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Optimizing Server Monitoring through Graphs Methods using BandwidthD for Two Subnets on a Network

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Abstract: *Server monitoring is an essential technique to not only watch overall progress of server machine in terms of efficiency but in other aspects such as the utilization of available resources in an efficient manner. The core of available resources for any network includes Utilization of Server machine speed, RAM, Bandwidth etc. In this research study, bandwidth monitoring of the server machine has been studied in detail from server machine perspective. In the first phase of this research study a proper client server environment has been developed after taking into consideration core aspects of server role in this environment. Thereafter a proper client server environment was created having different subnets to actualize the proper environment for this research study. This research study is based developing graphs for any subnet for any specific network. Graphs of two subnets in specific network shall be developed on the basis of 2-day, 8-day and 40-day period. Results of all protocols in two subnets against bandwidth consumption shall be presented in different color coding of HTTP, TCP/IP, UDP protocols for straightforward server monitoring on windows or Linux platform.*

Keywords: *Server Monitoring(Security and bandwidth), BandwidthD Tool, Internet Services Utilization, different TCP/UDP protocols using with colors, a centralized control*

I. INTRODUCTION

Server machines are the fundamental part of any computer network for any organization. One important thing server machines do is to provide connectivity to various end points or nodes to avail different available services on particular network. System administrators are always wanted to have such a tool for monitoring servers which can also provide security and to maintain business procedures in a smooth manner. One solution to monitor servers is a Cacti which is open source frontend RRD (Round Robin Database) tool for collecting network data and producing graphs [1]. One major problem with Cacti is that there are no alerting tools available incase certain thresholds are surpassed. To overcome the server monitoring issue BandwidthD is good choice. BandwidthD encompasses to build charts for any individual IPs (Internet Protocol) without having SNMP (Simple Network Management Protocol) agents installed on every machine. Senior Management of IT organization might know the significance of having a continuous observing answer for watch out for their servers at all times, however don't know how to accomplish these points of view without spending a fortune on counseling, preparing and programming arrangements that could take ages to actualize. This is the place cloud-based administrations assume such a significant part in today's business scene – organizations can get to the dynamic force of a professionally oversaw in-house system inside of minutes of subscribing to a SaaS arrangement. Group pioneers ought to be completely mindful of the cloud's capacities at this point, yet in what manner can the innovation particularly relating with sever monitoring tools and their capabilities.

Server machines are the fundamental part of a any computer network for any organization. There are different use for Server Machine just like that to Monitoring system machine . Database system machines , data warehouse system machine ,Mail base system machine , CCTV servile server machine all of these are use enterprise network. One important thing server machines do is to provide connectivity to various end points or nodes to avail different available services on particular network. There are hundreds of service provide by server machine just like DHCP Server, DNS Server, VPN Server, NPM Server, File Server, mail Server, Database Server, Print Server, Web Server, Gaming Server, Application Server and other services. Server is two type standalone and dedicated server. Standalone server uses only small organization network and dedicated server have

use enterprise, huge networks. Now a days, virtualization technologies are used for server management system hardware wise one machine working wise 10 to 15 machines in virtual worked. System administrators are always wanted to have such a tool for monitoring servers which can also provide security and to maintain business procedures in a smooth manner. Tool Monitoring provide the 24/7 services on live network.

One solution to monitor servers is a Cacti which is open source frontend RRD (Round Robin Database) tool for collecting network data and producing graphs. A CACTI is a Web Based PHP/MySQL graphical solution using the RRDtool Engine. Cacti provide much quicker data sources user managements add users negative or positive viewing graphs have customizable. One major problem with Cacti is that there are no alerting tools available incase certain thresholds are surpassed. There are no sms base alert tools are available.

Furthermore, every pc was considered to have been kept completely synced with the server machine having CentOS Linux flavor for security reasons. It was also achieved to have removed SNMP agents from all client side as well server side machines since BandwidthD monitoring was required to have been achieved without SNMP activated on test network. Since the chief objective of this research work was to monitor Bandwidth through Server machines therefore Bandwidth monitoring tool BandwidthD was installed properly on server machine for this purpose. Linux was necessary also installed on the server machine since Linux provides more security as compare to Windows server environment. The major advantage of BandwidthD was to see the distribution of bandwidth consumption on the basis of different protocols. The major protocols which were considered in this study were HTTP HTTPS, FTP, TCP/IP, UDP, Telnet etc. The bandwidth data at two three different time intervals was taken such as 2 days, 8 days and 40 days interval. Data has been taken to see the different protocols use different color code scheme so that they can differentiated from each other. It is essential for networkers to see the bandwidth usage by different protocols to response in need especially in emergencies and critical times. The major advantage of this research work is to enhance an efficiency of network personnel in terms of giving response in terms of coping up emergencies. It is very normal in different organizations that users exceed using their allotted bandwidth. Furthermore, if this practice exceeds then bandwidth usage by different users can overall create bottlenecks. But with this research study, networks can avail our propose solution and monitor bandwidth usage in real time and also take action in case bandwidth usage exceeds to their allotted limits and can be identified through different color coding scheme

