

● DÍA 10: IMPLEMENTACIÓN DE SERVICIOS WEB Y FTP EN LINUX SERVER 🌐📡

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🚀 Fase 1: Instalación y configuración del servidor web

- ✓ Instalar Apache o Nginx y configurar el sitio por defecto en /var/www/html.
- ✓ Crear una página de prueba en HTML/PHP que muestre información del servidor (phpinfo();).

Creamos el archivo /var/www/html/info.php

```
GNU nano 7.2
echo "<?php phpinfo(); ?>"_
```

```
#
# Self signed certs generated by the ssl-cert package
# Don't use them in a production server!
#
# include snippets/snakeoil.conf;

root /var/www/html;

# Add index.php to the list if you are using PHP
index index.html index.htm index.nginx-debian.html;

server_name _;

location / {
    # First attempt to serve request as file, then
    # as directory, then fall back to displaying a 404.
    try_files $uri $uri/ =404;
}

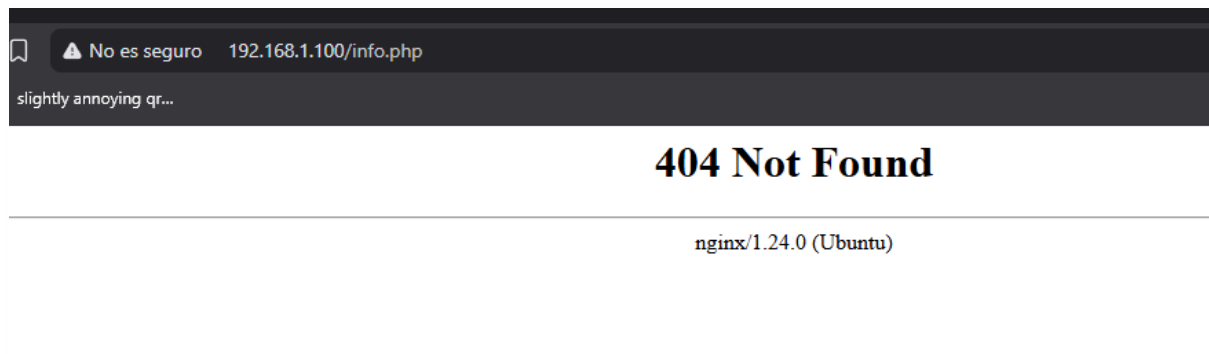
# pass PHP scripts to FastCGI server
#
location ~ \.php$ {
    include snippets/fastcgi-php.conf;
    #
    # With php-fpm (or other unix sockets):
    fastcgi_pass unix:/var/run/php/php8.3-fpm.sock;
    #
    # With php-cgi (or other tcp sockets):
    fastcgi_pass 127.0.0.1:9000;
    #}

# deny access to .htaccess files, if Apache's document root
# concurs with nginx's one
#
#location ~ /\.ht {
#    deny all;
#}

# Virtual Host configuration for example.com
```

La comprobacion:

```
vboxuser@UbuntuServer:~$  
vboxuser@UbuntuServer:~$ sudo nginx -t  
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok  
nginx: configuration file /etc/nginx/nginx.conf test is successful  
vboxuser@UbuntuServer:~$
```



- ✓ **Configurar un vhost para alojar múltiples proyectos en el mismo servidor.**

Creamos el directorio para el proyecto y asignamos permisos:

```
vboxuser@UbuntuServer:~$ sudo mkdir -p /var/www/proyecto-alpha  
vboxuser@UbuntuServer:~$ sudo chown -R vboxuser:vboxuser /var/www/proyecto-alpha  
vboxuser@UbuntuServer:~$
```

Creamos un archivo de configuracion:

```
GNU nano 7.2  
server {  
    listen 80;  
    server_name proyecto-alpha.codearts;  
  
    root /var/www/proyecto-alpha;  
    index index.html index.htm;  
  
    location / {  
        try_files $uri $uri/ =404;  
    }  
}
```

```
vboxuser@UbuntuServer:~$ sudo nginx -t  
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok  
nginx: configuration file /etc/nginx/nginx.conf test is successful  
vboxuser@UbuntuServer:~$ sudo systemctl reload nginx  
vboxuser@UbuntuServer:~$
```



Fase 2: Instalación y configuración del servidor FTP



Instalar vsftpd o ProFTPD en el servidor.

