

## **LOW LATENCY MOBILE HANDOFF IN HETEROGENEOUS NETWORK USING ARTIFICIAL INTELLIGENCE**

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### **Abstract**

In contemporary world, mobile and mobility are playing the vital role in all the aspects of human life. Most of the researchers are focusing on how to satisfy the customer with their needs. It leads to concentrate on handoff process in heterogeneous network environments with low latency. This paper is depicting the concepts of handoff and prediction algorithms in artificial intelligence for minimizing the latency. First we have to calculate the Null dwell time between the networks while transferring the data and implementation using IPV6. IPV6 reduces the size of routing tables and makes routing more efficient and hierarchical. IPV6's simplified packet header makes packet processing more efficient. Compared with IPv4, IPv6 contains no IP-level checksum, so the checksum does not need to be recalculated at every router hop. We propose the new novel prediction paradigm using linear regression for prediction of the device health and weakness status. Hence we can predict and increase the faster processing handoff in heterogeneous networks.

**Keywords:** *Null dwell time, IPV6, Linear Regression*

### **1. INTRODUCTION**

Portable IP [1] was created to empower PCs to keep up Internet availability while moving from one Web connection highlight another. Normal terms to portray Mobile IP engineering are:

- The Mobile Host (MH) or Mobile Node (MN) is a gadget, for example, an individual advanced colleague, or PC whose product empowers network meandering abilities.
- The Home Agent (HA) is a switch on the home organization filling in as the anchor point for correspondence with the Portable host. It burrows parcels from a

gadget on the Web, called a Correspondent Host, to the meandering Versatile Host.

- The Foreign Agent (FA) is a switch that may work as the purpose of connection for the Mobile Host when it meanders to an unfamiliar organization, conveying bundles from the Home Agent to the Mobile Host.
- The consideration of address (CoA) is the end purpose of the passage toward the Mobile Host when it is on a unfamiliar organization.
- The Home Agent keeps an relationship between the home IP address of the Mobile Host and its consideration of address, which is the current area of the Mobile Host on the unfamiliar or visited network.
- Binding is the trio that contains the versatile hub's street number, its consideration of address and the enrollment lifetime-how long the portability specialist may utilize the authoritative.

Every portable host (MH) has a home specialist (HA) that goes about as a area library, keeping up the official from the MH's place of residence and its unfamiliar consideration of-address. Each time the MH moves, this coupling is refreshed. Reporter has (CHs) send messages to the MH's street number and the HA advances this message to the MH by means of IP burrowing or exemplification. MHs pick up their consideration of-addresses (CoA) by reaching an unfamiliar specialist. The unfamiliar specialist relegates the care-of-address and updates the MH's official by reaching the HA. This refreshing requires some confirmation data.

## **2. REASONS FOR HANDOFF LATENCY**

At whatever point a portable hub (MN) moves to an unfamiliar organization, it needs another location as the purpose of connection is changed. Recuperating another passage (care-of address) takes a few times. In the wake of finding a state of connection in the new organization, the MN should illuminate its home organization about the new address. This additionally requires significant investment. Along these lines, coarsely we can layout that

handoff inertness is brought about by Address Reconfiguration also, Home Network Registration.

### **3. DISCUSSION ON TECHNIQUES FOR IMPROVING HANDOFF LATENCY**

#### **3.1 Protocols Based on Hierarchical Structures**

As the name suggests, this plan restrict the impact of handoff. It is proposed in [2] where the FAs in a single locale are overseen as per a various leveled structure. When MH is moving inside the locale, MH just requirements to enlist to the basic FA which is the nearest one on both the old also, the new courses to MH. Just when the MH moves out of the locale, it needs to enroll to HA. Various sorts of recommendations are given by upgrading the fundamental various leveled design. Asset Reservation Convention [3] is joined with the various leveled structure to get Hierarchical Mobile RSVP [4]. Here a GFA (Gateway FA) is utilized that holds a channel with the CH and area put together imperatives are forced with respect to asset reservations. As IPv6 will be the future innovation, a few conventions are worked by conveying IPv6 on the progressive structure. These incorporate Hierarchical Mobile IPv6 (HMIPv6) [5] and RSVP in MIPv6 [6]. Since MIPv6 uses neighbor disclosure [7], a FA is not, at this point required, and the MN will consistently have a arranged CoA while wandering. The writing referenced in [5] and [6] depend on this perception.

#### **3.2 Previous FA Notification Scheme**

[8] Proposes the past FA notice plot. It sends a cushion at FA to reserve a few bundles shipped off MH. After handoff, MH advises the new FA the source IP address and the ID of the last IP bundle it got from the old FA. At that point the new FA advances them to the old FA. So the old FA can conclude which parcels MH hasn't been gotten at this point, and at that point advances these bundles to the new FA, at that point to MH. This plan can adequately diminish the bundle misfortunes, however how to set the limit of the cushion is a troublesome issue. In addition, new convention should be characterized to help the correspondence between the new and old FAs.

### **3.3 Multicast Scheme**

To diminish the bundle misfortunes and the defer variety, [9] proposes to utilize IP multicast innovation to figure it out handoff. Each MH is allocated an exceptional IP multicast address. FA occasionally publicizes its reachability message in its reach, and MH follows the specialist commercial message to judge its present area and development drift and decide which FAs' reaches it will enter. At that point MH advises these FAs to join the multicast gathering. The parcels bound for MH show up at MH's home organization initially, and HA captures them furthermore, embodies them with multicast address, which is the distinction with the conventional Mobile IP. MH itself doesn't join the multicast gathering, nor does it get multicast bundles. MH can assign a FA to advance the decapsulated bundles to it. The weakness of this plan is the convoluted usage of multicast and the huge overhead.

