OSPFv3 over IPv4 for IPv6 Transition

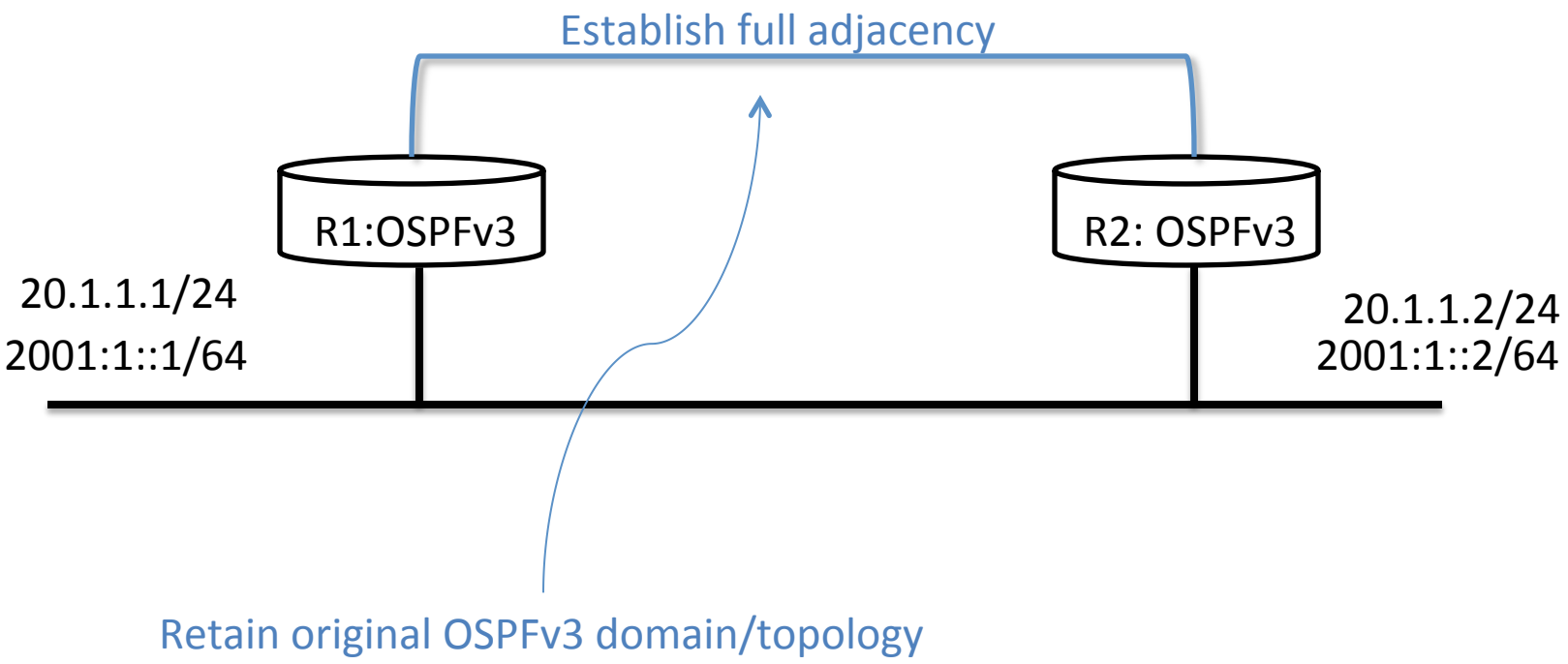
draft-chen-ospf-transition-to-ospfv3-00

I. Chen and A. Lindem

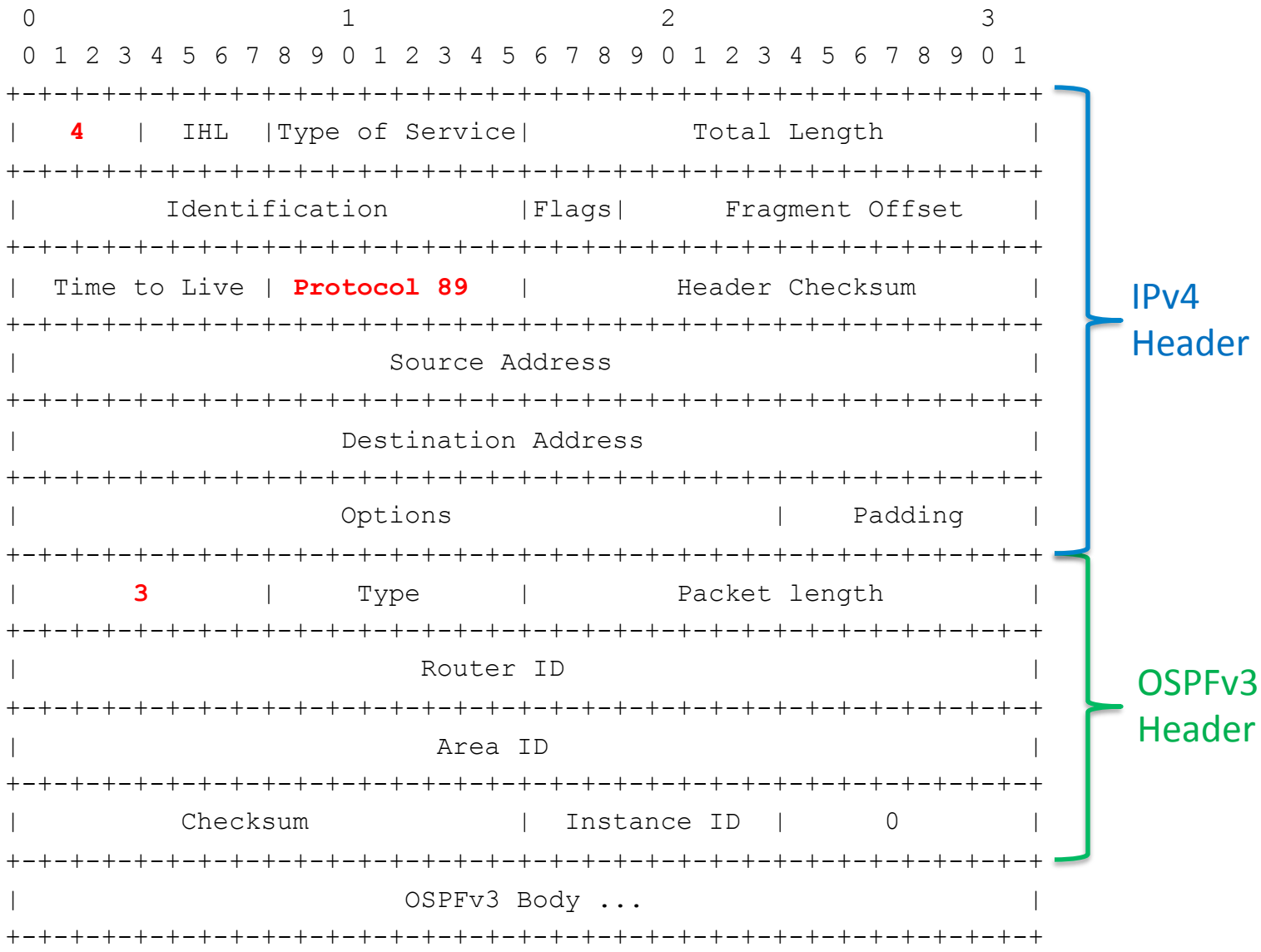
Applicability

- Existing approach
  - Carry IPv4 routes via OSPFv2
  - Carry IPv6 routes via OSPFv3
  - This increases operational complexity & cost because need to manage 2 IGPs at the same time for the same site
- OSPFv3 over IPv4 is an alternative for some
  - Use existing Address Family extension to carry both IPv4 & IPv6 prefixes in OSPFv3 at the same time
  - Start with OSPFv3/IPv4, later add IPv6 routes, and eventually transition to OSPFv3/IPV6
  - Lower operational complexity & cost for some sites
- This helps some sites with IPv6 transition