He instalado vsftpd

Editamos el archivo de configuración:

```
GNU nano 7.2 /etc/vsftpd.conf
# chroot_list_enable below.
chroot_local_user=YES
#
# You may specify an explicit list of local users to chroot() to their home
# directory. If chroot_local_user is YES, then this list becomes a list of
# users to NOT chroot().
# (Warning! chroot'ing can be very dangerous. If using chroot, make sure that
# the user does not have write access to the top level directory within the
# chroot)
chroot_local_user=YES
chroot_list_enable=YES
# (default follows)
#chroot_list_file=/etc/vsftpd.chroot_list
#
# You may activate the "-R" option to the builtin ls. This is disabled by
# default to avoid remote users being able to cause excessive I/O on large
# sites. However, some broken FTP clients such as "ncftp" and "mirror" assume
# the presence of the "-R" option, so there is a strong case for enabling it.
#ls_recurse_enable=YES
#
# Customization
#
# Some of vsftpd's settings don't fit the filesystem layout by
# default.
#
# This option should be the name of a directory which is empty. Also, the
# directory should not be writable by the ftp user. This directory is used
# as a secure chroot() jail at times vsftpd does not require filesystem
# access.
secure_chroot_dir=/var/run/vsftpd/empty
#
# This string is the name of the PAM service vsftpd will use.
pam_service_name=vsftpd
#
# This option specifies the location of the RSA certificate to use for SSL
# encrypted connections.
rsa_cert_file=/etc/ssl/certs/ssl-cert-snakeoil.pem
rsa_private_key_file=/etc/ssl/private/ssl-cert-snakeoil.key
ssl_enable=NO
#
# Uncomment this to indicate that vsftpd use a utf8 filesystem.
#utf8_filesystem=YES
allow_writeable_chroot=YES
force_dot_files=YES
```



Crear tres usuarios FTP con acceso restringido a directorios específicos.



Configurar permisos adecuados para garantizar la seguridad en las transferencias de archivos.

```

Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n]
info: Adding new user `dev1' to supplemental / extra groups `users' ...
info: Adding user `dev1' to group `users' ...
vboxuser@UbuntuServer:~$ sudo adduser dev2 --shell /usr/sbin/nologin
info: Adding user `dev2' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `dev2' (1016) ...
info: Adding new user `dev2' (1016) with group `dev2 (1016)' ...
info: Creating home directory `/home/dev2' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for dev2
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n]
info: Adding new user `dev2' to supplemental / extra groups `users' ...
info: Adding user `dev2' to group `users' ...
vboxuser@UbuntuServer:~$ sudo adduser dev3 --shell /usr/sbin/nologin
info: Adding user `dev3' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `dev3' (1017) ...
info: Adding new user `dev3' (1017) with group `dev3 (1017)' ...
info: Creating home directory `/home/dev3' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for dev3
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n]
info: Adding new user `dev3' to supplemental / extra groups `users' ...
info: Adding user `dev3' to group `users' ...

```

Fase 3: Seguridad y monitoreo de accesos

- ✓ **Configurar firewall (ufw o iptables) para permitir solo conexiones desde la red interna.**

```

vboxuser@UbuntuServer:~$ sudo ufw allow from 192.168.1.100/24 to any port 80 proto tcp
WARN: Rule changed after normalization
Skipping adding existing rule
vboxuser@UbuntuServer:~$ sudo ufw allow from 192.168.1.100/24 to any port 443 proto tcp
WARN: Rule changed after normalization
Rule added
vboxuser@UbuntuServer:~$ sudo ufw allow from 192.168.1.100/24 to any port 21 proto tcp
WARN: Rule changed after normalization
Rule added
vboxuser@UbuntuServer:~$ sudo ufw allow from 192.168.1.100/24 to any port 20 proto tcp
WARN: Rule changed after normalization
Rule added
vboxuser@UbuntuServer:~$ sudo ufw allow from 192.168.1.100/24 to any port 22 proto tcp
WARN: Rule changed after normalization
Rule added

```

```
vboxuser@UbuntuServer:~$ sudo ufw enable
Firewall is active and enabled on system startup
vboxuser@UbuntuServer:~$ sudo ufw status verbose
Status: active
Logging: on (low)
Default: deny (incoming), allow (outgoing), disabled (routed)
New profiles: skip
```

