



INSTITUTO POLITÉCNICO NACIONAL
ESCUELA SUPERIOR DE CÓMPUTO



SISTEMAS DISTRIBUIDOS

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Tarea 3: IMPLEMENTACIÓN DE UNA VPN VNet-to-VNet

Fecha de Entrega: 28/Mar/2025

INTRODUCCIÓN:

Azure Virtual Network es un servicio que proporciona el bloque de compilación fundamental para su red privada en Azure. Una instancia del servicio (una red virtual) permite que muchos tipos de recursos de Azure se comuniquen de forma segura entre sí, Internet y redes locales.

DESARROLLO:

1. Crear dos redes virtuales localizadas en dos regiones de Azure diferentes.
 - Creando la primera red virtual (en East US 2)

The screenshot shows the Microsoft Azure portal interface for creating a new virtual network. The top navigation bar includes links for 'Create virtual network - Microsoft' and '(29) WhatsApp'. The main title is 'Create virtual network'. Below it, there are tabs for 'Basics', 'Security', 'IP addresses', 'Tags', and 'Review + create'. The 'Basics' tab is selected. A note says: 'Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.' The 'Subscription' dropdown is set to 'Azure for Students'. Under 'Resource group', there is a dropdown with 'T3-2023630338-vnet_group' and a 'Create new' link. The 'Instance details' section contains fields for 'Virtual network name' (set to 'T3-2023630338-vnet-1') and 'Region' (set to '(US) East US 2'). At the bottom, there are buttons for 'Previous', 'Next', and 'Review + create'. The status bar at the bottom right shows the date and time as '27/03/2025 10:23 p.m.' and the location as 'ESP LAA'.

- En el panel de “IP address”, dejamos la configuración default con el CIDR 10.0.0.0/16, lo cual nos da 65,536 posibles direcciones IP a usar. Con una subnet de CIDR /24, lo cual nos da 256 IP’s posibles a usar dentro de esta vnet y esta subred. Y añadimos una red virtual llamada “Gateway Subnet”

Create virtual network

IP addresses

Subnets	IP address range	Size	NAT gateway
default	10.0.0.0 - 10.0.0.255	/24 (256 addresses)	-
GatewaySubnet	10.0.1.0 - 10.0.1.255	/24 (256 addresses)	-

Add IPv4 address space | ↴

Previous Next Review + create Give feedback

- Panel de “Revisar y Crear”

Create virtual network

Review + create

Basics

Subscription	Azure for Students
Resource Group	T3-2023630338-vnet_group
Name	T3-2023630338-vnet-1
Region	East US 2

Security

Azure Bastion	Disabled
Azure Firewall	Disabled
Azure DDoS Network Protection	Disabled

IP addresses

Address space	10.0.0.0/16 (65,536 addresses)
Subnet	default (10.0.0.0/24) (256 addresses)
Subnet	GatewaySubnet (10.0.1.0/24) (256 addresses)

Previous Next Create Give feedback

- Recurso creado (primera vnet)

T3-2023630338-vnet-1

Virtual network

Overview

Essentials

Resource group (move) : T3-2023630338-vnet_group
Location (move) : East US 2
Subscription (move) : Azure for Students
Subscription ID : e1d319c4-9458-4992-b305-fe400976ae65
Tags (edit) : Add tags

Address space : 10.0.0.0/16
DNS servers : Azure provided DNS service
BGP community string : Configure
Virtual network ID : 5849698d-fdb4-4578-9ec4-2a1aefbb83f3

Capabilities (5)

- DDoS protection : Not configured
- Azure Firewall : Not configured
- Peerings : Not configured
- Microsoft Defender for Cloud
- Private endpoints

- Creando la segunda red virtual (en West US 2)

Create virtual network

Basics

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * : Azure for Students

Resource group * : (New) T3-2023630338-vnet_group2

Instance details

Virtual network name * : T3-2023630338-vnet-2

Region * : (US) West US 2

Deploy to an Azure Extended Zone

Review + create

- En la pestaña “IP addresses” dejamos la configuración por default, simplemente se le cambia la parte del host a la red para que no ninguna IP choque con alguna de la primera Vnet (10.1 seria la parte del host)

Create virtual network

IP addresses

Subnets	IP address range	Size	NAT gateway
default	10.1.0.0 - 10.1.0.255	/24 (256 addresses)	-
GatewaySubnet	10.1.1.0 - 10.1.1.255	/24 (256 addresses)	-

Add IPv4 address space | ↴

Previous Next Review + create Give feedback

- Antes de crearla (Review + Create)

Create virtual network

Review + create

Basics

Subscription	Azure for Students
Resource Group	T3-2023630338-vnet_group2
Name	T3-2023630338-vnet-2
Region	West US 2

Security

Azure Bastion	Disabled
Azure Firewall	Disabled
Azure DDoS Network Protection	Disabled

IP addresses

Address space	10.1.0.0/16 (65,536 addresses)
Subnet	default (10.1.0.0/24) (256 addresses)
Subnet	GatewaySubnet (10.1.1.0/24) (256 addresses)

