



NSCET E-LEARNING PRESENTATION

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

III YEAR / VI SEMESTER

EC8004– WIRELESS NETWORK

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UNIT II

MOBILE NETWORK LAYER

INTRODUCTION

- An overall view of Mobile IP, and the extensions needed for the internet to support the mobility of hosts. A good reference for the original standard (RFC) which describe the development of mobile IP, all packet formats, mechanisms, discussions of the protocol and alternatives etc. in detail.
- The new version of Mobile IP does not involve major changes in the basic architecture but corrects some minor problems (RFC 3344)

Goals of Mobile IP

- Assign new IP address when enter into new location
- Increase problem with higher layer protocols like TCP , as they rely on IP layer.
- Routers are built for fast forwarding but not for fast update of routing table
- Quick solution not working

Requirements of Mobile IP

- **Compatibility**
- **Transparency**
- **Scalability and efficiency**
- **Security**

Entities and terminology

Mobile node (MN):

- A mobile node is an **end-system or router** that can change its point of attachment to the internet using mobile IP.
- **Mobile nodes are not necessarily small devices such as laptops with antennas**

Correspondent node (CN):

- At least one partner is needed for communication. In the following the CN represents this partner for the MN. The CN can be a fixed or mobile node.

Home network:

- The home network is the subnet the MN belongs to with respect to its IP address. No mobile IP support is needed within the home network.

Foreign network:

- The foreign network is the current subnet the MN visits and which is not the home network

IP Packet Delivery

- **step 1** - A correspondent node CN wants to send an IP packet to the MN. One of the requirements of mobile IP was to support hiding the mobility of the MN.
- CN sends an IP packet with MN as a destination address and CN as a source address.

- **step 2**- A new header is put in front of the old IP header showing the COA as new destination and HA as source of the encapsulated packet
- **step 3** - The foreign agent now de-capsulates the packet, i.e., removes the additional header, and forwards the original packet with CN as source and MN as destination to the MN
- Again, for the MN mobility is not visible. It receives the packet with the same sender and receiver address as it would have done in the home network.
- **step 4** - The MN sends the packet as usual with its own fixed IP address as source and CN's address as destination

Agent discovery

- One initial problem of an MN after moving is how to find a foreign agent.
- Mobile IP describes two methods:
- Agent advertisement and
- Agent solicitation

Agent advertisement

- For the first method, foreign agents and home agents advertise their presence periodically using special **agent advertisement** messages.
- These advertisement messages can be seen as a beacon broadcast into the subnet

Agent solicitation

- If no agent advertisements are present or the inter-arrival time is too high, and an MN has not received a COA by other means, e.g., DHCP the mobile node must send **agent solicitations**.

Registration

It has includes the following tasks

- Get a care of address from the foreign Agent
- Inform its home agent of its current care of address
- Renew a registration when it is about to expire
- De-register when it returns to its home link

Tunneling and encapsulation techniques

- **Tunnel** - virtual pipe for data packets between a tunnel entry and a tunnel endpoint. Packets entering a tunnel are forwarded inside the tunnel and leave the tunnel unchanged.
- **Encapsulation** - mechanism of taking a packet consisting of packet header and data and putting it into the data part of a new packet.
- **De-capsulation** - reverse operation, taking a packet out of the data part of another packet

3 process

- IP-in-IP encapsulation
- Minimal encapsulation
- Generic routing encapsulation

IPv6

- Mobile IP was originally designed for IP version 4, IP version 6 makes life much easier. Several mechanisms that had to be specified separately for mobility support come free in IPv6
- One issue is security with regard to authentication, which is now a required feature for all IPv6 nodes.
- Every IPv6 node masters address auto configuration – the mechanisms for acquiring a COA are already built in.

Advantage

- Manageability

Disadvantages

- Efficiency
- Transparency
- Security:



THANKS!