

cdActividad 1 – Módulos Apache

1. Inicia sesión en “Alias Server” y comprueba los módulos estáticos que se han cargado al compilar el servidor ejecutando el comando: `sudo apache2ctl -l`

```
enrique@enrique:~$ sudo apache2ctl -l
Compiled in modules:
  core.c
  mod_so.c
  mod_watchdog.c
  http_core.c
  mod_log_config.c
  mod_logio.c
  mod_version.c
  mod_unixd.c
enrique@enrique:~$ _
```

2. Comprueba los módulos que se han cargado dinámicamente al arrancar el servidor. Esto se realizará consultando el directorio `/etc/apache2/mods-enabled`. Observa que los ficheros que aparecen en este directorio son enlaces simbólicos a ficheros de `/etc/apache2/mods-available`.

```
mod_version.c
mod_unixd.c
enrique@enrique:~$ cd /etc/apache2/mods-enabled/
enrique@enrique:/etc/apache2/mods-enabled$ ll
total 8
drwxr-xr-x 2 root root 4096 Jan 18 11:56 ./
drwxr-xr-x 8 root root 4096 Feb  4 15:49 ../
lrwxrwxrwx 1 root root 36 Jan 18 11:56 access_compat.load -> ../mods-available/access_compat.load
lrwxrwxrwx 1 root root 28 Jan 18 11:56 alias.conf -> ../mods-available/alias.conf
lrwxrwxrwx 1 root root 28 Jan 18 11:56 alias.load -> ../mods-available/alias.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 auth_basic.load -> ../mods-available/auth_basic.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authn_core.load -> ../mods-available/authn_core.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authn_file.load -> ../mods-available/authn_file.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authz_core.load -> ../mods-available/authz_core.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authz_host.load -> ../mods-available/authz_host.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authz_user.load -> ../mods-available/authz_user.load
lrwxrwxrwx 1 root root 32 Jan 18 11:56 autoindex.conf -> ../mods-available/autoindex.conf
lrwxrwxrwx 1 root root 32 Jan 18 11:56 autoindex.load -> ../mods-available/autoindex.load
lrwxrwxrwx 1 root root 30 Jan 18 11:56 deflate.conf -> ../mods-available/deflate.conf
lrwxrwxrwx 1 root root 30 Jan 18 11:56 deflate.load -> ../mods-available/deflate.load
lrwxrwxrwx 1 root root 26 Jan 18 11:56 dir.conf -> ../mods-available/dir.conf
lrwxrwxrwx 1 root root 26 Jan 18 11:56 dir.load -> ../mods-available/dir.load
lrwxrwxrwx 1 root root 26 Jan 18 11:56 env.load -> ../mods-available/env.load
lrwxrwxrwx 1 root root 29 Jan 18 11:56 filter.load -> ../mods-available/filter.load
lrwxrwxrwx 1 root root 27 Jan 18 11:56 mime.conf -> ../mods-available/mime.conf
lrwxrwxrwx 1 root root 27 Jan 18 11:56 mime.load -> ../mods-available/mime.load
lrwxrwxrwx 1 root root 32 Jan 18 11:56 mpm_event.conf -> ../mods-available/mpm_event.conf
lrwxrwxrwx 1 root root 32 Jan 18 11:56 mpm_event.load -> ../mods-available/mpm_event.load
lrwxrwxrwx 1 root root 34 Jan 18 11:56 negotiation.conf -> ../mods-available/negotiation.conf
lrwxrwxrwx 1 root root 34 Jan 18 11:56 negotiation.load -> ../mods-available/negotiation.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 reqtimeout.conf -> ../mods-available/reqtimeout.conf
lrwxrwxrwx 1 root root 33 Jan 18 11:56 reqtimeout.load -> ../mods-available/reqtimeout.load
lrwxrwxrwx 1 root root 31 Jan 18 11:56 setenvif.conf -> ../mods-available/setenvif.conf
lrwxrwxrwx 1 root root 31 Jan 18 11:56 setenvif.load -> ../mods-available/setenvif.load
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.conf -> ../mods-available/status.conf
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.load -> ../mods-available/status.load
enrique@enrique:/etc/apache2/mods-enabled$
```

