Autonomous Mobile Mesh Networks

ABSTRACT:

Mobile ad hoc networks (MANETs) are ideal for situations where a fixed infrastructure is unavailable or infeasible. Today’s MANETs, however, may suffer from network partitioning. This limitation makes MANETs unsuitable for applications such as crisis management and battlefield communications, in which team members might need to work in groups scattered in the application terrain. In such applications, intergroup communication is crucial to the team collaboration. To address this weakness, we introduce in this paper a new class of ad-hoc network called Autonomous Mobile Mesh Network (AMMNET). Unlike conventional mesh networks, the mobile mesh nodes of an AMMNET are capable of following the mesh clients in the application terrain, and organizing themselves into a suitable network topology to ensure good connectivity for both intra- and intergroup communications. We propose a distributed client tracking solution to deal with the dynamic nature of client mobility, and present techniques for dynamic topology adaptation in accordance with the mobility pattern of the clients. Our simulation results indicate that AMMNET is robust against network partitioning and capable of providing high relay throughput for the mobile clients.

EXISTING SYSTEM:

In a standard wireless mesh network, stationary mesh nodes provide routing and relay capabilities. They form a mesh-like wireless network that allows mobile mesh clients to communicate with each other through multihop communications. Such a network is scalable, flexible, and low in maintenance cost. When a mesh node fails, it can simply be replaced by a new one; and the mesh network will recognize the new mesh node and automatically reconfigure itself.

DISADVANTAGES OF EXISTING SYSTEM:

· Difficult to design robust MANETs for minimize network partitions.

PROPOSED SYSTEM:

Ø In this paper, we introduced a mobile infrastructure called AMMNET. Unlike conventional mobile ad hoc networks that suffer network partitions when the user groups move apart, the mobile mesh routers of an AMMNET track the users and dynamically adapt the network topology to seamlessly support both their intragroup and intergroup communications.

Ø Since this mobile infrastructure follows the users, full connectivity can be achieved without the need and high cost of providing network coverage for the entire application terrain at all time as in traditional stationary infrastructure.

ADVANTAGES OF PROPOSED SYSTEM:

Ø AMMNET can forward data for mobile clients along the routing paths built by any existing ad hoc routing protocols.

Ø AMMNET is robust against network partitioning and capable of providing high relay throughput for the mobile clients.

MODULES:

1. AMMNET.

2. Adapting to Intragroup Movement

3. Reclaiming Redundant Routers

4. Interconnecting Groups

5. Topology adaptation.

MODULES DESCRIPTION:

AMMNET

An AMMNET is a mesh-based infrastructure that forwards data for mobile clients. Tha roles in this network:

Intra-group routers: A mesh node is an intra-group router if it detects at least one client within its radio range and is in charge of monitoring the movement of clients in its range. Intra-group routers that monitor the same group of clients can communicate with each other via multi-hop routing. For example, routers r1and r2 are intra-group routers that monitor groupG1.

Intergroup routers: A mesh node is an intergroup router, i.e., square nodes, if it plays the role of a relay node helping to interconnect different groups. For each group, we designate at least one intergroup router that can communicate with any intra-group routers of that group via multi-hop forwarding as the bridge router, for example, routerb1for groupG1.

Free routers: A mesh node is a free router if it is neither an intra-group router nor an intergroup router.

Adapting to Intra-group Movement

Each client continuously broadcasts beacon message to notify its present within the ratio range of an intra-group router. When this router no longer hears the expected beacon messages, one of two possible scenarios might have happened. The first scenario is client moves out of the communication range of router into the communication range of an adjacent router in the same group. The second scenario is the missing client moves from the communication range of router to a space not currently covered by any of the routers in the group.

Reclaiming Redundant Routers

When the intra- and intergroup routers are no longer required due to client mobility, the AMMNET should reclaim them for future use.

Interconnecting Groups

Given a set of intra-group routers that provide communication coverage for a group of mobile users, these mobile users might move out of this coverage area in smaller groups. To avoid network partitioning, each of the new groups must be supported by their local intra--group routers; and intergroup routers must organize themselves into a sub-network of bridges to support the intergroup communications.

Topology adaptation

In this Module, we use two topology adaptation schemes, namely local adaptation and global adaptation, each with a different resolution of location information to shorten the relay paths between groups.

SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

Ø System : Pentium IV 2.4 GHz.

Ø Hard Disk : 40 GB.

Ø Floppy Drive : 1.44 Mb.

Ø Monitor : 15 VGA Colour.

Ø Mouse : Logitech.

Ø Ram : 512 Mb.

SOFTWARE REQUIREMENTS:

 Operating system : Windows XP/7.

 Coding Language : ASP.net, C#.net

 Tool : Visual Studio 2010

 Database : SQL SERVER 2008