43. NETWORKING INFRASTRUCTURE 2
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43. NETWORKING INFRASTRUCTURE

A.C.3.1

Implement a network infrastructure based on the design prepared in assignment criteria 2.1 in the form of practical demonstration and attach the evidences in a written report with annotated photographs at various stages of implementation.

The network infrastructure which I have created in criteria 2.1 is

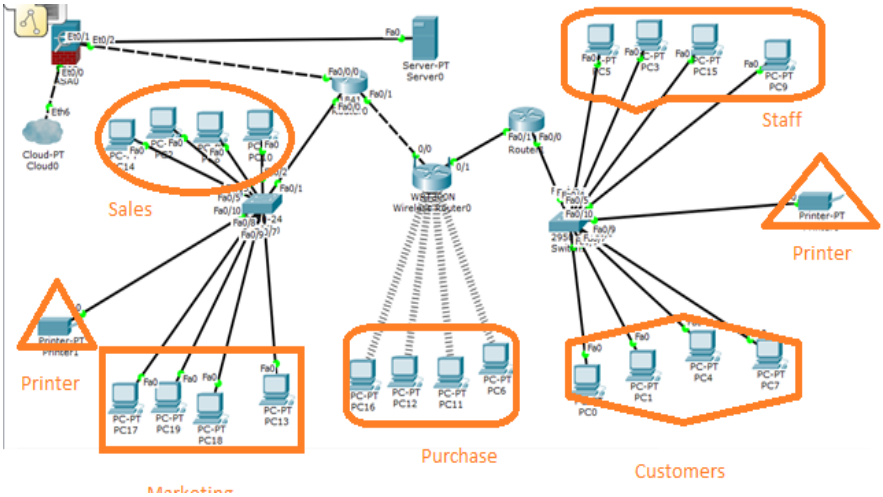

Figure 1 output design

The services which I have included in the server are -:

1. HCP
2. Active directory
3. DNS
4. Remote access and services.

The configuration in server and services I have done in this server are-:

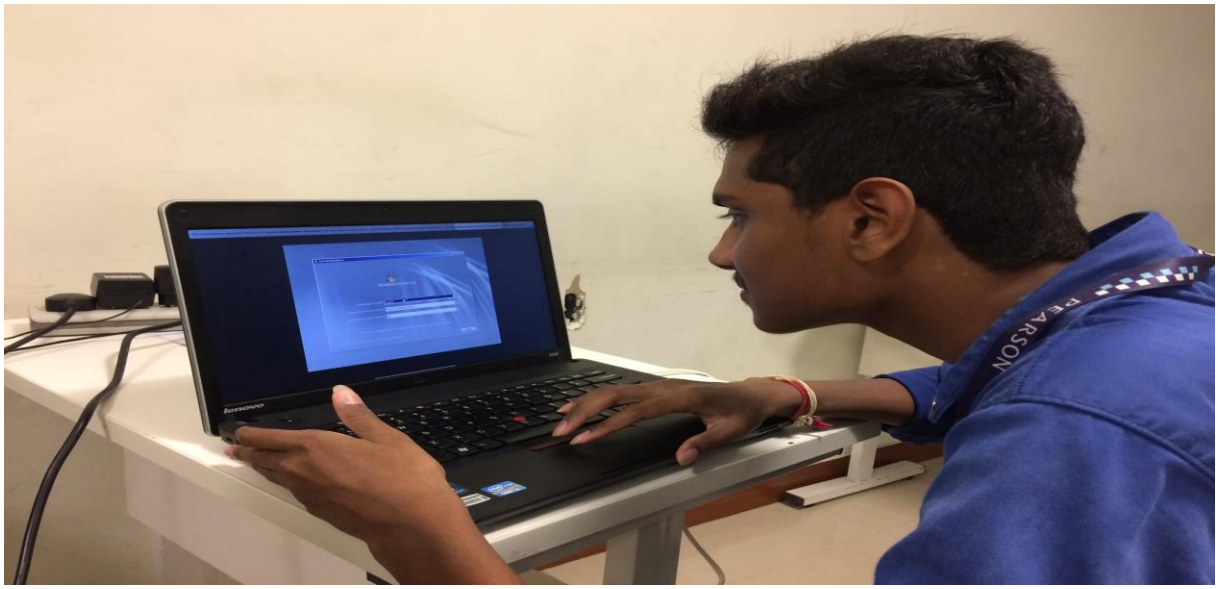

Figure 2 installing OS

In the above photo I am installing the OS which is window server 2008 rs and this the operating system, I have chosen.

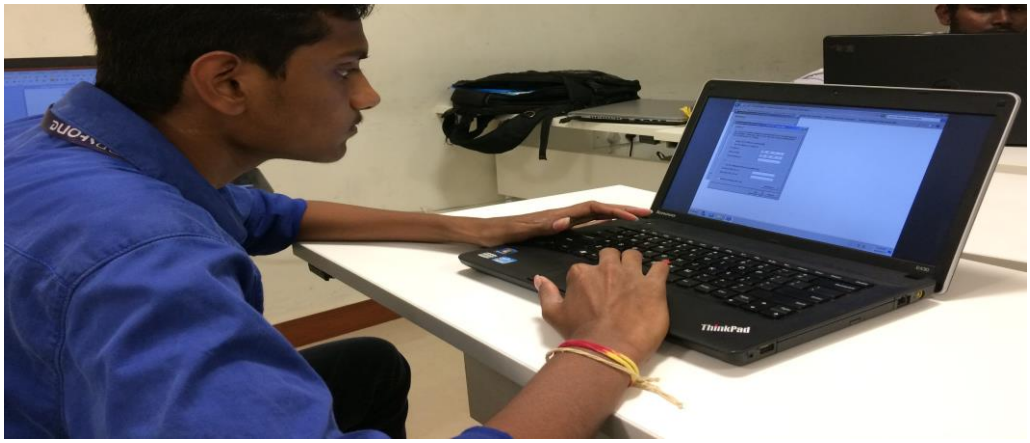

Figure 3ip address

Then I am assigned the IP address to the server and the pc and I will make the connection between all the pc with assigning the IP address.

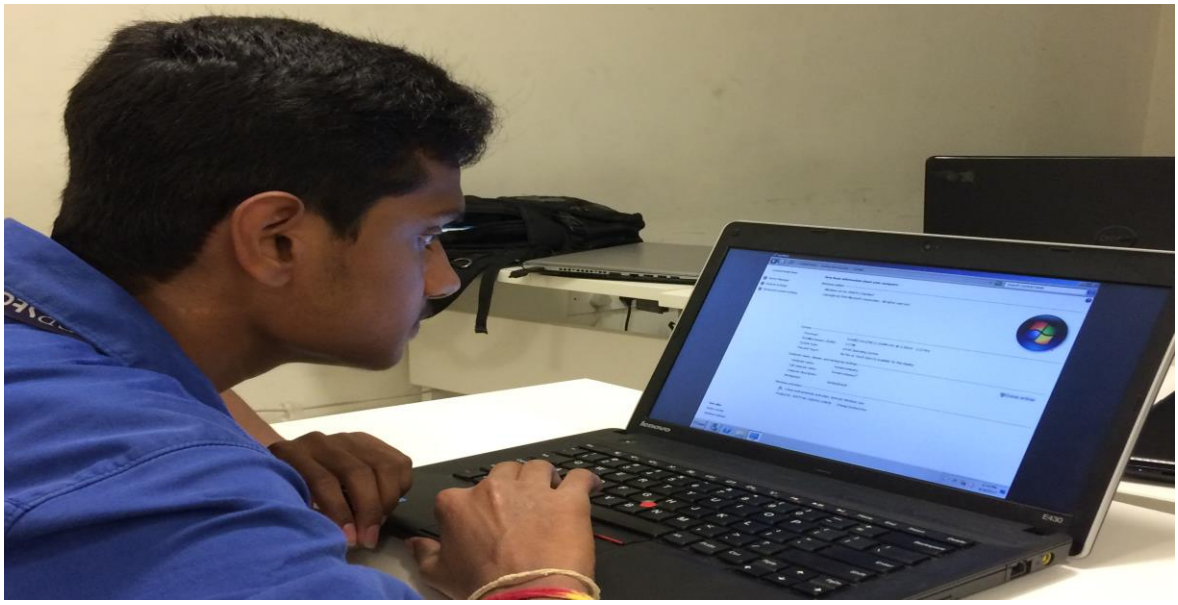

Figure 4 server name changed

In the above photo I have changed the server name from default name to the name livewirecompany. In the above I have change the server name as mentioned.

Dcprormo-:

Active directory-:

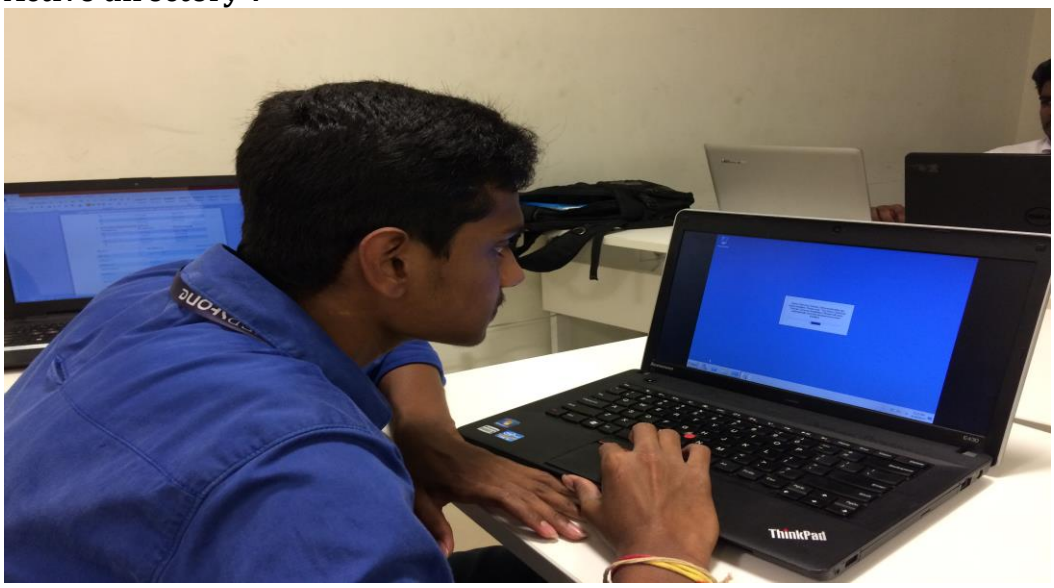

Figure 5dcpromo

Here I am installing the DNS server and active directory service, active directory service is used to manage domains and DNS is used to set website IP address name.

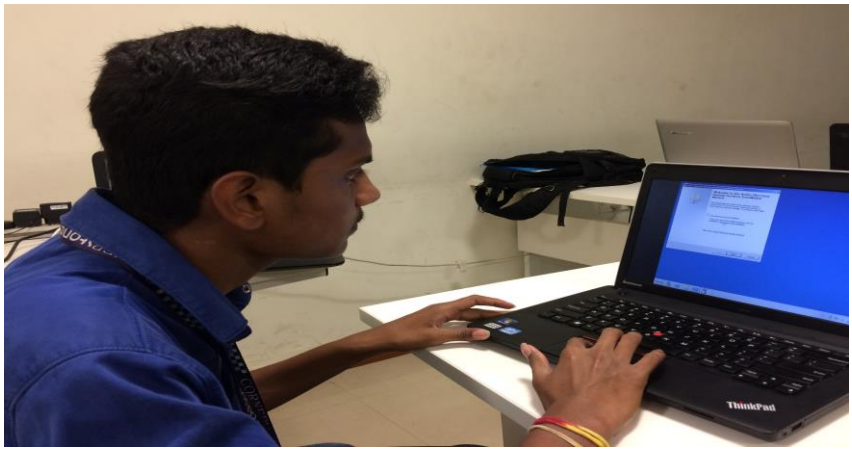

Figure 6dcpromo starting page

The photo indicates the starting page of the dcpromo and the above photo I have started the service.

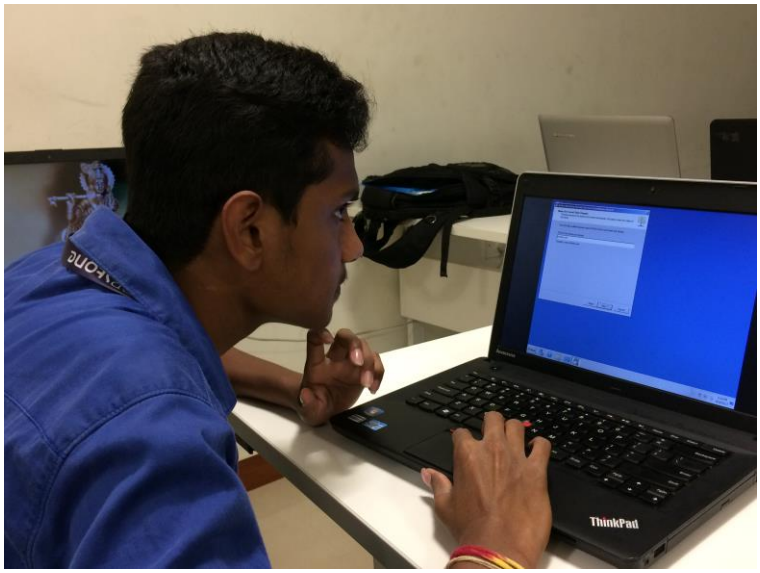

Figure 7 creating domain name

In thisphoto I have create the domain name livewire.com for the organization. This is mentioned in the scenario. It will assign to every user in the active directory.

