

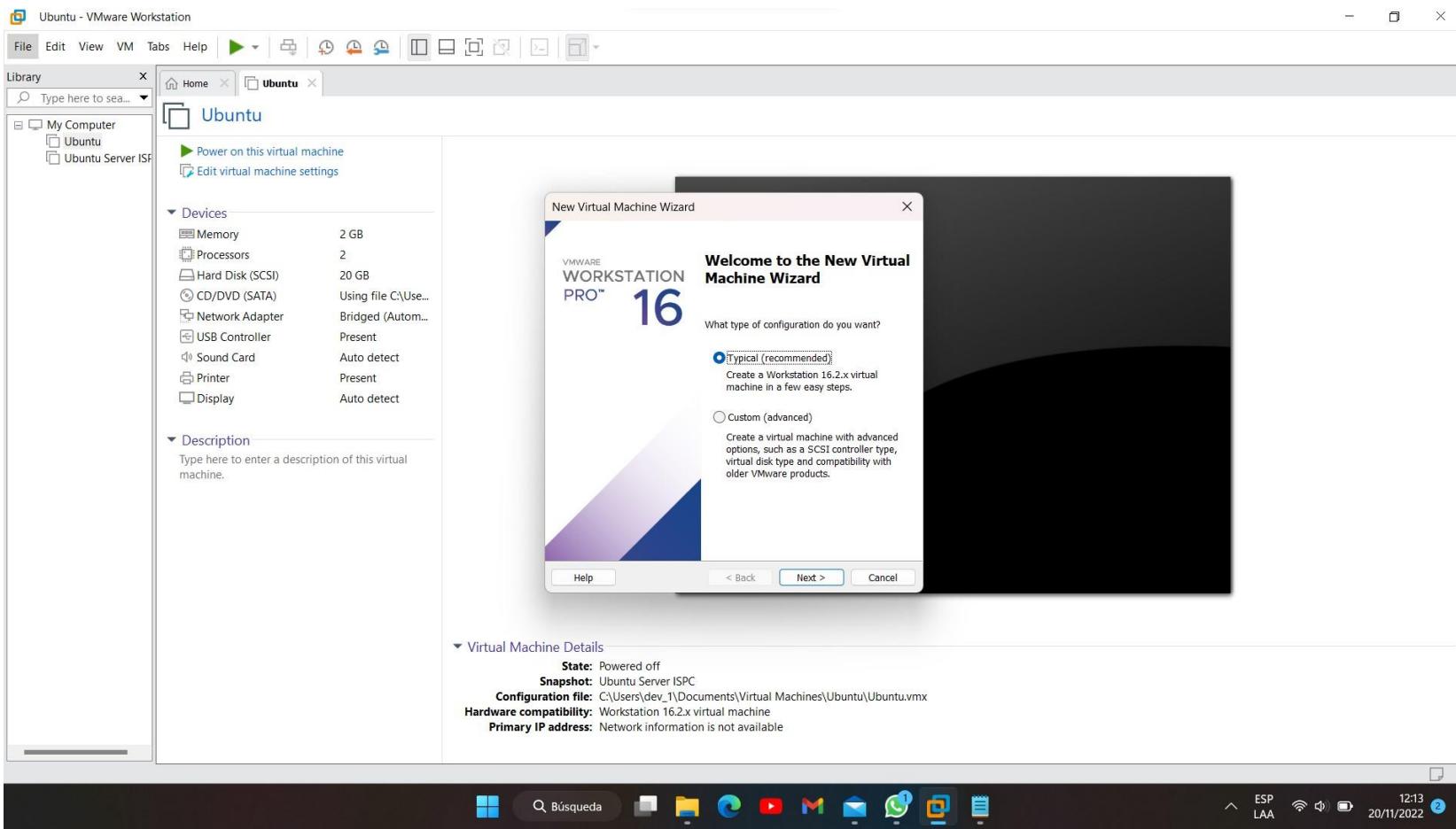


PROYECTO INTEGRADOR I

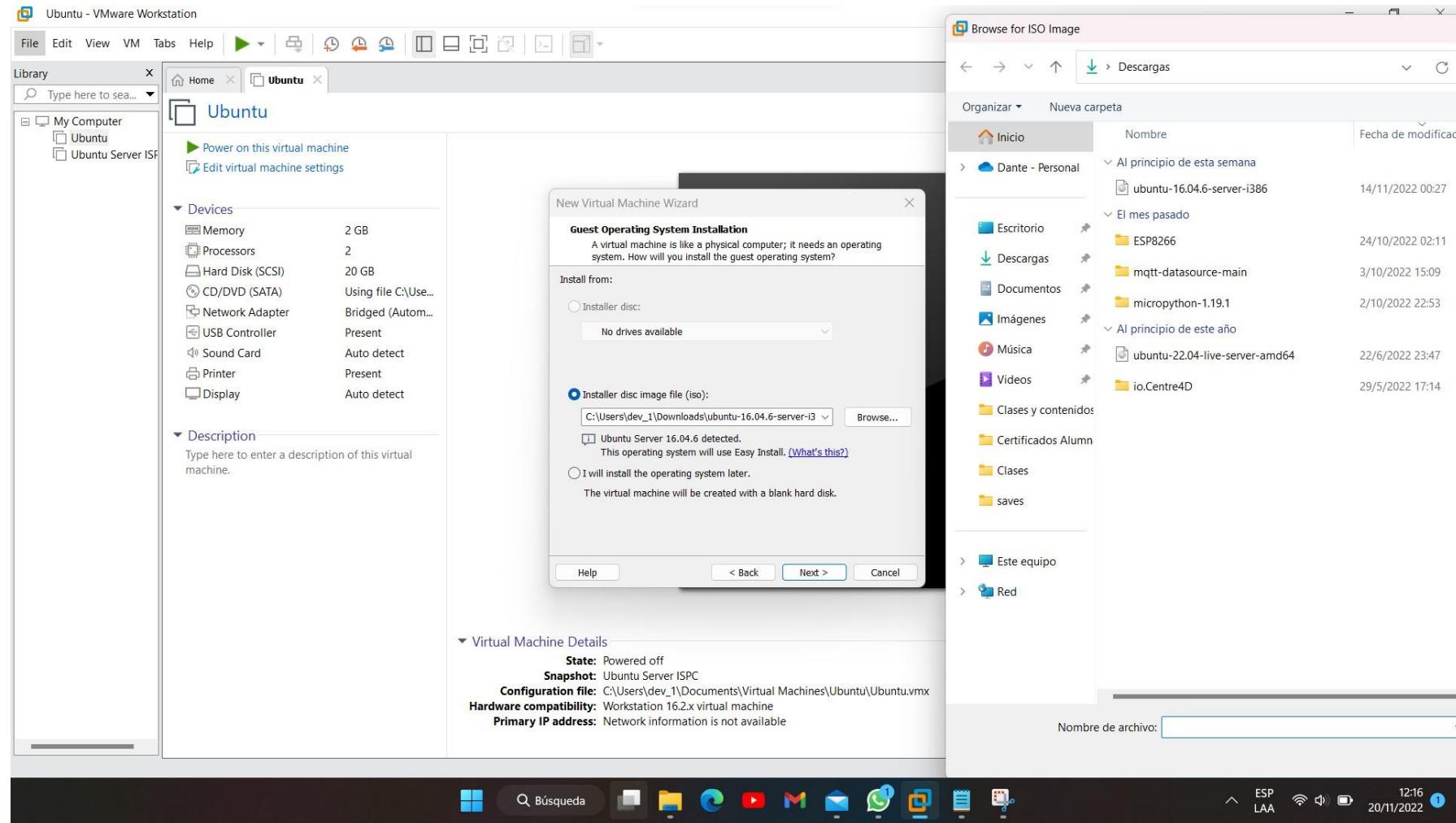


Unidad V

Creación de VM



Unidad V



Unidad V

Ubuntu - VMware Workstation

File Edit View VM Tabs Help

Library Home Ubuntu

Type here to search...

My Computer

Ubuntu

Ubuntu Server ISP

Ubuntu

Power on this virtual machine

Edit virtual machine settings

Devices

Memory	2 GB
Processors	2
Hard Disk (SCSI)	20 GB
CD/DVD (SATA)	Using file C:\Use...
Network Adapter	Bridged (Autom...
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Description

Type here to enter a description of this virtual machine.

New Virtual Machine Wizard

Easy Install Information

This is used to install Ubuntu.

Personalize Linux

Full name:

User name:

Password:

Confirm:

Help < Back Next > Cancel

Virtual Machine Details

State: Powered off

Snapshot: Ubuntu Server ISPC

Configuration file: C:\Users\dev_1\Documents\Virtual Machines\Ubuntu\Ubuntu.vmx

Hardware compatibility: Workstation 16.2x virtual machine

Primary IP address: Network information is not available

domingo, 20 de noviembre de 2022

ESP LAA 12:16 20/11/2022

Windows Start Button

Búsqueda

Icons: File Explorer, Edge, YouTube, Gmail, Mail, WhatsApp, Task View, Calendar, Task Manager

Unidad V

Ubuntu - VMware Workstation

File Edit View VM Tabs Help

Library

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Ubuntu

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- Edit virtual machine settings

Devices

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Network Adapter	Bridged (Autom...
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Description

Type here to enter a description of this virtual machine.

New Virtual Machine Wizard

Specify Disk Capacity

How large do you want this disk to be?

The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.

Maximum disk size (GB):

