SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107
Accredited by NAAC-UGC with 'A' Grade
Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai

Department of Information Technology

Course Name – 19IT503 Internet of Things

III Year / V Semester

Unit 4 – IPv6 TECHNOLOGIES FOR THE IOT

Topic 7 - Mobile Node Operation

Mobile Node Operation

MN operations entail the following functions:
Maintaining the BU list

Processing bindings
- Sending BUs to the HA
- Correspondent registration
- Receiving BAs
- Receiving BRRs

Processing mobility headers

Packet processing
- Sending packets while away from home
- Interaction with outbound IPsec processing
- Receiving packets while away from home
- Routing multicast packets
- Receiving ICMP error messages
- Receiving binding error messages

Mobile Node Operation

HA and prefix management
- Dynamic HAAD
- Sending mobile prefix solicitations
- Receiving mobile prefix advertisements

Movement support
- Movement detection
- Forming new CoA
- Using multiple CoA
- Returning home

Return-routability procedure
- Sending test init messages
- Receiving test messages
- Protecting return-routability packets

Retransmissions and rate limiting

Relationship to IPV4 Mobile IPv4 (MIP)

MIPv6 shares many features with MIP, but is integrated into IPv6 and offers other improvements.
The notable differences between MIP and MIPv6 are as follows:

- There is no need to deploy special routers as “foreign agents,” as in MIP. MIPv6 operates in any location without any special support required from the local router.

- Support for route optimization is a fundamental part of the protocol, rather than a nonstandard set of extensions.

- MIPv6 route optimization can operate securely even without prearranged Sas. It is expected that route optimization can be deployed on a global scale between all MNs and CNs.

- Support is also integrated into MIPv6 for allowing route optimization to coexist efficiently with routers that perform “ingress filtering.”

- The IPv6 neighbor unreachability detection assures symmetric reachability between the MN and its default router in the current location.

Relationship to IPV4 Mobile IPv4 (MIP)

- Most packets sent to an MN while away from home in MIPv6 are sent using an IPv6 routing header rather than IP encapsulation, reducing the amount of resulting overhead compared to MIP.
- MIPv6 is decoupled from any particular link layer, as it uses IPv6 neighbor discovery instead of Address Resolution Protocol (ARP); this also improves the robustness of the protocol.
- The use of IPv6 encapsulation (and the routing header) removes the need in MIPv6 to manage “tunnel soft state.”
- The dynamic HAAD mechanism in MIPv6 returns a single reply to the MN. The directed broadcast approach used in IPv4 returns separate replies from each HA.

Relationship to IPV4 Mobile IPv4 (MIP)

- MIPv6 offers a number of improvements over MIPv4 principally due to capabilities inherited from IPv6. For example, route optimization and dynamic HA discovery can only be achieved with MIPv6.
- One of the advantages of the large address space provided by IPv6 is that it allows MNs to obtain a globally unique CoA wherever they are;
- therefore, there is no need for network address translator (NAT) traversal techniques designed for MIPv4. This allows MIPv6 to be a significantly simpler and more bandwidth-efficient mobility management protocol.
- At the same time, during the transition toward IPv6, NAT traversal for existing private IPv4 networks needs to be considered.

THANK YOU