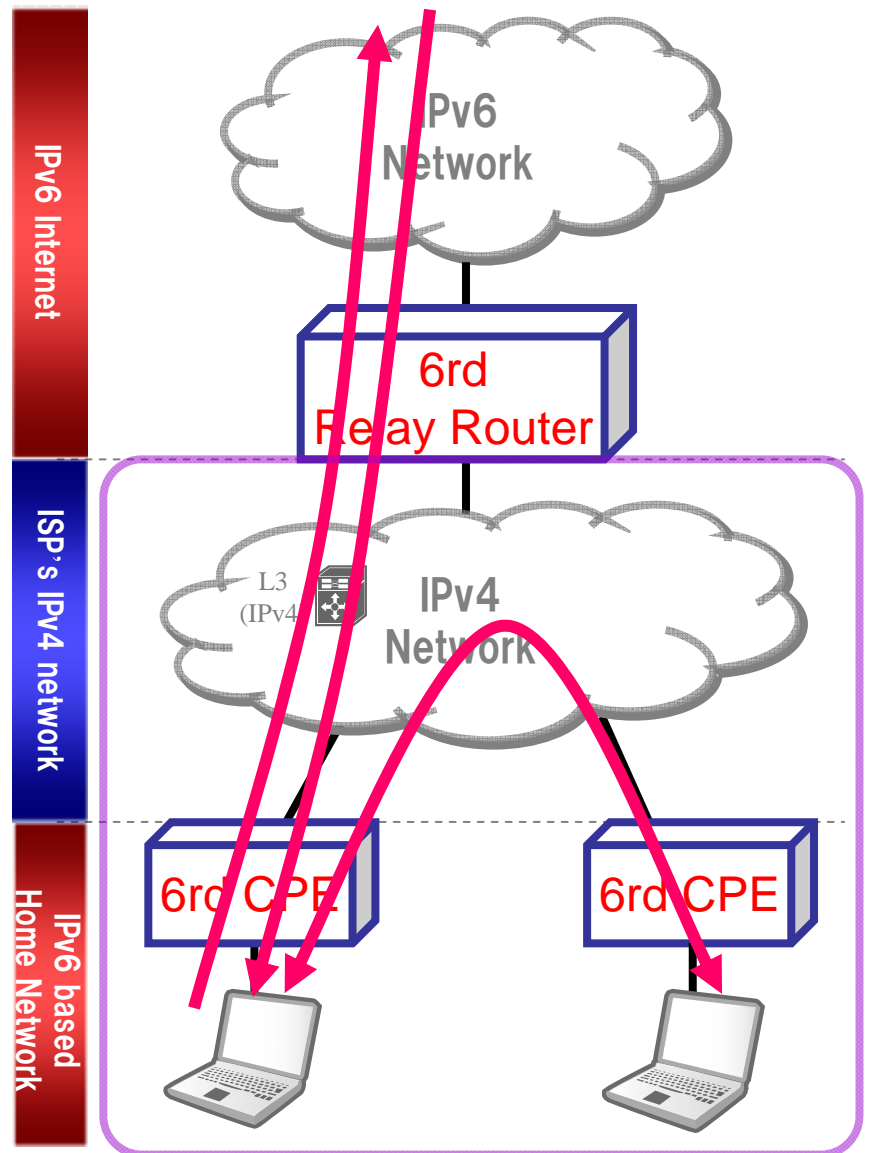


**Why we choose 6rd  
for our ADSL access network?**

 SoftBank

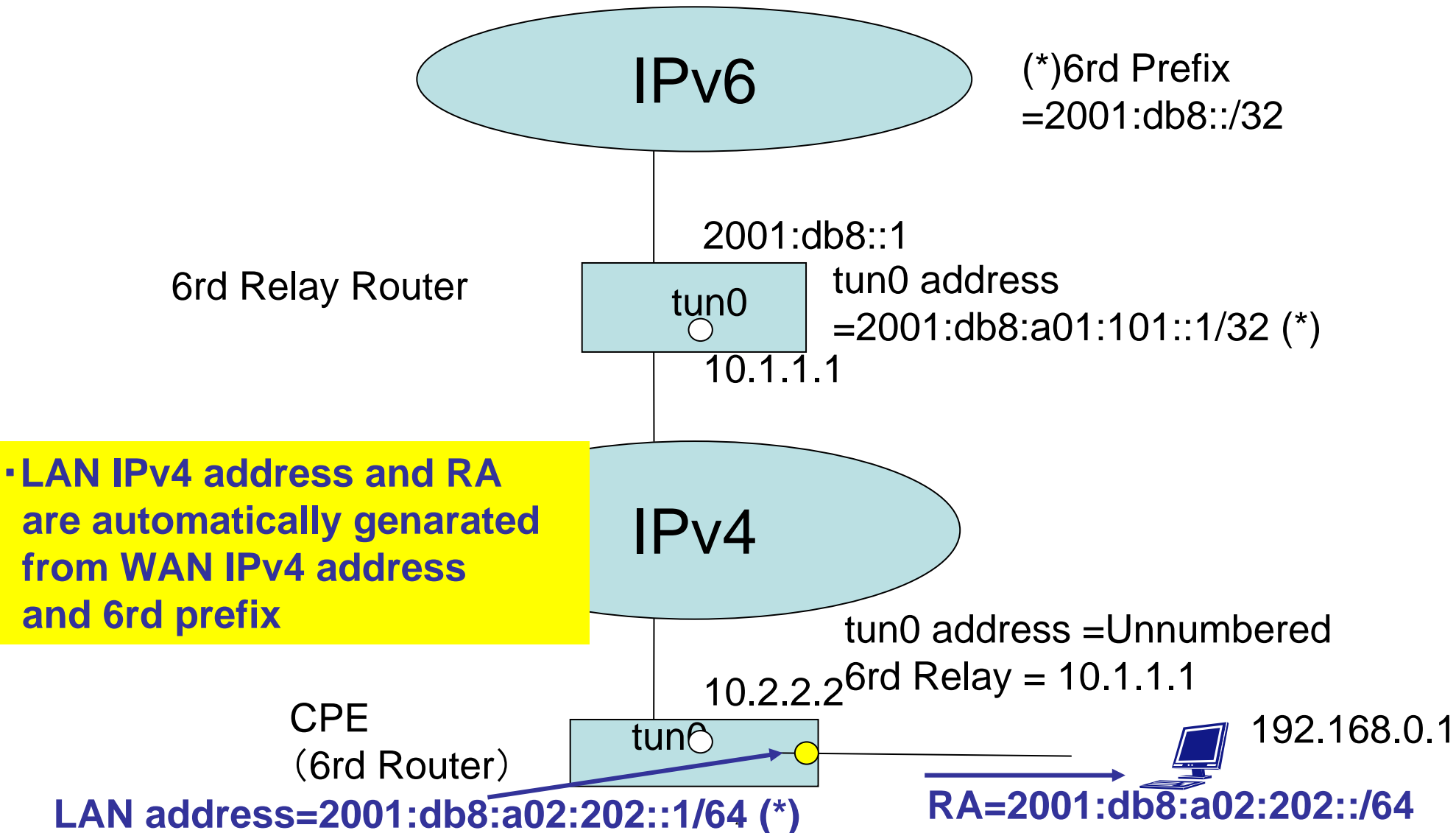
- **Softbank is 3rd largest carrier and one of largest ISP in Japan**
- **We have two different access NW for broadband service**
  - **ADSL access network**
  - **FTTH access network**
- **We choose 6rd for our ADSL access network**

- ADSL access network is IPv4 only network
  - Replacing or upgrading all devices to enable IPv6 is not realistic
  - We will need 6 over 4 technology to provide IPv6 connectivity
- Subscribers are moving to FTTH, so # of subscribers is slightly decreasing
- Existing subscribers already have global IPv4 addresses
- Since we are providing ADSL modems as CPEs, we can control software in CPEs
- Nobody want to pay for IPv6 transition, we should minimize all additional costs

