



Review: Advantages and Disadvantages of Mikrotik Nstreme Protocols on Wireless Networks

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ABSTRACT

Today, Wireless communication has a special place in the communications, as well as between the different methods, such as wired and optical communications, etc. is important and Some of the things that makes this enormous growth is more affordable than some of these methods, portability, installation and rapid implementation, quality and no need for physical but this method also has its own problems, is still, If at this stage we ignore some security problems, lack of communication bandwidth is a major problem facing the problem of distance communication also seen higher, In this regard, the researchers also found several solutions have been proposed, some of which follow the general protocol and some specifically for Wi-Fi connection is created between a manufacturer of products, this article reviews the nstreme protocol that created by mikrotik and comparison it by 802.11 protocol and flaws and strengths of each expressed.

Keywords: *Mikrotik, Polling, Nstreme, 802.11, CSMA/CA, Mac Polling.*

1 INTRODUCTION

Until now, solutions and several methods to access media including using CSMA / CA or using multiple access with collision avoidance [1], RTS/CTS that transmitter send a RTS packet to receiver and if the media is empty, a CTS packet sent from the receiver to the sender indicating that the media is empty [2] or techniques, such as PCF, HCF, CSMA/CRAP, MACA [3] All techniques to send information on physical media. One of the ways in which today's researchers and manufacturers of wireless equipment introduced and It will be capable of data transfer rates up considerably compared to previous methods used to promote polling is. [4]

Inspection method can be divided into two groups, each to be associated with the nodes in the wireless topology and the two types of the:

1. Roll Call Polling
2. Hub Polling

2 CURRENT POLLING METHODS

In continue will be discussed of the current polling protocol and advantages and disadvantages of this protocols.

2.1 Roll Call Polling

In this method there is a central controller and A channel out of band communication that central controller visit all nodes by send a token to them though out-band channel and Each station has data to send, send data through out-band channels and when transmit finished, send a finish message to central controller, If a station that is deemed not to send the information, the controller will inspect the other nodes. [5] In this method the control center with a series of packets containing information such as schedule and Header data to individual nodes within the network to visit them and ask to send data if has data to transfer and promulgate data transfer end.

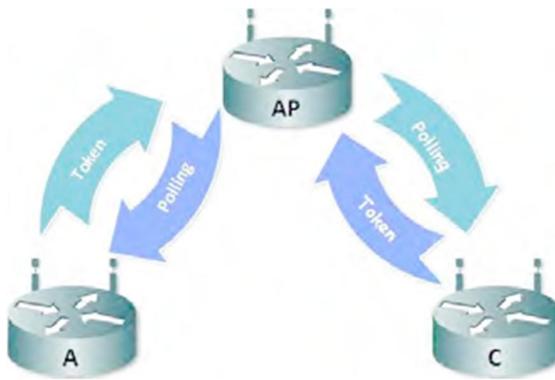


Fig. 1. Roll Call Polling

2.2 Hub Polling

In this method the network consists of a central station and a secondary station is zero or more. The main station responsible is divided into several sections, which is as follow:

1. Initial value and identification network
2. Invites new stations to the network and addressing them
3. Maintain and inspect the performance of the virtual ring network

The overall effect of this method is that the base station network has to handle and store information, Each secondary station connected to the network, such as a passive entity that expects to receive poll frame from central station, Each node is added to the network must know the address of the next stop of its own, Start the process begins when the central station give access to the media by assign poll frame to the first station of its own and If the station has data to send, start data transfer Otherwise it will send the poll frame to the next station, This too will continue to poll frames to reach the central station and the cycle starts again [6].

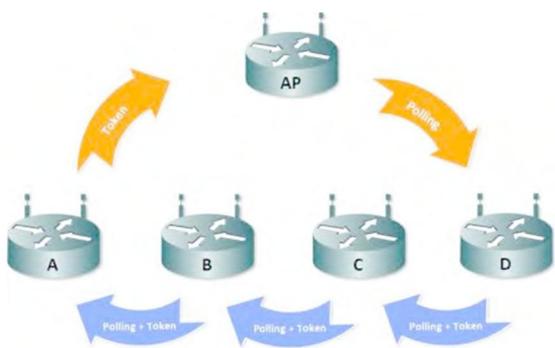


Fig. 2. Hub polling method

2.3 Disadvantages of Polling Based Methods

In polling methods one of the disadvantages that reduces the time loss between the nodes of the media comes, is hands down token between stations. So that in this method, token first to be delivered to the highest station, Selected station after data transfer send token back to the central controller or an next station This problem increases the time delay between the two stations with the media which sought to reduce the amount of channels usage and Waste transfer rate yielded, However, this method can be a better alternative to using CSMA/CA, So that would be different in terms of data transfer rate of up to 05% increase, so that can increase data transfer rate up to 50% in different situation But also increases the time delay [7].

