TO INCREASE THE EFFICENCY OF UNIVERSITY NETWORKING SYSTEM

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Abstract— The main aim of this project is to develop a system which can help to solve the Network problem. I was employed at IT services in University as a trainer. In the period of worked I learned many things about networking, communication and got practical on live problems faced in this University. These problems include the cable problems, Wi-Fi communication problems, communications between Blocks 'A' Block 'B' Block 'C' Proxy Server, Switch and fiber communication. I also learned how to work in a team and what are the benefits of it. Here I got exposure for my communication skill along with the knowledge of networking. A given communication can also be characterized by the type of data transmission technology is use on it (for example ,a TCP/IP or system networking architecture); by whether it carries voice, data, or both kind of signals; by who can use the network (public or private); usual nature of its connections (dial-up or switched, dedicated or no switched, or virtual connection); and by the types of physical links (for example, optical fiber ,coaxial cable, and unshielded twisted pair). The large telephone networks and networking using their infrastructure such as the internet have sharing and exchange arrangements the larger network are created.

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I. Introduction

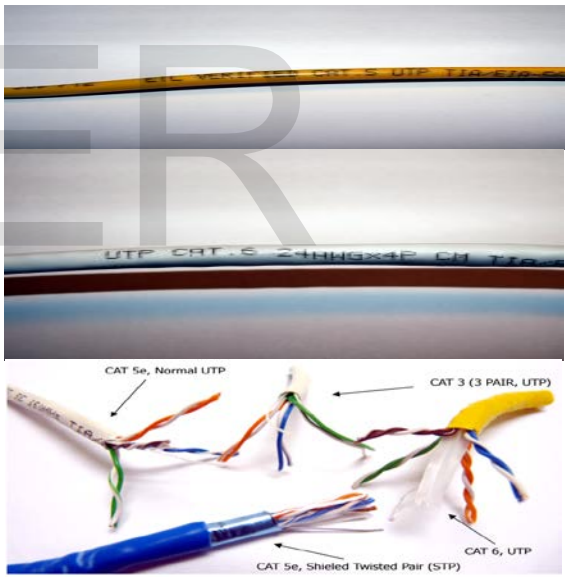
In this project i would like to introduce how to manage the internet traffic and its bandwidth through the network. Benefits of a highly efficient network is better insight into the network means more effective management of it. For example, employee productivity will increase, as users will be able to access the network at top speed. IT resources will be available for more strategic projects, as they won't be tied up at inopportune times to troubleshoot network access issues. Communication and data sharing will improve as users reduce high-bandwidth activities, ensuring high performance and availability to the network. And IT departments can host more centralized applications with resources properly allocated. Managing network bandwidth efficiently is a top-of-mind concern for many network engineers today. With increasing bandwidth demands, network professionals are constantly looking to optimize network resources, ensure adequate bandwidth, and deliver high performance.

II. THE TYPES OF NETWORK CABLE

Category CAT3, CAT4, CAT5, Cat. 5e, Cat. 6, Cat. 6a, Cable Are Use in University.

In the **University** they use this Category of Networks cable. If you have got a bundle of Ethernet cables and you're not really sure if you should use them in your network, this short guide should help you identify and correctly use any of the common Ethernet cables you are likely to run across.

Identify the Cable:-



As you see above almost all Ethernet cabling has this category of cabling printed on the side (hover over an image for the caption). The category shows what bandwidth the cable is rated to carry. If you encounter anything other than the categories listed in the table below, you probably should not use them in your network. In the **University** they use this Category of Networks cable. If you have got a bundle of Ethernet cables and you're not really sure if you should use them in your network, this short guide should help you

identify and correctly use any of the common Ethernet cables you are likely to run across.

Cat.5-	10/100/1000MbE *	A category 5 cable is a currently outdated standard that provides support for up to 100Mhz operation. It can be used for 10/100 Ethernet without worry, however for longer runs of 1000MbE it is recommended to use Cat. 5e or higher.
Cat.5 e-	10/100/1000MbE *	Category 5e cable provides support for frequencies up to 100Mhz. Cat. 5e generally provides the best price for performance, however for future proofing Cat. 6 or higher might be a better choice as it usually does not cost much more.
Cat. 6-	10/100/1000MbE 10GbE*	Category 6 is defined up to a frequency of 250Mhz. Allowing 10/100/1000 use with up to 100 meter cable length, along with 10GbE over shorter distances.
Cat.6a -	10/100/1000MbE 10GbE*	Cat. 6a or Augmented Category 6 is defined up to 500Mhz. It allows up to 10GbE with a length up to 100m.

Fiber optics:-

Fiber optics is a system which transmits signals from one location to another through a thin strand of glass which carries light pulses to carry data. This transmission system works on the same principle that copper wires do, but is done in a different way. Date is encoded from electrical signals onto optical light pulses, sent through a glass medium and converted back and decoded at the other end. Both copper and optics use electricity at the end of the ir lines, but optics uses light in between to carry the data.

