Bus and Infrastructure Less Different Routing Protocol Communication in Heterogeneous Network

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Abstract- *In the last ten years there is the huge growth is achieved in the developing area of mobile applications. By this the demand on services of wireless communication is increased. The freedom in mobility and flexibility are provided by the ability of achieving wireless entrance anytime, anyplace and anywhere is turn into common expectation nowadays. Mobile device needs faultless connectivity by vertical handoff for achieving global mobility in heterogeneous networks. While the particular solutions for the vertical handoff is not provided by any existing wireless frameworks.*

Keywords- HWN, SWLD, SIS, WLD, AWLD

I. INTRODUCTION

The developing demand for services (e.g., web browsing, file downloading and e-mail) from MUs anywhere, anytime is on the increase regardless of the technological constraints which are associated with distinctive sorts of RATs such as UMTS, WiMAX and LTE, besides, there is no single RAT is able to satisfy the necessities for every different wireless communication situations. So, the telecommunication operators are primary for build an interoperability process for these distinct types of current networks to get the high-quality connection anyplace, every time between heterogeneous wireless networks (HWN).

A collection of End techniques and Intermediate systems that communicate immediately via a wired physical medium is known as a wired verbal exchange Domain, or Wired Domain (WRD), for short. A Communication Network composed exclusively of Wired Domains is called Wired Network.

Wireless ESs has a wireless network interface enabling the communication while moving within a pre-defined three dimensional region. Contingent upon the measurement and layout of this radio coverage region, on the existence of electromagnetic interference and obstacles and on the radio technology that is being used, there might be the need to split the radio coverage region into a number of smaller regions.

A Radio Cell (RC) is therefore characterized as a typical radio scope zone of a gathering of WLESs and ISs. The arrangement of WLES/ISs that defines a Radio Cell is called Wireless Communication Domain, or Wireless Domain (WLD), for short. A Radio Cell can be either ad-hoc (ARC) or structured (SRC), depending on whether the WLES/ISs communicate directly or indirectly between them. Structured Radio Cells are necessary communicate while moving from one SRC to another. This requirement will become clearer later on in this chapter. The mechanism that supports inter-cell mobility is called handoff (or handover). So as to have a Structured Radio Cell, there is the need for a specific type of IS – a Structuring Intermediate System (SIS). A Structured Wireless Domain (SWLD) is defined as the arrangement of End Systems and Intermediate Systems that are associated to a Structured Radio Cell.

All communications between ESs belonging to a SWLD must be relayed by the Structuring Intermediate System (Fig 1). ESs transmits using one Radio Channel (uplink) and receive using another Radio Channel (downlink). A Radio Channel Set (CHS) is defined as the arrangement of radio channels used for communication within a Radio Cell. Therefore, in a Structured Radio Cell, the Radio Channel Set is composed of one uplink and one downlink Radio Channels. SIS may implement half or full-duplex communication.

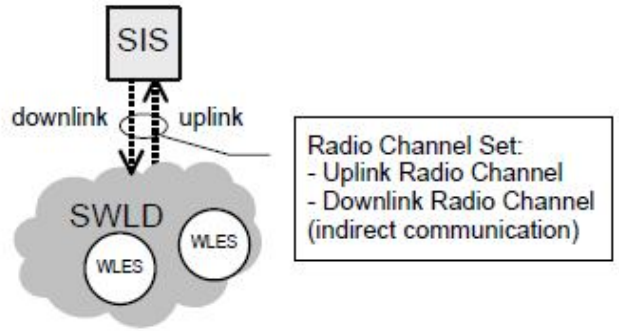

Figure 1. Structured Wireless Domain (SWLD)

If mobility is to be performed inside a specific Radio Cell (intra-cell mobility), then Ad-hoc Radio Cells can be used. An Ad-hoc Wireless Domain (AWLD) is characterized as a WLD where associated ESs defines an Ad-hoc Radio

Cell. In this case, it is assumed that the Radio Channel Set is composed of only one Radio Channel, which is used both to transmit and to receive, using half-duplex communication.

