OSPF IPv6 Extensions

V6 Area Option

- Supports Both IPv4 and IPv6 Addrs
- May Maintain 2 Routing Tables Or Single IPv6 Routing Table
  - If Single Routing Table Must Translate IPv4 Addrs To IPv6 Addr
- V6 Area May Be Stub Area, Transit Area (Including Backbone), NSSA Area
- Runs On Top Of IPv6

Packet Formats

- Identical To IPv4 Formats (Hellos, DD, LsReq) But Have Bigger Addrs
  - Link-State ID Field Is 128 bits
  - Advertising Router Field Is 128 bits
  - Area ID Field Is 128 bits
- Net Mask Field Is 32 bits
  - Identifies Number Of Bits Of A Contiguous Network Mask

Link-State Advertisements

- Correspond To Current OSPF LSA Types
  - Type 17 = Type 1 (Router Links)
  - Type 18 = Type 2 (Network Links), etc.
- 128-bit LS ID, 128-bit Rtr ID, 32-bit mask length field
- IPv4 LSAs (Summaries, Externals) May Be Flooded Into V6 Areas But V6 LSAs Are Never Flooded Into IPv4 Areas

V6 Router Links Advertisements

- Includes Both IPv4 and IPv6 Links
  - Equivalent Link Types But With Big Fields
  - e.g., type 17 = type 1: point-to-point connection
- New Router Link Type (21) For IPv4 Router Id
- Router Link Partitions Needed For Bigger Addrs
  - Link-State ID Identifies Partition

Opaque LSA

- Method To Distribute Information Using OSPF Database Distribution Mechanism
- Uses The ‘P’ Bit To Flag Border Routers To Redistribute LSA To Other V6 Areas
- Potential Usage
  - Flood AS Path Information (BGP/IDRP)
  - Flood Public Key Info
  - If IPX Addrs Embedded Into IPv6 Can Use Opaque To Flood SAP Info

Migration

- Run V6 As Backbone
- Run V6 As Stub Areas
- Single Or V4 and V6 Routing Tables
- Can Run Existing IPv4 Protocols (RIP, BPG) As Well As IPv6