

8 Conclusion and Future Developments

8.1 Conclusion

The main objective of this system was to provide a web based Bandwidth Monitoring System to all Ruhuna-LAN users and network administrators of the University of Ruhuna. The implementation of Ruhuna-MBS project will make work carried by the network administrators much easier, quicker and can be well managed. The other Ruhuna-LAN users can test themselves the status of network without bothering network administrators ever time.

After the total system has been developed as a web based application and web applications can be implemented using various kinds of architectures. Three-tier architecture is used to implement the Ruhuna-MSB system. The system is developed as platform independent product and can be run on MS Windows or Linux environment and apache web server host the web site. PHP components are used to implement business logic of the system and MySQL is used to store information.

8.2 Achievements of the Project

- Ruhuna-MBS system is mainly developed using PHP (generating dynamic content and Business Logic Components). The author gained experience on using this programming language in real project.
- The project was really brought up the theoretical knowledge in to practical work.
- One of the key achievements gained throughout the development of the project was time management and deadline achievement.

8.3 Future Developments

Within the tough time frame, it was not easy to full fill all the requirements that were identified at the analysis stage and those identified requirements which was not implemented could be considered as further developments. Mainly some critical design

issues that are used to carry the data over on common network had to be simplified with these limitations.

- Monitoring Server performance module has to do as future work.
- If the Ruhuna-MBS system can be integrated with the squid cache the performance will be high and source code will be light weight.
- If the system can be integrated with the bandwidth controlling method the system will be highly valuable.
- At present the report module totally runs on web based platform and that would be not much printer friendly. The printer friendly reporting version will much useful when any one generate the hard copy of the reports.
- Present system does not have the internet payment calculation process. If the Internet payment can be calculated based on web access it will be improve the product value.

References

- [1] A. Poulton, P. Clayton, and F. F. Jacot-Guillarmod, "A Bandwidth Management and Pricing Proxy," *Citeseer Ist Psu Edu548382 Html Referred Dec.*, 2004.
- [2] H.-F. Yu and L.-M. Tseng, "Abnormal Web usage control by proxy strategies," *Internet Res.*, vol. 12, no. 1, pp. 66–75, 2002.
- [3] C. Maltzahn, K. Richardson, D. Grunwald, and J. Martin, "A feasibility study of bandwidth smoothing on the World-Wide Web using machine learning," Technical Report CU-CS-879-99, Dept. of Computer Science, University of Colorado at Boulder, 1999.
- [4] M. Joshi and T. H. Hadi, "A Review of Network Traffic Analysis and Prediction Techniques," *ArXiv Prepr. ArXiv150705722*, 2015.
- [5] L. Bent, M. Rabinovich, G. M. Voelker, and Z. Xiao, "Characterization of a large web site population with implications for content delivery," *World Wide Web*, vol. 9, no. 4, pp. 505–536, 2006.
- [6] C. Maltzahn, K. J. Richardson, and D. Grunwald, "Comparing the performance of CERN's httpd and Squid," in *Proceedings of the 1997 NLNR Web Cache Workshop*, 1997.
- [7] A. Berezhnoy and P. Danilov, "CONTENT SQUID PROXY SERVER PRODUCTIVITY RESEARCH."
- [8] R. D. Thilakavalli K, "Monitoring Internet Access along with Usage of Bandwidth Using Intrusion Detection System," *Int. J. Sens. Netw. Data Commun.*, vol. 04, no. 01, 2015.
- [9] H. Haddadi, "Network Traffic Inference Using Sampled Statistics," 2006.
- [10] D. Rajagopal, K. Thilakavalli, and K. S. A. Fathima, "New Approach to Monitoring Internet Access along with Usage of Bandwidth Using Intrusion Detection System," *Int. J. Secur. Its Appl.*, vol. 9, no. 6, pp. 183–194, Jun. 2015.
- [11] S. Rombetto, C. Granata, A. Vettoliere, A. Trebeschi, R. Rossi, and M. Russo, "SQUID-based multichannel system for Magnetoencephalography," *ArXiv Prepr. ArXiv13104619*, 2013.
- [12] "SquidFaq - Squid Web Proxy Wiki." [Online]. Available: <http://wiki.squid-cache.org/SquidFaq>. [Accessed: 05-Feb-2016].
- [13] J. Arora and K. Trivedi, "UGC-INFONET digital library consortium: Present services and future endeavours," *DESIDOC J. Libr. Inf. Technol.*, vol. 30, no. 2, pp. 15–25, 2010.
- [14] G. Dias and C. Gunaratne, "Using dynamic delay pools for bandwidth management," *7th Int Wkshp Web Content Caching Distrib.*, pp. 171–176, 2002.

- [15] K. Saini, *Squid proxy server 3.1: beginner's guide ; improve the performance of your network using the caching and access control capabilities of Squid*. Birmingham: Packt Publ, 2011.
- [16] V. S. Pai, A. Badam, S. Ihm, and K. Park, "First-class access for developing-world environments," in *Proceedings of the 5th International Conference on Future Internet Technologies*, 2010, pp. 30–34.
- [17] "squid : Optimising Web Delivery." [Online]. Available: <http://www.squid-cache.org/>. [Accessed: 05-Feb-2016].
- [18] Welling, L. & Thomson, L. (2009). *PHP and MySQL Web Development, Fourth Edition*, Sams Publishing.
- [19] <http://freshmeat.net/projects/bmon>
- [20] <http://www.ubuntugeek.com/bandwidth-monitoring-tools-for-ubuntu-users.html>
- [21] http://en.wikipedia.org/wiki/Multi_Router_Traffic_Grapher
- [22] <http://www.cacti.net>
- [23] <http://www.apachefriends.org/en/xampp.html>
- [24] <http://www.php.net/>
- [25] <http://www.mysql.com/>
- [26] <https://www.nagios.org>
- [26] http://en.wikipedia.org/wiki/SimpleNetwork_Management_Protocol
- [27] <http://www.unleashnetworks.com/resources/articles/95-work-with-output-from-snmpwalk.html>
- [28] <http://argouml.tigris.org>
- [29] <http://www.squid-cache.org/>
- [30] <http://www.debianhelp.co.uk/mrtg.htm>
- [31] <http://www.php-mysql-tutorial.com/>
- [32] <http://www.w3schools.com>