Core System Services

xinetd and telnet

In order to set up the telnet server, we need to complete the following steps:

1. Install xinetd and the telnet server
2. Created default settings
3. Verify our work.

Let's install the xinetd daemon and verify that it is going to start when we need it.

```
sudo apt install xinetd telnetd telnet
```

Once xinetd is installed, we need to create the telnet service file:

```
sudo nano /etc/xinetd.d/telnet
```

```
# default: on
# description: The telnet server serves telnet sessions; it uses
# unencrypted username/password pairs for authentication.
service telnet
{
disable = no
flags = REUSE
socket_type = stream
wait = no
user = root
server = /usr/sbin/in.telnetd
log_on_failure += USERID
}
```

~~Now, we need to turn off the linux firewall or it will block our tftp server. We wouldn't do this in a production environment - we would modify the rules. We will learn how to modify linux firewall rules in a future class.~~

```
sudo systemctl stop ufw.service
sudo systemctl status ufw.service
```

```
● ufw.service - Uncomplicated firewall
   Loaded: loaded (/lib/systemd/system/ufw.service; enabled; vendor preset: enabled)
   Active: inactive (dead) since Sat 2018-03-24 23:31:14 UTC; 18min ago
  Process: 14400 ExecStop=/lib/ufw/ufw-init stop (code=exited, status=0/SUCCESS)
 Main PID: 379 (code=exited, status=0/SUCCESS)
```

Core System Services

Restart xinetd to get telnet going:

```
sudo systemctl restart xinetd.service
```

Check the telnet service is listening using netstat:

```
netstat -natu
```

```
tcp        0      0 0.0.0.0:23              0.0.0.0:*               LISTEN
```

```
-n - numeric ip addresses and ports (don't try to resolve)
-a - all - show listening and non-listening sockets
-t - TCP
-u - UDP
```

is there a IPv6 version of telnet running?

Check /var/log/syslog by using the tail (show last 10 lines of a file) command:

```
tail -25 /var/log/syslog
```

```
Mar 26 23:26:11 cushing-dave xinetd[10637]: Reading included
configuration file: /etc/xinetd.d/telnet [file=/etc/xinetd.conf]
[line=14]
Mar 26 23:26:11 cushing-dave xinetd[10637]: xinetd Version 2.3.15
started with libwrap loadavg options compiled in.
Mar 26 23:26:11 cushing-dave xinetd[10637]: Started working: 1
available services
```

/var/log/syslog is a very important log file
It should always be your first stop when troubleshooting
Practice using the tail command with /var/log/syslog

Testing telnet

Let's follow the logging. Open a new terminal window and use the following tail command:

```
tail -f /var/log/syslog
```

Determine what your server's IP address is:

```
ip a
```

```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen
1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: ens4: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1460 qdisc pfifo_fast state UP group
default qlen 1000
    link/ether 42:01:0a:80:00:03 brd ff:ff:ff:ff:ff:ff
    inet 10.128.0.X/32 brd 10.128.0.3 scope global ens4
       valid_lft forever preferred_lft forever
    inet6 fe80::4001:aff:fe80:3/64 scope link
       valid_lft forever preferred_lft forever
```

Open a new terminal window. We are now going to test telnet on our server to make sure it is working properly:

```
$ telnet 10.128.0.X
Trying 10.128.0.X...
Connected to 10.128.0.X.
Escape character is '^]'.
Ubuntu 16.04.4 LTS
cushing-dave login: linuxuser
Password:
Welcome to Ubuntu 16.04.4 LTS (GNU/Linux 4.13.0-1011-gcp x86_64)
```

telnet is working!

