

DEVELOPMENT OF MIKROTIK ROUTER BANDWIDTH MANAGEMENT APPLICATION

Ipriadi¹, Retno Devita*², Ruri Hartika Zain³

^{1,2,3} Universitas Putra Indonesia YPTK Padang, Indonesia

doi. [10.22216/jod.v7i1.1255](https://doi.org/10.22216/jod.v7i1.1255)

*Correspondence should be addressed to retnodevita@upiyptk.ac.id

This is an open access article distributed under the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/).

Article Information

Submitted :
[18 Des 2021](#)

Accepted :
[21 May 2022](#)

Published :
[30 May 2022](#)

Abstract

Bandwidth instability is a serious problem where the need for using the internet is in the process, it is necessary to manage bandwidth so that bandwidth is properly organized but changes that will be made to bandwidth management require experts in Mikrotik routers, so an application is needed to manage this bandwidth and can be used by ordinary people so that errors in configuration will be avoided because the configuration is done automatically as desired and can certainly help bandwidth management at a lower cost. Making this application by using data collection methods by taking data at PLN Muara Labuh area, interviewing field supervisors, studying literature that supports problem solving and Unified Modeling Language (UML) for software designers along with software testing. The application is built using django.

Keywords: Network Automation, Bandwidth, Mikrotik, Python

1. INTRODUCTION

The need for internet in office matters is no longer a side need, but there is also a main need in doing work. At the PLN office, Muara Labuh area, there are also a lot of jobs that use the internet in the process. Of course this requires internet stability which can be achieved with an even or appropriate bandwidth. In the research conducted by Aan Restu Mukti(2019) the results of the distribution of the Mikrotik bandwidth can make the access point not exceed the maximum bandwidth limit or limit at 512 kbps in the Mikrotik router. it can be ascertained that Mikrotik is effective in limiting bandwidth and distribution [1].

To overcome these obstacles, bandwidth management is made that can regulate bandwidth so that it remains stable and also on target in its distribution. based on the

conclusions of research conducted by Taufiqur Rohman, the queue tree method on mikrotik can optimize bandwidth, limit bandwidth, manage users, and get low latency or ping. then the bandwidth management application will be effective if it uses a queue tree[2].

The use of bandwidth management applications will use libraries in the python programming language to communicate with mikrotik routers and configure bandwidth where the libraries are routers api and paramiko. This application is web-based to make it easier to use and the router will be efficient in remote applications on the server and the user will only access it in the browser. Rheza Adhyatmaka Wiryawan in a journal entitled "Development of Website-Based Network Administration Automation Applications Using Python

Programming Language" applies the paramiko library where paramiko is a python library that supports ssh2. it does some kind of routing and also web-based vlan configuration using django[3].

This research aims to overcome the problems of difficult and failed bandwidth configurations by PLN employees of Muara Labuh rayon who are unfamiliar with computer networks.

2. METHOD

The research flow begins with a literature study from several books and journals. The application development method uses the RAD development method or Rapid Application Development, which this method has four stages in this RAD method, namely requirements planning, design, development/prototype and implementation.

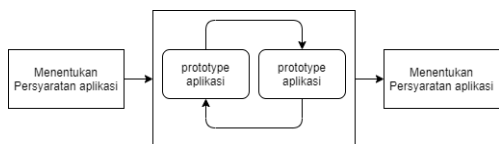


Figure 1. RAD model phase

At the requirement identification stage, application development needs require software and hardware, which software requirements are python 3.8 for the programming language, virtualbox for servers and routers on virtual networks. as well as the hardware used by the laptop powered by a dual core four-tread processor and 8GB of RAM so that it can run virtual machines properly in its use the ubuntu server os used to run applications have installed supporting applications such as docker for deployment and in the docker container python will be installed and supporting libraries such as paramiko, routeros api and other supporting libraries at this stage of research and design a network topology that is useful for map and better understand the network that will be built in the network office.