A. Possible Solution:

To overcome the server monitoring issue BandwidthD is good choice. Development of BandwidthD is funded under the GPL General public license. BandwidthD provide Monitor network activity same local area network and different local area network. BandwidthD encompasses to build charts for any individual IPs (Internet Protocol) without having SNMP (Simple Network Management Protocol) agents installed on every machine. There are three versions arrive SNMPv1 SNMPv2 many ways insecure and SNMPv3 which provides more advanced security features. SNMP agents do the bulk of the work. They are responsible for gathering information about the local system and storing them in a format that can be queried. Updating a database called the "management information base", or MIB. SNMP agents respond to most of the commands define by the protocol. These include GetRequest, GetNestRequest, GetBulkRequest, SetRequest, and InformRequest.

This research study is based developing graphs for any subnet for any specific network. Graphs of two subnets in specific network shall be developed on the basis of 2-day, 8-day and 40-day period. Results of all protocols in two subnets against bandwidth consumption have been presented in different color coding red, blue, orange, green, yellow, silver and purple other colors of HTTP, TCP/IP, UDP, ICMP protocols for straightforward server.

II. LITERATURE REVIEW

Baraka, H. B., & Tianfield, H. [2] conducted experimental test and evaluated intrusion detection system for cloud environment. They did their efforts to simulate attacks that possibly be made on the cloud based virtualized server environment. They also presented data that shows that other than intrusion detection DoS attack are also possible. Shakeribehbahani, N., et al [3] in their study conducted experimental and practical work of Microsoft base server monitoring using Android OS based devices. Their study was focused on the Microsoft window based server monitoring such as CPU consumption, RAM usage, Hard disk or input/output actions. They showed that it is possible to monitor server activity using android application and with and mobile phone device.

Lang, L. [4] conducted simulation study of research of detection method of server network storm attack. In this study they proposed and optimized server network monitoring method such as storm attack detection which get troubles when it comes to the role of Internet Database Connectivity (IDBS) and hence increases density clustering algorithms. Balantrapu, et al [5] presented their research work and focused the issues of scalable netflow monitoring of virtual machines in physical server. Kim, M. R., & Cho, D. S. [6] in their research conducted experimental study for the optimization techniques of the work-sharing scheduling in remote metering server. In their study they worked out electric power manufacturing relative problems which are normally identified just like a server which consumes certain watts within an hour for metering the server for server network remote metering. Similarly, Wolf, Tilman, et al. [7], in their work presented and discussed the structural design for distributed synchronized passive network

measurement. They did a lot of work for properly describing the passive Distributed Online Measurement Environment (DOME) which in turn produces the actual difference of nodes based on the locations. Whereas, Kassim, M. et al. [8] presented overall bandwidth based study with bandwidth management in an IP based network. In their work they pay attention on the development of latest algorithms or design quality services of network management IP based framework. Similarly, Sairam, A. S., & Barua, G. [9] developed a proper load balancer for bandwidth. They conducted different experiments to examine bandwidth from different management perspectives of proper load balancing techniques. In this study, they also conducted research activities relating with progress of incoming as well as outgoing bandwidth access links with subnet-level or proxy based load balancing technique to distributed network traffic. Yang, C. & Luo, H. [10] presented their experimental work of end to end bandwidth measurement. They developed test bed to conduct a study relating with the issues of measurement of end to end bandwidth measurement in wireless mesh networks. In their work they were determined to study the capacity of wireless links for band width monitoring on focused investigation of wireless capacity link, traffic control, bandwidth cross-traffic and QoS provisioning and analyzing of test environments for band width monitoring.

