INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 4 ISSUE 1 (2018) PAGES 2752 - 2756
RECEIVED : 15.01.2018 PUBLISHED : 13.02.2018
Feb 13, 2018

AN EFFICIENT VERTICAL HANDOFF DECISION HANDOVER KEY MANAGEMENT 4G HETEROGENEOUS WIRELESS NETWORK

[1]Shanmugam.T, M.Phil, Research Scholar, K.M.G College Of Arts & Science, Gudiyattam.

[2]Prof.K.Jayasankar, Assistant Professor, PG & Research Department Of Computer Science & Applications, K.M.G College Of Arts & Science, Gudiyattam.

Abstract:

Mobility is the need of the hour computing and communication devices of today are omnipresent and operate in heterogeneous environment. Terminologies such as Always Best Connected‖, Seamless Mobility‖ are considered as key features of Next Generation Wireless Networks (NGWN). The challenge for Next Generation Wireless devices is ensuring end-to-end connectivity by seamlessly migrating between Heterogeneous wireless technologies (viz. Wireless LAN, WiMax, Cellular, UMTS, and LTE etc.) This process of handover between different wireless technologies referred to as Vertical Handovers/Handoffs has significant importance among industry and academia researchers. The prime objective of this paper is to provide a one-stop literature store on basics of Handovers, Classifications, Algorithms, Factors influencing Handovers and desirable features of Handover mechanisms for NGWN.

Keywords: Hard Handoff, Soft Handoff, VHD algorithms, Multi Attribute Decision Making (MADM).

1. INTRODUCTION

The 4G Revolution has begun with many of the advantages in wireless technology.Wireless technologies such as LTE, WLAN, WiMAX, etc. were developed with different standards and these technologies offer variety of services, different data rates and diverse area of coverage. One of the forthcoming challenge in network management is to establish connection between end to end heterogeneous wireless technologies. To provide such end-to-end connection between heterogeneous networks we need to perform Handover. If the serving and target base station during Handover are of different wireless technologies then such a Handover is called as Vertical Handover/Handoffs. The term interworking is used to express interactions between heterogeneous networks with the aim of providing an end- to-end communication [1]. A Handover decision is a significant problem, in Next Generation Wireless Networks (4G). Handoff between two base stations (BSs) of the same system is called Horizontal handoff. Horizontal handoff involves a terminal device to change cells within the same type of network (e.g., within a CDMA network) to maintain service continuity. It can be further classified into Link-layer handoff and Intra-system handoff. Horizontal handoff between two BS, under same Foreign Agent (FA) is known as Link-layer handoff. In Intra- system handoff, the horizontal handoff occurs between two BSs that belong to two different FAs and both FAs belongs to the same system and hence to same Gateway Foreign Agent. Vertical handoff refers to a network node changing the type of connectivity it uses to access a supporting

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 4 ISSUE 1 (2018) PAGES 2752 - 2756
RECEIVED : 15.01.2018 PUBLISHED : 13.02.2018
Feb 13, 2018

infrastructure, usually to support node mobility. Vertical handovers refer to the automatic fall over from one technology to another in order to maintain communication [2].

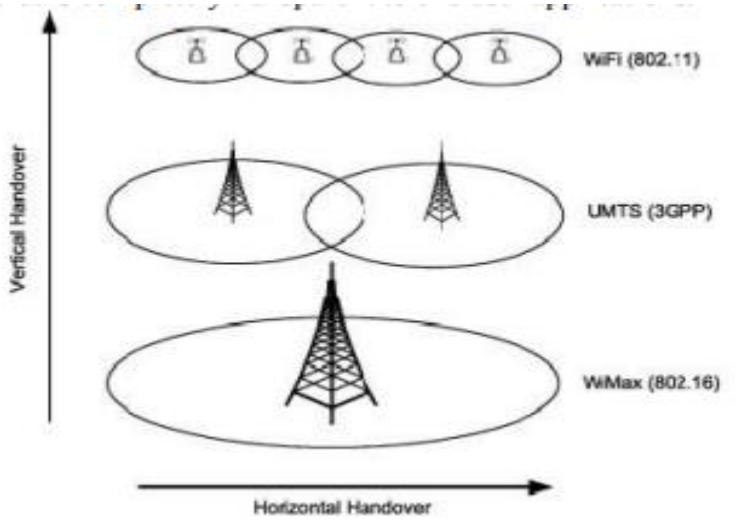

Fig.1.Basic Structure

The vertical handoff mechanism allows a terminal device to change networks between different types of networks (e.g., between 3G and 4G networks) in a way that is completely transparent to end user applications.