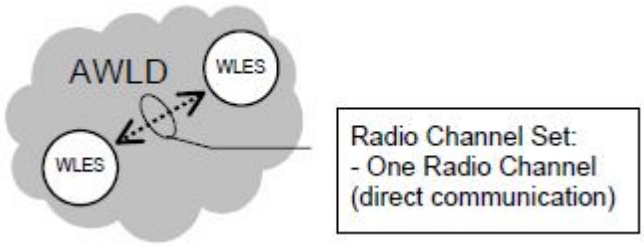

Figure 2. Ad-hoc Wireless Domain (AWLD)

An application may impose or benefit from the support of Mobile Wired Domains MWRDs (e.g., an AGV containing a Wired Domain with an arrangement of wired ESs, moving between Radio Cells). Similarly to the SWLD case, all the End Systems associated to the MWRD move altogether and the (one and only one) IS that is associated to the MWRD may handoff between Radio Cells [1].

II. CLASSIFICATION OF HANDOFFS

Factors that impact categorization of handoffs can likewise be administrative domains concerned, quantity of connections, network forms, user based, necessity of handover and frequencies engaged.

A. Network Types Involved

It is probably the most normal classification aspect. Handoffs can likewise be arranged as either flat or vertical. This will depend on whether a handoff happens between a single sort of network interface and a form of distinctive network interfaces.

a) Vertical handoff

Mobile terminal can be handover to access points those supporting different network technologies. For outline, the changeover of sign transmission from WIMAX base station to LTE network is seen a vertical handoff approach.

b) Horizontal handoff

Mobile terminal handover between entry elements helping the equal network technology. For illustration, the changeover of sign transmission between same forms of network i.e. WIMAX to- WIMAX base station is considered as a horizontal handoff process.

B. Frequencies Engaged

a) Intra-frequency handoff

Process of handover for cellular terminal across access aspects working on the equal frequency. This sort of handoff happens in code division multiple access (CDMA) networks with frequency-division-duplex (FDD).

b) Inter frequency handoff

Process of handover for mobile terminal throughout entry elements working on unique frequencies. This type of hand -off is present in CDMA networks with time-division duplex (TDD) and is the only handoff type supported in GSM cellular systems.

C. Number of Connections Involved

a) Hard handoff

In a difficult handoff the radio link to the old base station is discharged while a radio hyperlink to the new base station is engaged. As it were, utilizing extreme handoff, a mobile node is permitted to hold an association with one and only base station at any given time.

b) Soft handoff

A mobile node continues a radio connection with no less than two base stations in an overlapping handoff area and does no more free up any of the signs except it drops beneath a specified threshold value. Soft handoffs are possible in situations where the mobile node is moving between cells operating on the same frequency.

b) Softerhandoff

A softer handoff is fundamentally the same as a soft handoff, aside from the mobile terminal switches connections over radio hyperlinks that have a place with the indistinguishable section point.

D. Administrative Domains Involved

It's a gathering of frameworks and networks worked by a solitary association of administrative authority. Administrative domains play an enormous function in 4G wireless networks as distinct networks, each controlled via exclusive administrative authorities, turn out to be available. Consequently, the characterizations of handoffs as far as administrative domains are.

a) Intra-administrative handoff

A handoff approach the place the mobile terminal transfers between extraordinary networks (supporting the equal or unique varieties of network interfaces) managed via the identical administrative domain.

b) Inter-administrative handoff

A handoff process where the versatile terminal exchanges between different networks (supporting the same or distinctive sorts of network interfaces) overseen by various regulatory spaces.

E. User Control Allowance

Handoffs will also be classified as proactive or passive.

a) Proactive handoff

In a proactive handoff the mobile terminal's client is permitted to decide when to handoff. The handoff decision can be based on an arrangement of preferences specified by the user. Proactive handoff is relied upon to be one of the radical features of 4G wireless systems.

b) **Passive handoff**

The consumer has no manipulate over the handoff procedure. The consumer has no manage over the handoff method. This type of handoff is the most common in first, second and third generation wireless systems [2].

III. LITERATURE REVIEW

Jianli Xie [2016] et al. this paper proposes a distributed JAC scheme based on the ecology theory in HWN. It establishes a mapping relationship of biological rivalry and heterogeneous radio resources management, and adopts the Gause-Lotka-Volterra (GLV) model to predict the heterogeneous network traffic [3].