Lei, L. [11] in his research work projected and compared a reliability and optimization of complex of computer network. He has studied the design and technical pointers to measure the overall performance of computer networks. He has applied the study of genetics algorithm and intelligent algorithm efficient programming language of computer networks. Similarly, Zhou, Y. et al [12] in their work relating with the discovery of algorithm for network topology based on SNMP. They have discovered vital tool for network management and understand the global internet for network managers. They focused in future of layer two topology algorithms to efficiency, accuracy, compressive network management. Whereas, Azodi, A., et al [13] in their research work presented results of investigation of in their study on Passive Network Monitoring using REAMS. They have focused on IPv6 address space, vastness of the address spaces and future would be allow for more efficient and effectives scanning of IPv6 address. They investigated the passive scanning solution using the logs produced by the system within the network.

Ali, E. [14] in his research study conducted and analyzed an implementation of the Optimizing Server Resource by Using Virtualization Technology. He has analyzed the designed and has reduced the cost of purchasing new servers, effortless work load, and efficient performance of virtual machine of servers. He has implemented open source Linux distributed based operating system Proxmox server use. Whereas, Affandi, A, et al. [15] presented their research study results and conducted and design and implementation of fast response system monitoring server using Simple Network Management Protocol (SNMP). They designed internet services availability network condition, uptime and downtime monitoring server. Similarly, Bolze, R., et al. [16] produced research results relating with design and implementation of remote monitoring servers and also conducted the several design and implementation related problems of monitoring and visualization tools and its application for a network enabled server platform. They have designed visualization tool adapted for Network Enabled Server systems. However, Lübke, R.,et al [17] in their research study conducted an implantation and measurement the NORA: An Integrated Network Measurement Tool for End-To-End Connections. They have implantation special tool network measurements of packet based end to end network connections, TCP, UDP, IPv6, losses of accuracy connections. Further more, Wadal, M. P. V., & Gupta, S. R. [18] in experimental study proposed in their Study an overview of network management system. They proposed the network management Architecture, functionalities and visibility network management system. In these researched discussed advanced internet based and three key security level provide network management system. Miura, S. I., et al. [19] conducted experimental study and also proposed a practical method of Low-cost high-bandwidth tree network for PC clusters based on tagged-VLAN technology. They studied an inexpensive layer two Gigabit Ethernet switch for high-performance cluster for end nodes. They build a large scale frames tagged with 802.1q VLAN enhancement of bandwidth end user of the network PC. Similarly, Otsuka, T., et al [20] proposed a practical method of Switch-tagged VLAN routing methodology for PC clusters with Ethernet. They have studied layer two algorithm designed parallel processing IEEE 802.1Q VLAN routing technology. The proposed the use of NAS 16 host parallel PC clusters method improves the performance of Gigabit Ethernet frames. Whereas, Wei, H. Y., & Lin, Y. D. [21] conducted a survey and measurement-based comparison of bandwidth management techniques. They have studied and differentiate class-based queuing (CBQ), per-flow queuing (PFQ), random early detection (RED), and TCP rate control (TCR). Conducted test emulates internet Bandwidth managements of VOIP packets of access link, traffic down, sessions calculated.

Aweya, J., et al [22] in their work proposed a multi-queue TCP window control scheme with dynamic buffer allocation. They have studied explicit transmission control protocol (TCP) window control through the modification of end to end packets. Their described the algorithm of dynamic buffer allocation window control by sharing memory system improvement of packet throughput. Whereas, Barakabitze, A. et al. [23] conducted a survey on Naming, Name Resolution and Data Routing in Information Centric Networking (ICN). They produced three relative architectures design for future studied of DNS system. They developed efficient scalable routing scheme, congestion control mechanism, Quality of services, efficient caching and security, privacy issue build a new ICN internet framework Architecture. Similarly, Azodi, A., et al [24] studied a latest and completely new approach for building a multi-tier direct access knowledgebase for IDS/SIEM Systems. They conducted experiments and produced very good results. Their study was focused on proposing an entirely new IDS/ SIEM system which utilized a fewer resources, improve procedure and efficient process. However, Vaarandi, R., &

Niziński, P. [25] in their work implemented and studied a comparative analysis of open-source log management solutions for security monitoring and network forensics. They worked on the detection and analysis frameworks in a cost-efficient way open sources log managements system. This study shall help to reduce these type of attacks on server which work exclusively for monitoring and controlling the performance of bandwidth.

III. METHODOLOGY

Methodology includes basic architect design of the test network which contains two subnets. This network is based on client server architecture. BandwidthD shall be installed on the server machine based on network architecture shown in Figure 1. Simple Network Monitoring Protocol removal is the second major step. SNMP normally collects information about all manageable devices on the Internet Protocol (IP) network. Since all network devices ranging from routers and switches to the end user Personal Computers (PCs), network printers and server machines of all kinds, use SNMP. Furthermore, normally SNMP is used in many network monitoring and managements systems. However, within the scope of this work SNMP shall be not required at workstations in our test bed. BandwidthD shall be utilized for the network monitoring without the use of SNMP.

