4. Web Server Administration

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Web Application Deployment

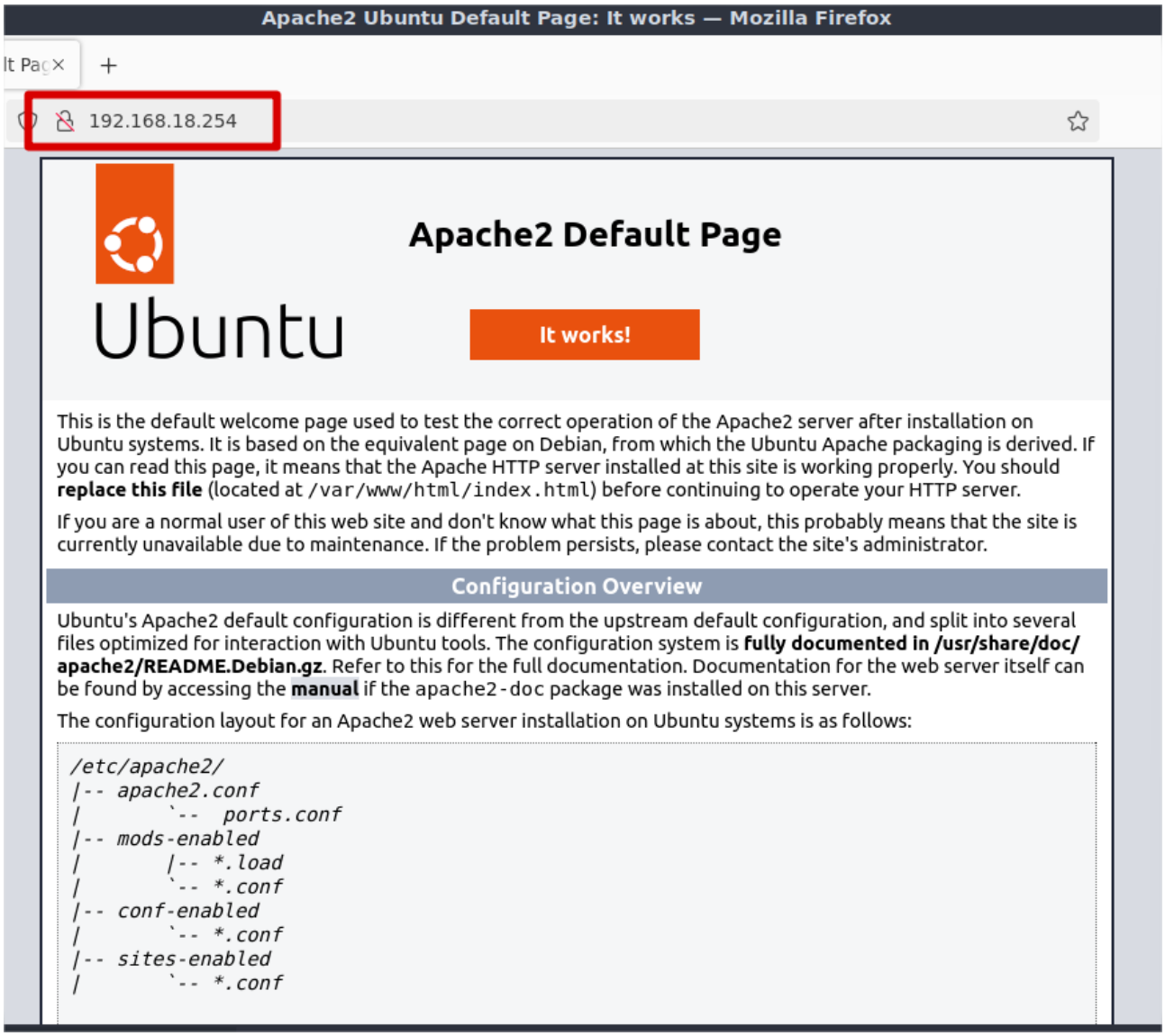
2nd C-VET Web Application Development

Index

Apache exercises

Step 1: Install the Apache2 Server

Verify that Apache2 is installed and running by opening a browser and navigating to http://localhost. Attach screenshots.



