NETTECH

IIT-KHARAGPUR

*Nettech, established in 2002, is a full Information Technology consulting and development firm specializing in the area of computer networking. At Nettech, client relationships are the cornerstone of our business. We place tremendous importance on establishing open, collaborative relationships with our clients, each of which, we build on a foundation of trust.  
  
Our heritage is based on helping clients to take advantage of new technologies. At Nettech, we work only with cutting-edge technologies. Our staff members are certified in their fields and have many years of experience designing and implementing solutions for our clients. Whether you are looking forward to building a network from the ground-up, building web presence or enhancing existing network, we have the technical prowess to accomplish beyond your expectation.*

*Nettech's staff is experienced in networking technologies, including Microsoft Windows 2003, Novell NetWare 5.1/6, Linux, Internet, TCP/IP, Ethical Hacking and telecommunications and networking. Along with its technological expertise, Nettech applies its business experience to help clients solve complex problems by leveraging information technologies.*

*FACEBOOK LINK:* [*https://www.facebook.com/nettech.in/*](https://www.facebook.com/nettech.in/)

*Website address : - http://www.nettech.in/*

INSTRUCTOR: - Dr. Swapan Purkait

**Education** :

2013 : -

Ph.D., Vinod Gupta School of Management, Indian Institute of Technology, Kharagpur.

Thesis title: A Study of Phishing Attacks and Effectiveness of the Countermeasures

Supervisor: Dr. S. K. De

2005 :-

PGDBM, Xavier's Institute of Management, Bhubaneswar.

1997:-

B. Com., Calcutta University

**Awards and Achievements**:-

1993:-

Received Rashtrapati Scout award from Rashtrapati Dr. Shankar Dayal Sharma.

1993:-

Received Rajyapuraskar Scout award (Bharat Scouts and Guides, West Bengal)

**LINKEDIN PROFILE**: - https://in.linkedin.com/in/spurkait **TRAINING DESCRIPTION**

We used RHEL (Red Hat Enterprise Linux) as the platform to work on. Red Hat Enterprise Linux includes military-grade security technologies—from network firewall control to secure containers for application isolation—to prevent intrusions and protect the data.

With RHEL as the platform, we also got to know about the functioning of various media-transferring software such as FileZilla and Putty.

FileZilla is open source software distributed free of charge under the terms of the GNU General Public License. It’s the perfect solution for FTP problems between two operating systems.

Putty is a free SSH (Secured Shell) and Telnet client for communication between two operating systems.

We started with learning about network classes and topologies, MAC address , IPv4 and IPv6, and a lot about the types of networks.

Further, we started learning about IPv4 addresses and how to configure them in RHEL using commands such as

* [root@shubhendu~]# netconfig
* [root@shubhendu~]# service network restart
* [root@shubhendu~]# ifconfig

We learnt about masking of different classes of IP address and how to configure them. After masking, we were introduced to the concept of Class-less Inter Domain Routing (CIDR).

The very first important task was to find out the Network address and the broadcast address of a given IP address.

The next important topic we went through was on Variable Length Subnet Mask (VLSM).

We were also taught about a few concepts related to Cryptography. For example:

Encrypted Message: L\_\_OT\_ITYRETKHO\_NOEAULI\_\_N\_INM2KFSGE

Decrypted Message: LIKE 2 THANK YOU FOR LISTENING TO ME

The instructor also recommended us some good movies to watch such as Net, Hacker, Firewall, Italian Job, Recruit etc.

After that, we went on to the concept of hops and routing tables using the network diagram. The table consists of Destination, Next Hop, Port and the Type (Direct or Remote). We also learnt about various networking devices such as Hub, Switch, Router and Repeater.

When it comes to Router we can collect all info about the router using the ARP (Address Resolution Protocol) table. We learnt about DCCN (Data Communication Computer Networks).

