International Journal of Advance Research in Science and Engineering
Vol. No.6, Issue No. 08, August 2017
www.ijarse.com
IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

HETEROGENEOUS NETWORKS BASED ON SAW AND WPM METHODS

Dr.K.Prabha[1], J.Santhi[2]

[12]*Department of Computer Science*

Periyar University PG Extension Centre, Dharmapuri (India)

ABSTRACT

The mobile subsequently invention procedure will be enable with the talent to maintain several types of network, the need for an user to be always best connected at anywhere to leads execute a vertical handoff various networks. The mobile terminal supports designed for achieve seamless mobility based on handoff mechanism across heterogeneous wireless networks. Handoff process enable a mobile node from one cell to another cell to provide such as transfer an active call from one base station to another base station. In this paper, we consider the handoffs for multiple attribute decision making (MADM) methods such as SAW and WPM methods and parameter such as bandwidth, delay and cost. The handoff decision schemes to be selected a best networks.

Keywords: vertical handoff decision, MADM, Parameters, SAW and WPM methods.

I. INTRODUCTION

In subsequently generation wireless networks service continuity is a major goal i.e., when a MT or mobile node (MN) moving in an overlap region, permanent service must be need so the technique "HANDOFF" is done. The handover technique [1] is mainly used to send the mobile user's service network from existing network to a new network or one base station (BS) to another BS or one access point (AP) to another AP among same technology or between different technologies to reduce the processing delay in the overlapping region.

Mobility has become a characteristic feature for the network access. Users wish to access the Internet from different mobile networks and to stay connected while changing into another network. This requires handover procedures to maintain a connection while moving from one network to another. Handover procedures are divided into horizontal and vertical ones. Horizontal handovers are applied for changes between different network cells of the same technology, while vertical handovers are required when changing between networks of different technologies. Vertical handovers are complex because various aspects have to be taken into account, such as different network technologies, provider domains, services [1]. Regarding the latter soft and hard handover are distinguished. A soft handover can be applied when the mobile device is connected with two points of access simultaneously, whereas a hard handover shortly interrupts the connection when moving between different access points. To support a soft handover the handover decision has to be made in time to avoid connection interruptions. This requires that relevant parameters for the handover decision have to be evaluated continuously. The problem is that parameters, such as bandwidth, delay and cost.

Handover network category has the two types, horizontal handover and vertical handover. The Homogenous wireless networks perform horizontal handover, if there be two BSs with the same access technology, in recent

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

system called horizontal handover. This type of machinery use signal strength capacity for neighboring BSs to trigger and just before perform the handover decision. In heterogeneous wireless networks surroundings, always best connected (ABC) [2] which require dynamic selection of the best network and access technologies while multiple options be available simultaneously. The mobile station (MS) or BS will be operational with multiple network interfaces to accomplish different wireless network type of handoff of Wi-Fi, UMTS and WiMax.

Handover performance has the four phases: Handover Initiation, System discovery, Handover decision, Handoff execution. We should also believe the User preferences such like wide coverage, low cost, security etc. When a user using a low-cost network is handed above to another high-cost network, then it spirit be an issue. So we have to consider different types of issue while considering heterogeneous network. In [3] we have compared two MADM methods such as SAW and WPM for handoff decision [4]. In this paper consider the 1.introduction, 2.MADM Algorithm for handoff decision 3.Result and performance analysis and final conclusion.

II. MADM ALGORITHM FOR HANDOFF DECISION

The most perceived and utilized MADM calculations for vertical handoffs are simple Additive Weighting (SAW), Weighted Product Method (WPM) [5] between others. These calculations must analyze and assess the choice components for every wireless system, with a view to find and cause a vertical handover. The variables might be arranged as favorable, i.e., the bigger, the higher, or cost, i.e., the decline, the higher. Inside the accompanying these calculations are described wireless.

Table: 1 Attribute of Various Network

	Bandwidth	Delay	Cost
WIFI	20	60	10
WIMAX	30	62	20
UMTS	15	50	8

4.1 Simple Additive Weighting Method:

Simple Additive Weighting (SAW) which is likewise mentioned as weighted straight composite or scoring methodologies or weighted aggregate strategy is a basic and most generally utilized multi choice system. The strategy is constructing absolutely in bright of the weighted standard.

An assessment score is believed for every alternative by multiplying the scaled cost given to the alternative of that characteristic With the weights of relative standing quickly appointed by methods for decision producer joined by summing of the products for all principles [7].construct the standardized decision framework: every component rij is gotten by utilizing the min, max procedure standardization ii. For transmission capacity element, the standardized expense of rij is processed as [9]:

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

$$r_{ij} = \frac{a_{ij}}{d_{ij}^{maqx}} \text{---------- (1)}$$

For delay and cost attribute, the normalized value of rij is

Computed as:

$$r_{ij} = \frac{d_{ij}^{min}}{d_{ij}} \text{---------- (2)}$$

Construct the weighted normalized decision matrix: The weighted normalized decision matrix vij is computed as:

$$v_{ij} = \sum_{j=0}^{n} w_i r_{ij} \text{---------- (3)}$$

Where w_j represents the weight of the j^{th} criterion, r_{ij} represents the adjusted value of the j^{th} attribute of the i^{th} network.

Calculate the score of each candidate network Ai

$$s_i = \sum_{j=1}^{m} v_{ij} \text{ ---------- (4)}$$

Table 2: Simple Additive Weighting

	Bandwidth	Delay	Cost
WIFI	0.2664	0.2499	0.24
WIMAX	0.4	0.2418	0.12
UMTS	0.2	0.3	0.3

The simple added substance weighting values for table: 2 are articulated to by utilizing increasing the example values with their relating weights. In spite of the way that the delay and cost of the WiMax is lower taken a toll, transmission capacity cost is better an incentive for WiMax. Diverse WIFI and UMTS are low transmission capacity and higher incentive for delay and cost. It shows respectable presentation for transmission capacity while contrasted and diverse choices for perceive: 1 show the saw approach.

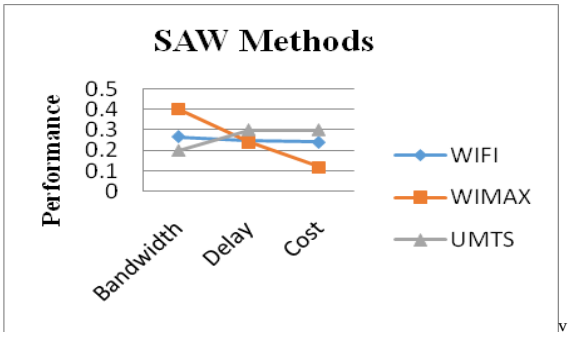

Figure 1: SAW Method

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

4.2 Weighted Product Method:

Weighted Product Method (WPM) [3] is another scoring method wherever the weighted produce of the measure is used to choice the greatest alternate. The score calculating technique in relations of Step1 and 2 are identical to SAW approach.

