Internet Protocol version 10 (IPv10)

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IPv4 Address Space

IPv4 can support about 4.3 billion public unique addresses.

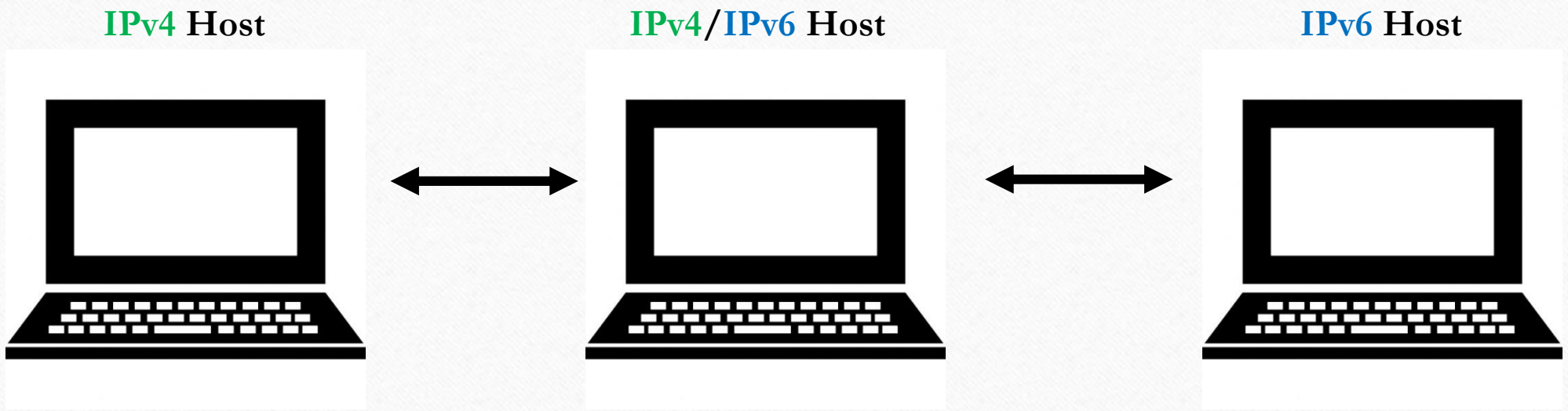
IPv4 Address Space Exhaustion Dates

- **IANA** → 3rd of February, 2011.
- **APNIC** → 19th of April, 2011.
- **RIPE NCC** → 14th of September, 2012.
- **LACNIC** → 10th of June, 2014.
- **ARIN** → 24th of September, 2015.
- **AFRINIC** → 2017.

Internet Protocol version 6

- Developed in 1998 by the IETF.
- Requires full migration and after 19 years no full migration occurred.
- IPv4 domination on Internet traffic (about 95%).
- New Internet clients will be assigned IPv6 only addresses.

Recent Situation



Problem

IPv4 only Host

No Direct Connectivity

IPv6 only Host

Transitioning Solutions

- **IPv4/IPv6 Dual Stacks** → Cannot be used with new Internet clients after the depletion of the IPv4 address space.
- **Tunneling** → Allows only IPv6-to-IPv6 communication over an IPv4 network.
- **NAT-PT** → Allows IPv4/IPv6 communication only using hostnames and getting the DNS involved in the communication process.
- **NAT-64** → Requires so much protocol translations, statically configured bindings and getting the DNS64 involved in the communication process.

Problem of Transitioning Solutions

- Depends on Internet clients.
- Adds more complexity.
- Not widely used.
- Only NAT-64 that can be used but requires so much protocol translations and statically configured bindings, in addition to getting the DNS64 involved in the communication process.