### **3.4 Fast Mobility Detection**

The impact of portability location is fused in [10]. It proposes to utilize the connection layer information to acknowledge quick portability identification. In remote organizations, each remote connection has its own connection identifier (LID), which is sent occasionally. As indicated by the LID, MH can decide if it has changed the passage or not. The sending recurrence of Top is far higher than that of the specialist notice message. This property is abused. Here, a connection identifier choice is added to the specialist notice message, whose content is the rundown of the LIDS of the multitude of connections in the scope of FA. By and large, FA just sends the specialist commercial message with this choice because of MH's representative requesting message.

When MH changes the connection or access point, it will get the new LID right away. It leaves behind the LID to Mobile IP layer. Versatile IP checks whether this Top is remembered for the rundown it got seconds ago. Assuming this is the case, showing that MH is as yet in a similar FA's reach, it doesn't need handoff; else, it implies that MH has left the old FA's reach, and afterward MH enlists right away. MH sends specialist notice requesting message effectively. As reaction, FA will send specialist ad message with the LID list alternative. This plan just portrays the location reconfiguration part; the home organization enrollment part is not featured. This may cause a general idleness.

### **3.5 Low Latency Protocols**

Low Latency address arrangement is tied in with designing an address for the MN in an organization that it is probably going to move to, before it moves. The Low Latency handoff proposition [11] depicts two strategies for accomplishing this, in particular Preregistration furthermore, Post-enlistment. With Pre-enlistment handoff, the MN is helped by the organization to perform L3 (layer-3) handoff before it finishes the L2 (layer-2) handoff. It utilizes L2 'triggers', which emerges because of beaconing signals from the organization the MN is going to move to, to start an IP layer (L3) handoff. Post-enrolment handoff triggers resemble connected up occasions that happen in an AP or on the other hand MN after a MN effectively finishes the association stage.

### **3.6 Topology-supported Cross-layer conventions**

A blend of cross-layer plan and the topological data is proposed in [12]. The convention utilizes prehandoff triggers for specialist revelation or addresses design before layer-3 handoffs, and applies present handoff triggers on wipe out the move location delay. An autonomous area affiliation worker (LAS) is proposed here, which keeps up area data, handoff-to connections, and AP/MA or on the other hand AP/DHCP relationship for a bunch of APs. LAS can be actualized either as an independent worker or as an extra programming module in MAs, DHCP Proxies, or RADIUS workers. Be that as it may, the execution of LAS isn't very clear in this proposition.

### **3.7 Seamless Handoff Architecture**

The Seamless Handoff design for Mobile IP (S-MIP) [13] gives an unexpected methodology in comparison to what we have talked about up until now:

- It joins the hub development following and handoff calculations, subsequently gives better outcome.
- Another substance name Decision Engine (DE) is presented which is comparative as a MAP.

DE tracks the development of the versatile hub and takes choice regardless of whether handoff is fundamental and in which heading. The development example of the hub can be



direct, stochastic or then again fixed in the middle of two switches. S-MIP acts in an unexpected way in these cases and suppositions the conceivable course of the MN from its set of experiences of development. After the handoff choice is made, the MAP sends parcels to both PAR and NAR which is cradled by them. Later those bundles are conveyed. This plan has downsides in situations when the MAP predicts a development for the MN yet the MN remains on its past network for quite a while. Subsequently, the MN gets bundles from PAR and when it goes to the NAR organization, it would get similar parcels. The copied affirmation sent by the MN can mess up instance of TCP. [14] proposes some alteration on this plan which employments a few pieces to separate two sorts of parcels and guarantees they are appropriated on a totally unrelated way.

### **3.8 Fast Handover Protocols**

Quick handover [14] is a consolidated strategy for pre and post enlistment where pre-enrollment works and if the handover isn't finished, the passage worked in post-enlistment comes to work. It is in reality low inactivity handoff in the IPv6 stage. This plan as a rule has three stages: Handover commencement, Tunnel foundation and Packet sending. The interesting part is the inception of the parcel sending all things considered accomplished more on an envisioning way. Along these lines, sending the parcel too soon or past the point of no return might be an issue as it is troublesome to decide a summed up time span. This plan can be more confined by presenting progressive handover conventions. At that point the MAPs manage the nearby portability the board and the MN doesn't have to update with HA each time it moves around. Another option approach to bundle sending is additionally proposed, to be specific Concurrent Binding Framework. Here, the issue of not knowing where the MN would go is disposed of by sending parcel to the MN's present area and other n areas.

### **4. FUTURE HEADINGS**

The advantages and disadvantages of the specific plans are talked about in the past segment. We see that a portion of the plans consider just the connection level adjustment though a few others manage organization and transport layer. It tends to be inferred that whatever the plan is, that should cause as little adjustment as conceivable to the current convention stack. This



way a thorough in reverse similarity can be guaranteed. In addition, the issue of TCP and IP should be mixed together to create a productive cross-layer handoff component. A few plans like S-MIP and Fast Handover shows great outcomes in lab recreations, yet more broad work must be finished to apply them onto a useful climate.

## 5. CONCLUSION

In this paper we assemble the possibility of Mobile IP and talk about the different plans to limit the handoff inertness in Mobile IP climate. We break down the bit of leeway and burden of the proposed plots and acquaint a few thoughts with get a better arrangement. The examination has shown the crucial purposes of concern related with effective handoff plans.

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