3. Edita uno de los ficheros .load (ejemplo dir.load) y observa cómo se utiliza la directiva LoadModule. Comprueba cual es la ruta donde está el código del módulo (archivo .so)

4. Edita uno de los ficheros .conf (ejemplo dir.conf) y observa cómo se añaden directivas dentro de una declaración

<ifmodule nombremodulo>...</ifmodule> que se ejecutaran si se cargan el modulo Consulta el directorio /usr/lib/apache2/modules/ y observa los módulos disponibles para cargar.

```
GNU nano 4.8                                dir.conf
<IfModule mod_dir.c>
    DirectoryIndex index.html index.cgi index.pl index.php index.xhtml index.htm
</IfModule>
# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

```
-rw-r--r-- 1 root root 47312 Aug 12 19:46 mod_proxy_ftp.so
-rw-r--r-- 1 root root 35024 Aug 12 19:46 mod_proxy_hcheck.so
-rw-r--r-- 1 root root 39152 Aug 12 19:46 mod_proxy_html.so
-rw-r--r-- 1 root root 47312 Aug 12 19:46 mod_proxy_http.so
-rw-r--r-- 1 root root 67936 Aug 12 19:46 mod_proxy_http2.so
-rw-r--r-- 1 root root 22768 Aug 12 19:46 mod_proxy_scgi.so
-rw-r--r-- 1 root root 22656 Aug 12 19:46 mod_proxy_uwsgi.so
-rw-r--r-- 1 root root 18560 Aug 12 19:46 mod_proxy_wstunnel.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_ratelimit.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_reflector.so
-rw-r--r-- 1 root root 30928 Aug 12 19:46 mod_remoteip.so
-rw-r--r-- 1 root root 18640 Aug 12 19:46 mod_reqtimeout.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_request.so
-rw-r--r-- 1 root root 75984 Aug 12 19:46 mod_rewrite.so
-rw-r--r-- 1 root root 43216 Aug 12 19:46 mod_sed.so
-rw-r--r-- 1 root root 26832 Aug 12 19:46 mod_session.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_session_cookie.so
-rw-r--r-- 1 root root 30928 Aug 12 19:46 mod_session_crypto.so
-rw-r--r-- 1 root root 22736 Aug 12 19:46 mod_session_dbd.so
-rw-r--r-- 1 root root 18640 Aug 12 19:46 mod_setenvif.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_slotmem_plain.so
-rw-r--r-- 1 root root 18640 Aug 12 19:46 mod_slotmem_shm.so
-rw-r--r-- 1 root root 18640 Aug 12 19:46 mod_socache_dbm.so
-rw-r--r-- 1 root root 18640 Aug 12 19:46 mod_socache_memcache.so
-rw-r--r-- 1 root root 18640 Aug 12 19:46 mod_socache_redis.so
-rw-r--r-- 1 root root 26832 Aug 12 19:46 mod_socache_shmcb.so
-rw-r--r-- 1 root root 18640 Aug 12 19:46 mod_spelling.so
-rw-r--r-- 1 root root 248240 Aug 12 19:46 mod_ssl.so
-rw-r--r-- 1 root root 26832 Aug 12 19:46 mod_status.so
-rw-r--r-- 1 root root 26832 Aug 12 19:46 mod_substitute.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_suexec.so
-rw-r--r-- 1 root root 14464 Aug 12 19:46 mod_unique_id.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_userdir.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_usertrack.so
-rw-r--r-- 1 root root 14544 Aug 12 19:46 mod_vhost_alias.so
-rw-r--r-- 1 root root 26832 Aug 12 19:46 mod_xml2enc.so
enrique@enrique:/usr/lib/apache2/modules$
```

5. Ejecuta el siguiente comando para mostrar los paquetes disponibles en los repositorios de Ubuntu que permiten instalar módulos adicionales en apache.