Recommended size for Ubuntu: 20 GB

Store virtual disk as a single file

Split virtual disk into multiple files

Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

Help < Back Next > Cancel

Virtual Machine Details

State: Powered off

Snapshot: Ubuntu Server ISPC

Configuration file: C:\Users\dev_1\Documents\Virtual Machines\Ubuntu\Ubuntu.vmx

Hardware compatibility: Workstation 16.2x virtual machine

Primary IP address: Network information is not available

12:18 20/11/2022

ESP LAA

Búsqueda

YouTube

Google

Mail

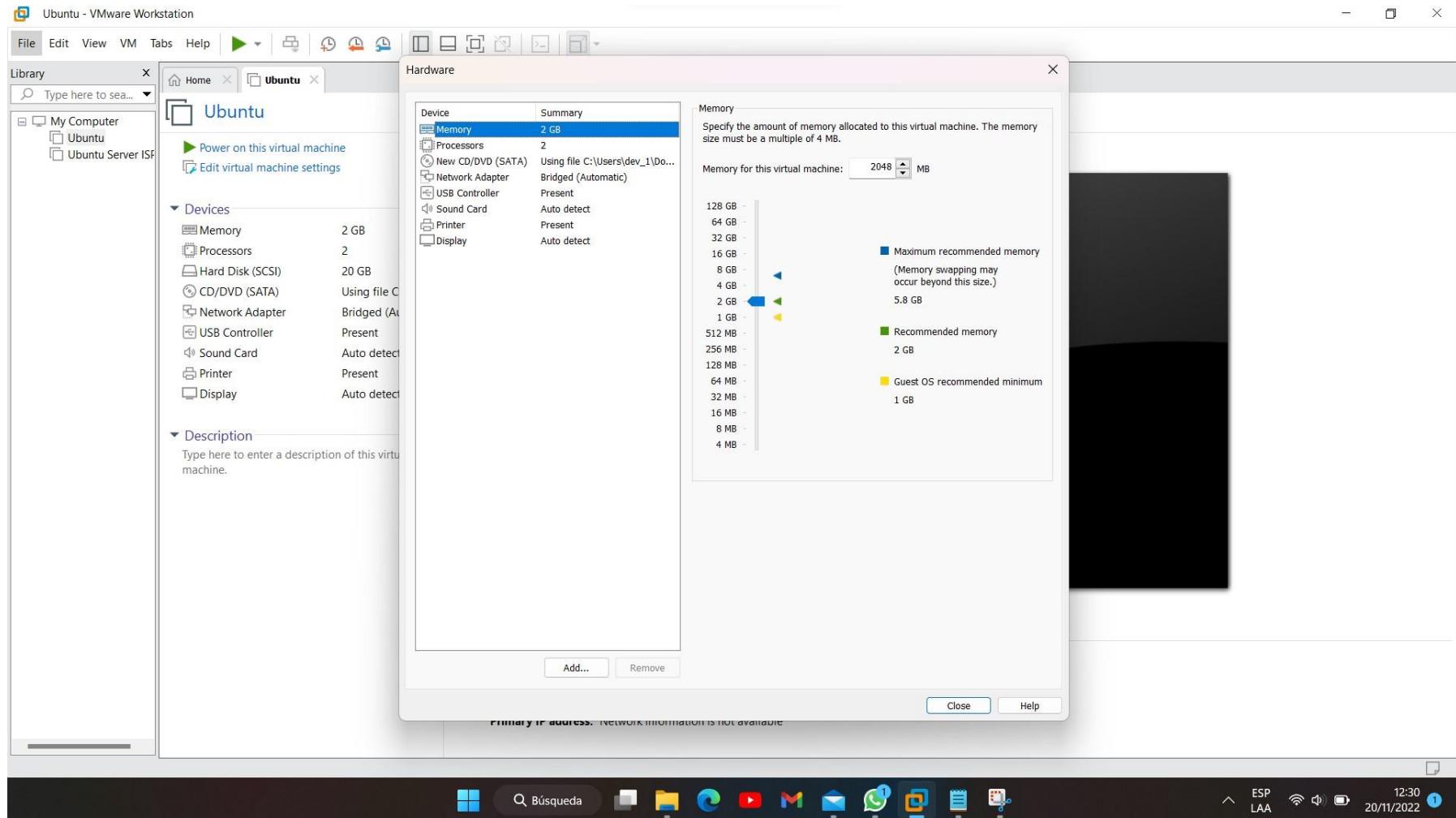
WhatsApp

OneDrive

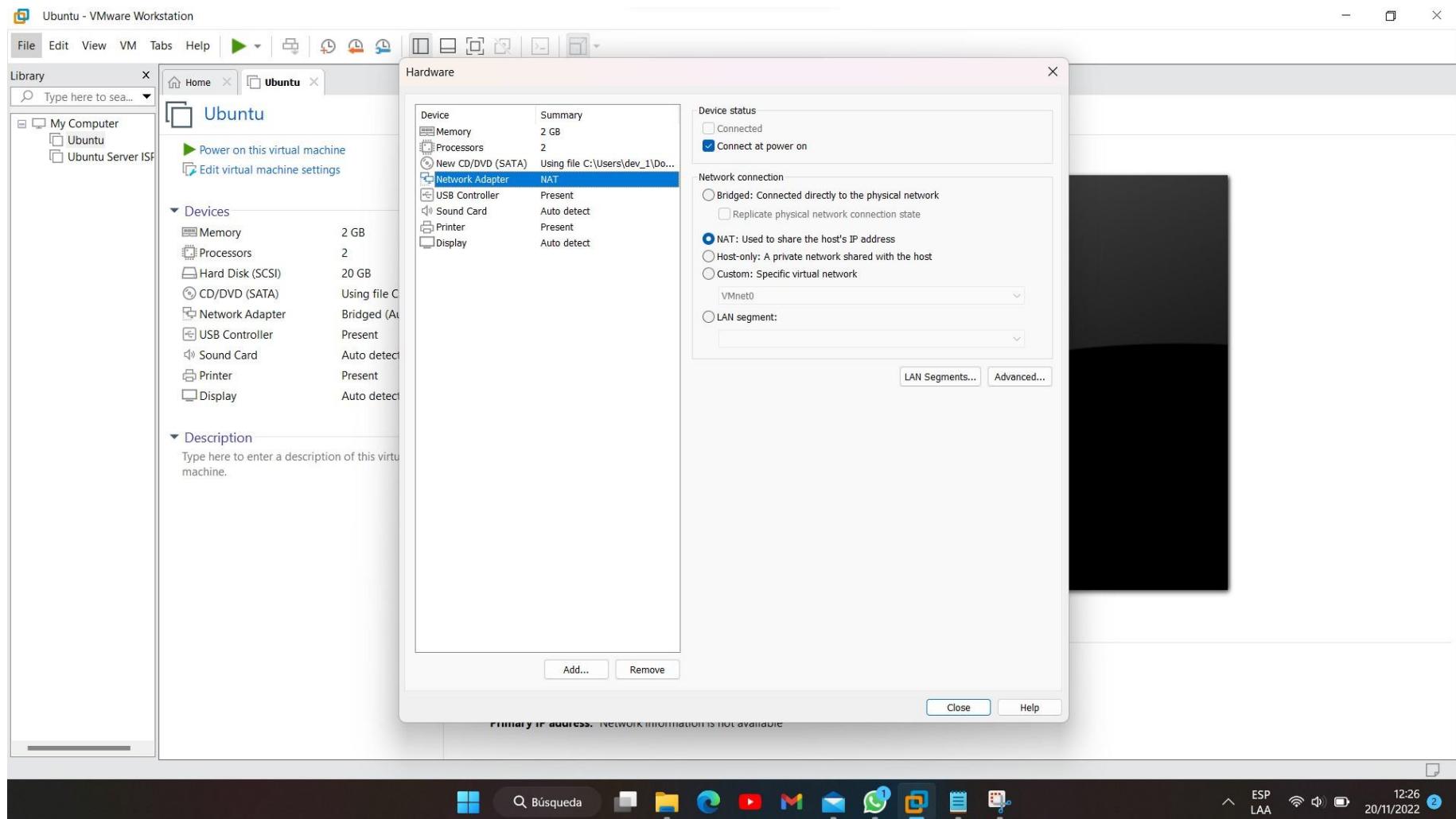
Calendar

Photos

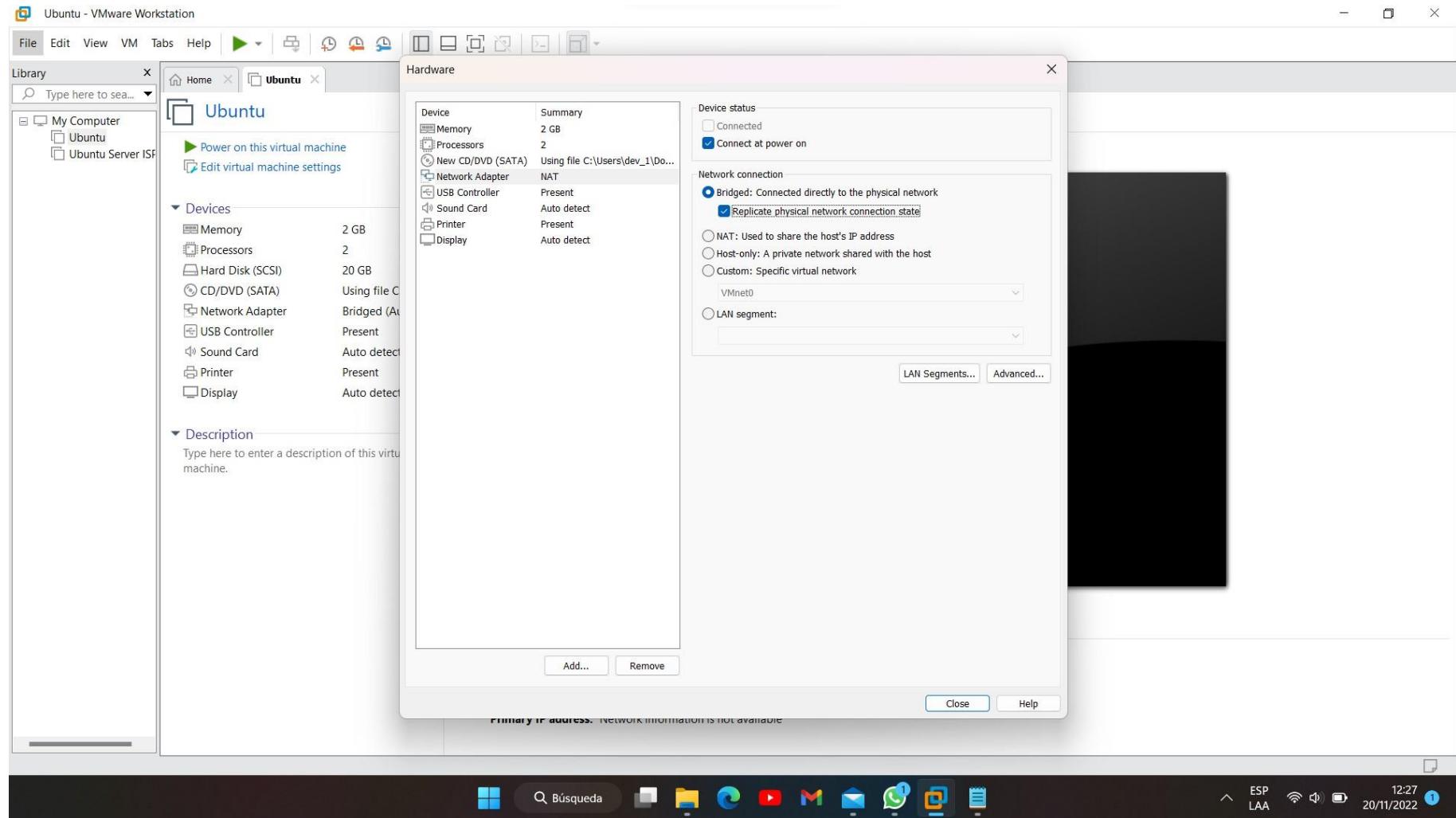
Unidad V



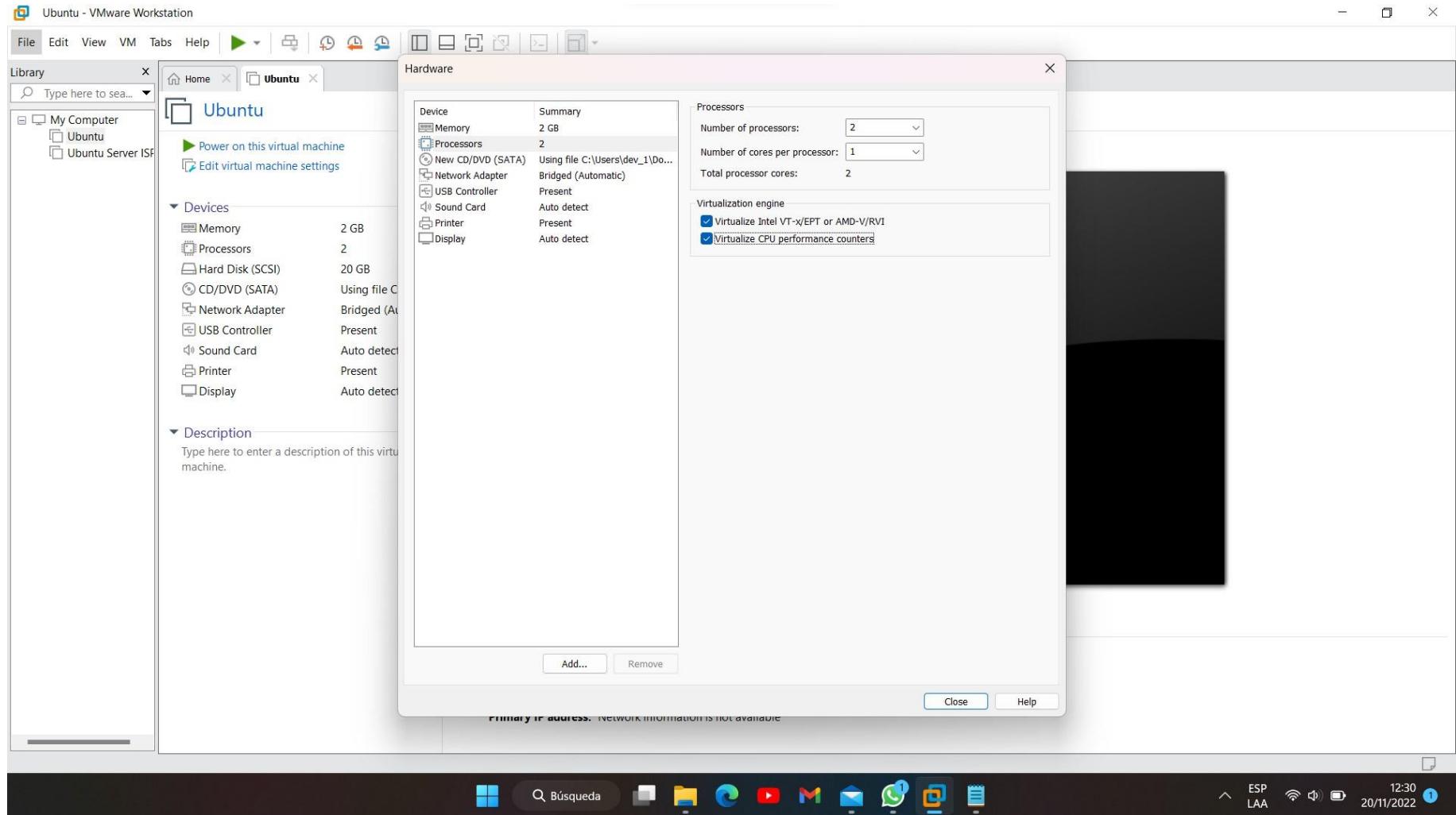
Unidad V



Unidad V



Unidad V



Unidad V

Ubuntu - VMware Workstation

File Edit View VM Tabs Help

Library Home Ubuntu

My Computer Ubuntu Ubuntu Server ISP

Power on this virtual machine Edit virtual machine settings

Devices

Memory	2 GB
Processors	2
Hard Disk (SCSI)	20 GB
CD/DVD (SATA)	Using file C:\Use...
Network Adapter	Bridged (Autom...
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Description

Type here to enter a description of this virtual machine.

New Virtual Machine Wizard

Ready to Create Virtual Machine

Click Finish to create the virtual machine and start installing Ubuntu and then VMware Tools.

The virtual machine will be created with the following settings:

Name:	Ubuntu Server ISPC 32 bits
Location:	C:\Users\dev_1\Documents\Virtual Machines\Ubuntu Se...
Version:	Workstation 16.2.x
Operating System:	Ubuntu
Hard Disk:	20 GB, Split
Memory:	2048 MB
Network Adapter:	Bridged (Automatic)
Other Devices:	2 CPU cores, CD/DVD, USB Controller, Printer, Sound C...

Customize Hardware... Power on this virtual machine after creation

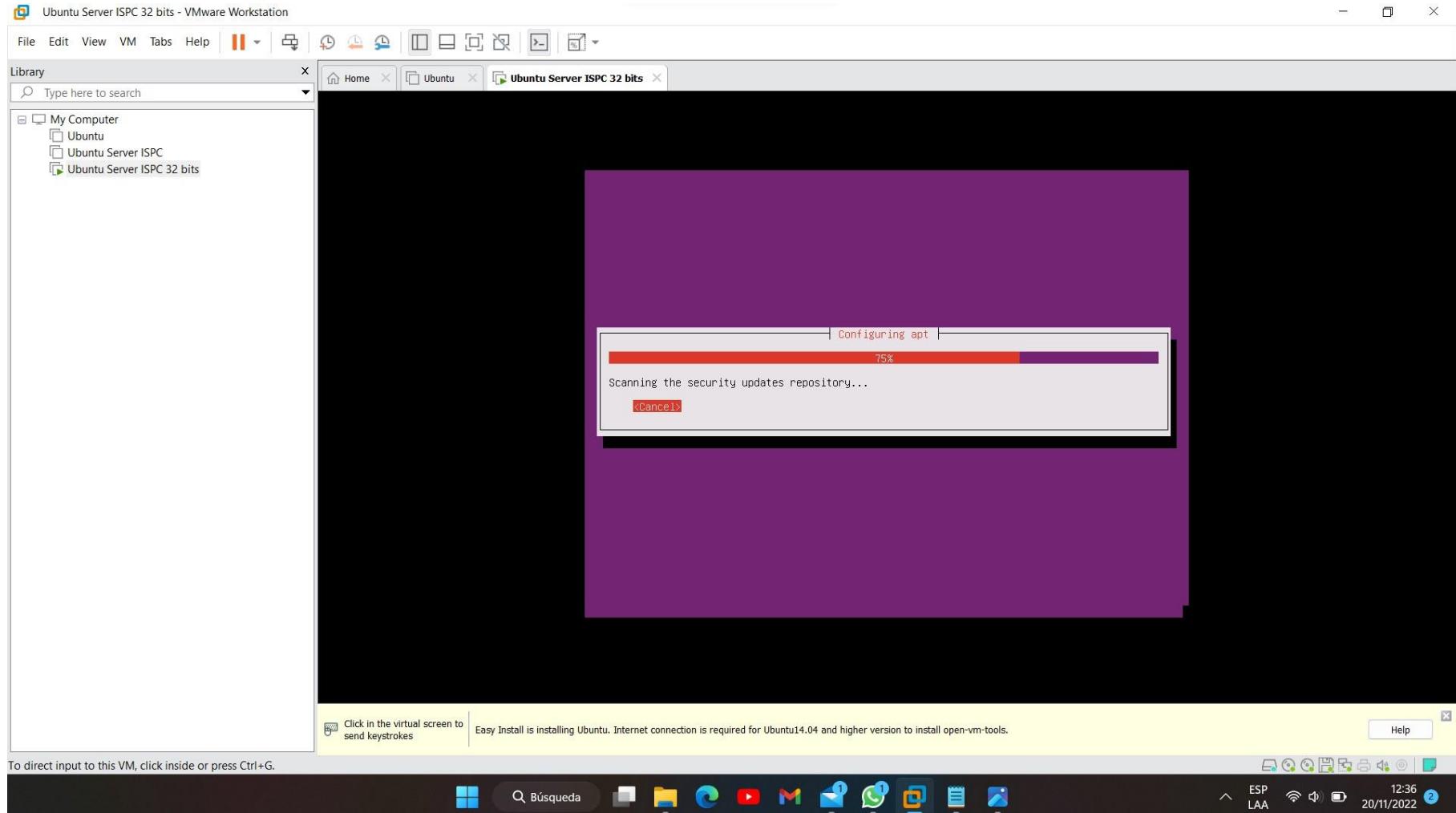
< Back Finish Cancel

Virtual Machine Details

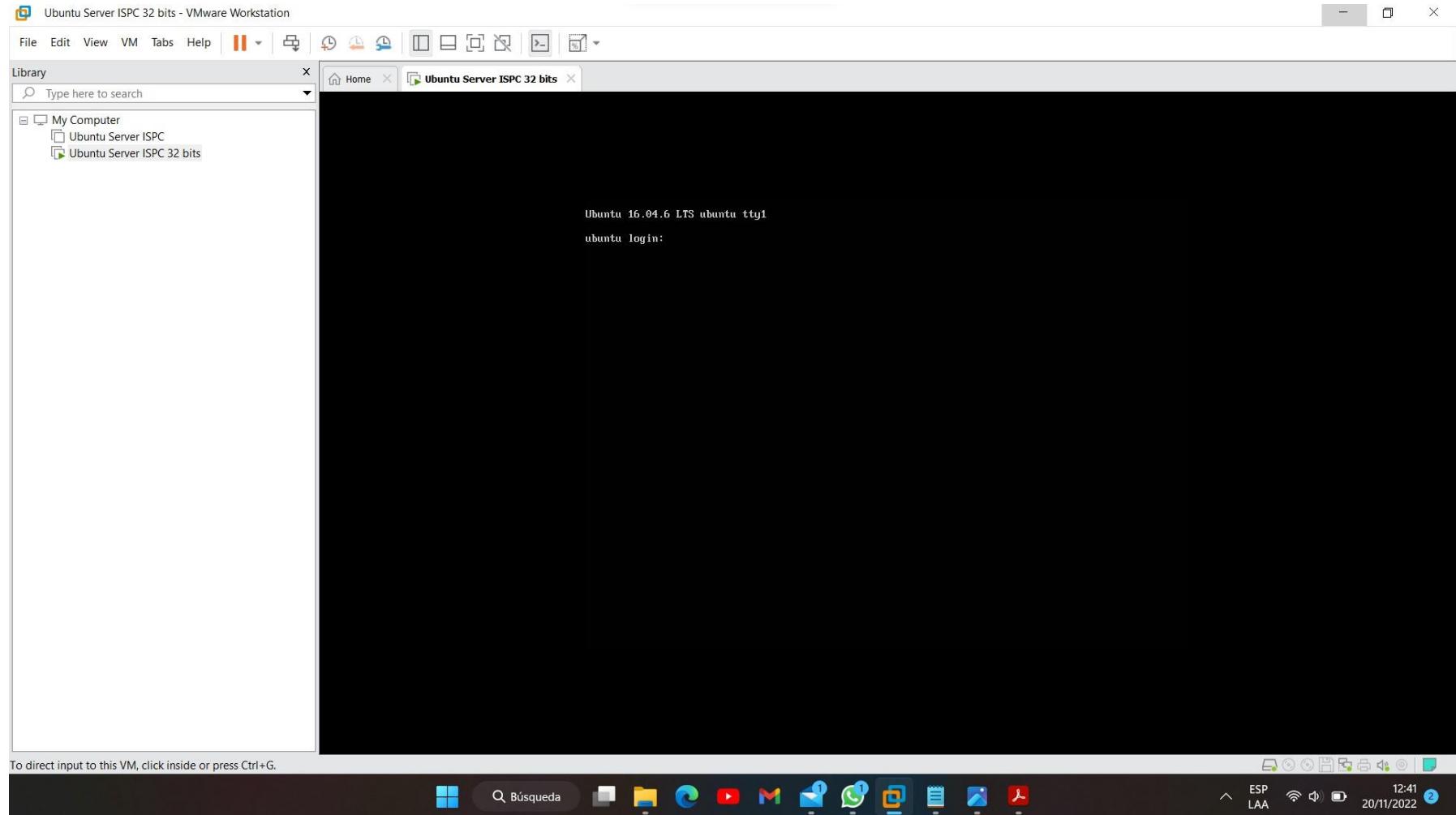
State: Powered off
Snapshot: Ubuntu Server ISPC
Configuration file: C:\Users\dev_1\Documents\Virtual Machines\Ubuntu\Ubuntu.vmx
Hardware compatibility: Workstation 16.2.x virtual machine
Primary IP address: Network information is not available