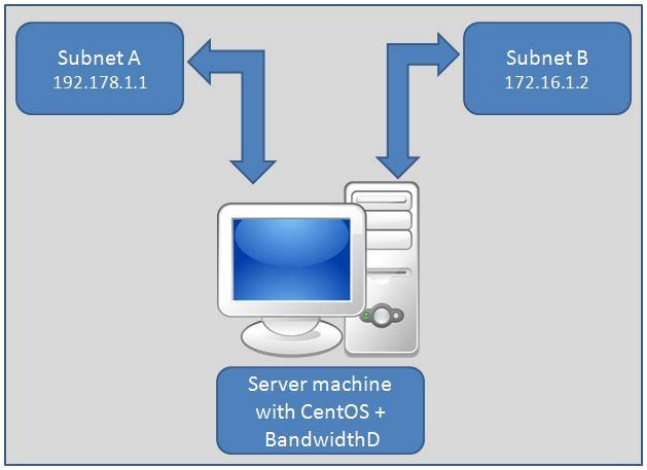

Figure 1: Network Architecture of BandwidthD for network monitoring

Normally, two subnets are connected through a managed switch. As it can be seen in the Figure 2, a server machine contains CentOS operating system and on top of it BandwidthD is installed.

As a first step to achieve this research work, a network with two subnets just like 192.168.1.1 and second 172.16.1.1 class C IP network has been achieved and BandwidthD solution shall be configured on a server machine. To achieve proper monitoring, a Server needs to be placed on a proper positioning in this case with a managed switch.

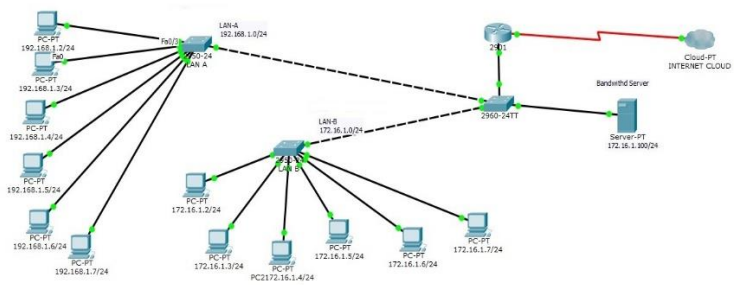

Figure 2: Two Subnets networks

As a second step to remove SNMP agents from all machines in the subnets if there are any. Since, SNMP is normally part of all network devices as discussed in earlier sections. Additionally, it has been seen that BandwidthD has been utilized by many researchers to setup its interface on CentOS operating system. In Figure 3, basic interface of BandwidthD is presented including its first optional setting.

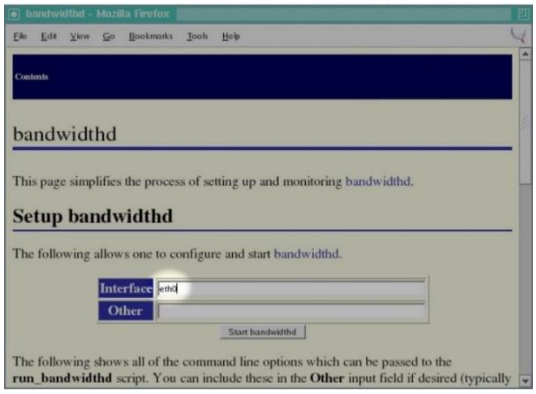

Figure 3: BandwidthD interface

Server hardware requirement is also a critical issue, since before configuration of Hardware requirements certain specifications are required to be managed. The minimum requirements are 2.4GHZ process, 1GB RAM, 20 GB hard disk. Installation requirements Centos open source operating system.

Furthermore, another great advantage of BandwidthD is that, almost every frequency of top traffic can be achieved such as top traffic daily, weekly, monthly. Following Figure 4 is the screenshot of daily traffic for two subnets created for BandwidthD experimentation for the accomplishment of this thesis work.

