



Network infrastructure development for strengthening of branding and digital marketing at KPJT Manut based on Mikrotik Routerboard RB951Ui

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Abstract: In line with the spirit of implementing research and government priority programs to build and strengthen rural communities, various efforts are being made. Klakah District continues to grow and shows its potential to become a center of Oyster Mushroom and Their Processed Products. Klakah village has a height of 193 m asphalt with annual rainfall of 1,480 mm and the number of rainy days as much as 123 days / year. Climatic conditions have an average temperature between 25-30°C, RH humidity between 60-80%. This condition is in accordance with the conditions for growing oyster mushrooms so that the production of oyster mushrooms is very potential to be developed. KPJT Manut is a community group in the cultivation of oyster mushrooms and their processed products in Klakah District. During 3 years of developing the business, currently there are 28 members spread across 6 villages. Some carry out functions as mushroom producers, as well as dozens of others as processed producers. Opportunities to expand marketing access by utilizing digital marketing technology and branding of oyster mushroom-based culinary villages are constrained by internet network infrastructure. Through this activity an internet network service was developed for KPJT Manut members using a local area network by applying a star topology. Developed based on the Mikrotik Routerboard RB951Ui technology, 8 members in the oyster mushroom culinary village area have been connected with the center at KPJT Manut Inspiration House. The average user gets throughput up to 5 MBPS. With the application of this technology, it is hoped that the Klakah branding as the center for oyster mushrooms and the digital marketing of KPJT Manut will be wider and stronger.

Keywords: Branding, Digital Marketing, KPJT Manut, Mikrotik, Internet Network.

1. Introduction

The progress of partner village community service activities that have been achieved in the last two years has succeeded in solving several partner problems [1] [2]. Efforts to encourage business diversification and various processed products made from oyster mushrooms have been implemented successfully. Entering the third year of implementation of community service and assistance activities for KPJT Manut partners, new problems were found and pre-existing problems, including the condition of the kumbang which was too humid causing oyster mushrooms to absorb excess water; the results of



the fungus are not resistant to storage and easily rot. Meanwhile, the problem at the oyster mushroom processed producer level is that the variety of processed products is felt to be continuously increased to absorb mushroom production from group member farmers who are not absorbed in the market, the method / method of processing mushrooms for other high-value products such as mushroom broth, mushroom crackers and mushroom ice cream, and do not have any special outlets or facilities to market the products they produce. Improvement on the management side is needed to strengthen the economic empowerment of partners [3]. The problems from the management side include the not yet massive branding that Klakah is a center for oyster mushrooms and its various processed products and the need for improvement in the management system in the form of production records, and strengthening the means to support the online marketing of various products produced [4].

For improvement on the management side, in the third year, the focus is on the Klakah branding as a center for oyster mushrooms and their preparations, as well as the pilot education of oyster mushrooms in Klakah. Efforts are made to the following organizational management, including: the formation and arrangement of the Mushroom Oyster Culinary Village around the KPJT Manut inspirational house, filing documents, business licensing, information technology-based production and sales records, promotional media and website-based KPJT profiles, training updates digital marketing content and various other supporting activities to strengthen the Klakah branding as a center for oyster mushrooms and its preparations.

The problems on the management side that are strived to be resolved include efforts to encourage the realization of the oyster mushroom culinary village as one of the tourist destinations in Klakah, marketing strategies by utilizing information technology supported by adequate internet connection infrastructure for all KPJT Manut members, especially those located around Kampung Oyster Mushroom culinary and home inspiration. In an effort to support the resolution of the problem from the management side, the provision of internet network infrastructure [5] for partners and members is crucial. Through this research, the development and implementation of the concept of internet network infrastructure based on conditions in the partner environment was carried out to support the strengthening of KPJT Manut branding and digital marketing [6] for various products produced by all KPJT Manut members.

2. Research Methods

Local Area Network (LAN) provides many advantages to users, including sharing information and resources. Local Area Network (LAN) is also a high-speed computer network with a fairly small area coverage. In a computer network there are many benefits that can be obtained, computers that are in a network can exchange information / data with other computers in the network. Users of a computer can access data on other computers in the network when file sharing is done. A computer network is a system consisting of computers and other network devices that work together to achieve goals. Two types of networks are peer to peer and client server networks. Peer to peer network every computer connected to the network can act either as a workstation or server. A client-server network is only one computer that serves as a server and other computers act as workstations.

