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NEWS-LETTER FROM INFORMATION TECHNOLOGY,
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EXPERIENCE & EXPOSURE



National Conference on Computer Networks & Information Security was organized by the Department of Information Technology, Vasavi College of Engineering on 16th and 17th April, 2012.

The conference focused on latest and cutting edge technologies in the field of Networking and Information Security and provides an opportunity to interact with experts in this area for better understanding of different topics.

It provided a fine opportunity for young teaching faculty and aspiring specialists in the field to present their innovative ideas and get them reviewed by industry experts and renowned academia who graced the conference with their presence. Special lectures on the latest topics like Virtualization and Cloud Computing by the guests of honor provided deep insights into the field of computers and networking to the participants of the conference.

This conference provides an excellent opportunity to network with IT security professionals and business leaders in Computer Networking industry.

The conference saw immense response and received a large number of papers from students and researchers across the country. The organizers made sure that the conference was definitely worth all the preparation and effort of the participants by making sure that not only are their ideas received and encouraged well enough but also provided the best hospitality possible during the two days of the conference.

All the participants were presented certificates and this conference definitely provided them enough encouragement to elevate their zeal for research to a higher level.

It's not a faith in Technology. It's faith in people.

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“It's fine to celebrate success but it is more important to heed the lessons of failure.”

- Bill Gates

“Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young. The greatest thing in life is to keep your mind young.”

- Henry Ford

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FACULTY COLUMN

Networking – Part-2

Computer Networking :

It is essential to transfer stored information across various geographical locations to process and complete a range of business activities. Computer networks provide a fast, dependable and accurate way of doing this in favor of a business domain.

Purpose of computer networks :

From a user's point of view, there are many advantages of having a computer network. The major purpose of a computer network is to share hardware and software resources. In sharing hardware, you can access a printer connected to a remote PC, and you can allow one of your colleagues to use your own PC's CD-ROM from his computer.

Whenever you share software resources, you execute a software application in a remote server. The server will do all the processing while your computer does only the input and output, without using much processing power. This is especially beneficial when the client computers are less capable machines, whereas high-end servers are available to get the job done.

From a network administrator's perspective, a computer makes management of the computers easy and effortless. Regular tasks like maintenance, backup and new software installation will be a tedious task without a computer network. With a little help from a computer network, additional duties such as assistance, security allocation and monitoring becomes a piece of cake.

Networking equipment :

To form an operational computer network you need to have some hardware devices. One of the major components is the Network Interface. The network interface may be an Ethernet (a type of network) adaptor, a modem, a wireless network card or your ADSL modem. This device is essential for contact with the other end of the communication.

Always, the connection is established over a communication media. Wired or bounded communication media are one type that contains cable media such as Twisted-Pair cable, Co-axial or Optical Fibers. Unbounded media types use wireless technologies, for instance Microwave, Radio waves and Infrared waves.

Some advance networks need additional communication equipment, such as Switches, Gateways, firewalls, and Routers. These devices increase the reliability of the communication and makes it smooth and error-free. All networks need not have all these hardware, but for certain types of networks, some of them stand compulsory.

Networking standards :

Many networking standards provide ways and means to follow when investing for a new computer network. Hardware device capabilities, protocols and wiring regulations are some of the few points to consider. Selecting the correct networking standard depends upon the requisite of the designated network. Thorough analysis of the business requirement is necessary before choosing a standard to investigate the suitable type of network that fit the usage demands. Deploying a computer network should be a well-planned activity, just like developing a new custom software package.

Networking basics :

There are many advantages of having computer networks. You can share your hardware and software resources over a computer network.

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For example, you can share the printer that is connected to your computer with other colleagues at your office. You can also run a software application from a remote server using the network features, without having it installed in your computer. You can send and receive e-mails, do instant chatting and even connect your workplace internal PBX system into your computer network. From a network administrator's point of view, a network enables managing all the organization's computers from a central location. This includes installing software, maintenance tasks, security allocation, monitoring and so on.

Except for the PC requirements, there are some other necessities to form an operational computer network.

Network interface :

This is the device where you plug-in your network cable. This may be the network card fixed into the back of your PC, or it can be the internal modem in terms of Internet connectivity. Of course, it can also be your wireless network adapter with a USB interface, enabling you to access a wireless communications network.

Communication media :

Media includes the cables used to transport informative content from one location to another, electronically. There are several different types such as Twisted-pair, Co-axial and optical fiber. Infrared waves, Radio waves and Microwaves fall under wireless media category.

Special communication devices :

Special communication devices are necessary in certain computer networks in the purpose of increasing reliability, error correction, signal restoration, automated switching and in various other requirements. These include Hubs, Switches, Gateways, Routers and Firewalls. You may require very few of them for your computer network.

