

## Laboratorio 6

### Sesión #6 Configuración de un servidor web seguro

**Título del Laboratorio:** Configuración de un servidor web seguro

**Duración:** 2 Hora

#### Objetivos del Laboratorio:

1. Configurar un Servidor Web Funcional con SSL/TLS
2. Asegurar el Tráfico Web Mediante HTTPS
3. Verificar la Seguridad de la Conexión Web

#### Materiales Necesarios:

1. Utilizar GitHub como repositorio
2. Utilizar Academia Cisco
3. Computador
4. Acceso a internet

#### Estructura del Laboratorio:

**Duración:** 2 hora

#### Parte 1: Preparación del Entorno

##### - Paso 1: Actualización del Sistema

```
KALI-LINUX [Corriendo] - Oracle VM VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda

root@kali-linux: ~
Archivo Acciones Editar Vista Ayuda

(root@kali-linux)~[~]
# sudo apt update && sudo apt upgrade -y
sudo: unable to resolve host kali-linux: Nombre o servicio desconocido
Obj:1 https://brave-browser-apt-release.s3.brave.com stable InRelease
Des:2 http://kali.download/kali kali-rolling InRelease [41,5 kB]
Des:3 http://kali.download/kali kali-rolling/main amd64 Packages [21,0 MB]
Des:4 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [51,9 MB]
Des:5 http://kali.download/kali kali-rolling/non-free amd64 Packages [204 kB]
Des:6 http://kali.download/kali kali-rolling/non-free amd64 Contents (deb) [915 kB]
Descargados 74,0 MB en 14s (5.433 kB/s)
Se pueden actualizar 16 paquetes. Ejecute «apt list --upgradable» para verlos.
sudo: unable to resolve host kali-linux: Nombre o servicio desconocido
Los paquetes indicados a continuación se instalaron de forma automática y ya no son necesarios.
icu-devtools libicu-dev libpython3.12t64 python3-poetry-dynamic-versioning python3.12-tk
libflac12t64 liblbfgsb0 libutempter0 python3-pywebview python3-pywebview
libfuse3-3 libpoppler145 python3-aioconsole python3-requests-ntlm sphinx-rtd-theme-common
libgeos3.13.0 libpython3.12-minimal python3-dunamai python3-setuptools strongswan
libglapi-mesa libpython3.12-stdlib python3-nfsclient python3-tomlkit
Utilice «sudo apt autoremove» para eliminarlos.

Upgrading:
dhcpcd-base firefox-esr libpq5 netexec postgresql-client-17
faraday libavif16 metasploit-framework postgresql-17

Not upgrading:
bulk-extractor libstreamer-plugins-bad1.0-0 libre2-11 strongswan
gstreamer1.0-plugins-bad libjavascriptcoregtk-4.1-0 libwebkit2gtk-4.1-0

Summary:
Upgrading: 9, Installing: 0, Removing: 0, Not Upgrading: 7
Download size: 320 MB
Space needed: 837 kB / 7.022 MB available

Des:1 http://kali.download/kali kali-rolling/main amd64 dhcpcd-base amd64 1:10.1.0-10 [201 kB]
Des:3 http://kali.download/kali kali-rolling/main amd64 firefox-esr amd64 128.10.1esr-1 [64,9 MB]
Des:5 http://mirror.0xem.ma/kali kali-rolling/main amd64 libpq5 amd64 17.5-1 [226 kB]
Des:2 http://kali.mirror.rafael.ca/kali kali-rolling/main amd64 faraday all 5.14.0-0kali1 [8.355 kB]
Des:4 http://kali.download/kali kali-rolling/main amd64 libavif16 amd64 1.2.1-1.1 [133 kB]
Des:6 http://kali.download/kali kali-rolling/main amd64 metasploit-framework amd64 6.4.64-0kali1 [227 MB]
Des:7 http://kali.download/kali kali-rolling/main amd64 netexec all 1.4.0-0kali3 [920 kB]
Des:8 http://kali.download/kali kali-rolling/main amd64 postgresql-client-17 amd64 17.5-1 [2.025 kB]
Des:9 http://kali.download/kali kali-rolling/main amd64 postgresql-17 amd64 17.5-1 [16,5 MB]
Descargados 320 MB en 29s (10,9 MB/s)
Preconfigurando paquetes ...
```