```
sudo apt-cache search libapache2-mod
```

```
libapache2-mod-python-doc - Python-embedding module for Apache 2 - documentation
libapache2-mod-qos - quality of service module for the apache2
libapache2-mod-r-base - server-side R integration with Apache 2
libapache2-mod-removeip - Module to remove IP from apache2's logs
libapache2-mod-rivet - Server-side Tcl programming system combining ease of use and power
libapache2-mod-rivet-doc - Documentation for Rivet, a server-side Tcl programming system
libapache2-mod-rpaf - module for Apache2 which takes the last IP from the 'X-Forwarded-For' header
libapache2-mod-ruid2 - suexec module for Apache 2
libapache2-mod-uwsgi - uwsgi module for Apache2 (mod_Ruwsgi)
libapache2-mod-uwsgi-dbg - debugging symbols for Apache2 mod_Ruwsgi
libapache2-mod-security2 - Tighten web applications security for Apache
libapache2-mod-shib - Federated web single sign-on system (Apache module)
libapache2-mod-shib2 - transitional package
libapache2-mod-svn - Apache Subversion server modules for Apache httpd
libapache2-mod-upload-progress - upload progress support for the Apache web server
libapache2-mod-uwsgi - uwsgi module for Apache2 (mod_uwsgi)
libapache2-mod-uwsgi-dbg - debugging symbols for Apache2 mod_uwsgi
libapache2-mod-vhost-ldap - Apache 2 module for Virtual Hosting from LDAP
libapache2-mod-watchcat - Process monitoring Apache module
libapache2-mod-webauth - Apache module for WebAuth authentication
libapache2-mod-webauthldap - Apache module for WebAuth LDAP lookup and authorization
libapache2-mod-webkdc - Apache modules for a WebAuth authentication KDC
libapache2-mod-wsgi - Python WSGI adapter module for Apache
libapache2-mod-xforward - Apache module implements redirection based on X-Forward response header
libapache2-mod-xsendfile - Serve large static files efficiently from web applications
liblinux-pid-perl - wrapper around the getpid() and getppid() C functions
libocamlnet-ocaml-dev - OCaml application-level Internet libraries - core development libraries
mapcache-cgi - tile caching server - CGI binary
mod-musicindex-common - Common files for mod-musicindex
mono-apache-server4 - ASP.NET 4.5 backend for mod_mono Apache module
mono-fastcgi-server4 - ASP.NET 4.0 backend for FastCGI web servers
mono-fpm-server - ASP.NET backend for FastCGI Process Manager
php7.4-fpm - server-side, HTML-embedded scripting language (FPM-CGI binary)
radicale - simple calendar and addressbook server - daemon
shibboleth-sp-utils - Federated web single sign-on system (daemon and utilities)
tclws - Tcl Web Services
enrique@enrique:~$ _
```

Actividad 2 – Módulo userdir

1. Consulta el directorio /etc/apache2/mods-enabled que el módulo userdir no está habilitado.

```
lrwxrwxrwx 1 root root 33 Jan 18 11:56 reqtimeout.load -> ../mods-available/reqtimeout.load
lrwxrwxrwx 1 root root 31 Jan 18 11:56 setenvif.conf -> ../mods-available/setenvif.conf
lrwxrwxrwx 1 root root 31 Jan 18 11:56 setenvif.load -> ../mods-available/setenvif.load
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.conf -> ../mods-available/status.conf
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.load -> ../mods-available/status.load
enrique@enrique:/etc/apache2/mods-enabled$ apache2ctl -M
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0
.1.1. Set the 'ServerName' directive globally to suppress this message
Loaded Modules:
  core_module (static)
  so_module (static)
  watchdog_module (static)
  http_module (static)
  log_config_module (static)
  logio_module (static)
  version_module (static)
  unixd_module (static)
  access_compat_module (shared)
  alias_module (shared)
  auth_basic_module (shared)
  authn_core_module (shared)
  authn_file_module (shared)
  authz_core_module (shared)
  authz_host_module (shared)
  authz_user_module (shared)
  autoindex_module (shared)
  deflate_module (shared)
  dir_module (shared)
  env_module (shared)
  filter_module (shared)
  mime_module (shared)
  mpm_event_module (shared)
  negotiation_module (shared)
  reqtimeout_module (shared)
  setenvif_module (shared)
  status_module (shared)
enrique@enrique:/etc/apache2/mods-enabled$ _
```

2. Habilita el módulo ejecutando el siguiente comando: sudo a2enmod userdir