To	Action	From
--	-----	----
80/tcp	ALLOW IN	Anywhere
2222/tcp	ALLOW IN	Anywhere
21/tcp	ALLOW IN	192.168.1.100
40000:50000/tcp	ALLOW IN	192.168.1.0/24
22/tcp	ALLOW IN	192.168.1.0/24
80/tcp	ALLOW IN	192.168.1.0/24
443/tcp	ALLOW IN	192.168.1.0/24
21/tcp	ALLOW IN	192.168.1.0/24
20/tcp	ALLOW IN	192.168.1.0/24
80/tcp (v6)	ALLOW IN	Anywhere (v6)
2222/tcp (v6)	ALLOW IN	Anywhere (v6)

```
vboxuser@UbuntuServer:~$
```

✓ Implementar logs para detectar accesos sospechosos y revisar
/var/log/apache2/access.log.

```
vboxuser@UbuntuServer:~$ sudo tail -f /var/log/nginx/access.log
192.168.1.36 - - [26/Jun/2025:07:48:36 +0000] "GET / HTTP/1.1" 200 68 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/137.0.0.0 Safari/537.36"
192.168.1.36 - - [26/Jun/2025:07:48:36 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "http://192.168.1.100/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/137.0.0.0 Safari/537.36"
192.168.1.36 - - [26/Jun/2025:07:48:57 +0000] "GET /info.php HTTP/1.1" 404 196 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/137.0.0.0 Safari/537.36"
```

✓ Bloquear intentos de acceso no autorizados con reglas de firewall y
fail2ban.

```
#
# Provide customizations in a jail.local file or a jail.
# For example to change the default bantime for all jail
# ssh-iptables jail the following (uncommented) would ap
# See man 5 jail.conf for details.
#
# [DEFAULT]
# bantime = 1h
#
# [sshd]
enabled = true
# See jail.conf(5) man page for more information

# Comments: use '#' for comment lines and ';' (following
```

```
vboxuser@UbuntuServer:~$ sudo fail2ban-client status
Status
|- Number of jail:      1
|- Jail list:   sshd
vboxuser@UbuntuServer:~$
```



Fase 1: Análisis en tiempo real del sistema



Ejecutar y analizar las siguientes herramientas:

Top:

```
top - 08:11:43 up 18 min, 1 user, load average: 0.01, 0.06, 0.04
Tasks: 115 total, 1 running, 118 sleeping, 0 stopped, 0 zombie
%Cpu(s):  0.0 us,  0.2 sy,  0.0 ni, 99.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem : 3916.1 total, 3226.9 free, 473.6 used, 439.5 buff/cache
MiB Swap:  0.0 total,  0.0 free,  0.0 used, 3442.5 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1	root	20	0	22620	13436	9340	S	0.0	0.3	0:00.71	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	20	0	0	0	0	S	0.0	0.0	0:00.00	pool_workqueue_release
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-rcu_g
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-rcu_p
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-slab
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-nets
9	root	20	0	0	0	0	I	0.0	0.0	0:01.36	kuworker/0:1-events
10	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/0:0H-events_highpri
11	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kuworker/u4:0-ext4-rsv-conversion
12	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-mm_pe
13	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_kthread
14	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_rude_kthread
15	root	20	0	0	0	0	I	0.0	0.0	0:00.00	rcu_tasks_trace_kthread
16	root	20	0	0	0	0	S	0.0	0.0	0:00.02	ksoftirqd/0
17	root	20	0	0	0	0	I	0.0	0.0	0:00.03	rcu_preempt
19	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
19	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/0
20	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/0
21	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/1
22	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	idle_inject/1
23	root	rt	0	0	0	0	S	0.0	0.0	0:00.15	migration/1
24	root	20	0	0	0	0	S	0.0	0.0	0:00.01	ksoftirqd/1
27	root	20	0	0	0	0	I	0.0	0.0	0:00.05	kuworker/u5:0-events_power_efficient
29	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kdevtmpfs
30	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-inet
31	root	20	0	0	0	0	S	0.0	0.0	0:00.01	kauditd
33	root	20	0	0	0	0	S	0.0	0.0	0:00.00	khungtaskd
34	root	20	0	0	0	0	S	0.0	0.0	0:00.00	oom_reaper
35	root	20	0	0	0	0	I	0.0	0.0	0:00.03	kuworker/u6:1-flush-8:0
36	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-write
37	root	20	0	0	0	0	S	0.0	0.0	0:00.01	kcompactd0
38	root	25	5	0	0	0	S	0.0	0.0	0:00.00	ksmd
40	root	39	19	0	0	0	S	0.0	0.0	0:00.00	khugepaged
41	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-kint
42	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-kbloc
43	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-blkcq
44	root	-51	0	0	0	0	S	0.0	0.0	0:00.00	irq/9-acpi
45	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-tpm_d
46	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-ata_s
47	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-md
48	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-md_b1
49	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kuworker/R-edac-

Htop:

```
0[ Tasks: 31, 37 thr, 88 kthr; 1 running
1[ Load average: 0.01 0.07 0.04
Mem[ 252M/3.02G Uptime: 00:19:32
Swap[ 0K/0K
```

Main	I/O	PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
		1	root	20	0	22620	13436	9340	S	0.0	0.3	0:00.71	/sbin/init splash nonpmt noshell automatic-ubuntu
		307	root	19	-1	50444	16392	13568	S	0.0	0.4	0:00.09	/usr/lib/systemd/systemd-journald
		357	root	RT	0	282M	27136	8704	S	0.0	0.7	0:00.02	/sbin/multipathd -d -s
		369	root	20	0	282M	27136	8704	S	0.0	0.7	0:00.00	/sbin/multipathd -d -s
		371	root	RT	0	282M	27136	8704	S	0.0	0.7	0:00.00	/sbin/multipathd -d -s
		372	root	RT	0	282M	27136	8704	S	0.0	0.7	0:00.00	/sbin/multipathd -d -s
		375	root	RT	0	282M	27136	8704	S	0.0	0.7	0:00.00	/sbin/multipathd -d -s
		374	root	RT	0	282M	27136	8704	S	0.0	0.7	0:00.03	/sbin/multipathd -d -s
		375	root	RT	0	282M	27136	8704	S	0.0	0.7	0:00.00	/sbin/multipathd -d -s
		392	root	20	0	29072	7552	4592	S	0.0	0.2	0:00.06	/usr/lib/systemd/systemd-udevd
		439	systemd-re	20	0	21520	12600	10624	S	0.0	0.3	0:00.04	/usr/lib/systemd/systemd-resolved
		444	root	16	-4	11344	2048	1920	S	0.0	0.1	0:00.03	/sbin/auditd
		447	root	16	-4	11344	2048	1920	S	0.0	0.1	0:00.00	/sbin/auditd
		448	systemd-tl	20	0	91020	7808	6912	S	0.0	0.2	0:00.02	/usr/lib/systemd/systemd-timesyncd
		490	systemd-tl	20	0	91020	7808	6912	S	0.0	0.2	0:00.00	/usr/lib/systemd/systemd-timesyncd
		621	systemd-re	20	0	10936	9472	8320	S	0.0	0.2	0:00.02	/usr/lib/systemd/systemd-networkd
		671	messagebus	20	0	9780	5376	4608	S	0.0	0.1	0:00.06	dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog
		677	bind	20	0	501M	19584	14336	S	0.0	0.5	0:00.01	/usr/sbin/named -f -u bind
		682	root	20	0	202M	22272	17920	S	0.0	0.6	0:00.06	php-fpm: master process (/etc/php/8.3/fpm/php-fpm.conf)
		683	polkitd	20	0	300M	7936	7040	S	0.0	0.2	0:00.02	/usr/lib/polkit-1/polkitd --no-debug
		690	root	20	0	18120	8576	7680	S	0.0	0.2	0:00.04	/usr/lib/systemd/systemd-logind
		691	root	20	0	457M	13312	11264	S	0.0	0.3	0:00.02	/usr/libexec/udisks2/udisksd
		699	bind	20	0	501M	19584	14336	S	0.0	0.5	0:00.00	/usr/sbin/named -f -u bind
		700	bind	20	0	501M	19584	14336	S	0.0	0.5	0:00.00	/usr/sbin/named -f -u bind
		701	bind	20	0	501M	19584	14336	S	0.0	0.5	0:00.00	/usr/sbin/named -f -u bind
		702	bind	20	0	501M	19584	14336	S	0.0	0.5	0:00.00	/usr/sbin/named -f -u bind
		703	bind	20	0	501M	19584	14336	S	0.0	0.5	0:00.00	/usr/sbin/named -f -u bind
		707	root	20	0	457M	13312	11264	S	0.0	0.3	0:00.00	/usr/libexec/udisks2/udisksd
		709	root	20	0	457M	13312	11264	S	0.0	0.3	0:00.00	/usr/libexec/udisks2/udisksd
		712	root	20	0	457M	13312	11264	S	0.0	0.3	0:00.00	/usr/libexec/udisks2/udisksd
		736	syslog	20	0	217M	6144	4480	S	0.0	0.2	0:00.01	/usr/sbin/rsyslogd -n -iNONE
		740	root	20	0	107M	22912	13568	S	0.0	0.6	0:00.04	/usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signa
		741	polkitd	20	0	300M	7936	7040	S	0.0	0.2	0:00.01	/usr/lib/polkit-1/polkitd --no-debug
		742	www-data	20	0	202M	8832	4480	S	0.0	0.2	0:00.00	php-fpm: pool www
		745	www-data	20	0	202M	8832	4480	S	0.0	0.2	0:00.00	php-fpm: pool www
		744	polkitd	20	0	300M	7936	7040	S	0.0	0.2	0:00.00	/usr/lib/polkit-1/polkitd --no-debug
		745	polkitd	20	0	300M	7936	7040	S	0.0	0.2	0:00.00	/usr/lib/polkit-1/polkitd --no-debug
		755	root	20	0	457M	13312	11264	S	0.0	0.3	0:00.00	/usr/libexec/udisks2/udisksd
		756	root	20	0	310M	12928	10880	S	0.0	0.3	0:00.04	/usr/sbin/ModemManager
		759	syslog	20	0	217M	6144	4480	S	0.0	0.2	0:00.00	/usr/sbin/rsyslogd -n -iNONE
		761	syslog	20	0	217M	6144	4480	S	0.0	0.2	0:00.00	/usr/sbin/rsyslogd -n -iNONE

```
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

Uptime y Free:

```
vboxuser@UbuntuServer:~$ uptime
08:41:29 up 18 min, 1 user, load average: 0.02, 0.09, 0.05
vboxuser@UbuntuServer:~$ free -m
              total        used        free      shared    buff/cache   available
Mem:           3916         473        3226          3         439        3442
Swap:              0              0              0
```

Fase 2: Gestión activa de procesos y prioridades

- ✓ Finalizar un proceso inactivo o que no sea esencial (kill, killall o pkill).

```
vboxuser@UbuntuServer:~$ sleep 600 &
[1] 1061
vboxuser@UbuntuServer:~$ pgrep sleep
1061
vboxuser@UbuntuServer:~$ kill 1601
-bash: kill: (1601) - No such process
vboxuser@UbuntuServer:~$ kill 1061
vboxuser@UbuntuServer:~$ _
```

- ✓ Cambiar la prioridad de un proceso en ejecución con renice.

```
[1]+  Terminated                  sleep 600
vboxuser@UbuntuServer:~$ sleep 600 &
[1] 1072
vboxuser@UbuntuServer:~$ pgrep sleep
1072
vboxuser@UbuntuServer:~$ renice 10 1072
1072 (process ID) old priority 0, new priority 10
vboxuser@UbuntuServer:~$
```

- ✓ Lanzar un proceso en segundo plano (&) y enviarlo al primer plano con fg.

```
vboxuser@UbuntuServer:~$ jobs
[1]+  Running                  sleep 600 &
vboxuser@UbuntuServer:~$ fg %1
sleep 600
^Z
[1]+  Stopped                  sleep 600
vboxuser@UbuntuServer:~$ bg
[1]+ sleep 600 &
vboxuser@UbuntuServer:~$
```