You should have noticed some activity in the /var/log/syslog tail window:

```
Mar 26 23:31:05 cushing-dave systemd[1]: Created slice User Slice of linuxuser.
Mar 26 23:31:05 cushing-dave systemd[1]: Started Session 1723 of user linuxuser.
Mar 26 23:31:05 cushing-dave systemd[1]: Starting User Manager for UID 1000...
Mar 26 23:31:05 cushing-dave systemd[10698]: Reached target Sockets.
Mar 26 23:31:05 cushing-dave systemd[10698]: Reached target Timers.
Mar 26 23:31:05 cushing-dave systemd[10698]: Reached target Paths.
Mar 26 23:31:05 cushing-dave systemd[10698]: Reached target Basic System.
Mar 26 23:31:05 cushing-dave systemd[10698]: Reached target Default.
Mar 26 23:31:05 cushing-dave systemd[10698]: Startup finished in 15ms.
Mar 26 23:31:05 cushing-dave systemd[1]: Started User Manager for UID 1000.
Mar 26 23:31:09 cushing-dave systemd[10698]: Stopped target Default.
Mar 26 23:31:09 cushing-dave systemd[10698]: Reached target Shutdown.
Mar 26 23:31:09 cushing-dave systemd[10698]: Starting Exit the Session...
Mar 26 23:31:09 cushing-dave systemd[10698]: Stopped target Basic System.
Mar 26 23:31:09 cushing-dave systemd[10698]: Stopped target Sockets.
Mar 26 23:31:09 cushing-dave systemd[10698]: Stopped target Paths.
Mar 26 23:31:09 cushing-dave systemd[10698]: Stopped target Timers.
Mar 26 23:31:09 cushing-dave systemd[1]: Stopping User Manager for UID 1000...
Mar 26 23:31:09 cushing-dave systemd[10698]: Received SIGRTMIN+24 from PID 10720
(kill).
Mar 26 23:31:09 cushing-dave systemd[1]: Stopped User Manager for UID 1000.
Mar 26 23:31:09 cushing-dave systemd[1]: Removed slice User Slice of linuxuser.
```

If there were errors they would also be in /var/log/messages, so this is an important file to check when troubleshooting.

4 Marks in the Lab:

Change the telnet server port to 2323 and test
You can test by using **`telnet localhost 2323`** from the command line

Core System Services

Creating your Own

We are going to create a script that we are going to run as a xinet.d service.

First we'll need to install xinetd and telnet:

```
sudo apt install xinetd telnet
```

Using a text editor, create **/usr/bin/testservice.sh** with the following content:

```
#!/bin/bash
echo "Connection received!"
```

Use the **chmod** command to make sure the file is executable for everyone. Check your work by executing **/usr/bin/testservice.sh**

Now we need to create our service file in /etc/xinetd.d. Use a text editor to create **/etc/xinetd.d/testservice**

```
service testservice
{
port = 5900
socket_type = stream
protocol = tcp
wait = no
user = root
server = /usr/sbin/testscript.sh
server_args = test
type = unlisted
}
```

Restart the xinetd process and check to see if your service is running by using **sudo systemctl status**
telnet localhost 5900 will connect to your service.

It will not work as configured - you will have to troubleshoot

Troubleshoot using the output from `sudo systemctl status xinetd.service` or `tail /var/log/syslog`

Your output should look like this:

```
# telnet localhost 5900
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
“Connection received!”
Connection closed by foreign host.
```

Marking

```
sudo /scripts/lab04-check.sh
```

```
Services enabled

enabled
tcp        0      0 0.0.0.0:5900            0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:2323            0.0.0.0:*               LISTEN

Configuration Files

service testservice
{
port = 5900
socket_type = stream
protocol = tcp
wait = no
user = root
server = [obfuscated for marking]
server_args = test
type = unlisted
}

#!/bin/bash
echo “Connection received!”

# default: on
# description: The telnet server serves telnet sessions; it uses
# unencrypted username/password pairs for authentication.
service telnet
{
disable = no
flags = REUSE
socket_type = stream
wait = no
user = root
```


```
server = /usr/sbin/in.telnetd
log_on_failure += USERID
}
```