Wenjie Chen Huashan Li [2016] et al. In this study, analyze the protection efficiency and energy efficiency of a two tier heterogeneous network which is composed of micro tier and percent tier. With the aid of stochastic geometry tools and PPP properties, the analytical expression of achievement likelihood for each tier is derived to evaluate the tier's coverage performance how to vary with the SBS deployment density [4].

Jiyan Wu [2016] et al. this paper presents an Energy-Distortion Aware MPTCP (EDAM) solution. First, we advance an analytical mannequin to seize the energy-distortion tradeoff for multipath video transmission over HWN Second, we propose a video flow rate allocation algorithm to minimize the vitality consumption while achieving target video quality based on utility maximization theory [5].

Hideo Kobayashi [2016] et al. this paper considers a concern of user and entry factor associations in HWNs along with multiple radio entry technologies. We advise a technique for optimizing the challenge that aims at maximizing the total minimal utility of clients in the long haul. The minimal utilities may likewise be bought from bare essentials of the best of expertise and outlined by using for the reason that exceptional specifications of each and every consumer [6].

A. Maheswari [2016] et al. the proposed algorithm for VHO optimizes the execution of Handover Delay and packet loss. The GPS tracking system is used for location update and system discovery. The Markov based decision is used to identify the best available network to perform handover for seamless connectivity. The simulation results about demonstrate that the handover latency of the proposed algorithm is minimized than the existing approaches and reduces the loss of packets during handover [7].

Yuzhou Li [2015] et al. On this paper, we examine the delay-mindful energy efficient transmission main issue in dynamic HWNs with time-variant channel stipulations, movement burdens, and purchaser mobility. Through jointly in view that subcarrier undertaking, energy allocation, and time fraction decision, we formulate it as a stochastic optimization drawback to maximize the system energy efficiency (EE) meanwhile ensure network stability [8].

Ali Rıza Ekti [2015] et al. On this be taught, the difficulty of joint data rate allocation and mobile terminal (MT) enterprise is investigated in a HWN atmosphere that entails Wi-Fi local area network (WLAN) access points (APs) and cellular base stations (BSs) for a great effort carrier. MTs are geared up with a couple of radio interfaces and have multi homing capabilities. As a result, MTs can join at the same time to multiple wireless networks (e.g, cellular network BS and WLAN AP) and aggregate the offered bandwidths from these networks to support applications with high required data rates [9].

Oh Chan Kwon [2015] et al. this paper displays an energy-efficient multipath spilling transport convention to bolster a consistent high-fantastic video gushing administration over HWNs the proposed protocol employs

Raptor codes to alleviate video excellent degradation induced by means of wireless channel errors and the diverse characteristics of wireless networks [10].you.

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IV. PROPOSED WORK

Wireless networks in wired applications, homes, and offices contain the nodes without any mobility. Many networks contain at least some powerful machines additionally connected with a wire line network. The information of wireless network topology at powerful nodes is also utilized to avoid congestion process routing tables, control transmission power, to fetch data and discover resources. Heterogeneous networks do a unique job in the development of communities and the maker of individual decisions. On this thesis, we depict our skill in the design of heterogeneous network a framework for automatic network administration of a heterogeneous network infrastructure. In today's environment the increasing level of wireless communication, the persons regularly needs Quality of System for sharing their data among the nodes of different network or platform. For have the funds for QOS the user, many researchers declared some methods to offer QoS assured routing for hybrid networks, they struggle to enhance the reliability and network capacity but they avoid limit in QOS. Communication between different infrastructure it's quite difficult when both network follow different routing protocol because of working of both network are different, wired network have infrastructure or also have access point then again wireless network is infrastructure less or have not any type of access point so whenever two distinctive kind of network communicate somehow maintain the execution of network is much more important thing so in our thesis we create a wired and wireless scenario with 7,14,21,28 nodes and apply AODV and DSR routing protocol, on the basis of end to end delay, throughput and packet delivery ratio we say which routing network Protocol perform higher in heterogeneous network environment.