DNS-:

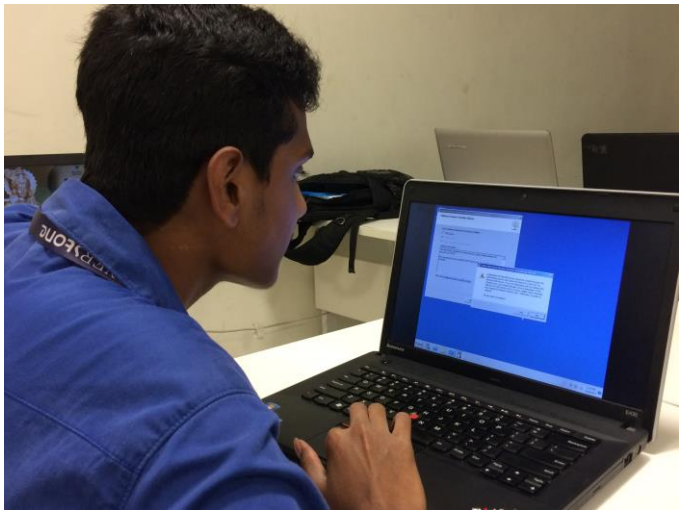

Figure 8 assign the DNS

In the above photo, I have enable DNS server and I am installing the DNS server with active directory.

DHCP-:

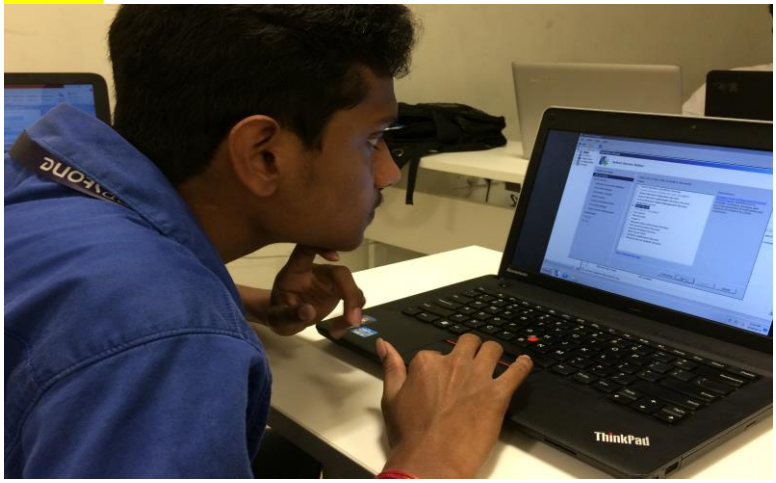

Figure 9 adding DHCP

Adding the DHCP (dynamic host configure protocol) in the roles, this is used to assign the IP address automatically to the clients those who are directly connected to the network of using.

Figure 10 DNS

In the above photo the dhcp server allow the option to add the dns IP address for the particular name and the dns server will show to the clients in the form of IPV4

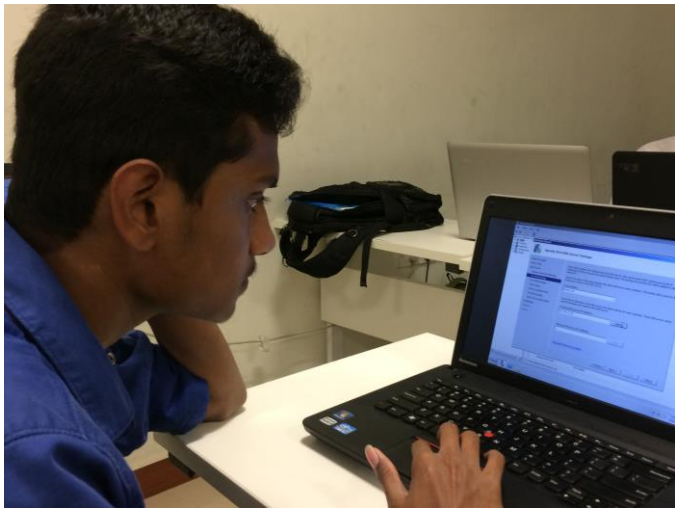

Figure 11 setting IPV4 setting

In the above photo, I have to validate the particular name and DNS IP address so that it may be assigned to the client at the time of connection. This is used to check the DNS IP address can be useful are not.

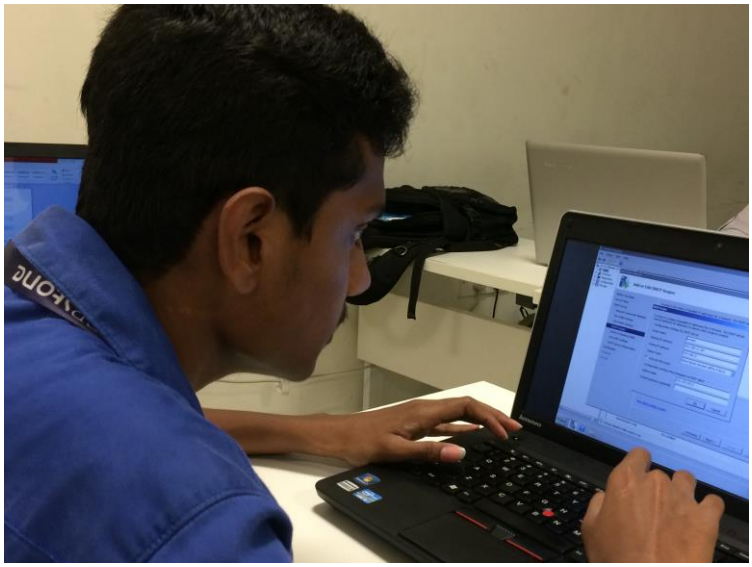

Figure 12 adding dhcp

In the above photo I have created the starting and ending IP address so that the computer will assign in the particular address only and setting the domain name.in the above photo the starting IP address and the stopping IP address until particular limit it will assign for the computer.

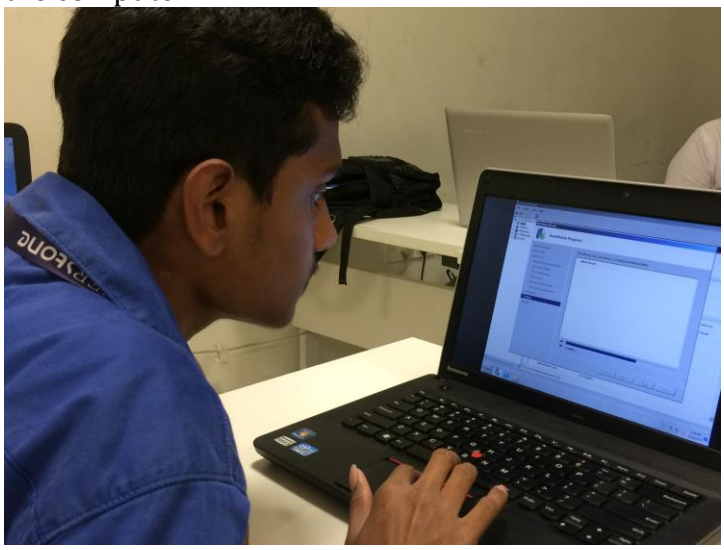

Figure 13dhcp install

In the above process the dhcp service is installing in the server for assign the IP address for clients. In the above photo the service and features which I have selected will be installed in it.

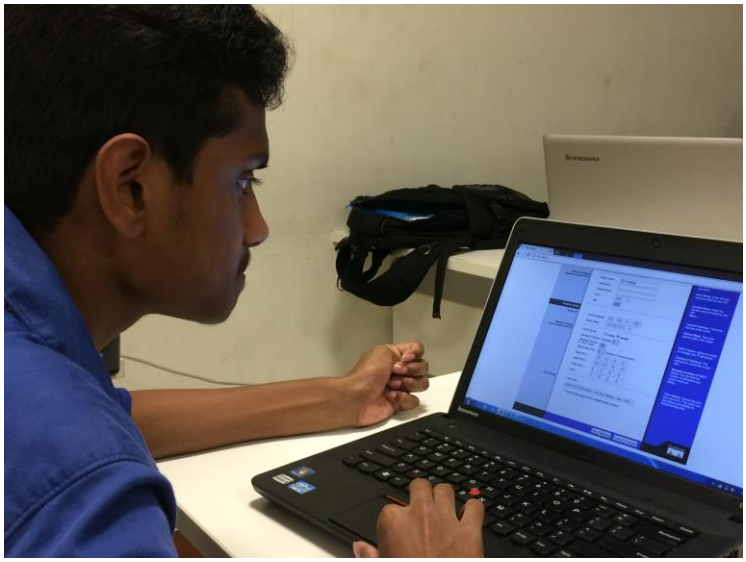

Figure 14 wireless router

In the above photo, I have enter the wireless router and assigned the IP address like what we have given when setting the limit and save the settings for saving the IP address. This IP address will assign to all clients.

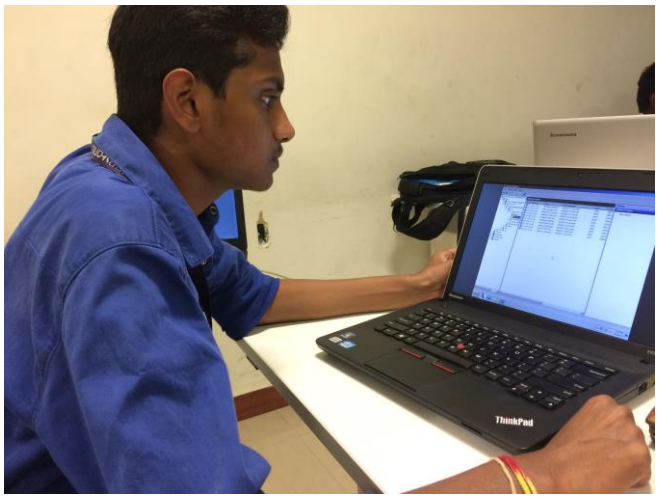

Figure 15 show the result of connections

In the above photo, I have seen the members who are connected to my network; there I can see the IP address assign to the particular clients with the details and type of mode, date at which I can know about the when they have login to the wifi. And easily able to know about the IP address and what IP address assign and I may know DHCP is working properly.

Creating user in the active directory-:

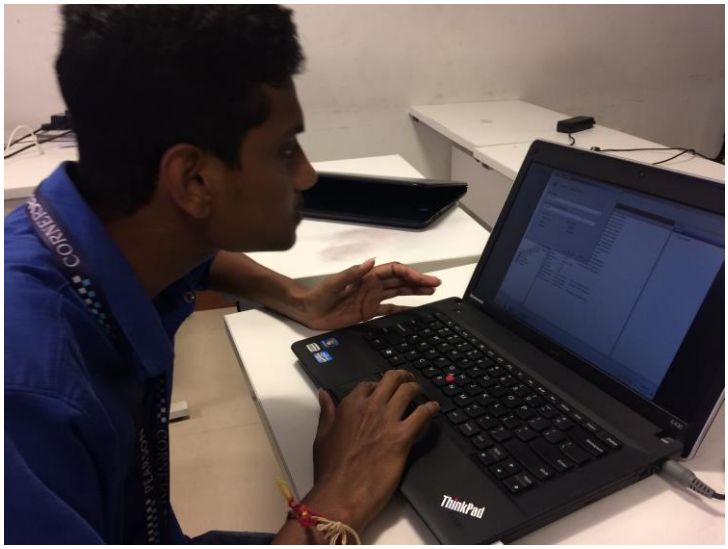

Figure 16 creating groups

In the above photo, I have group like creating the groups to the users like creating the market group 4 users. By the name given in the sales, staff, customers, marketing and purchase departments.