Step 2: Check the Version

Use the command `apache2 -v` to check the installed version. Attach a screenshot.

```
root@server:/home/user# apache2 -v
Server version: Apache/2.4.52 (Ubuntu)
Server built:   2024-07-17T18:57:26
```

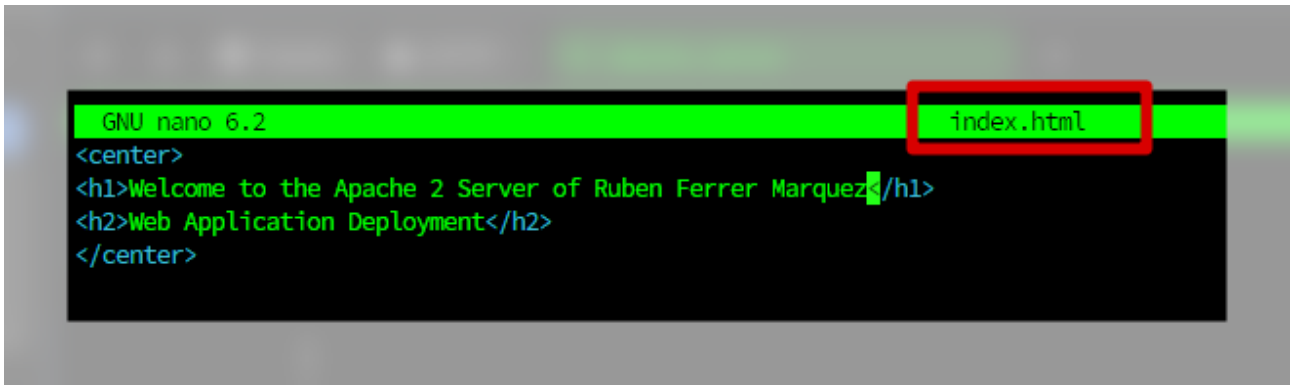
Step 3: Create a Welcome Page

Replace the default welcome page with a custom one:

- Navigate to `/var/www/html/`.
- Rename the existing `index.html` file.
- Create a new `index.html` file with the following content:

```
<center>
<h1>Welcome to the Apache 2 Server of [Your Name]</h1>
<h2>Web Application Deployment</h2>
</center>
```

Replace `[Your Name]` with your own name. Refresh the browser, and the new page should appear. Attach screenshots.