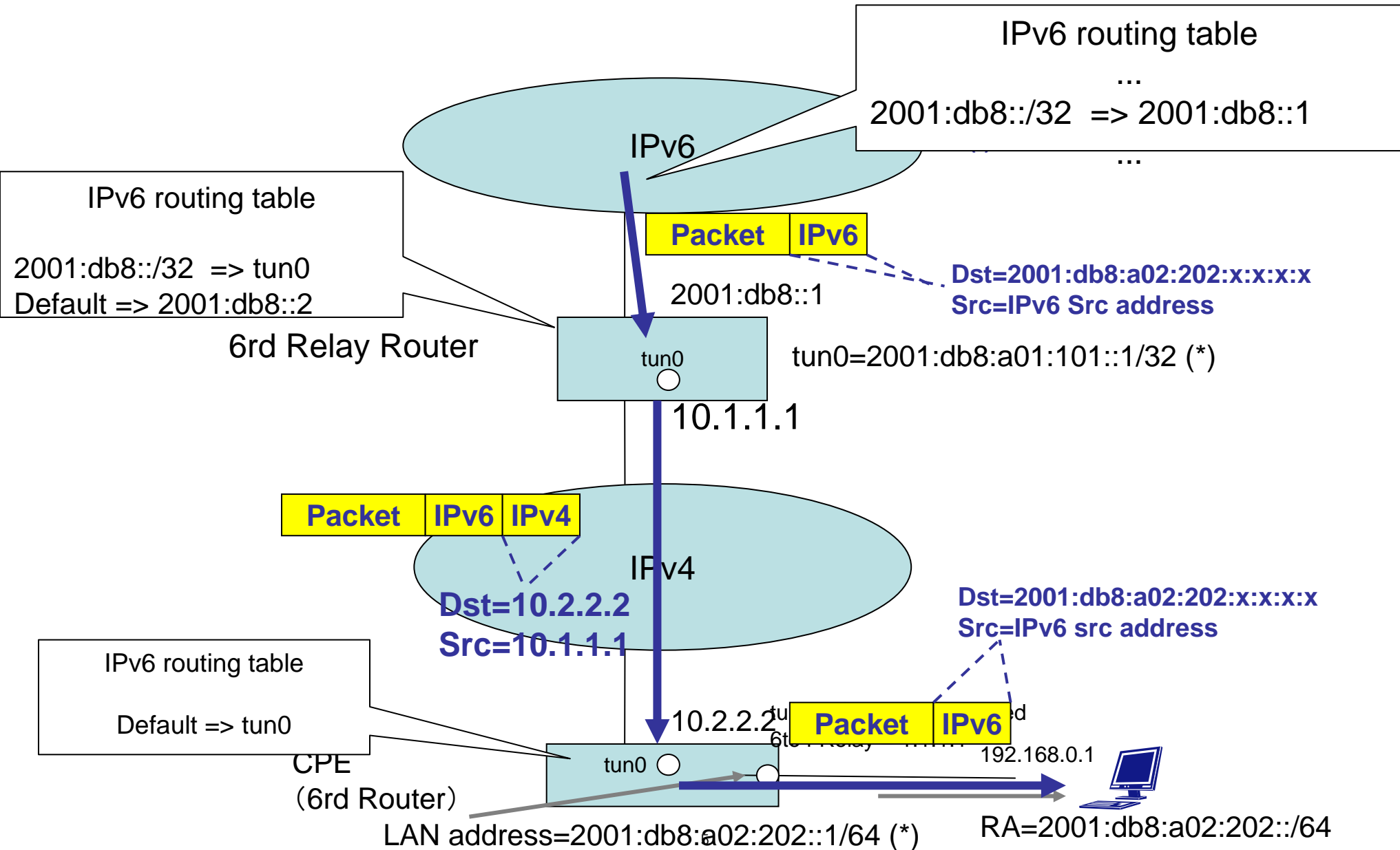


- IPv4 address is used as internal ID
- IPv6 prefix which is delegated for each subscriber is derived from global IPv4 address which is assigned for same subscriber
- CPE can automatically configure its delegated IPv6 prefix to home network
- For downstream packet, 6rd relay router can automatically form encap header from dst IPv6 address of incoming packet (without configuring a tunnel for each subs)
- For upstream packet, CPE can figure out tunnel end point (6rd relay router or other CPE) from dst IPv6 address