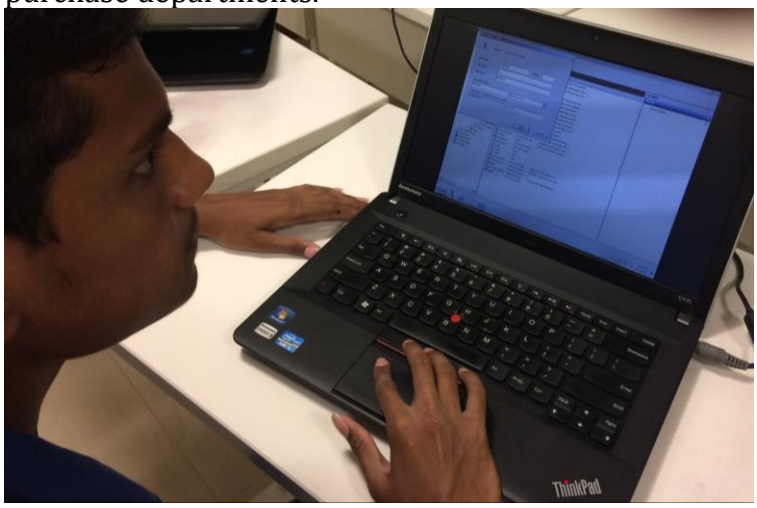

Figure 17creating the user

In the above photo, I have been creating users for each group mentioned like department, I have created 4 users and each client will be given particular username and password according to the details given them after it is created like it and it is created in the active directory by right clicking it and click new button and enter the details and click next and user is created.

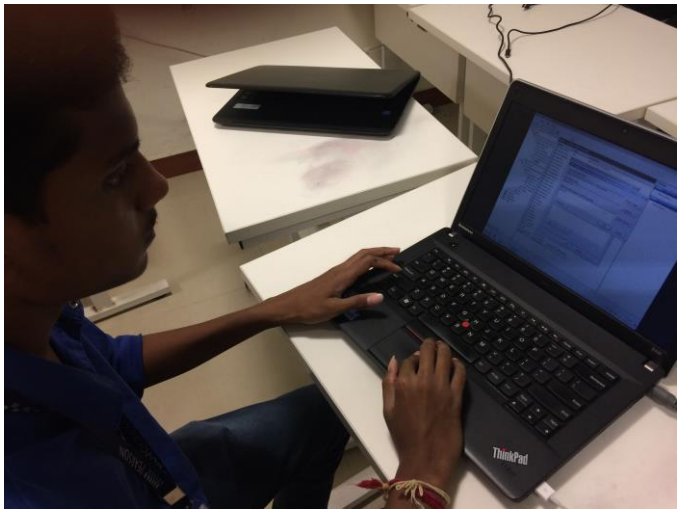

Figure 18 adding users to group

In the above photo, I have to insert the users in the group and for each group I will to assign 4 users which I have created in the user and each user will get inserted in the group according the organization chosen for members will be inserted in particular department.

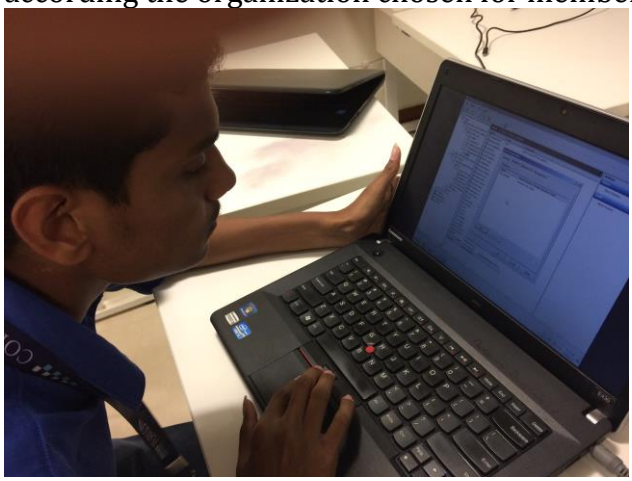

Figure 19user added to group

I have added the users to the group same steps to be followed for all group the output shows the users are added to the group, I can able to see the who are user inserted in the group.

DNS-:

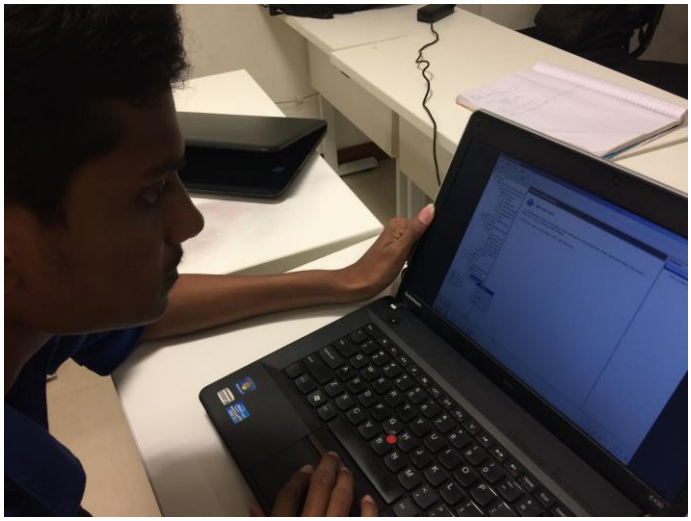

Figure 20 reverse

In the above photo, I have start reverse zone which used to set reverse zone in the dns server and it is used to set relate with the network or IP address and the reverse zone is used to set the reverse zone to the IPV4.

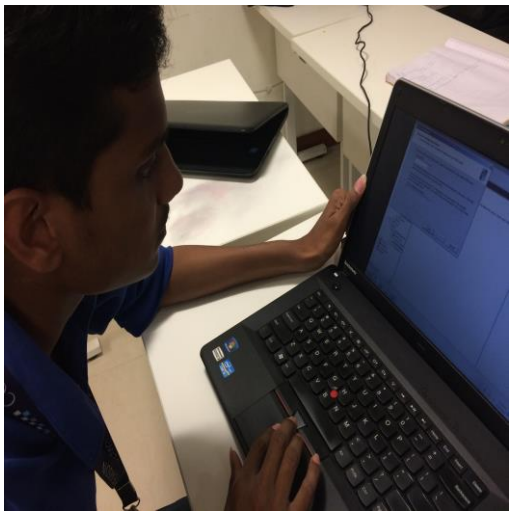

Figure 21ip address

In the above, I am assigning the network so that the particular user which domain name is connected will be in reverse zone.In this part if I have enter the network, so that the network id will not be reversed and it will be normal.

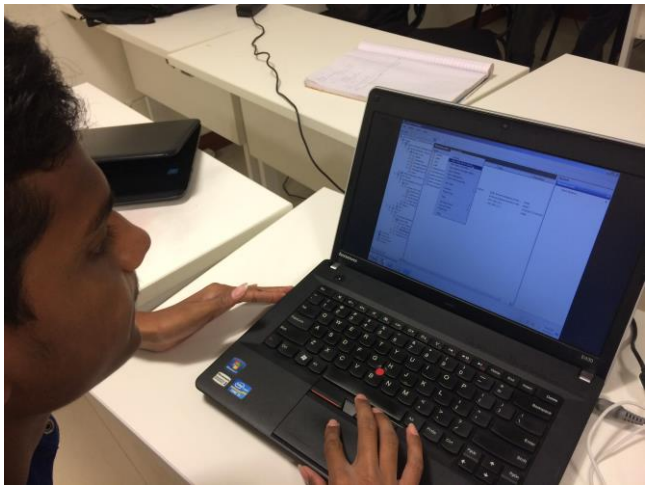

Figure 22 AAA

Here in the above photo I am selecting the AAA in the forward zone which is used to set the authentication, authorization, accounting which is used to set the control access of the computer to the resource.

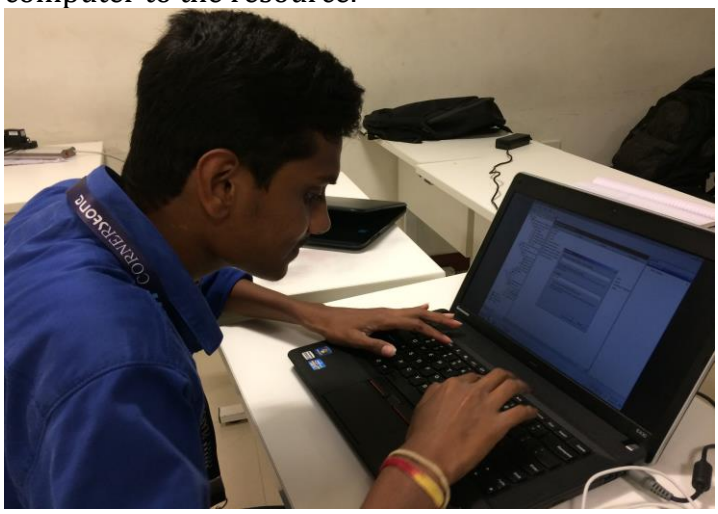

Figure 23 setting the IP address

In the above photo I have set the IP address to set the control of the and host name which and used to create the authentication to the IP address to access control of the computer to the resource.

Remote access and services-:

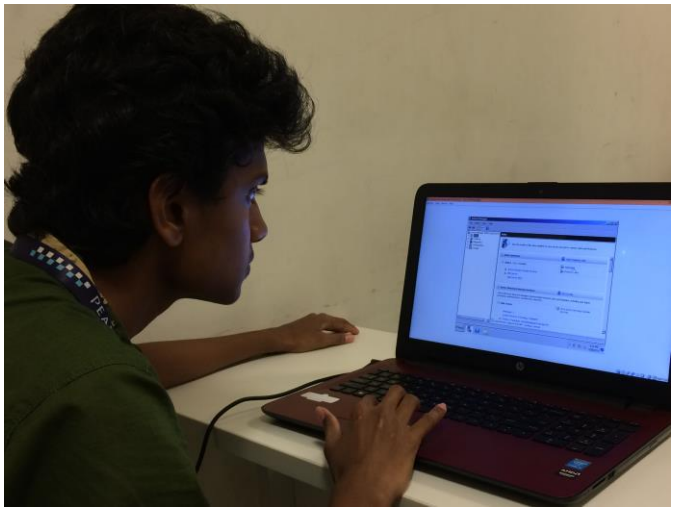

Figure 24 adding roles

In the above screenshot, I have explain about I am going to the add roles where I am going to add the extra service to the server and in the add roles, I am going to add the network policy and services.

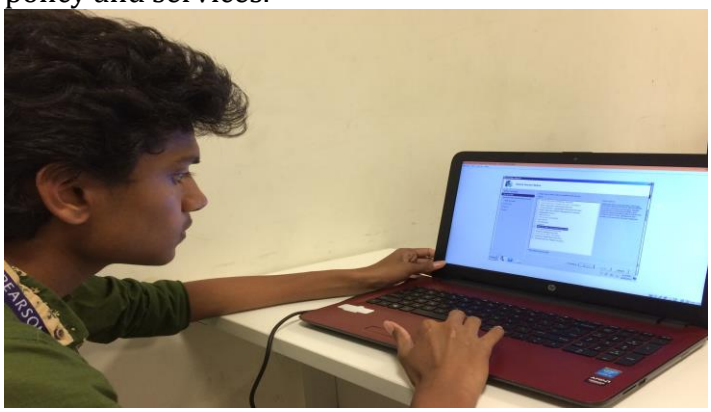

Figure 25selecting network access and policy services

I am selecting the above service in the role for connection of server with the other computer through network or LAN

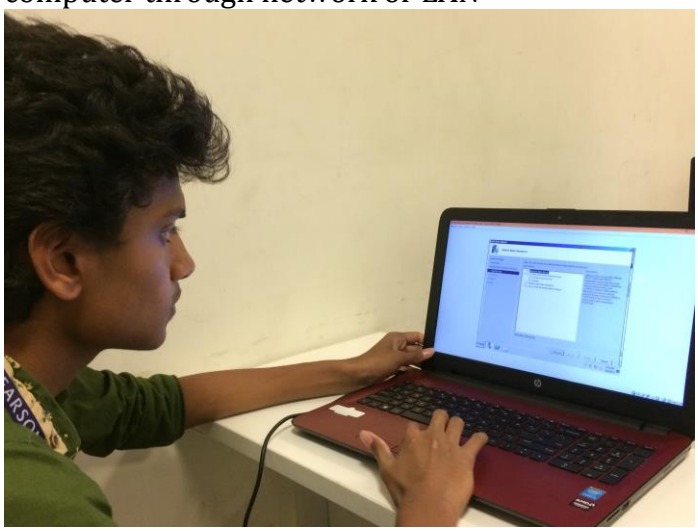

Figure 26 adding roles

Then I need to select the roles for the service and after selecting the roles. Click the next button. Here I have enable the network policies server which is used to set the NAP

connection and used to connect the other computer through safe way without loss of any packets and data, routing and remote access service which is used to connecting form one computer to another computer through the network.