```
enrique@enrique:/etc/apache2/mods-enabled$ sudo a2enmod userdir
Enabling module userdir.
To activate the new configuration, you need to run:
  systemctl restart apache2
enrique@enrique:/etc/apache2/mods-enabled$ systemctl restart apache2
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ====
Authentication is required to restart 'apache2.service'.
Authenticating as: enrique
Password:
==== AUTHENTICATION COMPLETE ====
enrique@enrique:/etc/apache2/mods-enabled$ _
```

```
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.conf -> ../mods-available/status.conf
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.load -> ../mods-available/status.load
lrwxrwxrwx 1 root root 30 Feb 6 16:42 userdir.conf -> ../mods-available/userdir.conf
lrwxrwxrwx 1 root root 30 Feb 6 16:42 userdir.load -> ../mods-available/userdir.load
enrique@enrique:/etc/apache2/mods-enabled$ apache2ctl -M
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0
.1.1. Set the 'ServerName' directive globally to suppress this message
Loaded Modules:
  core_module (static)
  so_module (static)
  watchdog_module (static)
  http_module (static)
  log_config_module (static)
  logio_module (static)
  version_module (static)
  unixd_module (static)
  access_compat_module (shared)
  alias_module (shared)
  auth_basic_module (shared)
  authn_core_module (shared)
  authn_file_module (shared)
  authz_core_module (shared)
  authz_host_module (shared)
  authz_user_module (shared)
  autoindex_module (shared)
  deflate_module (shared)
  dir_module (shared)
  env_module (shared)
  filter_module (shared)
  mime_module (shared)
  mpm_event_module (shared)
  negotiation_module (shared)
  reqtimeout_module (shared)
  setenvif_module (shared)
  status_module (shared)
  userdir_module (shared)
enrique@enrique:/etc/apache2/mods-enabled$ _
```

3. Verifica que dentro del directorio /etc/apache2/mods-enabled se han creado los enlaces simbólicos del módulo userdir (archivos .conf y .load) hacia /etc/apache2/mod_avaliables

```
enrique@enrique:/etc/apache2/mods-enabled$ ll
total 12
drwxr-xr-x 2 root root 4096 Feb  6 16:42 ./
drwxr-xr-x 8 root root 4096 Feb  4 15:49 ../
-rw-r--r-- 1 root root 1024 Feb  6 16:18 .dir.load.swp
lrwxrwxrwx 1 root root 36 Jan 18 11:56 access_compat.load -> ../mods-available/access_compat.load
lrwxrwxrwx 1 root root 28 Jan 18 11:56 alias.conf -> ../mods-available/alias.conf
lrwxrwxrwx 1 root root 28 Jan 18 11:56 alias.load -> ../mods-available/alias.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 auth_basic.load -> ../mods-available/auth_basic.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authn_core.load -> ../mods-available/authn_core.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authn_file.load -> ../mods-available/authn_file.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authz_core.load -> ../mods-available/authz_core.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authz_host.load -> ../mods-available/authz_host.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 authz_user.load -> ../mods-available/authz_user.load
lrwxrwxrwx 1 root root 32 Jan 18 11:56 autoindex.conf -> ../mods-available/autoindex.conf
lrwxrwxrwx 1 root root 32 Jan 18 11:56 autoindex.load -> ../mods-available/autoindex.load
lrwxrwxrwx 1 root root 30 Jan 18 11:56 deflate.conf -> ../mods-available/deflate.conf
lrwxrwxrwx 1 root root 30 Jan 18 11:56 deflate.load -> ../mods-available/deflate.load
lrwxrwxrwx 1 root root 26 Jan 18 11:56 dir.conf -> ../mods-available/dir.conf
lrwxrwxrwx 1 root root 26 Jan 18 11:56 dir.load -> ../mods-available/dir.load
lrwxrwxrwx 1 root root 26 Jan 18 11:56 env.load -> ../mods-available/env.load
lrwxrwxrwx 1 root root 29 Jan 18 11:56 filter.load -> ../mods-available/filter.load
lrwxrwxrwx 1 root root 27 Jan 18 11:56 mime.conf -> ../mods-available/mime.conf
lrwxrwxrwx 1 root root 27 Jan 18 11:56 mime.load -> ../mods-available/mime.load
lrwxrwxrwx 1 root root 32 Jan 18 11:56 mpm_event.conf -> ../mods-available/mpm_event.conf
lrwxrwxrwx 1 root root 32 Jan 18 11:56 mpm_event.load -> ../mods-available/mpm_event.load
lrwxrwxrwx 1 root root 34 Jan 18 11:56 negotiation.conf -> ../mods-available/negotiation.conf
lrwxrwxrwx 1 root root 34 Jan 18 11:56 negotiation.load -> ../mods-available/negotiation.load
lrwxrwxrwx 1 root root 33 Jan 18 11:56 reqtimeout.conf -> ../mods-available/reqtimeout.conf
lrwxrwxrwx 1 root root 31 Jan 18 11:56 reqtimeout.load -> ../mods-available/reqtimeout.load
lrwxrwxrwx 1 root root 31 Jan 18 11:56 setenvif.conf -> ../mods-available/setenvif.conf
lrwxrwxrwx 1 root root 31 Jan 18 11:56 setenvif.load -> ../mods-available/setenvif.load
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.conf -> ../mods-available/status.conf
lrwxrwxrwx 1 root root 29 Jan 18 11:56 status.load -> ../mods-available/status.load
lrwxrwxrwx 1 root root 30 Feb  6 16:42 userdir.conf -> ../mods-available/userdir.conf
lrwxrwxrwx 1 root root 30 Feb  6 16:42 userdir.load -> ../mods-available/userdir.load
enrique@enrique:/etc/apache2/mods-enabled$
```

4. Reinicia el servidor para que los cambios surtan efecto

