



**Blas Barragán Román - 2n DAW SEMI**

# **PREPARACIÓN DE MAQUINAS VIRTUALES PARA DAW**

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# ÍNDICE

|                              |    |
|------------------------------|----|
| ■ Introducción               | 03 |
| ■ VM Windows 10 Pro          |    |
| ■ Descarga XAMPP             | 04 |
| ■ Acceso a WEB con XAMPP     | 05 |
| ■ VM Ubuntu SERVER & DESKTOP |    |
| ■ Instalación LAMP           | 07 |
| ■ Instalación TOMCAT9        | 13 |

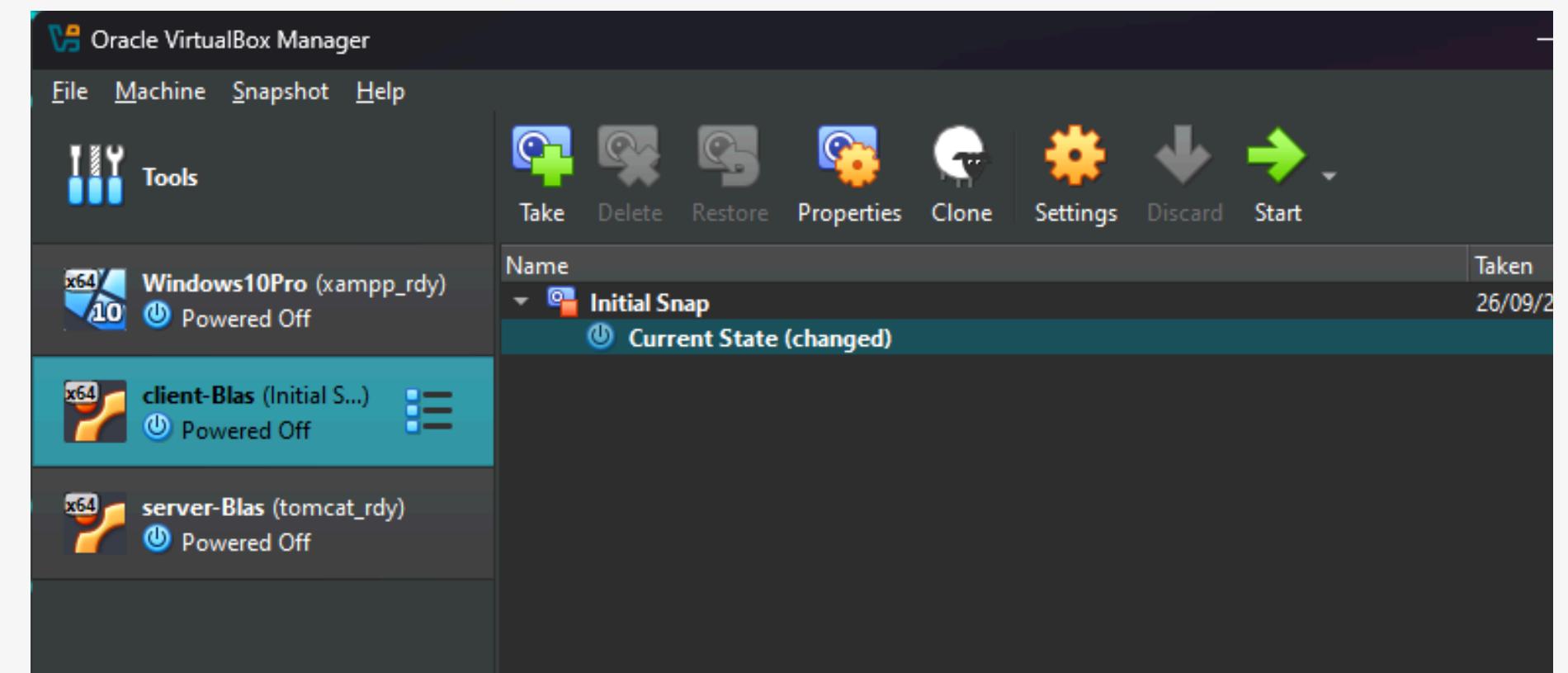


# INTRODUCCIÓN



## Prepararemos:

- MV Windows 10 Pro con XAMPP
- MV Ubuntu 20.04 Server con LAMP y Tomcat9
- MV Ubuntu 20.04 Desktop como cliente



Vamos a preparar las herramientas necesarias para la realización del curso, partiendo de la virtualización de 3 equipos mediante VirtualBox.



## 1 DESCARGAR XAMPP

En primer lugar accederemos a su pagina oficial:

<https://www.apachefriends.org/es/index.html>

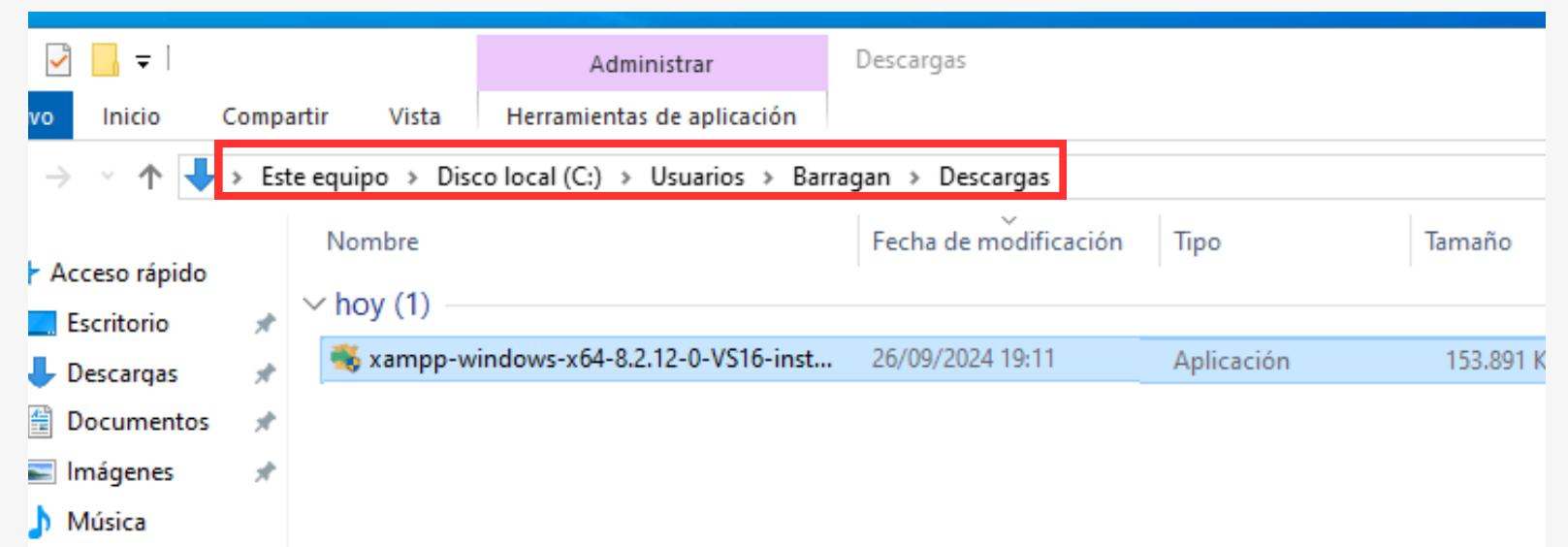
Descargamos el instalador que corresponde a nuestro SO, en nuestro caso XAMPP para Windows.