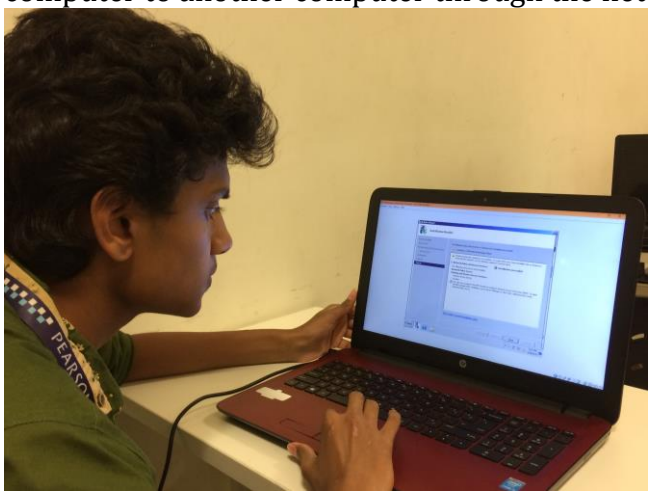

Figure 27 completed installation

Then I will see the installation process and after I will show the successful message by indicating the service is installed

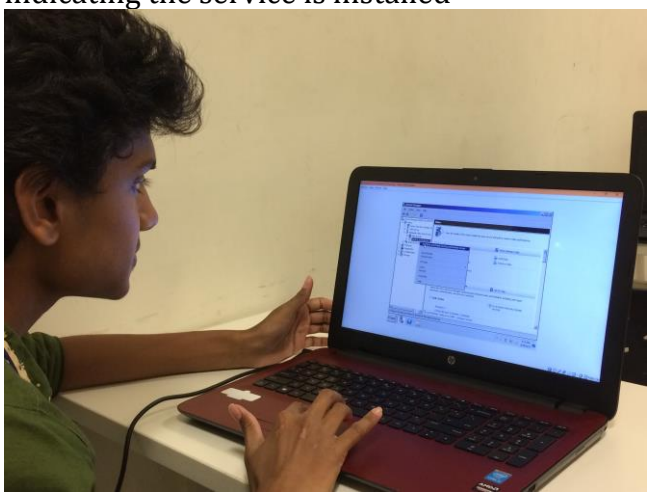

Figure 28 enable of routing and remote

Next step I have done in the service by selecting routing and remote access by right clicking. I may see that is to configure and enable routing and remote access. I have selected that option.

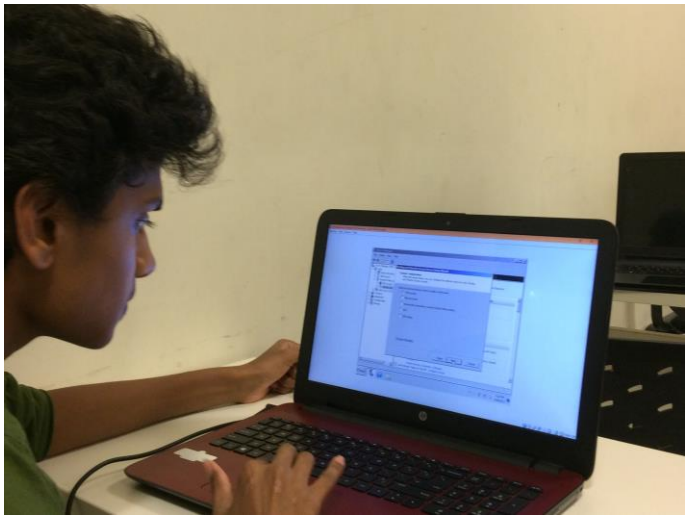

Figure 29 vpn

Then next it ask the option like which service to be enable, then select VPN option and select the next button and the option I have selected here is VPN because the flies can be seen by the VPN also.

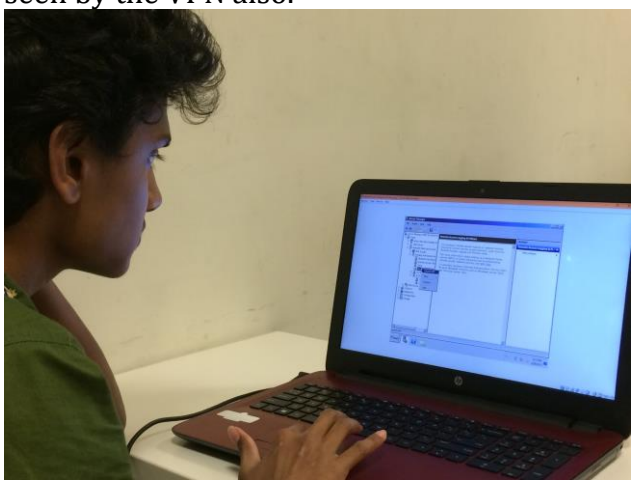

Figure 30NPS

Then go to routing and remote access file, right click it and I have been observe the launch NPS. Then I have selected the button. And network policy service which used to set the security to the VPN connected client and server.

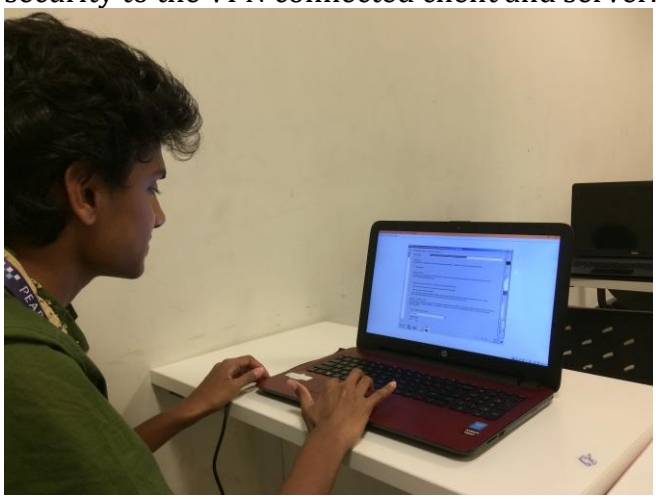

Figure 31granting permission

Then it shows the page I have given the access grant to it and selected the apply button and in the above photo I have granted the flies and used to set the clients few grants which are connected to through VPN.

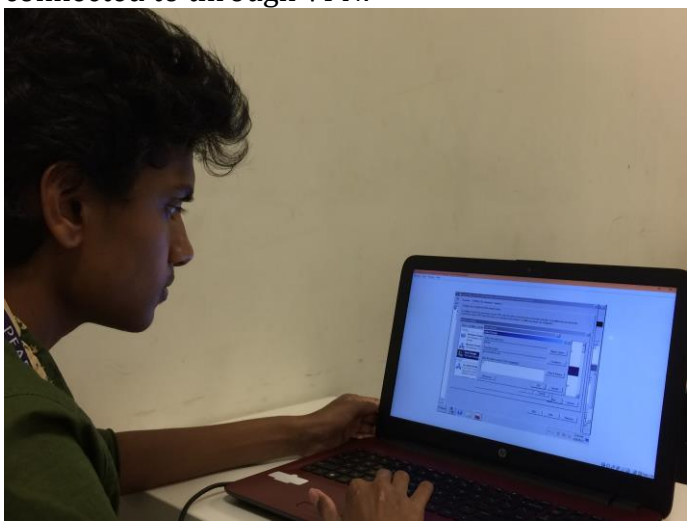

Figure 32adding user group

After selecting user group in the condition and add the user group to it and select add button and select the apply button and select the ok button and I am adding the user to access about the flies.

Figure 33 static routing

After I have gone to the static routing which is in IPv4, by right clicking the static routing and click the show IP addressing, I have seen the IP address assign to the computer

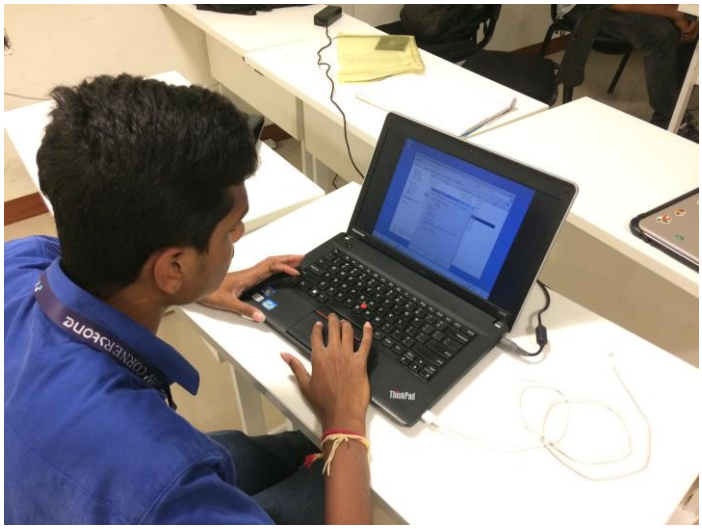

Figure 34 creating files

In this photo, I have explained about the file, I have created in the computer at local disk and after creating the file right click the folder and open sharing settings. There I can set the option to set sharing folder.

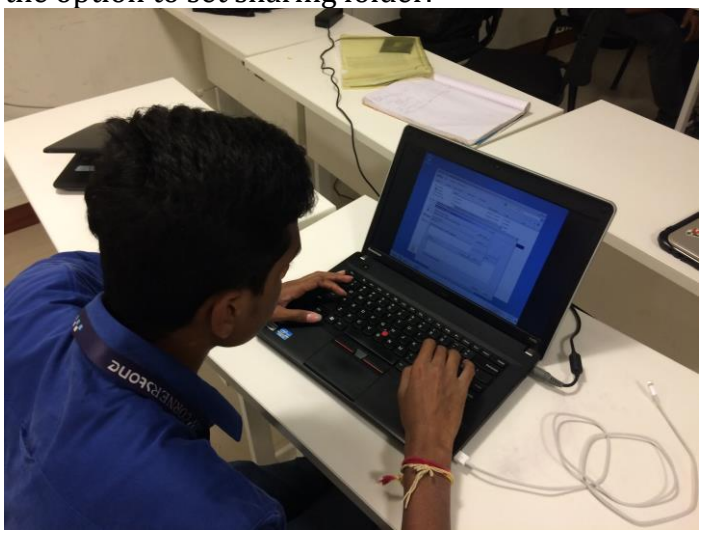

Figure 35 sharing the flies

Adding file to share and giving the permission to the groups, so that particular group can only access it but not other. Like which user group is given to the folder only they can access the folder but not other.

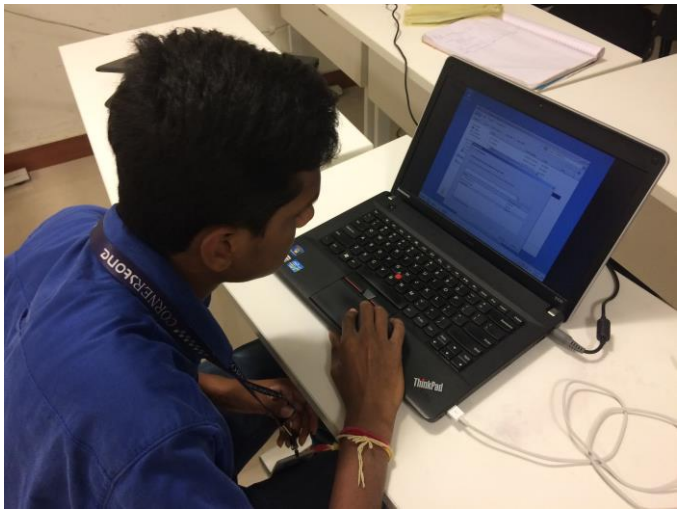

Figure 36 permission

In the above photo, I have created the permission like only group can access or any department can access and I am giving the permission according to the group want like read or write etc.

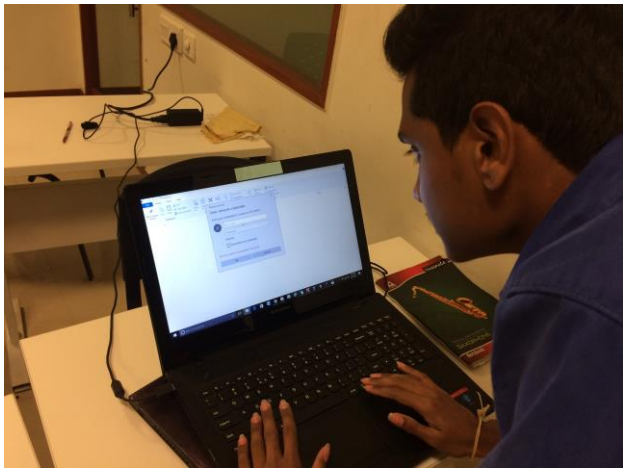

Figure 37 enter the login

In the above photo, I have opened the IP address, which is connected to this network like domain and password to view the flies, I have shared and this done to the other folders can be viewed in other computer.

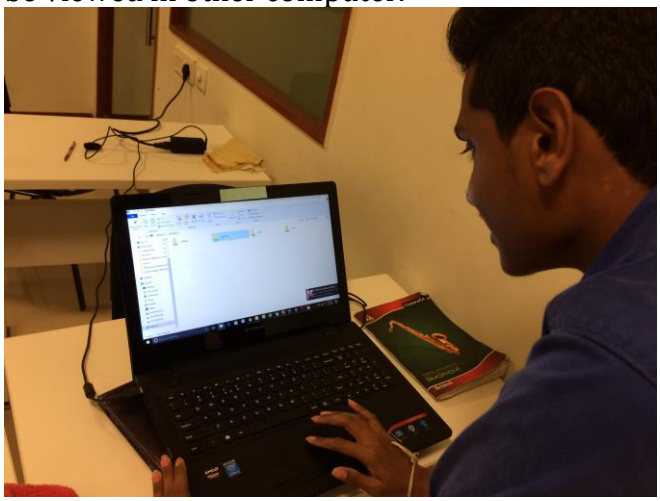

Figure 38 open folders

In this photo I have open the flies from with the domain and password and I am able to view the flies of shared and other flies which is not given permission cannot be open with this user.

