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Vertical Handover Technique for Femto System

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Abstract:
Femtocells are the emerging and the fast upcoming technology in the telecommunication industry as there is a heavy competition in the operators are researching various methods to keep their costumers remain with them while this research Femtocell was developed the main aim of developing is to provide efficient mobile efficient mobile or cellular services to the subscribers. My thesis demonstrates various parameters of the Femtocell development like what exactly is Femtocell the features and advantages of the Femtocell inn general. My thesis also demonstrates the how femtocell works by the deployment and installation. Also carried.

Keywords: Vertical handover, femto system, LAN, Access Point.

I. INTRODUCTION

ERTICAL handover or vertical handoff refers to a network node changing the type of connectivity it uses to access a supporting infrastructure, usually to support node mobility. For example, a suitably equipped laptop might be able to use both a high speed wireless LAN and a cellular technology for Internet access. Wireless LAN connections generally provide higher speeds, while cellular technologies generally provide more ubiquitous coverage. Thus the laptop user might want to use a wireless LAN connection whenever one is available, and to 'fall over' to a cellular connection when the wireless LAN is unavailable. Vertical handovers refers to the automatic fallover from one technology to another in order to maintain communication. This is different from a 'horizontal handover' between different wireless access points that use the same technology in that a vertical handover involves changing the data link layer technology used to access the network. Vertical handoffs between WLAN and UMTS(WCDMA) have attracted a great deal of attention in all the research areas of the 4G wireless network, due to the benefit of utilizing the higher bandwidth and lower cost of WLAN as well as better mobility support and larger coverage of UMTS. Vertical handovers among a range of wired and wireless access technologies including WiMAX can be achieved using Media independent handover which is standarised as IEEE 802.21. Wireless technologies, under the "Anytime, Anywhere" paradigm, offer users the promise of being always attached to the network. Mobile devices enabled with multiple wireless technologies make possible to maintain seamless connectivity in highly dynamic scenarios such as vehicular networks(VNs), switching from one wireless network to another by using vertical handover techniques(VHO). In this paper we present an overview of VHO techniques, along with the main algorithms, protocols and tools proposed in the literature. In addition, we suggest the most appropriate VHO techniques to efficiently communicate in VN environments considering the particular characteristics of this type of networks.

II. VMAN

Virtualization has become a key technology deployed by an increasing number of Information Technology (IT) organizations worldwide. System virtualization has quickly gained popularity because of its potential to reduce IT costs. Virtualization allows IT managers to increase use of their existing physical resources and even reduce the number of systems deployed managed. This consolidation helps reduce hardware management requirements, mitigates power and cooling needs, and thus lowers IT costs overall. However, while system virtualization can reduce the cost of owing and maintaining physical hardware, some of the savings are offset by the added systems management complexity and introduced by virtualization. Instead of managing numerous physical servers, administrators are managing many virtual computer systems (i, e. virtual machines) consolidated onto fewer physical servers. The management complexity shifts from hardware to virtual computer systems. Moreover, deploying virtualization solutions typically means the addition of management tools to the existing environment. Introducing new management tools requires administrators training and further increases complexity and cost.

III. VERTICAL HANDOVER

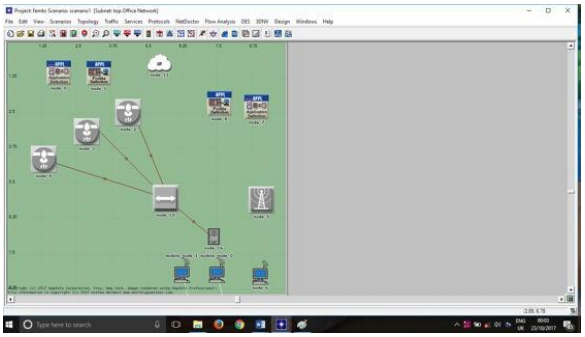
Rapid growth in the evolution of wireless technologies and mobile user demands necessitates future wireless communication to be a conjunctive working of several heterogeneous networks with their complementary features. Roaming of mobile terminals with different access interfaces and technologies among dissimilar networks is inescapable depending upon the user demands. Anywhere, anytime, any type connectivity is the raising requirement for mobile users either for real time or non-real time services. Recent literature has brought out numerous vertical handoff protocols for the emergence of the best network. In this paper, we give an overview and categorization of various vertical handoff decision schemes with reference to their characteristics. We