Windows Start Menu Search Bar Taskbar Icons

Unidad V

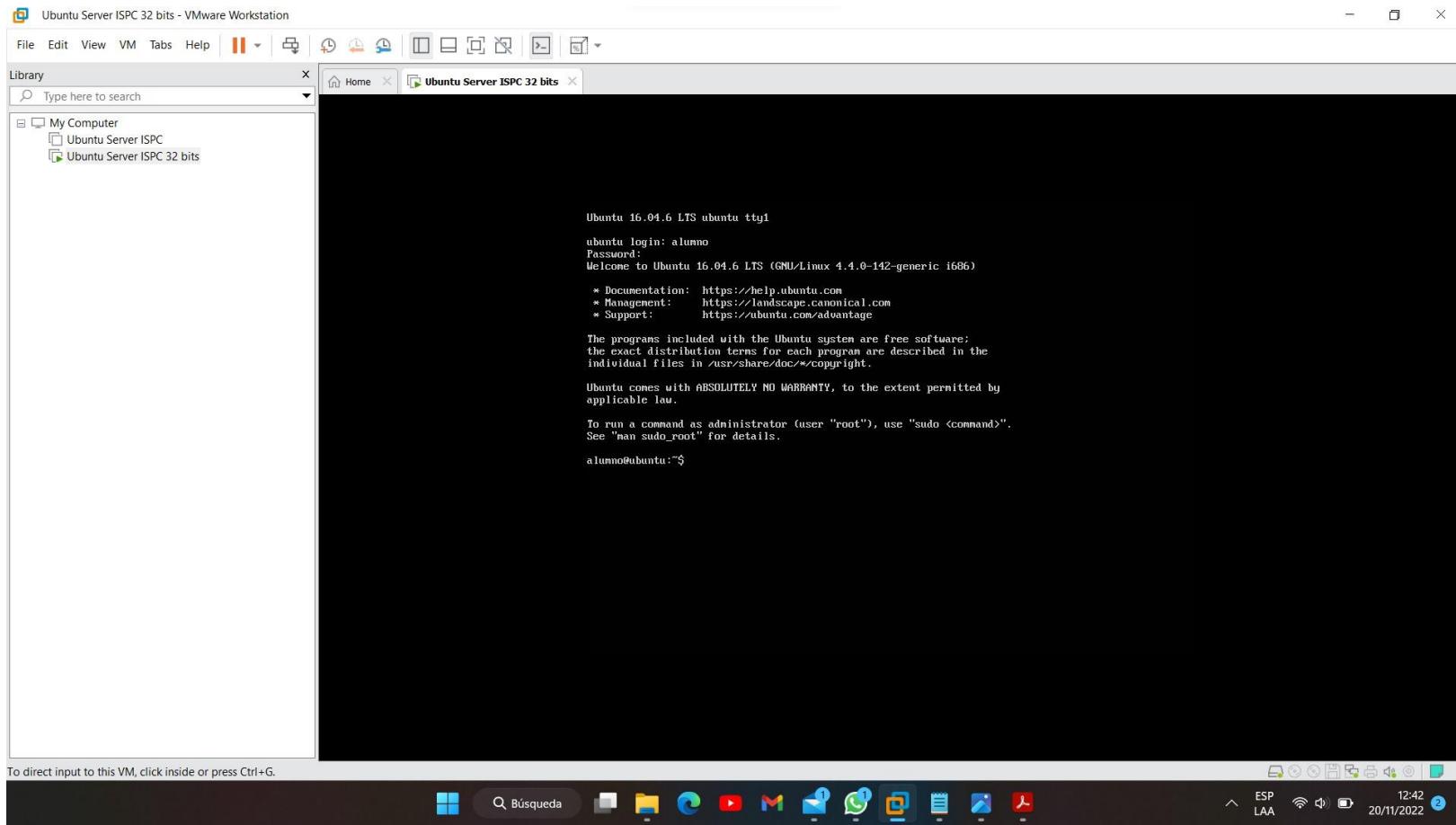


Unidad V

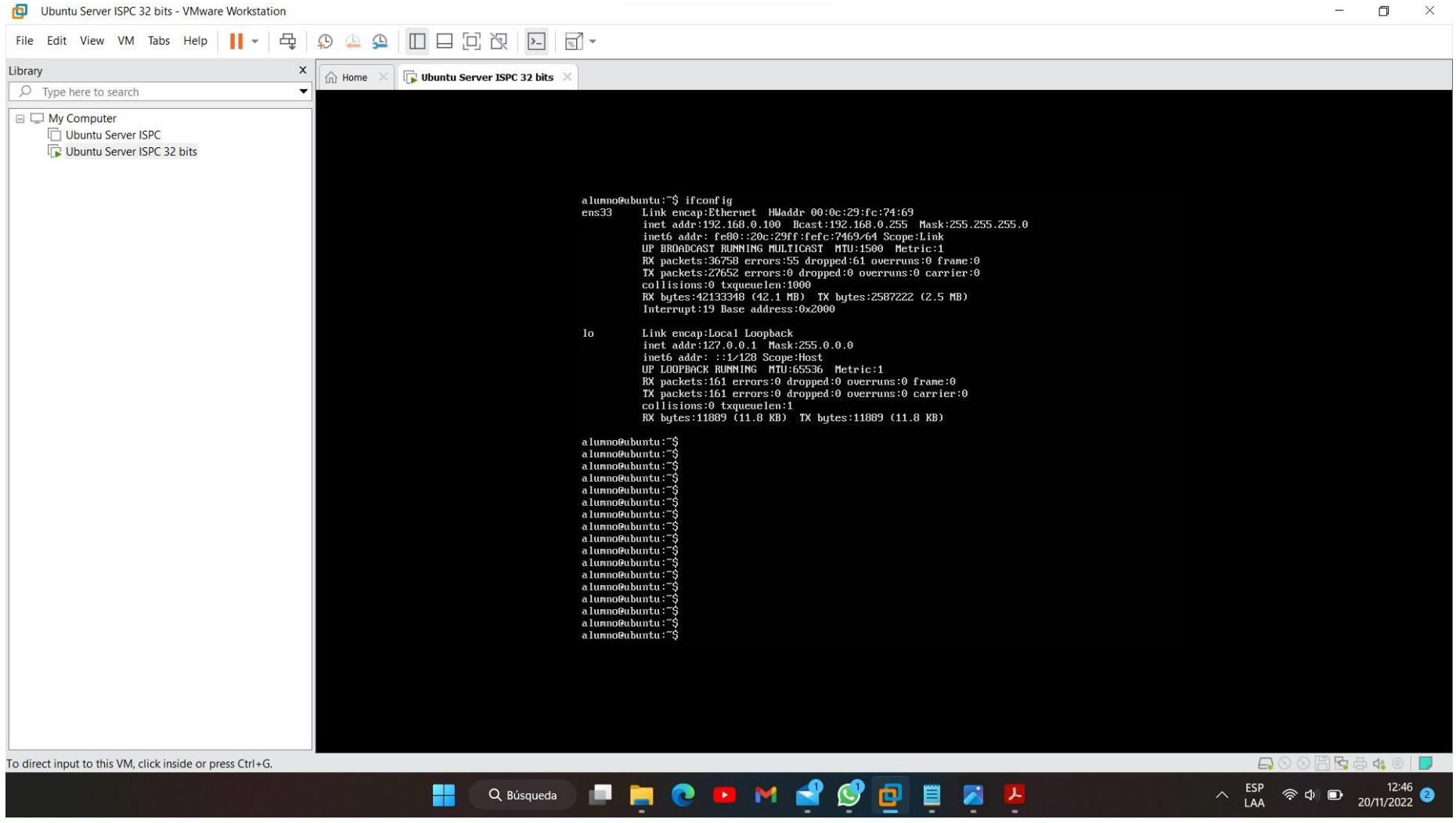


Unidad V

Inicio Servidor y cambio interfaz de red a IP estática



Unidad V



Ubuntu Server ISPC 32 bits - VMware Workstation

File Edit View VM Tabs Help

Library

Type here to search

My Computer

Ubuntu Server ISPC

Ubuntu Server ISPC 32 bits

```
alumno@ubuntu:~$ ifconfig
ens33      Link encap:Ethernet HWaddr 00:0c:29:fc:74:69
           inet addr:192.168.0.100  Bcast:192.168.0.255  Mask:255.255.255.0
           inet6 addr: fe80::20c:29ff:fe74:69 Scope:Link
             UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
             RX packets:36758 errors:55 dropped:61 overruns:0 frame:0
             TX packets:27652 errors:0 dropped:0 overruns:0 carrier:0
             collisions:0 txqueuelen:1000
             RX bytes:42133348 (42.1 MB)  TX bytes:2587222 (2.5 MB)
             Interrupt:19 Base address:0x2000

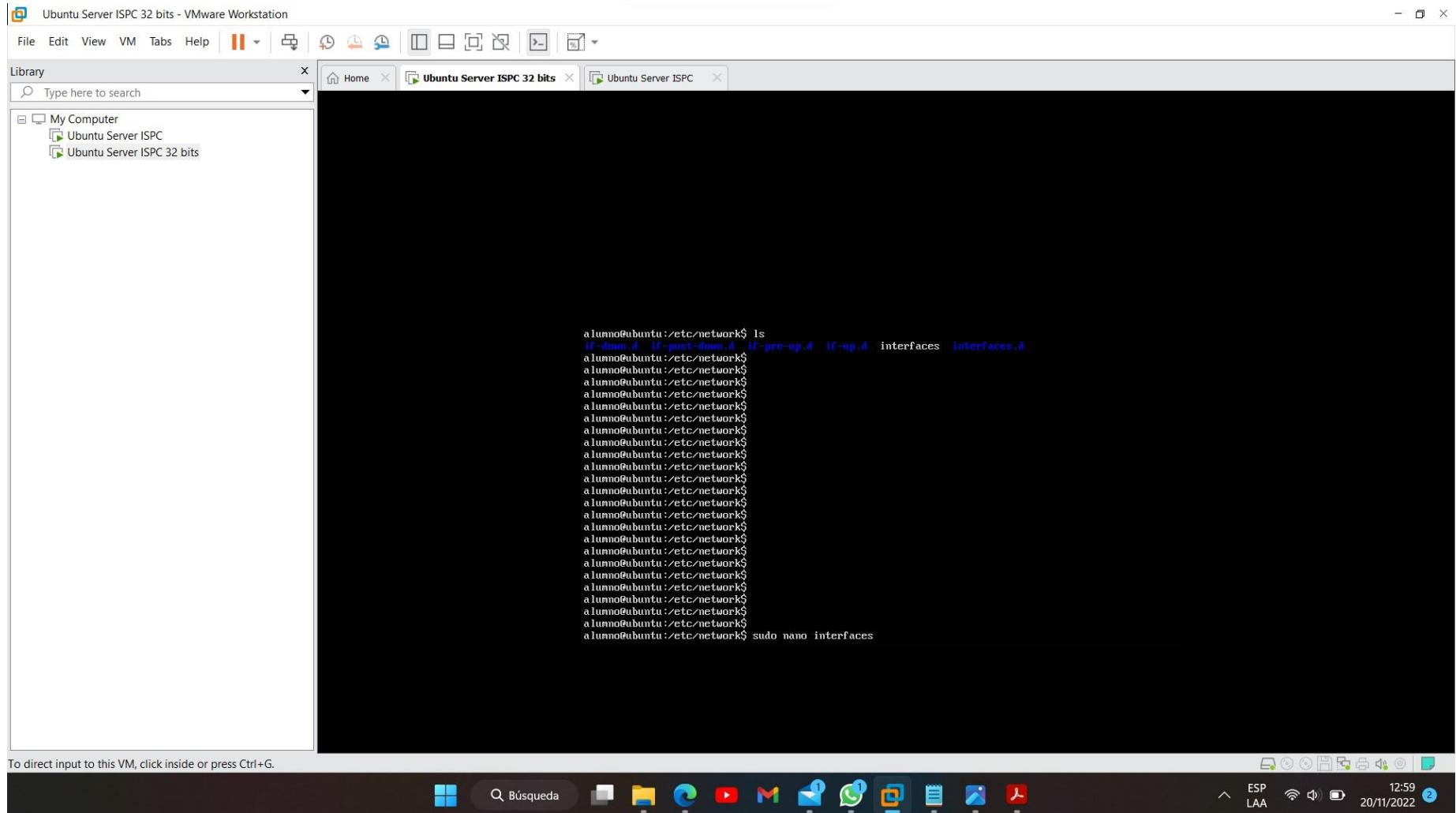
lo         Link encap:Local Loopback
           inet addr:127.0.0.1  Mask:255.0.0.0
           inet6 addr: ::1/128 Scope:Host
             UP LOOPBACK RUNNING MTU:65536  Metric:1
             RX packets:161 errors:0 dropped:0 overruns:0 frame:0
             TX packets:161 errors:0 dropped:0 overruns:0 carrier:0
             collisions:0 txqueuelen:1
             RX bytes:11889 (11.8 KB)  TX bytes:11889 (11.8 KB)

alumno@ubuntu:~$
```

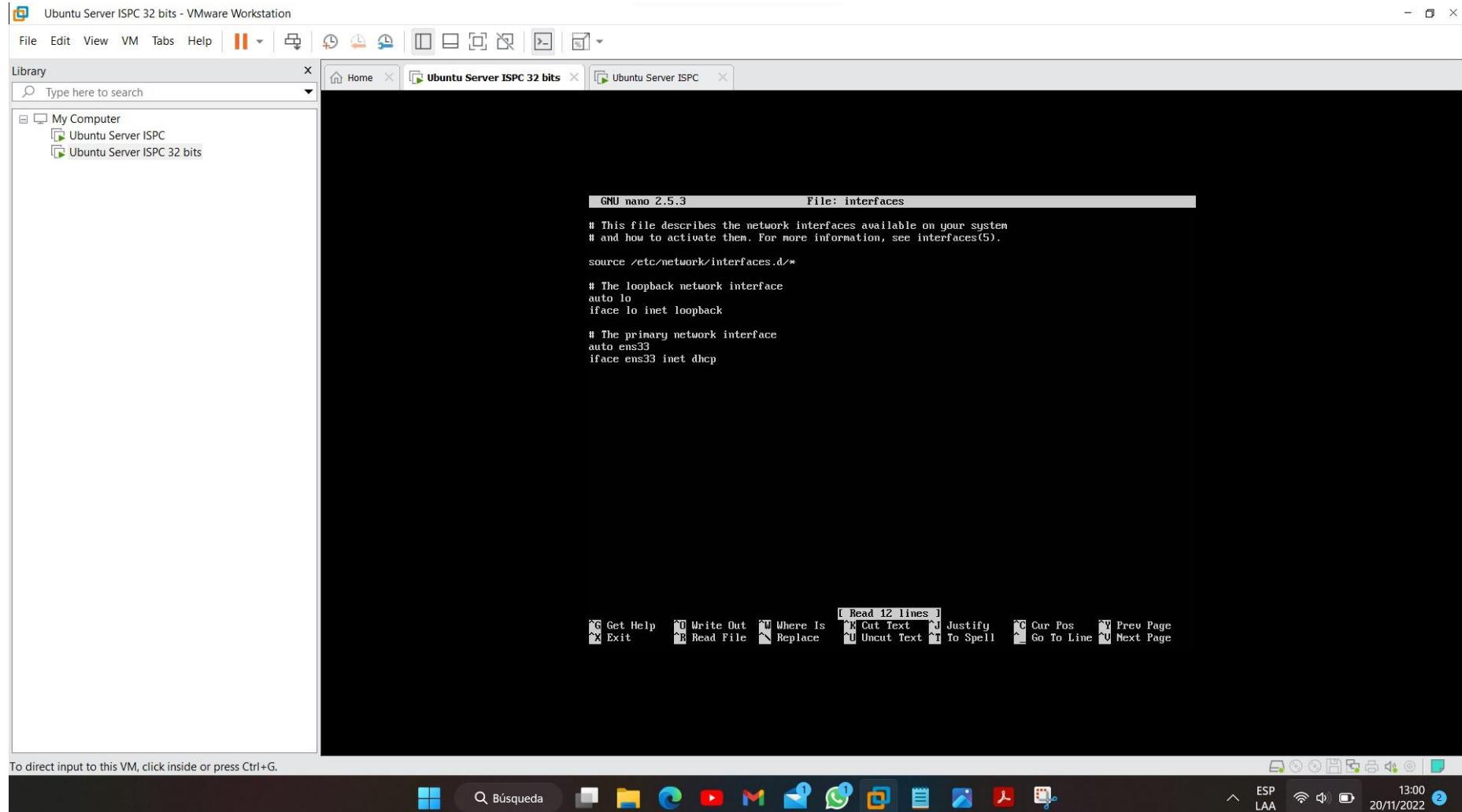
To direct input to this VM, click inside or press Ctrl+G.

ESP LAA 12:46 20/11/2022

Unidad V



Unidad V



Ubuntu Server ISPC 32 bits - VMware Workstation

File Edit View VM Tabs Help

Library

Type here to search

My Computer

- Ubuntu Server ISPC
- Ubuntu Server ISPC 32 bits

Ubuntu Server ISPC 32 bits

Ubuntu Server ISPC

GNU nano 2.5.3 File: interfaces

```
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

source /etc/network/interfaces.d/*

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto ens33
iface ens33 inet dhcp
```

Read 12 lines

Get Help Write Out Where Is Cut Text Justify Cur Pos Prev Page

Exit Read File Replace Uncut Text To Spell Go To Line Next Page

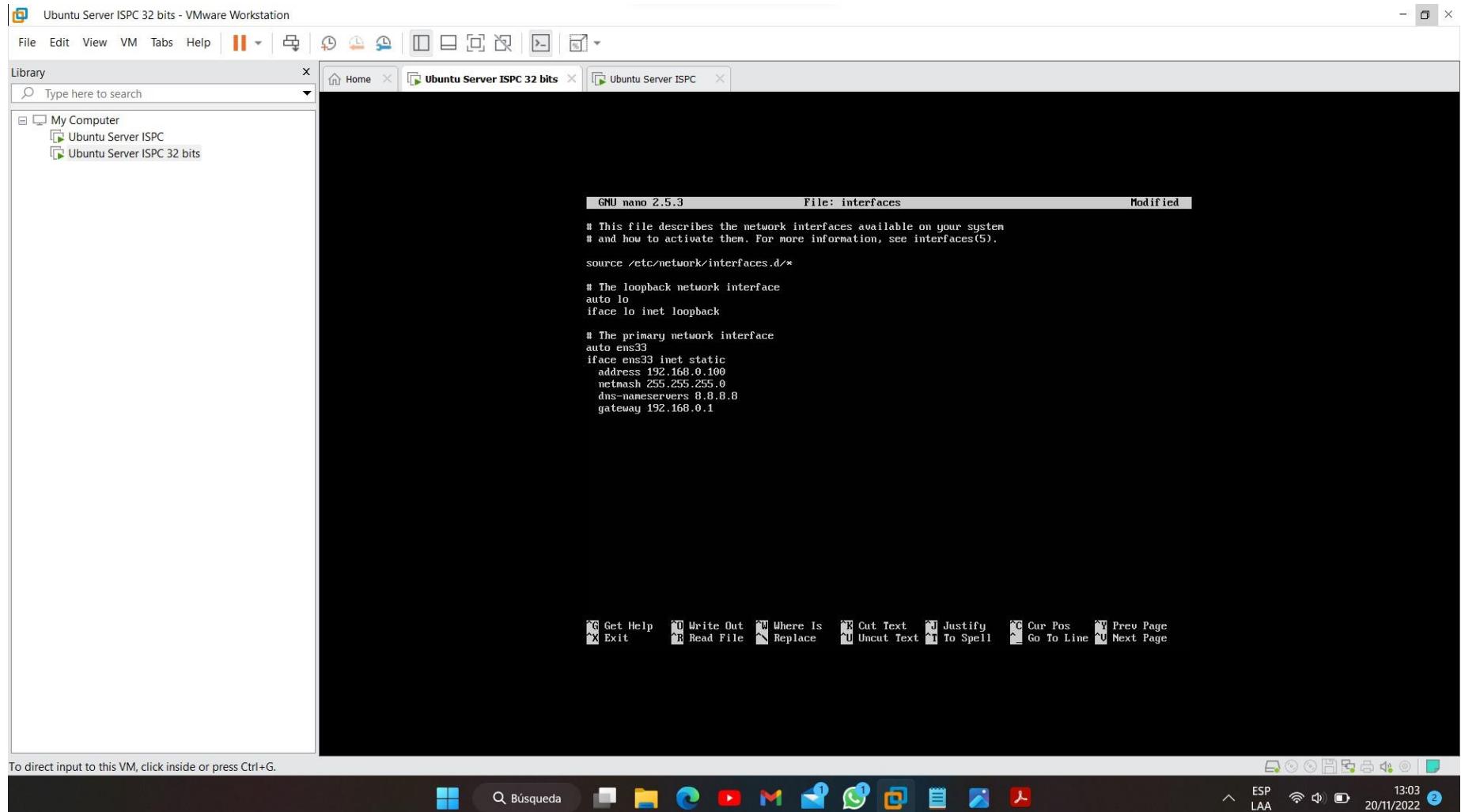
To direct input to this VM, click inside or press Ctrl+G.

Windows Start Button Búsqueda

Taskbar icons: File Explorer, Edge, YouTube, Gmail, WhatsApp, Microsoft Store, Calendar, Photos, PDF Reader, File Manager, Task View, Taskbar Icons.

System tray: Network (ESP LAA), Battery (20/11/2022), Volume, 13:00.

Unidad V



The screenshot shows a VMware Workstation interface with a single running VM titled "Ubuntu Server ISPC 32 bits". Inside the VM, a terminal window is open, showing the contents of the /etc/network/interfaces file. The file includes configurations for the loopback interface (lo) and the primary network interface (ens33), which is set to static IP 192.168.0.100. The terminal window has a standard nano editor menu bar at the bottom.

```
GNU nano 2.5.3           File: interfaces          Modified
#
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).
#
source /etc/network/interfaces.d/*
#
# The loopback network interface
auto lo
iface lo inet loopback

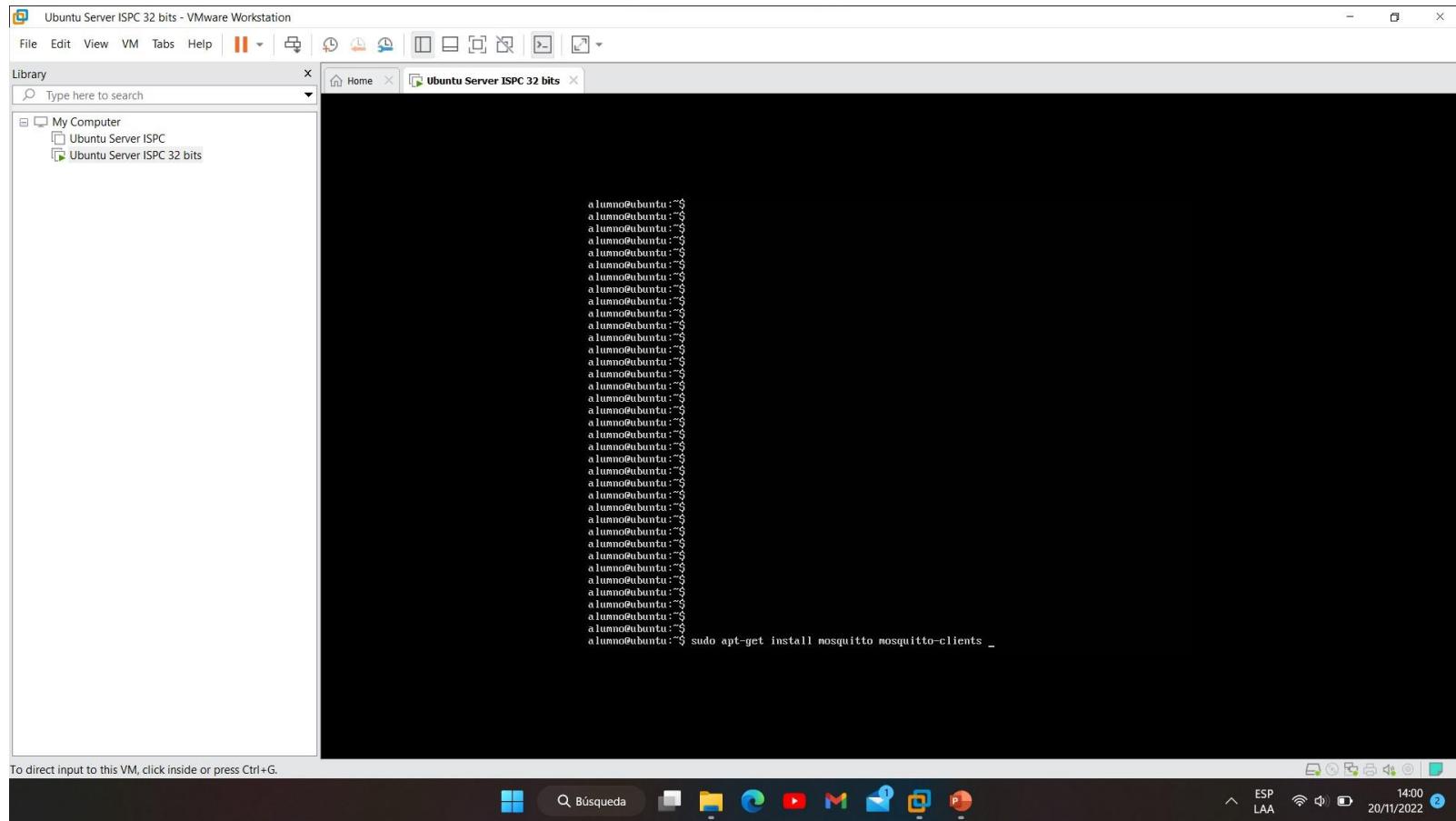
#
# The primary network interface
auto ens33
iface ens33 inet static
    address 192.168.0.100
    netmask 255.255.255.0
    dns-nameservers 8.8.8.8
    gateway 192.168.0.1
```

To direct input to this VM, click inside or press Ctrl+G.