Previous Next Create Give feedback

- Recurso creado (segunda vnet)

T3-2023630338-vnet-2

Virtual network

Overview

Essentials

Resource group ([move](#))
[T3-2023630338-vnet_group2](#)

Location ([move](#))
West US 2

Subscription ([move](#))
[Azure for Students](#)

Subscription ID
e1d319c4-9458-4992-b305-fe400976ae65

Tags ([edit](#))
[Add tags](#)

Address space
10.1.0.0/16

DNS servers
Azure provided DNS service

BGP community string
[Configure](#)

Virtual network ID
00460f78-a017-4151-b55a-3a6d7ccf1573

Topology Properties Capabilities (5) Recommendations Tutorials

JSON View

2. Crear una VPN VNet-toVNet entre las dos redes virtuales creadas anteriormente.
- Creando la primera puerta de enlace (gateway) para la primera red virtual.

En la siguiente imagen se ve el nombre del VNG requerido en la tara, también la región en la que creamos la primer Vnet, así también es posible ver que el grupo de recursos corresponde al de la primera Vnet creada.

Create virtual network gateway

Basics Tags Review + create

Azure has provided a planning and design guide to help you configure the various VPN gateway options. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources. [?](#)

Subscription *

Resource group [?](#) T3-2023630338-vnet_group (derived from virtual network's resource group)

Instance details

Name *

Region * Deploy to an Azure Extended Zone [?](#)

Gateway type * VPN ExpressRoute

SKU *

[Review + create](#) [Previous](#) [Next : Tags >](#) [Download a template for automation](#)

En la siguiente imagen, vemos como asociamos el VNG a la primera Vnet, también como la subred se establece con la subnet "GatewaySubnet" previamente creada, así también se establece el nombre de una nueva IP publica como se nos pide en la tarea.

Creation details:

- Generation: Generation2
- Virtual network: T3-2023630338-vnet-1
- Subnet: GatewaySubnet (10.0.1.0/24)
- Public IP address:
 - Name: T3-2023630338-ip-1
 - SKU: Standard
 - Assignment: Static
 - Mode: Enabled
 - BGP: Disabled
- Authentication Information (Preview):
 - Enable Key Vault Access: Disabled

- Antes de crear el Gateway

Validation passed

Basics

Subscription	Azure for Students
Resource group	T3-2023630338-vnet_group
Name	T3-2023630338-gateway-1
Region	East US 2
SKU	VpnGw2
Generation	Generation2
Virtual network	T3-2023630338-vnet-1
Subnet	GatewaySubnet (10.0.1.0/24)
Gateway type	Vpn
VPN type	RouteBased
Enable active-active mode	Disabled
Configure BGP	Disabled
Public IP address	T3-2023630338-ip-1

Tags

Create Previous Next Download a template for automation

- Recurso creado (primera puerta de enlace)

The screenshot shows the Microsoft Azure portal interface. At the top, there are several browser tabs and a search bar. The main navigation bar includes 'Microsoft Azure', 'Search resources, services, and docs (G+)', 'Copilot', and user information. Below this, the 'All resources' section is displayed, with a sidebar on the left showing a list of resources like 'NetworkWatcher_eastus2', 'T2-2023630338-image', and two instances of 'T3-2023630338-gateway-1'. The central pane shows the detailed configuration for 'T3-2023630338-gateway-1', including its name, location (East US 2), subscription (Azure for Students), and resource group (T3-2023630338-vnet_group). It also lists its SKU (VpnGw2), VPN type (VPN), and public IP address (128.24.100.28). On the right, there are sections for 'Health check', 'Advisor Recommendations', and 'Documentation'.

- Creando la segunda puerta de enlace (gateway) para la segunda red virtual.

En la siguiente imagen se puede ver el nombre solicitado en la tarea para el Gateway, la zona en la que creamos la segunda Vnet, y como asociamos este recurso a la Vnet antes mencionada.

The screenshot shows the 'Create virtual network gateway' wizard in the Microsoft Azure portal. The current step is 'Instance details'. The form includes fields for 'Resource group' (T3-2023630338-vnet_group2), 'Name' (T3-2023630338-gateway-2), 'Region' (West US 2), 'SKU' (VpnGw2), 'Generation' (Generation2), 'Virtual network' (T3-2023630338-vnet-2), and 'Subnet' (GatewaySubnet (10.1.1.0/24)). A note at the bottom states: 'Only virtual networks in the currently selected subscription and region are listed.' At the bottom, there are buttons for 'Review + create', 'Previous', 'Next : Tags >', and 'Download a template for automation'.

En la siguiente imagen se ve la creación de una IP pública para el Gateway con el nombre requerido en la tarea.

Only virtual networks in the currently selected subscription and region are listed.

Public IP address

Public IP address * Create new Use existing

Public IP address name * T3-2023630338-ip-2

Public IP address SKU Standard

Assignment Dynamic Static

Enable active-active mode * