

Enhancing the Quality of Service by employing Swarm Intelligence in Multi-hop Heterogeneous Networks

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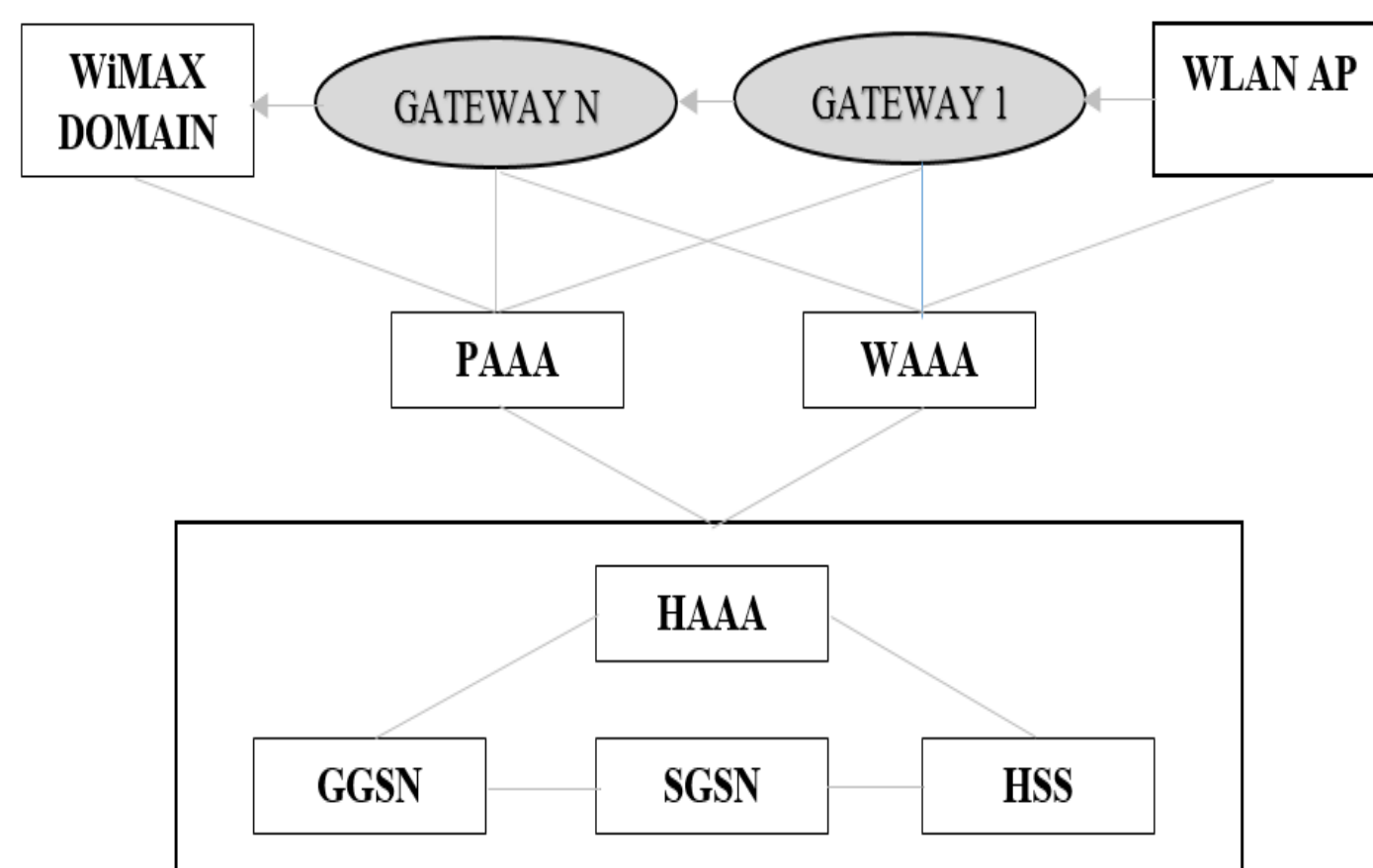
Abstract