Windows taskbar icons include: Start, Search, File Explorer, Edge, YouTube, Mail, WhatsApp, Microsoft Store, Calendar, Photos, and People. System tray icons show battery level (ESP LAA), signal strength, and date/time (13:03, 20/11/2022).

Unidad V

Instalación y configuración broker Mosquitto



Unidad V

Ubuntu Server ISPC 32 bits - VMware Workstation

File Edit View VM Tabs Help | 

Library  Type here to search

My Computer

- Ubuntu Server ISPC
- Ubuntu Server ISPC 32 bits

Ubuntu Server ISPC 32 bits

```
Preparing to unpack .../mosquitto_1.4.8-1ubuntu0.16.04.7_i386.deb ...
Unpacking mosquitto (1.4.8-1ubuntu0.16.04.7) ...
Selecting previously unselected package mosquito-clients.
Preparing to unpack .../mosquitto-clients_1.4.8-1ubuntu0.16.04.7_i386.deb ...
Unpacking mosquito-clients (1.4.8-1ubuntu0.16.04.7) ...
Selecting previously unselected package tcpd.
Preparing to unpack .../tcpd_7.6.q-25_i386.deb ...
Unpacking tcpd (7.6.q-25) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for libc-bin (2.23-0ubuntu11) ...
Processing triggers for systemd (229-4ubuntu21.16) ...
Processing triggers for ureadahead (0.100.0-19) ...
Setting up libcap0:i386 (7.6.q-25) ...
Setting up libc-ares2:i386 (1.10.0-1ubuntu0.2) ...
Setting up libmosquitto1:i386 (1.4.8-1ubuntu0.16.04.7) ...
Setting up libuv1:i386 (1.8.0-1) ...
Setting up libev4 (1:4.22-1) ...
Setting up libuebsockets7:i386 (1.7.1-1) ...
Setting up mosquitto (1.4.8-1ubuntu0.16.04.7) ...
Setting up mosquito-clients (1.4.8-1ubuntu0.16.04.7) ...
Setting up tcpd (7.6.q-25) ...
Processing triggers for libc-bin (2.23-0ubuntu11) ...
Processing triggers for systemd (229-4ubuntu21.16) ...
Processing triggers for ureadahead (0.100.0-19) ...
alumno@ubuntu:~$ systemctl status mosquito.service
* mosquito.service - LSB: mosquitto MQTT v3.1 message broker
  Loaded: loaded (/etc/init.d/mosquitto; bad; vendor preset: enabled)
  Active: active (running) since Sun 2022-11-20 09:01:38 PST; 50s ago
    Docs: man:systemd-sysv-generator(8)
   CGrou...
  ↳ 1687 /usr/sbin/mosquitto -c /etc/mosquitto/mosquitto.conf

Nov 20 09:01:38 ubuntu systemd[1]: Starting LSB: mosquitto MQTT v3.1 message broker...
Nov 20 09:01:38 ubuntu mosquitto[1671]: * Starting network daemon: mosquitto
Nov 20 09:01:38 ubuntu mosquitto[1671]: ...done.
Nov 20 09:01:38 ubuntu systemd[1]: Started LSB: mosquitto MQTT v3.1 message broker.
alumno@ubuntu:"$ -
```

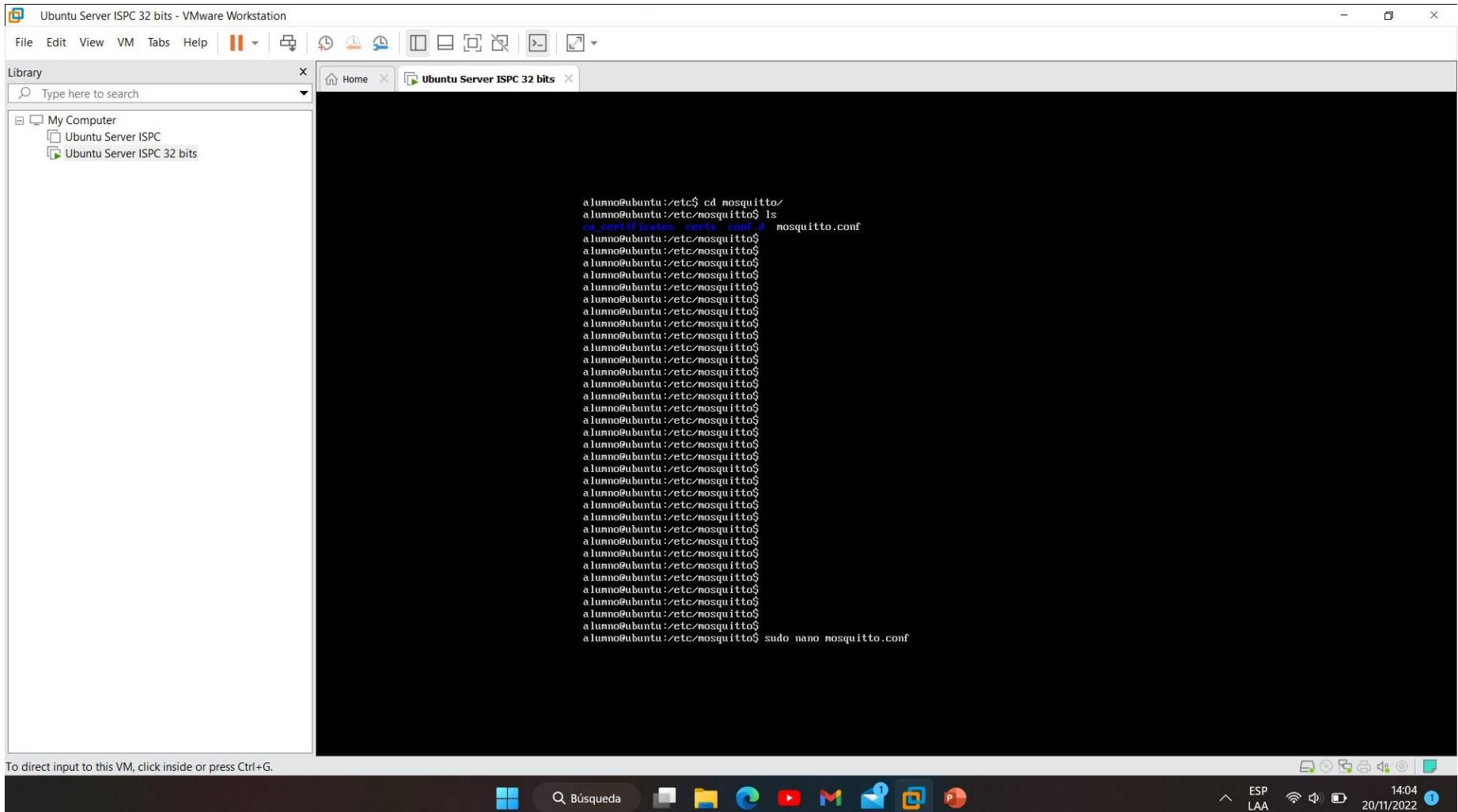
To direct input to this VM, click inside or press Ctrl+G.

 Búsqueda          

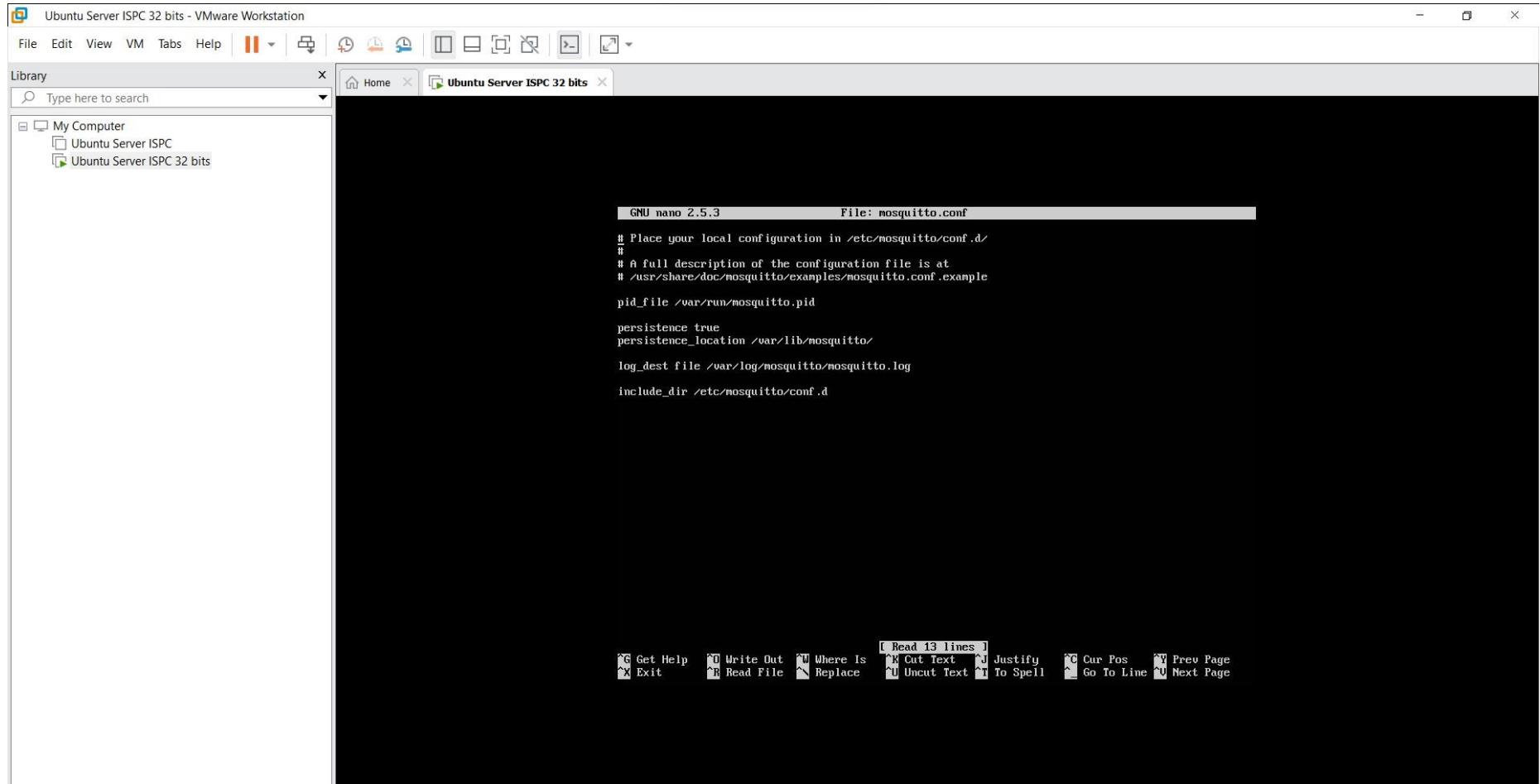
Mostrar escritorio 

ESP LAA  14:02 20/11/2022 

Unidad V



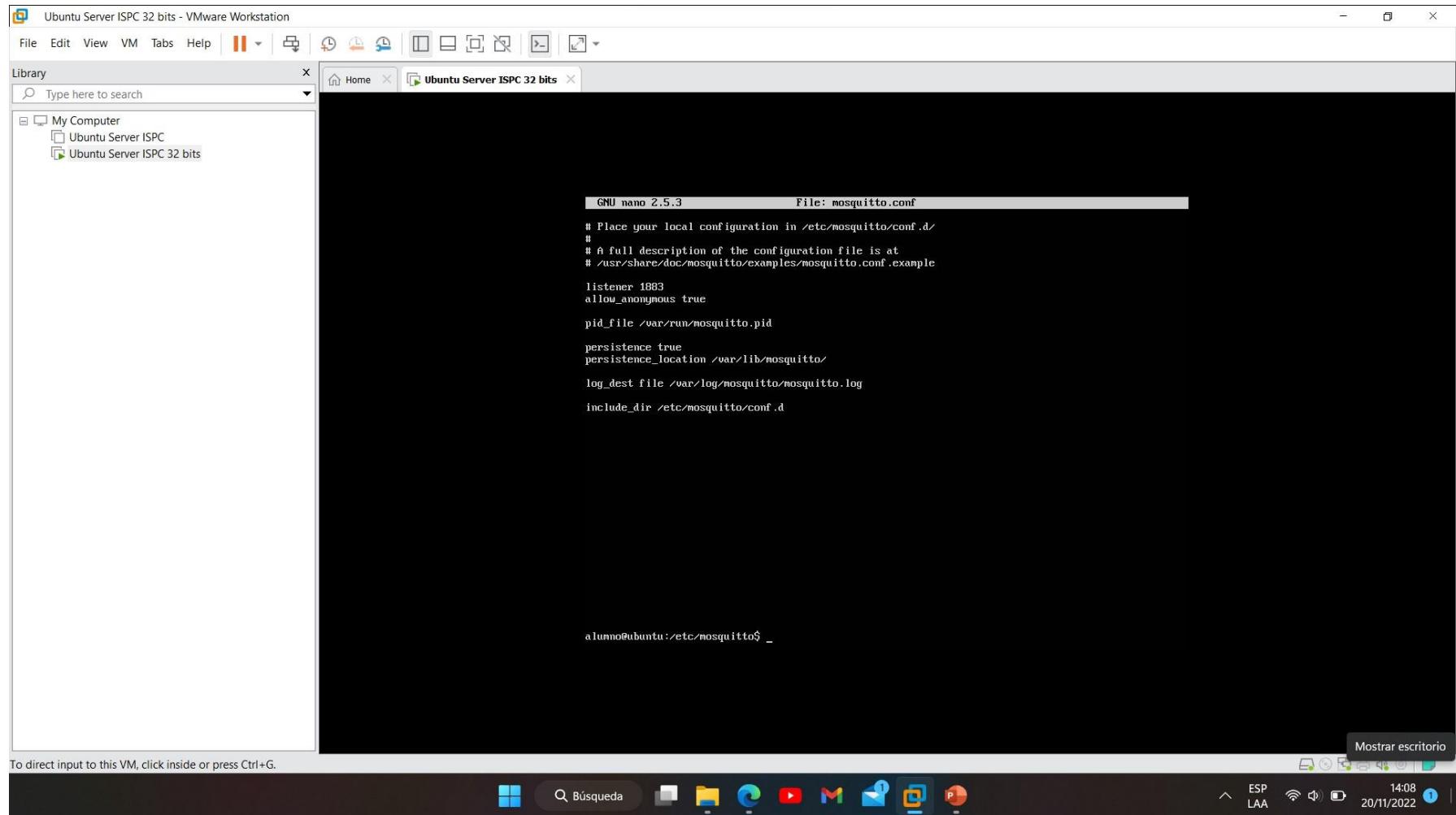
Unidad V



To direct input to this VM, click inside or press Ctrl+G.



Unidad V



The screenshot shows a VMware Workstation interface with a single virtual machine named "Ubuntu Server ISPC 32 bits". The terminal window is open to the file "/etc/mosquitto/mosquitto.conf" using the nano editor. The configuration file contains the following content:

```
GNU nano 2.5.3          File: mosquitto.conf
#
# Place your local configuration in /etc/mosquitto/conf.d/
# A full description of the configuration file is at
# /usr/share/doc/mosquitto/examples/mosquitto.conf.example
#
listener 1883
allow_anonymous true

pid_file /var/run/mosquitto.pid

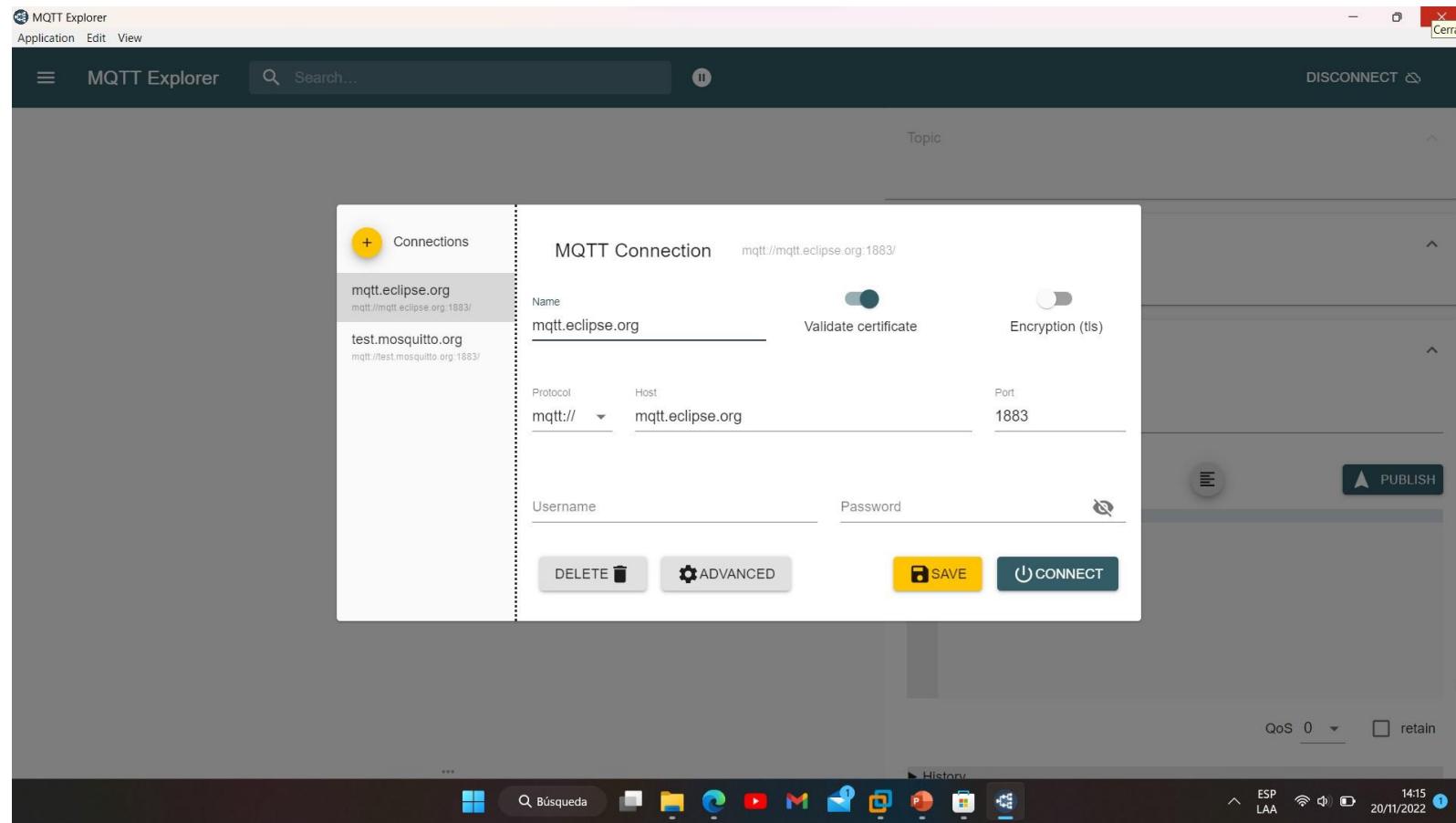
persistence true
persistence_location /var/lib/mosquitto/

log_dest file /var/log/mosquitto/mosquitto.log
include_dir /etc/mosquitto/conf.d
```

The terminal prompt at the bottom indicates the user is "alumno@ubuntu:/etc/mosquitto\$". The VMware status bar at the bottom right shows the date and time as "20/11/2022 14:08".