Fiber cable GYFT C8S

Increased bandwidth: The high signal bandwidth of optical fibers provides significantly greater information carrying capacity. Typical bandwidths for multimode (MM) fibers are between 200 and 600MHz-km and >10GHz-km for single mode (SM) fibers. Typical values for electrical conductors are 10 to 25MHz-km.

Electromagnetic/Radio Frequency Interference Immunity: Optical fibers are immune to electromagnetic interference and emit no radiation.

Decreased cost, size and weight: Compared to copper conductors of equivalent signal carrying capacity, fiber optic cables are easier to install, require less duct space, weigh 10 to 15 times less and cost less than copper.

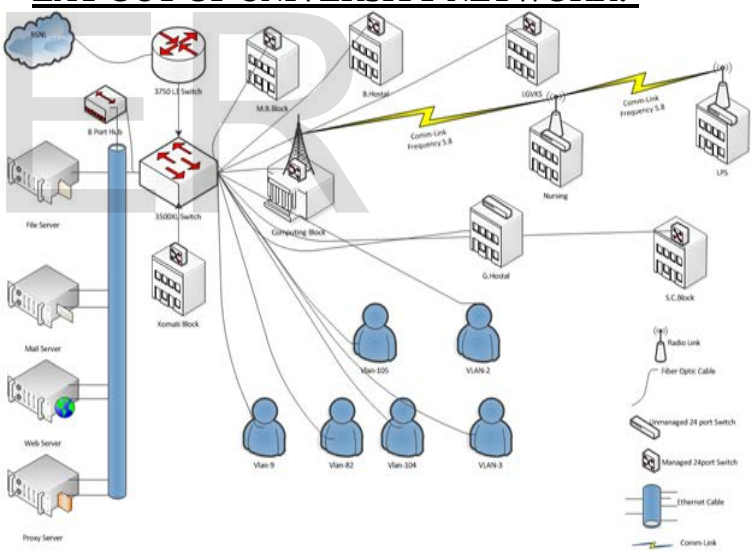
Lower loss: Optical fiber has lower attenuation (loss of signal intensity) than copper conductors, allowing longer cable runs and fewer repeaters.

No sparks or shorts: Fiber optics do not emit sparks or cause short circuits, which is important in explosive gas or flammable environments.

Security: Since fiber optic systems do not emit RF signals, they are difficult to tap into without being detected.

Grounding: Fiber optic cables do not have any metal conductors; consequently, they do not pose the shock hazards inherent in copper cables.