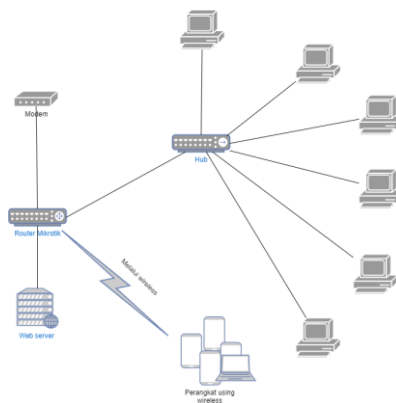


Figure 2. Application network topology

At this stage of system design also uses UML diagram modeling. In this study using a use case. Activity use case diagrams are useful for presenting user and system interactions and visualizing functions.

3. RESULT

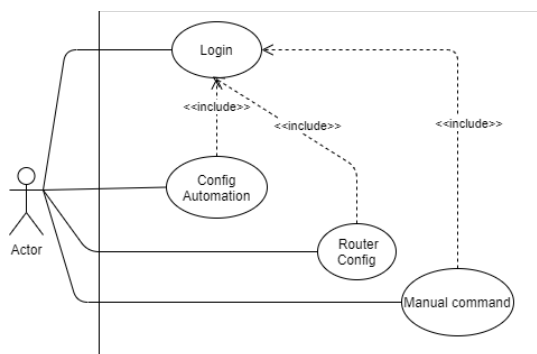


Figure 3. Use case diagrams

Use can visualize user and system interactions that are seen in the use case, users can manage routers, manage automation and also send commands.

The application has a user interface that can be used by users who are not very familiar with the network. Opened applications require login first to access from all applications.

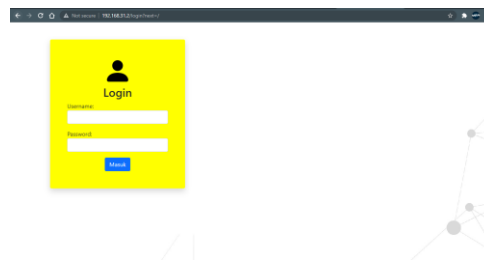


Figure 4. Login view

The application display is in the form of a dashboard where on the left there is a navigation menu and the content section on the right with a ratio of approximately one to six for the width of the menu.

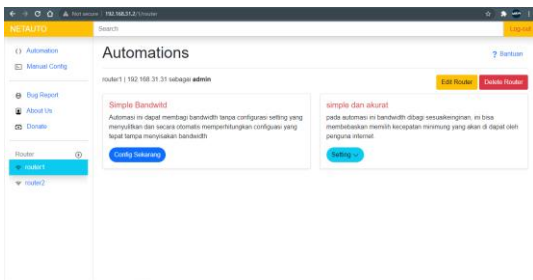


Figure 5. Automation view

In the automation option, there are two existing methods or two options for automation, the first is simple queue pcq which does not need to set a limit at while the second requires a limit at. according to the object of research on users, about 25 devices will be divided so that each user gets a minimum of 3mbps for each user.

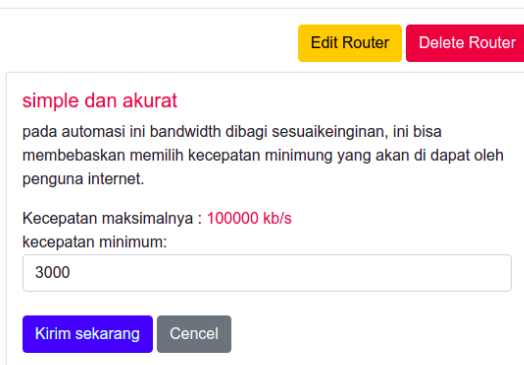


Figure 6. Limit at view

the application of the network to the object of research then obtained measurements using winbox on the configuration on the mikrotik router.