Unidad V

Comprobar broker con dos clientes (uno en SO host otro en celular, ambos en la misma red)



Unidad V

MQTT Explorer

Application Edit View

MQTT Explorer Search... DISCONNECT

Topic

+ Connections

- mqtt.eclipse.org mqtt://mqtt.eclipse.org:1883/
- test.mosquitto.org mqtt://test.mosquitto.org:1883/
- mosquitto 32** mqtt://192.168.0.100:1883/

MQTT Connection mqtt://192.168.0.100:1883/

Name: mosquitto 32 Validate certificate: Encryption (tls):

Protocol: mqtt:// Host: 192.168.0.100 Port: 1883

Username: Password: 

PUBLISH 

QoS: 0 retain

Búsqueda History

ESP LAA 14:16 20/11/2022 1



Unidad V

MQTT Explorer

Application Edit View

MQTT Explorer Search... DISCONNECT Cerrar

▼ 192.168.0.100
► \$SYS (47 topics, 1906 messages)
▼ Host
prueba = Prueba de Broker

Topic 1

Host

Value

Publish

Topic: Host/prueba

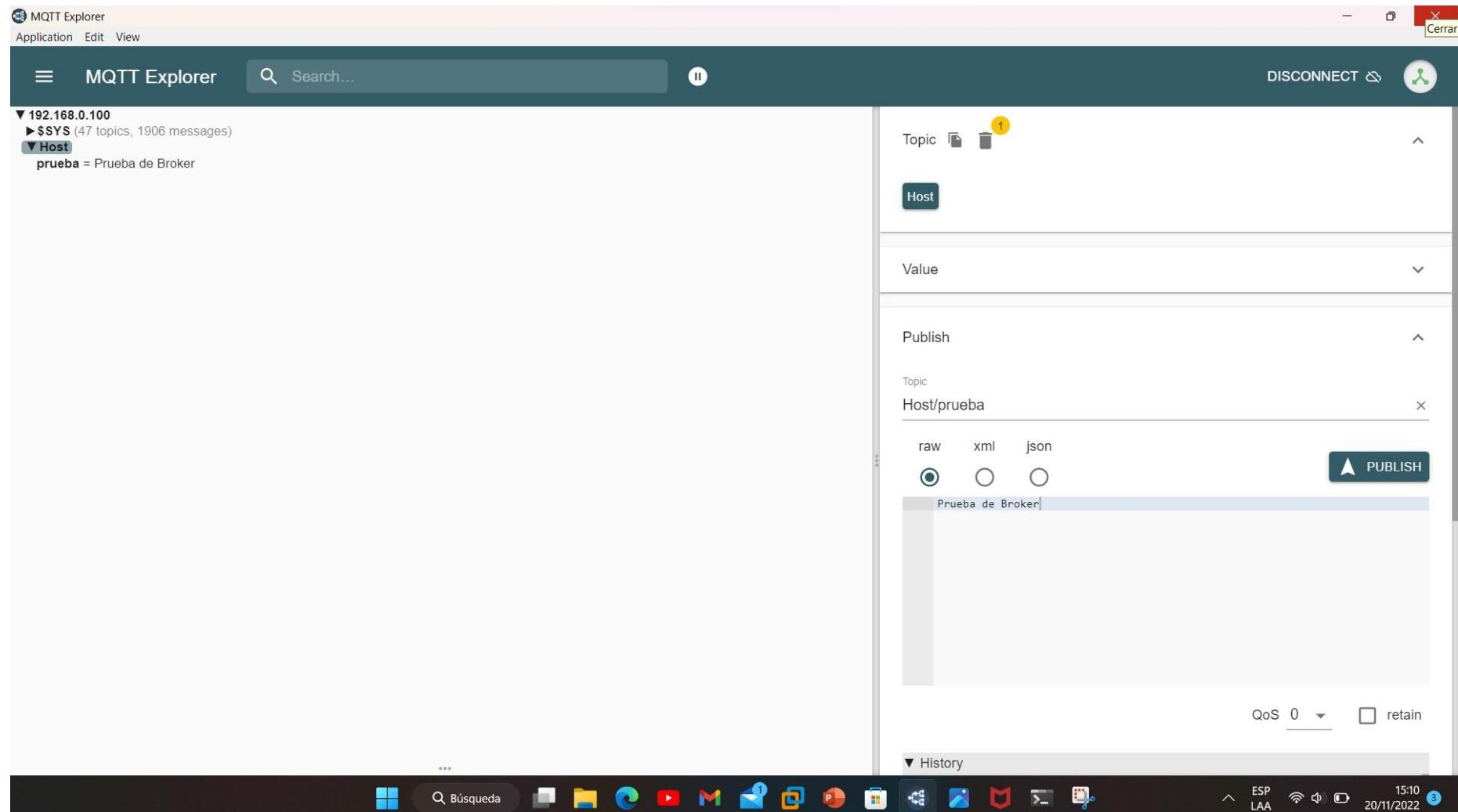
raw xml json

PUBLISH

Prueba de Broker

QoS 0 retain

History





MQTT Explorer

Application Edit View

MQTT Explorer

Search...



DISCONNECT

Value

+ Connections

- mqtt.eclipse.org
mqtt://mqtt.eclipse.org:1883/
- test.mosquitto.org
mqtt://test.mosquitto.org:1883/
- mosquitto32
mqtt://192.168.0.100:1883/

MQTT Connection mqtt://192.168.0.100:1883/

Subscription

+ ADD

- #
- \$SYS/#

PUBLISH

MQTT Client ID
mqtt-explorer-2c9ddf80

CERTIFICATES BACK

QoS 0 ▾ retain

History 3

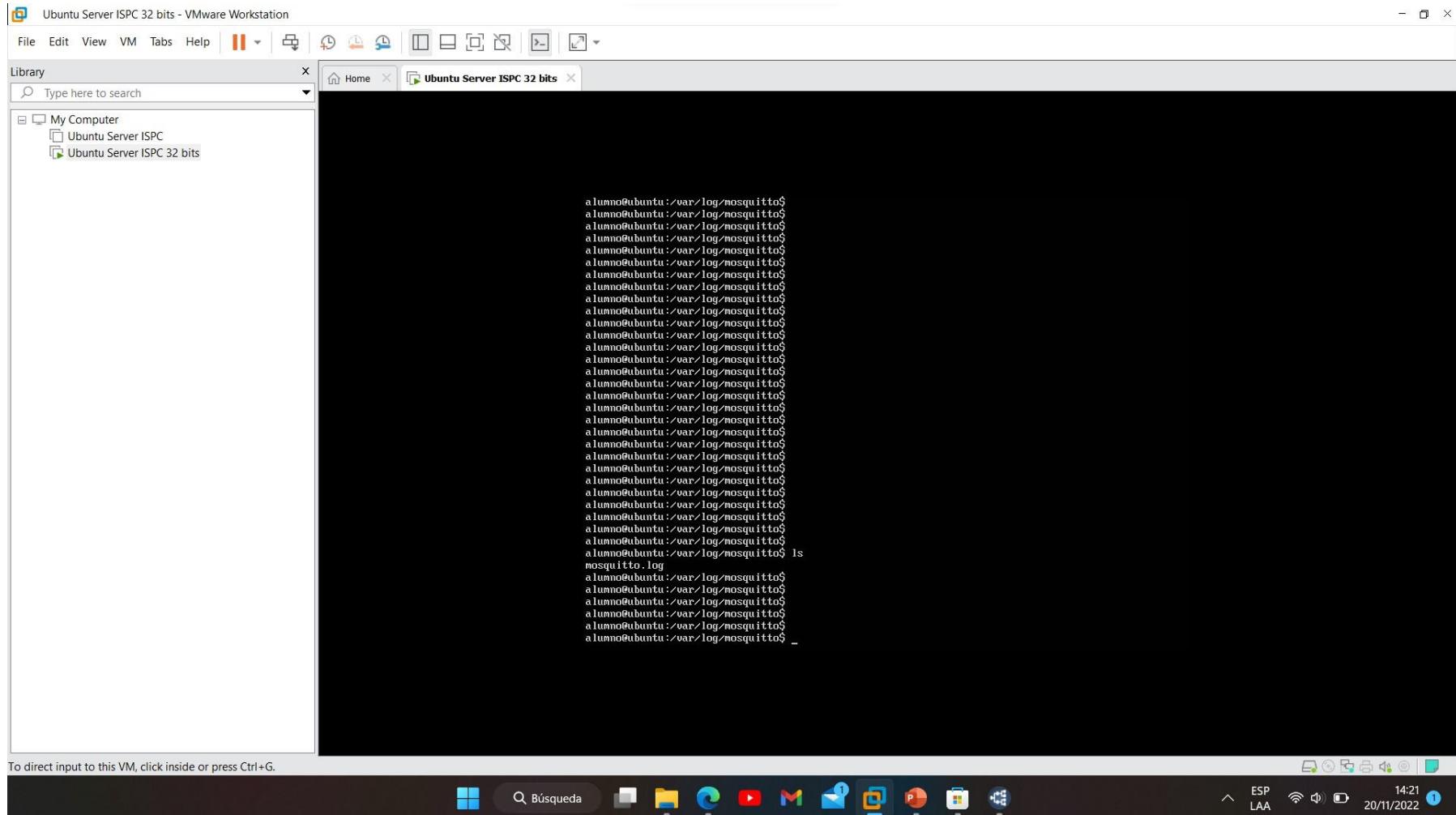
Stats

Mostrar escritorio



ESP LAA 14:43 20/11/2022

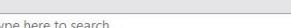
Unidad V



Unidad V

Ubuntu Server ISPC 32 bits - VMware Workstation

File Edit View VM Tabs Help | 

Library  Type here to search

My Computer

- Ubuntu Server ISPC
- Ubuntu Server ISPC 32 bits

Ubuntu Server ISPC 32 bits

```
aumno@ubuntu:~$ ls
aumno@ubuntu:~$ cd /var/log/
aumno@ubuntu:/var/log$ ls
mosquitto.log
aumno@ubuntu:/var/log$ sudo nano mosquitto.log
aumno@ubuntu:/var/log$
```

To direct input to this VM, click inside or press Ctrl+G.

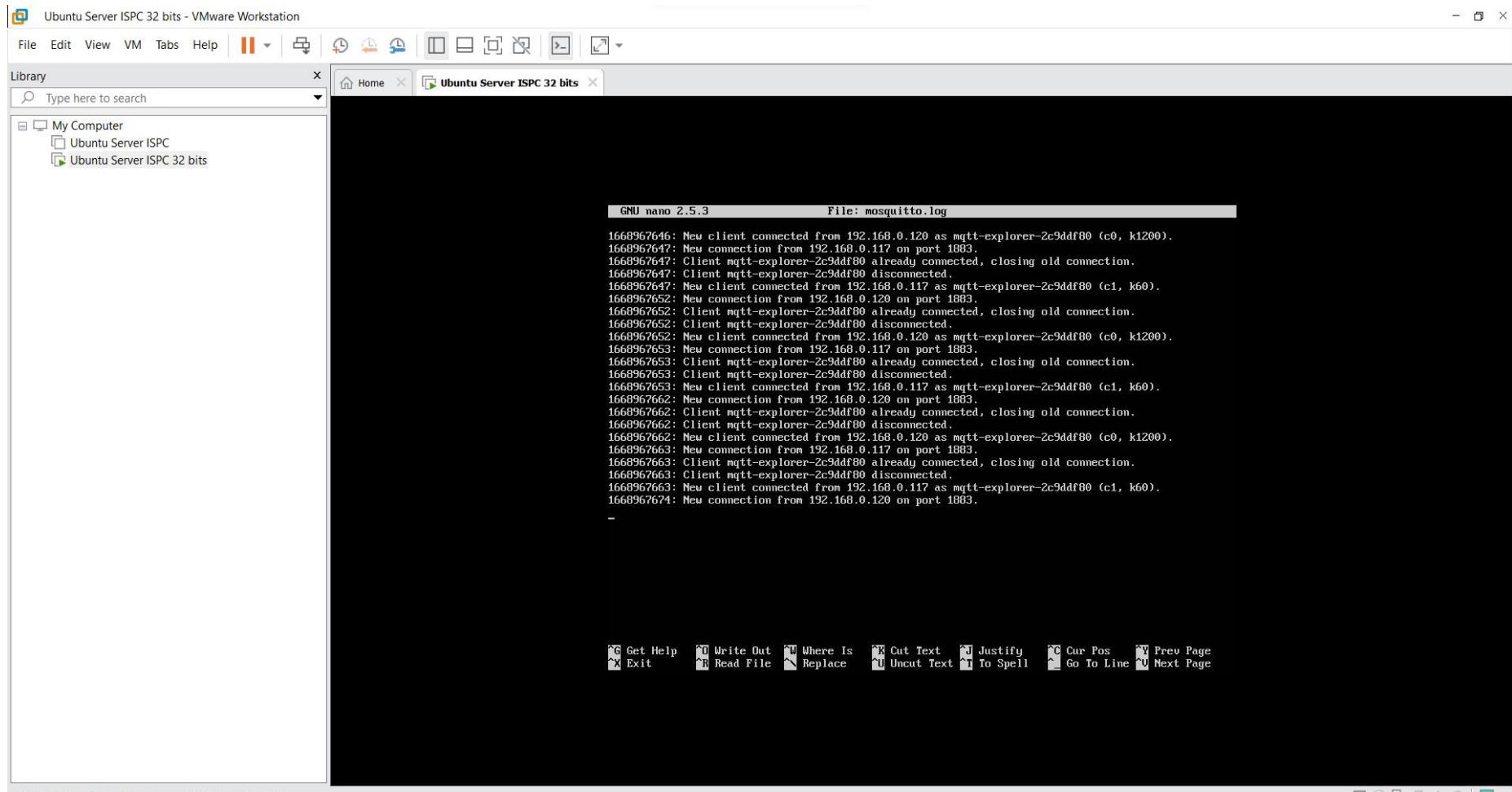
Windows Taskbar:

- Búsqueda
- Explorador de archivos
- Comunicación
- YouTube
- Gmail
- Outlook
- PowerPoint
- OneDrive
- Notas
- Calendario
- Control Panel

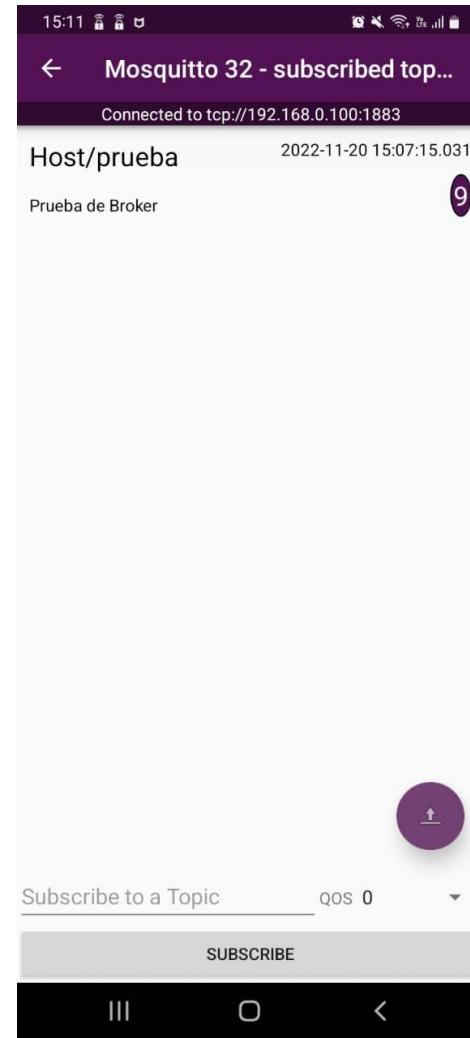
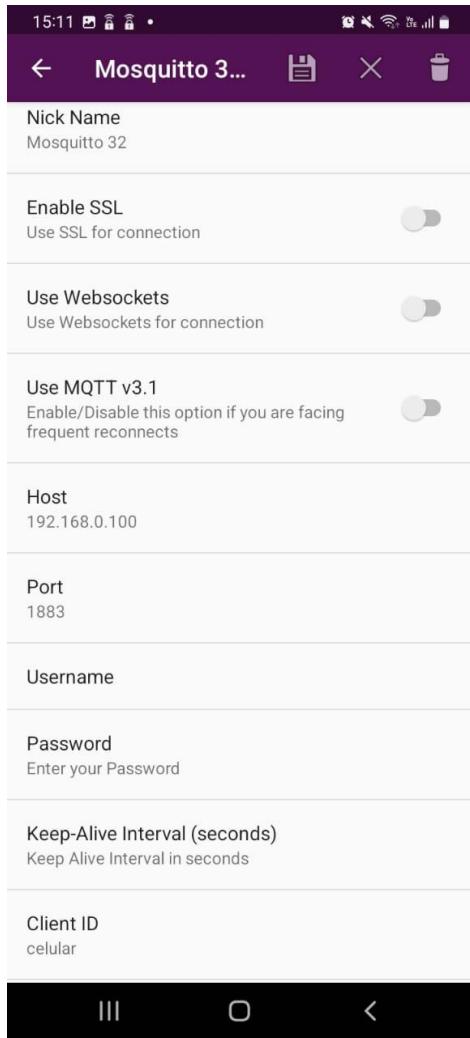
System tray:

