Group Project Final Report

Executive Summary:

For our System Administrations project, we created a locally hosted virtual web server utilizes File-Transfer-Protocol via Ubuntu Server (version 11.10) in a virtual machine (VirtualBox). In order to utilize FTP, we installed a package called proftpd.

The web server hosts a local site, and consists of a few users, imitating a small company with 5 employees—CEO, Senior Developer, System Administrator, Frontend Developer and Backend Developer. Each employee (user) has their own role, permission level etc. Users in the company to download/upload and read/write files, which in this case, are just simple pages (html files). We use a FTP-tool called FileZilla Client to allow users to achieve this goal.

The system administrator (sysadmin) is allowed to make various changes in the Ubuntu Server, including adding/deleting users, modifying user access and changing file structure, but the sysadmin is unable to edit files directly via FileZilla.

All other users (ceo, senior, frontdev and backdev) are not given shell access (/bin/false), and therefore are strictly FTP-only users. This is achieved by adding /bin/false as an option in the /etc/shells file. This means they cannot access the Ubuntu server, but they can read/write files in their given range via FileZilla. For these four employees, there are 3 levels of access. This type of user-authentication is done via a method called “User Isolation”. The users, when created, are assigned a home directory and that home directory acts as their “root” directory, which means they cannot access files above that directory, which allows us to achieve different levels of permissions.

The site files are located in the /var/www directory in the server. And the file structure is as followed:

ls /var/www:

index.html about.d

ls /var/www/about:

about.html frontend.d backend.d

ls /var/www/about/frontend:

front1.html front2.html

ls /var/www/about/backend:

back1.html back2.html

As you can see above, there are 3 levels of directories. The user ceo has /var/www as the home directory, giving the user full access to the site files. The user senior has /var/www/about as the home directory, meaning the user senior cannot edit/change index.html. The users backdev and frontdev have .../backend and .../frontend as their respective home directories, giving them limited access.

Group Members & Their Roles:

Anmol Gondara - Setting up Ubuntu Server and FTP installation.
Hang Li - Documentation (Report) and Presentation Slides
Sunminder Sandhu - User-Hierarchy Design and Troubleshooting
Aditya Sheoran - Documentation (Report) and Presentation Slides
Russell Wong - Network/File Configurations, User Access Modification and Finalization

Conceptual Design:

The concept here is to imitate a small startup company with only 5 employees: CEO, Senior Developer, System Administrator, Frontend Developer and Backend Developer. The are different files in the company, and the System Administrator is responsible for setting up user accounts and giving them different access levels.
The files/devices of the company are imitated by simply using a site consisted of different html pages. The CEO obviously has all access to all the files (pages), while the senior has the next level of user access to the files. The senior overlooks both the frontend developer and backend developer as well. Both frontend and backend developers are only allowed access to their respective areas, meaning they can only work on frontend and backend respectively. Their access

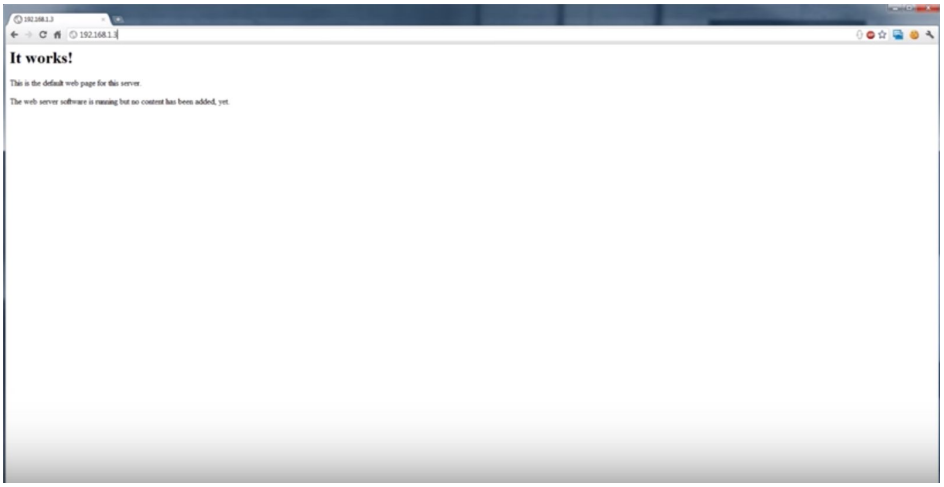
are also mutually exclusive e.g. the frontend developer does not have access to the backend files (in this case, the back1.html and back2.html in the backend directory).
The system administrator (sysadmin) cannot change the files directly, but has the power to modify user accounts. The sysadmin is responsible for supervising user activity and assuring the files are structured accordingly too.

Step By Step Guide:

1. Download & Install VirtualBox via **https://www.virtualbox.org/**
2. Download Ubuntu Server (Version 11.10) via **https://www.ubuntu.com/download/server**
3. Begin Installation of Ubuntu Server on VirtualBox
    a. Select User Settings (Language, Keyboard, Time Zone, etc.)
    b. Name the Server & Set the Password
    c. Partition Disk by Selecting 'Guided - Use Entire Disk' Option
    d. Install Base System
    e. Encrypt Home Directory Settings
    f. Configure apt Package Management System
    g. Set Automatic Updates Options
    h. Select & Install Software
        - Open SSM server
        - LAMP server
    i. Install GRUB boot user
    j. Finish Installation
4. Begin Setup of Server and FTP
    a. Change Network Settings by Selecting "Network Adapters" and Change the "Attached to" Setting to "Bridged Adapter" From "NAT."
    b. Restart Networking on Linux Box
        - sudo /etc/init.d/networking restart
    c. Learn Your IP Address

- ip addr show

d. Test by Entering Your IP Address
    - Enter the IP address into a browser and a page should pop up.



e. Download and Install FileZilla Client via **https://filezilla-project.org/download.php?show_all=1**

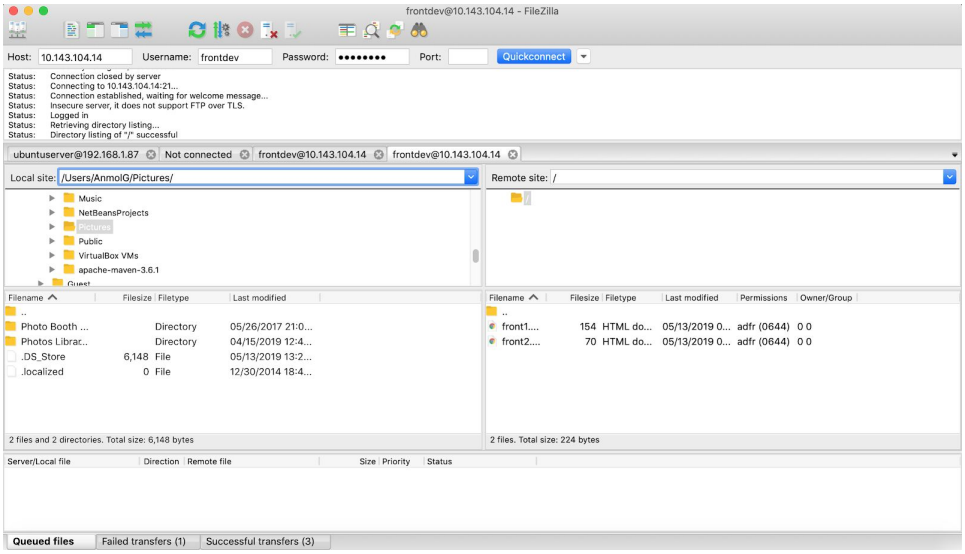
f. Change the Contents of File sources.list for Package Installation
    - sudo nano /etc/apt/sources.list
    - Change every instance of "...archive.ubuntu..." and "security.ubuntu...." to "old-releases.ubuntu...."
    - Save & Close File

g. Update Package Lists for Upgrades
    - sudo apt-get update

h. Install All Available Upgrades
    - sudo apt-get upgrade

i. Install ProFTPD and OpenSSL
    - sudo apt-get install proftpd openssl
    - Confirm "Standalone" Option

j. Connect to FileZilla by Entering IP into "Host" Box Followed by User Login Information
    - Change Editing Settings to Choose Your Favorite Editor



k. Set Access Permissions

- cd /var/www/
- sudo chmod 777 * -R

5. Set up File Structure and User Access

a. cd /var/www

b. sudo mkdir about

c. cd /var/www/about

d. sudo touch about.html

e. sudo mkdir backend && sudo mkdir frontend

f. cd /var/www/about/backend

g. sudo touch back1.html && sudo touch back2.html

h. cd /var/www/about/frontend

i. sudo touch front1.html && sudo touch front2.html

j. After that, change config files

k. sudo nano /etc/proftpd.conf

l. Uncomment “DefaultRoot ~” (This allows us to jail users to their designated home directories, creating user isolation)

m. sudo nano /etc/shells

n. Add /bin/false (This creates an option for no shell access users)

o. Create users and set passwords:
    i. sudo useradd ceo d /var/www -s /bin/false
    ii. sudo useradd senior d /var/www/about -s /bin/false
    iii. sudo useradd frontdev d /var/www/about/frontend -s /bin/false
    iv. sudo useradd backdev d /var/www/about/backend -s /bin/false
    v. sudo passwd ceo (when prompted, enter password)
    vi. sudo passwd senior (when prompted, enter password)
    vii. sudo passwd frontdev (when prompted, enter password)
    viii. sudo passwd backdev (when prompted, enter password)

References:

Configuration

https://vitux.com/ubuntu-proftpd-tls/

https://askubuntu.com/questions/600339/network-fails-to-configure-on-boot

User-Isolation with ProFTPD

https://www.liquidweb.com/kb/set-up-ftp-isolation-in-centos-or-ubuntu/

https://ubuntuforums.org/showthread.php?t=51611

Linux User/Group Commands

https://www.linode.com/docs/tools-reference/linux-users-and-groups/

http://www.debianadmin.com/users-and-groups-administration-in-linux.html

https://www.cyberciti.biz/faq/linux-list-all-members-of-a-group/