3 NSTREME PROTOCOL

The protocol was developed by Mikrotik company and use at point to point and point to multipoint solutions in wireless networks, Some of the advantages of this protocol is client pooling, Low overhead on frames which increases the data transmission rate, not reduce transmit rate and limited on long distance links, protocole auto Regulation dependent on the type of traffic and resource consumption [8], How this protocol using pooling mac is expressed as follows [9]. The protocol was developed by Mikrotik company and use at point to point and point to multipoint solutions in wireless networks, Some of the advantages of this protocol is client pooling, Low overhead on frames which increases the data transmission rate, not reduce transmit rate and limited on long distance links, protocole auto Regulation dependent on the type of traffic and resource consumption [8], How this protocol using pooling mac is expressed as follows [9].

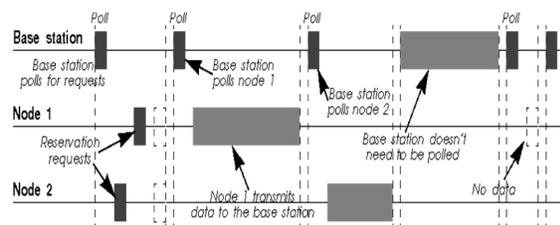


Fig. 3. Nstreme polling structure

The performance of this protocol is to be the central station waiting for requests from the client stays, request for data transmit send to central station through out-band channel And in order to appeal to the central station, stations will be

allowed to use media and transfer data through in-band channel.

3.1 Advantages of Nstreme

- i. Client polling
- ii. Low overhead on frames which increases the data transmission rate
- iii. No limitations on the distance between the base station and clients
- iv. Not limited on long distance links
- v. Auto Regulation dependent on the type of traffic and resource consumption
- vi. Security can be called one of the advantages of this protocol because other companies products do not support this protocol

3.2 DISADVANTAGES OF NSTREME

- i. Overhead caused by pooling on stations through the out-band of channel reduce data transmit time
- ii. Propagation Delay of the frames due to the timing of clients to data transfer by pooling method
- iii. In some cases, the latency of the network

4 CONCLUSION

According to tests done on a link with a distance of about 2 km and Almost 150 meters height difference between send and receive points and In a region with warm, dry air, The results show that due to the noise in the area and about 30 degree air temperature nstreme protocol is better than 802.11 protocol on mikrotik products And increases the data transfer bandwidth, In addition, this protocol is secure because only mikrotik devices able to detect this protocol, Below pictures show results of the test in the winter and 30 percent air humidity.

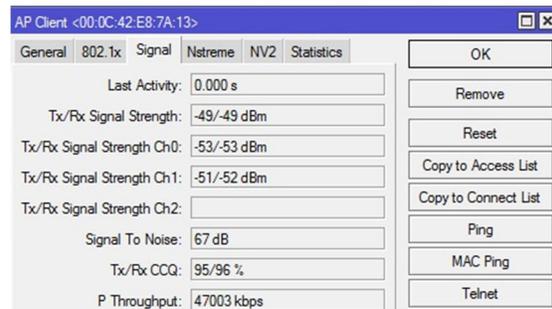


Fig. 4. 802.11 Protocol signal quality

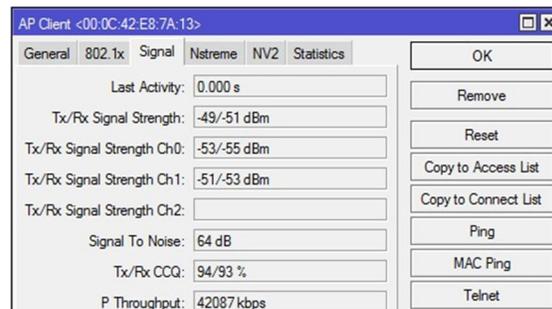


Fig. 5. Nstreme Protocol signal quality

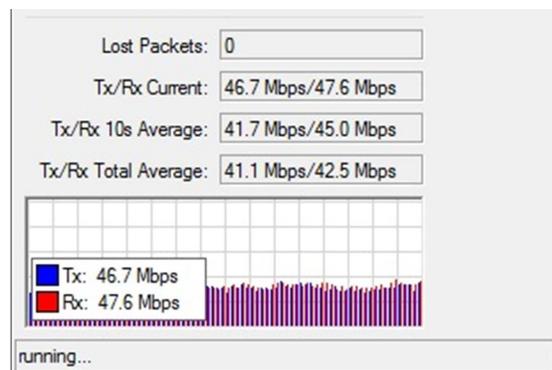


Fig. 6. NstremeProtocol TCP port bandwidth test

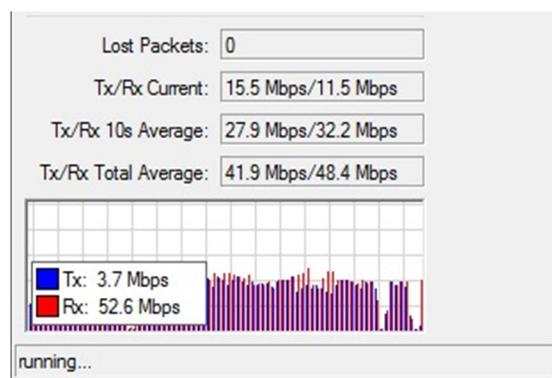


Fig. 7. 802.11 Protocol TCP port bandwidth test

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