USING QUALITY OF SERVICE VIRTUAL PRIVATE NETWORK (VPN) ON E-KTP BANDAR LAMPUNG

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ABSTRACT

Implementation e-ktp in Bandar Lampung , there are several obstaclesin the field, among others, are oftendelays inthe exchange of databetween theserverthatis locatedin the districtandthat is inthe centralserver. Tofind the cause ofthese obstaclesand the importance ofthe quality ofnetwork servicesit is necessary todothemeasurementthatcanbeusedtomeasurethePerformance of/qualityofnetworkservice VPN that isused in the implementation of E-Ktpin Bandar Lampungon each - eachin the district, the main problemin this studyis" Identification of QualityofService Virtual Private Network (vpn) on the Implementationof Electronic-Ktp" in Bandar Lampung. By using Axcent Net Toolsand methods used action research model with QoSmonitoring system.

KEYWORDS: Network VPN, Quality Of Service, ActionResearch

1. Introduction

Background
Internet use is currently a need for all aspects of human life, ranging from the world of business, education, government and entertainment. Along with the growing needs of Internet network access it is necessary to network performance is excellent and reliable internet. In addition to the speed of the bullet the other hand is a security concern. One utilization of network security in the use of Virtual Private Network (VPN)[1].

The application of electronic-identity card (e-KTP) in Bandar Lampung has been implemented in 2011, was conducted in 13 districts in the city float, each district has two client computers and one computer server. Each server that is districts directly connected to an existing data center in jakarta. To support the connection between the server districts with data center servers require a data communications network that is fast and safe. For that in the implementation of E-Ktp used VPN network to transfer media data from the server to the server data center districts, but in. implementation are still many obstacles that arise. Some problems were encountered of which are data access and data transfer results from the data recording many people still retained in the server districts, despite the use of special lanes or VPN. Some of the factors that cause these problems include the effect of bandwidth, the device used, the number of clients and others. The purpose of this study was to determine the performance of services or Performance of VPN network used in the implementation of E-KTP associated with bandwidth, delay, and packet lost in every district in the city of Bandar Lampung in order to support the successful implementation of E-KTP card.

2. Literature Review

Computer network

The computer network is a collection of computers, printers and other equipment that is connected in one unit. Information and data moving through wires or wirelessly, allowing users of computer networks can exchange documents and data, print on the same printer and jointly use hardware / software connected to the network[2]. Each computer, printer or peripherals connected to a network is called a node. A computer network can have two, tens, thousands or even millions of nodes.

Internet is a combination of a variety of LAN and WAN computer network located throughout the world. Thus forming a network with a broader scale and global terms typically the Internet network using TCP / IP protocol to transmit Internet data packets originating from the (interconnected networks) which means that the relationship of a variety of computer networks in the world are integrated with each other to form a communications global terms.

Understanding VPN

IP VPN is a special type of VPN services that transmit Internet Protocol (IP) infrastructure through public private IP or Internet. Which became a key benchmark is the IP VPN IP service delivery to the end user. With IP VPN data networking possible privately and securely over public networks or private IP networks for communication users remote access, site-to site, or corporate-to-corporate.

Understanding Quality of Service (QoS)

Quality of Service (QoS) is defined as a measure of how well the network and is an attempt to define the characteristics and nature of a service. QoS refers to the ability of the network to provide better service to certain network traffic channeled through a different technology - different. QoS is a major challenge in IP-based networks and the Internet as a whole. The goal of QoSAdalahuntuk meet the needs - the needs of different services - different, which uses the same insfrastrukut. QoS offers the ability to define the attributes - attributes of the service provided, both qualitatively and quantitatively. Computer network performance may vary due to several problems, such as bandwidth, latency and jitter that can make a big enough effect for many applications.