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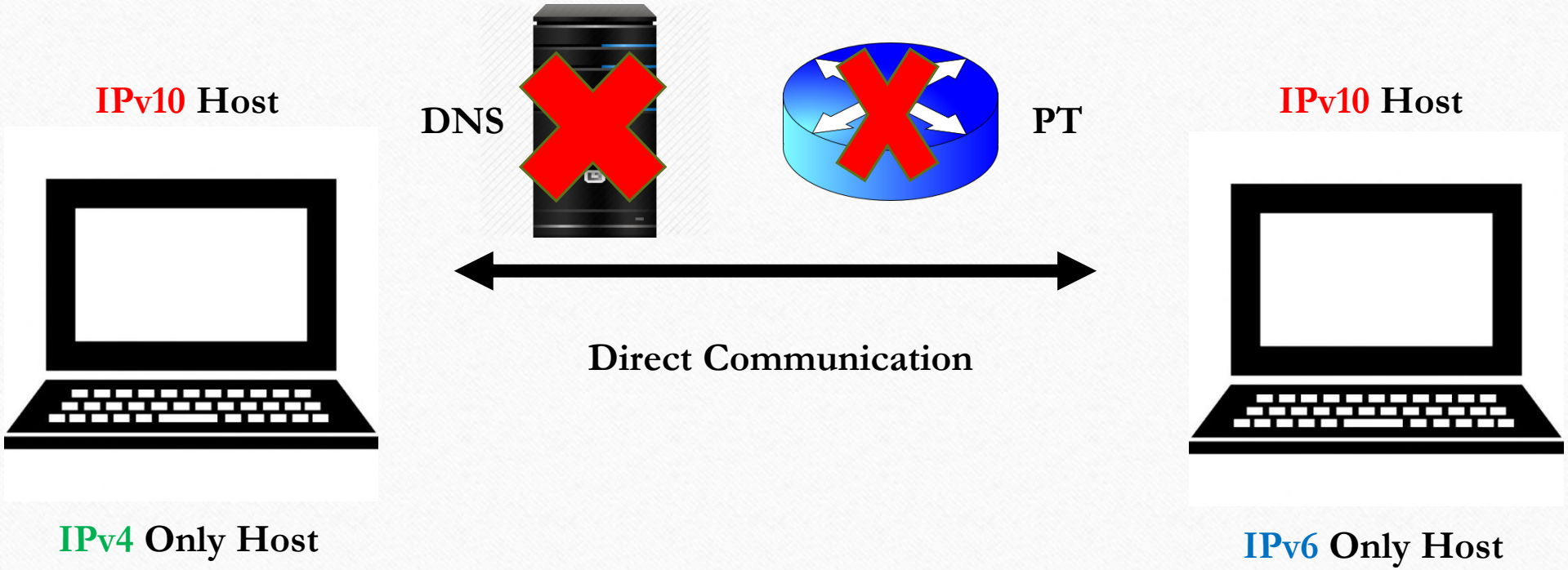

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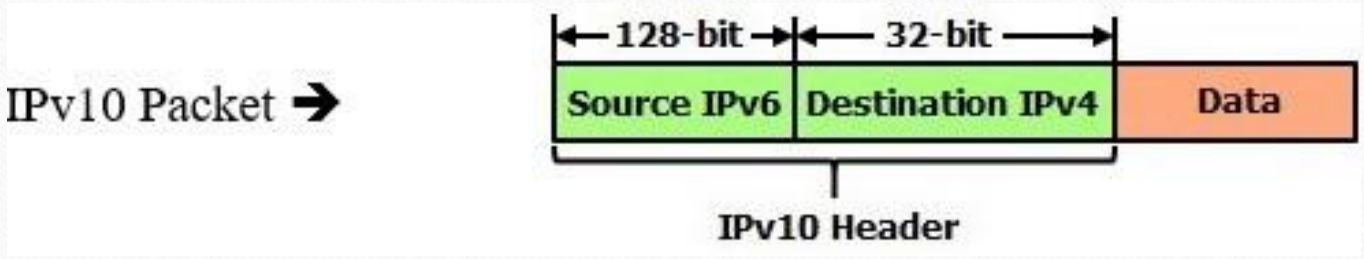