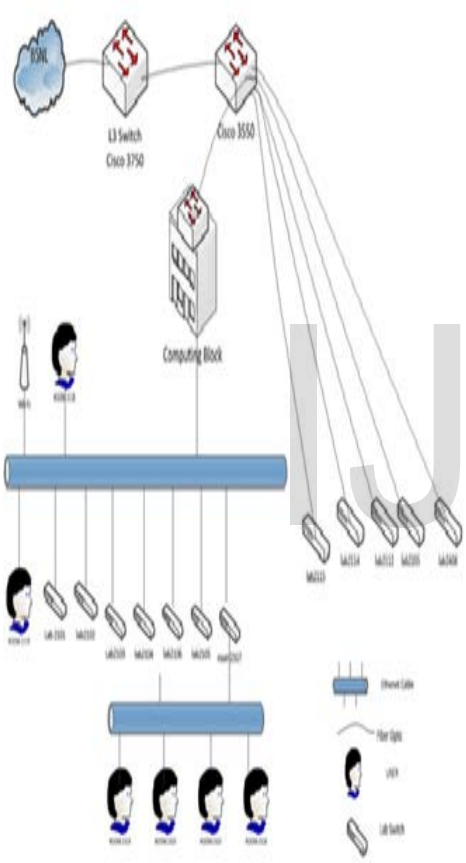
LAY OUT OF UNIVERSITY NETWORK:-



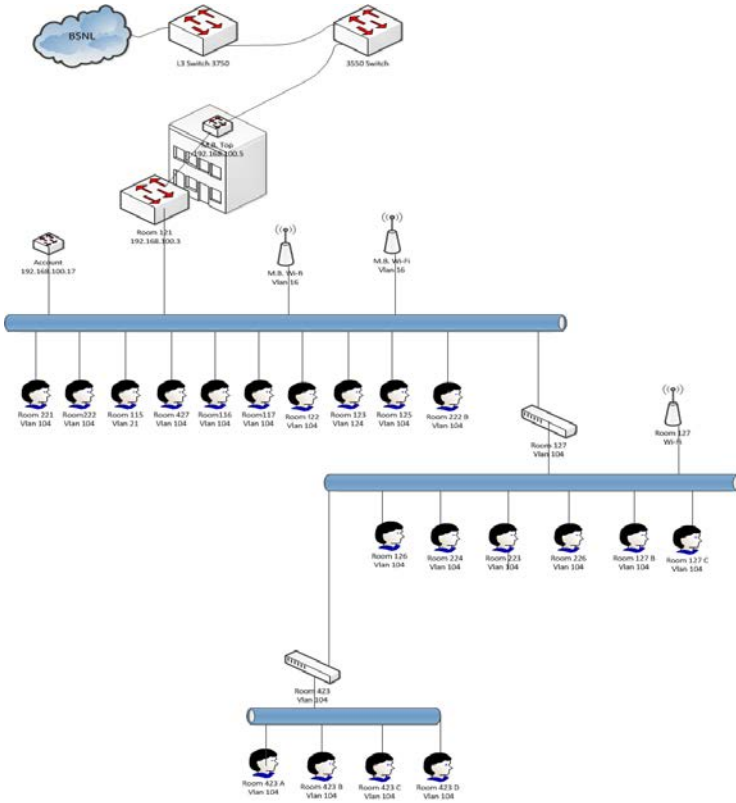
Whole network of **University** shown in the map. This diagram is drawing through the **Microsoft Visio Software**. In university take the connection through the **BSNL** and **Elixer**. The BSNL is connected through **FIBER OPTIC** and Air Cell is connected through **Radio point to point**. The University

takes **1GBPS** Band with BSNL and it also take **10mbps** Band With through Elixer. The Fiber Optic Cable connected to main switch (3750) L3. There are four servers in the University like **FILE SERVER, MAIL SERVER, WEB SERVER, and PROXY SERVER**. The **main switch (3750) L3** distributes Network whole University. The Network connection is given all the building in side University through fiber optic connection**. Block 'A'**, **Block 'B' Block 'c'& Block 'D'** and are connect through the Radio point to point. A server has connected main switch through cat6 cable. A server is connected through Ethernet Cable. The entire Network is operator from the IT servers. **Block 'c'** is connected through the Fiber Optic cable. The boy's hostel and Girl hostel are connected through the Fiber Optic cable. There are six VLan in the server.

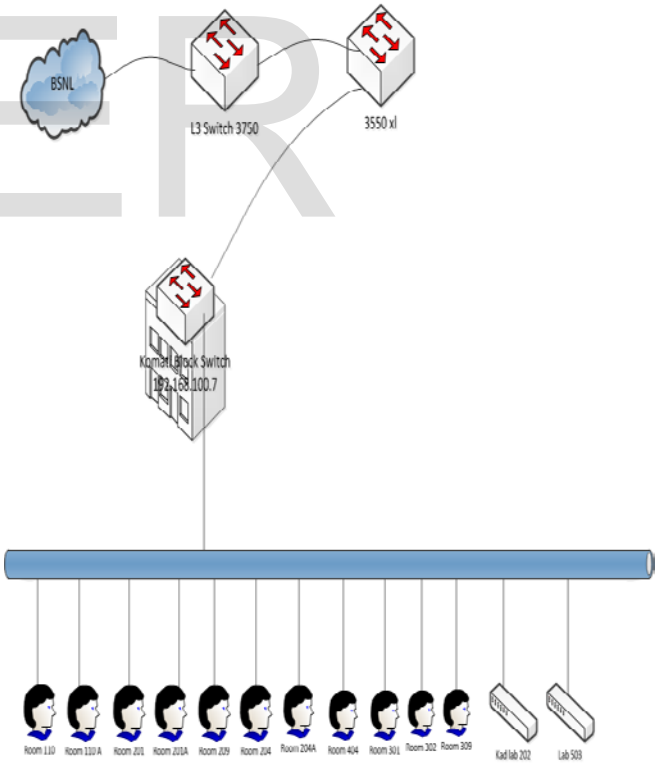
Block 'A'



