

Aitor Pascual Jiménez
Despliegue de Aplicaciones Web
2º DAW

LOGS Y RENDIMIENTO EN APACHE



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Si entramos a nuestro directorio /var/log/apache2 (directorio solo accesible por root por razones de seguridad), podemos ver un cúmulo de archivos y comprimidos.

```
root@ubuntu-despliegue:/var/log/apache2# ls
access.log      access_miWeb.log      access_miWeb.log.2.gz  access_otraWeb.log.1  error.log.1           error.log.2.gz        error.log.
4.gz            error.log.6.gz        error.log.8.gz         error_miWeb.log       error_otraWeb.log
access.log.1    access_miWeb.log.1    access_otraWeb.log     error.log              error.log.10.gz       error.log.3.gz        error.log.
5.gz            error.log.7.gz        error.log.9.gz         error_miWeb.log.1     other_vhosts_access.log
```

Estos se generan debido a la rotación de logs para que no ocupen tanto espacio.

Si abrimos error.log (en mi caso el .1), podemos ver que todas las lineas cumplen este formato:

[Fecha Hora] [Módulo:Nivel] [PID] Código Mensaje

```
root@ubuntu-despliegue:/var/log/apache2# cat error.log.1
[Fri Jan 24 09:02:36.801451 2025] [mpm_prefork:notice] [pid 1073] AH00163: Apache/2.4.52 (Ubuntu) OpenSSL/3.0.2 configured -- resuming normal operations
[Fri Jan 24 09:02:36.801555 2025] [core:notice] [pid 1073] AH00094: Command line: '/usr/sbin/apache2'
[Fri Jan 24 09:57:35.730870 2025] [mpm_prefork:notice] [pid 1073] AH00170: caught SIGWINCH, shutting down gracefully
[Fri Jan 24 09:57:35.837089 2025] [mpm_prefork:notice] [pid 2903] AH00163: Apache/2.4.52 (Ubuntu) OpenSSL/3.0.2 configured -- resuming normal operations
[Fri Jan 24 09:57:35.837141 2025] [core:notice] [pid 2903] AH00094: Command line: '/usr/sbin/apache2'
[Fri Jan 24 09:59:40.275675 2025] [mpm_prefork:notice] [pid 2903] AH00169: caught SIGTERM, shutting down
[Fri Jan 24 10:00:33.814706 2025] [mpm_prefork:notice] [pid 2993] AH00163: Apache/2.4.52 (Ubuntu) OpenSSL/3.0.2 configured -- resuming normal operations
[Fri Jan 24 10:00:33.814753 2025] [core:notice] [pid 2993] AH00094: Command line: '/usr/sbin/apache2'
[Fri Jan 24 10:02:40.326719 2025] [mpm_prefork:notice] [pid 2993] AH00170: caught SIGWINCH, shutting down gracefully
[Fri Jan 24 10:03:14.751823 2025] [mpm_prefork:notice] [pid 3115] AH00163: Apache/2.4.52 (Ubuntu) OpenSSL/3.0.2 configured -- resuming normal operations
[Fri Jan 24 10:03:14.751878 2025] [core:notice] [pid 3115] AH00094: Command line: '/usr/sbin/apache2'
[Fri Jan 24 10:03:24.400234 2025] [mpm_prefork:notice] [pid 3115] AH00170: caught SIGWINCH, shutting down gracefully
[Fri Jan 24 10:03:31.566650 2025] [mpm_prefork:notice] [pid 3150] AH00163: Apache/2.4.52 (Ubuntu) OpenSSL/3.0.2 configured -- resuming normal operations
[Fri Jan 24 10:03:31.566708 2025] [core:notice] [pid 3150] AH00094: Command line: '/usr/sbin/apache2'
[Fri Jan 24 10:17:22.571898 2025] [mpm_prefork:notice] [pid 3150] AH00170: caught SIGWINCH, shutting down gracefully
```

En mi caso todas son de nivel notice ya que no he tenido errores, todas estas lineas muestran apagados y encendidos suaves hechos con systemctl o al apagar la vm.

Si abrimos los ficheros access.log podemos ver logs de acceso.

```
root@ubuntu-despliegue:/var/log/apache2# cat access.log.1
127.0.0.1 - [13/Dec/2024:09:18:09 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:09:18:09 +0100] "GET /icons/ubuntu-logo.png HTTP/1.1" 200 3607 "http://127.0.0.1/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:09:18:09 +0100] "GET /favicon.ico HTTP/1.1" 404 487 "http://127.0.0.1/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:10:26:36 +0100] "GET /index.html HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:10:27:32 +0100] "GET /mIServerUbuntuClase HTTP/1.1" 404 488 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.16.3.216 - [13/Dec/2024:10:55:47 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.16.3.216 - [13/Dec/2024:10:55:48 +0100] "GET /icons/ubuntu-logo.png HTTP/1.1" 200 3607 "http://172.16.3.216/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.16.3.216 - [13/Dec/2024:11:51:21 +0100] "GET /favicon.ico HTTP/1.1" 404 488 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:11:51:21 +0100] "GET /mIServerUbuntuClase.local HTTP/1.1" 404 488 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:11:51:26 +0100] "GET /mIServerUbuntuClase HTTP/1.1" 404 488 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:11:52:32 +0100] "GET /mIServerUbuntuClase.local HTTP/1.1" 404 488 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:11:52:45 +0100] "GET /mIServerUbuntuClase.local HTTP/1.1" 404 488 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:11:18 +0100] "GET /mIServerUbuntuClase.local HTTP/1.1" 404 488 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:11:19 +0100] "GET /mIServerUbuntuClase.local HTTP/1.1" 404 487 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:11:56 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:11:57 +0100] "GET /icons/ubuntu-logo.png HTTP/1.1" 200 3608 "http://127.0.0.1/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:11:57 +0100] "GET /favicon.ico HTTP/1.1" 404 488 "http://127.0.0.1/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:13:00 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:13:00 +0100] "GET /icons/ubuntu-logo.png HTTP/1.1" 200 3607 "http://otroserverubuntuclase.local/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:13:00 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.0.0.1 - [13/Dec/2024:12:14:22 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:131.0) Gecko/20100101 Firefox/131.0"
127.16.3.248 - [13/Dec/2024:13:22:38 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/131.0.0.0 Safari/537.36"
127.16.3.248 - [13/Dec/2024:13:22:38 +0100] "GET /icons/ubuntu-logo.png HTTP/1.1" 200 3607 "http://ubuntu-despliegue.local/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/131.0.0.0 Safari/537.36"
127.16.3.248 - [13/Dec/2024:13:22:39 +0100] "GET /favicon.ico HTTP/1.1" 404 501 "http://ubuntu-despliegue.local/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/131.0.0.0 Safari/537.36"
127.16.3.248 - [13/Dec/2024:13:23:30 +0100] "-" 408 0 "-" "-"
127.16.3.248 - [13/Dec/2024:13:23:30 +0100] "-" 408 0 "-" "-"
127.16.3.248 - [13/Dec/2024:13:37:42 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/131.0.0.0 Safari/537.36"
127.16.3.248 - [13/Dec/2024:13:37:43 +0100] "GET / HTTP/1.1" 200 3459 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/131.0.0.0 Safari/537.36"
127.16.3.248 - [13/Dec/2024:13:37:57 +0100] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/131.0.0.0 Safari/537.36"
127.16.3.248 - [13/Dec/2024:13:38:49 +0100] "-" 408 0 "-" "-"
```

En este caso todas las lineas cumplen con el siguiente formato:

<IP> - <identidad> [<fecha y hora>] "<método> <recurso> <protocolo/versión>" <código de estado> <tamaño de respuesta> "<referencia>" "<user-agent>"

Dentro de estos logs de acceso podemos encontrar un patrón, siempre que se hace una petición a una página exitosa se hace otra petición por el favicon, este es el comportamiento que tienen los navegadores web.

Previamente cuando hemos hecho un ls del directorio hemos visto algunos archivos con nombres distintos.

```
access_miWeb.log      access_miWeb.log.2.gz  
access_miWeb.log.1    access_otraWeb.log
```

Esto ocurre porque ya tenía configurados los logs para mis virtual host, para hacer esto debemos irnos a /etc/apache2/sites-available/laConfiguraciónDeNuestroVirtualHost, dentro de la etiqueta VirtualHost de estos archivos, podemos definir 2 líneas de configuración, en mi caso hago uso de la constante APACHE_LOG_DIR que apunta al directorio /var/log/apache2 o al que tengamos definido y doy el nombre de cada archivo personalizado.

```
ErrorLog ${APACHE_LOG_DIR}/error_miWeb.log  
CustomLog ${APACHE_LOG_DIR}/access_miWeb.log combined
```