Proposed Algorithm

Step1: create wireless scenario.
Step2: create wired network bus architecture.
Step3: built communication between different network nodes.

V. RESULT ANALYSIS

The evaluation of proposed work is done using Network simulator2. In this experiment evaluation the network includes 50mobile nodes randomly Deployed in a 1000x1000 meter field and the transmission range is defined 100 meters for default network. User defined network can be formed by different number of nodes taken as input.

In simulation process, every node starts moving from a particular position to a destination. When the nodes moves and reached to one destination, it will take few seconds pause and chose other destination. The whole process continues during the simulation, causing frequent change in the underlying topology of network. Many different network output generate for different number of nodes and pause times are generated.

A. Simulation and result:

7 Nodes communication:

The transfer variables of the material handling equipment are which the amount of the length and the maximum utilization time of the system.

The total length of the conveyor system planned is of 0.5m. and the time accumulated for the entire transversal is with the average time span of 0.05 minutes and the maximum delay of 0.01 minutes. The number of production batches is of 68 batches.

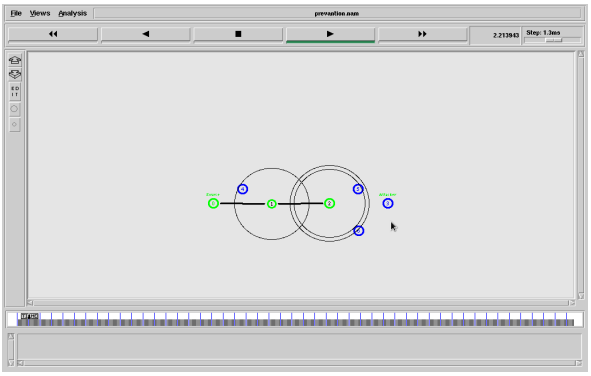

Figure 3. Nodes communication.

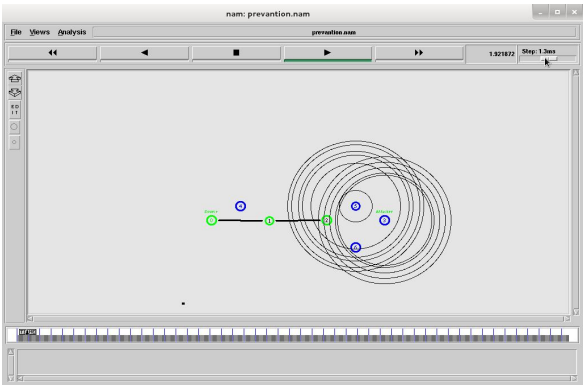

Figure 4. Nodes communication

14 Nodes communication:

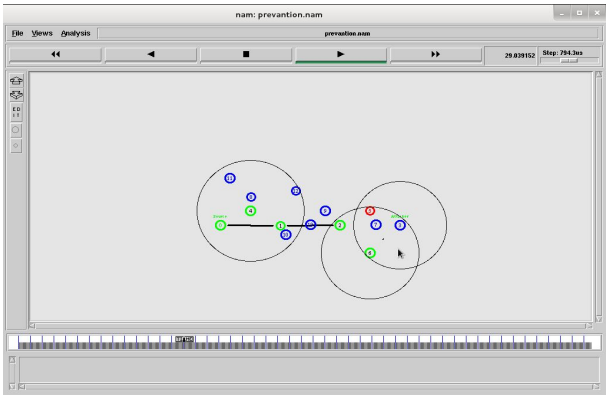

Figure 5. Nodes communication

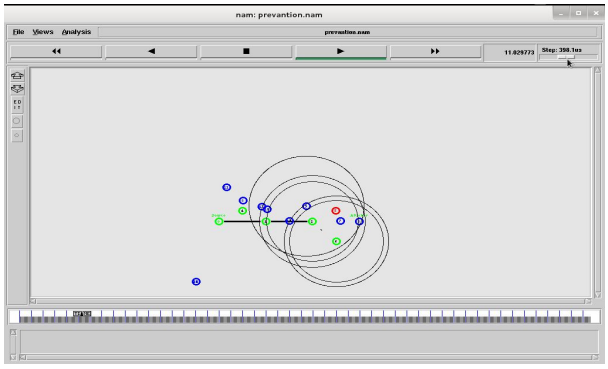

Figure 6. Nodes data transfer and route discovery

21 nodes:

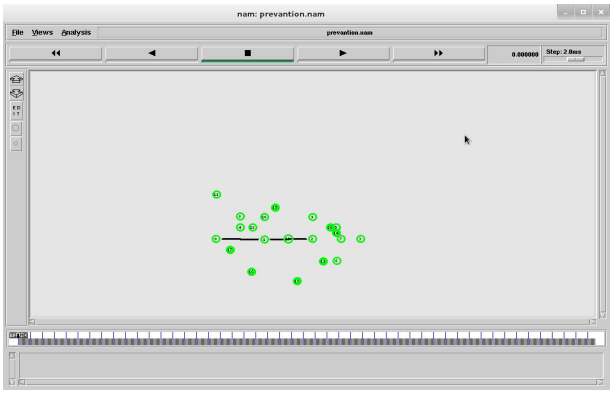

Figure 7. Nodes network

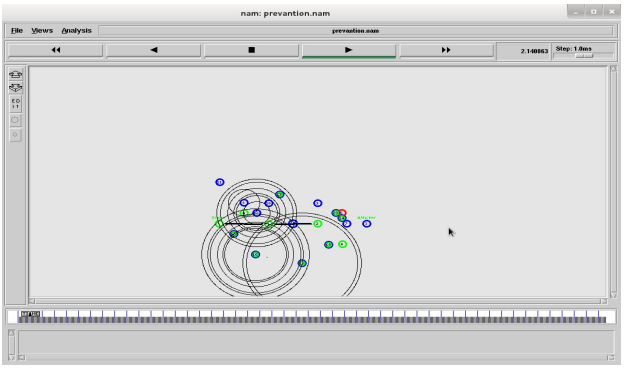

Figure 8. Route discovery or data sent

28 Nodes simulation output

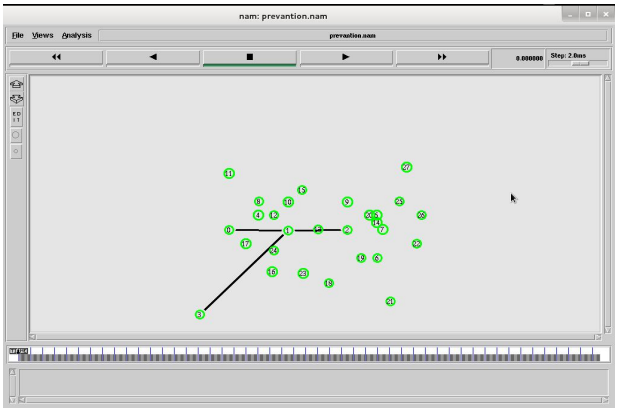

Figure 9. Network scenario

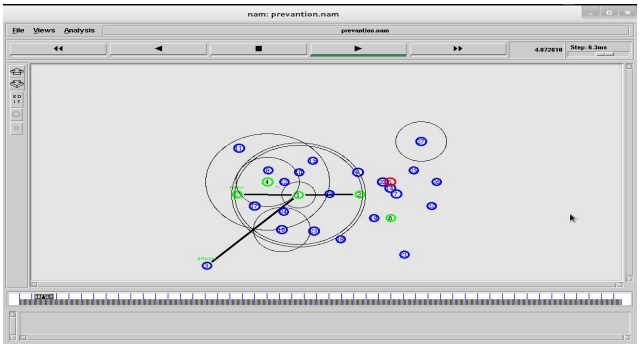

Figure 10. Route discovery and data sent

IV. CONCLUSION

The study of basic structure for different handovers in various wireless networks is the main intension of this investigation. Some different kind of wireless technologies are WiMAX, WI–Fi, and LTE. To maintain the Quality of Service and faultless attachment between divergent technologies We ought to reduce the delay while shifting to another technology. And if delay is reduced, throughput will be increased. For better services we have to increase the throughput of the system.

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