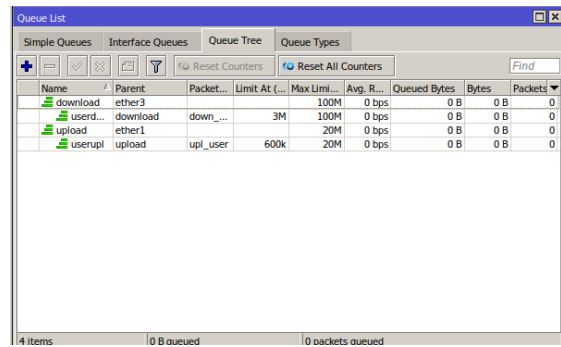


Figure 7. Winbox check

Checking can also be done without the need to use Winbox. You can also use the manual command feature in the application, where there are instructions for each command.

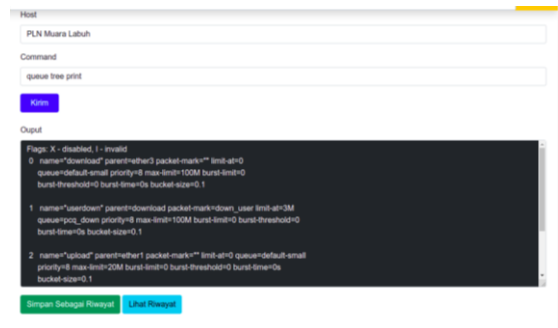


Figure 8. Manual Command view

4. Conclusion

With the implementation of online sales and media information systems at the Pomegranate store, it can make it easier to process data on selling and buying clothing materials at the store. With the Sales Information System and Promotional Media at the Pomegranate Shop, it can make it easier for customers to place orders and purchase goods online without having to come to the store. Furthermore, in the application of a new information system so that sales data processing can provide information as expected, it is better to create an orderly work system in each section of the sales and promotion section of the Pomegranate Shop. And also so that the data on the store can be stored and not lost.

References

- [1] Siahaan, M. L., Panjaitan, M. S., & Siahaan, A. P. U. (2016). MikroTik bandwidth management to gain the users prosperity prevalent. *Int. J. Eng. Trends Technol*, 42(5), 218-222.
- [2] Aryotejo, G., & Mufadhol, M. (2019, May). Static and dynamic alliance: the solution of reliable internet bandwidth management. In *Journal of Physics: Conference Series* (Vol. 1217, No. 1, p. 012126). IOP Publishing.
- [3] Sukarsa, I. M., Piarsa, I. N., & Putra, I. G. B. P. (2021). Simple solution for low cost bandwidth management. *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, 19(4), 1419-1427.
- [4] Siahaan, A. P. U. (2017). Mikrotik Bandwidth Management to Gain the.
- [5] Rahman, A., & Havaluddin, H. (2016). Implementation of Bandwidth Management Authentication. *International Journal of Computing and Informatics (IJCANDI)*, 1(1), 1-8.
- [6] Jambak, A. H., Aspriyono, H., & Al Akbar, A. (2022). Computer Network Management Using a Mikrotik Router at the Immigration Office Class I TPI Bengkulu City. *Jurnal Media Computer Science*, 1(1), 7-13.
- [7] Putra, G. M., Sembiring, M. A., Sapta, A., Dristyan, F., Firmansyah, A. U., Abdullah, D., & Simarmata, J. (2018, November). Concept of Analysis and Implementation of Burst On Mikrotik Router. In *Journal of Physics: Conference Series* (Vol. 1114, No. 1, p. 012071). IOP Publishing.
- [8] Al Fadjri, M. K. N., Ritzkal, R., & Hendrawan, A. H. (2020). Computer Network Analysis Using The Queue System In Mikrotik: Computer Network Analysis Using The Queue System In Mikrotik. *Jurnal Mantik*, 4(1), 483-488.
- [9] Mazdadi, M. I., Riadi, I., & Luthfi, A. (2017). Live forensics on routers using api services to investigate network attacks. *International Journal of Computer Science and Information Security (IJCSIS)*, 15(2).
- [10] Yaqin, A., & Firmansyah, F. (2020). Development of a Network Security System with Mikrotik in SMK Muhammadiyah 2 Kuningan. *Jurnal Mantik*, 4(1), 117-122.