The screenshot shows the Apache Friends website for XAMPP. The URL in the browser's address bar is highlighted with a red box and shows <https://www.apachefriends.org/es/index.html>. The main heading is "XAMPP Apache + MariaDB + PHP + Perl". Below it, there's a section titled "¿Qué es XAMPP?" with a brief description. To the right is a large orange square icon with a white play button symbol, labeled "XAMPP". At the bottom, there are download links: a green arrow pointing right labeled "Descargar" with the note "Pulsa aquí para otras versiones", and three other links: "XAMPP para Windows 8.2.12 (PHP 8.2.12)", "XAMPP para Linux 8.2.12 (PHP 8.2.12)", and "XAMPP para OS X 8.2.4 (PHP 8.2.4)".

## 2 INSTALACIÓN

Una vez descargado, lo encontramos en la carpeta descargas.

Lo ejecutamos haciendo doble click en el.

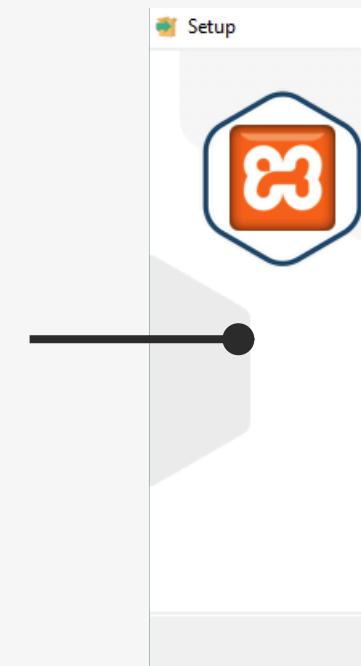


# INSTALACIÓN XAMPP



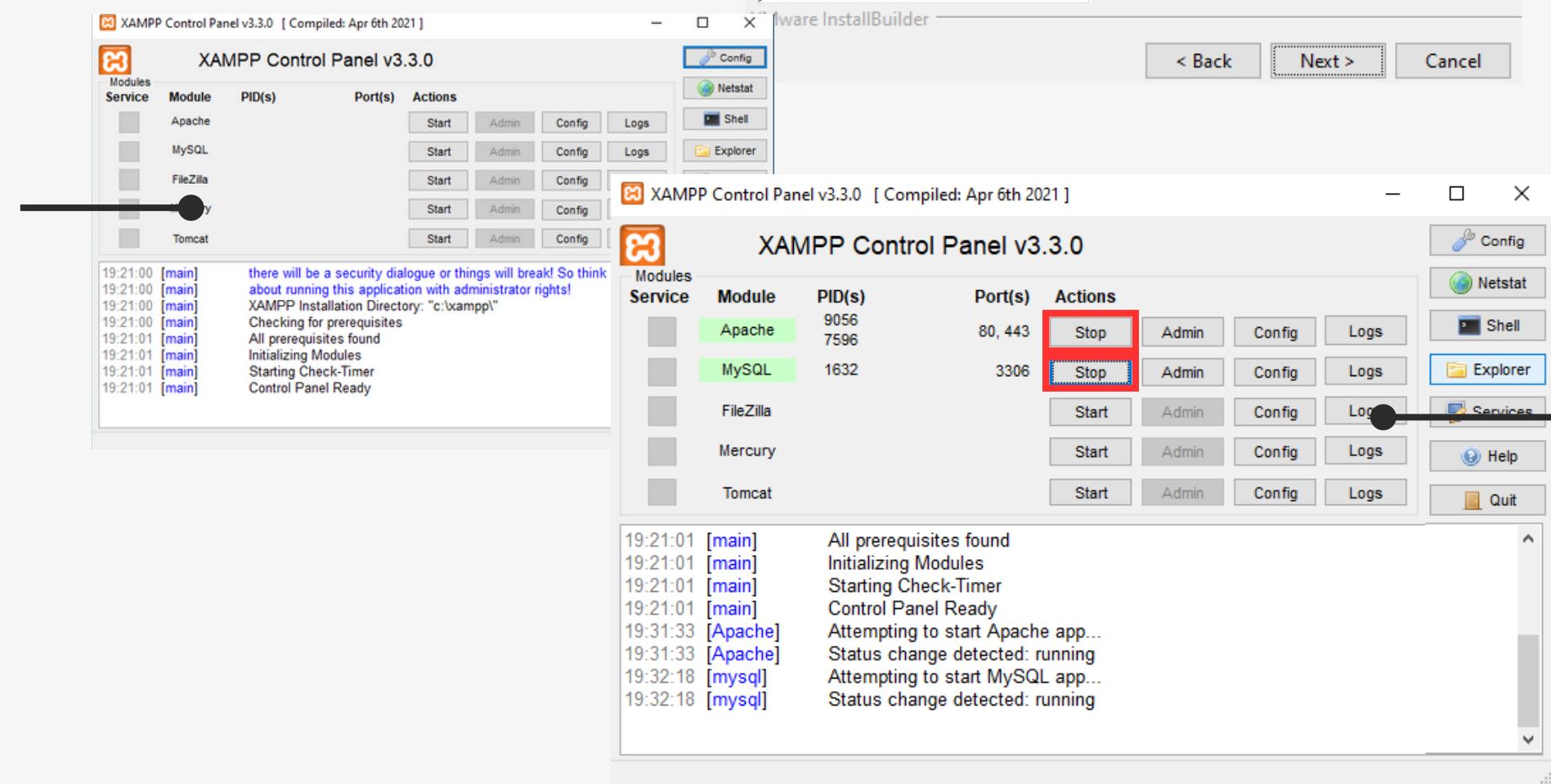
1

Iniciamos el asistente de instalación de la aplicación.



3

Una vez se completa la instalación, se abrirá el panel de control, desde donde podremos manejar todos los servicios.