also have given a synthesis of various vertical handoff decision schemes against diverse parameters. As global markets transcend nationalities in search for key advantages in cost, quality and flexibility, the once unbridgeable limit of geographical location is overcome by faster Internet speed lines, online services and tools that allow individuals and businesses to interact regardless of space and time. This thesis studies the transition from traditional project management to virtual environments and the impact that this new paradigm has over dispersed teams and their interactions among themselves and the project manager. The focus of the study lays on the concept of motivation within virtual project management and the role of the project manager to overcome the specific challenges of this new working scenario. Additionally, parallels are drawn on the motivation features that virtual project management systems offer to project managers as well as team members. This study shows the importance of bridging the difficulties of motivating dispersed teams and how traditional techniques of motivation have a much lesser impact on team members. The idea of progress and self-accomplishment are brought forth as the strongest motivators for dispersed teams. Finally, this study exposes the short comings of current project ware as a tool to motivate teams and explores the idea of applying gamification techniques to these software packages to lift the motivation respons ibilities off the shoulders of project managers.

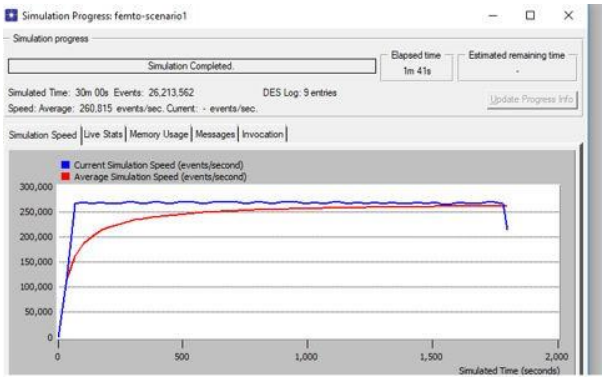
IV. FEMTOCELL

In telecommunications, a femtocell is a small cellular base station, typically designed for use in a home or small business. A broader tem which is more widespread in the industry is small cell, with femtocell as a subset. It is also called femto Access Point(AP). It connects to the service providers network via broadband (such as DSL or cable); current designs typically support four to eight simultaneously active mobile phones in a residential setting depending on Inversion number and femtocell hardware, and eight to sixteen mobile phones in enterprise setting. A femtocell allows service providers to extend service coverage indoors or at the cell edge, especially where access would otherwise be limited or unavailable. Although much attention is focused on WCDMA, the concept is applicable to all standards, including GSM, CDMA2000, TD-SCDMA, WiMAX and LTE solutions. Use of femtocells benefits both the mobile operator and the consumer. For a mobile operator, the attractions of a femtocell are improvements to both coverage, especially indoors, and capacity. Coverage is improved because femtocells can fill in the gaps and eliminate loss of signal through buildings. Capacity is improved by a reduction in the number of phones attempting to use the main network cells and by the off-load of traffic through the users network to the operators infrastructure. Instead of using the operators private network, the internet is used. Because 3G networks breathe, offloading to femtocells extends a networks physical coverage distance from each tower. Consumers and small business benefit from greatly improved coverage and signal strength since they have a femto base station inside their premises. Using femtocell the mobile phone users expends significantly less power for communication with it, thus increasing battery life. Femtocell are an alternative way to deliver the benefits of fixed mobile convergence. Femtocells is in the order of 10 meters to cover the distance. The users have the benefits like 5 bar coverage when there is no existing signal or poor coverage. Femtocells are sold or loaned by the mobile network operator to the needed consumers. Using femtocells the consumers experience better signal for communication. Reduced transmitter- receiver distance extends the battery life of mobile phone users. Here we are using Opnet software to implement vertical handover using femtocells.