## - Paso 2: Instalación del Servidor Web

```
KALI-LINUX [Corriendo] - Oracle VM VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
root@kali-linux: ~

Archivo Acciones Editar Vista Ayuda
Procesando disparadores para libc-bin (2.41-6) ...
Procesando disparadores para man-db (2.13.1-1) ...
Procesando disparadores para postgresql-common (264) ...
supported-versions: WARNING! Unknown distribution ID in /etc/os-release: kali
debian found in ID_LIKE, treating as Debian
Building PostgreSQL dictionaries from installed myspell/hunspell packages...
en_us
Removing obsolete dictionary files:
Procesando disparadores para wordlists (2023.2.0) ...
Procesando disparadores para kali-menu (2025.2.7) ...

(root@kali-linux)-[~]
# sudo apt install apache2 -y
sudo: unable to resolve host kali-linux: Nombre o servicio desconocido
apache2 ya está en su versión más reciente (2.4.63-1).
Los paquetes indicados a continuación se instalaron de forma automática y ya no son necesarios.
icu-devtools libicu-dev libpython3.12t64 python3-poetry-dynamic-versioning python3.12-tk
libflac12t64 liblbfgsb0 libutempter0 python3-pywebview python3-requests-ntlm ruby-zeitwerk
libfuse3-3 libpoppler145 python3-aiococonsole python3-setproctitle sphinx-rtd-theme-common
libgeos3.13.0 libpython3.12-minimal python3-dunamai python3-tomlkit strongswan
libglapi-mesa libpython3.12-stdlib python3-nfsclient python3-tomlkit
Utilice «sudo apt autoremove» para eliminarlos.

Summary:
Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 7

(root@kali-linux)-[~]
#
```

## Parte 2: Configuración de HTTPS en el Servidor Web

### - Paso 3: Generación de una Solicitud de Firma de Certificado (CSR)

```
KALI-LINUX [Corriendo] - Oracle VM VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
root@kali-linux: ~

Archivo Acciones Editar Vista Ayuda
(root@kali-linux)-[~]
# sudo openssl req -new -newkey rsa:2048 -nodes -keyout /etc/ssl/private/lewisjesus.key -out /etc/ssl/certs/lewisjesus.csr

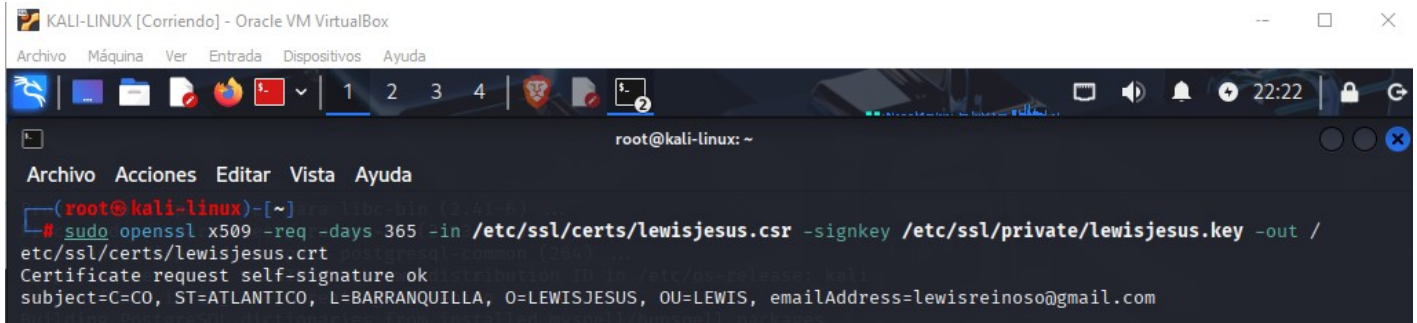
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.

Country Name (2 letter code) [AU]:CO
State or Province Name (full name) [Some-State]:ATLANTICO
Locality Name (eg, city) []:BARRANQUILLA
Organization Name (eg, company) [Internet Widgits Pty Ltd]:LEWISJESUS
Organizational Unit Name (eg, section) []:LEWIS
Common Name (e.g. server FQDN or YOUR name) []:
Email Address []:lewisreinoso@gmail.com

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:Lewisreinoso1992$
An optional company name []:
```