2. RELATED WORK

The requirement for handoff mechanism can be classified in to dynamic and non-dynamic requirements. The dynamic requirements include RSS, velocity, throughput, user preferences, handover latency, network load balancing as parameters and non-dynamic requirements include network cost, power consumption, network security and bandwidth as parameters.

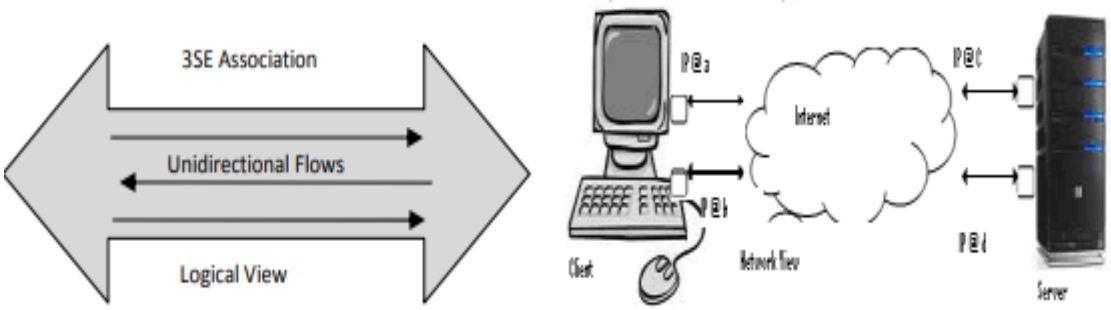

Fig.2.Architecture

We need to find ways to improve energy efficiency in wireless networks. Power is consumed during mobile switching or handoffs. During handoff, frequent interface activation can cause considerable battery drainage. The issue of power saving also arises in network discovery because unnecessary interface activation can increase power consumption. It is also important to incorporate power consumption factor during handoff decision. Secure handoff has become an important factor in wireless networks. The network

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 4 ISSUE 1 (2018) PAGES 2752 - 2756
RECEIVED : 15.01.2018 PUBLISHED : 13.02.2018
Feb 13, 2018

security consists of the provisions and policies adopted by the network to prevent and monitor unauthorized access, misuse, modification, and network-accessible resources. The security features such as highest levels of integrity, authentication, and confidentiality, network security should be embedded in the handoff policies. NGWN consists of heterogeneous network managed by different operators like 2G, 3G mobile communication systems,WLAN, IEEE 802.16e (WiMax), satellite. Issues in 4G network can be mobility, when mobile user switches from one network to another network or from one Base Station (BS) to another the mechanism used is ―Handover‖. So in heterogeneous network vertical handoff decision (VHD) is mainly used for continuous service. A handoff scheme is required to preserve connectivity as devices move about, and at the same time curtail disturbance to on-going transfers. Therefore, handoffs must exhibit low latency, sustain minimal amounts of data loss, as well as scale to large networks.

3. PROPOSED SYSTEM

If a loss event occurred in wireless environment the congestion window size will be dropped. This is one of the major problems of TCP and SCTP. When packets are lost due to mobility or worst radio channel conditions, the transmission rate reduction causes a significant throughput decrease. In order to overcome this problem, and identify losses due to congestion, 3SE estimates the exact bandwidth capacity in advance. If the router under estimates the bandwidth capacity, it will under utilize the link and waste the valuable bandwidth resource, and if the router overestimates the capacity, it will provide improper feedback to senders to increase their congestion windows and may cause queue growth and even buffer overflow. It is very difficult to decide a proper value of bandwidth capacity in advance for a wireless link. This is because a wireless channel is shared by competing neighbor nodes and the number of nodes sharing this channel may change all the time. And another reason is that the wireless link bandwidth is affected by many changing physical conditions such as signal strength, propagation distance and transmitter power. those estimated on the secondary path. If the bandwidth on the secondary path is larger than the bandwidth on the path where the time out occurred then the path definition are swapped. The secondary path becomes the new primary path and vice versa. The aim of this change is to transmit new packets on the path that seems to be in better conditions, increasing the probability of a successful communication. In order to avoid frequent path swaps, a time hysteresis of 60s is introduced. wireless portion is an 802.11b WLAN. Links have different capacities, unless otherwise specified, the one-way propagation delay is set to 40ms on the fixed part and is negligible on the wireless channel. The 3SE includes implementation of Dynamic Address Reconfiguration and Integration with the MIH framework. The simulation results evaluating the transport of MIH messages via 3SE and the impact of handover signaling delays.