V. IMPLEMENTATION OF FEMTOCELL



Using Opnet, femtocells are implemented in a home or small building to improve the signal coverage. This cell can cover the home without any gap, it fills in the small gap so, there is an satisfication in using this. Comparing to Wi-Fi, WiMAX femtocells have better quality of service. It covers even a small gap , as a increased number of users in Wi-Fi, has reduced the better quality. Now, it is an indoor application, implemented in a home. In past, femtocells can cover small gap as mentioned. But this paper is going to explain the same but implemented using Opnet. Opnet is nothing but it is a simulator tool which is used in a engineering field. Connect the router, switch, hub and the essential connections are given and the specifications are edited. Connections are done as in the required basis. Edit the nodes using edit attributes and give the name to the nodes. Save the design and run the program. This paper deals with the signal strength using femtocells in Opnet software. It is the new technique for this implementation. Femtocells are the easier way to implement the communication with strong signal strength. So it is easy to communicate effectively in that particular premises. Using this software, implementation of femtocells in a home is shown. The implementation has some nodes, routers, hub, Ethernet switch, application profile, configuration profile, and some other like base station. This design is inside the parental subnet. Before running the time should be fixed. Then the simulation is observed.



This graph shows the simulation of current speed and average speed between times versus speed.

VI. REFERENCES

[1]. Shufie Liang, Yuexia Zhang, Bo Fan, and Hui Tian, "Multi-Attribute Vertical Handover Decision-Making Algorithm in a Hybrid VLC Femto system ",*IEEE Communications Letters*, vol. 21, no. 7, July 2017.

[2] .T. Komine and M. Nakagawa, "Fundamental analysis for visible light communication system using LED lights," *IEEE Trans. Consum.Electron.*, vol. 50, no. 1, pp. 100–107, Feb.2004.

[3]. D. J. T. Heatley *et al.*, "Optical wireless: The story so far," *IEEECommun. Mag.*, vol. 36, no. 12, pp. 72–74, Dec. 2004.

[4]. M. B. Rahaim *et al.*, "A hybrid radio frequency and broadcast visiblelight communication system," in *Proc. IEEE GLOBECOM Workshops(GC Wkshps)*, Dec. 2011, pp. 792–796.

[5]. X. Bao *et al.*, "Protocol design and capacity analysis in hybrid network of visible light communication and OFDMA systems," *IEEE Trans. Veh.Technol.*, vol. 63, no. 4, pp. 1770–1778, May 2014.

[6]. F. Wang *et al.*, "Efficient vertical handover scheme for heterogeneousVLC-RF systems," *J. Opt. Commun. Netw.*, vol. 7, no. 12,pp. 1172–1180, 2015.

[7]. J. Hou and D. C. O'brien, "Vertical handover-decision-making algorithm using fuzzy logic for the integrated radio- and-OW system," *IEEE Trans Wireless Commun.*, vol. 5, no. 1, pp. 176–185, Jan. 2006.

[8]. Q. Song and A. Jamalipour, "Network selection in an integrated wirelessLAN and UMTS environment using mathematical modeling and computing techniques," *IEEE Wireless Commun.*, vol. 12, no. 3, pp. 42–48,Jun. 2005.

[9]. D. Niyato and E. Hossain, "A cooperative game framework for bandwidth allocation in 4G heterogeneous wireless networks," in *Proc. IEEE Int. Conf. Commun.*, vol. 9. Jun. 2006, pp. 4357–4362.

[10]. Y. Wang and H. Haas, "Dynamic load balancing with handover inhybrid Li-Fi and Wi-Fi networks," *J. Lightw. Technol.*, vol. 33, no. 22, pp. 4671–4682, Nov. 15, 2015. [11] R. W. Saaty, "The analytic hierarchy process—What it is and how it is used," *Math. Modelling*, vol. 9, nos. 3–5, pp. 161–176, 1987.

[12] E. Triantaphyllou and S. H. Mann, "Using the analytic hierarchy process for decision making in engineering applications: Some challenges," *Int. J. Ind. Eng., Appl. Pract.*, vol. 2, no. 1, pp. 35–44, 1995.

[13]. M. Pulido et *al*., "Game theory techniques for University management: An extended bankruptcy model," *Ann. Oper. Res.*, vol. 109, no. 1, pp. 129–142, Jan. 2002.

[14]. T. S. Ferguson, "Game theory text," Dept. Math., Univ. California,Los Angeles, CA, USA, Tech. Rep., 2008.

[15]. R. Srinivasan *et al., Draft IEEE 802.16 m Evaluation Methodology Document*, IEEE Standard C802. 16m- 07/080r2, 2007.