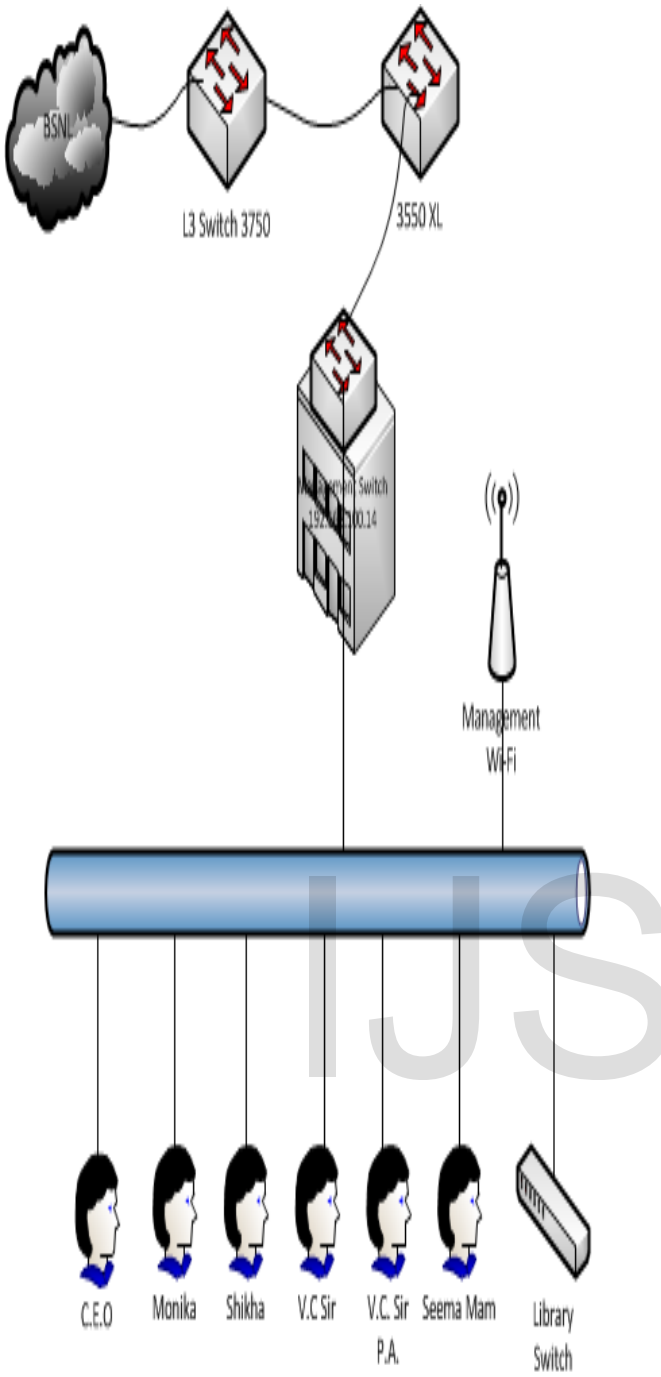
Block 'B'

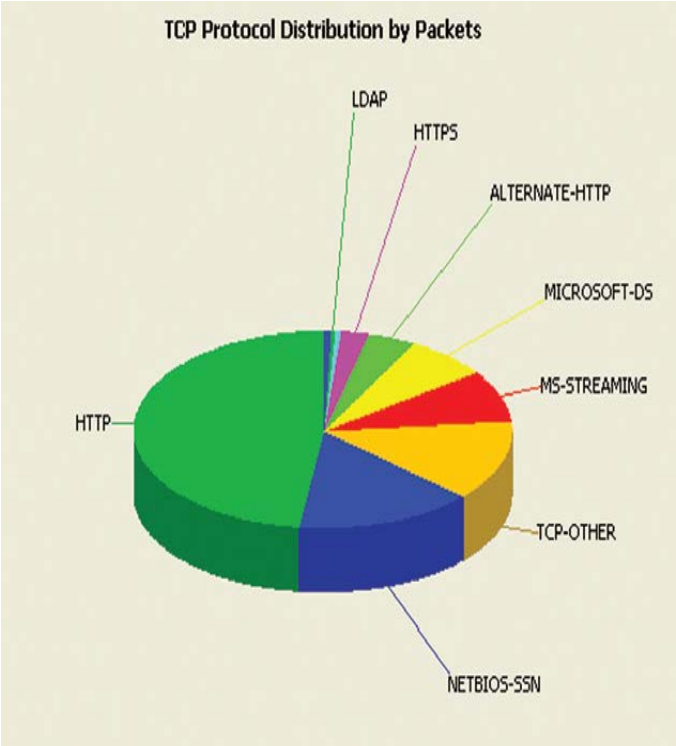


Block 'c'



BLOCK 'D'





Best practices at work: prevent unwanted network traffic

Unwanted network traffic comes from several sources and often

Contributes to unnecessary processing by devices throughout the Network.

III. Network Analyzer

The Network Analyzer from an integrated, comprehensive tool that combines multiple functions in one portable device, so network professionals can go directly to the source of a problem and analyze numerous possible causes. The Analyzer also aids network professionals with monitoring, base lining and managing the network.

Monitor

With the Analyzer, network professionals can discover which protocols and applications are running on the network, track the top hosts/users and which applications they are running, and determine which applications are unwanted. Network engineers can monitor WAN traffic and identify unauthorized applications that are running over the WAN. They can also quickly and easily identify multicasts, broadcasters or select top conversations to determine which hosts may be over-utilizing resource bandwidth.