4. ANALYSIS

Framework introduce 3SE and its capabilities namely multihoming, multistreaming, address reconfiguration and is able to distinguish among losses due to congestion and radio channel failures. Among the main novelties introduced by 3SE, there are the diversified bandwidth estimation and the efficient use of multihoming by the redefinition of primary and secondary path. In addition, they provide a complete solution to use 3SE as an efficient transport solution for MIH. The solution combines a path selection algorithm and the use of MIH services to optimize 3SEs behavior. Simulation results shows that the proposed solution reduces the impact of packet loss and the event generation rate on the transmission delay,

INTERNATIONAL RESEARCH JOURNAL IN ADVANCED ENGINEERING AND TECHNOLOGY (IRJAET) E - ISSN: 2454-4752 P - ISSN : 2454-4744
VOL 4 ISSUE 1 (2018) PAGES 2752 - 2756
RECEIVED : 15.01.2018 PUBLISHED : 13.02.2018
Feb 13, 2018

RSS measurements either with an estimated lifetime metric or the available bandwidth of the WLAN candidate. We have two scenarios. In the first scenario when the mobile terminal moves from the coverage area of a WLAN into a 3G, a handover to the 3G network is initiated. When RSS average of the WLAN connection falls below a predefined threshold, and the estimated lifetime is less than or equal to the

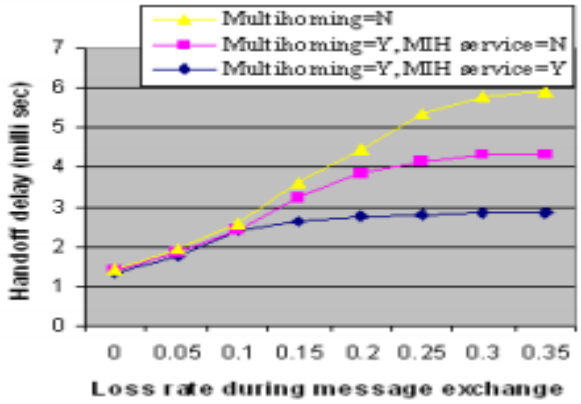

Fig.3.Analysis

handover delay, the handover is triggered. In the second scenario when the mobile terminal moves towards a WLAN cell, the handover to the WLAN is triggered if the average RSS measurements of the WLAN signal are larger than a threshold and the available bandwidth of the WLAN meets the bandwidth requirements of the application .An algorithm is proposed between WLAN and 3G which is based on comparison of the current RSS and a dynamic RSS threshold when a mobile terminal is connected to a WLAN access point. A travelling distance prediction based algorithm is developed to eliminate the unnecessary handovers which is introduced in the above method. The algorithm or fuzzy logic. The mobile device collects features of available wireless networks and sends them to a middleware called vertical handover manager through the existing links. The vertical handover manager consists of three main components: network handling manager, feature collector and ANN training/selector. A multilayer feed forward ANN is used to determine the best handover target wireless network available to the mobile device, based on the user's preferences. A fuzzy logic based algorithm.

CONCLUSION

[1] Sarla More, Dr.Durgesh Kumar Mishra,‖4G Revolution: WiMAX Technology‖, Professor and Head Department of Computer science and Engineering Thakur Shivkumar Singh Memorial Engineering College Burhanpur, India 2010.

[2] Abdoul-Aziz IssakaHassane, Li Renfa, and ZengFanzi Handover Decision Based on User Preferences in Heterogeneous Wireless Networks ―College of Information Science and Engineering, Hunan University, China 2012.

[3] B. R. Chandavarkar, G. Ram Mohan Reddy Survey Paper: Mobility Management in Heterogeneous Wireless Networks‖ Department of Information Technology National Institute of Technology Karnataka, Surathkal, Mangalore, India 2011.

[4] MandeepKaur Gondara1 and Dr. Sanjay Kadam‖Requirementsof Vertical Handoff Mechanism In 4G Wireless Networks‖ Ph. D Student, Computer Science Department, University of Pune, Pune 2011.

[5] NidalNasser,‖Handoffs in Fourth Generation Heterogeneous Networks‖ University of GuelphAhmedHasswa and HossamHassanein, Queen's University2010.
[6] Ashutoshdutta, subir das, davidfamolari Seamless handover across heterogeneous networks‖ Henning schulzrinne, computer science department, ColumbiaUniversity, New York.
[7] S. Mohanty, I.F. Akyildiz, A cross-layer (layer 2 + 3) handoff management protocol for next-generation wireless systems, IEEE Transactions on Mobile Computing 5 (10) (2006) 1347–1360.