3.Research Methods

3.1 Research Time

This study start in January 2015 until February 2015

3.2 Research Methods

The method usedinthis study using Action Research (AR), the method it that theory and action may be closed prakti integrated with the learning of the results integrated with the learning of the results of the intervention planned after detailed diagnosis of the problem context. Division, Martinsons and Kock (2004, in Chandrax2008), while the phases of the Action Research in this research are:

1. perform diagnostics
    identifying the principal - the principal issue that is to be the basis of research by analyzing the existing VPN network system on each server - each district that became the object of research.

2. Actionplanning
    Understand that there are fundamental analysis and then develop a plan of action that is appropriate to analyze the testing of the performance of existing VPN networks in districts.

3. Taking action

Implementing an action plan that had been developed by testing the VPN network performance used in the district with a reference standard of Quality of Service parameters.

4. Evaluation

To evaluate the results of implementation, in this stage to see how the results of the performance testing standards based Quality of Service.

5. Learning

In the learning stage researchers provide information and research results to the district for consideration and further basic improvement.
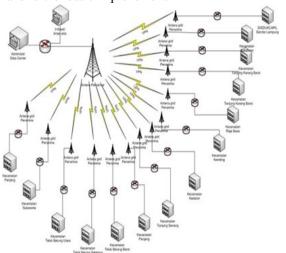

Figure 1: The network topology E-Ktp

4. Discussion

4.1NetworkPerformanceAnalysis

Monitoring is doneasthe user interface of network applications, serves totake thetraffic data packets. As for monitoring the traffic information data packets for Quality of Service parameters were performed on each sub-district which is the objectof researchas follows:
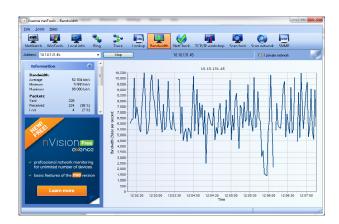

Figure 2 network monitoring axecennettolsPro5.0

4.2 Monitoring Results

After conducting field monitoring directly the data obtainedis expected that bandwidth, delay, and packet Lostin the VPN network used in the implementation of Electronic Identity Card(e-ID) of each – eac district.

4.2.1Bandwidth

Of the monitoring process hat has been done in the districton the parameters of bandwidth, the bandwidth capacity of every point of the network services Vpn existing in the districtis not in accordance with the standards provided from the network provider or ISP (Internet Service Provider) that is equal to128kbps, the source cross-Arta, Bandwidth measurement is done using an application AxcentNetToolsPro5, the measurement results asf ollows.

Table3.1 Value Bandwidth Int he District Network

No	Nama Tempat	Bandwith (bit/s)			
		Bandwidth	Hasil Pengukuran	Maximum	Average
1	Rajabasa	128	2.051	15.801	13.228
2	Sukabumi	128	41.592	84.328	59.629
3	Kemiling	128	2.037	8.259.296	1.983
4	Tanjung Karang Barat	128	19.208	56.704	41.512
5	Tanjung Karang Timur	128	5.448	59.000	41.333

4.2.2Throughput

Throughput is the ratio between data packets successfully to the destination or can also be regarded as actual measured bandwidth during transmission of data. Throughput measurement is done by testing the delivery or burden some data packets from one sub-district point and point by using a central server AxcentNetToolsPro5 software.

Table3.2.throughput Value in each district

No	Nama tempat	Throughput (b/s)		
		Minimum	Maksimum	Average
1	Kemiling	2.037.776	8.259.296	1.983.748
2	Rajabasa	2.051.736	15.801.416	13.228.467
3	Sukabumi	41.592	84.328	59.629
4	Tanjung Karang Timur	5.448	59	41.333
5	Tanjung Karang Barat	19.208	56.704	41.512

4.2.3 Delay

Based on the measurement results of delay that has been done in each - each subdistricts linked to the quality / vpn network performance, can delay value in the average - average dalama unit of millisecond (ms), the value of the measurement results of delay as in the following table:

Table3.3ValueDelayInthe DistrictNetwork

No	Nama tempat	Delay (ms)		
		Minimum	Maksimum	Average
1	Kemiling	63	146	90
2	Rajabasa	45	297	86
3	Sukabumi	44	365	94
4	Tanjung Karang Timur	63	137	90
5	Tanjung Karang Barat	63	199	91