```
enrique@enrique:/etc/apache2/mods-enabled$ sudo /etc/init.d/apache2 restart
Restarting apache2 (via systemctl): apache2.service.
enrique@enrique:/etc/apache2/mods-enabled$ _
```

5. Consulta el fichero /etc/apache2/mods-enabled/userdir.conf. Observa que está habilitado el uso de directorios personales para todos los usuarios excepto para el usuario root y que public_html es el nombre del subdirectorio que pueden crear los usuarios en su directorio home para poner sus páginas personales.

```
GNU nano 4.8 userdir.conf
<IfModule mod_userdir.c>
    UserDir public_html
    UserDir disabled root

    <Directory /home/*/public_html>
        AllowOverride FileInfo AuthConfig Limit Indexes
        Options MultiViews Indexes SymLinksIfOwnerMatch IncludesNoExec
        Require method GET POST OPTIONS
    </Directory>
</IfModule>

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

[ Read 12 lines ]
^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos  M-U Undo
^X Exit      ^R Read File ^_ Replace   ^U Paste Text ^T To Spell  ^_ Go To Line M-E Redo
```

6. Crea el directorio /home/alias/public_html y dentro del mismo, crea un fichero denominado personal.html con el contenido que quieras (debe aparecer al menos tu alias).

```
GNU nano 4.8 personal.html Modified
<html>
<body>
Buenas Tardes
</body>
</html>

^G Get Help  ^O Write Out ^W Where Is  ^K Cut Text  ^J Justify   ^C Cur Pos  M-U Undo
^X Exit      ^R Read File ^_ Replace   ^U Paste Text ^T To Spell  ^_ Go To Line M-E Redo
```

7. Desde un cliente Web, accede a [http: //IP-Server/~alias](http://IP-Server/~alias) (pantalla)



8. Deshabilita el modulo anterior ejecutando el comando: `sudo a2dismod userdir`

```
enrique@enrique:~/public_html$ sudo a2dismod userdir
Module userdir disabled.
```

9. Reinicia el servidor para que los cambios tengan efecto

```
systemctl restart apache2
enrique@enrique:~/public_html$ systemctl restart apache2
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ====
Authentication is required to restart 'apache2.service'.
Authenticating as: enrique
Password:
==== AUTHENTICATION COMPLETE ====
enrique@enrique:~/public_html$ _
```

10. Desde un cliente Web, accede a [http: //IP-Server/~alias](http://IP-Server/~alias) (pantalla)