2

Antes de iniciar la instalación, se nos preguntara por los paquetes que deseamos en nuestro equipo. Para nuestro caso, marcaremos al menos las casillas de MySQL, FileZilla FTP Server, Tomcat y phpMyAdmin.

4

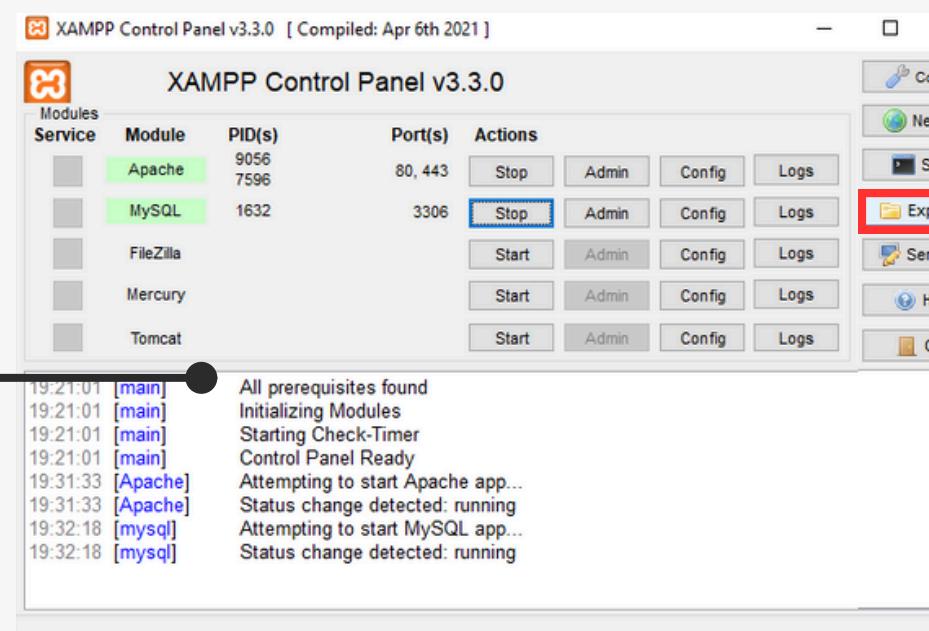
Arrancaremos los servidores de Apache y MySQL haciendo click en el respectivo botón start, que cambiara a stop una vez se haya iniciado.

# ACCESO A WEB CON XAMPP



1

Con los servicios anteriores iniciados, accedemos al directorio del servidor haciendo click en el botón explorer.



3

Después nos vamos a cualquier navegador de nuestro equipo y accedemos a :  
[http://localhost/xampp/  
NOMBRE-DE-PROYECTO](http://localhost/xampp/NOMBRE-DE-PROYECTO)

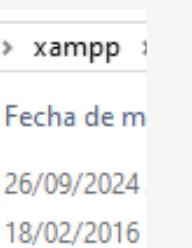
The composite screenshot illustrates the steps to access a local web project:

- XAMPP Control Panel:** Shows Apache and MySQL services running. The "Explorer" button is highlighted.
- File Explorer:** Shows the directory structure: C:\Este equipo\Disco local (C:)\xampp\htdocs. The "xampp" folder is highlighted.
- Browser:** Two tabs are shown:
  - localhost/xampp/web-libre/**: Displays "Index of /xampp/web-libre".
  - localhost/xampp/web-libre/Reyes-magos/**: Displays "Index of /xampp/web-libre/Reyes-magos".
- Final Web Page:** The "Reyes-magos" directory contains files like "carta-baltasar.html", "carta-gaspar.html", "carta-melchor.html", "carta-reyes-magos.css", and "carta-reyes-magos.html". The page features a festive design with three wise men and the text "Carta a los Reyes Magos".

Para comprobar la correcta instalación de XAMPP, alojaremos una web HTML en el servidor y accederemos a ella.

2

Nos vamos a la carpeta htdocs y luego a la carpetaxampp. Aquí pondremos nuestros proyectos. Para este caso usare una web HTML realizada el curso anterior.



4

Dentro encontraremos los archivos de nuestro proyecto, donde podemos ejecutar el .HTML y acceder a la pagina.

# MV UBUNTU SERVER & DESKTOP



En la maquina Ubuntu Server vamos a instalar el paquete LAMP mediante comandos de consola. Y con la maquina Ubuntu Desktop verificaremos los procesos, haciendo de cliente.