Some network product service providers refer to the need for web-shaped information within an organization. The advantages that refer to information needs in building a computer network system include being able to share the use of existing equipment, such as hard drives, printers, modems, and others without moving the equipment to those in need, thus saving time and costs of purchasing hardware. In addition to other benefits, namely being able to share the use of files and data, multiuser applications, controlling users centrally and a backup system that is relatively easy because of centralized management.

This research method consists of several stages, such as literature review, data collection and problem identification, analysis and topology modeling, and implementation.



2.1. Literature Review

Literature review is carried out to collect information from several references related to the issues to be discussed. Theories related to research problems are used as a basis for data processing. At this stage, identification and problems formulation will be conducted which will be the objectives of the research. Problem formulation to be examined based on the background of the problem.

2.2. Data Collection and Problem Identification

At this stage, data collection and identification of problems that become constraints are carried out in the provision of internet network infrastructure at partner locations. The designated locations are KPJT Manut members who are strategically expected to contribute to strengthening the KPJT Manut branding and digital marketing for the various products it produces.

2.3. Analysis and Topology Modeling

After data collection and problem identification are carried out, an analysis of the existing situation is carried out as a reference in determining the most suitable network topology model to be applied.

2.4. Implementation

Based on the results of the determined topology analysis and modeling, then the implementation of the network infrastructure installation at the KPJT Manut service partner location and evaluation of the bandwidth that can be accessed by each point in the house of each KPJT Manut member who is given access.

3. Result and Discussion

3.1. Literature Review

Literature review is carried out to collect information from several references related to the issues to be discussed. Theories related to research problems are used as a basis for computer network and internet connectivity. After a literature review is carried out, the next goal that must be determined is to determine the topology, technology and equipment and material requirements to achieve the targeted results.

3.2. Data Collection and Problem Identification

Based on the results of data collection carried out on partners, it is recommended to install or expand the internet access network for KPJT Manut members which is strategically expected to contribute to strengthening the KPJT Manut branding and digital marketing for the various products produced. These members are located around the house of inspiration as the coordination center for KPJT Manut, namely the mushroom bread production house, the screen printing and printing business unit, the mushroom ice cream production house, the corn rice production house, the mushroom cracker production house, the crispy mushroom production house, the house of the community leader, and KPJT Manut's house of inspiration. Thus, the total number reaches 8 location points to be connected.

3.3. Analysis and Topology Modelling

Based on data collection needs and situation analysis in the partner environment, it was decided that the most suitable topology is a star topology [7] with the house of inspiration as the center of the network to be implemented. The structure of the topology is implemented as shown in Figure 1.

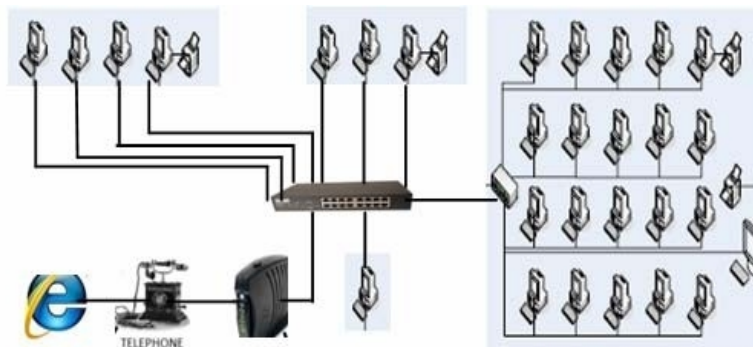


Figure 1. Star Topology implemented

3.4. Implementation

Based on the results of the determined topological analysis and modeling, the implementation of the installation of network infrastructure at the KPJT Manut service partner location and evaluation of the bandwidth that can be accessed by each point in the house of each KPJT Manut member is given access. The amount of bandwidth that can be distributed to eight location points is up to 20 Mbps.

With the 20Mbps bandwidth that KPJT Manut has, it must be able to be utilized and shared properly. Therefore, the use of Mikrotik [8] to distribute bandwidth is the PCQ method. PCQ is a bandwidth management mechanism that is quite easy because PCQ works using an algorithm that will divide bandwidth evenly among a number of active clients, in this case are 8 members of KPJT Manut. The ideal PCQ is applied when in bandwidth management we have difficulty in determining the bandwidth per client.

Here's an overview of how PCQ works;

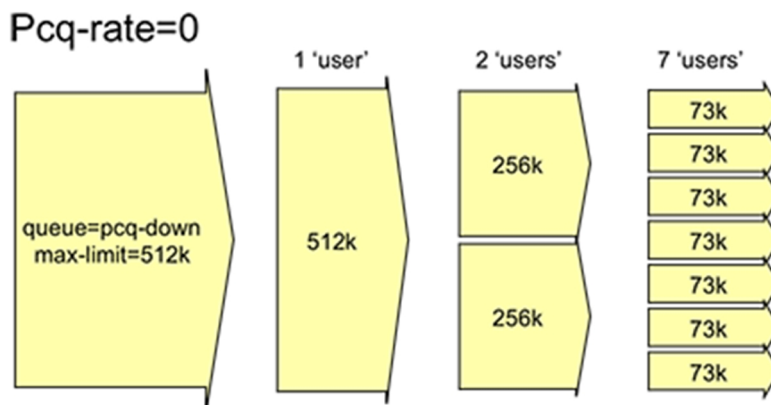


Figure 2. Overview of dynamic user management bandwidth

PCQ rate is the basic calculation of a router. How big is the rate-limit that will be given to active users. How to setup PCQ only needs to add Queue Type PCQ, then determine the classifier value and rate value. For download traffic management, select the dst.address classifier option. And for upload traffic management, select the src.address option.