- ESP LAA
- Wi-Fi signal
- Battery icon
- 20/11/2022

Unidad V

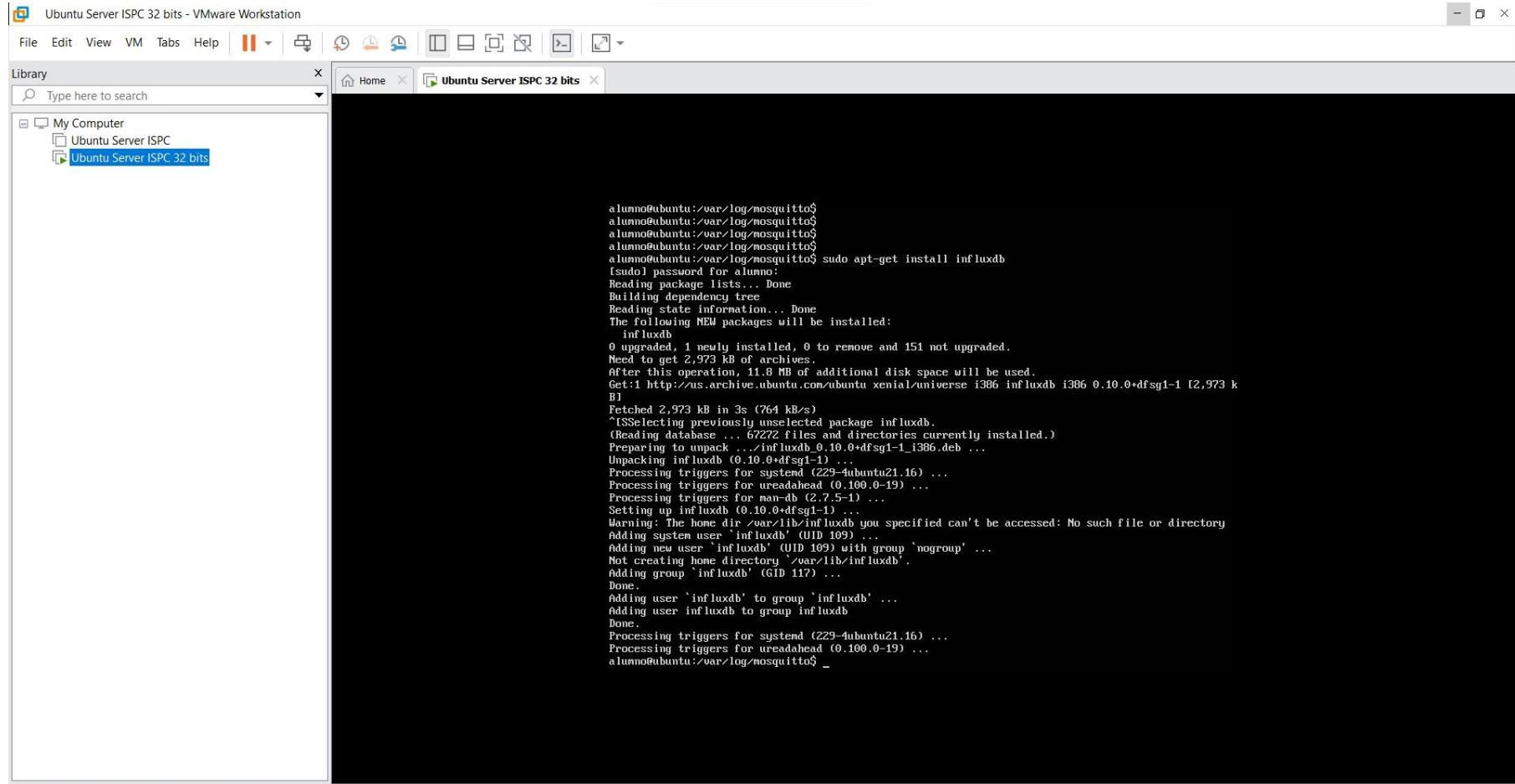


Unidad V



Unidad V

Instalación y configuración InfluxDB



The screenshot shows a VMware Workstation interface with a single VM named "Ubuntu Server ISPC 32 bits". The terminal window displays the following command-line session:

```
alumno@ubuntu:~$ sudo apt-get install influxdb
[sudo] password for alumno:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
influxdb
0 upgraded, 1 newly installed, 0 to remove and 151 not upgraded.
Need to get 2,973 kB of archives.
After this operation, 11.8 MB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu xenial/universe i386 influxdb i386 0.10.0+dfsg1-1 [2,973 kB]
Fetched 2,973 kB in 3s (764 kB/s)
^ISSelecting previously unselected package influxdb.
(Reading database ... 67272 files and directories currently installed.)
Preparing to unpack .../influxdb_0.10.0+dfsg1-1_i386.deb ...
Unpacking influxdb (0.10.0+dfsg1-1) ...
Processing triggers for systemd (229-4ubuntu21.16) ...
Processing triggers for ureadahead (0.100.0-19) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up influxdb (0.10.0+dfsg1-1) ...
Warning: The home dir '/var/lib/influxdb' you specified can't be accessed: No such file or directory
Adding system user 'influxdb' (UID 109) ...
Adding new user 'influxdb' (UID 109) with group 'nogroup' ...
Not creating home directory '/var/lib/influxdb'.
Adding group 'influxdb' (GID 117) ...
Done.
Adding user 'influxdb' to group 'influxdb' ...
Adding user influxdb to group influxdb
Done.
Processing triggers for systemd (229-4ubuntu21.16) ...
Processing triggers for ureadahead (0.100.0-19) ...
alumno@ubuntu:~$ _
```

To direct input to this VM, click inside or press Ctrl+G.

Unidad V

Ubuntu Server ISPC 32 bits - VMware Workstation

File Edit View VM Tabs Help

Ubuntu Server ISPC 32 bits

```
Adding system user 'influxdb' (UID 109) ...
Adding new user 'influxdb' (UID 109) with group 'nogroup' ...
Not creating home directory '/var/lib/influxdb'.
Adding group 'influxdb' (GID 117) ...
Done.
Adding user 'influxdb' to group 'influxdb' ...
adding user influxdb to group influxdb
Done.
Processing triggers for systemd (229-4ubuntu21.16) ...
Processing triggers for ureadahead (0.100.0-19) ...
alumno@ubuntu:~$ systemctl status influxdb.service
influxdb.service           initrd-switch-root.service
                         initrd-switch-root.target
initrd-cleanup.service    initrd.target
initrd-fs.target          initrd-udevadm-cleanup-db.service
initrd-parse-etc.service  init.scope
initrd-root-fs.target
alumno@ubuntu:~$ systemctl status influxdb.service
* influxdb.service - InfluxDB is an open-source, distributed, time series database
  Loaded: loaded (/lib/systemd/system/influxdb.service; enabled; vendor preset: enabled)
  Active: active (running) since Sun 2022-11-20 10:37:36 PST; 2min 36s ago
    Docs: man:influxd(1)
   Main PID: 2197 (influxd)
     Group: /system.slice/influxdb.service
           └─2197 /usr/bin/influxd -c /etc/influxdb/influxdb.conf

Nov 20 10:37:48 ubuntu influxd[2197]: 2022/11/20 10:37:48 updated node metaservers with: [localhost:
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 [-] [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 -- [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 -- [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 -- [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 -- [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 -- [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 -- [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [meta] 2022/11/20 10:37:48 127.0.0.1 -- [20/Nov/2022:10:37:48
Nov 20 10:37:48 ubuntu influxd[2197]: [tsm1wall1] 2022/11/20 10:37:48 tsm1 WAL starting with 10485760
Nov 20 10:37:48 ubuntu influxd[2197]: [tsm1wall1] 2022/11/20 10:37:48 tsm1 WAL writing to /var/lib/influxdb
lines 1-18/18 (END)
```

To direct input to this VM, click inside or press Ctrl+G.

Unidad V

```
alumno@ubuntu:/$ sudo apt-get install influxdb-client
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  influxdb-client
0 upgraded, 1 newly installed, 0 to remove and 152 not upgraded.
Need to get 1,911 kB of archives.
After this operation, 7,439 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu xenial/universe i386 influxdb-client i386 0.10.0+dfsg1-1 [1,911 kB]
Fetched 1,911 kB in 6s (289 kB/s)
Selecting previously unselected package influxdb-client.
(Reading database ... 67295 files and directories currently installed.)
Preparing to unpack .../influxdb-client_0.10.0+dfsg1-1_i386.deb ...
Unpacking influxdb-client (0.10.0+dfsg1-1) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up influxdb-client (0.10.0+dfsg1-1) ...
alumno@ubuntu:/$ _
```

Unidad V

```
alumno@ubuntu:/ $ influx
Visit https://enterprise.influxdata.com to register for updates, InfluxDB server management, and monitoring.
Connected to http://localhost:8086 version 0.10.0
InfluxDB shell 0.10.0
> CREATE DATABASE telegraf
> SHOW DATABASES
name: databases
-----
name
internal
telegraf

> CREATE USER telegraf WITH PASSWORD ispc
ERR: error parsing query: found ispc, expected string at line 1, char 36
Warning: It is possible this error is due to not setting a database.
Please set a database with the command "use <database>".
> CREATE USER telegraf WITH PASSWORD 'ispc'
> SHOW USERS
user          admin
telegraf      false

>
```

Unidad V

Instalación y configuración Telegraf

```
alumno@ubuntu:~$ wget -qO- https://repos.influxdata.com/influxdb.key | sudo apt-key add -
OK
alumno@ubuntu:~$ source /etc/lsb-release
alumno@ubuntu:~$ echo "deb https://repos.influxdata.com/${DISTRIB_ID,,} ${DISTRIB_CODENAME} stable"
| sudo tee /etc/apt/sources.list.d/influxdb.list
deb https://repos.influxdata.com/ubuntu xenial stable
alumno@ubuntu:~$ _
```

```
alumno@ubuntu:~$ sudo apt-get install telegraf_
```

Unidad V

```
alumno@ubuntu:~$ sudo service telegraf start
alumno@ubuntu:~$ sudo service telegraf status
● telegraf.service - Telegraf
   Loaded: loaded (/lib/systemd/system/telegraf.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2022-11-20 11:33:20 PST; 3min 10s ago
     Docs: https://github.com/influxdata/telegraf
        PID: 8658 (telegraf)
      CGroup: /system.slice/telegraf.service
              └─8658 /usr/bin/telegraf -config /etc/telegraf/telegraf.conf -config-directory /etc/telegraf

Nov 20 11:35:50 ubuntu telegraf[8658]: 2022-11-20T19:35:50Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:00 ubuntu telegraf[8658]: 2022-11-20T19:36:00Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:00 ubuntu telegraf[8658]: 2022-11-20T19:36:00Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:10 ubuntu telegraf[8658]: 2022-11-20T19:36:10Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:10 ubuntu telegraf[8658]: 2022-11-20T19:36:10Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:20 ubuntu telegraf[8658]: 2022-11-20T19:36:20Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:20 ubuntu telegraf[8658]: 2022-11-20T19:36:20Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:22 ubuntu systemd[1]: Started Telegraf.
Nov 20 11:36:30 ubuntu telegraf[8658]: 2022-11-20T19:36:30Z E! [outputs.influxdb] When writing to [h
Nov 20 11:36:30 ubuntu telegraf[8658]: 2022-11-20T19:36:30Z E! [outputs.influxdb] When writing to [h
Lines 1-18/18 (END)
```

Unidad V

```
alumno@ubuntu:~$ cd /etc
alumno@ubuntu:/etc$ 
alumno@ubuntu:/etc$ 
alumno@ubuntu:/etc$ 
alumno@ubuntu:/etc$ cd telegraf/
alumno@ubuntu:/etc/telegraf$ ls
telegraf.conf  telegraf.conf.sample  telegraf.d
alumno@ubuntu:/etc/telegraf$ sudo nano telegraf.conf_
```

Unidad V

```
GNU nano 2.5.3                               File: telegraf.conf                                Modified

# log_with_timezone = ""

## Override default hostname, if empty use os.Hostname()
hostname = ""
## If set to true, do no set the "host" tag in the telegraf agent.
omit_hostname = false

## Method of translating SNMP objects. Can be "netsnmp" which
## translates by calling external programs snmptranslate and snmptranslate,
## or "gosmi" which translates using the built-in gosmi library.
# snmp_translator = "netsnmp"

#####
#          OUTPUT PLUGINS
#####

# Configuration for sending metrics to InfluxDB
[[outputs.influxdb]]
    ## The full HTTP or UDP URL for your InfluxDB instance.
    ##
    ## Multiple URLs can be specified for a single cluster, only ONE of the
    ## urls will be written to each interval.
    # urls = ["unix:///var/run/influxdb.sock"]
    # urls = ["udp://127.0.0.1:8089"]
    urls = ["http://127.0.0.1:8086"]

    ## The target database for metrics; will be created as needed.
    ## For UDP url endpoint database needs to be configured on server side.
    database = "telegraf"

    ## The value of this tag will be used to determine the database. If this
    [ Smooth scrolling enabled ]
^G Get Help   ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify   ^C Cur Pos   ^Y Prev Page
^X Exit      ^R Read File   ^N Replace    ^U Uncut Text  ^T To Spell   ^_ Go To Line ^V Next Page
```

Unidad V

```
GNU nano 2.5.3           File: telegraf.conf          Modified

database = "telegraf"

## The value of this tag will be used to determine the database. If this
## tag is not set the 'database' option is used as the default.
# database_tag = ""

## If true, the 'database_tag' will not be included in the written metric.
# exclude_database_tag = false

## If true, no CREATE DATABASE queries will be sent. Set to true when using
## Telegraf with a user without permissions to create databases or when the
## database already exists.
skip_database_creation = true

## Name of existing retention policy to write to. Empty string writes to
## the default retention policy. Only takes effect when using HTTP.
# retention_policy = ""

## The value of this tag will be used to determine the retention policy. If this
## tag is not set the 'retention_policy' option is used as the default.
# retention_policy_tag = ""

## If true, the 'retention_policy_tag' will not be included in the written metric.
# exclude_retention_policy_tag = false

## Write consistency (clusters only), can be: "any", "one", "quorum", "all".
## Only takes effect when using HTTP.
# write_consistency = "any"

## Timeout for HTTP messages.
timeout = "5s"

^G Get Help   ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify   ^C Cur Pos   ^Y Prev Page
^X Exit      ^R Read File  ^R Replace   ^U Uncut Text  ^T To Spell  ^L Go To Line ^N Next Page
```

Unidad V

```
GNU nano 2.5.3           File: telegraf.conf          Modified

## The value of this tag will be used to determine the retention policy. If this
## tag is not set the 'retention_policy' option is used as the default.
# retention_policy_tag = ""

## If true, the 'retention_policy_tag' will not be included in the written metric.
# exclude_retention_policy_tag = false

## Write consistency (clusters only), can be: "any", "one", "quorum", "all".
## Only takes effect when using HTTP.
# write_consistency = "any"

## Timeout for HTTP messages.
timeout = "5s"

## HTTP Basic Auth
username = "telegraf"
password = "ispc"

## HTTP User-Agent
# user_agent = "telegraf"

## UDP payload size is the maximum packet size to send.
# udp_payload = "512B"

## Optional TLS Config for use on HTTP connections.
# tls_ca = "/etc/telegraf/ca.pem"
# tls_cert = "/etc/telegraf/cert.pem"
# tls_key = "/etc/telegraf/key.pem"
## Use TLS but skip chain & host verification
# insecure_skip_verify = false

^G Get Help   ^W Where Is   ^K Cut Text   ^J Justify   ^C Cur Pos   ^Y Prev Page
^X Exit      ^R Read File  ^U Uncut Text  ^T To Spell  ^_ Go To Line ^V Next Page
```

Unidad V

```
#####
#           INPUT PLUGINS          #
#####

# Read metrics about cpu usage
[[inputs.cpu]]
    ## Whether to report per-cpu stats or not
    percpu = true
    ## Whether to report total system cpu stats or not
    totalcpu = true
    ## If true, collect raw CPU time metrics
    collect_cpu_time = false
    ## If true, compute and report the sum of all non-idle CPU states
    report_active = false
    ## If true and the info is available then add core_id and physical_id tags
    core_tags = false
```

```
## Read metrics from MQTT topic(s)
[[inputs.mqtt_consumer]]
    ## Broker URLs for the MQTT server or cluster. To connect to multiple
    ## clusters or standalone servers, use a separate plugin instance.
    ## example: servers = ["tcp://localhost:1883"]
    ##          servers = ["ssl://localhost:1883"]
    ##          servers = ["ws://localhost:1883"]
    servers = ["tcp://127.0.0.1:1883"]
    ## Topics that will be subscribed to.
    topics = [
        "Host/prueba",
    ]
```

Unidad V

```
GNU nano 2.5.3           File: telegraf.conf          Modified

    "Host/prueba",
]
#
## The message topic will be stored in a tag specified by this value. If set
## to the empty string no topic tag will be created.
## topic_tag = "topic"
#
## QoS policy for messages
## 0 = at most once
## 1 = at least once
## 2 = exactly once
##
## When using a QoS of 1 or 2, you should enable persistent_session to allow
## resuming unacknowledged messages.
qos = 0
#
## Connection timeout for initial connection in seconds
## # connection_timeout = "30s"
```

Unidad V

```
GNU nano 2.5.3                               File: telegraf.conf                                Modified

#  # max_undelivered_messages = 1000
#
#  ## Persistent session disables clearing of the client session on connection.
#  ## In order for this option to work you must also set client_id to identify
#  ## the client. To receive messages that arrived while the client is offline,
#  ## also set the qos option to 1 or 2 and don't forget to also set the QoS when
#  ## publishing.
#  persistent_session = false
#
#  ## If unset, a random client ID will be generated.
client_id = "telegraf"
#
#  ## Username and password to connect MQTT server.
#  # username = "telegraf"
#  # password = "metricsmetricsmetricsmetrics"
#
#  ## Optional TLS Config
#  # tls_ca = "/etc/telegraf/ca.pem"
#  # tls_cert = "/etc/telegraf/cert.pem"
#  # tls_key = "/etc/telegraf/key.pem"
#  ## Use TLS but skip chain & host verification
#  # insecure_skip_verify = false
#
#  ## Data format to consume.
#  ## Each data format has its own unique set of configuration options, read
#  ## more about them here:
#  ## https://github.com/influxdata/telegraf/blob/master/docs/DATA_FORMATS_INPUT.md
data_format = "value"
data_type = "float"
```

Unidad V

```
# ## Enable extracting tag values from MQTT topics
# ## _ denotes an ignored entry in the topic path
[[inputs.mqtt_consumer.topic_parsing]]
    topic = "Host/prueba"
# # measurement =
# # tags =
# # fields =
# ## Value supported is int, float, unit
[[inputs.mqtt_consumer.topic.types]]
    key = float
```

```
# ## Enable extracting tag values from MQTT topics
# ## _ denotes an ignored entry in the topic path
[[inputs.mqtt_consumer.topic_parsing]]
    topic = "Host/prueba"
# # measurement =
# # tags =
# # fields =
# ## Value supported is int, float, unit
[[inputs.mqtt_consumer.topic_parsing.types]]
    prueba = "float"
```

Verificación Telegraf con Mosquitto

```
GNU nano 2.5.3          File: mosquitto.log

1668978292: Opening ipv4 listen socket on port 1883.
1668978292: Opening ipv6 listen socket on port 1883.
1668978380: New connection from 192.168.0.117 on port 1883.
1668978380: New client connected from 192.168.0.117 as mqtt-explorer-2c9ddf80 (c1, k60).
1668978416: New connection from 192.168.0.120 on port 1883.
1668978416: Client cellular disconnected.
1668978416: New client connected from 192.168.0.120 as celular (c0, k1200).
1668979348: Error in poll: Interrupted system call.
1668979348: mosquitto version 1.4.8 terminating
1668979354: mosquitto version 1.4.8 (build date Tue, 18 Jun 2019 11:59:34 -0300) starting
1668979354: Config loaded from /etc/mosquitto/mosquitto.conf.
1668979355: Opening ipv4 listen socket on port 1883.
1668979355: Opening ipv6 listen socket on port 1883.
1668979389: New connection from 192.168.0.117 on port 1883.
1668979389: New client connected from 192.168.0.117 as mqtt-explorer-2c9ddf80 (c1, k60).
1668980077: New connection from 127.0.0.1 on port 1883.
```