Step 3: Construct weighted standardized decision

$$vij = rij^{wij} \quad \text{---------- (5)}$$

Step 4: Analyze the score of every alternate

$$s_i = \sum_{j=1}^{m} v_{ij} \quad \text{---------- (6)}$$

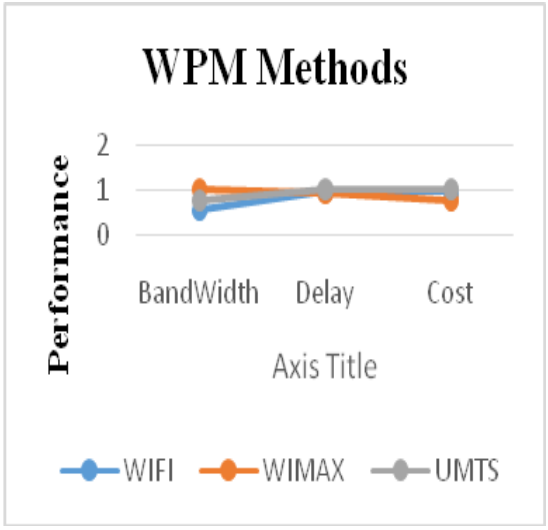

Figure 2: WPM Method

III. SIMULATION AND PERFORMANCE ANALYSIS

In this paper three networks have been considered to design heterogeneous environment. These networks are WLAN, WiMax and UMTS having three attributes as bandwidth delay and cost. The values of various attributes vary randomly as given in the Table2. The weights of various attributes have been assigned using two weight in SAW and WPM method analysis. When the connection from the current network is becoming weak or if strong signals are being received from the available networks, the multi-mode terminal will make a decision to change its connection to the most suitable network.in this paper the target network selected depending on the application Qos requirement of the parameters. In figure (1) discuss WiMax is the highest value another networks of Wi-Fi and UMTS values are lowest. In figure (2) discuss, Bandwidth is the highest value another parameter of Delay and cost is lowest value. Finally we compared in figure (3) that is SAW and WPM, in this two Bandwidth is the highest value. In the above two SAW and WPM method, WPM is the good result.

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

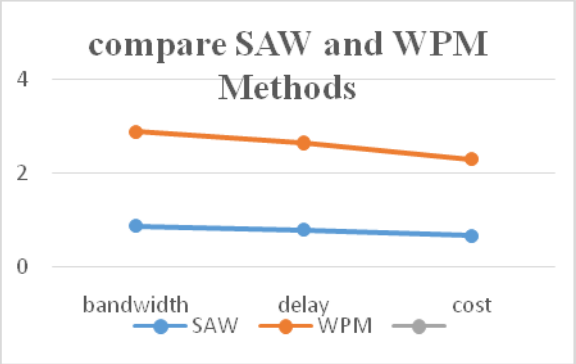

Figure 3: compare SAW and WPM methods

IV. CONCLUSION

It is a dreary technique to make handoff decision in heterogeneous wireless networks considering multiple criteria. This article introduced an efficient and innovative multiple attribute decision making (MADM) system. MADM distributes the computation of the network quality between targets of the mobile terminal and consider the band width, delay, and cost parameters as metrics. In this method, SAW and WPM algorithms provide the solution with highest available bandwidth necessary for this application and lowest value for Delay and Cost value. The parameter provides good result than WIMAX metrics. The two methods are compared in highest value for WPM methods In future work determination spotlight on enhancing techniques and weighted for our proposed system.

REFERENCE

[1.] A. Bhuvaneswari et al "An Overview of Vertical Handoff Decision Making Algorithms" I.J. Computer Network and Information Security, 2012, 9, 55-62.

[2.] K.Savitha et al "Trusted Network Selection using SAW and TOPSIS Algorithms for Heterogeneous Wireless Networks" International Journal of Computer Applications (0975 – 8887) Volume 26– No.8, July 2011.

[3.] N.D.Tripathi, J.H.Reed and H.F.VanLandinoham, ,"Handoff In Cellular System", IEEE Personal Communications, Vol.49, 2000, pp.2276-2285.

[4.] Himanshu Kaushik et al, "Advance Handoff Requirements Schemes in WiMax and LTE Networks in Wireless Sensor Network" International Journal of Computer Applications (0975 8887) Volume 59– No.19, December 2012.

[5.] N. Nasser, A. Hasswa, H. Hassanein: Handoffs in Fourth Generation Heterogeneous Networks. IEEE Communications Magazine 10 (2006) 44 96-103.

[6.] Q. Song, and A. Jamalipour, "A Network Selection Mechanism for Next Generation Networks," Proc. IEEE Int. Communications Conference, pp.1418-1422, May 2005.

[7.] W. Zhang, "Handover Decision Using Fuzzy MADM in Heterogeneous Networks," in Proc. of IEEE Wireless Communications and Networking Conf., WCNC'04, Atlanta, USA, pp. 653-658.

IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

[8.] E. Stevens-Navarro and V. W.S. Wong, "Comparison between Vertical Handoff Decision Algorithms for Heterogeneous Wireless Networks," in Proc. of 63rd Conf. on Vehicular Technology, IEEE VTC'06-Spring, Melbourne, Australia, pp. 947-951.

[9.] N.Priya "Handoff between heterogeneous networks based on MADM methods", International Journal of Scientific & Engineering Research, Volume 4, Issue 12, December-2013 2157 ISSN 2229-5518.