

Lab 3: TCP/IP Services

In this lab, you learn about various TCP/IP services, files, and manually connecting to services using *telnet*. Each team will turn in answers to the questions in this lab.

Configure the system

Bring the up single-user and perform initial configuration

- Step 1. Boot your system into single user mode. To accomplish this, reboot the system, and interrupt the Red Hat splash screen at the beginning of the boot process with Control-X. Then type **linux single** at the **boot:** prompt.
- Step 2. Configure your system with the IP address 10.0.0.N/24, where N is your system number. Don't forget about the files **/etc/hosts**, **/etc/hostname**, and **/etc/sysconfig/network**. Refer to Lab 1 if necessary – by now, you should be able to reliably configure your network in just a few minutes, and understand the relationship between the various configuration files and commands.

Q1. What class is your IP address (careful!)? _____

- Step 3. Bring your system up multi-user (init level 3). If you find that **sendmail** hangs on boot, it is because your hostname is not set, or is not resolvable. Let **sendmail** timeout (about 2 minutes), and be sure to configure your hostname, and either reboot the system or restart sendmail with the command **/etc/init.d/sendmail restart**.

The /etc/nsswitch file

Explore the name service switch file to discover where services obtain their data.

- Step 4. Look at the service switch file **/etc/nsswitch.conf**.

Q2. Which database(s) is used to translate hostnames? _____

Q3. Which database(s) is used to obtain account information? _____

Q4. From where is RARP getting its information? _____

Q5. Where might TCP/IP port information come from? _____

The /etc/services file

Explore and learn about the UNIX TCP/IP port name / port number mapping file /etc/services.

- Step 5. Examine the port (service) name to port number file **/etc/services**.

Q6. What is the service number for the FTP protocol? _____

Q7. What protocol (s) can be used for a web server? _____

Q8. What port number is used to talk to the Trivial File Transfer Protocol? _____

Q9. What network daemon is used to implement the **sunrpc** protocol? _____

The /etc/rpc file

Explore and learn about the Remote Procedure Call program name / program number mapping file /etc/rpc.

- Step 6. Examine the service RPC program name / program number mapping file **/etc/rpc**.

Q10. What programs correspond to RCP program numbers 100004, 100007, 100009, 100028, 100300, 100303? _____

Q11. What general service is implemented by the programs above? _____

Using telnet to connect to a service

Learn about */etc/services*, TCP/IP ports, and how to use *telnet* to manually connect to a service.

Step 7. Look up the **daytime** service port number in the services files */etc/services*.

Q12. What is the port number for **daytime**? _____

Step 8. You can use **telnet** to connect to any of the TCP/IP services whose commands are plain ASCII. Use **telnet** to attempt to connect to the **daytime** service. Enter the command below to cause **telnet** to connect to **daytime** port number you found in the */etc/services* file:

```
$ telnet localhost portnum
```

Q13. Describe the result: _____

Step 9. You need to configure **xinetd** to listen for access to the **daytime** service. Enable the daytime service by editing the file */etc/xinetd.d/daytime*, changing the **yes** in the **disable = yes** line to a **no**, and send **xinetd** the **USR2** signal. Make sure you did not accidentally kill **xinetd**!

Step 10. Try to telnet again to the **daytime** port.

Q14. Describe the result: _____

Step 11. Symbolic port names can also be used for ports. Connect using the name **daytime** instead of its port number:

```
$ telnet localhost daytime
```

The SMTP service

Learn about *SMTP* by manually creating an email message (headers and body) and talking directly to the *SMTP* service. Review page 70-71 of the *TCP/IP Network Administration* book for a quick overview of *ESMTP*.

Step 12. Look up the port for the **SMTP** service.

Q15. Which port is reserved for **SMTP**? _____

Step 13. Connect to the **SMTP** service using **telnet**, using the correct port. If you cannot connect to this port, it might be that the appropriate daemon is not running, or your system's hostname may be unset.

Q16. What daemon implements the **SMTP** service? _____

Step 14. Enter the **ehlo** command telling **SMTP** who you are. Replace *yourhostname* with the name of your host.

```
ehlo yourhostname
```

Q17. Does the server support **ESMTP** or just **SMTP**? _____

Q18. If **ESMTP**, how many extensions are supported? _____

Q19. If **ESMTP**, name the first two: _____

Step 15. Tell **SMTP** who the mail is from with the **mail from:** command. Replace *from* below with your own email address.

```
mail from:<from>
```

Step 16. Tell **SMTP** who the recipient is: with the **rcpt to:** command:

```
rcpt to:<student@localhost>
```

Step 17. Now give the body of the email message with the **data** command. Enter the command below, and then enter your mail message. The **data** command ends when it sees a single . (period) on a line by itself.

```
data
your-mail-message-here
.
```

Step 18. Terminate your connection to **SMTP** with the **quit** command.

Step 19. Now login into the student account, and read the mail with the **mail** command.

Q20. Write down the **From** header? _____

Step 20. When you are done, don't forget to shutdown your system with the command: **shutdown -h now** and be sure that the power is turned off after the system has halted.