)

Static:
DS-Lite – Intf 3
Port FWD (UPnP, PCP…)

AFTR NAPT Table

Dynamic:
Flow 1..
Flow 2..
Flow 3..
Static:
Port FWD (PCP)
Address C…Z
Load Balance Broadband Router
TL-R470T+

TP-Link TL-R470T+ Dual Wan Load Balance Broadband Router

$43 online

TL-R470T+ by TP-LINK (Factory New) The TL-R470T+ Load Balance Broadband Router possesses stronger data transmission capacity and stability, cost-efficient for networks in places such as Internet cafes and small offices. It brings you high return on investment with low overhead. Management: QoS, Web-based Management, Remote Web Management, DHCP.
What for 6204-bis?

- Current text states CE Routers SHOULD implement DS-Lite and 6rd, but avoids how they interact with one another as well as with Native IPv4 and Native IPv6.

- Specify in the “Transition” section that IP interface configuration remain independent (as with Native Dual-Stack), ruling out “forced singlehoming”

- In order to support Multihoming:
  - **For 6rd:** draft-townsley-troan-ce-transitioning specifies 3 Multihoming requirements, and 3 “6rd sunsetting” requirements. Adopt these in some form.
  - **For DS-Lite:** Require that IPv4 “dual-wan” functionality be employed and identify that operational issues surrounding “disabling IPv4” are out of scope but could be of concern (MAX_SOL_RT for IPv4 as well?).

- Or, move the “Transitioning” solution space to a new document.