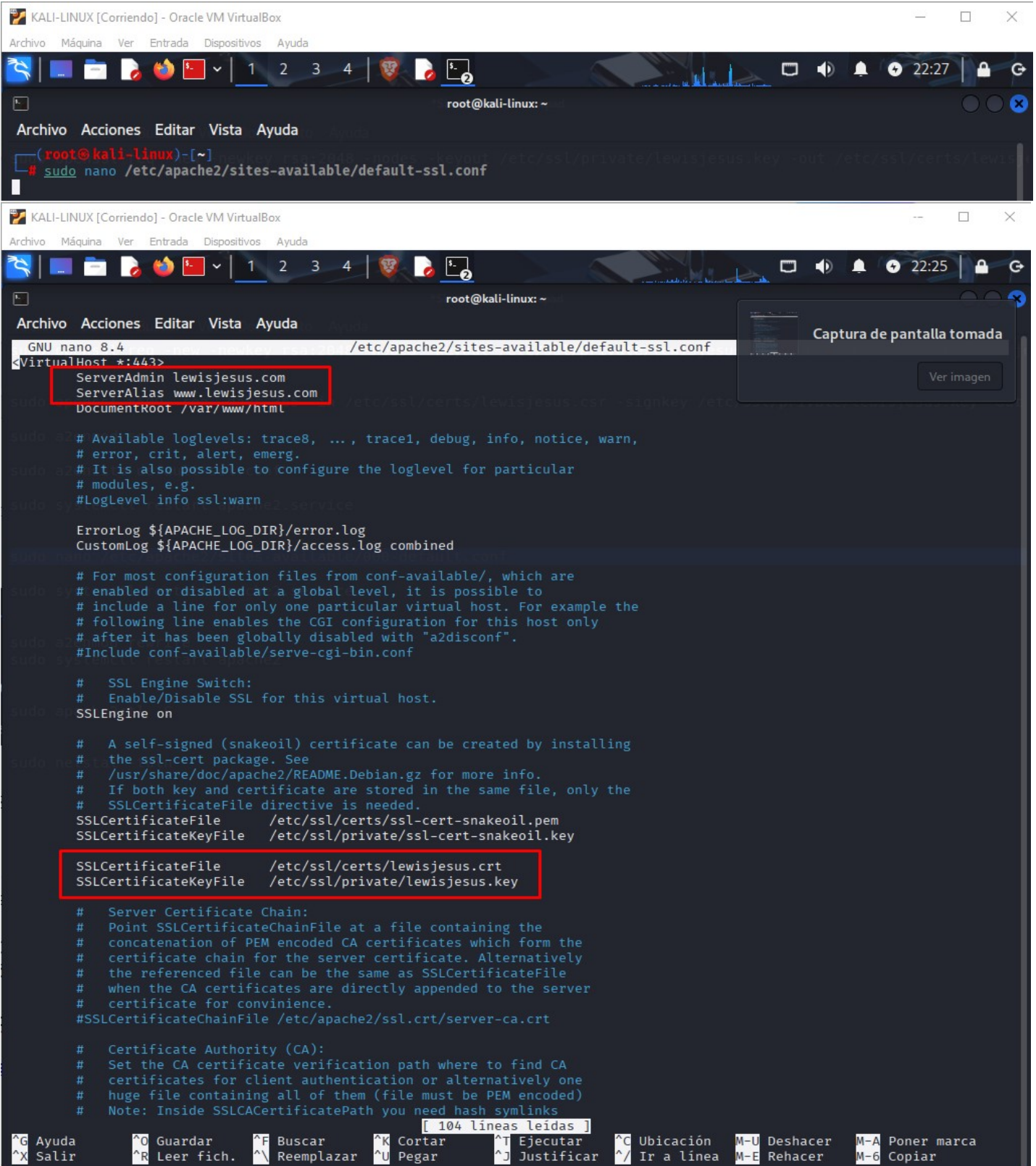


#### - Paso 4: Obtención del Certificado SSL



```
KALI-LINUX [Corriendo] - Oracle VM VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
root@kali-linux: ~
Archivo Acciones Editar Vista Ayuda
(root@kali-linux)-[~]
# sudo openssl x509 -req -days 365 -in /etc/ssl/certs/lewisjesus.csr -signkey /etc/ssl/private/lewisjesus.key -out /etc/ssl/certs/lewisjesus.crt
Certificate request self-signature ok
subject=C=CO, ST=ATLANTICO, L=BARRANQUILLA, O=LEWISJESUS, OU=LEWIS, emailAddress=lewisreinoso@gmail.com
```