- ✓ Usar nice para iniciar un proceso con prioridad baja (por ejemplo, una copia pesada con cp).

```
[11]+  Terminated          sleep 600
vboxuser@UbuntuServer:~$ sleep 600 &
[11] 1072
vboxuser@UbuntuServer:~$ pgrep sleep
1072
vboxuser@UbuntuServer:~$ renice 10 1072
1072 (process ID) old priority 0, new priority 10
vboxuser@UbuntuServer:~$ nice -n 15 cp /var/log/syslog ./backup_syslog_lento.log
cp: cannot open '/var/log/syslog' for reading: Permission denied
vboxuser@UbuntuServer:~$ sudo nice -n 15 cp /var/log/syslog ./backup_syslog_lento.log
[sudo] password for vboxuser:
vboxuser@UbuntuServer:~$
```

Fase 3: Monitorización y registro del uso de recursos

- ✓ Usar el comando vmstat y guardar su salida en un archivo /srv/logs/vmstat.log.

He creado la ruta /srv/logs

He ejecutado `vmstat 10 > /srv/logs/vmstat.log &` para que guarde datos cada 10 segundos en el archivo de log.

- ✓ Configurar una tarea en crontab que guarde el uso de recursos (`top -b -n 1`) cada 5 minutos en /srv/logs/top.log.

```
GNU nano 7.2 /tmp/cr
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
*/5 * * * * top -b -n 1 >> /srv/logs/top.log_
```


✓ Explorar iotop (si el sistema lo permite) para monitorizar I/O de disco.

Total DISK READ:		0.00 B/s	Total DISK WRITE:	0.00 B/s	
Current DISK READ:		0.00 B/s	Current DISK WRITE:	0.00 B/s	
TID	PRI	USER	DISK READ	DISK WRITE	COMMAND
1	be/4	root	0.00 B/s	0.00 B/s	init splash noprompt noshell automatic-ubiquity
2	be/4	root	0.00 B/s	0.00 B/s	[kthreadd]
3	be/4	root	0.00 B/s	0.00 B/s	[pool_workqueue_release]
4	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-rcu_g]
5	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-rcu_p]
6	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-slab_]
7	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-netns]
8	be/4	root	0.00 B/s	0.00 B/s	[kworker/0:0-cgroup_destroy]
10	be/0	root	0.00 B/s	0.00 B/s	[kworker/0:0H-kblockd]
11	be/4	root	0.00 B/s	0.00 B/s	[kworker/u4:0-ext4-rsv-conversion]
12	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-mm_pe]
13	be/4	root	0.00 B/s	0.00 B/s	[rcu_tasks_kthread]
14	be/4	root	0.00 B/s	0.00 B/s	[rcu_tasks_rude_kthread]
15	be/4	root	0.00 B/s	0.00 B/s	[rcu_tasks_trace_kthread]
16	be/4	root	0.00 B/s	0.00 B/s	[ksoftirqd/0]
17	be/4	root	0.00 B/s	0.00 B/s	[rcu_preempt]
18	rt/4	root	0.00 B/s	0.00 B/s	[migration/0]
19	rt/4	root	0.00 B/s	0.00 B/s	[idle_inject/0]
20	be/4	root	0.00 B/s	0.00 B/s	[cpuhp/0]
21	be/4	root	0.00 B/s	0.00 B/s	[cpuhp/1]
22	rt/4	root	0.00 B/s	0.00 B/s	[idle_inject/1]
23	rt/4	root	0.00 B/s	0.00 B/s	[migration/1]
24	be/4	root	0.00 B/s	0.00 B/s	[ksoftirqd/1]
25	be/4	root	0.00 B/s	0.00 B/s	[kworker/1:0-events]
26	be/0	root	0.00 B/s	0.00 B/s	[kworker/1:0H-kblockd]
27	be/4	root	0.00 B/s	0.00 B/s	[kworker/u5:0-events_power_efficient]
28	be/4	root	0.00 B/s	0.00 B/s	[kworker/u6:0-events_unbound]
29	be/4	root	0.00 B/s	0.00 B/s	[kdevtmpfs]
30	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-inet_]
31	be/4	root	0.00 B/s	0.00 B/s	[kauditd]
32	be/4	root	0.00 B/s	0.00 B/s	[kworker/u5:1-flush-8:0]
33	be/4	root	0.00 B/s	0.00 B/s	[khungtaskd]
34	be/4	root	0.00 B/s	0.00 B/s	[oom_reaper]
36	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-write]
37	be/4	root	0.00 B/s	0.00 B/s	[kcompactd0]
38	be/5	root	0.00 B/s	0.00 B/s	[ksmd]
40	be/7	root	0.00 B/s	0.00 B/s	[khugepaged]
41	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-kint]
42	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-kbloc]
43	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-blkg]
44	rt/4	root	0.00 B/s	0.00 B/s	[irq/9-acpi]
45	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-tpm_d]
46	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-ata_s]
47	be/0	root	0.00 B/s	0.00 B/s	[kworker/R-md]
keys: any: refresh q: quit i: ionice o: active p: procs a: accum					
sort: r: asc left: DISK READ right: COMMAND home: TID end: COMMAND					
CONFIG TASK DELAY ACCT and kernel.task_delayacct sysctl not enabled in kernel, cannot determine SWAPIN and IO %					