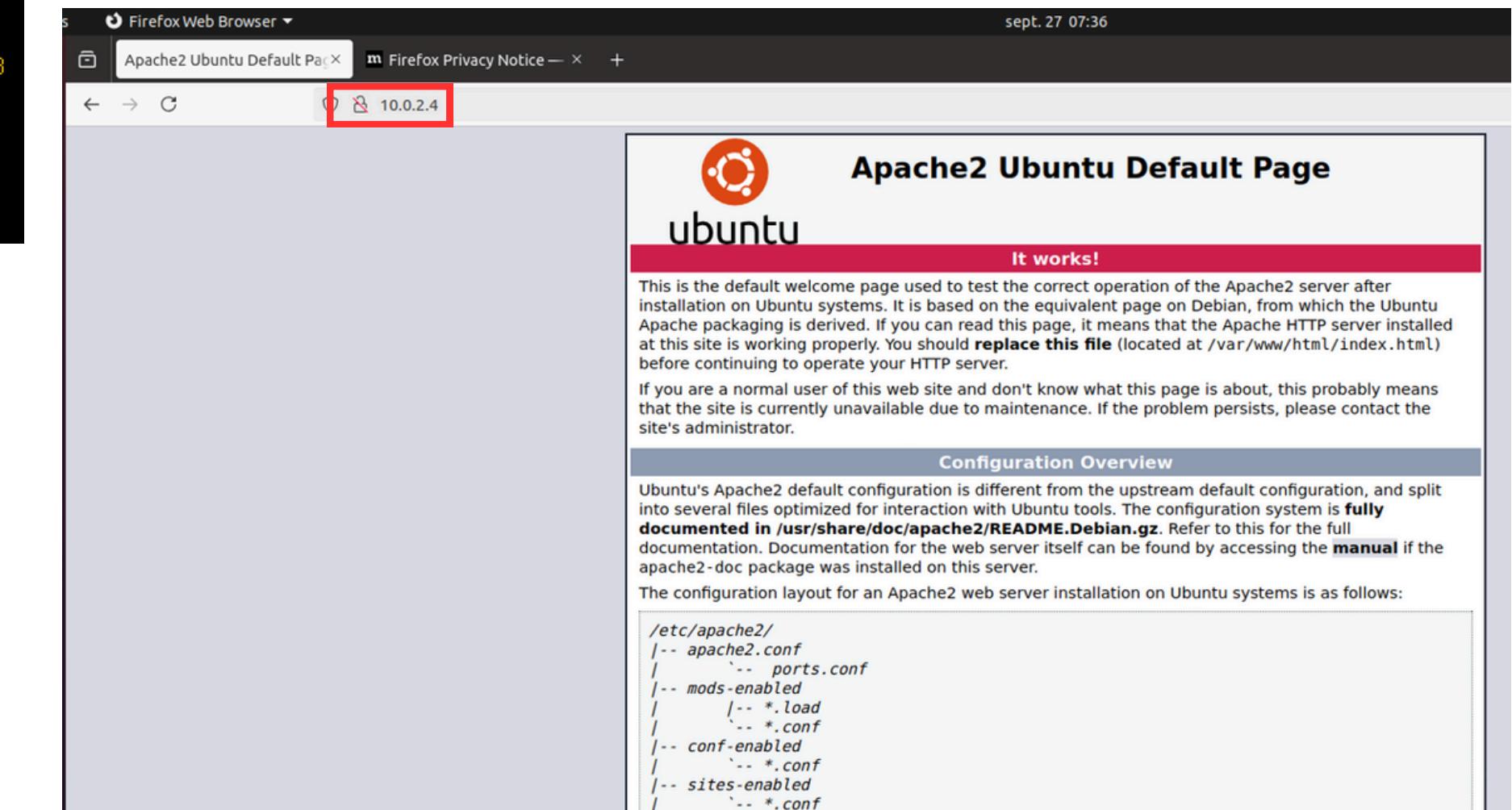
## 1 APACHE

sudo apt-get install apache2

```
File Machine View Input Devices Help
barragan@server-blas:~$ sudo apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3
  libaprutil1-ldap libjansson4 liblua5.2-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3
  libaprutil1-ldap libjansson4 liblua5.2-0 ssl-cert
0 upgraded, 11 newly installed, 0 to remove and 3 not upgraded.
Need to get 1,875 kB of archives.
After this operation, 8,121 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

## 2 COMPROBACIÓN

Comprobamos la correcta instalación entrando a través del navegador de nuestra MV Ubuntu Desktop a la ip de la MV Server.



# MV UBUNTU SERVER & DESKTOP



## 3 MySQL

sudo apt-get install mysql-server

A screenshot of a terminal window titled "server-Blas (Initial Snap) [Running] - Oracle VirtualBox". The window shows the command "sudo apt-get install mysql-server" being run. The output includes package lists, dependency building, state information, additional packages to be installed (such as libcgifast-perl, libcgipm-perl, libencode-locale-perl, etc.), suggested packages, and a summary of 0 upgraded, 25 newly installed, 0 to remove, and 3 not upgraded. It also asks if the user wants to continue with [Y/n].

```
barragan@server-blas:/$ sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libcgifast-perl libcgipm-perl libencode-locale-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-perl libhtml-parser-perl libhtml-tagset-perl
  libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl
  liblwp-mediatypes-perl libmecab2 libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8
  mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0
Suggested packages:
  libdata-dump-perl libipc-sharedcache-perl libwww-perl mailx tinyca
The following NEW packages will be installed:
  libcgifast-perl libcgipm-perl libencode-locale-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-perl libhtml-parser-perl libhtml-tagset-perl
  libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl
  liblwp-mediatypes-perl libmecab2 libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8
  mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server mysql-server-8.0
  mysql-server-core-8.0
0 upgraded, 25 newly installed, 0 to remove and 3 not upgraded.
Need to get 36.9 MB of archives.
After this operation, 318 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

## 4 SECURIZACIÓN

sudo mysql\_secure\_installation

A screenshot of a terminal window titled "barragan@server-blas:~\$ sudo mysql\_secure\_installation". The window shows the MySQL secure installation process. It starts by securing the MySQL server deployment, then connects to MySQL using a blank password. It then asks if the user wants to set up the VALIDATE PASSWORD component, which checks password strength and allows users to set secure passwords. Finally, it prompts the user to press Y for Yes or any other key for No.

```
barragan@server-blas:/$ sudo mysql_secure_installation
Securing the MySQL server deployment.

Connecting to MySQL using a blank password.

VALIDATE PASSWORD COMPONENT can be used to test passwords
and improve security. It checks the strength of password
and allows the users to set only those passwords which are
secure enough. Would you like to setup VALIDATE PASSWORD component?

Press y|Y for Yes, any other key for No:
```

# MV UBUNTU SERVER & DESKTOP



## 5 PHP

```
sudo apt-get install php7.4 libapache2-mod-php7.4 php7.4-mysql
```

```
server-Blas (Initial Snap) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
barragan@server-blas:~$ sudo apt-get install php7.4 libapache2-mod-php7.4 php7.4-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  php-common php7.4-cli php7.4-common php7.4-json php7.4-opcache php7.4-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php7.4 php-common php7.4 php7.4-common php7.4-json php7.4-mysql
  php7.4-opcache php7.4-readline
0 upgraded, 9 newly installed, 0 to remove and 3 not upgraded.
Need to get 4,151 kB of archives.
After this operation, 18.5 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

## 6 COMPROBACIÓN

Creamos un archivo info.php que contenga la siguiente linea: <?php phpinfo(); ?> .  
sudo nano /var/www/html/info.php