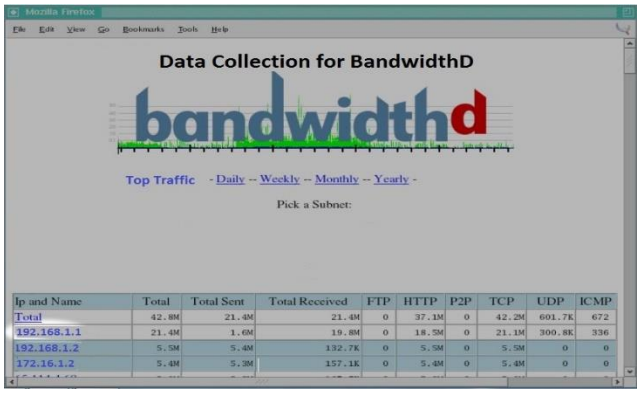

Figure 4: Top daily traffic of BandwidthD for different protocols.

As presented in the earlier section, the following part contains the details of how data has been collected using above BandwidthD interface for the following frequency. The data has been collected using 02 days, 08 days and 40 days time intervals.

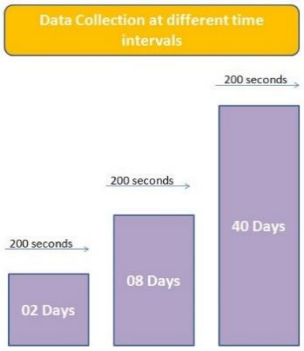

Figure 5: BandwidthD data Collection frequency

The output shall be taken after every 200 seconds in the format of Static html page or png format and also in database driven approach which takes advantage PHP pages for filtering and searching advantage. In either way of taking out the data, it is easier then to develop colourful graphs for different protocols for real time monitoring. Further, BandwidthD has been configured so that different protocols in relationship with bandwidth may be produced in different color codes for HTTP, TCP/IP, UDP and ICMP. Color coding shall help us monitor server performance in an easier and straight forward manner.

IV. RESULTS

This chapter contains details of the methodology to accomplish this thesis work. As described in the chapter 03 of methodology to for achieving this research work, a client server model has been achieved. As it is the basic requirement of this thesis work to remove the SNMP from the clients, hosts and switches to perform desired operation of BandwidthD to accomplish this thesis research work. From the client server environment prospectus following has been achieved. SNMP is an application-layer convention that gives a message organization to correspondence amongst administrators and specialists. The SNMP framework comprises of a SNMP director, a SNMP specialist, and a MIB. The SNMP supervisor can be a piece of a system administration framework. The operators and MIB dwell on the switch and on the clients, in our contest on the client machines. To do the arrangements for the removal of SNMP from the clients as well as on the switch, you characterize the relationship between the administrator and the operators.

The SNMP specialist contains variables whose values the SNMP chief can demand or change. A director can get a quality from a specialist or store a worth into the operators. The specialists accumulate information from the MIB, the archive for data about gadget parameters and system information. The specialists like BandwidthD or other tools can likewise react to an administrator's solicitations to get or set information. An operator can send spontaneous traps to the director. Traps are messages cautioning the SNMP supervisor to a condition on the system. Traps can mean despicable client verification, restarts, join status (up or down), MAC address following, shutting of a TCP association, loss of association with a neighbor, or other huge occasions but it has no impact of BandwidthD which has been utilized for the important purpose of this research work.
The stack expert handles the SNMP asks for and traps for the entire switch stack. The stack ace straightforwardly deals with any solicitations or traps that are identified with all stack individuals. At the point when another stack expert is chosen, the new ace keeps on taking care of SNMP asks for and traps as designed on the past stack expert, expecting that IP network to the SNMP administration stations is still set up after the new ace has taken control.

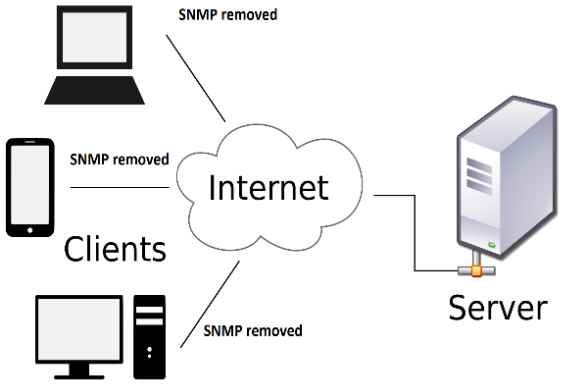

Figure 6: SNMP removals from the client side has been shown in the figure

In the figure 6 above a SNMP removal from the client side has been shown which has been achieved as the first stage of this research thesis. After performing basic steps, the network architect under test becomes like presented in the figure 7.

