ITEC 350 Dr. Lee

Intro to Networking

Lab Report Pod 6

Team Pod 6 was comprised of Gerald Ottman, Josh Obenhaus, Robert Tedder, and Eileen Hindmon.

Lab assignments are important to obtain hands on knowledge of the different Networking Layers, protocols, and their applications. One of the top complaints Employers report back to Universities regarding recent Computer Science and IT graduates is the lack of hands on knowledge. All students must know and understand the theory of Communication Networks in order to develop new services within this quickly evolving field, but more importantly is the ability to transfer our learned theory into a secure and working network. The infrastructure of communication networks is undergoing dramatic change under pressure from the new services and enabled by technology innovation[[1]](#footnote--1). Current students will be developing protocols for the next generation of wireless devices, which will not be successfully completed without knowledge of the current protocols.

The first day of lab Josh and Gerald installed the necessary software on all three workstations. Ubuntu was installed on one machine, Windows XP on another, and then Windows Server 2003 was installed for our server. According to Josh, Ubuntu was the fastest installation process of the three, while the installation of XP and Windows Sever 2003 were equivalent to one another. Meanwhile, Gerald started the physical layer of our network setup and was completed during the next meeting. Complications arose, but were quickly swashed by substituting pod 5’s router and switch for the router and switch assigned to pod6. All four team mates then walked through the entire physically setup again, to verify all knew the process. Gerald, Josh, and Robert each took over the administrative duties of their respective machines, while I delegated and read each task we need to accomplish. This method worked well since we individuals were assigned to one pod or network. Once the physical layer and all three operating systems were installed we preceded to configure the network settings of each machine. Each machine was assigned ip addresses from the 190.111.0 network; therefore, our server was assigned 190.111.1, XP was assigned 190.111.1.2, and Ubuntu was assigned 190.111.3. Since we knew we were going to use our server as a Domain Name Server, we set the loopback address to 127.0.0.1. Our pod’s router was set as the default gateway for our network. Once the previous tasks were completed we preceded to confirm our network connectivity. Robert, being the administrator for our server was able to successfully ping the other two computers on our network, but neither of the other administrators were able to ping the server. This information led us to change the firewall settings on our server, after which all three machines were successfully able to communicate with one another. Our next step was to setup Active Directory Domain Controller through our server. Robert, being the administrator added this role with a custom configuration of pod6.edu as the full DNS of the domain on our network. After configuring the DNS, we confirmed the DNS operation was working properly by pinging each machine respectively using the Domain name of the individual workstations instead of Internet Protocol Addresses. To confirm the working status of the DNS nslookup was executed on each workstation. Once confirmation was received, Gerald, the administrator of our XP machine, added his workstation to our domain, which must be completed so the workstation is managed through Active Directory. Our server administrator Robert, created a folder on the desktop labeled shared. This path was created so the administrators of the other two machines could locate the shared folder on the network, which they successfully did. In order to manage the Active Directory Domain from our XP station, Gerald, being the administrator, installed an Admin Pack to his workstation. In order to remotely manage our XP workstation from the server, we manually added the workstation through the computer management function of our server.

Our network, aka Pod6, was successfully up and running. The first additional service we decided to add to our network was mail service. Gerald and myself added the two standard mail services SMTP and POP3, and then created mail accounts for each of the team members in our group. Eileen configured outlook express on the XP workstation, so test message could be sent to the others in our group. Gerald then setup outlook express on the server and proceeded to send Eileen a test message, which she responded to via the Outook Express client on the XP workstation. Josh decided to enable ssh service on his Ubuntu machine. The process was fairly simple as the workstation itself did most of the work, according to Josh. Once this was completed, Putty was downloaded and installed on the XP machine. Josh tested the SSH service by logging into XP and remotely accessing the Linux workstation. Josh then continued to install samba on the Linux workstation so he could remotely access the shared folder on our server using a command line tool called SMBclient. He was able to access the remote folder and stored a text document with a greeting for everyone to read. Eileen decided to add the ISS web service on to our server and created a simple webpage, which was then viewed from our XP workstation. Next, Josh configured terminal services on the Windows server and remotely connected via the XP workstation. Eileen then established an Organizational Unit within our domain using Active Directory on our server and delegated control to a user, Eileen, which was created earlier in the lab. To verify the user had control of the Organizational Unit, we logged into our XP workstation and created a new user pod6. Robert decided to configure the DHCP service on our server, which obtains workstation IP addresses, subnet masks, gateways, and DNS information. DHCP protocol servers can assign IP addresses to machines on a network. There is normally a range of available addresses, but not all of these addresses are used. DHCP protocol is additionally capable of doing many other things. They can be configured to allow for a computer to learn its IP address, subnet mask, gateway, and DNS server information. In order to set up the DHCP protocol we accessed, “manage your server” and added a DCHP role. After beginning the process a scope / range had to be set representing the available IP addresses on our group’s pod. We set the starting address to 10 and set the ending address to 50. After further progress was achieved through the DHCP setup, the “yes” option was selected for DHCP options. Once in the DHCP options window one is required to setup a default gateway, parent domain, and set the server IP address. We entered pod6.edu for the parent domain and 190.111.5.1 for the IP address. Next the scope was activated. The last two steps taken in the process were naming the Sever, “Pod6Server”, and selecting the authorize option.

Next, was connecting a printer to our pod using one of the print servers in the lab on a standard TCP/IP port. We also decided to set the permissions on the shared directory to deny write and delete for one of our accounts. We choose this elective because none of us had previous experience with setting permissions. An audit file was created to view attempts made by the restricted user, which we then viewed. Then last elective we choose was setting up a connection with pod1 to establish a two-way trust between the two domains. The trust relationship was confirmed by logging onto a user in the trusted pod’s domain.

The only two electives we did not complete were setting up an access-list on our router and working with another pod to share a single DHCP server. I would like to complete both of these electives at some point to practice, but it will have to wait until our next lab encounter.

From this lab we learned many things, such as the differences between Windows and Unix-based systems that are used for networking. We learned more about how the physical structure of a network is used, and a lot more about how routing works. Before this assignment none of us knew how to set up a mail server or DNS server, and had never used Hyper Terminal or RIP.

The lab guide we followed was well written and contained step-by-step easy to follow instructions. In fact, the lab guide will be followed to setup personal servers residing at our individual residences for further hands on experience.

The lab would be more beneficial if the groups were smaller, but then we would have a shortage of pods or networks. Overall, everyone in our group enjoyed the learning experience, worked well together, and hopes for more lab time in the future.

1. [↑](#footnote-ref--1)