```
server-Bla (Initial Snap) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
GNU nano 4.8          /var/www/html/info.php      Modified
<?php phpinfo(); ?>
```

Guardamos los cambios y comprobamos desde un navegador en la MV Ubuntu Desktop:  
[IP\\_MAQUINA\\_SERVIDOR/info.php](http://IP_MAQUINA_SERVIDOR/info.php)

PHP Version 7.4.3-4ubuntu2.23

| System                                  | Linux server-bla 5.4.0-196-generic #216-Ubuntu SMP Thu Aug 29 13:26:53 UTC 2024 x86_64   |
|---|--|
| Build Date                              | Jun 17 2024 13:22:20   |
| Server API                              | Apache 2.0 Handler   |
| Virtual Directory Support               | disabled   |
| Configuration File (php.ini) Path       | /etc/php/7.4/apache2   |
| Loaded Configuration File               | /etc/php/7.4/apache2/php.ini   |
| Scan this dir for additional .ini files | /etc/php/7.4/apache2/conf.d  |
| Additional .ini files parsed            | /etc/php/7.4/apache2/conf.d/10-mysqlind.ini, /etc/php/7.4/apache2/conf.d/10-opcache.ini, /etc/php/7.4/apache2/conf.d/10-pdo.ini, /etc/php/7.4/apache2/conf.d/20-calendario.ini, /etc/php/7.4/apache2/conf.d/20-ffti.ini, /etc/php/7.4/apache2/conf.d/20-type.ini, /etc/php/7.4/apache2/conf.d/20-exif.ini, /etc/php/7.4/apache2/conf.d/20-ftpi.ini, /etc/php/7.4/apache2/conf.d/20-finfo.ini, /etc/php/7.4/apache2/conf.d/20-ftp.ini, /etc/php/7.4/apache2/conf.d/20-jpeg2000.ini, /etc/php/7.4/apache2/conf.d/20-mbstring.ini, /etc/php/7.4/apache2/conf.d/20-mcrypt.ini, /etc/php/7.4/apache2/conf.d/20-phar.ini, /etc/php/7.4/apache2/conf.d/20-pspell.ini, /etc/php/7.4/apache2/conf.d/20-readline.ini, /etc/php/7.4/apache2/conf.d/20-shmop.ini, /etc/php/7.4/apache2/conf.d/20-sysvmsg.ini, /etc/php/7.4/apache2/conf.d/20-sysvshm.ini, /etc/php/7.4/apache2/conf.d/20-tokenizer.ini |
| PHP API                                 | 20190902   |
| PHP Extension                           | 20190902   |
| Zend Extension                          | 320190902  |

# MV UBUNTU SERVER & DESKTOP



## 7 PREPARACIÓN PHPMYADMIN

```
sudo apt install php-mbstring php-zip php-gd php-json php-curl
```

A terminal window titled "server-Blas (lamp\_rdy) [Running] - Oracle VirtualBox". The user runs the command `sudo apt install php-mbstring php-zip php-gd php-json php-curl`. The output shows the package manager reading lists, building a dependency tree, and listing additional packages to be installed, including various PHP extensions and libraries. It also lists suggested and recommended packages. The user is prompted at the end to continue the installation.

```
barragan@server-blas:/$ sudo apt install php-mbstring php-zip php-gd php-json php-curl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  fontconfig fonts-dejavu-core libfontconfig1 libgd3 libjbig0 libjpeg-turbo8 libjpeg8
  libonig5 libtiff5 libwebp6 libxpm4 libzip5 php7.4-curl php7.4-gd php7.4-mbstring php7.4-zip
Suggested packages:
  libgd-tools
The following NEW packages will be installed:
  fontconfig fonts-dejavu-core libfontconfig1 libgd3 libjbig0 libjpeg-turbo8 libjpeg8
  libonig5 libtiff5 libwebp6 libxpm4 libzip5 php-curl php-gd php-json php-mbstring php-zip
  php7.4-curl php7.4-gd php7.4-mbstring php7.4-zip
0 upgraded, 21 newly installed, 0 to remove and 3 not upgraded.
Need to get 2,509 kB of archives.
After this operation, 8,064 kB of additional disk space will be used.
Do you want to continue? [Y/n] _
```

## 8 INSTALACIÓN

```
sudo apt-get install phpmyadmin
```

A terminal window titled "server-Blas (lamp\_rdy) [Running] - Oracle VirtualBox". The user runs the command `sudo apt-get install phpmyadmin`. The output shows the package manager reading lists, building a dependency tree, and listing additional packages to be installed, including various PHP extensions and libraries. It also lists suggested and recommended packages. The user is prompted at the end to continue the installation.

```
barragan@server-blas:/$ sudo apt-get install phpmyadmin
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  dbconfig-common dbconfig-mysql icc-profiles-free javascript-common libjs-jquery libjs-openlayers
  libjs-sphinxdoc libjs-underscore php-bz2 php-google-recaptcha php-mysql
  php-phpmyadmin-motranslator php-phpmyadmin-shapecfile php-phpmyadmin-sql-parser php-phpseclib
  php-psr-cache php-psr-container php-psr-log php-symfony-cache php-symfony-cache-contracts
  php-symfony-expression-language php-symfony-service-contracts php-symfony-var-exporter php-tcpdf
  php-twig php-twig-extensions php-xml php7.4-bz2 php7.4-xml
Suggested packages:
  php-dbase php-libodium php-mcrypt php-gmp php-symfony-service-implementation php-imagick
  php-twig-doc php-symfony-translation www-browser php-recode php-gd2 php-pragmarx-google2fa
  php-bacon-qr-code php-samyoul-u2f-php-server
Recommended packages:
  php-mcrypt
The following NEW packages will be installed:
  dbconfig-common dbconfig-mysql icc-profiles-free javascript-common libjs-jquery libjs-openlayers
  libjs-sphinxdoc libjs-underscore php-bz2 php-google-recaptcha php-mysql
  php-phpmyadmin-motranslator php-phpmyadmin-shapecfile php-phpmyadmin-sql-parser php-phpseclib
  php-psr-cache php-psr-container php-psr-log php-symfony-cache php-symfony-cache-contracts
  php-symfony-expression-language php-symfony-service-contracts php-symfony-var-exporter php-tcpdf
  php-twig php-twig-extensions php-xml php7.4-bz2 php7.4-xml phpmyadmin
0 upgraded, 30 newly installed, 0 to remove and 3 not upgraded.
Need to get 15.2 MB of archives.
After this operation, 69.1 MB of additional disk space will be used.
Do you want to continue? [Y/n] _
```

# MV UBUNTU SERVER & DESKTOP



## ■ 9 USUARIO PARA PHPMYADMIN

Creamos un usuario en mySQL para acceder a la pagina de administracion de phpMyAdmin

```
server-Blas (lamp_rdy) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
barragan@server-blas:/$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 27
Server version: 8.0.39-Ubuntu0.20.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE USER 'sammy'@'localhost' IDENTIFIED WITH caching_sha2_password BY 'password';
Query OK, 0 rows affected (0.02 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO 'sammy'@'localhost' WITH GRANT OPTION;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your
MySQL server version for the right syntax to use near 'WHIT GRANT OPTION' at line 1
mysql> GRANT ALL PRIVILEGES ON *.* TO 'sammy'@'localhost' WITH GRANT OPTION;
Query OK, 0 rows affected (0.02 sec)

mysql> EXIT
Bye
barragan@server-blas:/$
```

## ■ 10 COMPROBACIÓN

Comprobamos desde un navegador en la MV Ubuntu Desktop:  
IP\_MAQUINA\_SERVIDOR/phpmyadmin

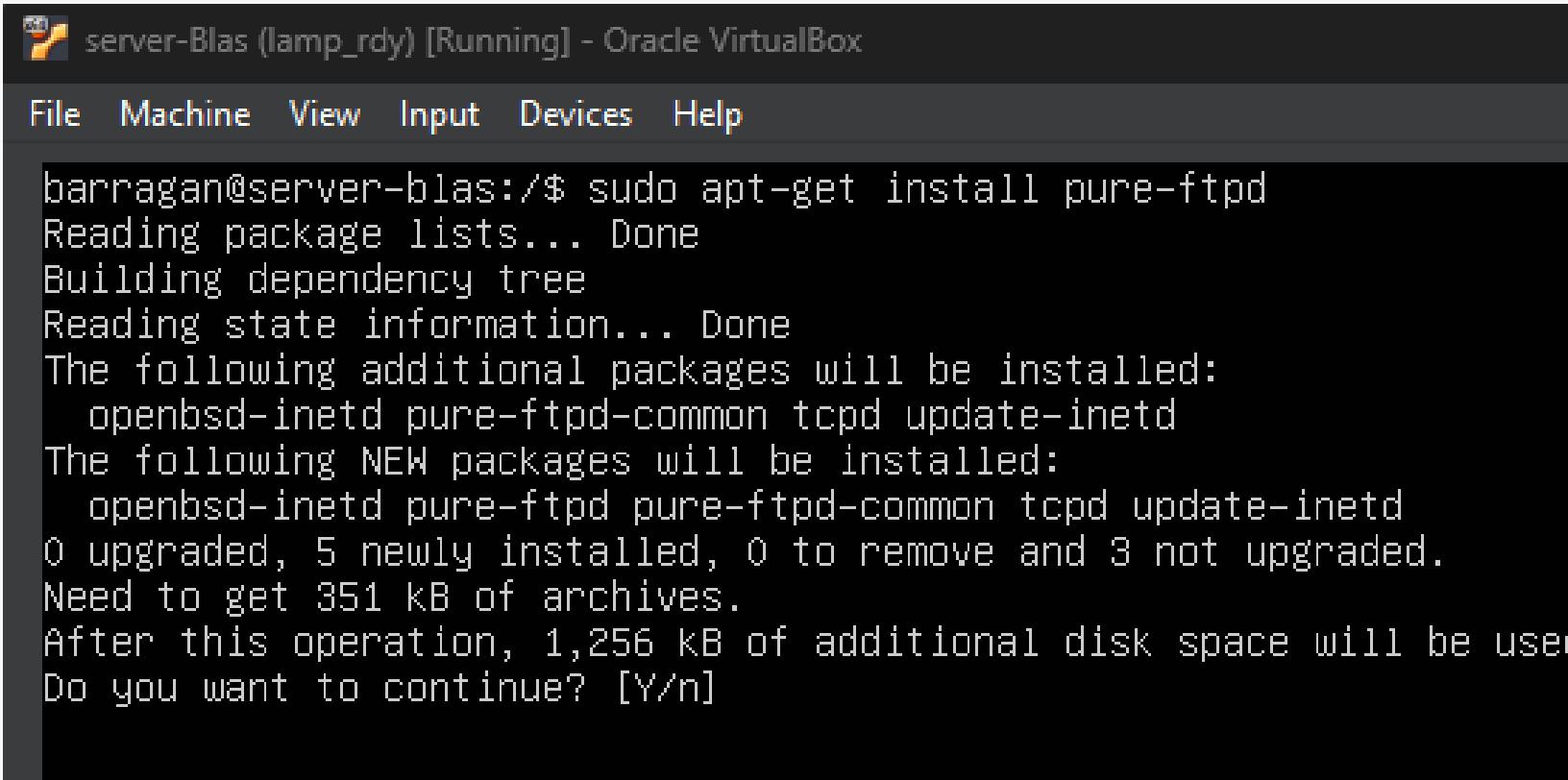
A screenshot of a Firefox browser window. The address bar shows "10.0.2.4/phpmyadmin/index.php". The main content area displays the phpMyAdmin interface with the title "phpMyAdmin". On the left, there's a sidebar with database names like "information\_schema", "mysql", "performance\_schema", "phpmyadmin", and "sys". The main panel has sections for "General settings" and "Appearance settings". The "General settings" section includes fields for "Change password" and "Server connection collation" set to "utf8mb4\_unicode\_ci". The "Appearance settings" section includes "Language" set to "English", "Theme" set to "pmahomme", and "Font size" set to "82%".

# MV UBUNTU SERVER & DESKTOP



## 11 SERVIDOR FTP

```
sudo apt-get install pure-ftpd
```

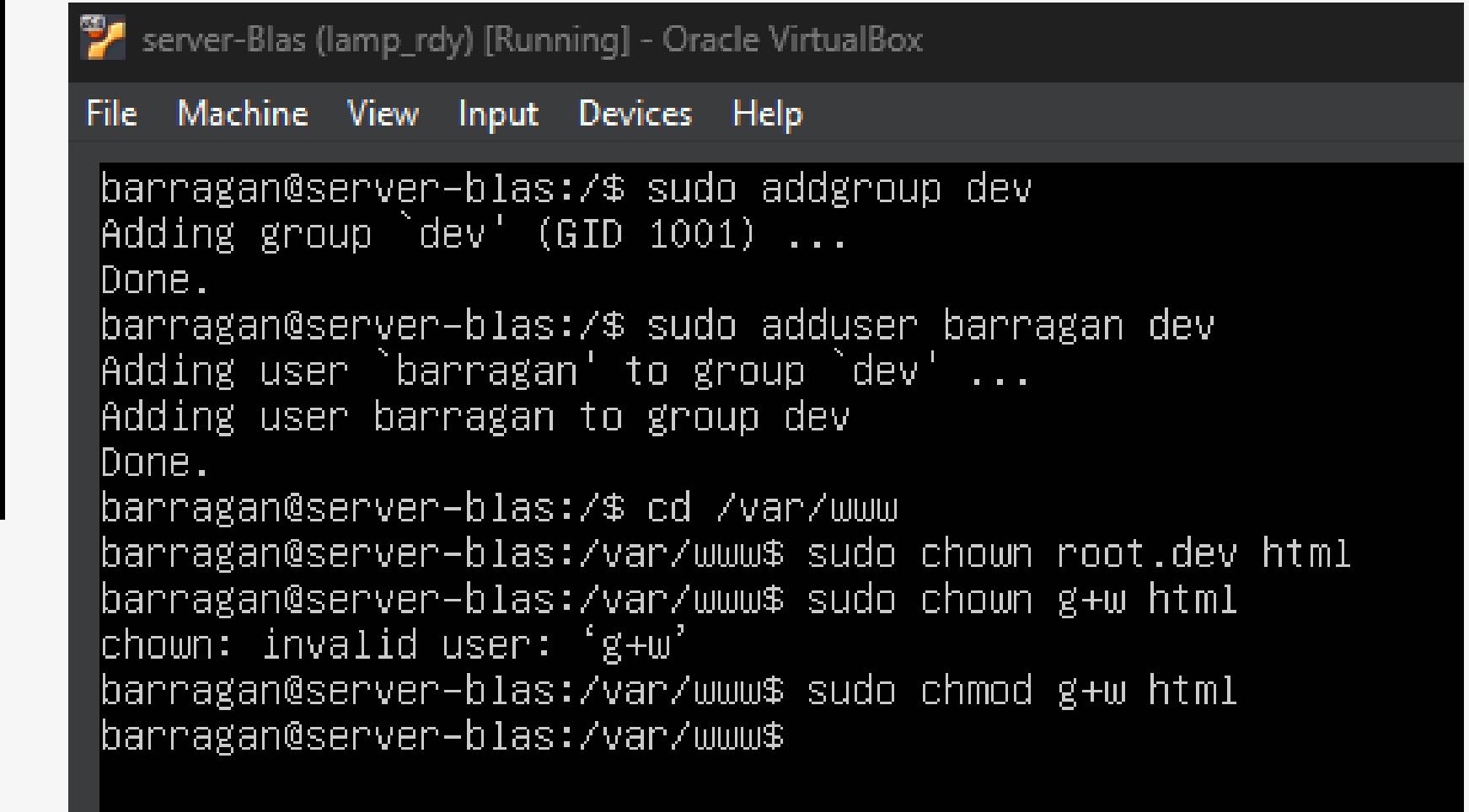


A screenshot of a terminal window titled "server-Blas (lamp\_rdy) [Running] - Oracle VirtualBox". The window shows the command "sudo apt-get install pure-ftpd" being run and its output. The output includes package lists, dependency trees, state information, additional packages to be installed (openbsd-inetd, pure-ftpd-common, tcpd, update-inetd), new packages to be installed (openbsd-inetd, pure-ftpd, pure-ftpd-common, tcpd, update-inetd), upgrade counts, newly installed packages, removal counts, non-upgraded packages, disk space requirements, and a prompt asking if the user wants to continue (Y/n).