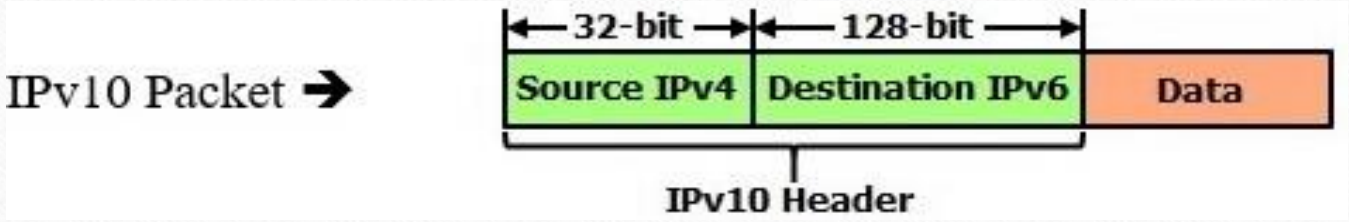

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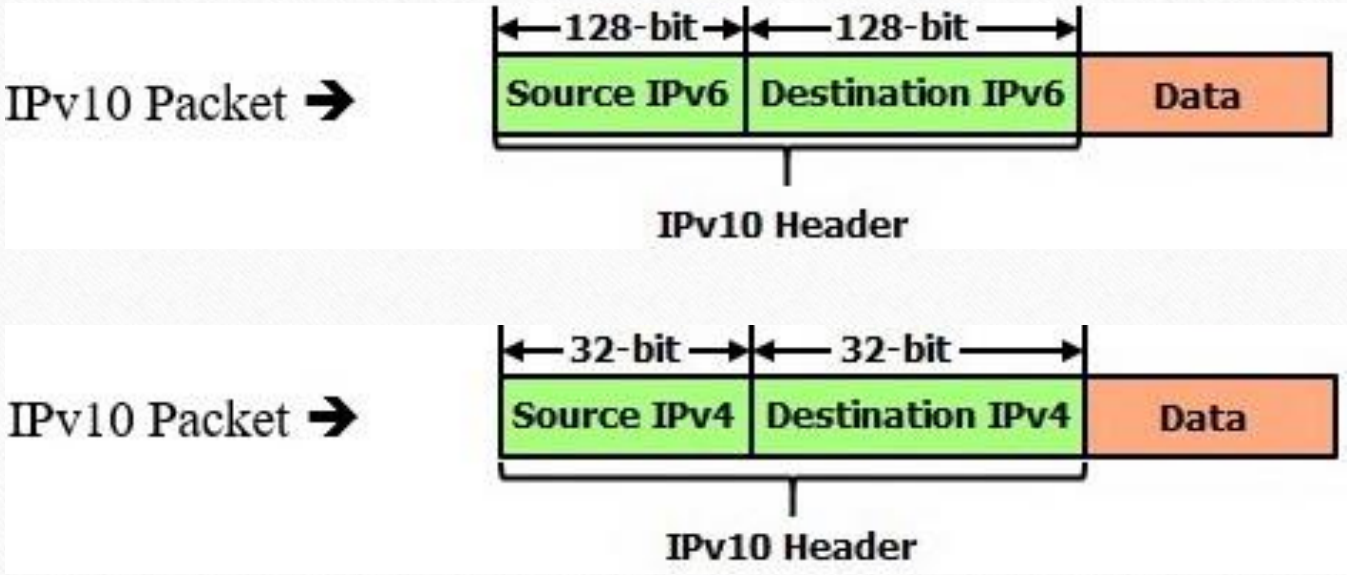
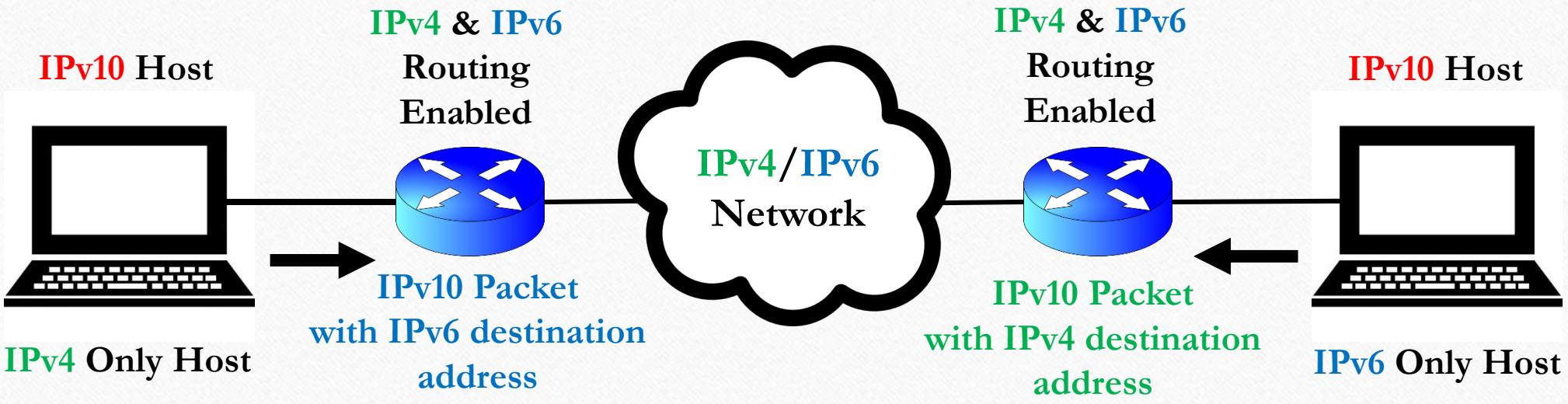
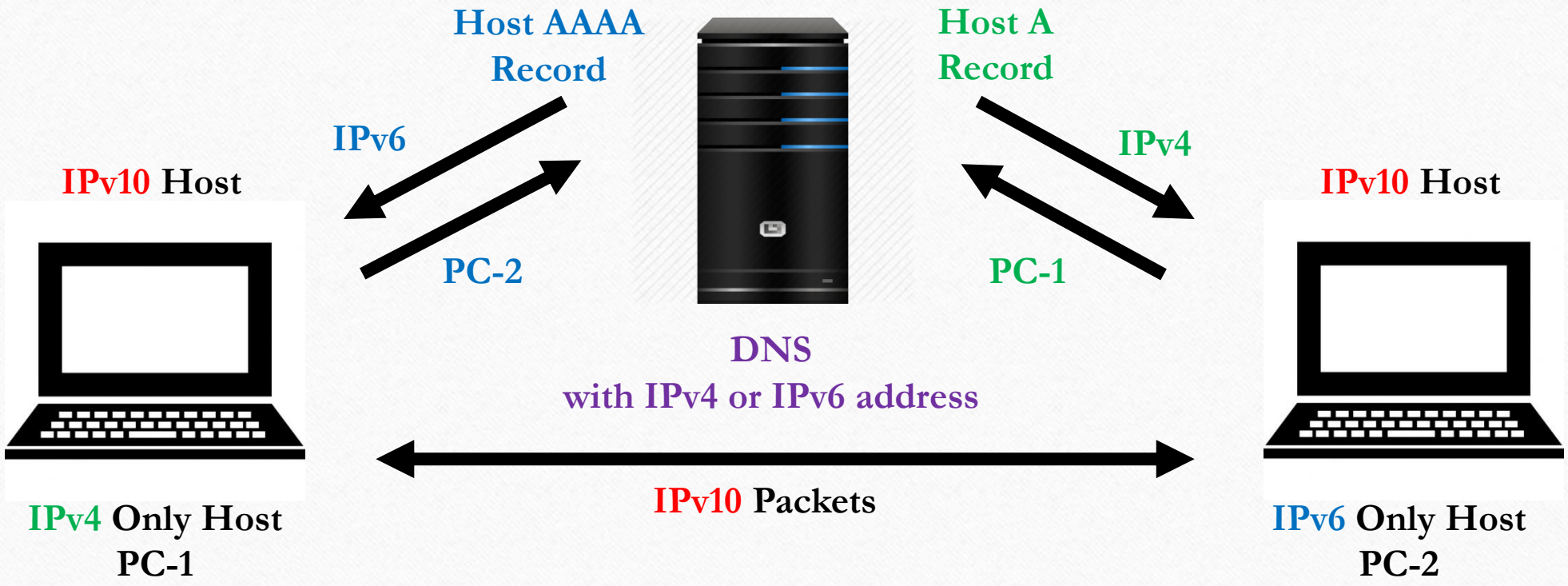