Communication software :

Software plays a major role in computer related communication networks. You need to have diverse types of software such as server operating systems for servers and some advanced software to control those special communication devices such as routers. Usually, workstation PCs only need some basic client software utilities such as browsers and e-mail clients.

Networking protocols are another basic requirement to enable network communication. Protocols are communication standards maintained by international governing bodies to sustain the reliable communication between different communication equipment and environments. Mostly, you need not worry about these protocols yourself, because they are built-in to the networking software you are using. However, if you want to know how to configure networks, you have to learn the essentials of protocol standards. TCP/IP protocol suite is a good starting point, because it is the most widely accepted and established communication protocol at present, especially concerning the Internet. You have to be aware that TCP/IP alone would not make the communication possible, but may require some other above and below level software and hardware constrains.

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WAN OPTIMIZATION IN BUSINESS part-2 By-Neha Kanjani

This paper presented by Neha Kanjani and Nidhi Sanghi has bagged first prize at MVSr.

4) Caching/Proxy:

Caching can be defined as caching of Web documents wherein copies of documents that pass through the Web cache are stored. Web caching is a technique that helps in reducing bandwidth usage and server load.

Web Caching is an effective technology tool that can enhance quality of service for the broad range of Internet users. Caching helps in enhancing the quality of data transmissions over the Internet. In situations where there is network congestion or heavy load on originating server, the cache can promptly serve data to a page. The benefit of nearby caches serving requests through interception is that the volume of requests going to the source server is drastically reduced, thereby reducing server load and network traffic.

A well-designed Web cache effectively reduces network traffic while improving access time to Web sites. This is greatly beneficial to both Web users and network administrators. A Web cache is located between one or several Web servers and one or more clients. The Web servers are also referred to as origin servers. The requests that are transmitted over the network are given responses, which are saved in the Web cache.

The responses will be sending of the requested Web documents to the receiver. The Web documents may be HTML pages, images, files, and others. These are collectively termed as 'representations.' When there is a request for the same URL again, the response from the Web cache is used instead of being directed again to the origin server.

Browser Caches, Proxy Caches, and Gateway Caches are the 3 kinds of Web caches, which have specific functionalities. Browser Caches are used to ascertain if the stored representations on the cache are fresh. Proxy caches are found on the networks and requests are routed to them either by manual selection or through interception. Being a type of shared cache, they cover many users while efficiently reducing network traffic and latency levels. Gateway caches are deployed by Webmaster to enhance their sites in terms of better performance, scalability, and reliability.

5) Forward Error Correction:

Forward Error Correction is a method, as the name suggests, of controlling error in the transmission of data. The forward error correction techniques consist of sending redundant data and the receiver or destination on recognizing portions of the data that are effort free. Forward error correction does not require a handshake between sender and receiver and this allows for the transmission of data to multiple destinations from a single source.

Types of Forward Error Correction:

Block and convolutional codes are the two main categories of forward error correction codes. Sometimes these are combined in concatenated coding schemes.

Block codes – this type of forward error correction works on fixed block sizes or symbols of predetermined size. These are generally decoded in polynomial time to their length.

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Convolutional codes – this type of forward error correction works on data of arbitrary length. These are frequently decoded using the Viterbi algorithm. This algorithm allows variable lengths data decoding but exponentially introduces complexity.

Concatenated forward error correction codes – In concatenated forward error correction schemes, a short length Viterbi decoded convolutional code is primary while a block with large size finishes up any errors made by the convolutional decoder. This is a very effective method of forward error correction with low error rates.

6) Protocol spoofing:

Protocol Spoofing is used to improve performance in situations where an existing protocol is inadequate, for example due to long delays or high error rates.

Spoofing techniques:

In most applications of protocol spoofing, a communications device such as a modem or router simulates ("spoofs") the remote endpoint of a connection to a locally attached host, while using a more appropriate protocol to communicate with a compatible remote device that performs the equivalent spoof at the other end of the communications link.

Figure 1: The IP Header

0	4	8	15	16	31
Version	IHL	Type of Service	Total Length		
Identification			Flags	Fragment Offset	
Time to Live	Protocol		Header Checksum		
Source IP Address					
Destination IP Address					
Options				Padding	

Error correction and file transfer protocols typically work by calculating a checksum or CRC for a block of data known as a packet, and transmitting the resulting number at the end of the packet. At the other end the receiver recalculates the number and compares it to what was sent from the remote machine. If the two match the packet was transmitted correctly, and the receiver sends an ACK to signal that it's ready to receive the next packet.