#### - Paso 5: Configuración del Servidor Web para HTTPS



```
KALI-LINUX [Corriendo] - Oracle VM VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
root@kali-linux: ~
Archivo Acciones Editar Vista Ayuda
(root@kali-linux)-[~]
# sudo nano /etc/apache2/sites-available/default-ssl.conf

GNU nano 8.4 /etc/apache2/sites-available/default-ssl.conf
VirtualHost *:443>
ServerAdmin lewisjesus.com
ServerAlias www.lewisjesus.com
DocumentRoot /var/www/html

# 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 ${APACHE_LOG_DIR}/error.log
CustomLog ${APACHE_LOG_DIR}/access.log combined

# 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

# SSL Engine Switch:
# Enable/Disable SSL for this virtual host.
SSLEngine on

# A self-signed (snakeoil) certificate can be created by installing
# the ssl-cert package. See
# /usr/share/doc/apache2/README.Debian.gz for more info.
# If both key and certificate are stored in the same file, only the
# SSLCertificateFile directive is needed.
SSLCertificateFile /etc/ssl/certs/ssl-cert-snakeoil.pem
SSLCertificateKeyFile /etc/ssl/private/ssl-cert-snakeoil.key

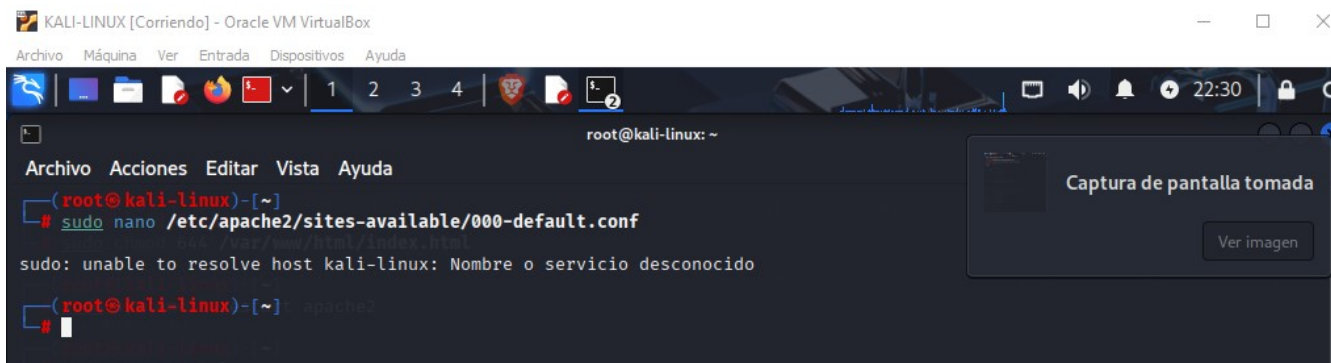
SSLCertificateFile /etc/ssl/certs/lewisjesus.crt
SSLCertificateKeyFile /etc/ssl/private/lewisjesus.key

# Server Certificate Chain:
# Point SSLCertificateChainFile at a file containing the
# concatenation of PEM encoded CA certificates which form the
# certificate chain for the server certificate. Alternatively
# the referenced file can be the same as SSLCertificateFile
# when the CA certificates are directly appended to the server
# certificate for convenience.
#SSLCertificateChainFile /etc/apache2/ssl.crt/server-ca.crt

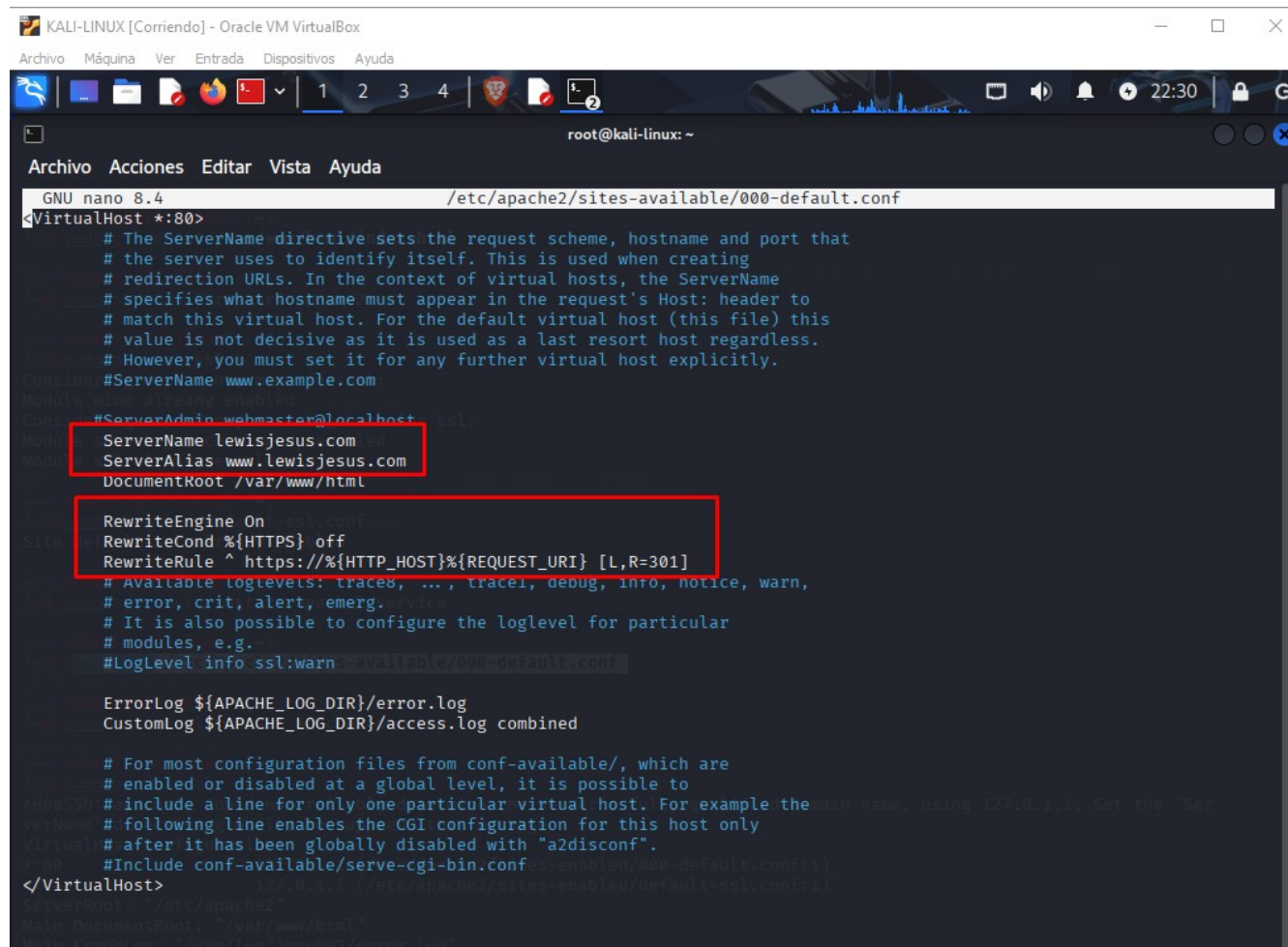
# Certificate Authority (CA):
# Set the CA certificate verification path where to find CA
# certificates for client authentication or alternatively one
# huge file containing all of them (file must be PEM encoded)
# Note: Inside SSLCACertificatePath you need hash symlinks
[ 104 líneas leídas ]
^G Ayuda ^O Guardar ^F Buscar ^K Cortar ^T Ejecutar ^C Ubicación M-U Deshacer M-A Poner marca
^X Salir ^R Leer fich. ^\ Reemplazar ^U Pegar ^J Justificar ^/ Ir a línea M-E Rehacer M-6 Copiar
```