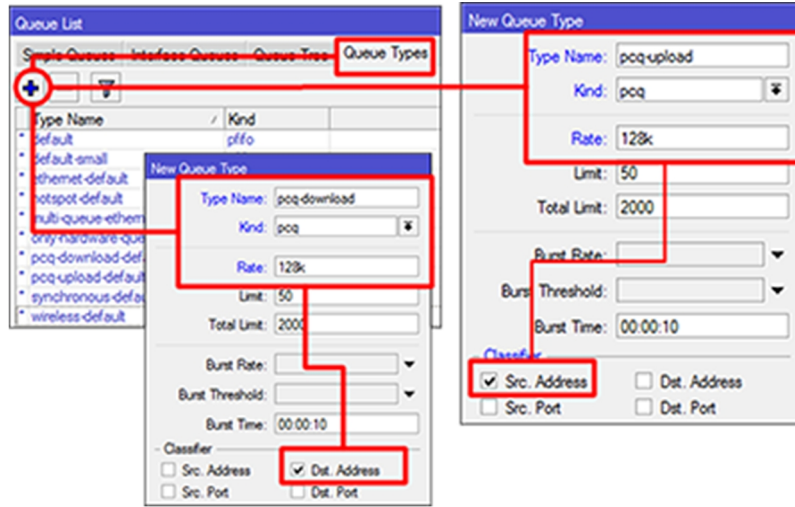


Figure 3. PCQ management traffic

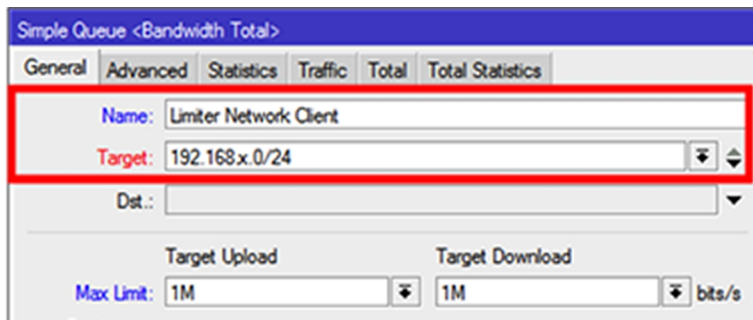


Figure 4. PCQ Queue

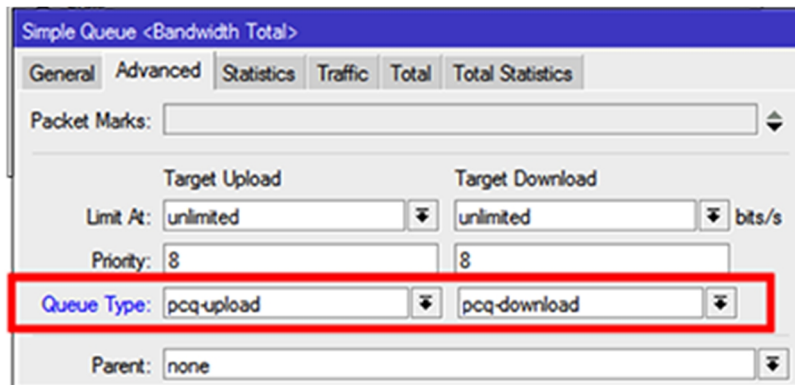


Figure 5. PCQ upload and download

With the use of PCQ, the problems that KPJT Manut has, which only has a bandwidth of 20 Mbps can be solved. So that the 8 KPJT Manut users can enjoy the internet network according to their needs, without sacrificing the internet network of other members who are connected in one network. The average user gets throughput up to 5 Mbps.



4. Conclusion

Based on the research that has been conducted, it can be concluded several things. The implementation of star topology has been implemented in KPJT Manut partners and its 8 strategic units can share the use of the internet network to strengthen the branding of KPJT Manut and Klakah as production centers for oyster mushrooms and their processed products. Apart from this, the existing internet network infrastructure can also be used by visitors to the culinary village and oyster mushroom education tours, as well as to strengthen access to online marketing of KPJT Manut products. Developed based on the Mikrotik Routerboard RB951Ui technology, 8 members in the oyster mushroom culinary village area have been connected with the center at KPJT Manut Inspiration House. The average user gets throughput up to 5 Mbps. With the application of this technology, it is hoped that the Klakah branding as the center for oyster mushrooms and the digital marketing of KPJT Manut will be wider and stronger.

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References

- [1] Setyohadi, D.P.S., Riskiawan, H.Y., Hariono, B. and Kurnianto, F.D., 2018. Modeling production schemes for oyster mushroom commodities and their processed products using a supply chain management approach. In *Proceeding of the 1st International Conference on Food and Agriculture*.
- [2] Riskiawan, H. Y., Setyohadi, D. P. S., Hariono, B., Kurnianto, M. F., Putra, D. E., & Firgiyanto, R. (2019, December). MAINTAINING THE PRODUCTION OF OYSTER MUSHROOMS SUPPLY CHAIN THROUGH THE DIVERSIFICATION OF ITS PROCESSED PRODUCTS USING STATISTICAL PROCESS CONTROL (SPC). In *Proceeding of the International Conference on Food and Agriculture* (Vol. 2, No. 1).
- [3] Rujito, H., Utami, M.M.D. and Riskiawan, H.Y., 2018, October. Community Economic Empowerment and Improvement of Meru Betiri National Park Area through Strengthening Community Institutional Capacity. In *1st International Conference on Social Sciences (ICSS 2018)*. Atlantis Press.
- [4] Jeffrey F. Rayport dan Bernard J. Jaworski, *E-commerce*, McGraw-Hill/Irwin, Singapura, 2001
- [5] Wheeler, D. C., & O'Kelly, M. E. (1999). Network topology and city accessibility of the commercial Internet. *The Professional Geographer*, 51(3), 327-339.
- [6] Yadav, M., Joshi, Y., & Rahman, Z. (2015). Mobile social media: The new hybrid element of digital marketing communications. *Procedia-social and behavioral Sciences*, 189(1), 335-343.
- [7] Barranco, M., Proenza, J., & Almeida, L. (2009). Quantitative comparison of the error-containment capabilities of a bus and a star topology in CAN networks. *IEEE Transactions on Industrial Electronics*, 58(3), 802-813.
- [8] Mollick, P., Biswas, S., Halder, A., & Salmani, M. (2016). Mikrotik Router Configuration using IPv6. *International Journal of Innovative Research in Computer*, 4(2), 2001-2007.