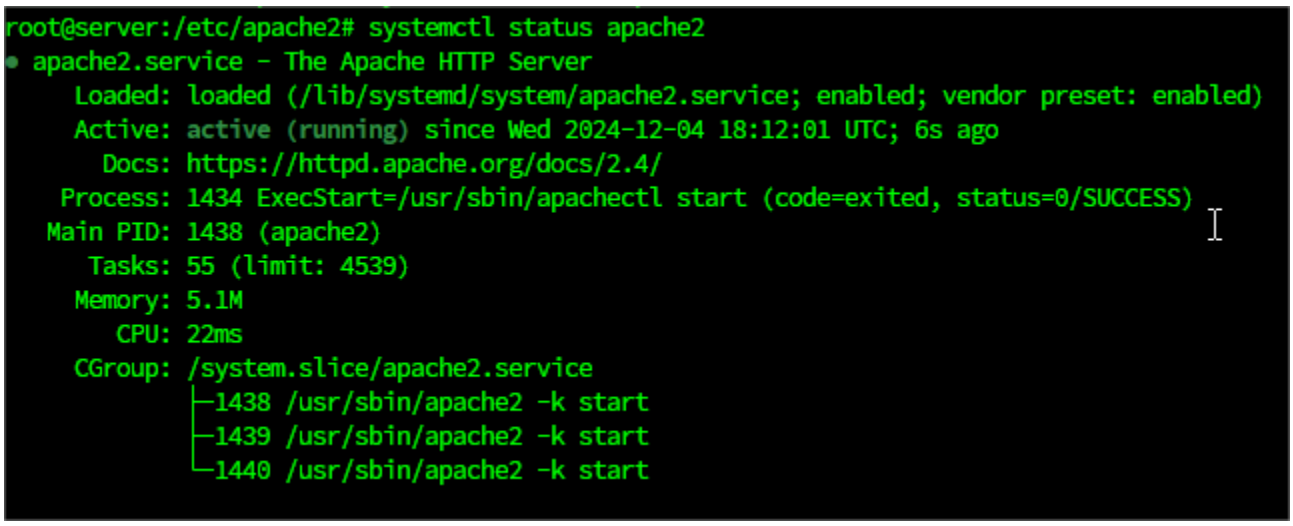


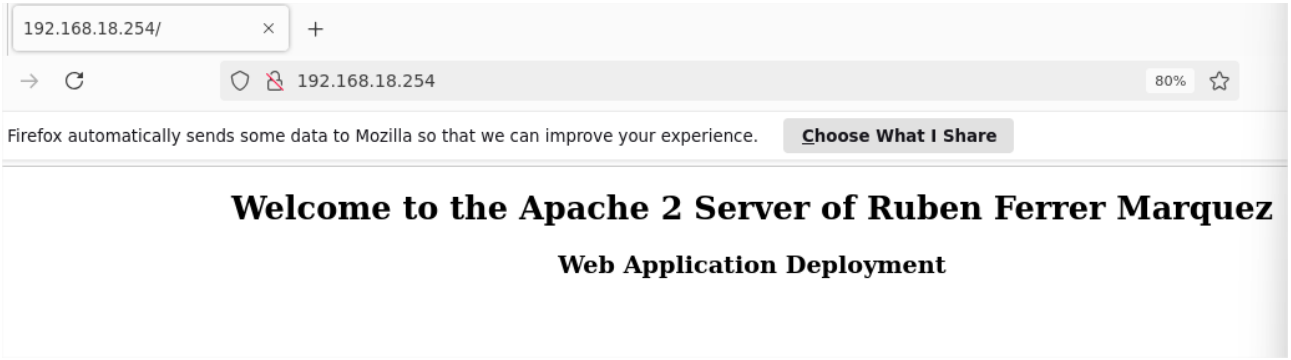
Step 4: Update Apache2 Configuration File

- Make a backup of `/etc/apache2/apache2.conf`.
- Add the following lines to the configuration file:

```
# Basic Configuration File (/etc/apache2/apache2.conf)
ServerRoot "/etc/apache2"
DocumentRoot "/var/www/html"
PidFile /var/run/apache2/apache2.pid
User www-data
Group www-data
ErrorLog /var/log/apache2/error.log
IncludeOptional mods-enabled/*.load
IncludeOptional mods-enabled/*.conf
Include ports.conf
IncludeOptional sites-enabled/*.conf
```

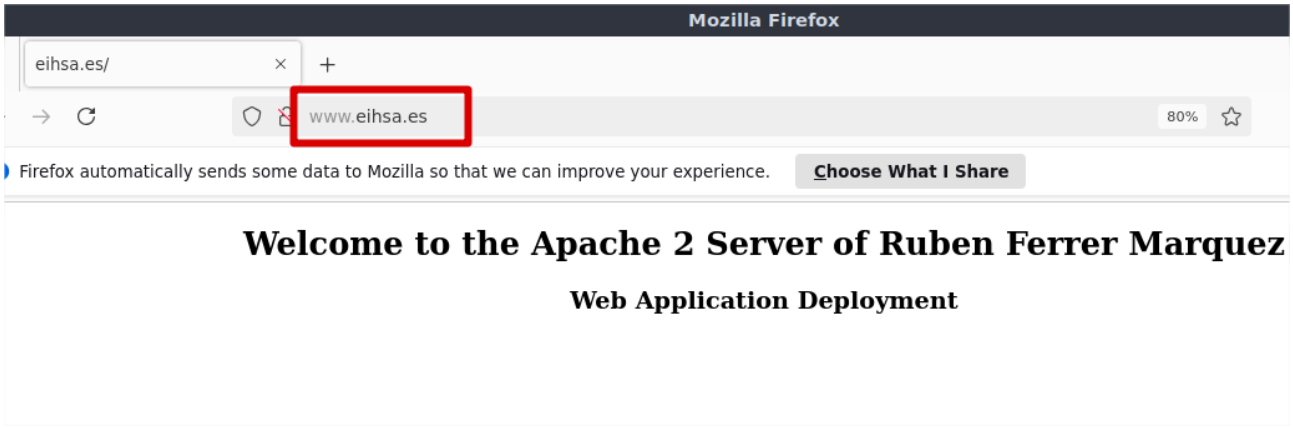
Restart Apache2 and verify its functionality. Attach screenshots.




192.168.18.254/
192.168.18.254
80%
Firefox automatically sends some data to Mozilla so that we can improve your experience.
Choose What I Share
Welcome to the Apache 2 Server of Ruben Ferrer Marquez
Web Application Deployment

Step 5: Change the Server's Access Name

Change the access name of the server to `www.eihsa.es` using either DNS configuration or by editing the `/etc/hosts` file. Test that the server responds to the new name. Attach screenshots.



Step 6: Enable User Web Spaces

Enable Apache's module that allows users to host their web pages in personal directories:

- Run: `$ sudo a2enmod userdir`

```
root@server:/etc/apache2# a2enmod userdir
Module userdir already enabled
root@server:/etc/apache2# systemctl restart apache2
root@server:/etc/apache2#
```

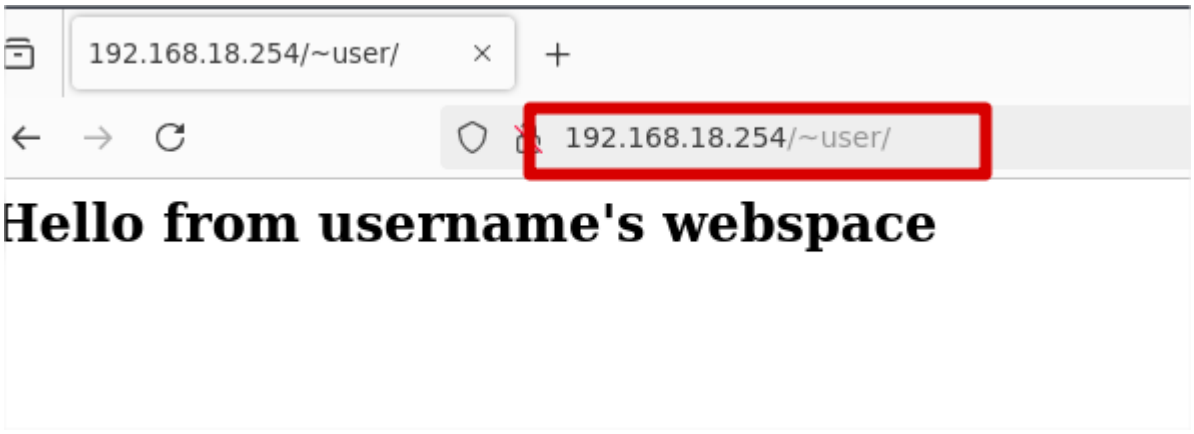
- Each user can create a `public_html` folder in their home directory (e.g., `/home/username/public_html`).

```
 GNU nano 6.2                                    mods-enabled/userdir.conf
<IfModule mod_userdir.c>
        UserDir public_html
        UserDir disabled root

        <Directory /home/*/public_html>
                AllowOverride FileInfo AuthConfig Limit
                Options MultiViews Indexes SymLinksIfOwnerMatch IncludesNoExec
                Require all granted
        </Directory>
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

Set appropriate permissions:

- Directory: `chmod 755`
- Files: `chmod 644`

Users can access their pages via URLs like `http://server_address/~username`. Restart Apache2 and test. Attach screenshots.



Step 7: Define Virtual Hosts by Name

- Create a new configuration file in /etc/apache2/sites-available/ for the new host.

```
root@server:/etc/apache2/sites-available# ls
000-default.conf  001-eihsa.conf  default-ssl.conf
root@server:/etc/apache2/sites-available#
```

- Set up the directory and create a web page for the host.

```
 GNU nano 6.2                                  001-eihsa.conf
<VirtualHost www.eihsa.es>
        # The ServerName directive sets the request scheme, hostname and port that
        # the server uses to identify itself. This is used when creating
        # redirection URLs. In the context of virtual hosts, the ServerName
        # specifies what hostname must appear in the request's Host: header to
        # match this virtual host. For the default virtual host (this file) this
        # value is not decisive as it is used as a last resort host regardless.
        # However, you must set it for any further virtual host explicitly.
        ServerName www.eihsa.es

        ServerAdmin webmaster@eihsa.es
        DocumentRoot /var/www/html/eihsa

        # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
        # error, crit, alert, emerg.
        # It is also possible to configure the loglevel for particular
        # modules, e.g.
        #LogLevel info ssl:warn

        ErrorLog /tmp/eihsa_ERROR.log
        #CustomLog ${APACHE_LOG_DIR}/access.log combined
        TransferLog /tmp/eihsa_ACCESS.log
        # For most configuration files from conf-available/, which are
        # enabled or disabled at a global level, it is possible to
        # include a line for only one particular virtual host. For example the
        # following line enables the CGI configuration for this host only
        # after it has been globally disabled with "a2disconf".
        #Include conf-available/serve-cgi-bin.conf
</VirtualHost>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

- Enable the site using `sudo a2ensite`.

```
root@server:/etc/apache2/sites-available# a2ensite 001-eihsa.conf
Enabling site 001-eihsa.
To activate the new configuration, you need to run:
  systemctl reload apache2
root@server:/etc/apache2/sites-available# systemctl reload apache2
root@server:/etc/apache2/sites-available#
```

- Restart Apache2 and verify functionality. Attach screenshots.

```
root@server:/var/www/html# systemctl restart apache2
```

Step 8: Define Virtual Hosts by IP

Configure a virtual host accessible via IP address. Test and attach screenshots.

```
  GNU nano (.2                                    001-eihsa.conf
<VirtualHost 192.168.18.254>
        # The ServerName directive sets the request scheme, hostname and port that
        # the server uses to identify itself. This is used when creating
        # redirection URLs. In the context of virtual hosts, the ServerName
        # specifies what hostname must appear in the request's Host: header to
        # match this virtual host. For the default virtual host (this file) this
        # value is not decisive as it is used as a last resort host regardless.
        # However, you must set it for any further virtual host explicitly.
        ServerName www.eihsa.es

        ServerAdmin webmaster@eihsa.es
        DocumentRoot /var/www/html/eihsa

        # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
        # error, crit, alert, emerg.
        # It is also possible to configure the loglevel for particular
        # modules, e.g.
        #LogLevel info ssl:warn

        ErrorLog /tmp/eihsa_ERROR.log
        #CustomLog ${APACHE_LOG_DIR}/access.log combined
        TransferLog /tmp/eihsa_ACCESS.log
        # For most configuration files from conf-available/, which are
        # enabled or disabled at a global level, it is possible to
        # include a line for only one particular virtual host. For example the
        # following line enables the CGI configuration for this host only
        # after it has been globally disabled with "a2disconf".
        #Include conf-available/serve-cgi-bin.conf
</VirtualHost>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

Step 9: Define Virtual Hosts by IP and Port

Set up a virtual host accessible via a specific IP and port. Test and attach screenshots.

Step 10: Basic HTTP Authentication and Protected Directories

Add authentication to a directory on the virtual server using `mod_auth_basic`.

Steps to Implement:

1. Create a User

Use the `htpasswd` command to create a `.htpasswd` file:

```
sudo su
htpasswd -c /etc/apache2/passwd/.htpasswd username
```

Set permissions on `.htpasswd` to `chmod 644`.

2. Restrict Access to a Private Directory

Create the directory `/var/www/html/virtual/private_directory` and add an `index.html` file. Add the following configuration to the relevant site file:

```
<Directory "/var/www/html/virtual/private_directory">
     AuthType Basic
     AuthName "Private Directory"
     AuthUserFile /etc/apache2/passwd/.htpasswd
     Require valid-user
</Directory>
```

Restart Apache2 and test access via a browser.

3. Using `.htaccess` for Authentication

Create a `.htaccess` file in the directory:

```
AuthType Basic
AuthName "Private Directory"
AuthUserFile /etc/apache2/passwd/.htpasswd
Require user username
```

Enable `.htaccess` in the site configuration by adding:

```
<Directory "/var/www/html/virtual/private_directory">
     AllowOverride AuthConfig
</Directory>
```

Test functionality without restarting Apache2.

4. Digest Authentication

Enable the `mod_auth_digest` module for encrypted authentication. Configure using the `htdigest` tool to add users and allow access to the protected directory.

Step 11: Create a Secure Virtual Server with OpenSSL

Set up a secure virtual server using OpenSSL. Test and attach screenshots.