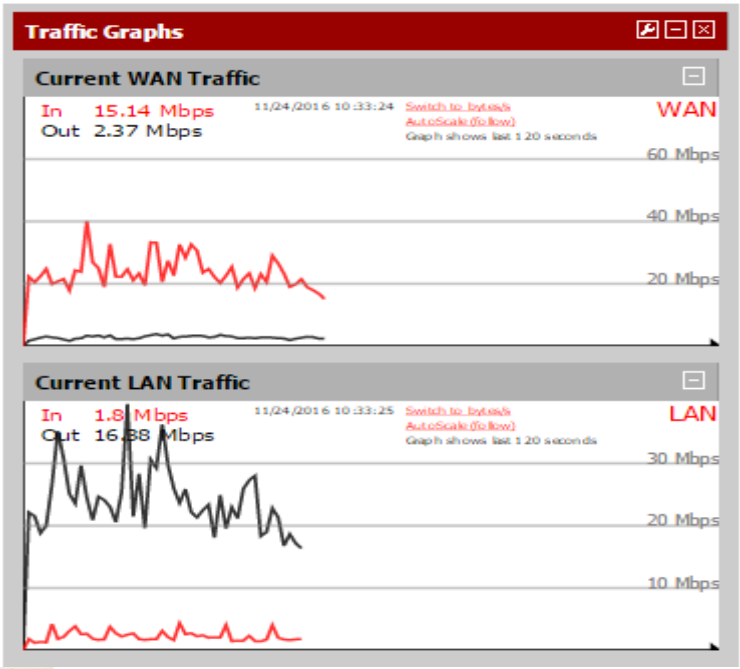
Baseline

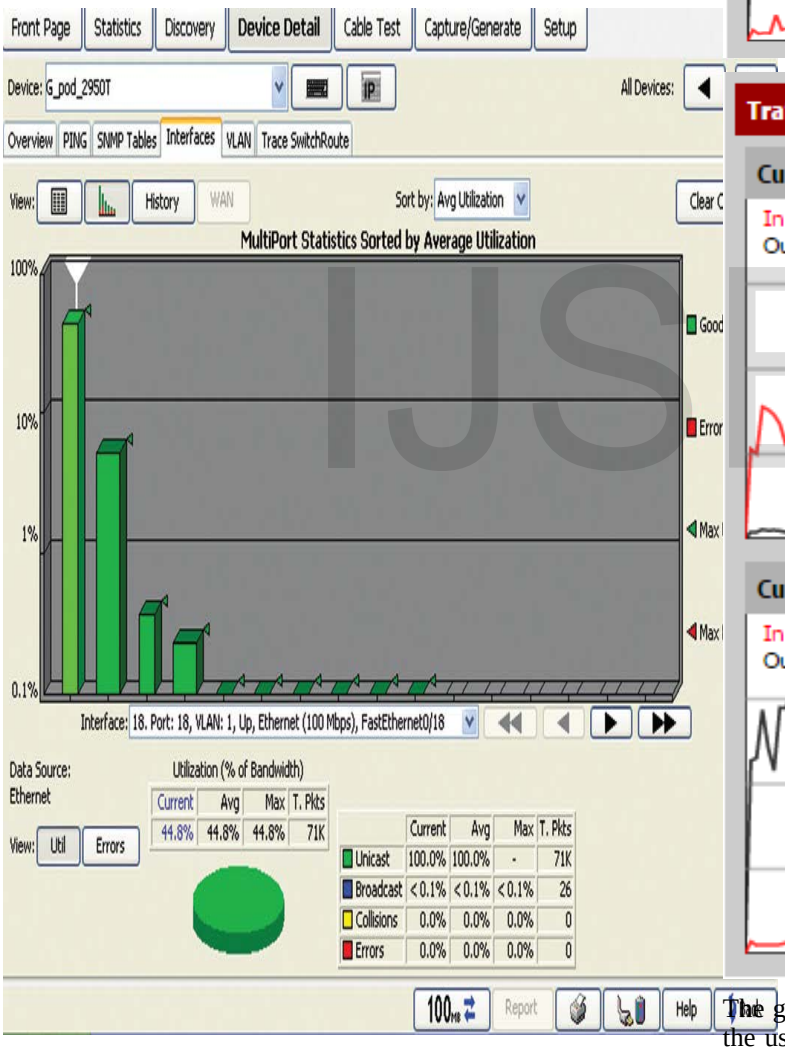
Once the network team has a full audit of activity on the network, a baseline can be documented to set the service level quality expectations. The team can define appropriate protocol usage, detail user activity, and determine normal WAN utilization. Network engineers can detect over-utilization and excessive errors, and locate inactive switch ports to determine if performance problems are related to link speed mis-configurations or to the number of hosts on a port. Network professionals can then use the Analyzer to eliminate unwanted applications through deep traffic analysis, differentiating between specific audio, video, image or data applications. Once this is complete, the IT team can take a snapshot of the network to determine normal operation. This

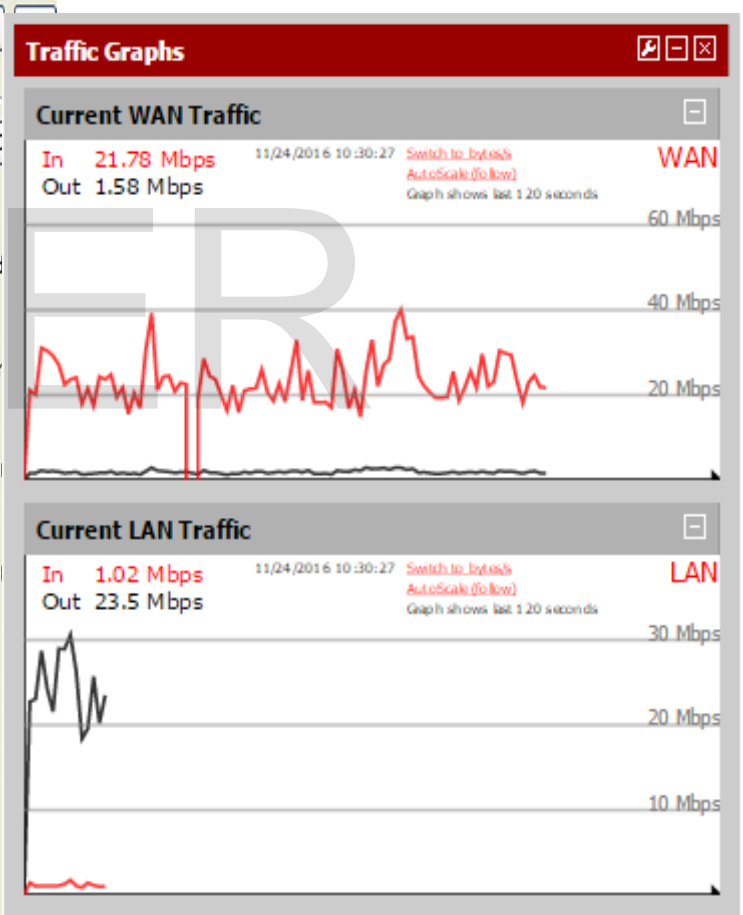
not only includes monitoring traffic levels, but also involves checking on the utilization of switch ports, router and WAN interfaces. While performing this task, network professionals can also check for errors on switch ports, indicating configuration errors such as duplex mismatches. It is important to document the results in this stage so that the network team has a reference point that can be used when users make reports of a slow network.

Manage

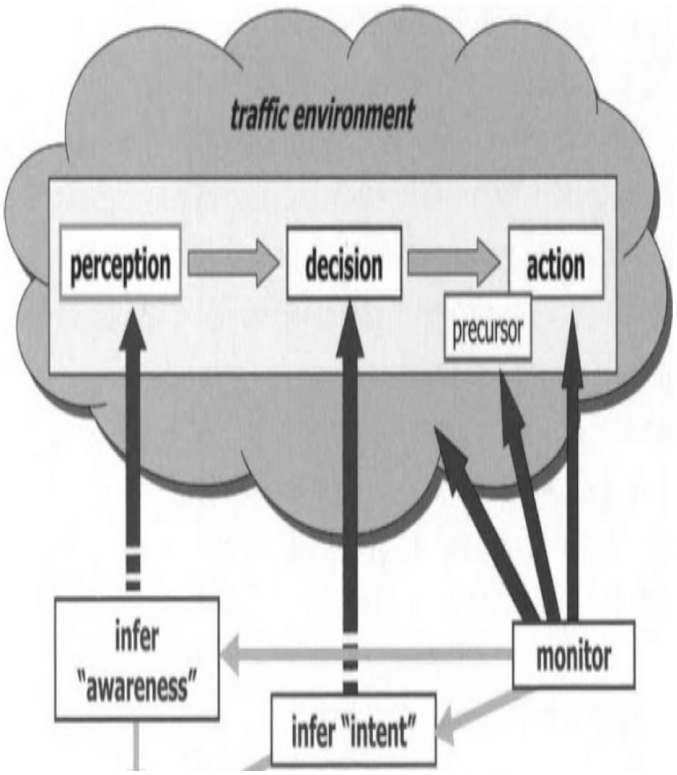
Monitoring the network periodically is much easier when working off of baseline data, and reports can be pulled quickly through the portable Analyzer user interface. The tool makes it simple to ensure unwanted traffic has not returned and that all changes are validated. The Integrated Network Analyzer enables network professionals to identify applications utilizing link bandwidth – including those that use dynamically assigned port numbers – in order to see and validate the impact of applications on bandwidth.