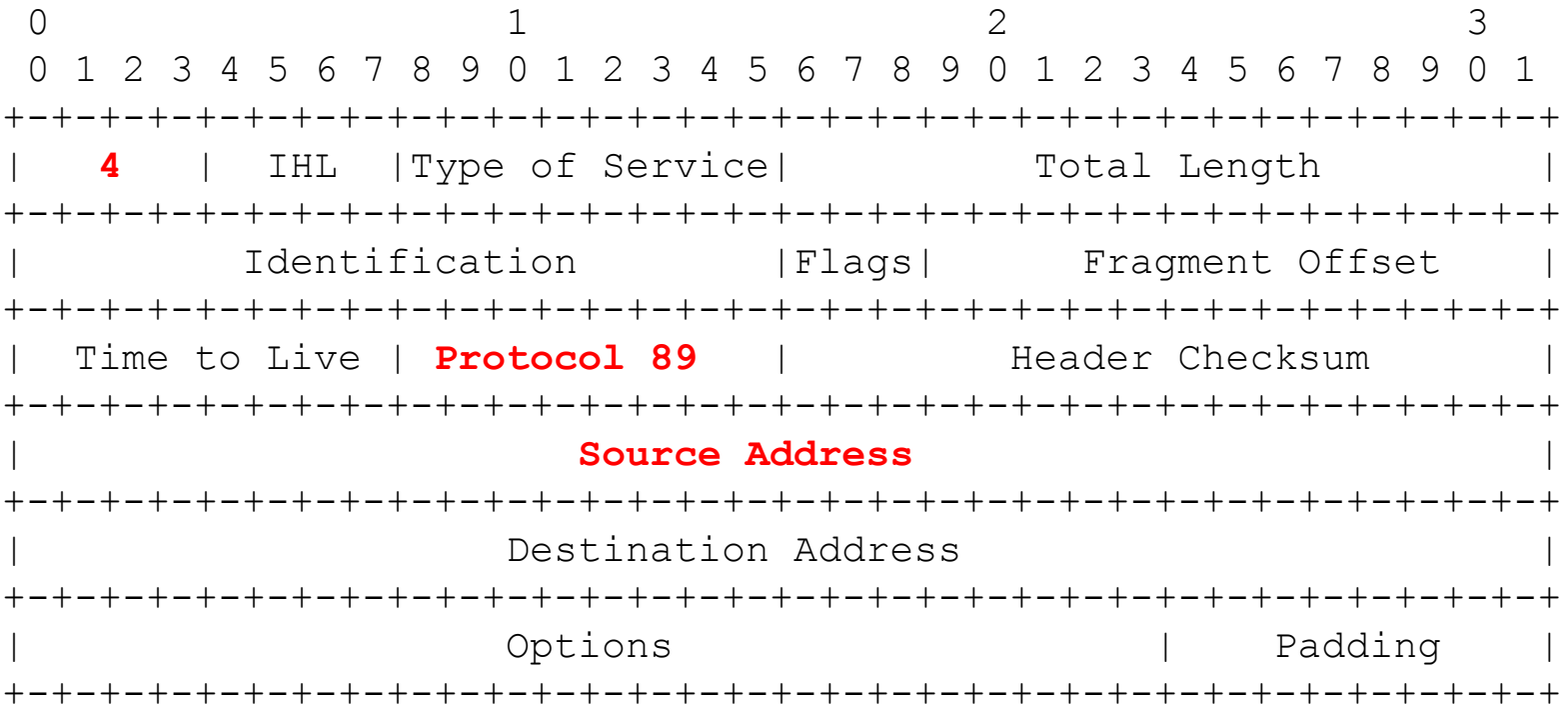
Transition to OSPFv3



OSPFv3 Packet in IPv4



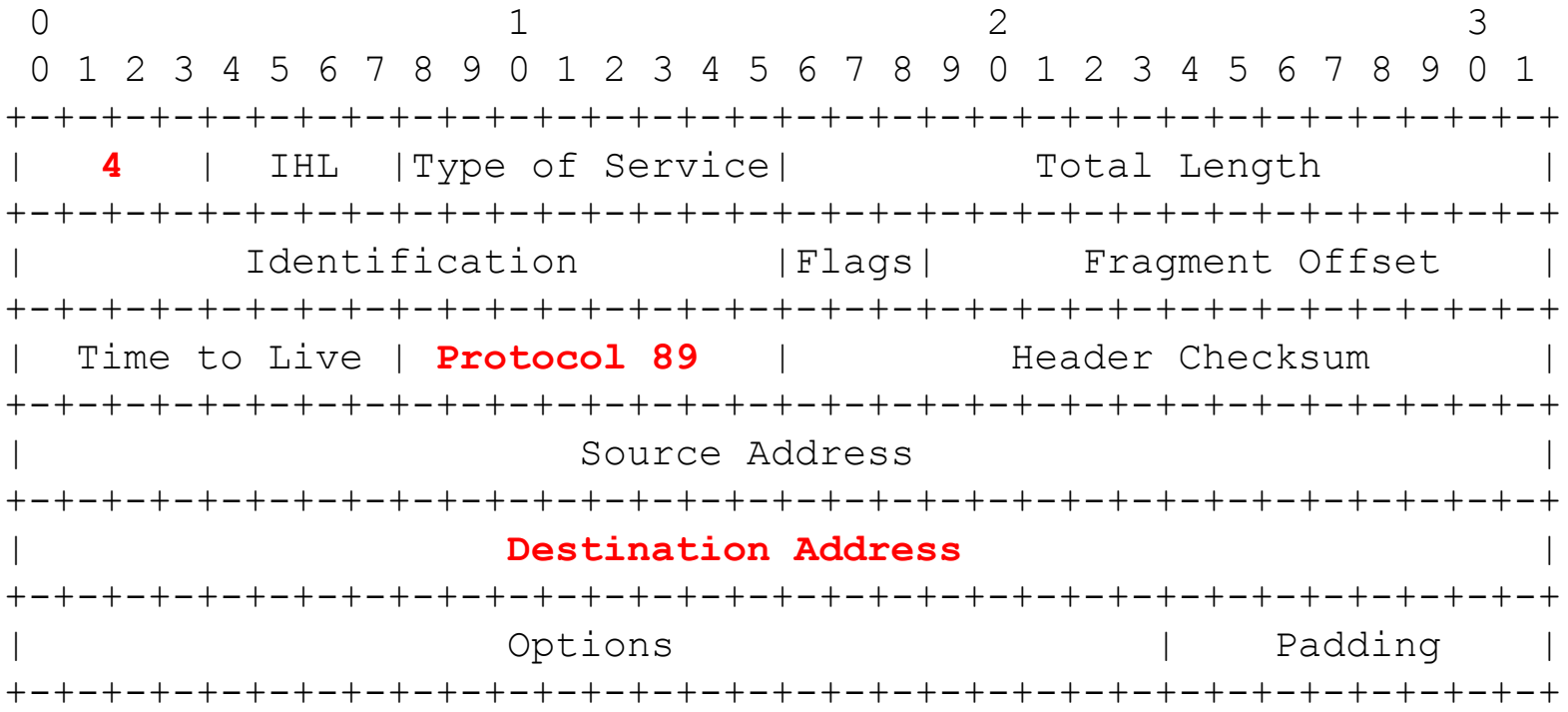
Source Address



R1 sends OSPFv3 packets using source address 20.1.1.1

R2 sends OSPFv3 packets using source address 20.1.1.2

Destination Address



- Multicast packets
  - ALLSPFRouters (224.0.0.5) and ALLDRouters (224.0.0.6)
- Unicast packets
  - IPv4 address assigned to the receiving interface.
  - R1 sends to destination address 20.1.1.2.

Deployment

- Normally, IPv4 and IPv6 network topologies will be identical in an OSPF deployment
  a. OSPFv2 on IPv4 and OSPFv3 on IPv6
  b. OSPFv3 using single IP version for transport
- During transition
  - If IPv4 network is larger, then OSPFv3 on IPv4
  - If IPv6 network is larger, then OSPFv3 on IPv6
- Out of Scope
  - IPv4/OSPFv2 and IPv6/OSPFv3 islands
  - Other misconfigurations