🚀 Fase 4: Simulación de sobrecarga controlada

✓ Instalar el paquete stress o stress-ng.

✓ Ejecutar una prueba con carga simulada de CPU, memoria o disco durante 1 minuto.

```
uoboxuser@UbuntuServer:~$ stress-ng --cpu 2 --vm 1 --vm-bytes 512M --timeout 60s --verbose
stress-ng: debug: [1661] invoked with 'stress-ng --cpu 2 --vm 1 --vm-bytes 512M --timeout 60s --verbose' by user 1000 'uoboxuser'
stress-ng: debug: [1661] stress-ng 0.17.06
stress-ng: debug: [1661] system: Linux UbuntuServer 6.8.0-62-generic #65-Ubuntu SMP PREEMPT_DYNAMIC Mon May 19 17:15:03 UTC 2025 x86_64, gcc 13.2.0, glibc 2.39
stress-ng: debug: [1661] RAM total: 3.8G, RAM free: 2.9G, swap free: 0.0
stress-ng: debug: [1661] temporary file path: '/home/uoboxuser', filesystem type: ext2 (8834284 blocks available)
stress-ng: debug: [1661] 2 processors online, 2 processors configured
stress-ng: info: [1661] setting to a 1 min, 0 secs run per stressor
stress-ng: debug: [1661] CPU data cache: L1: 48K, L2: 1280K, L3: 20480K
stress-ng: debug: [1661] cache allocate: shared cache buffer size: 20480K
stress-ng: info: [1661] dispatching hogs: 2 cpu, 1 vm
stress-ng: debug: [1661] starting stressors
stress-ng: debug: [1662] cpu: [1662] started (instance 0 on CPU 1)
stress-ng: debug: [1663] cpu: [1663] started (instance 1 on CPU 1)
stress-ng: debug: [1661] 3 stressors started
stress-ng: debug: [1664] vm: [1664] started (instance 0 on CPU 0)
stress-ng: debug: [1662] cpu: using method 'all'
stress-ng: debug: [1664] vm: using method 'all'
```