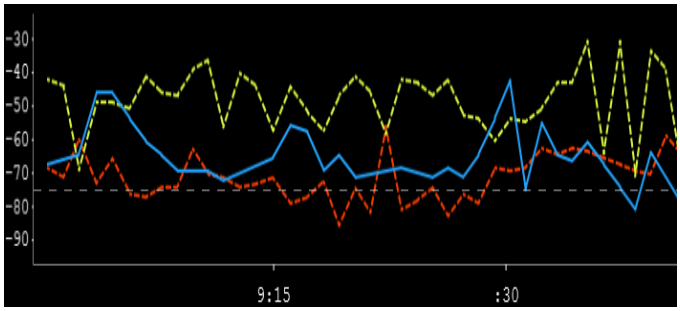


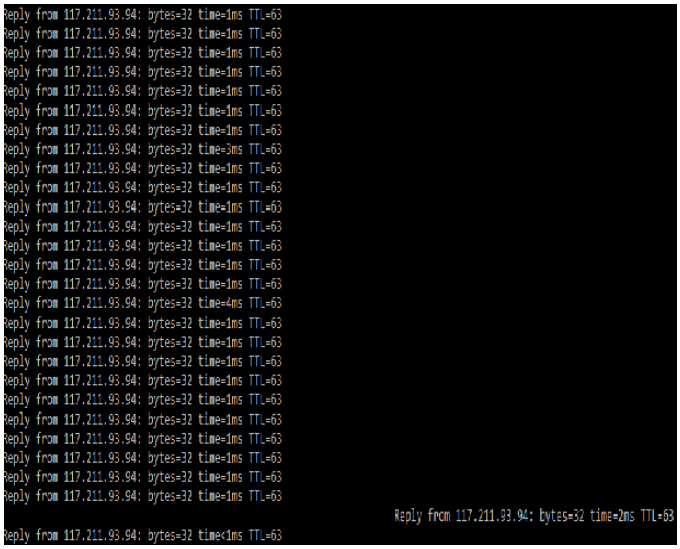


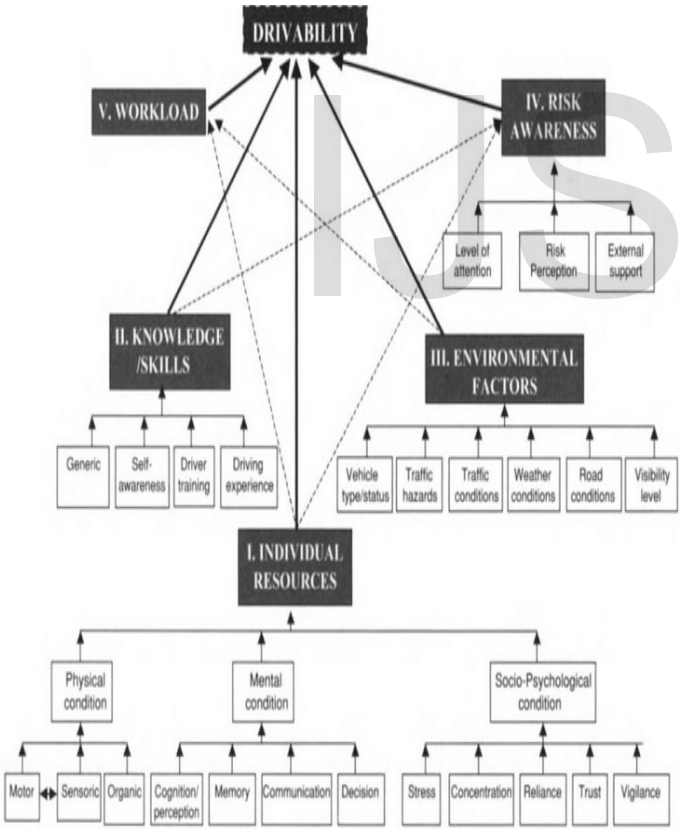


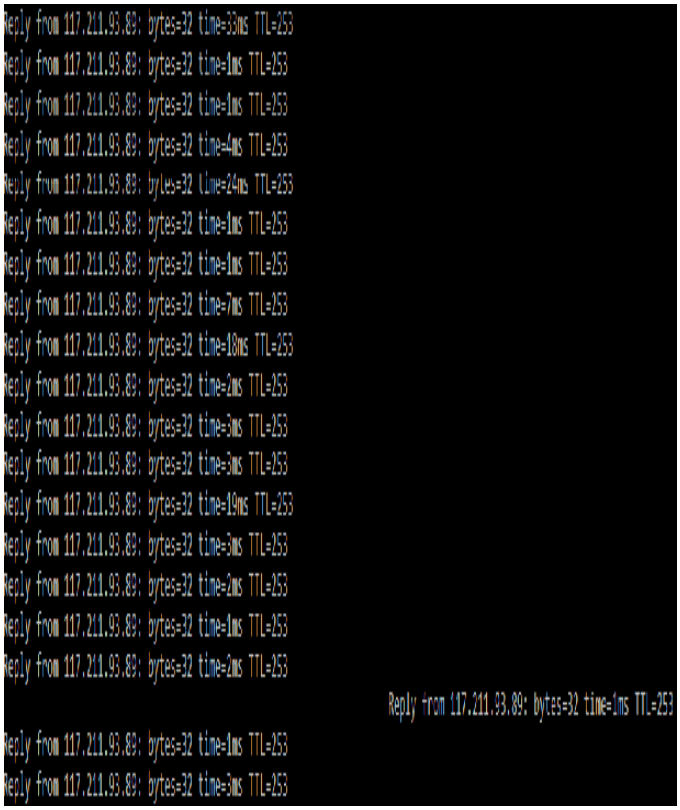
The graph show that input is source and output is uses. When the user does not use the internet the input is 21.78mbps and use is 1.58mbps when the pick time it become the input 1.02mbps and the user become 23.5mbps.so I want to manage the speed of internet for all user to work.


traffic environment
perception
decision
action
precursor
infer "awareness"
monitor
infer "intent"


-30
-40
-50
-60
-70
-80
-90
9:15
:30


Reply from 117.211.93.94: bytes=32 time=1ms TTL=63
Reply from 117.211.93.94: bytes=32 time=3ms TTL=63
Reply from 117.211.93.94: bytes=32 time=4ms TTL=63
Reply from 117.211.93.94: bytes=32 time=2ms TTL=63
Reply from 117.211.93.94: bytes=32 time<1ms TTL=63


DRIVABILITY
V. WORKLOAD
IV. RISK AWARENESS
Level of attention
Risk Perception
External support
II. KNOWLEDGE /SKILLS
III. ENVIRONMENTAL FACTORS
Generic
Self-awareness
Driver training
Driving experience
Vehicle type/status
Traffic hazards
Traffic conditions
Weather conditions
Road conditions
Visibility level
I. INDIVIDUAL RESOURCES
Physical condition
Mental condition
Socio-Psychological condition
Motor
Sensoric
Organic
Cognition/ perception
Memory
Communication
Decision
Stress
Concentration
Reliance
Trust
Vigilance


Reply from 117.211.93.89: bytes=32 time=33ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=4ms TTL=253
Reply from 117.211.93.89: bytes=32 time=24ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=7ms TTL=253
Reply from 117.211.93.89: bytes=32 time=18ms TTL=253
Reply from 117.211.93.89: bytes=32 time=2ms TTL=253
Reply from 117.211.93.89: bytes=32 time=3ms TTL=253
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Reply from 117.211.93.89: bytes=32 time=2ms TTL=253
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Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=3ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
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Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=2ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Reply from 117.211.93.89: bytes=32 time=1ms TTL=253
