ORIGINAL ARTICLE

Mobile IP: Solution to Network Mobility

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ABSTRACT

IP is a connectionless convention, which implies that there is no proceeding with association between the end focuses that are imparting. Each one bundle that goes through the Internet is dealt with as a free unit of information without any connection to some other unit of information. In the Open Systems Interconnection (OSI) correspondence model, IP is in layer 3, the Networking Layer.

Keywords:

Open Systems Interconnection, Mobile Host, Home Agent

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Introduction

The Internet Protocol (IP) is the technique or convention by which information is sent starting with one machine then onto the next on the Internet. Every machine (known as a host) on the Internet has no less than one IP address that extraordinarily distinguishes it from all different machines on the Internet.

When you send or get data (for example, an email note or a Web page), the message gets divided into little pieces called parcels. Each of these parcels contains both the sender's Internet location and the collector's location. Any bundle is sent first to an entryway machine that fathoms a little bit of the Internet. The portal machine scrutinizes the objective address and advances the bundle to a neighboring passage that subsequently examines the end address over the Internet until one entryway sees the group as fitting in with a machine inside its speedy neighborhood or zone. That entryway then advances the parcel particularly to the machine whose location is characterized.

Parcels can touch base in an alternate request than the request they were sent in. The Internet Protocol simply conveys them and the Transmission Control Protocol (TCP) to return them organized appropriately.

IP is a connectionless convention, which implies that there is no proceeding with association between the end focuses that are imparting. Each one bundle that goes through the Internet is dealt with as an autonomous unit of information without any connection to whatever other unit of information. In the Open Systems Interconnection (OSI) correspondence model, IP is in layer 3, the Networking Layer.

The most generally utilized adaptation of IP today is Internet Protocol Version 4 (Ipv4) and Ipv6. Ipv6 gives bigger number of IP locations. Ipv6 incorporates the abilities of Ipv4 and any server that can help Ipv6 parcels can likewise help Ipv4 bundles.

Mobile IP Overview:

Mobile IP is an open standard, characterized by the Internet Engineering Task Force (IETF) RFC. This convention permits us to keep the same IP location, stay joined, and keep up progressing applications while meandering between diverse IP systems. Mobile IP is versatile for the Internet

in light of the fact that it is focused around IP—any media that can help IP can help Mobile IP.

A gadget on a system is reachable through ordinary IP directing by the IP address it is alloted on the system.

The issue happens when a gadget meanders far from its home system and is no more reachable utilizing typical IP steering. This ends dynamic session of client's system association. Mobile IP was made to empower clients to keep the same IP location while flying out to an alternate system, hence guaranteeing that a meandering individual could proceed with correspondence without sessions or associations being dropped. Mobile IP additionally help for distinctive remote systems.

In view of Mobility capacity of Mobile IP, it lies on Network layer.

Mobile IP is valuable for Remote login, remote printing, and document exchange

The Basic Architecture:

Home agent (HA) keeps up tying table which contains (Mobile Host) MH's home address and its foreign care-of-address. The passage in tying table is redesigned each one time when MH moves from its home system to some other system. At the point when Correspondent hosts (Ch's) sends messages to MH utilizing MH's home address, the message is in term sent to the HA and HA now advances this message to the MH utilizing IP burrowing or epitome.

Presently if MH need to send message, MH's gets care-of-addresses by reaching a foreign agent; the foreign agent appoints the care-of-address and overhauls the MH's coupling table by conveying HA.

## The entire procedure is clarified beneath.

The Mobile Host is a gadget, for example, an individual computerized partner, or smart phone whose software empowers system meandering abilities.

The Home Agent is a switch on the home system serving transitional for correspondence with the Mobile host; It sends parcels from Correspondents Host found at diverse system to the Mobile host on the same system.

The Foreign Agent is a switch that sends parcel from reporter host to the home agent which in wording send it to Mobile Host.

The care-of address is the address appoint to Mobile Host on foreign system. It demonstrates current area of mobile host on foreign system. The Home Agent keeps up tying table between the home IP address of the Mobile Host and its care-of address.

The basic Architecture of Mobile-IP is shown below:
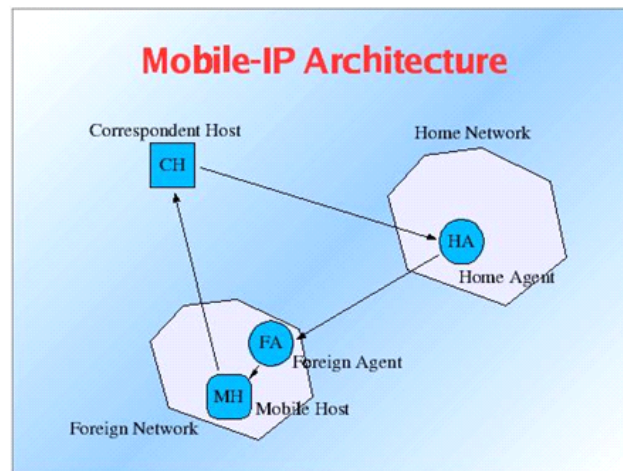
Working of Mobile IP:

The Mobile IP process has three main phases, which are discussed below:

Agent Discovery:

Agent Discovery is used to get Mobile Host register with foreign network if it is out of home network. In agent discovery phase, the Home Agent and Foreign Agent advertise their presence on the network. The Mobile Host listens to these advertisements to check if it is connected to its home network or foreign network. FA advertises MH's care-of-address. When MH detects that it is outside of Home network, MH listens advertisement from FA, it begins registration.

