Ospfv3 to ospfv3 to support ipv6. ospfv3

Design

OSPFv3 is the modified version of OSPF that is used to support routingin IPv6. InOSPFv3, some basic techniques used in OSPF are still maintained. Thesetechniques include designated router election, flooding, shortest path firstcalculation, and area support. While these basic mechanisms are stillmaintained in OSPFv3, some necessary changes have also been introduced becauseof the difference in protocol structure between IPv4 and IPv6.

(Coltum et al, 2008). OSPF was developed by the IETF in 1987. The version now used in IPv4 isOSPFv2. It was published in RFC 2328. OSPFv2 was later updated to OSPFv3 tosupport IPv6. OSPFv3 was release in 1999 and was published in RFC 5340. OSPFv3is a link state protocol which works by using Dijkstra's algorithm to determinethe shortest path to a destination within a network. To determine the shortestpath to each destination, OSPFv3 first constructs a shortest path tree from thenetwork.

The shortest path tree contains all pathsleading to remote networks. From the shortest path tree, OSPFv3 thenselects all resulting best paths and use them to populate its routing table(Lammle, 2007). OSPF supports hierarchical network design, enabling networkdesigners to separate larger networks into smaller ones called Areas. Separating larger networks into areas minimizes the amount of routinginformation that can be propagated at a time. This reduces convergence time ofthe network.

Also, when any fault occurs in the whole network it can be tracedto each area within the Changes forOSPFv3 As discussed by Teare (2010), one of the major changes introduced inOSPFv3 is thatthe protocol's header has been

redesigned. The header is no longercomplex as compared to the header in OSPFv2. The header now includes aninstance ID field. Routing in IPv6 is done on a per–interface basis not onper–subnet. Each IPv6 routing protocol is more concerned 16 about the link onwhich it is configured but not the subnet. The addition of the new instance IDfield to the protocol structure therefore makes it possible for several OSPFv3instances or addresses to be enabled on the same link.

By default, instance IDis 0. When there is an additional instance, it is increased. Each OSPF instanceis assigned a separate instance ID.