19ITT302 INTERNET OF THINGS

Mobile IPv6:

Mobile **IPv6** provides mobility support for **IPv6**. It allows you to keep the same internet address all over the world, and allows applications using that address to maintain transport and upper-layer connections when changing locations. It allows mobility across homogenous and heterogeneous media.

For example, Mobile **IPv6** facilitates node movement from an Ethernet segment to a wireless LAN cell while the mobile node's IP address remains unchanged.

In Mobile **IPv6**, each mobile node is identified by two IP addresses: its home address and its care-of address. The home address is a permanent IP address that identifies the mobile node regardless of its location. The care-of address changes at each new point of attachment and provides information about the mobile node's current situation. When a mobile node arrives to a visited network, it must acquire a care-of address, which will be used during the time that the mobile node is under this location in the visited network. It may use the methods of **IPv6** Neighborhood Discovery to get the care-of address. Both stateless and stateful autoconfiguration are possible. The care-of address can also be manually configured. How the care-of address is acquired is irrelevant to Mobile **IPv6**.

There must be at least one home agent configured on the home network, and the mobile node must be configured to know the IP address of its home agent. The mobile node sends a packet containing a binding update to the home agent. The home agent receives the packet and makes an association between the home address to the mobile node and the care-of address it received. The home agent responds with a packet containing a binding acknowledgment.

The home agent keeps a binding cache containing associations between the home addresses and the care-of addresses for the mobile nodes it serves. The home agent will intercept any packets destined for the home address and forward them to the mobile nodes. A mobile node will then send a binding update to the correspondent node informing it of its care-of address, and the correspondent node will create a

binding cache entry so that it can send future traffic directly to the mobile node at its care-of address.

Mobility support in AIX® provides the following basic functions:

As a **Home Agent** node:

- Maintain an entry in its binding cache for each mobile node for which it is serving.
- Intercept packets addressed to a mobile node for which it is currently serving as the home agent, on that mobile node's home link, while the mobile node is away from home.
- Encapsulate such intercepted packets in order to tunnel them to the primary care-of address for the mobile node indicated in its binding in the home agent's binding cache.
- Return a binding acknowledgment option in response to a binding update option received with the acknowledge bit set.
- Process the Duplicate Address Detection on the mobile node's care-of address to ensure the **IPv6** addresses are unique.
- Support Dynamic Home Agent Address Discovery to assist the mobile nodes is discovering the addresses of the home agents.
- Support the reception of Mobile Prefix Solicitation and the sending of Mobile Prefix Advertisement.

As a **Stationary Correspondent** node:

- Process a home address option received in any **IPv6** packet
- Process a binding update option received in a packet and to return a binding acknowledgement option if the acknowledge (A) bit is set in the received binding update
- Maintain a binding cache of the bindings received in accepted binding updates
- Send packets using a routing header when there is a binding cache entry for a mobile node that contains the mobile node's current care-of address

As a **Router** node in a Network visited by the mobile node:

- Send an advertisement interval option in its router advertisements to aid movement detection by mobile nodes. It is configurable by the **-m** parameter in the **ndpd-router** daemon.

- Support sending unsolicited multicast router advertisements at the faster rate described in RFC 2461. It is configurable by the **-m** and **-D** parameters in the **ndpd-router** daemon.
- Send a Home Agent Information option (home agent preference and lifetime) in its router advertisements to aid mobile nodes to choose their home agent. It is configurable by the **-H** parameter in the **ndpd-router** daemon.

- **Mobile IPv6 security**
  The binding update and binding acknowledgement messages exchanged between the mobile node and the home agent must be protected by IP Security using Encapsulating Security Payload (ESP) protection with a non-NULL payload authentication algorithm.
- **Mobile IPv6 configuration**
  This introduces information about configuring Mobile **IPv6**. In order to use Mobile **IPv6**, you must first install the bos.net.mobip6.rte fileset.
- **Troubleshooting Mobile IPv6**
  Use the **mobip6ctrl -b** command to troubleshoot Mobile **IPv6**.