How IPv10 Works



Routers examines the destination address field of the received IPv10 packet and decides which IP routing table (whether the IPv4 RT or the IPv6 RT) to use to make a routing decision.

DNS with IPv10

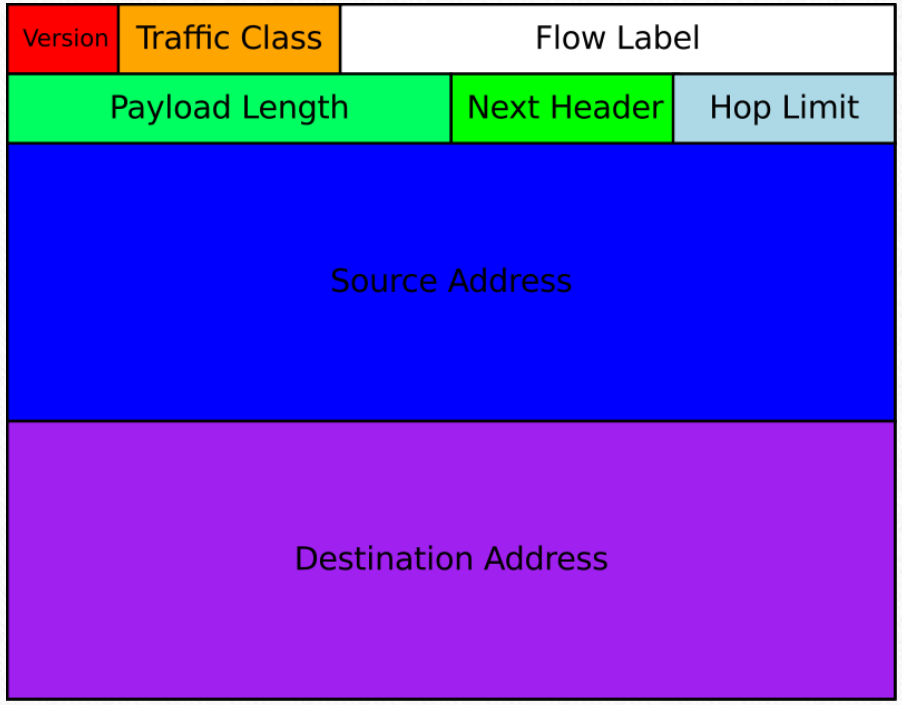


IPv10 Packet Header

Version:

- **0100** ➔ IPv4 Packet.
- **0110** ➔ IPv6 Packet.
- **1010** ➔ IPv10 Packet.

Note: **- The old IPv4 packet header will be replaced by the IPv6 packet header.**



Old IPv4 header & New IPv4 header

An IPv6 Packet Header

An IPv4 Packet Header

Advantages of IPv10

- No Protocol Translations required.
- No DNS involved in the communication process.
- No dependence on Internet clients.
- No rush for the IPv6 full migration process.
- Short-time deployment process.
- Effective and flexible communication between IPv4 and IPv6 hosts.