A NEW APPROACH TO FAST HANOVER OF MOBILE NODES IN WIRELESS NETWORK

The present era of communication has made information in finger tips, wherever one moves. Even when the user continuously moves, continuous communication is possible because of developments of technology in wireless communication and co-operative communication between heterogeneous networks by different service providers. The main problem is the authentication delay in handover mechanism when moving from one area to another or from one network to another network, which may pose problems either as loss of packets and deterioration in quality of service or as break in communication which has to be further re-established. In real time situation, the information is lost or quality suffers.

The proposed work aims at in reducing the authentication delay by a new procedure which will simplify procedures of authentication without compromising on security, reduces the delay for handover and even when a break happens it reduces the re-establishment time. The following are the modifications proposed to improve the performance.

Quick authentication is done by introducing a new authentication algorithm MICAuA (Mobile Information Centre Authentication Algorithm) which reduces a few steps in procedure, by installing a pre-established module of software in the Mobile Switching Centre(MSC) through mobile agents. The information passing through these MSCs are stored in a data base for further transaction, eliminating the need to get the information from Home Location Register every time. This procedure not only minimizes handover time but also reduces the control packet traffic in the network. In addition, long waiting to communicate may result in packet drops, which is also reduced by this process.

But again, though the node has been handed over to a BS with the higher Received Signal Strength, may have to handover again in the quick succession to another BS, which was
already in the range since the direction of movement of the MN is towards this and results in additional processing, more control packets and possible loss of packets also. The introduction of hybrid location prediction algorithm and direction of movement along with the speed of the MN, avoid this frequent handovers and congestion.

Because of various extraneous signal conditions and sudden obstructions like movement in a tunnel may cause abrupt termination. A quick procedure of re-registration, called MICRRA(Mobile Information Centre Re-Registration Algorithm) is suggested by installing a pre-established module of software in the Mobile Information Centre.

Handing over to a new Base Station again depends on the allocation of available frequency channel to the incoming node. If the channels are already exhausted, the Base Station cannot allot a new channel and takeover a new node, though this BS is in the direction of travel and high Received Signal Strength. A new procedure is suggested which would reallocate some of the nodes to another BS in the signal range. This procedure starts at BS/ Mobile Switching Centre when the number channels occupied reaches a threshold level.

These proposals have been implemented through different simulation studies and computations. The improvements in the new procedures have been analyzed for different type of conditions of network and different types of networks and seen that delay has been reduced by 30% to 60% depending on the type and conditions of network conditions.

As future study it is suggested that a different pricing policy could be adopted and intimated to nodes and foreign networks when the channel capacity is reaching a particular level forcing some un-important communications to be shed off.