Experiments with IETF Application level protocols

Objectives: To understand through hands-on experience, the low-level mode of operation of IETF application protocols.

Questions

- Which Unix application supports the TELNET protocol? Go through the manual pages (man) to find out more about this application protocol.
- Check in you Unix/Linux system in which ports the servers TELNET, SMTP, POP3 and FTP are listening.

Experiments

1. **SMTP**. Using the application that implements the TELNET protocol, in this experiment you will contact the port of the SMTP server of the system smtp.fe.up.pt. Please register the kind of response that you obtain.

Open a connection to the SMTP server using the below commands. The ">" indicates commands issued by the client and the "<" replies sent by the server:

```
> telnet smtp.fe.up.pt 25
< 220 smtp.fe.up.pt ESMTP Sendmail 8.10.1/8.10.1; Thu, 22 Nov 2001 20:21:14 GMT
> helo fe.up.pt
< 250 smtp.fe.up.pt Hello quarteira.fe.up.pt
[192.168.103.126], pleased to meet you
> mail from: johnSmith@fe.up.pt
< 250 2.1.0 johnSmith @fe.up.pt... Sender ok
> rcpt to: myself@fe.up.pt
< 250 2.1.5 myself@fe.up.pt... Recipient ok
> data
< 354 Enter mail, end with "." on a line by itself
> ola.
> .
< 250 2.0.0 fAMKLfE18191 Message accepted for delivery
> quit
< 221 2.0.0 lorosae.fe.up.pt closing connection
```

Using your regular email client, check if the message was successfully received in your mailbox.

2. **POP3**. Open a connection to the POP3 server of the system maila.fe.up.pt. Verify the number of messages you have and import them:

```
> telnet maila.fe.up.pt 110
< +OK PO3 maila.fe.up.pt v2003.83rh server ready
> user myself
< +OK Password required for myself.
> pass beware that the password will be visible
< +OK myself has 2 visible messages (0 hidden) in 17498 octets.
> stat
< +OK 2 17498
> retr 1
< +OK 889 octets
< ...
< .
> retr 2
< ...
< .
> quit
```

3. **FTP**. This protocol uses one connection for control and one connection for transferring the actual data files. For each new file to be transferred, a new TCP connection is open . Accordingly, for this experiment you will new to have two terminal windows open (window A - for the control data; and window B - for the data file)

Execute the following steps on window A:

```
> telnet tom.fe.up.pt 21
> user myself
< 331 Password required for myself.
> pass _ beware that the password will be visible_
< 230 User myself logged in.
> pasv
< 227 Entering Passive Mode (193,136,28,12,19,91)
```

The command "pasv" is issued to request the FTP server to enter the passive mode. Is this situation, the client is responsible for opening another connection to transfer the data file.

When replying to the pasv command, the server sends back 6 bytes (in the example 193,136,28,12,19,91) with the following meaning:

- 193,136,28,12 -> 193.136.28.12 as the IP address of the server
- 19, 91 to indicate that the port to be used for the new data connection should be port 19 * 256 + 91 = 4955.

Accordingly, you should go to window B, and perform the following steps:

```
> telnet tom.fe.up.pt 4955
< ...
```

Now, going back to window A it is possible to retrieve the data file using the command

```
> retr ficheiro
```

Moving again to window B it is possible to see the data file coming in on this window.

A is the window for exchanging control commands; B is the window to exchange data!

4. **HTTP**. Connect to the FEUP Web server by executing the below set of commands. Do not forget to include a blank line right after the command *>HOST: www.fe.up.pt* (basically all you need to do is to press twice the return key):

```
> telnet www.fe.up.pt 80
> GET / HTTP/1.1
> HOST: www.fe.up.pt
>
< HTTP/1.1 200 OK
< Date: Thu, 22 Nov 2001 20:38:37 GMT
< Server: Apache/1.3.20 (Unix) mod_ssl/2.8.4 OpenSSL/0.9.6b
< Last-Modified: Thu, 05 Jul 2001 13:55:20 GMT
< ETag: "45e5-2d8-3b4471c8"
< Accept-Ranges: bytes
< Content-Length: 728
< Content-Type: text/html
<
< < html>
< ...
< function changeLocation(){
< location
'http://sifeup.fe.up.pt/sifeup/web_page.inicial';
< }
< ...
<
< < /html>
```

As it can be seen, this page asks the client to establish a new connection to the system sifeup.fe.up.pt ...

```
> telnet sifeup.fe.up.pt 80
> GET /sifeup/web_page.inicial HTTP/1.1
> HOST: sifeup.fe.up.pt
>
```