### Parte 3: Redirección de HTTP a HTTPS

#### - Paso 6: Configuración de la Redirección



```
KALI-LINUX [Corriendo] - Oracle VM VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
root@kali-linux: ~
Archivo Acciones Editar Vista Ayuda
(root@kali-linux)-[~]
# sudo nano /etc/apache2/sites-available/000-default.conf
sudo: unable to resolve host kali-linux: Nombre o servicio desconocido
(root@kali-linux)-[~]
#
```



```
KALI-LINUX [Corriendo] - Oracle VM VirtualBox
Archivo Máquina Ver Entrada Dispositivos Ayuda
root@kali-linux: ~
Archivo Acciones Editar Vista Ayuda
GNU nano 8.4 /etc/apache2/sites-available/000-default.conf
<VirtualHost *:80>
# 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.example.com
#ServerAdmin webmaster@localhost
ServerName lewisjesus.com
ServerAlias www.lewisjesus.com
DocumentRoot /var/www/html

RewriteEngine On
RewriteCond %{HTTPS} off
RewriteRule ^ https://%{HTTP_HOST}%{REQUEST_URI} [L,R=301]
# Available loglevels: traces, ..., 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 ${APACHE_LOG_DIR}/error.log
CustomLog ${APACHE_LOG_DIR}/access.log combined

# 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>
```

## Parte 4: Verificación

### - Paso 7: Verificación de la Conexión Segura