TCP spoofing:

TCP connections may suffer from performance limitations due to insufficient window size for links with high bandwidth x delay product, and on long-delay links such as those over GEO satellites, TCP's slow-start algorithm significantly delays connection startup. A spoofing router terminates the TCP connection locally and translates the TCP to protocols tailored to long delays over the satellite link such as XTP.

8) Traffic Shaping:

Internet Traffic is the flow of data across the Internet.

Traffic shaping is a strategy to optimize performance and manage traffic on a network. Because most networks have a limited amount of bandwidth, an effective strategy is needed to ensure the network does not become overloaded. Computer network traffic can sometimes cause a network to become so busy it leads to choking points.

In network traffic shaping, packets can be prioritized in different ways. Some may be prioritized based on the information being sent. Others may be prioritized based on the computer sending the information or the computer receiving the information.

In addition, if many users compete for the same bandwidth, traffic shaping can be used as a way to ensure everyone receives the same priority. If a computer is using the network heavily, then the packets from that computer could be delayed so that others are given fair and equal access. Internet service providers can also use traffic shaping as a means of controlling traffic on their own networks.

Today, our businesses operate on the internet. It is therefore crucial to the business organization as well as the customers to make the most of the available and allotted bandwidth to them to ensure efficient data transfer.

WAN optimization helps business organization realize their goals of faster data transfer across networks, file sharing and protect data more completely and hence offer the best to their clients.

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SERIES: PART-4 JUST MAKE IT HAPPEN - Ali Intakhab

My job was finally completed successfully. I was in good books of both the sides. I had set my eyes on the upcoming elections. Finally I was on one of the jeep which I use to see on television during my childhood and curse the person campaigning for deteriorating the condition of the country. The task was not that tough as I was their (people's) own child. But still I didn't take anything for granted. It was summer at its peak. One month before the elections, I was on bed rest due to sun-stroke during the campaign but still managed to resume my task of wooing the voters as I thought absence from the sight for long might put me on the losing side as all the market runs on one line 'Jo dikhta hai woh bikta hai' (What is seen, is sold). It was finally the voting time; where even I was suppose to cast my vote. After so much of hard work for campaigning, I deserved a break. I no more can visit Sana during my break since I was in public eyes. I had to hole up in my Baba's palace during my break. In couple of days, result was out in my favor. I never expected God to be so kind to me. In next few days, I took my oath as a MLA of the town. Vardhaman was accompanying me for the ceremony, "So what next, replacing me?" asked Vardhaman with a smile. "Hmmm! Let's see." I replied with a wink. After a pause, "God can never be replaced." I said to Vardhaman with a smile. The last statement was made just to keep the MP in confidence. Working days for me started. By now, I even started to feel the power of the designation. Frequent calls and texts were always exchanged between me and Sana. We were now the closest friends but she never came to know about my intentions of becoming the MLA.

Three years down the line, I was like right hand of Vardhaman. I knew about every

small proceeding in his life. The copy of the most confidential scam papers of his life was with me i.e., Land grabbing issue of which even I was a part. But luckily, my name was nowhere mentioned in the papers.

One day, Sana came over to my office, giving me the best surprise of life. I kept the file of scam which I was reading on table. Initially speechless with her gesture, in sometime I was in a position to utter some words. We were chatting at length as I asked all the meetings to be postponed. We didn't move out of the cabin. The reason is pretty obvious, a politician can't be seen with a girl at some café, mall or at screening of some random movie in India. Or else before Mango people, Opposition party and media officials will be available to screw their life inspite of me roaming with a Sr. News Reporter. Now coming back to all time boring cabin of mine. She was telling me all latest news which she covered in recent days. One thing which puts her as out of league girl, is the good character of her not talking about other girls in wrong attitude. She has one bad habit which slaughtered my life forever, playing with things around when talking to someone in person or on call. That day, she was playing with the file containing scam papers. The papers fell out of the file and on her way of putting back the papers; she got a glimpse which provoked her to read the entire document. I could do nothing but sweat in front of her. Within a fraction after she completing her bible read, the door was banged on my face. Once again I was speechless but for different reason. My calls and texts fell flat at that point of time. Life was not the same for me after becoming a MLA so I kept my affection for Sana at bay.

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Four months after the incident of Sana, one day I was sitting in Vardhaman's room. Our chat was at halt because few people walked in to get some help for permission regarding their new college. There college's authority knew that their service is not upto mark so they wanted some help from the MP. After speaking at length, they closed the deal for 2 Crores. I was asked to maintain all the records of such events. I was more like a personal assistant of the MP than a MLA myself.