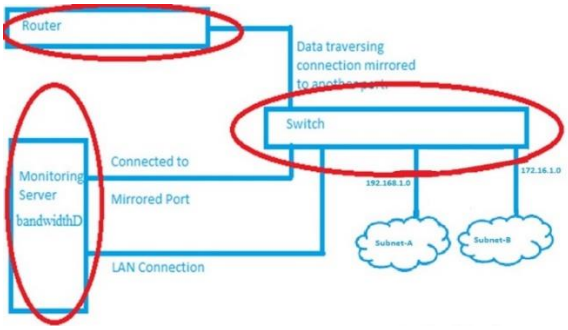

Figure 7. Network Architect of the BandwidthD having four components, LAN, Monitoring Server, Router and Switch, after performing basic steps

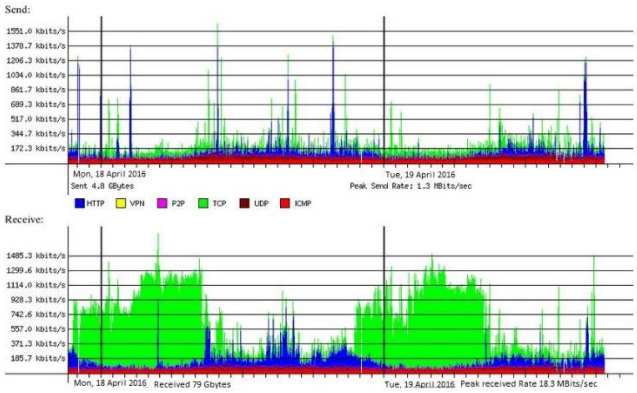

Figure 8: BandwidthD data for two day intervals for Vlan 01

A part of the XML script, the fields which are considered by BandwidthD includes the following:

Time stamp, IP address, TCP and UDP sent, ICMP/total sent, FTB and HTTP sent, P2P sent, ICMP received, total received, TCP/UDP received, etc

In Figure 8, a data graph for two days inter Vlan graph has been taken which is presented. The graph contains different color codes for the different protocols such as for TCP green color has been selected, for ICMP red color has been chosen, and for HTTP blue color scheme has been chosen. It can be clearly seen that data sent is less as compare to data received. Since user request more for the data. Normally they request HTTP and TCP data which can be seen clearly has taken most of the space.

In the graph above, it is evident that there is huge difference in data sets for sending and receiving information. On top of that it is clear that color selection makes it easier for viewing the bandwidth constraints if they occur. It can be seen that TCP data in green is oblivious to watch. It can easily be confirmed that green color is very visible. It is clear from the data that there is huge difference in data sets for sending and receiving information. On top of that it is clear that color selection makes it easier for viewing the bandwidth constraints if they occur. It can be seen that TCP is different from UDP data in green and shocking Red is understandable to timepiece. It can easily be confirmed that green color is very noticeable.

It can be seen that TCP data in green is clear to see. It can easily be confirmed that green color is very visible. It is clear from the data that there is huge difference in data sets for sending and receiving information. On top of that it is clear that color selection makes it easier for viewing the bandwidth restriction or limitation if they appear. The graph contains different color codes for the different protocols such as for TCP green color has been selected, for ICMP red color has been chosen, and for HTTP blue color scheme has been chosen. It can be clearly seen that data sent is less as compare to data received.

Table 1 three data sets for different time intervals showing results

Measurement	**Data for 2 days, 8 days and 40 days' time interval data**						
	Parameters	**2 days**		**8 days**		**40 days**	
		Vlan-1	**Vlan-2**	**Vlan-1**	**Vlan-2**	**Vlan-1**	**Vlan-2**
Reading 01	Sent bytes(GB)	4.8	1.7	3.9	2.8	4.1	3.9
	Received bytes (GB)	79	60	93	93	75	88
	Send peak rate (Mbits/sec)	1.3	2.6	4.7	3.2	2.6	4.7
	Receive peak rate (Mbits/sec)	18.3	21.5	13.3	22.6	17.1	15.9
Reading 02	Sent bytes(GB)	3.9	4.1	3.9	2.6	3.9	2.8
	Received bytes (GB)	62	93	75	88	60	93
	Send peak rate (Mbits/sec)	1.3	1.4	2.6	1.9	1.8	2.6
	Receive peak rate (Mbits/sec)	17.1	13.6	22.6	15.9	17.1	13.3
Reading 03	Sent bytes(GB)	2.8	1.3	2.8	1.7	3.9	2.8
	Received bytes (GB)	89	60	93	75	88	82
	Send peak rate (Mbits/sec)	2.6	2.8	4.1	3.9	2.6	4.7
	Receive peak rate (Mbits/sec)	15.9	17.1	13.3	22.6	19.4	17.1

Data presented in table 1 clearly marks difference between different rang bandwidth measurements taken at different intervals. It is clear now that different timings produce different data sets.