A.C.4.1

Critically review and test an implemented network infrastructure systems with DNS addressing, DHCP addressing, ping, trace route, access rights and resources based on assessment criteria 3.1.

Your test must contain:

- Test plan, test results, and analysis

Your review must contain:

- Results of test plan, merits and demerits of testing of the networking
- Alternative solution for the test performed.

Name	Test plan	Test result	Analysis
DNS addressing	Seeing that client are accessing the network are not	The ping between server and client is working	It is accessible by every device in the server.
DHCP addressing	Seeing that the clients are getting IP address or not.	IP address is assigned to client PCs	Which able to provide the IP address to device on the network
Ping	It should the server and clients are connect client with successful message	Yes packet are transferring to the clients form server and show successful message without loss of packets	Which able to know the network is connected or not and able us to know packets transferring correctly or not.
Trace route	It should to show path connection between router to router.	Yes connection is made between router to router and each packets also get transferred	The connection is made then the router so it may contact to the server and enable

			the services to all the clients.
Access rights and resources	Every user should have different access rights to the resource like flies.	Yes each user had rights and each user have different access to resource.	These are primary permission given to the users.

Results of test plan-:

- Dns is successful
  - Merit is I can able to know easily the people those are not connected to the network and many people can assess it at a time.
  - Demerit is if the client pc is not connected then the for large place it is difficult to know the where the problem occurs.

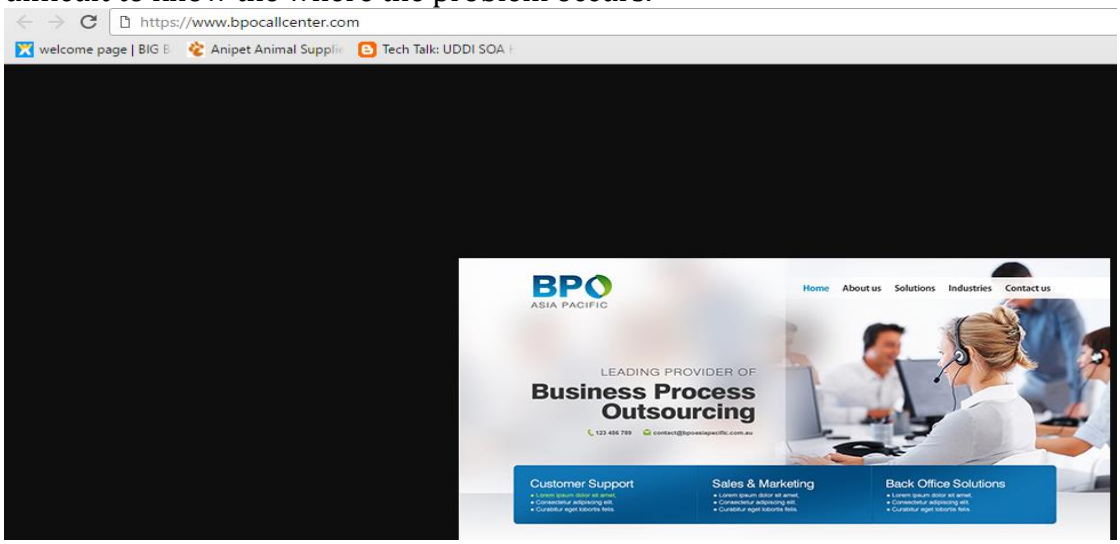

Figure 39DNS output

- Dhcp is successful
  - Merit is everyone those connected to network then client can get the IP address automatically
  - Demerit is it has some of the limit, after the limit has completed then the dhcp IP address will not get assigned.

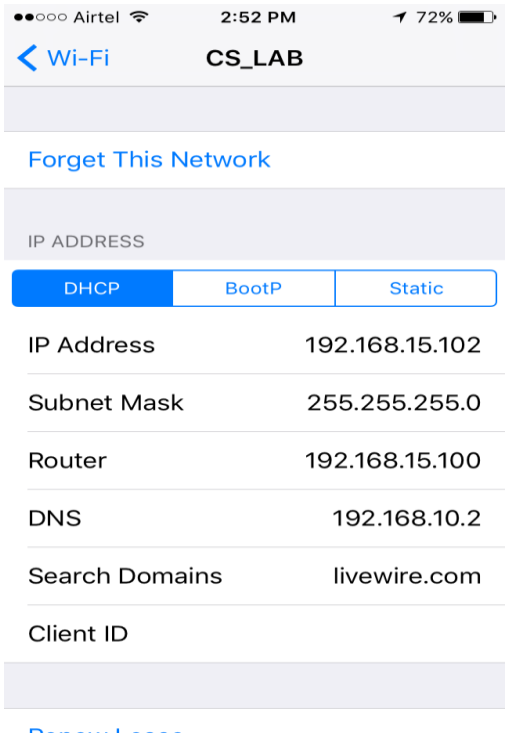

Figure 40dhcp output

In the above screenshot, I have connect to the wi-fi called CS_LAB after connecting to the network, the IP address in the dhcp mode shows, I have assigned in the wi-fi router. And the IP will come in between what I have given.

- Trace route is successful
  - Merit is with this the packet transfer to the client without loss of any packet in the server.
  - Demerit is if the one the router get problem then the other router connected to it also may fail.

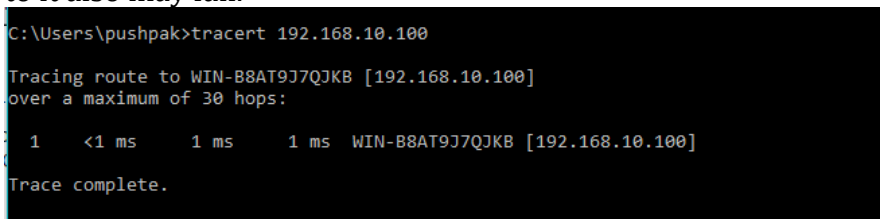

Figure 41tracer route

- Ping is successful
  - Merit is I can know about the connectivity server and clients.
  - Demerit is if there is any problem it does not show the problem place properly.

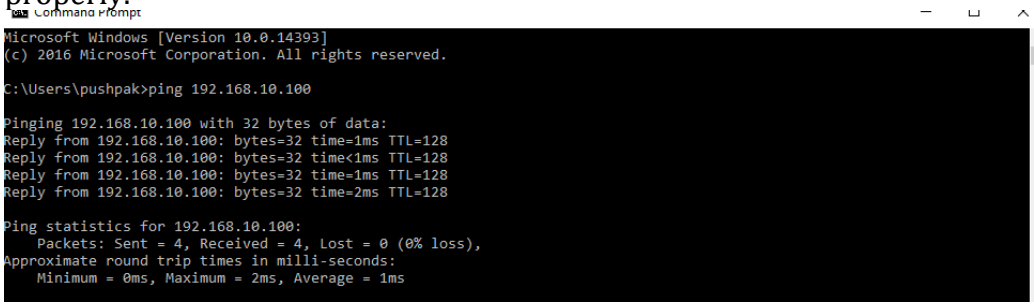

Figure 42 ping

- Access right and resource is successful
  - Merit is every client can have some confidential data access to them only by access rights.
  - Demerit with these if someone may know the problem then they may lose the data.

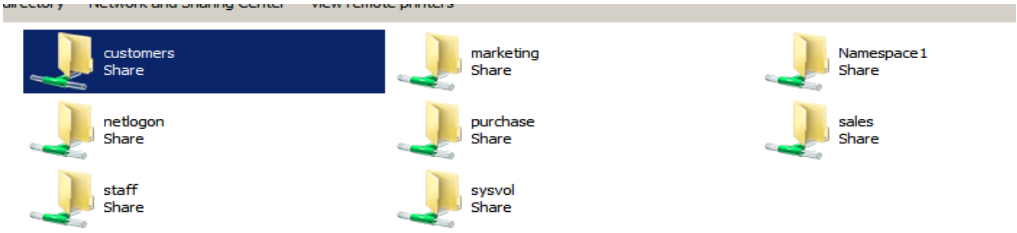

Figure 43access right

Alternative methods for testing are-:

- The alternate way of ping is gping which is used ping in graph way, it will check multiple users who host pc in interval of time
- The other way of checking the access rights to the resource by entering the flies with wrong access.
- The other way for checking the dhcp is by the changing to static and dhcp setting the it show successful messages

A.C.4.2

Evaluate system and user assurance of the implemented network infrastructure system. Your evaluation should be in the terms of system security, access, availability, visibility of resources, valid access issued, group access, inheritance of rights.
(Your report should contain annotated screenshots with proper explanation of system and user assurance.)

The user assurance in terms of system security, access, availability, visibility of resources, valid access issued, group access, inheritance of rights.

System security:-

Figure 44 system security

In the above screenshot, I have can know about the firewall where I can assign the firewall to the system so that no malware can get infected to the computer and any unknown data will not enter the system and I have assign the login credential to the user so that only he can access the server with some permission.
The system and its permission like it has full control to the system and it is healthy to use and it has permission for read and write so the client can read and write in it.

The user and its permission like it has special permission to the users and it has read and executes it used to see the folder and used to execute the folder and it has permission for read folder.
It has two types of security that is firewall and VPN ssl connections which is used to firewall help to stop the harmful data in the computer and make it safer and in the VPN connection ssl certificate help to enter the correct person but not like hacker persons. And the security is more safer.

Access-:

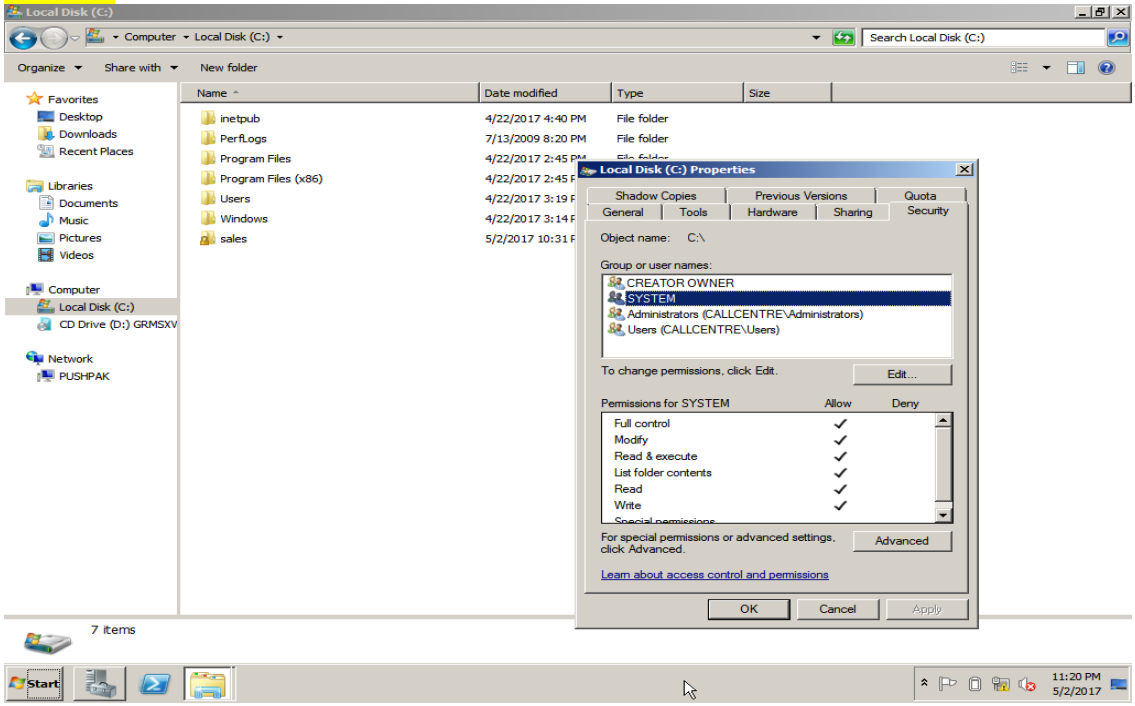

Figure 45 access

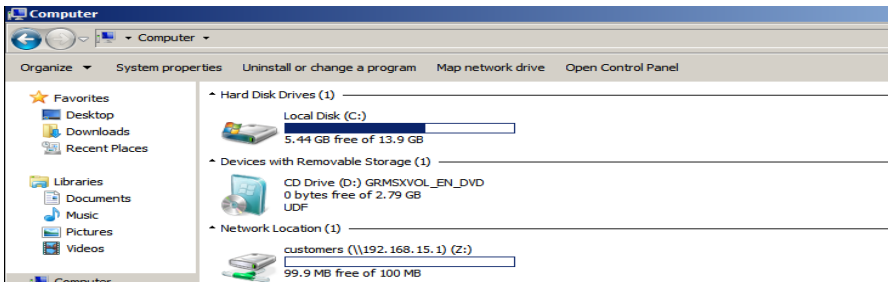

Figure 46 access

Some clients have permission to some of the folders like for example if the client want to access the file of the other department if he has right then he access if not he cannot access the file and the customer user can access disk files, in the above screenshot, I can see only customer can access to it.

Availability-:

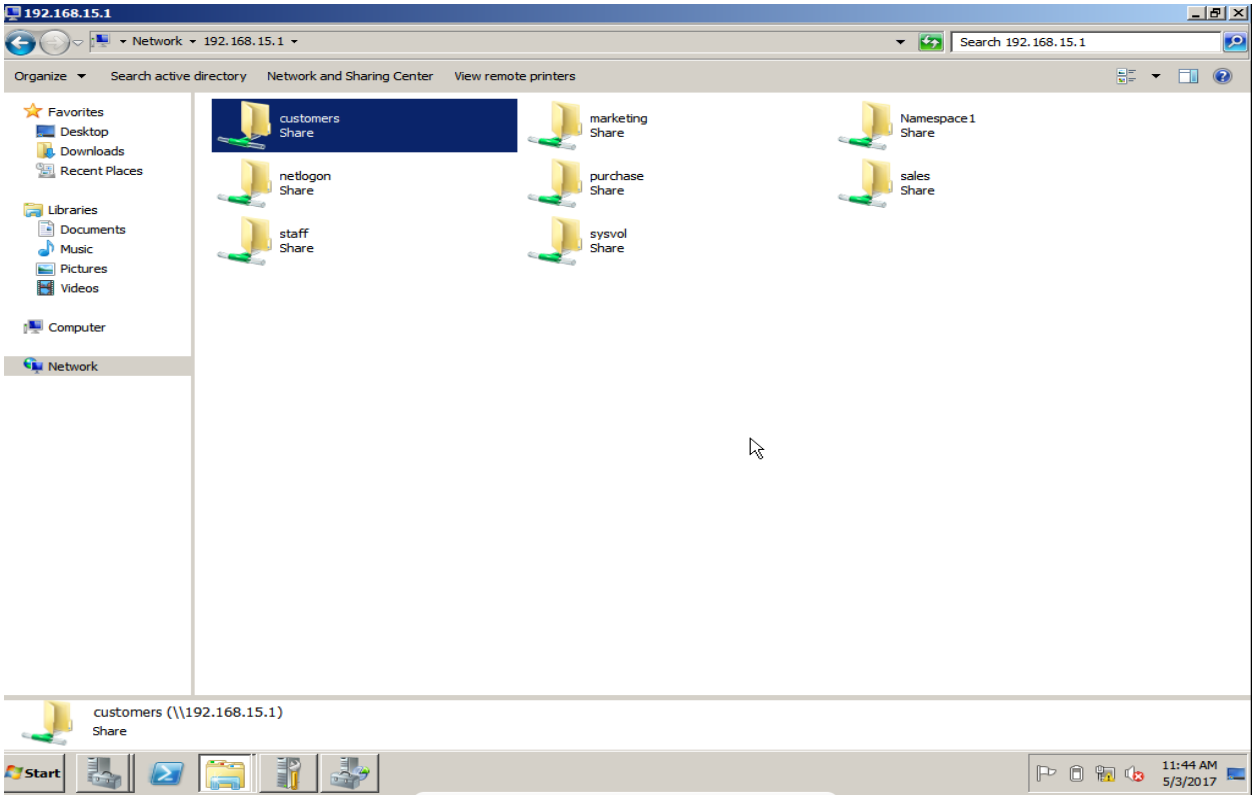

Figure 47 availability

These are the people who are ready to share their file for if the company want to share the data for different groups the it make it available so that only particular person can access it and use this flies for particular user can use it and the availability of the files will be given only particular user can use particular flies.

Visibility of resource-:

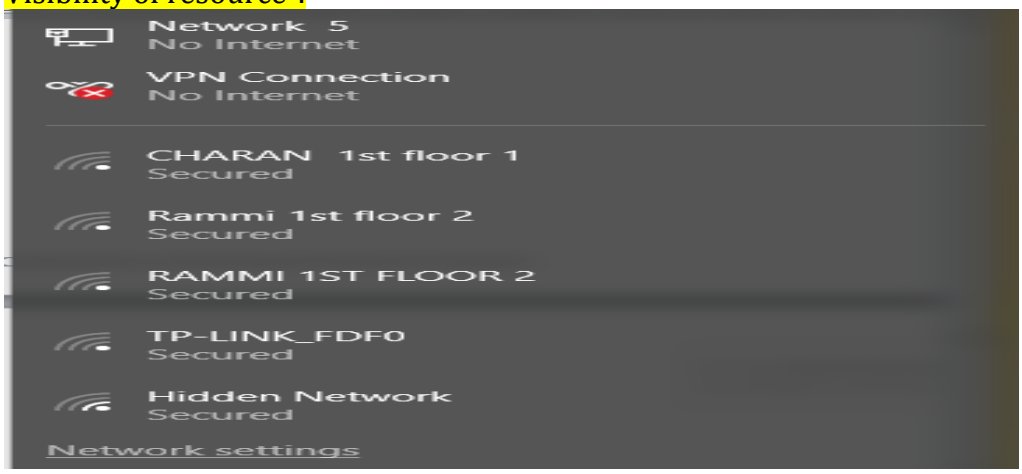

Figure 48 resources

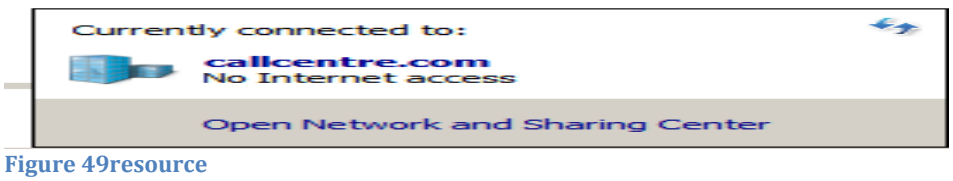

Figure 49resource

The resources which can be seen by all of the people like for example printer, ftp and etc. only these resource are provided so they may only visible but not the other devices can visible and can be used and some of the resource, I have created printer like I have assign to two department only one printer in my network.

Valid access issued-:

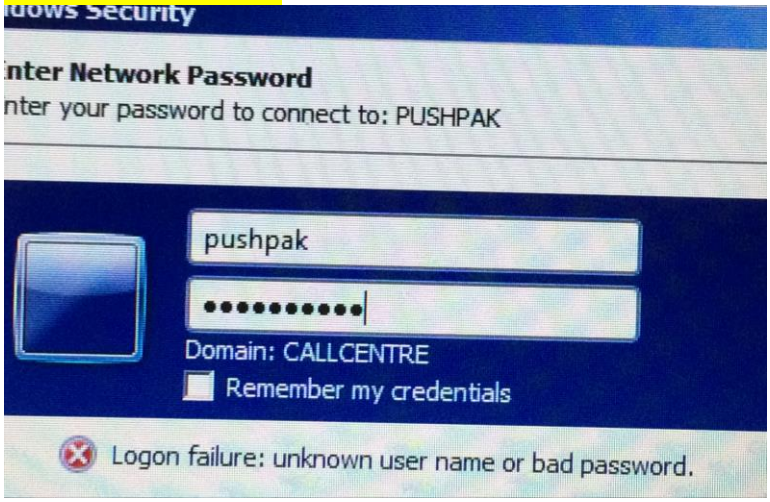

Figure 50 access issue

These are login credential which is created in the active directory and these are domain which each user have to login the organization and it is used in the file sharing part and in the system login part.

Group access-:

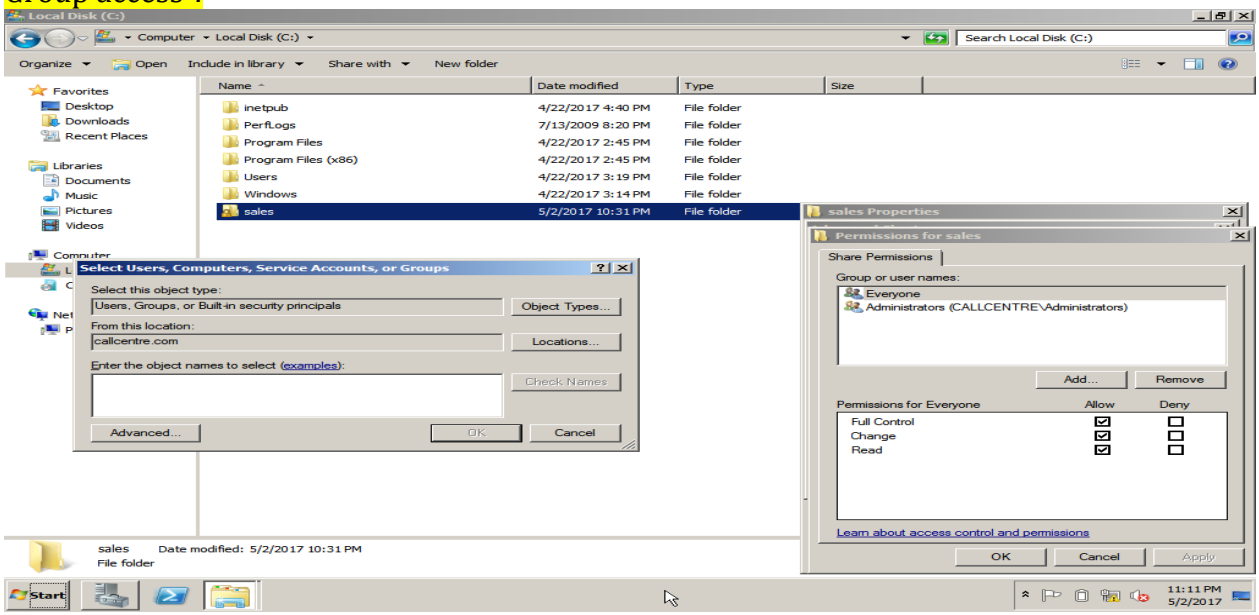

Figure 51 group access

The rights to groups are the rights which are given to all members of the group like I have given the marketing department total group rights like read and write. This is used to write the files and read the files of their departments. Each group has given different permission so that they can access only that file.

Inheritance of rights-:

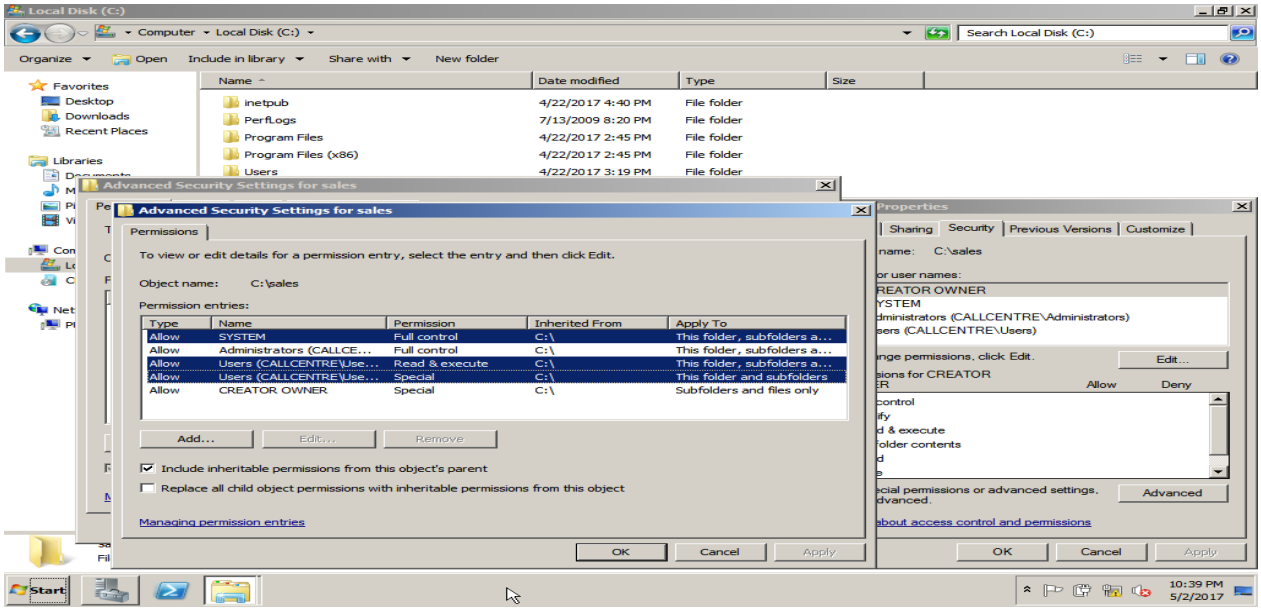

Figure 52 inheritance

Acquired Permissions might be a default trademark appropriate to all, it's intended to facilitate the undertaking of overseeing consents considering our system style, every one of the individuals inside the offices don't might want the transmissible rights

D3

Design a maintenance schedule in order to decrease the server down time which is implemented and tested in network infrastructure. Also, Perform the following maintenance task:

- Checking server log files
- Assessing hard disk space
- Examining folder permissions
- Installing security software patches
- Update antivirus software on all computer in the network
- Read server logs for security alerts
- Check server utilization
- Check hardware errors.