-

Antes:

```

0t
1t11
Host: ██████████
Supl: ██████████

0.0z1 Tasks: 30, 33 thr, 87 kthr: 1 running
1.3z1 Load average: 0.00 0.02 0.00
24M/3.02G Uptime: 00:13:20
OK/OK!

Main L/O
PID USER PRI NI VIRT RES SHR S CPU%MEM% TIME+ Command
1 root 20 0 22204 12968 9384 S 0.0 0.3 0:00.50 /sbin/init splash noprompt noshell automatic-ubiquity
360 root 17 -1 66752 17136 16032 S 0.0 0.4 0:00.00 /usr/lib/systemd/systemd-journald
366 root RT 0 282M 27136 8704 S 0.0 0.7 0:00.02 /sbin/multipathd -d -s
370 root 20 0 282M 27136 8704 S 0.0 0.7 0:00.00 /sbin/multipathd -d -s
371 root RT 0 282M 27136 8704 S 0.0 0.7 0:00.00 /sbin/multipathd -d -s
372 root RT 0 282M 27136 8704 S 0.0 0.7 0:00.00 /sbin/multipathd -d -s
373 root RT 0 282M 27136 8704 S 0.0 0.7 0:00.00 /sbin/multipathd -d -s
374 root RT 0 282M 27136 8704 S 0.0 0.7 0:00.01 /sbin/multipathd -d -s
380 root RT 0 282M 27136 8704 S 0.0 0.7 0:00.00 /sbin/multipathd -s
392 root 20 0 29204 7888 4992 S 0.0 0.2 0:00.07 /usr/lib/systemd/systemd-udevd
437 systemd-re 20 0 21576 12000 10624 S 0.0 0.3 0:00.04 /usr/lib/systemd/systemd-resolved
439 root 16 -4 11344 2048 1920 S 0.0 0.1 0:00.00 /sbin/auditd
442 root 16 -4 11344 2048 1920 S 0.0 0.1 0:00.00 /sbin/auditd
445 systemd-ti 20 0 9160 7888 6912 S 0.0 0.2 0:00.04 /usr/lib/systemd/systemd-timesyncd
500 systemd-ti 20 0 9160 7888 6912 S 0.0 0.2 0:00.00 /usr/lib/systemd/systemd-timesyncd
667 messagebus 20 0 9808 5376 4608 S 0.0 0.1 0:00.04 dbus-daemon --system --address=systemd: --nofork --nopidfile --systemd-activation --syslog-o
677 polkitd 20 0 300M 8064 7168 S 0.0 0.2 0:00.02 /usr/lib/polkit-1/polkitd --no-debug
683 root 20 0 18120 8576 7552 S 0.0 0.2 0:00.03 /usr/lib/systemd/systemd-logind
684 systemd-ne 20 0 18996 9472 8320 S 0.0 0.2 0:00.02 /usr/lib/systemd/systemd-networkd
685 root 20 0 457M 15568 11520 S 0.0 0.3 0:00.03 /usr/libexec/audks2audksd
702 root 20 0 457M 15568 11520 S 0.0 0.3 0:00.00 /usr/libexec/audks2audksd
705 root 20 0 457M 15568 11520 S 0.0 0.3 0:00.00 /usr/libexec/audks2audksd
719 polkitd 20 0 300M 8064 7168 S 0.0 0.2 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
720 polkitd 20 0 300M 8064 7168 S 0.0 0.2 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
721 polkitd 20 0 300M 8064 7168 S 0.0 0.2 0:00.00 /usr/lib/polkit-1/polkitd --no-debug
729 root 20 0 302M 12000 10752 S 0.0 0.3 0:00.00 /usr/sbin/ModemManager
730 root 20 0 457M 15568 11520 S 0.0 0.3 0:00.00 /usr/libexec/audks2audksd
732 syslog 20 0 217M 6016 4480 S 0.0 0.2 0:00.01 /usr/sbin/rsyslogd -n -iNONE
751 root 20 0 382M 12000 10752 S 0.0 0.3 0:00.00 /usr/sbin/ModemManager
756 root 20 0 382M 12000 10752 S 0.0 0.3 0:00.00 /usr/sbin/ModemManager
762 root 20 0 382M 12000 10752 S 0.0 0.3 0:00.00 /usr/sbin/ModemManager
765 root 20 0 217M 6016 4480 S 0.0 0.2 0:00.00 /usr/sbin/rsyslogd -n -iNONE
770 syslog 20 0 217M 6016 4480 S 0.0 0.2 0:00.00 /usr/sbin/rsyslogd -n -iNONE
772 syslog 20 0 217M 6016 4480 S 0.0 0.2 0:00.00 /usr/sbin/rsyslogd -n -iNONE
776 bind 20 0 501M 19456 14336 S 0.0 0.5 0:00.00 /usr/sbin/named -f -u bind
782 root 20 0 202M 2244 1772 S 0.0 0.6 0:00.06 php-fpm: master process (/etc/php/8.3/fpm/php-fpm.conf)
793 root 20 0 107M 23040 1536 S 0.0 0.6 0:00.04 /usr/bin/phpd03 /usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
800 root 20 0 500M 2456 2944 S 0.0 0.5 0:00.01 /usr/sbin/wpa_supplicant.conf
809 bind 20 0 501M 19456 14336 S 0.0 0.5 0:00.00 /usr/sbin/named -f -u bind
810 bind 20 0 501M 19456 14336 S 0.0 0.5 0:00.00 /usr/sbin/named -f -u bind

FileP LSetup LSearch LFilters LTree PLSortBy Lnice -P Lnice -P LKill PLOquit

```

Despues:

[illegible]