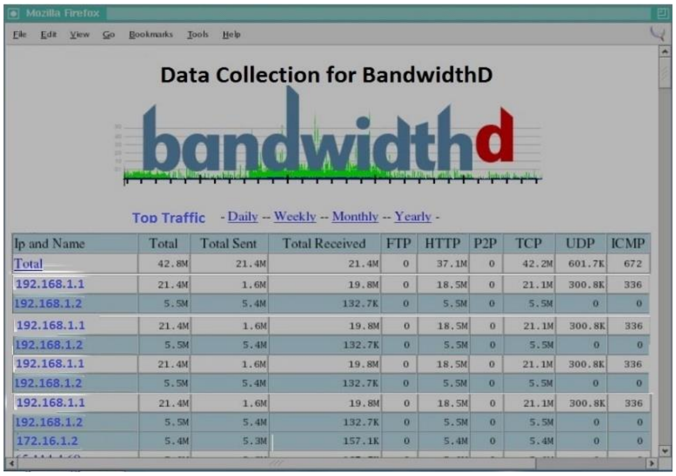

Figure 9: Data sets showing different vlan data for different protocols such as FTP, HTTP, TCP, UDP etc

In this section results were presented in a chronological manner, first network architect along with client server scenario was presented, then SNMP agents were removed from all clients and network switches. Later on periodical data was taken at different intervals was presented in 2 days and 8 days and 40-day interval time. It is now concluded that on the basis of these experiments it is clear now that color codes makes data very visible, therefore in case of emergencies in band width constraints time any security measure can be taken easily and a lot time can be saved because of data availability in an easier manner.

V. Discussion

In this research study an essential aspect of network field has been touched upon. Since, It is very important task of networkers to keep track of the wellbeing of server machines. Networker admins and managers normally take every step from installation of anti-viruses to full resource utilization from start till end. However, it has been observed that it is often difficult to keep track of the bandwidth issues. Users normally exceed from their allotted quota of bandwidth. On the other side, some of the protocols are sometimes banned in different organization such as Voice Communication is blocked in some organizations. Even though these protocols are used by users by means different proxies. This research project has enabled the networking community to best utilize the freely available BandwidthD utility to monitor network protocols in operation. The extra advantage of this utility is that it brings different protocol usage in different color codes and hence bring the entire protocols stream completely understandable by the network and system administrators for taking impulse decisions on the usage of different protocols. The expressive format of graphs along with other protocol details are very intuitive and convey most of the things to professionals in a very understandable format.

In this exploration contemplate a crucial part of system field has been studied. Since, it is vital assignment of networkers to monitor the prosperity of server machines. Networker administrators and chiefs ordinarily step from establishment of hostile to infections to full asset use from begin till end. Nonetheless, it has been watched that it is regularly hard to monitor the data transfer capacity issues. Clients regularly surpass from their designated quantity of data transfer capacity. On the other side, a portion of the conventions are now and again banned in various association, for example, Voice Communication is obstructed in a few associations. Despite the fact that these conventions are utilized by clients by means diverse intermediaries. This examination venture has empowered the systems administration group to best use the uninhibitedly accessible BandwidthD utility to screen system conventions in operation. The additional favorable position of this utility is that it gets distinctive convention utilization diverse shading codes and consequently bring the whole conventions stream totally reasonable by the system and framework chairmen for taking motivation choices on the use of various conventions. The expressive organization of charts alongside other convention points of interest are exceptionally instinctive and pass on the vast majority of the things to experts in an extremely reasonable arrangement.

In the most important length of this exam contemplate legitimate purchaser server surroundings has been created next to considering middle components of server component on this environment. From that factor legitimate customer server surroundings became made having distinct subnets to finish the best environment for this exploration examine. Except, every computer became taken into consideration to have been stored completely synchronized with the server system having CentOS Linux taste for protection motives. It turned into likewise carried out to have expelled SNMP professionals from all purchaser aspect also server facet machines next to BandwidthD checking become required to were performed without SNMP actuated on test system.

Because the imperative goal of this exploration of technical study this become an important aspect to display study of Bandwidth via Server machines along those lines Bandwidth checking utility of BandwidthD become added legitimately on server machine because of this. Linux was essentially and exclusively added on the server machine since users consider that Linux offers more protection as compare to the windows server environment. This study shall serve the research community in larger scope.