Wireless Communication is a quickly developing section of mobile communication systems. The mobile communication system has encountered an exponential development throughout the most recent decade. Furthermore, Wireless Local Network (WLAN) supplant wired system in diverse environment, for example, living arrangements, commercial ventures and so on. The huge development of remote frameworks combined with the multiplication of tablets and PCs demonstrate a splendid future for the wireless network as a component of the layer networking infrastructure. The 3G mobile communication systems give extraordinary scope and subscriber management. Likewise for web access contrasted with 3GPP (third Generation Partnership Project) WiMAX (Wireless Interoperability for Microwave Access) WLANs support hyper information rates at lower expense, because of the correlative way of 3GPP and WLANs-WiMAX the incorporated heterogeneous system network architecture is built up for future creative servers and applications. However, while translating these systems, there happens to be an issue of verification and security. Thus the improvement of Quality of Service parameter, re-authentication delay and signaling cost are considered. In this paper, we propose an advancement based procedure utilizing swarm intelligence for Quality of Service improvements. The simulation is done utilizing NS2 and tested results are obtained for the parameters.

Related Work:

Since the re-authentication of the terminal happens, within the domain, through the access point; the re-authentication delay is significantly reduced in the heterogeneous network. Also, the iterative process enhances the efficiency of the localized process, which was analyzed using network simulator. To overcome handover authentication is a critical issue in WiMAX area, an efficient group-based handover authentication mechanism for coexisting mobile stations in IEEE 802.16m networks were established. When the first Main station of the handover group nodes goes from the service base station (BS) to a target Base Station, the service Base Station sends all the handover group members security context to the target Base Station using the Security Context Transfer (SCT) method and then all these Main Stations in the same handover group can easily achieve the handover authentication with the target Base Station. Different from the standard SCT schemes, their scheme uses the Main Stations security context as a symmetric key of Cipher-based message authentication code (CMAC). Furthermore, performance analysis signifies that the proposed scheme is very efficient in reducing average handover latency. The handover decision is a significant problem. This is exacerbated when the Handoff decision is driven by user preferences, and wireless environment constraints. The security protocol is responsible for the slight delay in the network access, which may be much longer than the normal delays caused due to mobility management.

Methodology



The figure demonstrates the architecture of the proposed mechanism. The approval capacity figures out if a specific element is approved to perform a given movement, commonly acquired from authentication when signing on to an application or service. Authentication may be resolved to take into account a scope of confinements, for example, time-of-day limitations, or physical location restrictions, and limitations against various access by the same client. Typical approval in regular computer life is, for example, conceding read access to a particular document for authenticated client.

Accounting refers to the following of network resource utilization by clients with the end goal of capacity and trend examination, cost designation, and billing. Also, it may record occasions, for example, authentication and authorization failures, which allows checking the accuracy of systems completed in view of accounting data. Swarm intelligence is the order that deals with a regular and artificial system made out of numerous people that facilitate utilizing decentralized control and self-organization.

Simulation Results:

Nodes move towards WiMAX domain. Request and Response, sent and received are known as one cycle.

The simulation result of the authentication for the first time is shown figure 1.