(combined es el formato estándar de apache)

Si hemos accedido a la web y miramos el log, podemos ver que aparece una petición de raíz y del favicon.

```
root@ubuntu-despliegue:/var/log/apache2# cat access_miWeb.log.1  
127.0.0.1 - - [24/Jun/2025:10:10:42 +0100] "GET / HTTP/1.1" 200 2525 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:134.0) Gecko/20100101 Firefox/134.0"  
127.0.0.1 - - [24/Jun/2025:10:10:42 +0100] "GET /favicon.ico HTTP/1.1" 404 526 "https://miserverubuntuclase.local/" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:134.0) Gecko/20100101 Firefox/134.0"
```

Para hacer pruebas de rendimiento podemos usar la utilidad ab (Apache Bench), esta utilidad nos permite simular N solicitudes al servidor y ver métricas, usaremos los parámetros -n para el número de peticiones y -c para el número de usuarios concurrentes.

Si probamos a lanzar 1500 peticiones con 25 usuarios responde instantáneamente sin problemas.

```
root@ubuntu-despliegue:/var/log/apache2# ab -n 1500 -c 25 http://miserverubuntuclase.local/
This is ApacheBench, Version 2.3 <$Revision: 1879490 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking miserverubuntuclase.local (be patient)
Completed 150 requests
Completed 300 requests
Completed 450 requests
Completed 600 requests
Completed 750 requests
Completed 900 requests
Completed 1050 requests
Completed 1200 requests
Completed 1350 requests
Completed 1500 requests
Finished 1500 requests


Server Software:      Apache/2.4.52
Server Hostname:      miserverubuntuclase.local
Server Port:          80

Document Path:        /
Document Length:      95 bytes

Concurrency Level:    25
Time taken for tests:  0.244 seconds
Complete requests:    1500
Failed requests:       0
Total transferred:    546000 bytes
HTML transferred:     142500 bytes
Requests per second:  6147.92 [#/sec] (mean)
Time per request:     4.066 [ms] (mean)
Time per request:     0.163 [ms] (mean, across all concurrent requests)
Transfer rate:        2185.39 [Kbytes/sec] received


Connection Times (ms)
      min    mean[+/-sd] median   max
Connect:    0      0   0.4      0      8
Processing:  0      4   3.9      3     29
Waiting:    0      4   3.8      3     29
Total:      1      4   3.9      3     29
```

Sin embargo si lanzamos 100 veces más con el doble de usuarios el tiempo se multiplica en casi 100 veces, tomando 22 segundos y medio para responder a todas las peticiones con un volumen de 50GB transferidos.

```
root@ubuntu-despliegue:/var/log/apache2# ab -n 150000 -c 50 http://miserverubuntuclase.local/
This is ApacheBench, Version 2.3 <$Revision: 1879490 $>
Copyright 1996 Adam Twiss, Zeus Technology Ltd, http://www.zeustech.net/
Licensed to The Apache Software Foundation, http://www.apache.org/

Benchmarking miserverubuntuclase.local (be patient)
Completed 15000 requests
Completed 30000 requests
Completed 45000 requests
Completed 60000 requests
Completed 75000 requests
Completed 90000 requests
Completed 105000 requests
Completed 120000 requests
Completed 135000 requests
Completed 150000 requests
Finished 150000 requests


Server Software:      Apache/2.4.52
Server Hostname:      miserverubuntuclase.local
Server Port:          80

Document Path:        /
Document Length:      95 bytes

Concurrency Level:    50
Time taken for tests:  22.689 seconds
Complete requests:    150000
Failed requests:       0
Total transferred:    54600000 bytes
HTML transferred:     14250000 bytes
Requests per second:  6611.23 [#/sec] (mean)
Time per request:     7.563 [ms] (mean)
Time per request:     0.151 [ms] (mean, across all concurrent requests)
Transfer rate:        2350.08 [Kbytes/sec] received


Connection Times (ms)
              min    mean[+/-sd] median    max
Connect:        0      0   0.4      0     27
Processing:      1      7   3.5      7     48
Waiting:         1      7   3.5      7     47
Total:          2      7   3.5      7     48


Percentage of the requests served within a certain time (ms)
 50%      7
 66%      8
 75%      8
 80%      9
 90%     10
 95%     11
 98%     15
 99%     25
100%     48 (longest request)
```