The real factor of preference of BandwidthD was to peer the appropriation of statistics switch potential utilization on the idea of various conventions. The giant conventions which had been taken into consideration in this have a look at were HTTP HTTPS, FTP, and TCP/IP, UDP, Telnet and so forth. The switch speed records at three distinct time interims became taken, for instance, 2 days, 8 days and 40 days period in-

between. Records has been taken to peer the various conventions use unique shading code conspire with the purpose that they could separate from each other.

It's far fundamental for networkers to look the facts switch capability usage through various conventions to response in need especially in crises and primary times. The considerable point of preference of this exam paintings is to improve a proficiency of gadget faculty as a way as giving response as some distance as adapting up crises. Its miles extremely regular in various associations that customers surpass utilizing their apportioned statistics transmission.

Except, at the off risk that this exercise surpasses then transmission capability uses by using numerous clients can preferred make blockages? Be that as it is able to, with this exam study, structures can income us suggest arrangement and display screen switch pace utilization steadily moreover make a flow within the event that statistics transmission use surpasses to their apportioned points of confinement and may be identified thru various shading coding plan.

VI. CONCLUSION

Server monitoring is an essential technique to not only watch overall progress of server machine in terms of efficiency but in other aspects such as the utilization of available resources in an efficient manner. The core of available resources for any network includes Utilization of Server machine speed, RAM, Bandwidth etc. In this research study, bandwidth monitoring of the server machine has been studied in detail from server machine perspective. In the first phase of this research study a proper client server environment has been developed after taking into consideration core aspects of server role in this environment. Thereafter a proper client server environment was created having different subnets to actualize the proper environment for this research study. Furthermore, every PC was considered to have been kept completely synced with the server machine having CentOS Linux flavor for security reasons. It was also achieved to have removed SNMP agents from all client side as well server side machines since BandwidthD monitoring was required to have been achieved without SNMP activated on test network. Since the chief objective of this research work was to monitor Bandwidth through Server machines therefore Bandwidth monitoring tool BandwidthD was installed properly on server machine for this purpose. Linux was necessary also installed on the server machine since Linux provides more security as compare to Windows server environment. The major advantage of BandwidthD was to see the distribution of bandwidth consumption on the basis of different protocols. The major protocols which were considered in this study were HTTP HTTPS, FTP, TCP/IP, UDP, Telnet etc. The bandwidth data at two three different time intervals was taken such as 2 days, 8 days and 40 days interval. Data has been taken to see the different protocols use different color code scheme so that they can differentiated from each other. It is essential for networkers to see the bandwidth usage by different protocols to response in need especially in emergencies and critical times. The major advantage of this research work is to enhance an efficiency of network personnel in terms of giving response in terms of coping up emergencies. It is very normal in different organizations that users exceed using their allotted bandwidth. Furthermore, if this practice exceeds then bandwidth usage by different users can overall create bottlenecks. But with this research study, networks can avail our propose solution and monitor bandwidth usage in real time and also take action in case bandwidth usage exceeds to their allotted limits and can be identified through different color coding scheme.

Besides, every pc was considered to have been kept totally synchronized with the server machine having CentOS Linux flavor for security reasons. It was likewise accomplished to have expelled SNMP specialists from all customer side also server side machines subsequent to BandwidthD checking was required to have been accomplished without SNMP actuated on test system.

Since the central target of this exploration work was to screen Bandwidth through Server machines along these lines Bandwidth checking instrument BANDWIDTHD was introduced legitimately on server machine for this reason. Linux was important additionally introduced on the server machine since Linux gives more security as contrast with Windows server environment. The real point of preference of BandwidthD was to see the appropriation of data transfer capacity utilization on the premise of various conventions. The significant conventions which were considered in this study were HTTP HTTPS, FTP, TCP/IP, UDP, Telnet and so forth. The transfer speed information at two three distinctive time interims was taken, for example, 2 days, 8 days and 40 days interim. Information has been taken to see the diverse conventions use distinctive shading code conspire with the goal that they can separated from each other. It is fundamental for networkers to see the data transfer capacity utilization by various conventions to reaction in need particularly in crises and basic times. The significant point of preference of this examination work is to improve a proficiency of system faculty as far as giving reaction as far as adapting up crises. It is extremely typical in various associations that clients surpass utilizing their apportioned data transmission.

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VII. REFERENCES

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