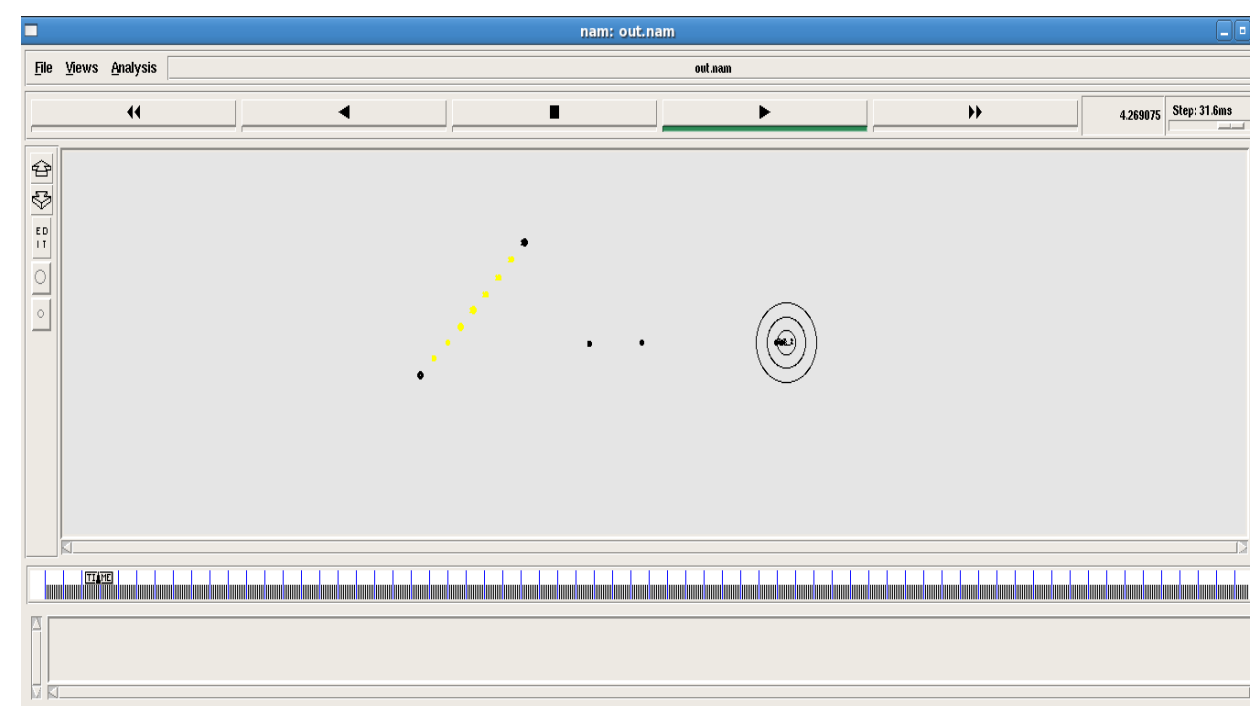


Fig 1. Authentication for the first time.