Next topic was about the Open System Interconnection (OSI) layer. It consists of seven layers:

🡪Application

🡪Presentation

🡪Session

🡪Transport

🡪Network

🡪Data-Link

🡪Physical

We learnt each and every detail about each layer of OSI layer individually.

We came across the transportation medium within the networks:

* TCP (Transmission Control Protocol)
* UDP (User Datagram Protocol)

We also came across various types of services and their dedicated port numbers.

🡪FTP – 20/21

🡪SSH – 22

🡪TELNET – 23

🡪SMTP – 25

🡪DNS – 53

🡪DHCP – 67/68

🡪HTTP – 80

🡪POP3 – 110

🡪IMAP – 143

🡪SMB – 139

🡪SNMP – 161

🡪HTTPS – 443

We learnt about the functioning and utilization of ipmango.com.

We also learnt about various Unix based commands to start/stop various services in RHEL:

* For FTP:

service vsftpd start

service vsftpd stop

* For SSH:

service sshd start

service sshd stop

* For SMTP:

service sendmail start

service sendmail stop

* For IPP:

service cups start

service cups stop

* For Telnet:

chkconfig telnet on

chkconfig telnet off

We can check the current number of services running and their port numbers using a basic command:

🡪 [root@shubhendu~]# nmap localhost

We were taught in deep about the Dynamic Host Configuration Protocol (DHCP) and Domain Name Service (DNS).

We learnt about the domain name, child domain name and the child of a child domain name too.

We came to know about various commands through which we can lookup on various servers , mail-servers and the ip addresses and their locations using the Command Prompt on our Windows Operating System.

The commands are:

* C:\Users\hp : nslookup
* C:\Users\hp : set q=ns (For looking for the respective servers)
* C:\Users\hp : set q=a (For looking up the DNS server and it’s IP)
* C:\Users\hp : set q=mx (For checking out the mail servers)

\*Use the first and the third command and then enter nitp.ac.in for a fun fact on random ip addressing.

After learning some basic commands of Linux we started working on some serious projects such as creating our own DNS servers and creating a website that should open in the next 5 systems connected to the same DNS server through a switch.

We used commands such as useradd\_username, passwd\_username, chmod 770 username, chgrp apache username, etc.

Now, for checking out if the work we did was correct or not, we used Linux commands such as :

* [root@shubhendu~]# cat /etc/passwd
* [root@shubhendu~]# cat /etc/group
* [root@shubhendu~]# cat /etc/shadow

To make each command as in the form of root we kept “su” in the starting of the command, for example:

* [root@shubhendu~]# su –

We learnt about Primary Group, Secondary Group and access permissions granted in the form of

* drwxr\_x\_w\_r

We used various formats such as:

Web Server DNS Server

DNS Server(Linux+Windows) Linux

We learnt about hacking into public cameras with public IP address using:

inurl:”axis-cgi/mjpg/video.swf ”

Now coming on to what I’m going to do as a project representation on what I learnt over in the training duration:

**Mail Server :**

Let’s understand this term using two systems to work on:

We will take two servers on two different PC’s and then connect the VMware with their respective Windows OS using the DNS placed into their VMnet 1 adapter.

Add two users and set passwords for both of them and after this change the mod using chmod and also change the group too with chgrp command.

Now enter into one of the users and write a statement to be printed if the respective domain’s website is opened.

Go to your Windows and then open any web browser and type the DNS with the port number assigned to the webmin service.

Create your own master domain. And while entering the addresses, enter one as the default one, the next one will be with the DNS and the last one will be with the Mail and the referred IP address.

Now go to the mail server task and then enter the mail server address and set the priority as 10 and then create the mail server. Now, we need to add the Forward zone by entering the domain and the master server and then start the name server.

Next, set the network configurations and also set the host addresses. After doing this, we need to set the sendmail configurations and set the relay domains.

Finally, set the apache server and start it to open the web and the mail server both.

For the mail server, we use squirrelmail as the default location for the second user.

**References**

* **nettech.in**

**A big thanks to Swapan Sir for guiding us on the above mentioned topic.**