(Your schedule must be in tabulated form with the department and the routine service schedule with day and time)

Maintenance schedule table-:

Department	Routine service	Day and time
Staff	Checking all the services Checking server logs Folder permissions Server utilization Hard disk space	Friday 3:00pm – 5:00pm

	Backups	
Purchase	Checking all the services Security patches Update antivirus software Read server logs for Security alerts Backups	Monday 10:00am – 12:00pm
Marketing	Checking all the services Hardware errors Server logs Folder permission Server utilization Backups	Tuesday 2:00pm-4:00pm
Customers	Checking all the services Security patches Update antivirus software Hardware errors Hard disk space	Wednesday 4:00pm -5:00pm
Sales	Checking all the services Server logs Folder permission Read server logs for Security alerts Hardware errors Backups	Friday 6:00pm-8:00pm
Staff and sales	Checking all the services Server logs Folder permission Read server logs for security alerts Hardware errors Security patches Update antivirus software Hard disk space Server utilization Backups	Monday 11:00am -5:00pm
Marketing and purchase	Checking all the services Server logs Folder permission Read server logs for security alerts Hardware errors Security patches Update antivirus software Hard disk space	Tuesday 12:00pm-4:00pm

	Server utilization Backups	

This is the maintenance which I will fallow step for decreasing the down time server this step will be fallowed until 1 month and this method should fallowed in alternate months.

Checking server log files

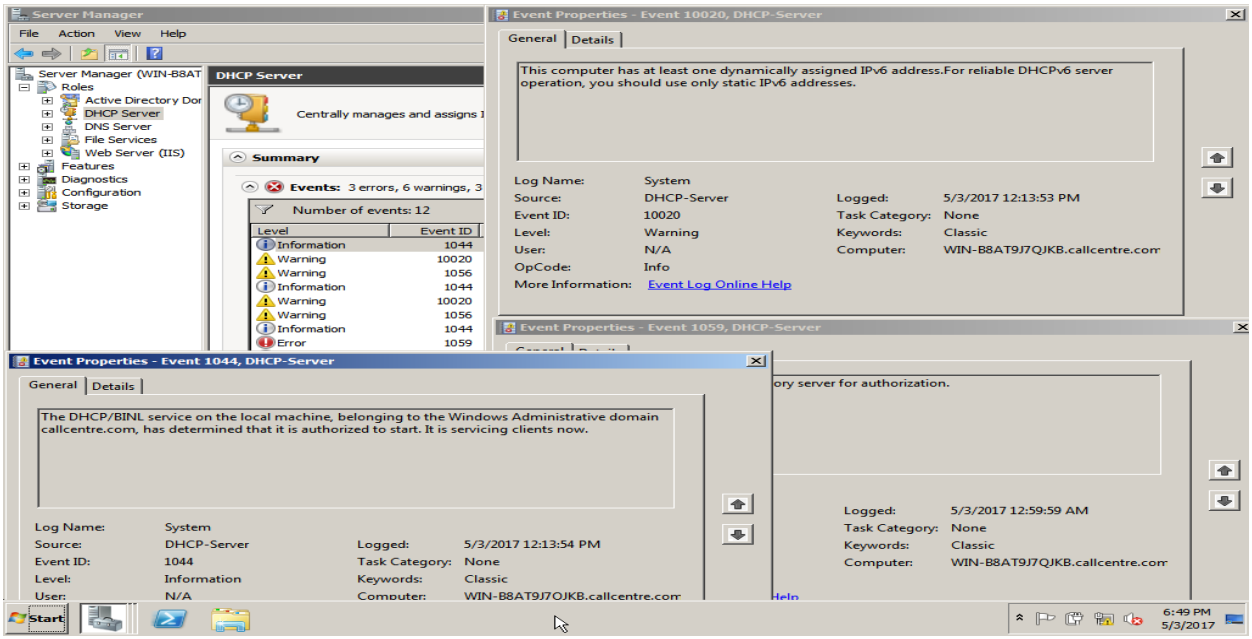

Figure 53 server log flies

In the above the screenshot I have shown about the DHCP server error and warning and information where, I can see the while clicking the warning and error and information, I can see the table where I can see the problem and may know where it caused and it indicates the particular place and specific part to check.

Assessing hard disk space

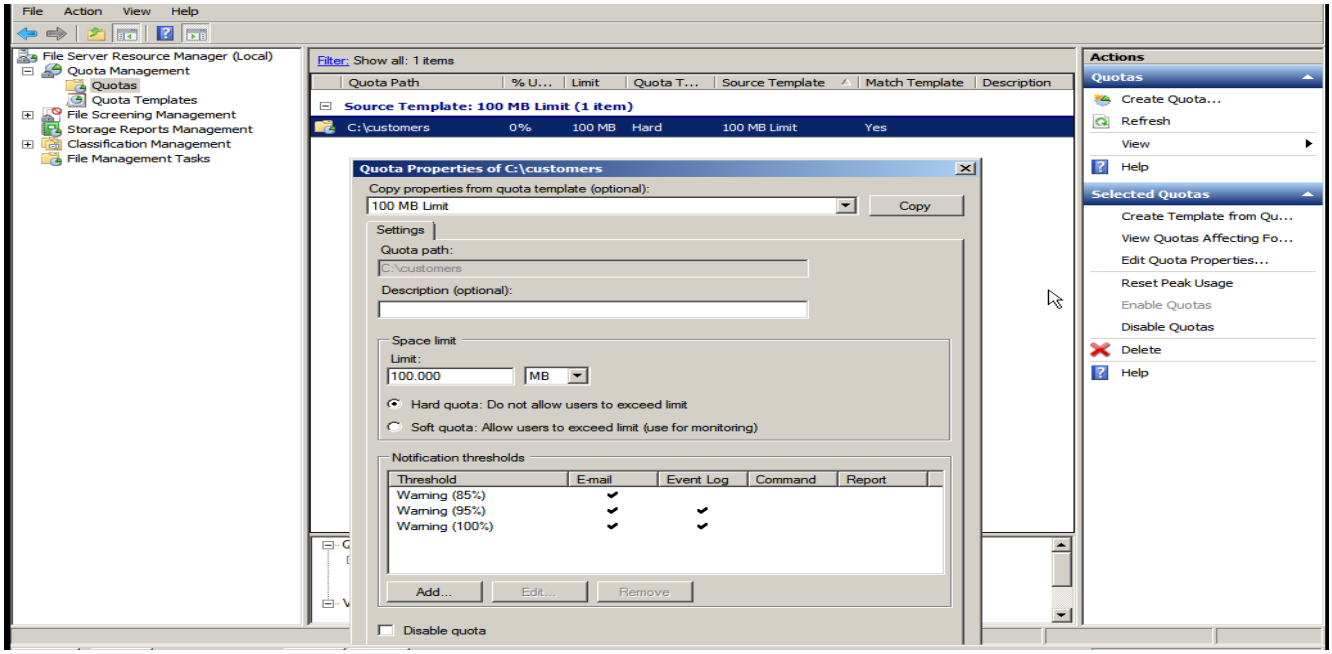

Figure 54 partition

Here the memory is done partition which means for each department, one of the drive is given to them with that performance increase and in the quota management system I have shown the hard disk space and its portion in it and in the above I can change the space in the place of the limit and in the warning of percentage indicates the numbers of person using this customer folder and with the help of this, I can able to know about the number of people using it and space completed.

Examining folder permissions

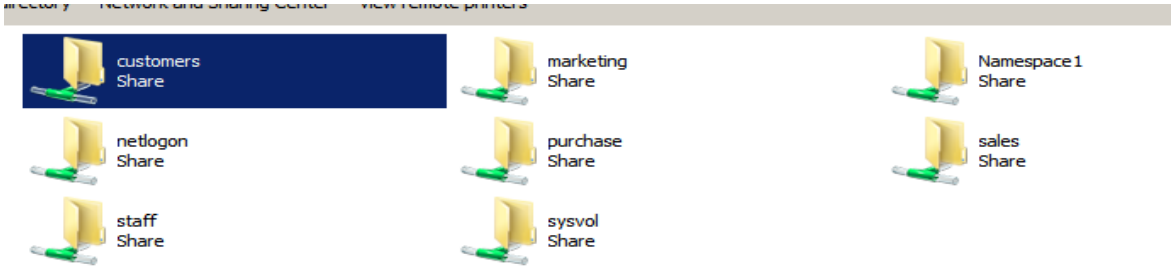

Figure 55 permission folders

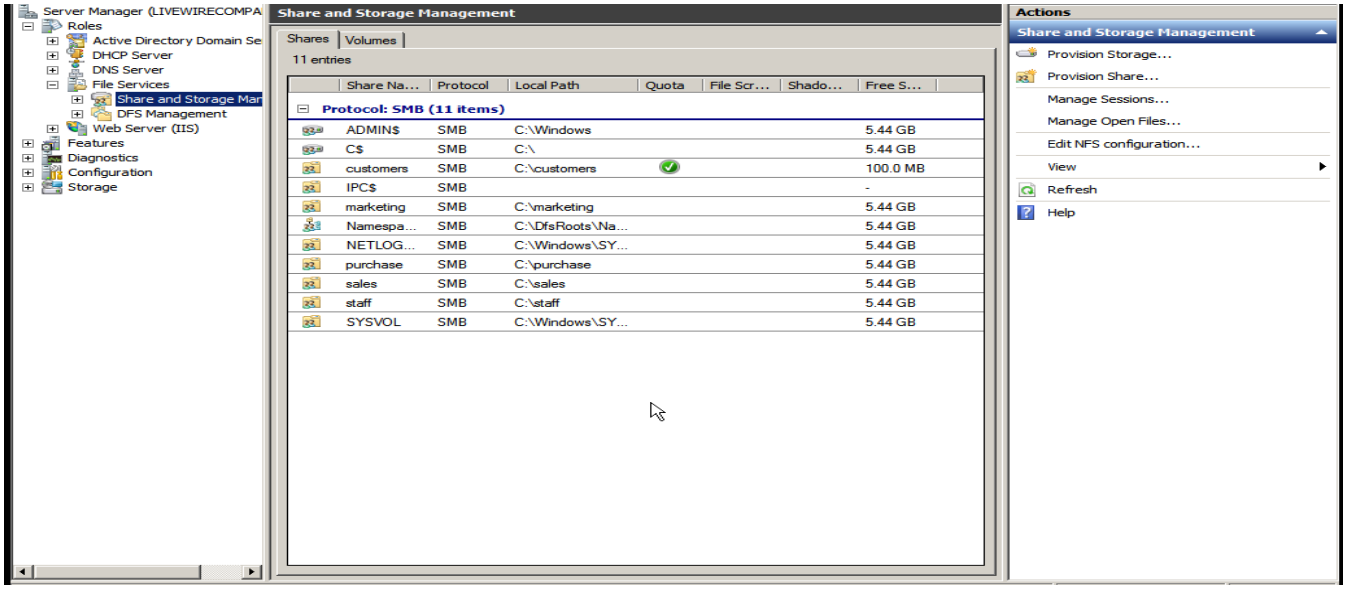

Figure 56 share and storage management

The permission for folders done checking like accessing the same folder from the different department the folder got not share and open using the particular user and every department has different permission to the folder and in the above I have shown the shares and space which is allotted to the shred folder and it is used when if the space of the share folder space will be less than the shared department, I can increase the space.