4.2.4 Lost Packet

Results of measurement of packet losson networks that existin the district vpn in 5 districts in the city of Bandar Lampung, in the value of Packet Loss dam can count percentages(%) for each district. The measurement results foreach districtas follows:

Table3.4 Value Packet Loss In the District Network

No	Nama Tempat	Packet Lost (%)		
		sent	Lost	Lost(%)
1	Kemiling	250 bits	18	4
2	Rajabasa	250 bits	115	18
3	Sukabumi	250 bits	36	14
4	Tanjung Karang Timur	250 bits	44	17
5	Tanjung Karang Barat	250 bits	46	15

6. Conclusion

From the results of measurements, observations, and analysis of QoS that has been done, it can take some conclusions as following.

1. From the measurement results of the comparison between the available bandwidth capacity with the actual bandwidth for each location in the sub-district results are still below the bandwidth capacity

2. Based on standardization TIPHON large packet loss for Kemiling and sukabumi districts classified in the degradation of good, for the king districts bases, cape coral reefs eastern and western promontory classified in moderate degradation.

3. Low bandwidth and throughput that exist in the district due to the shape / layout goegrafis of each - each district and pengakat supporters.
   4. For existing packet loss in the districts as a whole, including in the medium category with an average of 13%, however, still needs improvements to further improve services.

References

[1]Patton, 1980 (Dalamlexy J. Moleong 2002:103) Dan Taylor, (1975: 79) *Buku analisis Data*

[2]Sofana. I. 2010, Cisco Ccna &*Jaringan komputer, Informatika Bandung*, Bandung.

[3]Artikel Non-Personal,(2013), *Axencenettools Pro 5.0, Diakses 8 Mei 2013, Dari*(Http://Www.Axencesoftware.Com)

[4]Binus, 2007. Teknologi informasi jaringan komputer. (Http://Library.Binus.Ac.Id/Ecolls/Ethesis/Bab1/ 2007-2-00166 If_Bab%201.Pdf :Diakses 12 April 2013)

[5]Chandra, 2008. Action Research. (Http://Chandrax.Wordpress.Com/2008/07/05/Action-Researchpenelitian- Tindakan/ :Diakses 25 Desember 2014)

[6]Fatoni, 2012.*Analisis Kualitas layanan jaringan Intranet. Dosen Universitas Bina Darma,* Palembang

[7]Sesindo, 2011. *Pengukuran kinerja jaringan.* (Http://Digilib.Its.Ac.Id/Public/Its- Paper-19953-Paper.Pdf : Diakses 10 Januari 2015)

[8]Sisitirahayu, 2013.Monitoring Tools. (Http://Sisitirahayu.Blogspot.Com/2013/03/Network-Monitoringtools.Html :Diakses 29 Desember 2014)

[9]Kamarulla, A. (2009), "*Penerapan metode Quality Of Service Pada jaringan trafik Yang Padat*", Jurnal jaringan computer universitas sriwijaya. Diakses pada tanggal 13 Januari 2015, Dari (Www.Unsri.Ac.Id)

[10] Dewo, S. (2010), *Bandwidth dan Throughput*. Diaksespadatanggal 11 Desember 2014, Dari (*Http://Www.Ilmukomputer.Org/Wp-Content/Uploads/2006/08/-Dewobandwidth.Zip.*)

[11] R. Eržen, "Virtual Private Networks," 2012.

[12] P. T. Bakardjieva, "Introduction To Computer Networking," Pp. 1–23.

[13] A. Irawan, "Analisis Teknis Kualitas Layanan Jaringan Internet Berbasis Hsdpa Indosat Im2 Wilayah Maguwoharjo Depok Sleman," Pp. 1–21, 2011.

[14] R. S. Lubis And M. Pinem, "Analisis Quality Of Service (Qos) Jaringan," Vol. 7, No. 3, Pp. 131–136, 2014.