One day, Nikitha called me up to inform that Sana was going to leave city in a week's time since her mom called her back to Delhi due to some private reasons and even said that she visited my office that day to tell that she started liking me but I spoiled it. Luckily she was not told how I spoiled it. It didn't really matter to me then.

Days passed by and records kept increasing. With the help of Vardhaman, it was raining money for me as well. The only thing which didn't change in my life is my relation with Sahil. One day I sent him the Xerox of those scam papers to show him the reality.

Vardhaman & Saxena were the happiest person because their dream project was near its completion. Foreign companies were offered to become financiers who meant billion dollars deal sealing up.

On one of our usual party's meeting, "Toh Gopal ji, this time you will come back because I want Ishan to fight for MP's post. It doesn't mean I'm leaving. He will contest for another zone." Vardhaman said with a jovial mood. Suddenly, conference's door opens up and his secretary runs in and says "Sir ji, jaldi TV dekho." He switches on the TV in the hall which telecasts about the Land scam in relevance with Vardhaman, Gopal & Saxena. This left them baffled and before they could wonder the leak source, the news reporter on one of the news channel narrates, "These papers are the proof of the negotiation which took place between MP Vardhaman and well known industrialist Amit Saxena. These papers even say that former MLA Gopal Srivastava was also involved in this scam. We got this paper by post from New Delhi. This is Nikitha reporting exclusive news live" Vardhaman and Gopalji walked out of the hall

with handcuffs on, after police came in without wasting time.

Now let me tell you how they went behind bars. When I mailed Sahil the documents related to scam, I even sent along with it a letter reading, 'Post these documents to Nikitha, a reporter from *****'. I wanted this letter to come from a different city so that I get time to say Vardhaman that it was not me who did all this as it came from a different city and by in meanwhile police would arrive and save me from the fierce of Vardhaman & Gopalji. Since starting my only motive was to get back the land to their original owners which looked impossible if I would have gone against them then. Now you people might be thinking the reason behind me doing such a nice thing for the country. The only person who made me do all this was one of the three people who got killed then, my Baba. It was a state of rage. I preferred giving this news to Nikitha over Sana due to safety concern. I hardly bothered about Nikitha so put her in danger zone and travelled back to my city, Delhi to avoid the wrath of party's workers and most importantly to speak with Sana.

On reaching Delhi, finally I thought of telling Sana about my matter of words which got delayed by years. I went to Sana's house. "Namaste Aunty, main Ishan hoon. Sana ka dost." I said to Sana's mom after she opened the door. "Arrey beta! Aao aao! Aapko kaun nahi jaanta hai. Ab toh MLA ho gaye ho." (Please come in Ishan. Everyone knows you as a MLA) said Sana's Mom. I was in no mood to say that I have left all that and came here to speak with Sana. "Aunty, Kya Sana ghar pe hai?" (Aunty, Is Sana there?) I enquired. "Beta! Tumhe Sana nahi bataya?" (Didn't Sana tell you?) replied Sana's mom. "About what aunty?" I asked. "Sana toh ab apne pati ke saath Australia mein rehti hai. Tum toh busy the...." (Sana lives with her husband in Australia. You were busy...." informed Sana's mom. Those few words by Sana's mom took my breath away from me forever.

Every love story in real life doesn't wait. So when you find someone special, just say it with elegance.

Readers please be nice and kind to people. Respect parents and stay safe because so many lives are connected with you.

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GADGET CORNER -MOUNIKA.R

Magic Wand-Programmable Tv Remote :

The Magic Wand Remote Control gives you the opportunity to perform magic in your own home. Turn TV watching into an experience with the Magic Wand Remote Control. Teach the wand up to 13 commands from your old remote and then bin it because from now on, you can be Wizard and commander of your own multimedia empire... "the TV".



The Magic Wand Remote requires only magicians' moves to seamlessly change channels, up the volume or record your favourite programme. And the best thing is that you can decide which moves perform which function.

The Wand Remote Control can convert upto 13 different hand gestures into infrared

your IR-controlled gadgets. Ofcourse with just 13 gestures, you can only program 13 commands from your remotes. It has also got a nifty feedback system which provides "pulses" that confirm your gestures as well as let you know when the battery is running low.



Rotate clockwise

Rotate anti-clockwise

Flick wand upwards

The wand will even vibrate to let you know when it recognises a command and when it's running out of batteries. It will also turn itself off after being inactive for 60 seconds and then wake up as soon as you pick it up again.

There are four key buttons on the remote if waving your hands at the television doesn't appeal – volume, channel, mute and a home/select button, which allows you to access all the television's capabilities.

The wand does seem magical but like all magic props, it's just an illusion: a universal remote in disguise powered by 2 AAA batteries and a "motion-sensing accelerometer."

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