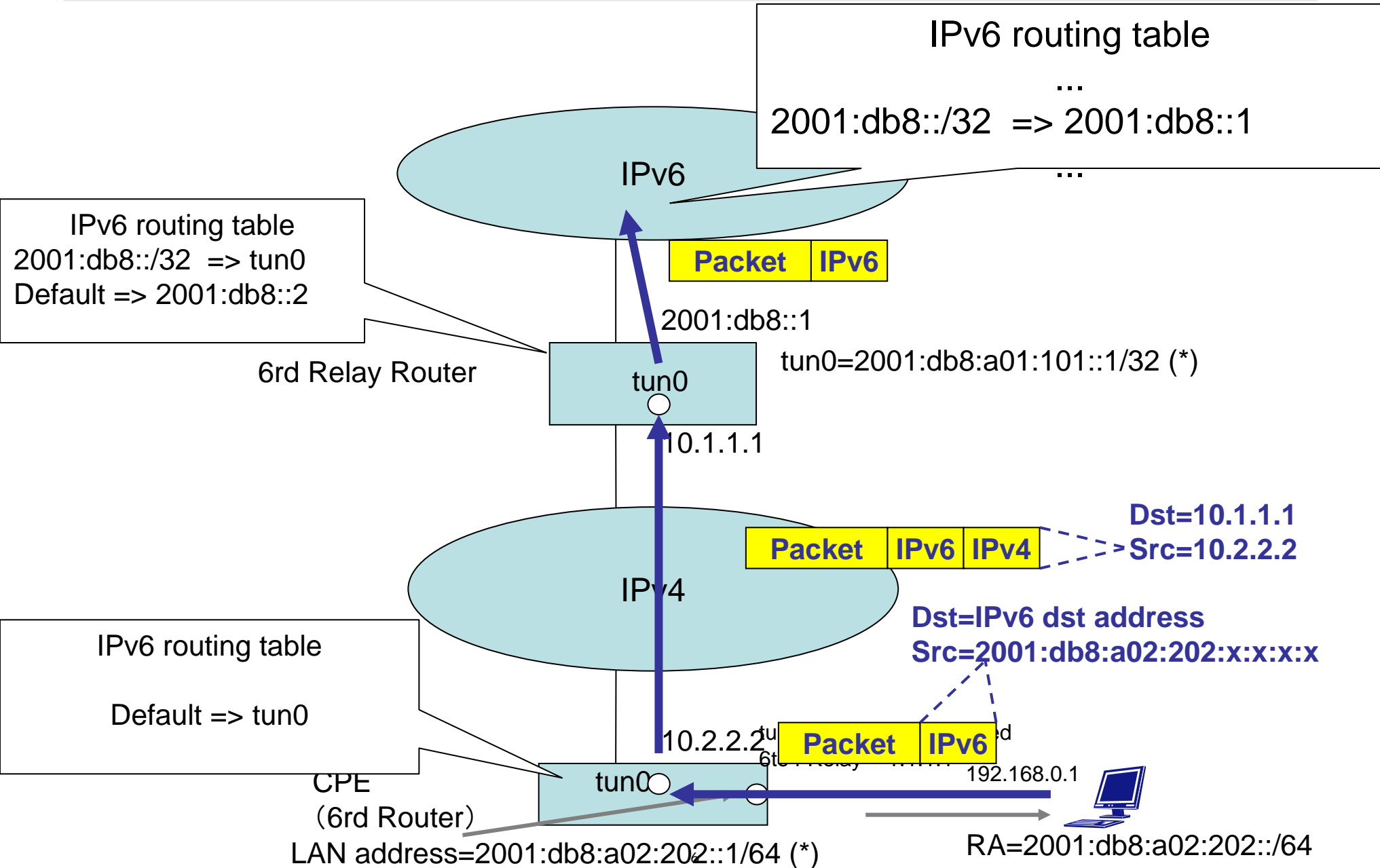
# 6rd behavior : Prefix Delegation



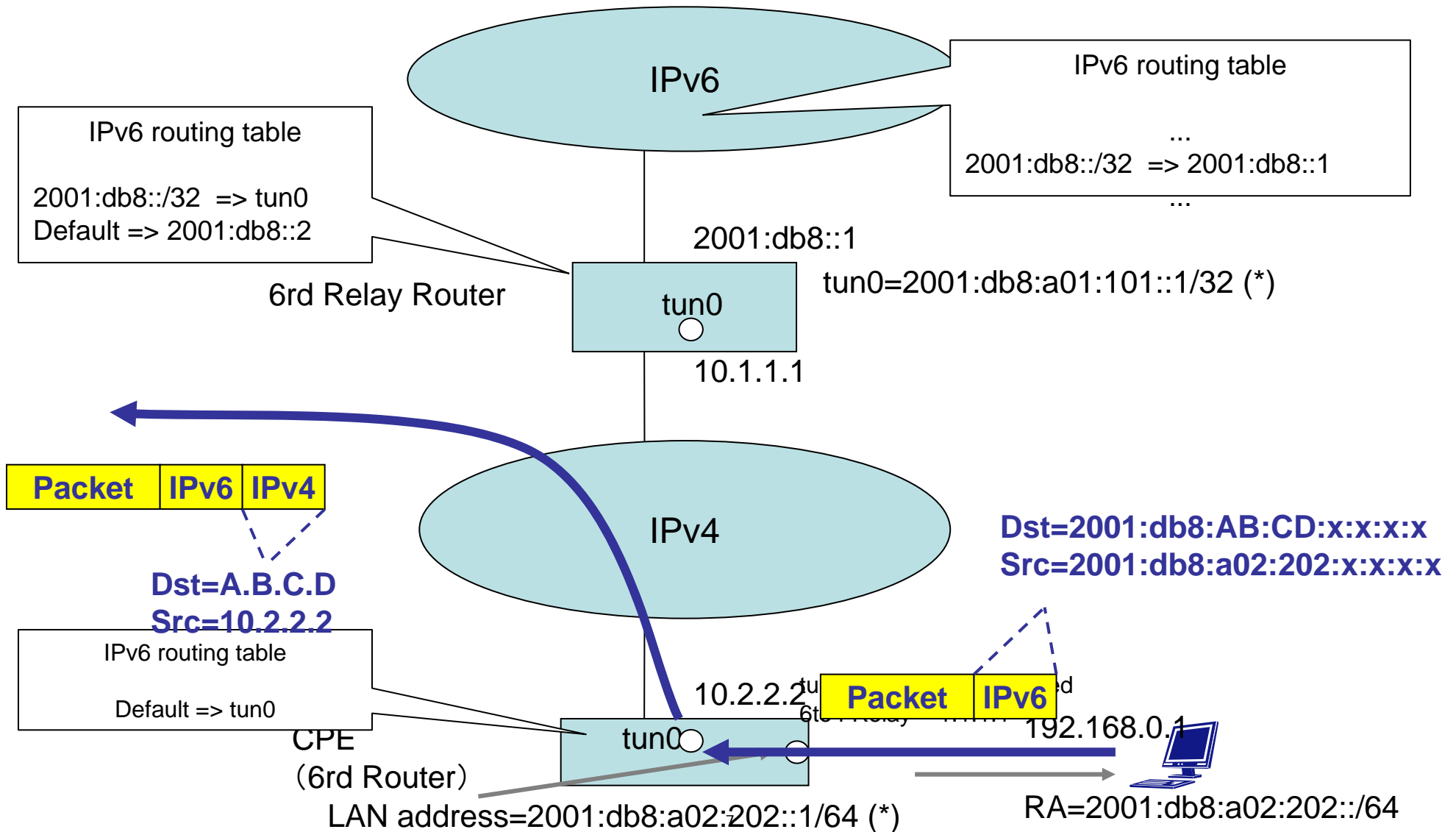
# 6rd behavior : Packet transfer (Downstream)



# 6rd behavior : Packet transfer (Upstream to external)



# 6rd behavior : Packet transfer (Upstream to internal)





- **6rd may works well, if**
  - **Your network is IPv4 only enabled**
  - **You have enough number of global IPv4 addresses**
  
- **6rd may not works well, if**
  - **Your network is already dual-stack or IPv6 only enabled**
  - **You don't have enough number of global IPv4 addresses like mobile operator**