Verificación entrada mqtt a Telegraf y conexión Telegraf con InfluxDB

```
alumno@ubuntu:~$ telegraf debug
2022-11-21T03:43:05Z I! Using config file: /etc/telegraf/telegraf.conf
2022-11-21T03:43:05Z I! Starting Telegraf 1.24.3
2022-11-21T03:43:05Z I! Available plugins: 221 inputs, 9 aggregators, 26 processors, 20 parsers, 57
outputs
2022-11-21T03:43:05Z I! Loaded inputs: mqtt_consumer
2022-11-21T03:43:05Z I! Loaded aggregators:
2022-11-21T03:43:05Z I! Loaded processors:
2022-11-21T03:43:05Z I! Loaded outputs: influxdb
2022-11-21T03:43:05Z I! Tags enabled: host=ubuntu
2022-11-21T03:43:05Z I! [agent] Config: Interval:10s, Quiet:false, Hostname:"ubuntu", Flush Interval
:10s
```

Unidad V

Instalación y configuración de Grafana

The screenshot shows a terminal window on an Ubuntu Server 32-bit VM. The user is running the command `sudo apt-get install grafana`. The terminal output shows the package being installed along with its dependencies. The user is prompted for their password twice. The terminal also displays suggested packages and a warning about new packages being installed. At the end, the user is asked if they want to continue with the upgrade.

```
alumno@ubuntu:~$ cd ..
alumno@ubuntu:~$ sudo apt-get install grafana
[sudo] password for alumno:
Sorry, try again.
[sudo] password for alumno:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
binutils build-essential cpp cpp-5 dpkg-dev fakeroot fonts-font-awesome g++ g++-5 gcc gcc-5
golang-1.6-go golang-1.6-src golang-go golang-src grafana-data javascript-common
libalgorithm-diff-perl libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan2 libatomic1c
libc-dev-bin libc6-dev libcc1-0 libcurl4-openssl-dev libdpkg-perl libfakeroot libfile-fcntllock-perl
libgcc-5-dev libgomp1 libis15 libitm1 libjs-angularjs libjs-jquery libjs-jquery-metadata
libjs-jquery-tablesorter libjs-twitter-bootstrap libmpc3 libmpfr4 libmpx0 libper15_22
libquadmath0 libstdc++-5-dev libubsan0 linux-libc-dev make manpages-dev patch perl
perl-modules-5.22 pkg-config rename xz-utils
Suggested packages:
binutils-doc cpp-doc gcc-5-locales debian-keyring g++-multilib g++-5-multilib gcc-5-doc
libc6-1-6-5-dbg gcc-minimal autopcm automate libtinfo5 flex bison gdb gcc-doc gcc-5-multilib
libgcc1-dbg libgomp1-dbg libitm1-dbg libatomic1c-dbg libasan2-dbg liblsan0-dbg libtsan0-dbg
libubsan0-dbg libcurl4-openssl-dev libmpx0-dbg libquadmath0-dbg bzr git mercurial subversion apache2
httpd libcurl3 libgcc-doc libjs-bootstrap libmpc3 libmpfr4 libmpx0 libper15_22
libtinfo5 libstdc++-5-dev libubsan0 linux-libc-dev make manpages-dev patch perl
libterm-readline-gnu-perl libterm-readline-perl-perl
The following NEW packages will be installed:
binutils build-essential cpp cpp-5 dpkg-dev fakeroot fonts-font-awesome g++ g++-5 gcc gcc-5
golang-1.6-go golang-1.6-src golang-go golang-src grafana-data javascript-common
libalgorithm-diff-perl libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan2 libatomic1c
libc-dev-bin libc6-dev libcc1-0 libcurl4-openssl-dev libdpkg-perl libfakeroot libfile-fcntllock-perl
libgcc-5-dev libgomp1 libis15 libitm1 libjs-angularjs libjs-jquery libjs-jquery-metadata
libjs-jquery-tablesorter libjs-twitter-bootstrap libmpc3 libmpfr4 libmpx0 libper15_22
libquadmath0 libstdc++-5-dev libubsan0 linux-libc-dev make manpages-dev patch perl
perl-modules-5.22 pkg-config rename xz-utils
0 upgraded, 55 newly installed, 0 to remove and 9 not upgraded.
Need to get 75.2 MB of archives.
After this operation, 371 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Unidad V

Ubuntu Server ISPC 32 bits - VMware Workstation

File Edit View VM Tabs Help | 

Home  Ubuntu Server ISPC 32 bits 

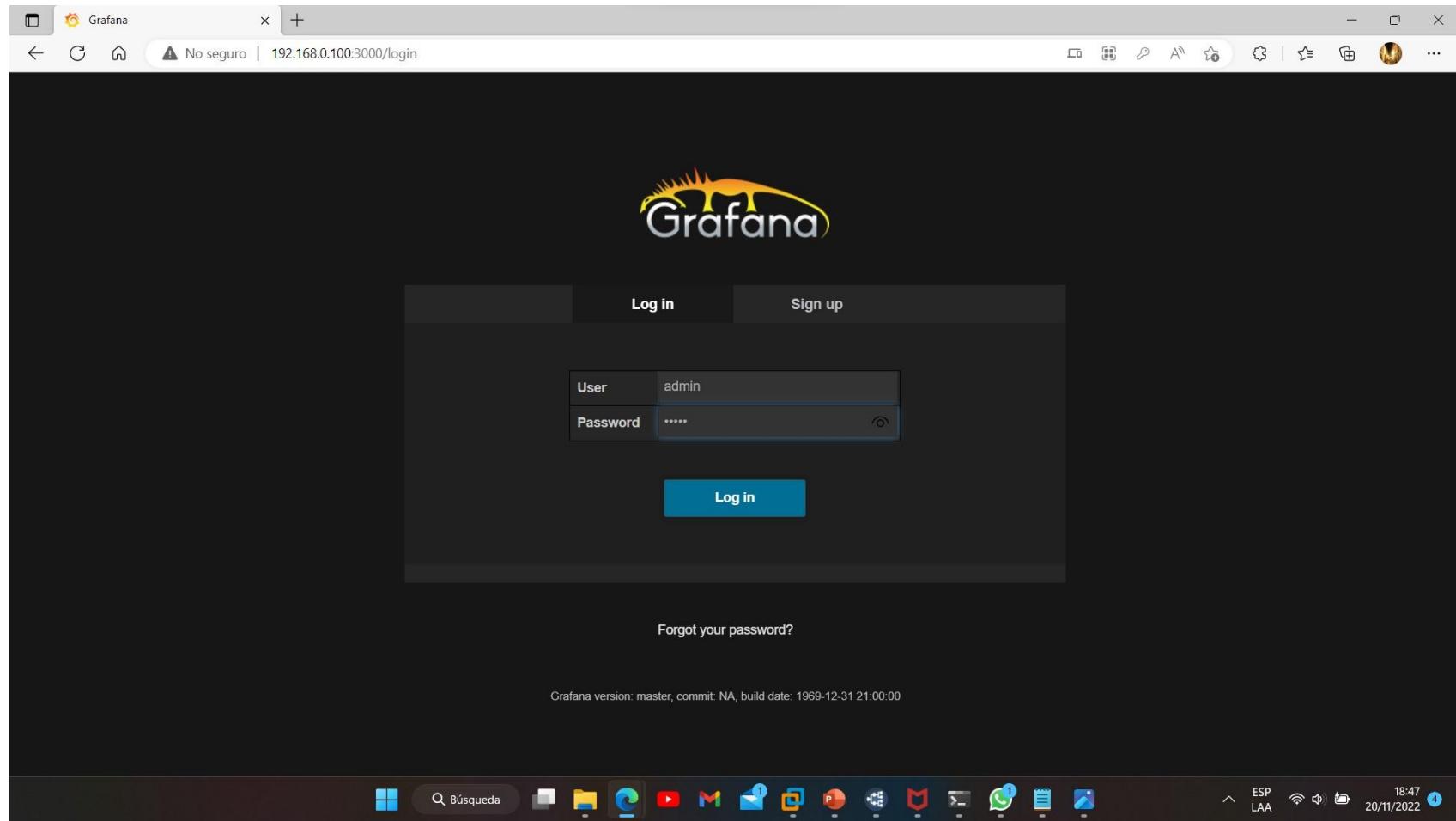
```
Setting up libjs-jquery-metadata (10-2ubuntu2) ...
Setting up libjs-jquery-tablesorter (10-2ubuntu2) ...
Setting up libjs-twitter-bootstrap (2.0.2+dfsg-9) ...
Setting up grafana-data (2.6.0+dfsg-1) ...
Setting up grafana (2.6.0+dfsg-1) ...
Setting up javascript-common (11) ...
Setting up libalgorithm-diff-perl (1.19.03-1) ...
Setting up libalgorithm-diff-xs-perl (0.04-4build1) ...
Setting up libalgorithm-merge-perl (0.08-3) ...
Setting up libflock-fcntllock-perl (0.22-3) ...
Setting up manpages-dev (4.04-2) ...
Setting up pkg-config (0.29.1-0ubuntu1) ...
Setting up rename (0.20-4) ...
update-alternatives: using /usr/bin/file-rename to provide /usr/bin/rename (rename) in auto mode
Processing triggers for libc-bin (2.23-0ubuntu11.3) ...
Processing triggers for ureadahead (0.100.0-19.1) ...
Processing triggers for systemd (229-0ubuntu21.31) ...
alumno@ubuntu:~$ systemctl status grafana
● grafana.service - Starts and stops a single grafana instance on this system
   Loaded: loaded (/lib/systemd/system/grafana.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2022-11-20 13:43:50 PST; 1min 1s ago
     Docs: http://docs.grafana.org
 Main PID: 7320 (grafana)
    CGroup: /system.slice/grafana.service
           └─7320 /usr/sbin/grafana --config=/etc/grafana/grafana.ini cfg:default.paths.logs=/var/lo

Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: drop tabl
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: create da
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: create in
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: create in
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: create in
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: alter das
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: create qu
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Migrator: exec migration id: create in
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Created default admin user: admin
Nov 20 13:43:51 ubuntu grafana[7320]: 2022/11/20 13:43:51 [I] Listen: http://0.0.0.0:3000
1 lines 1-18/18 (END)
```

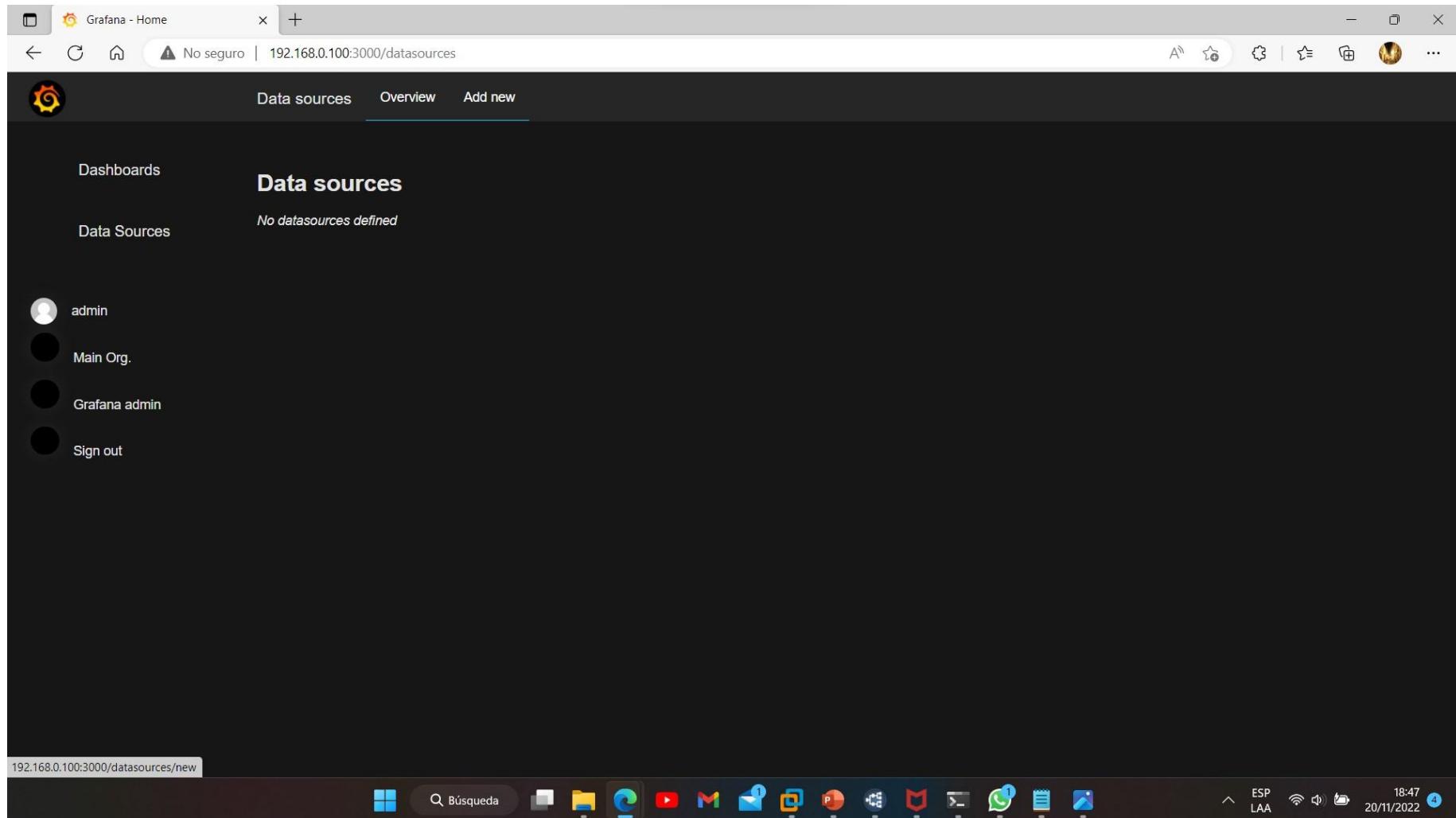
To direct input to this VM, click inside or press Ctrl+G.

Windows Start Button  Búsqueda                    

Configuración dashboard Grafana



Unidad V



Grafana - Home

No seguro | 192.168.0.100:3000/datasources

Data sources Overview Add new

Dashboards

Data sources

No datasources defined

admin

Main Org.

Grafana admin

Sign out

192.168.0.100:3000/datasources/new

Búsqueda

18:47 20/11/2022

Unidad V

The screenshot shows the Grafana interface for editing a data source. The top navigation bar includes links for 'Data sources', 'Overview', 'Add new', and 'Edit'. The left sidebar shows user profiles for 'admin', 'Main Org.', 'Grafana admin', and 'Sign out'. The main content area is titled 'Edit data source' and contains sections for 'Data Sources', 'Http settings', 'InfluxDB Details', and 'Test results'. The 'Data Sources' section shows 'Name: Influx' and 'Type: InfluxDB 0.9.x'. The 'Http settings' section shows 'Url: http://localhost:8086' and 'Access: proxy'. The 'InfluxDB Details' section shows 'Database: telegraf' and 'User: telegraf'. The 'Test results' section displays a green success message: 'Success' and 'Data source is working'. At the bottom are buttons for 'Save', 'Test Connection', and 'Cancel'.

Grafana - Home

Nueva pestaña | 192.168.0.100:3000/datasources/edit/2

Data sources Overview Add new Edit

Dashboards

Edit data source

Data Sources

Name	Influx	Default	<input checked="" type="checkbox"/>
Type	InfluxDB 0.9.x	<input type="button" value="▼"/>	

Http settings

Url	http://localhost:8086	Access	proxy	<input type="button" value="▼"/>
Http Auth	Basic Auth	<input checked="" type="checkbox"/>	With Credentials	<input checked="" type="checkbox"/>

InfluxDB Details

Database	telegraf		
User	telegraf	Password	****

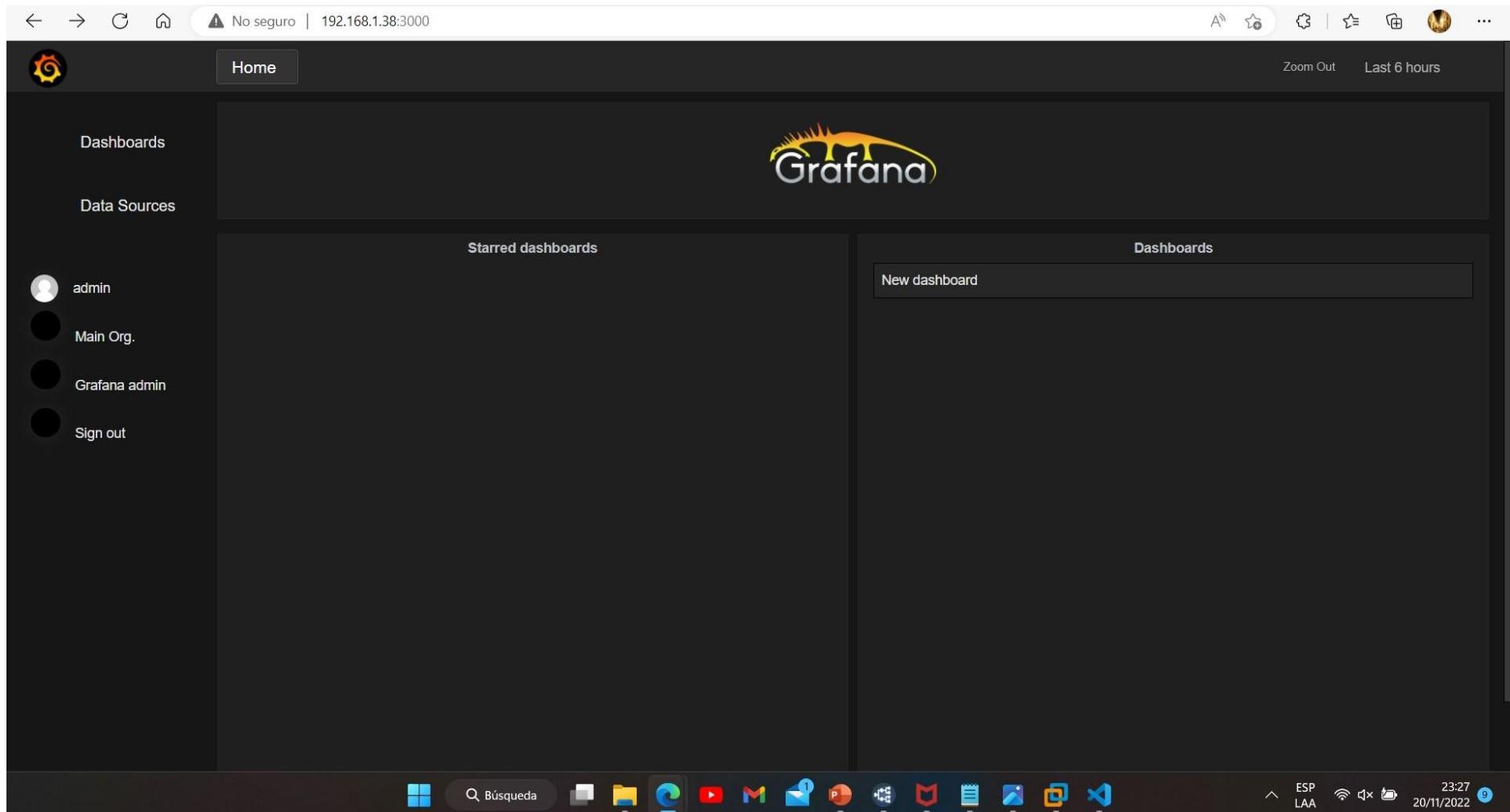
Test results

Success

Data source is working

Save Test Connection Cancel

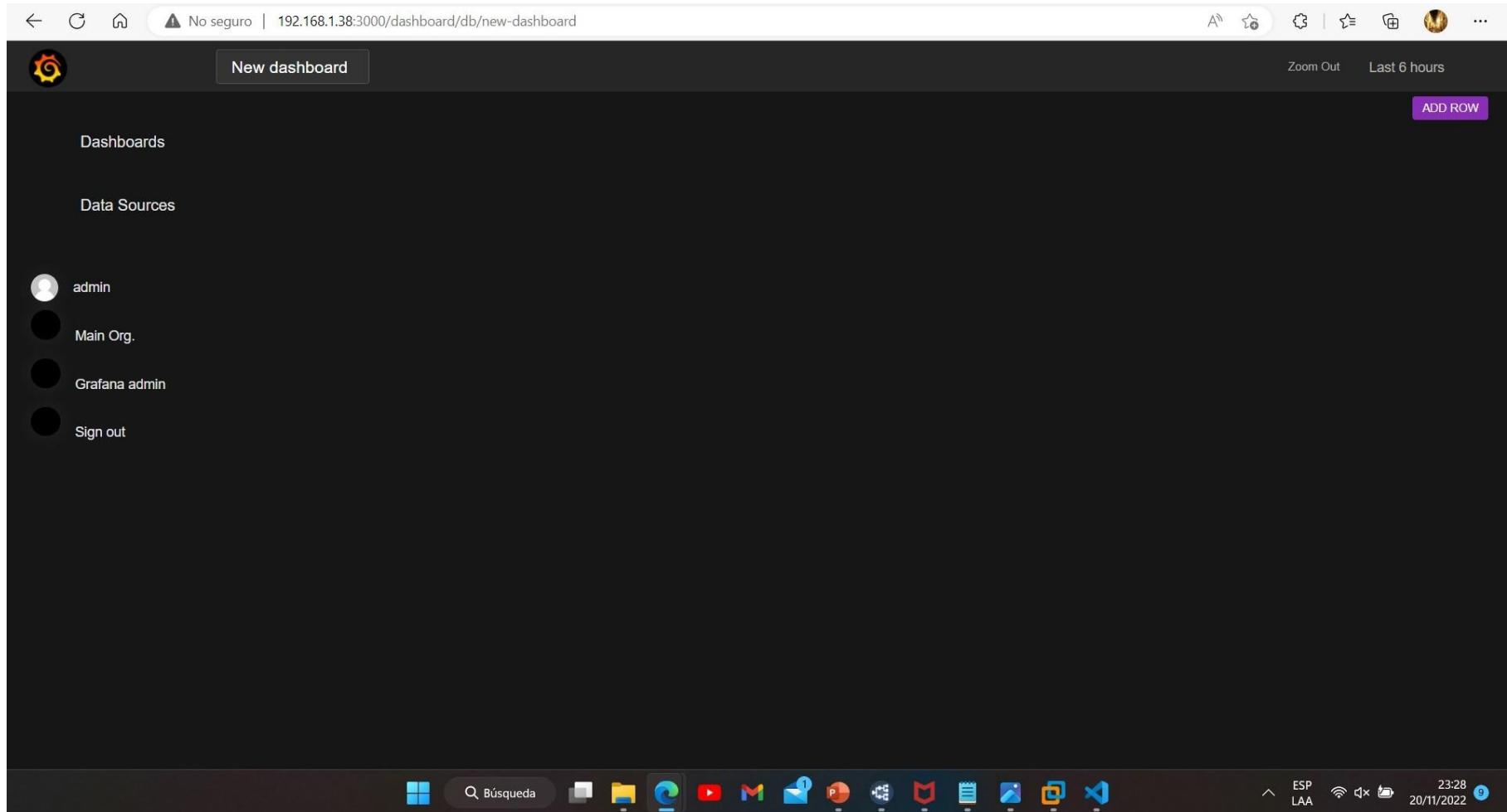
Unidad V



The screenshot shows the Grafana web interface. At the top, there is a header bar with browser controls, a warning icon for 'No seguro' (not secure), the IP address '192.168.1.38:3000', and various system icons. The main title 'Unidad V' is displayed prominently at the top center.

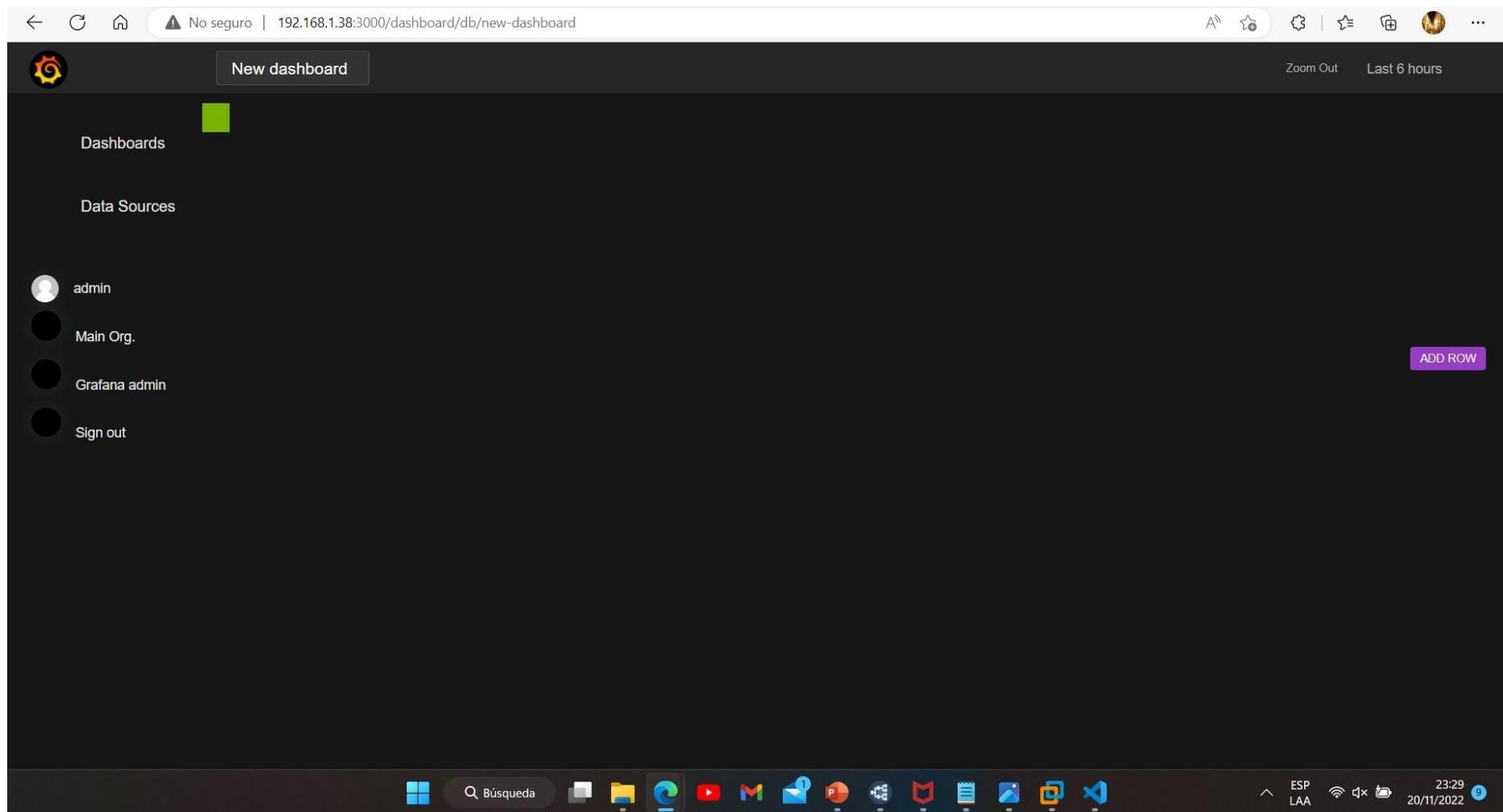
The left sidebar contains navigation links: 'Dashboards' (selected), 'Data Sources', and a user menu with options for 'admin', 'Main Org.', 'Grafana admin', and 'Sign out'. The central area features the Grafana logo and sections for 'Starred dashboards' and 'Dashboards'. A 'New dashboard' button is visible in the 'Dashboards' section. The bottom of the screen shows a taskbar with various application icons, including Microsoft Office and system utilities. The system tray in the bottom right corner displays network status ('ESP LAA'), battery level ('20/11/2022'), and a notification icon with the number '9'.

Unidad V



A screenshot of a web browser displaying the Grafana interface. The address bar shows the URL `192.168.1.38:3000/dashboard/db/new-dashboard`. The page title is "New dashboard". On the left sidebar, there are links for "Dashboards" and "Data Sources". Below these are user profile icons: "admin", "Main Org.", "Grafana admin", and "Sign out". The main content area is currently empty, showing a dark background with a "ADD ROW" button at the top right. The bottom of the screen shows a taskbar with various application icons and system status indicators.

Unidad V



A screenshot of a web browser displaying the Grafana interface. The address bar shows the URL `192.168.1.38:3000/dashboard/db/new-dashboard`. The page title is "New dashboard". On the left sidebar, there are links for "Dashboards" (with a green square icon) and "Data Sources". Below these are user profile icons and names: "admin", "Main Org.", "Grafana admin", and "Sign out". A purple "ADD ROW" button is located on the right side of the sidebar. The main content area is currently empty. At the bottom of the screen, a taskbar displays various application icons, and the system tray shows network status, battery level, and the date and time (20/11/2022).

Unidad V

The screenshot shows the Grafana interface with a dark theme. At the top, there's a navigation bar with icons for back, forward, search, and user profile. The URL is 192.168.1.38:3000/dashboard/db/new-dashboard. On the right side of the header, there are options for 'Zoom Out' and 'Last 6 hours'. Below the header, there's a sidebar with sections for 'Dashboards' and 'Data Sources', each with a list of actions: 'Add Panel', 'Set height', 'Move', 'Row editor', and 'Delete row'. A context menu is open over a row in the main content area, with the 'Graph' option selected. The main content area is currently empty. On the left, there's a user profile section for 'admin' with roles 'Main Org.' and 'Grafana admin', and a 'Sign out' button. On the right, there's a purple 'ADD ROW' button. The bottom of the screen shows a taskbar with various application icons.

Unidad V

No seguro | 192.168.1.38:3000/dashboard/db/new-dashboard?panelId=1&fullscreen&edit

New dashboard

Back to dashboard | Zoom Out | Last 6 hours

Dashboards

Data Sources

admin

Main Org.

Grafana admin

Sign out

Panel Title

Graph General Metrics Axes & Grid Display Styles Time range Back to dashboard

A FROM select measurement WHERE

SELECT field(value) mean()

GROUP BY time(\$interval) fill(null)

ALIAS BY Naming pattern Format as Time series

Query

Group by time interval example: >10s

alias patterns stacking & and fill group by time

Influx ▾

Windows Search Bar

File Explorer

Edge Browser

YouTube

Gmail

Email

PowerShell

Notepad

Calculator

Task View

File Explorer

PowerShell

Notepad

Calculator

Task View

Windows Search Bar

ESP LAA

23:29 9

20/11/2022

Unidad V

⚠ No seguro | 192.168.1.38:3000/dashboard/db/new-dashboard?panelId=1&fullscreen&edit

New dashboard

Back to dashboard Zoom Out Last 6 hours

Dashboards

Data Sources

admin

Main Org.

Grafana admin

Sign out

Panel Title

Graph General Metrics Axes & Grid Display Styles Time range Back to dashboard

A FROM WHERE

SELECT cpu ()

GROUP BY disk (null)

ALIAS BY kernel Format as Time series

mem

mqtt_consumer

processes

swap

system

alias patterns Group by time

192.168.1.38:3000/# Influx

Búsqueda

23:30 20/11/2022

ESP LAA

Unidad V

No seguro | 192.168.1.38:3000/dashboard/db/new-dashboard?panelId=1&fullscreen&edit

[Back to dashboard](#) [Zoom Out](#) [Last 15 minutes](#)

New dashboard

Dashboards

Data Sources

 admin

 Main Org.

 Grafana admin

 Sign out

Panel Title

mqtt_consumer.mean

Graph General Metrics Axes & Grid Display Styles Time range Back to dashboard

A **FROM** mqtt_consumer **WHERE**

SELECT field(value) mean()

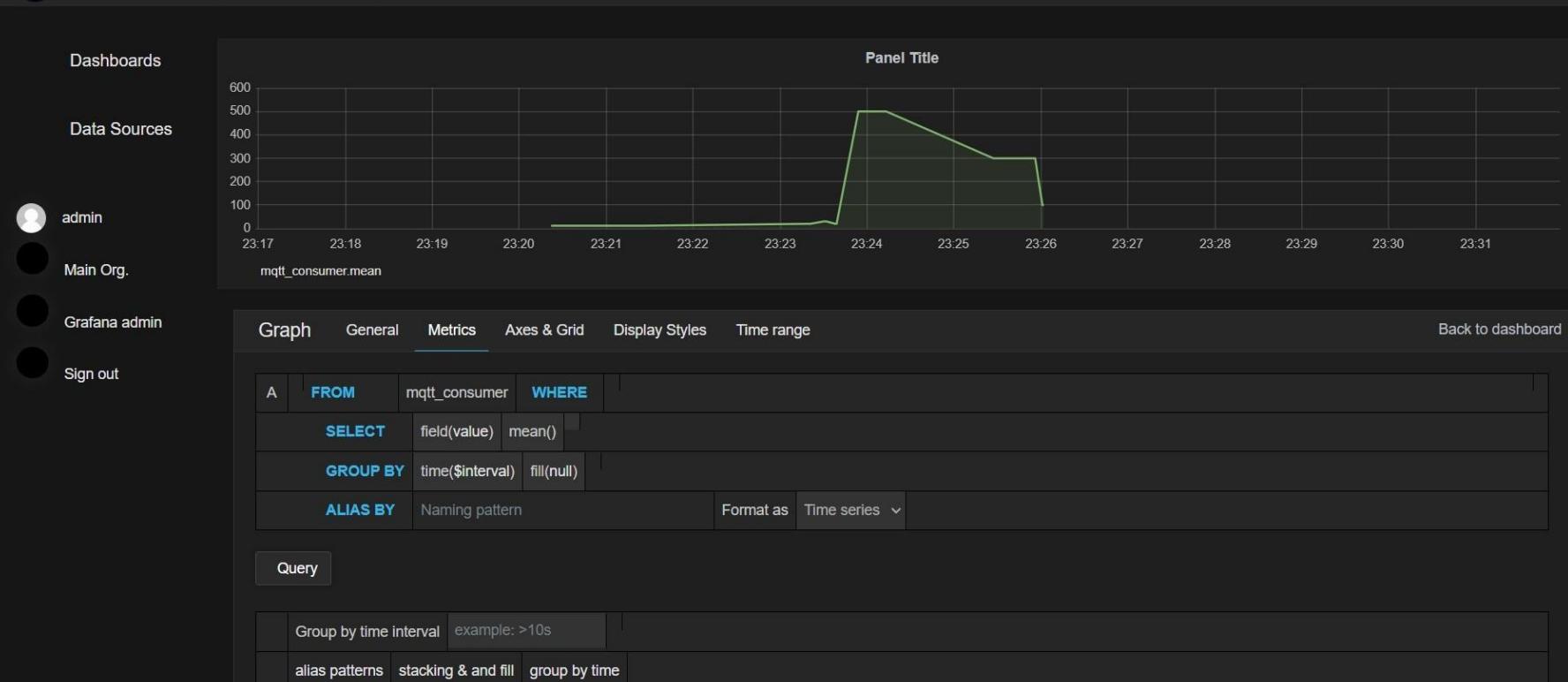
GROUP BY time(\$interval) fill(null)

ALIAS BY Naming pattern Format as Time series

Query

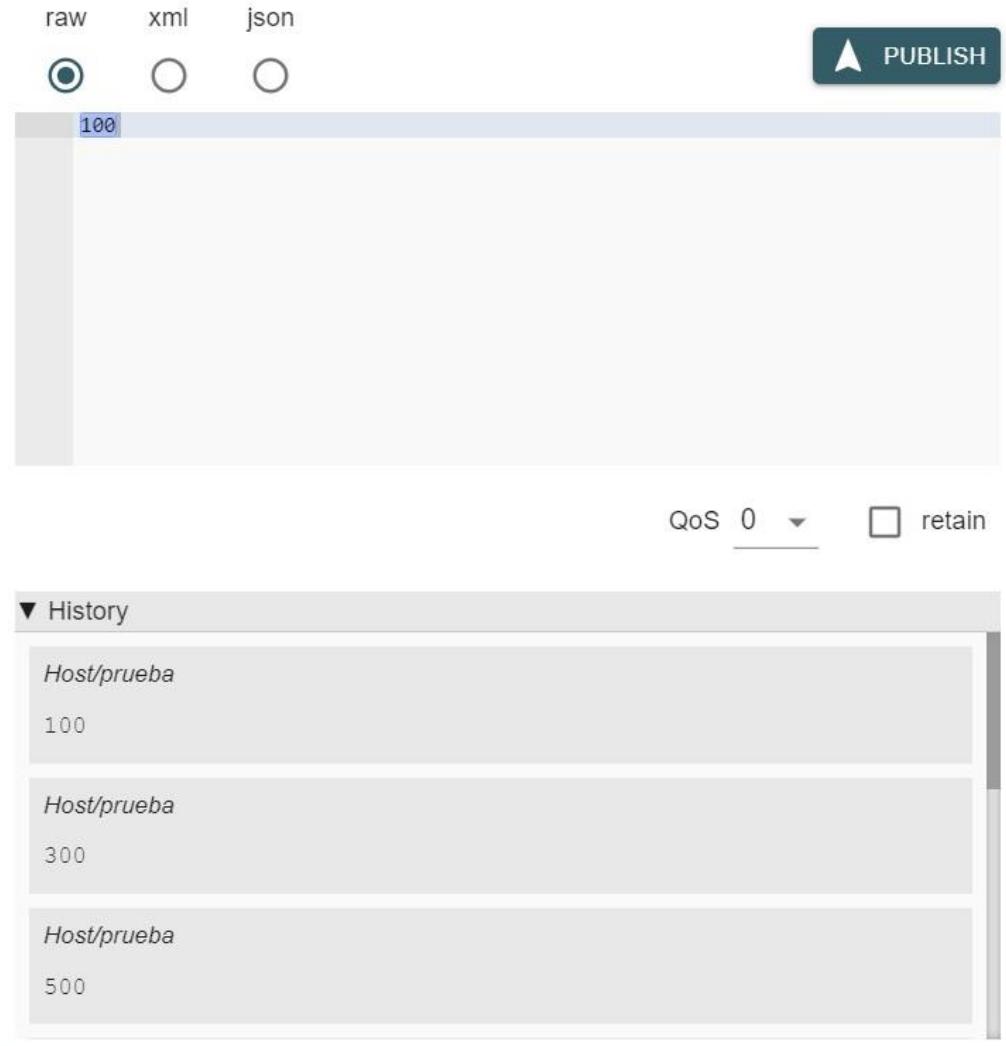
Group by time interval example: >10s

alias patterns stacking & and fill group by time



Unidad V

Datos enviados desde cliente mqtt que publica tópico “prueba” en broker Mosquitto. Los datos del tópico (100, 300, etc) son captados por Telegraf y enviados a una base de datos creada en InfluxDB. Luego son analizados con un dashboard creado en Grafana.





Proyecto Integrador I