Figure 2 shows the presence of node in the new domain

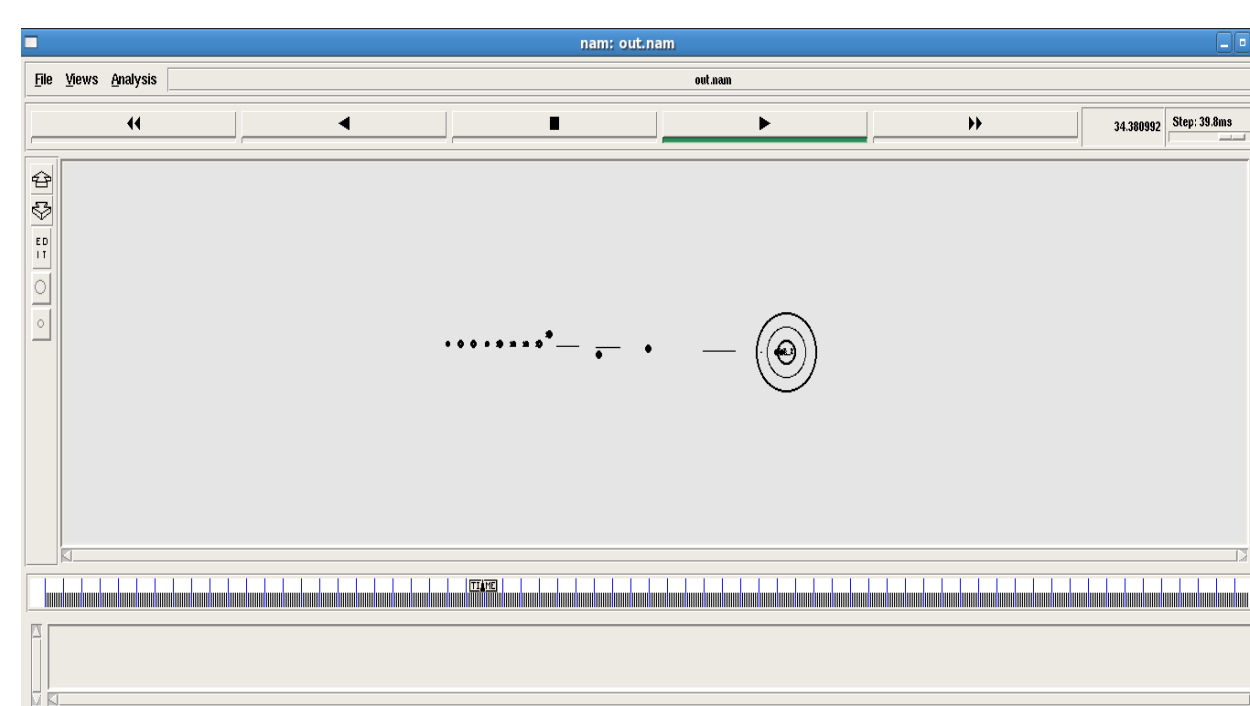
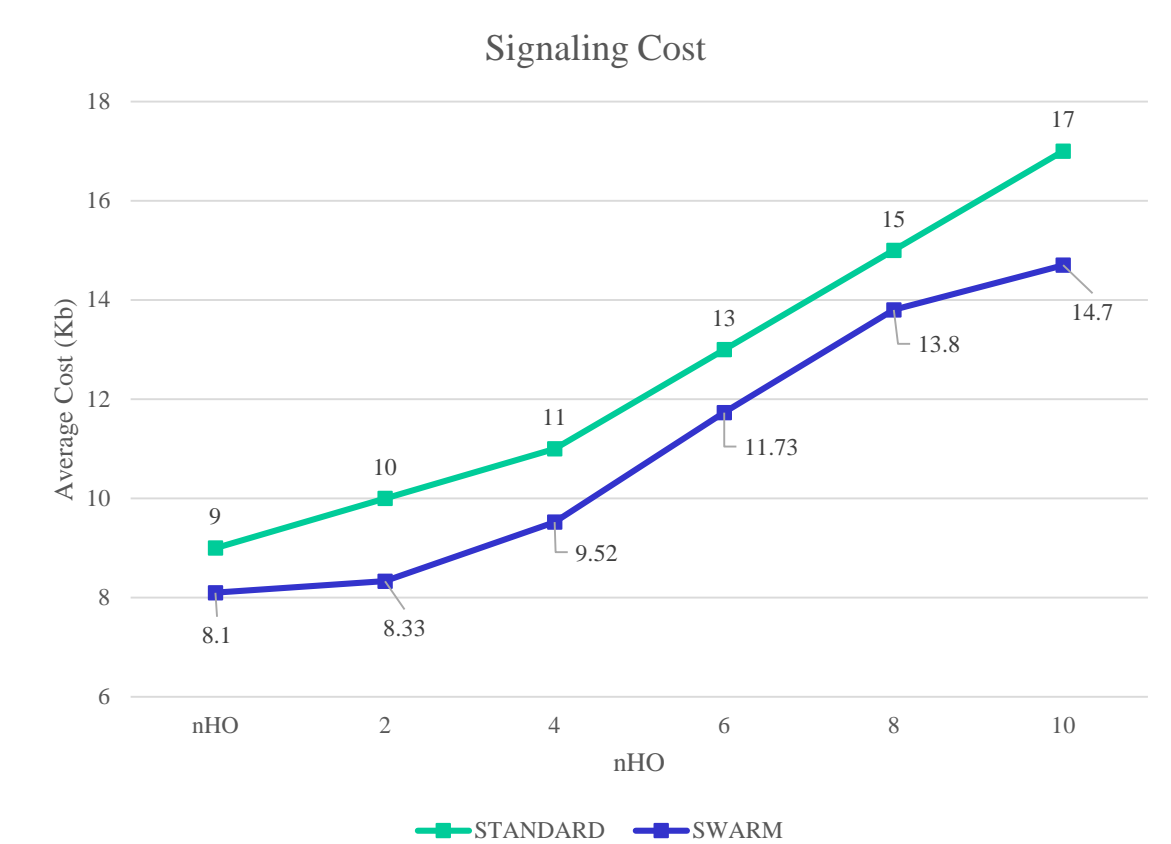
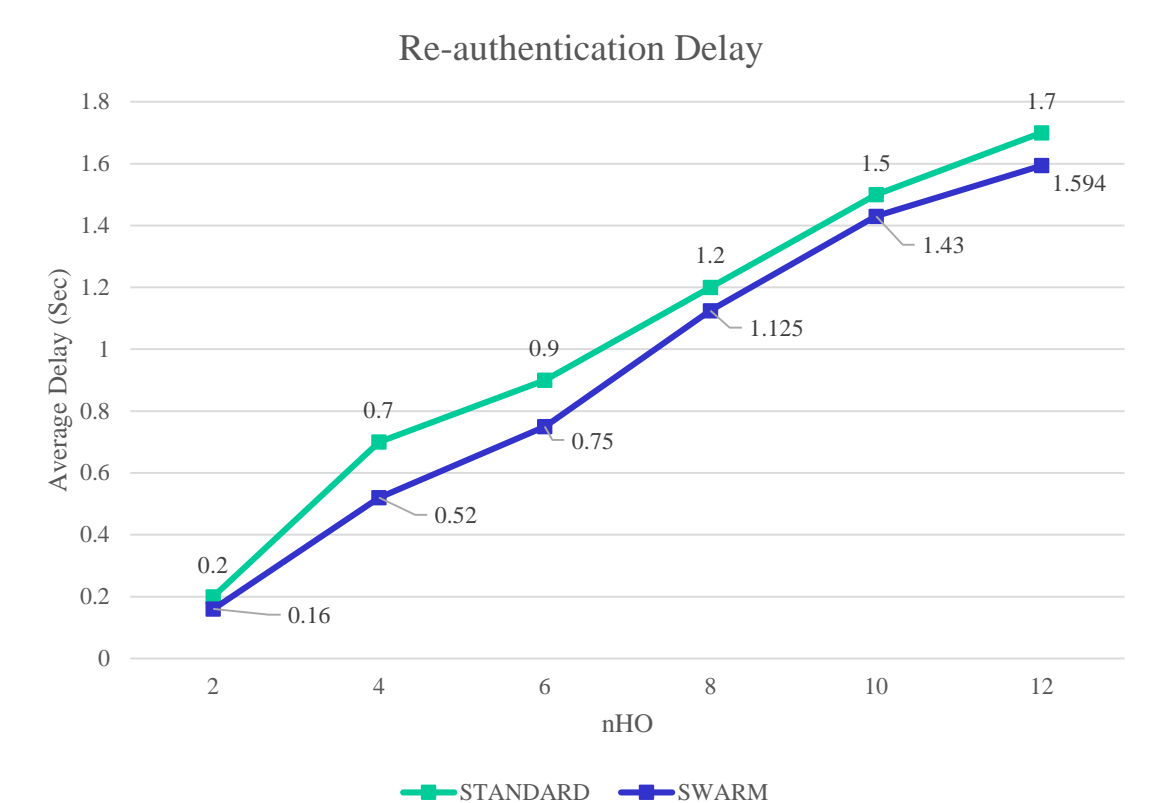


Fig 2. Node in the new Domain.

Conclusion

Advances in wireless access technologies, bridges the gap between static and dynamic characteristics of the user. In the aim to reduce the trade-off between the security offered by the network and the quality of service observed by the user, enhancement of the re-authentication protocol is performed in this paper. On analyzing the handover situations in the heterogeneous network, using swarm intelligence the better results are obtained, and compared to the standard scheme. In this paper, the re-authentication delay and the signaling cost during HO was significantly reduced during handover between WLAN and WiMAX. The re-authentication delay is reduced effectively by authenticating the user using WAAA, proxy server, rather than by authenticating through the main server 3GHN. This improves the security as well as seamless handover is achieved. Similarly, the signalling cost is reduced since the proxy server is used in between the mobile station and the main server. Thus the traffic due to signalling is reduced.



References

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