Request timed out.
General failure.
General failure.
General failure.
General failure.
General failure.
Reply from 10.0.82.177: Destination host unreachable.
Request timed out.
Reply from 10.0.82.177: Destination host unreachable.
Request timed out.
Reply from 10.0.82.177: Destination host unreachable.
Request timed out.
Request timed out.
Reply from 10.0.82.177: Destination host unreachable.
Reply from 10.0.82.177: Destination host unreachable.
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Reply from 10.0.82.177: Destination host unreachable.
Reply from 10.0.82.177: Destination host unreachable.
Request timed out.
Reply from 10.0.82.177: Destination host unreachable.
Reply from 10.0.82.177: Destination host unreachable.
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It is remarkable that Internet technologies and protocols have kept working and stayed relevant despite the huge
Advances in link-layer technology and increases in core and access link bandwidths that we have witnessed over four decades of operation. Novel mechanisms to deliver popular, high-bandwidth content to a global audience of billions are now being widely deployed and are starting to raise new questions concerning scalability. It is clear that as the ratio of access link bandwidth to core link bandwidth approaches unity, new opportunities for latency and bandwidth management will arise. In this report we have identified a number of concrete actions that will serve to improve the quality of experience for Internet users, relieve some of them pressures on network operators, and ensure that the Internet continues to thrive as a platform.

References:-

Blanche, Google
Bob Briscoe, BT
Cameron Byrne, T-Mobile
Stuart Cheshire, Apple
Alissa Cooper, Center for Democracy and Technology
Sam Crawford, SamKnows
Leslie Daigle, Internet Society
Lars Eggert, Netapp
Rob Evans, Janet
Nick Feamster, Georgia Institute of Technology
Mat Ford, Internet Society
Jim Gettys, Alcatel-Lucent Bell Labs
Jason Livingood,
Fluke Networks operates in more than 50 countries worldwide. To find your local office contact details, go to **www.flukenetworks.com/contact**.

Conclusions

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