

CM30078 NETWORKING–COURSEWORK

NOVEMBER 2012

This assignment is worth 25% of the total marks for the course. It is to be executed in a lab session in the week starting on 19 November 2012. Exceptions may only be granted by the Director of Studies (Mr Hayes).

Learning Outcomes

The successful student will be able, in a limited time, to connect a computer to the Internet, to retrieve and send files via FTP, to connect via SSH, to run a web server and to interpret the output of a network analysis tool.

How the Coursework Takes Place

Each student is assigned a two-hour lab session in the Lovelace lab. All students are given an identical workstation with special software installed. Students are supposed to complete the assignments with no other support than their workstation, so, in particular, no other computers, notes and papers can be used. In the week preceding the coursework week there will be a rehearsal session, where similar tasks in the same conditions will be performed with the assistance of the instructor.

Tasks

- (1) Produce a bash script that is able to properly connect a Linux workstation to the Internet. In fact, the assigned machine will be booted from a CD that does not automatically connect it. Marks are given as follows:
 - Ping machines by number [4 mark].
 - Ping machines by name [8 marks].
 - Insightful comments and appropriate style of the script, error detection, built-in flexibility and portability (for example use variables for the requested network parameters) [32 marks].
- (2) Install by yum, or by any other method that you might prefer, an *Apache* http server, and run it. Then create a simple web page with the student's name and access it from a remote machine via an SSH session (the *Apache* log will testify to the success of these actions). The breakdown of marks is:
 - Setting up the http server [16 marks].
 - Accessing the web page [8 marks].
- (3) Start a tcpdump, download by FTP a large file and, while the download is in progress, detach for a few seconds and then reconnect the machine's ethernet cable. Close the FTP session and stop the tcpdump. Open the tcpdump file and comment all the parts that you can associate to material studied in the course, in particular the beginning and end of connections. Delete most of the similar lines and replace them with explanatory comments. Explain what happened when the connection was interrupted. Clarity and ease of reading are important factors [32 marks].

At the end of the lab session the script, the *Apache* log file and the commented tcpdump file will be uploaded by FTP to a given server.

Technical Details

- Username/password of the Linux machine: root/toor (press enter on 'run from image' if the machine is not booted already).

- Your host's IP number: (read it from the sticker on your machine).
- Your host's name: (read it from the sticker on your machine).
- Netmask: 255.255.255.128.
- Router: 138.38.110.126.
- Primary/secondary nameserver: 138.38.32.45/138.38.32.46.
- Address to ping: 138.38.0.49/bath.ac.uk.
- Let your BUCS username be $\langle username \rangle$ and your name be $\langle name \rangle$, then $\langle identifier \rangle$ is $\langle username \rangle$ - $\langle name \rangle$ (for example, the instructor's $\langle identifier \rangle$ is ag248-Guglielmi).
- Name of the bash connection script: $\langle identifier \rangle$.script.
- FTP server: 138.38.108.168, user: networking, password: (will be given in class); IMPORTANT: change the directory to Public (write only directory).
- Large file to download: bigfile in the Public directory of the FTP server (the file is there even if you don't see it).

Checklist

- My name: _____.
- My BUCS username: $\langle username \rangle$ = _____.
- My host's IP number: _____.

When you are ready with the web page, please call the instructor and give him the URL of your page. AS SOON AS YOU UPLOAD A FILE, PLEASE INFORM THE INSTRUCTOR (who will make a copy for safety). Please give this filled checklist to the instructor before leaving the lab.

- (1) ping 138.38.0.49 works: YES/NO.
- (2) ping bath.ac.uk works: YES/NO.
- (3) I have uploaded $\langle identifier \rangle$.script to the FTP server and it contains my name inside a comment: YES/NO.
- (4) The web server is running: YES/NO.
- (5) I have renamed the *Apache* log to $\langle identifier \rangle$.log and I have uploaded it to the FTP server: YES/NO.
- (6) I have called the commented tcpdump file $\langle identifier \rangle$.tcpdump and I have uploaded it to the FTP server and it contains my name: YES/NO.

Date and signature: _____