```
barragan@server-blas:/$ sudo apt-get install pure-ftpd
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  openbsd-inetd pure-ftpd-common tcpd update-inetd
The following NEW packages will be installed:
  openbsd-inetd pure-ftpd pure-ftpd-common tcpd update-inetd
0 upgraded, 5 newly installed, 0 to remove and 3 not upgraded.
Need to get 351 kB of archives.
After this operation, 1,256 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

## 12 PERMISOS FTP

Creamos un grupo de usuarios e incluimos nuestro usuario de sistema. A este grupo le daremos permisos de escritura sobre /var/www que sera donde Apache buscara las webs que creamos.



A screenshot of a terminal window titled "server-Blas (lamp\_rdy) [Running] - Oracle VirtualBox". The window shows the creation of a group "dev" using "sudo addgroup dev", adding the user "barragan" to the group "dev" using "sudo adduser barragan dev", changing ownership of the "/var/www" directory to "root.dev" using "sudo chown root.dev html", changing file permissions to "g+w" using "sudo chmod g+w html", and finally exiting the directory with "barragan@server-blas:/var/www\$".

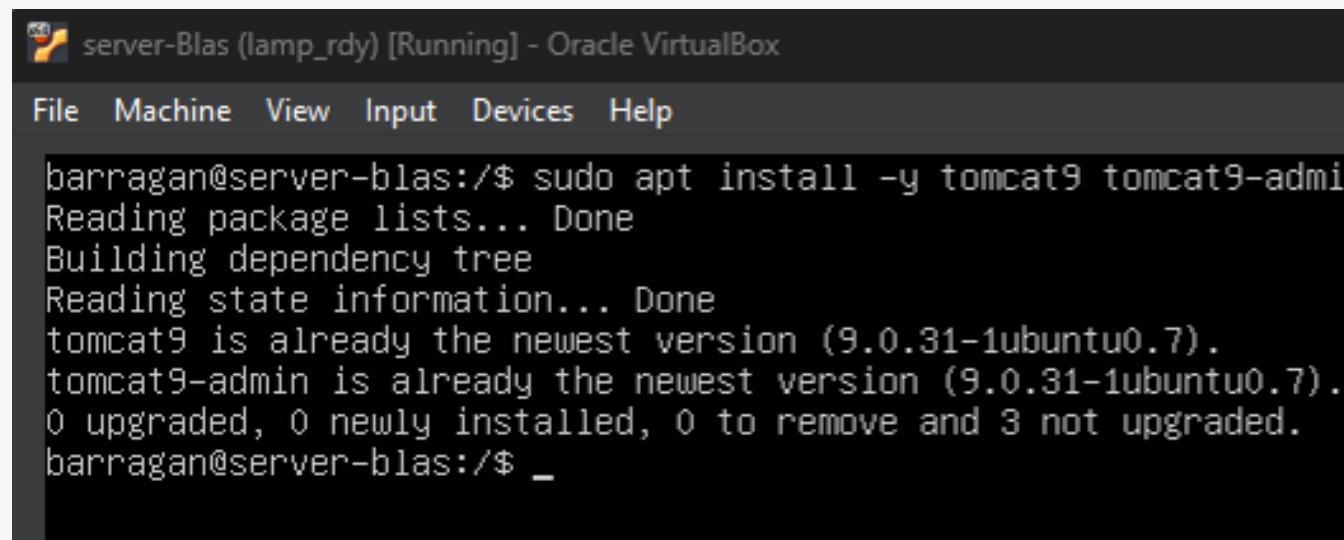
```
barragan@server-blas:/$ sudo addgroup dev
Adding group `dev' (GID 1001) ...
Done.
barragan@server-blas:/$ sudo adduser barragan dev
Adding user `barragan' to group `dev' ...
Adding user barragan to group dev
Done.
barragan@server-blas:/$ cd /var/www
barragan@server-blas:/var/www$ sudo chown root.dev html
barragan@server-blas:/var/www$ sudo chmod g+w html
chown: invalid user: 'g+w'
barragan@server-blas:/var/www$
```