Installing security software patches

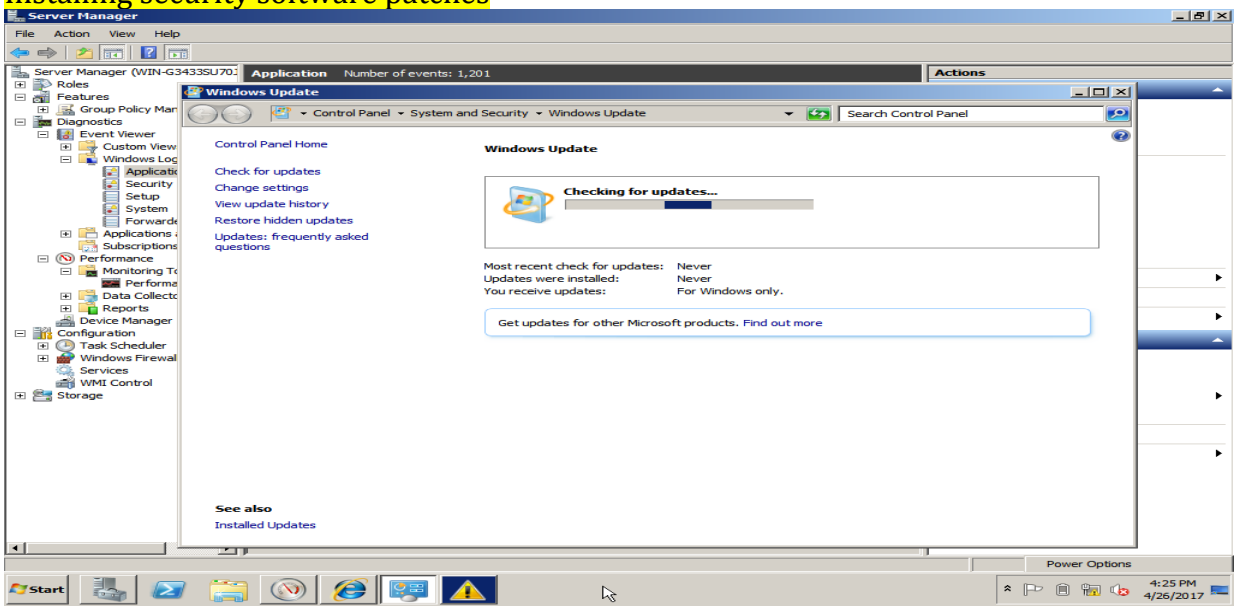

Figure 57 updates

In this part the updates are given by the organization like windows which help to solve the bugs and updating more security to the server and this are directly produced by the window to solve the problem.

Update antivirus software on all computers in the network

Figure 58antivirus

Which help the server to get more secure while updating day by day to the through so that the network computer is more safe and they cannot get the problem very easily like virus and it is mainly used remove the problem cause to folders and stop the Trojan related files.

Read server logs for security alerts

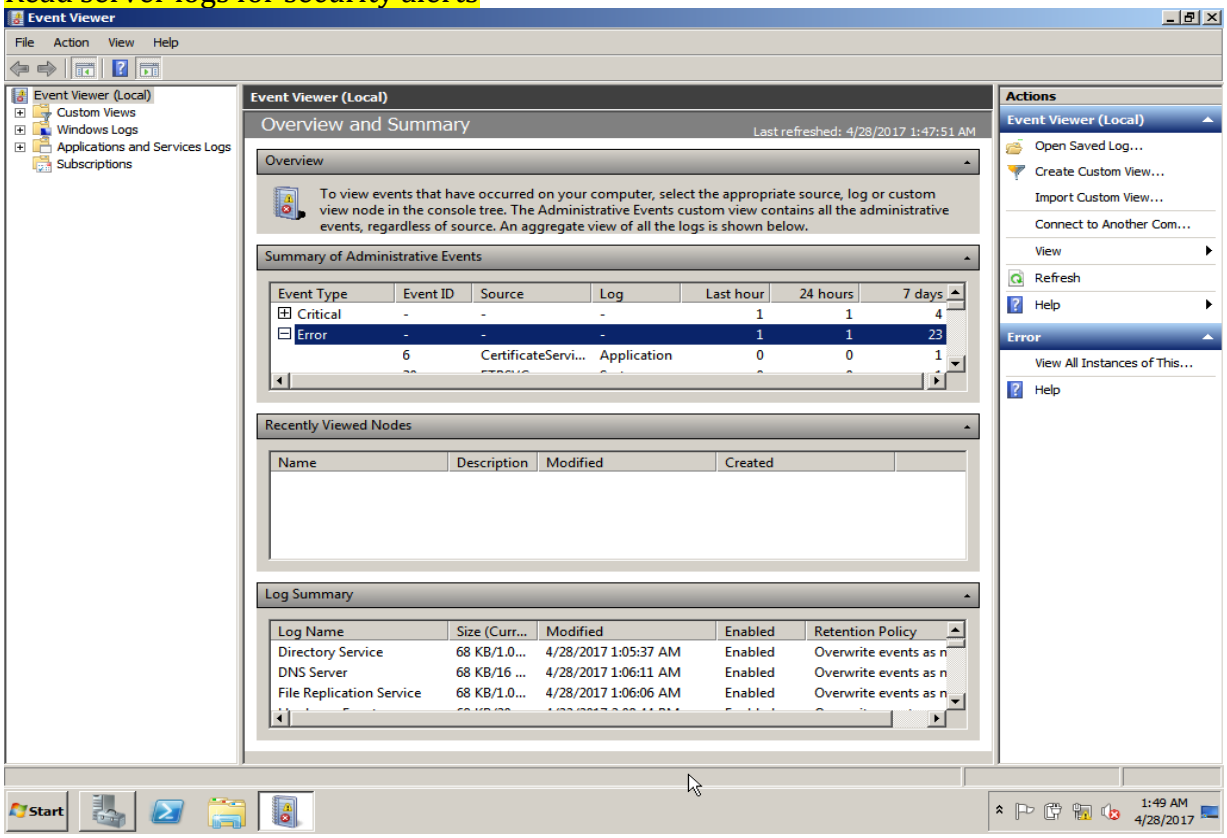

Figure 59 server logs

Here we can see the logs of the server we can read it and we can get alert message so that I can solve the problem got in the server and the performance increases and it is mainly used to check the problem in the log and solve the problem like warning and errors in it and in

the above screenshot the I can see the log for the errors, the error can notify easily can be resolved easily.

Check server utilization

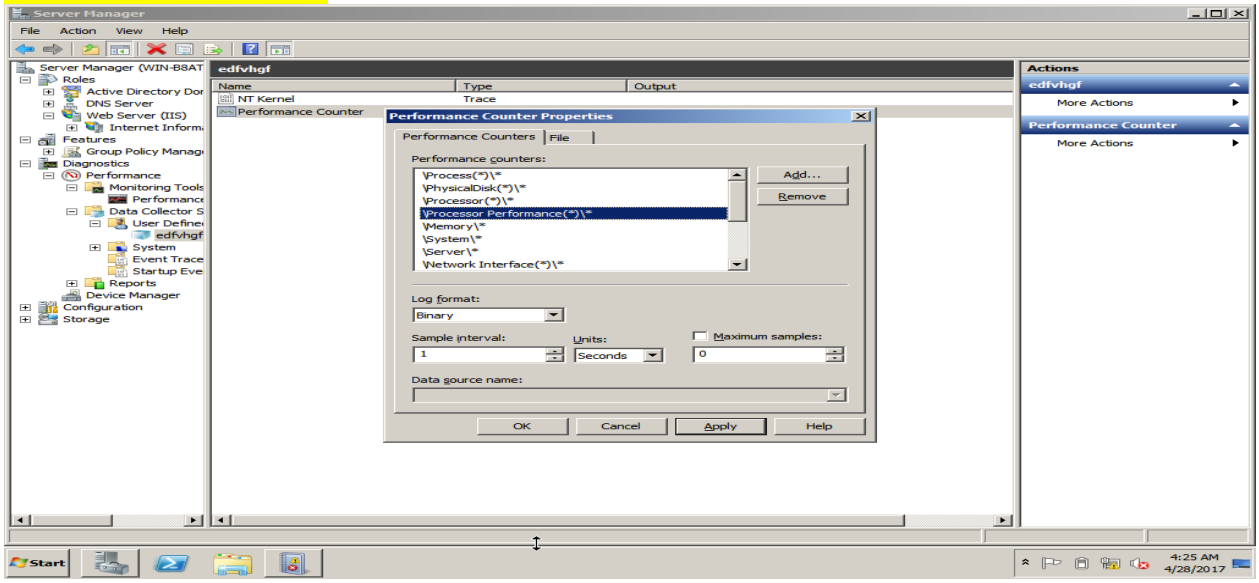

Figure 60 server utilization

Here I may see the server utilizing product how much space it is allotted to it and how much percentage of the memory left and how can be maintained will be known by this checking

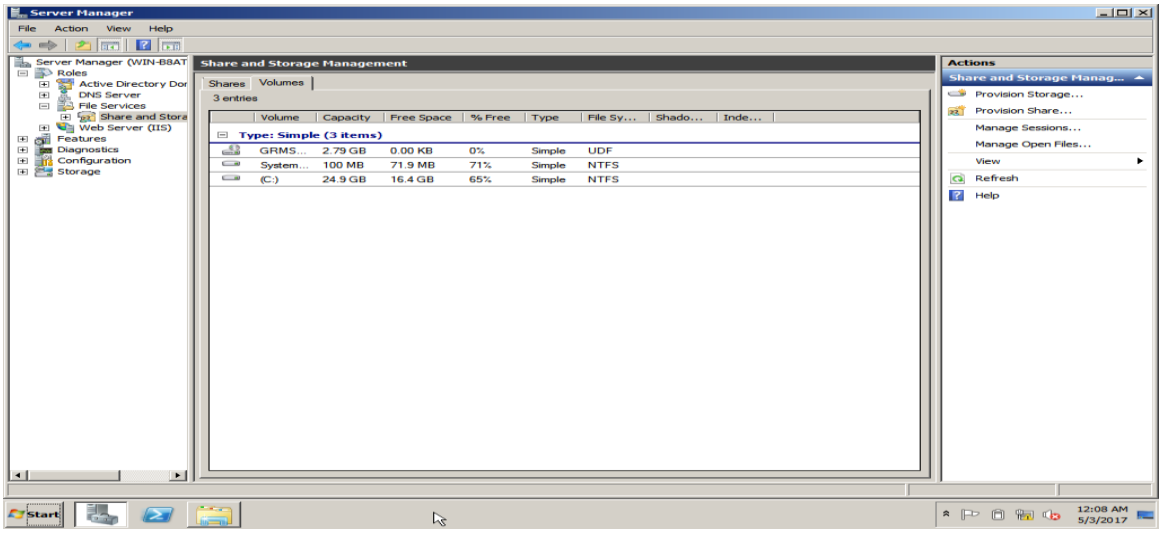

Figure 61 memory

In the above photo I have seen the partisan in the memory of the server and here I can see which disk is allocated the more space and I can make the disk to divide and use the disk for the flies for the departments.

Check hardware errors.

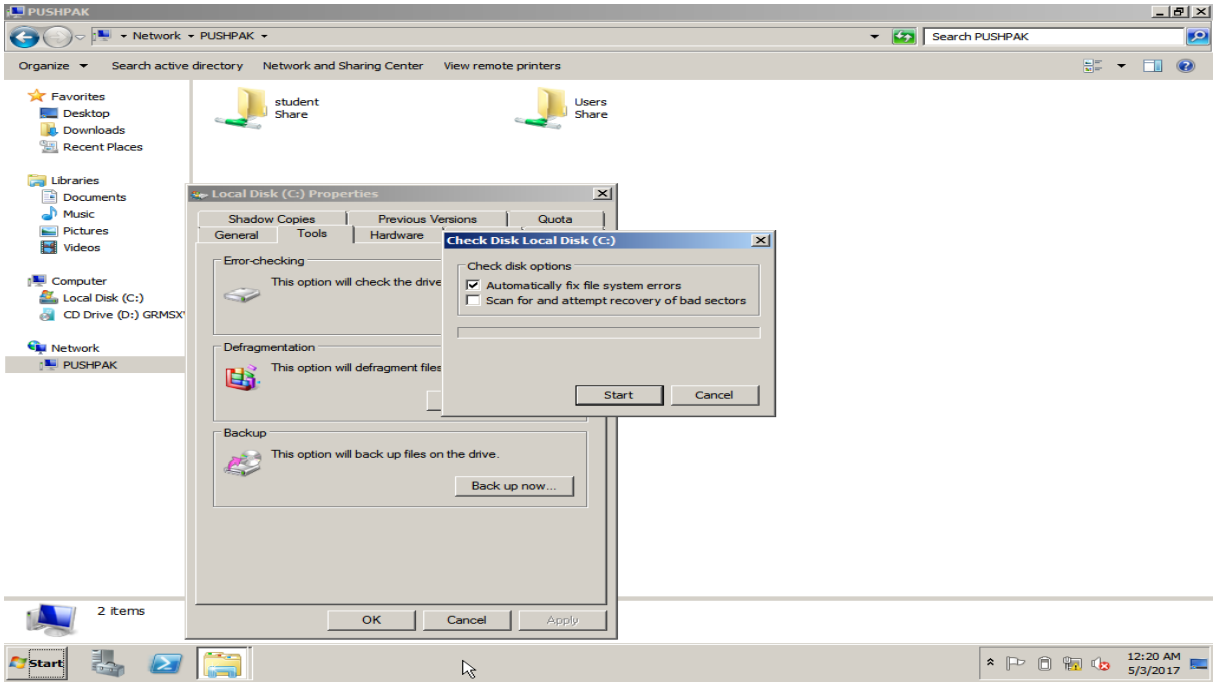

Figure 62 errors

Here I can see the hardware error may appear in the part of downstream and we should find the error in that part I should solve it so the performance will increases and in the tools I can see the errors, there I can observe the automatically repair system error in the system.