Registration:

The Mobile Host sends the registration request to its Home Agent.
The Home Agent checks the validity of MH's registration request. If it is valid, the
HA associates MH with its care-of-address and make routing entry in binding table for that MH. Now the packets are transfer through this tunnel.

Tunneling:

The Mobile Host sends packets using its home IP address even when it moves to foreign network. When communicating host sends packets to MH, HA intercepts this packets and tunnel it to care-of-address of MH. This is called as Tunneling.
Tunneling includes encapsulation of data packet and decapsulation at destination host. Tunnel follows IP Encapsulation within IP Encapsulation.
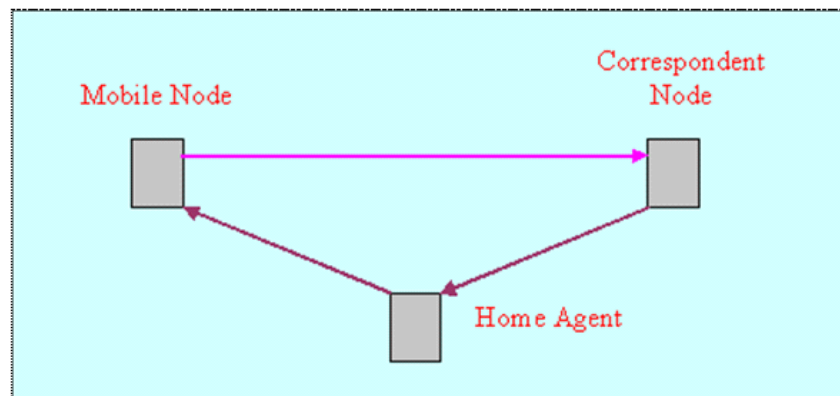
The following figure summarises the above process:
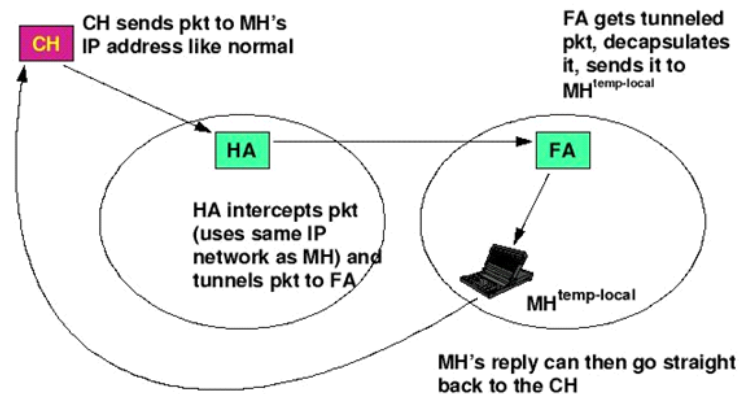
Problems with Mobile IP:

Mobile IP has following major two problems:

(1) "Triangle directing" Problem

When Correspondent hosts needs to send packet to MH, the problem of triangular routing discovers. When CH sends packet to MH, the packet arrives at HA and in terms HA forwards it to MH. When packet arrives at MH, MH routes reply packets directly to CH. So in this case we discover unnecessary delay in communication from CH to MH. This problem is called as "Triangle directing".

(2) Handoff Problem

HA agent maintains binding table which includes MH's care-of-address. Care-of-address gives current location of Mobile Host in the network. When CH sends packet to MH which is on different network. HA intercepts packet and look into mobility binding table to get care-of-address of MH. Now HA routes this packet to MH's care-of-address. If MH is present in that care-of-address it will receive packet.

But the problem occur, if MH moves to another foreign network and it does not inform HA about its new location. In this case, mobility binding table contains old care-of-address. So packet redirected to this address may lost. Loss packets in this case increases and it will cause unnecessary retransmission of packets.

Conclusion:

System portability utilizing Mobile IP gives an adaptable, straightforward, and secure arrangement. It is adaptable on the grounds that just the partaking segments need to be Mobile IP mindful the Mobile Node and the endpoints of the passage. It is straightforward to any applications while giving portability. At long last, it is secure in light of the fact that the situated up of bundle redirection is verified.

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