# MV UBUNTU SERVER & DESKTOP



## 13 TOMCAT9

```
sudo apt install -y tomcat9 tomcat9-admin
```

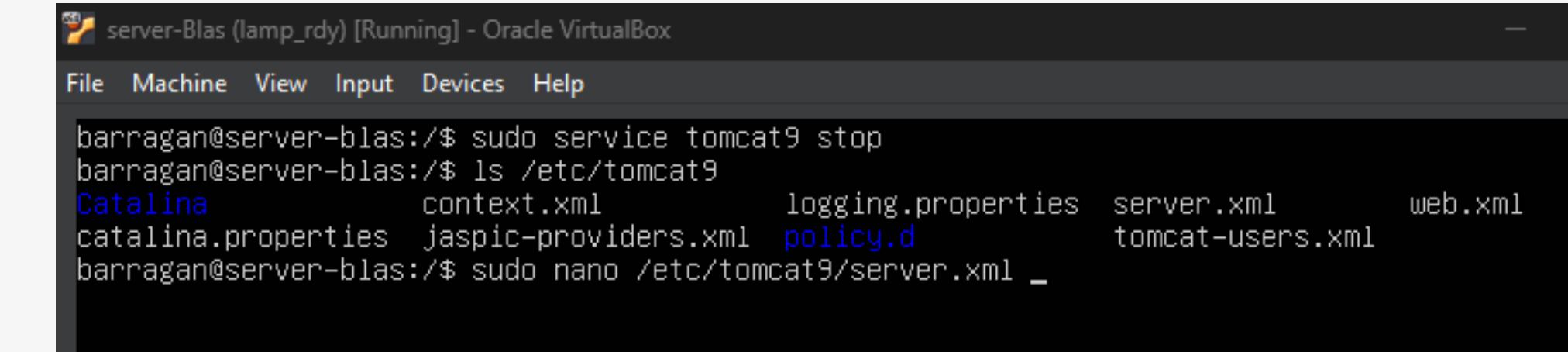


A terminal window titled "server-Blas (lamp\_rdy) [Running] - Oracle VirtualBox". The window shows the command "sudo apt install -y tomcat9 tomcat9-admin" being run, followed by the output of the package manager. It indicates that Tomcat9 is already the newest version and that tomcat9-admin is also up-to-date. There were 0 upgrades, 0 newly installed packages, and 0 to remove.

```
barragan@server-blas:/$ sudo apt install -y tomcat9 tomcat9-admin
Reading package lists... Done
Building dependency tree
Reading state information... Done
tomcat9 is already the newest version (9.0.31-1ubuntu0.7).
tomcat9-admin is already the newest version (9.0.31-1ubuntu0.7).
0 upgraded, 0 newly installed, 0 to remove and 3 not upgraded.
barragan@server-blas:/$ _
```

## 14 COMPROBACIÓN

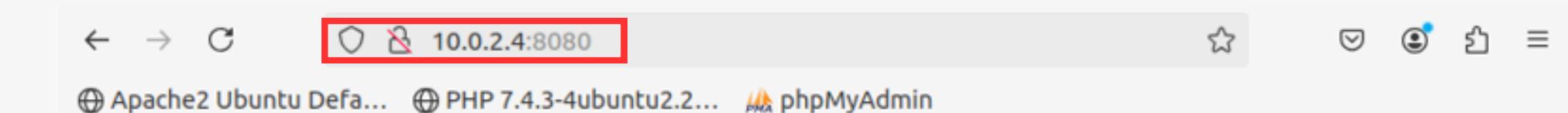
Comprobamos en el archivo server.xml de configuración, el puerto en el que escucha Tomcat9:



A terminal window titled "server-Blas (lamp\_rdy) [Running] - Oracle VirtualBox". The user runs "sudo service tomcat9 stop" to stop the service, then lists the contents of the "/etc/tomcat9" directory. The "server.xml" file is highlighted in blue. Finally, the user runs "sudo nano /etc/tomcat9/server.xml" to edit the configuration file.

```
barragan@server-blas:/$ sudo service tomcat9 stop
barragan@server-blas:/$ ls /etc/tomcat9
Catalina          context.xml      logging.properties  server.xml      web.xml
catalina.properties jaspic-providers.xml  policy.d        tomcat-users.xml
barragan@server-blas:/$ sudo nano /etc/tomcat9/server.xml _
```

Lo habitual será el 8080. Así que en la MV Ubuntu Desktop, comprobamos en el navegador:



### It works !

If you're seeing this page via a web browser, it means you've setup Tomcat successfully. Congratulations!

This is the default Tomcat home page. It can be found on the local filesystem at: /var/lib/tomcat9/webapps/ROOT/index.html

Tomcat veterans might be pleased to learn that this system instance of Tomcat is installed with CATALINA\_HOME in /usr/share/tomcat9 and CATALINA\_BASE in /var/lib/tomcat9, following the rules from /usr/share/doc/

# MV UBUNTU SERVER & DESKTOP



## 15 USUARIO TOMCAT9

Para acceder a las secciones del servidor necesitamos registrar al usuario en tomcat-users.xml

```
barragan@server-blas:~/etc/tomcat9
Catalina      context.xml      logging.properties  server.xml      web.xml
catalina.properties jaspic-providers.xml policy.d  tomcat-users.xml
barragan@server-blas:~$ sudo nano /etc/tomcat9/tomcat-users.xml
```

Modificamos el archivo añadiendo el usuario deseado:

```
GNU nano 4.8          /etc/tomcat9/tomcat-users.xml      Modified
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-->
<tomcat-users xmlns="http://tomcat.apache.org/xml"
               xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
               xsi:schemaLocation="http://tomcat.apache.org/xml tomcat-users.xsd"
               version="1.0">

<!--
NOTE: By default, no user is included in the "manager-gui" role required
to operate the "/manager/html" web application. If you wish to use this app,
you must define such a user - the username and password are arbitrary. It is
strongly recommended that you do NOT use one of the users in the commented out
section below since they are intended for use with the examples web
application.
--&gt;
&lt;!--
NOTE: The sample user and role entries below are intended for use with the
examples web application. They are wrapped in a comment and thus are ignored
when reading this file. If you wish to configure these users for use with the
examples web application, do not forget to remove the &lt;!... ..&gt; that surrounds
them. You will also need to set the passwords to something appropriate.
--&gt;

&lt;role rolename="tomcat"/&gt;
&lt;user username="tomcat" password="tomcat" roles="manager-status, manager-gui, admin-gui"/&gt;

&lt;/tomcat-users&gt;</pre>
```

## 16 COMPROBACIÓN

Comprobamos en el navegador de la MV Ubuntu Desktop:

The screenshot shows a desktop environment with a browser window open to <http://10.0.2.4:8080>. The address bar is highlighted with a red box. The browser displays a Tomcat login page asking for a username and password. Both fields are filled with 'tomcat'. A red box highlights the entire login form. Below the browser, there are two tabs of the Tomcat Web Application Manager interface. The top tab is 'Tomcat Web Application Manager' and the bottom tab is 'Tomcat Virtual Host Manager'. Both tabs show their respective management interfaces.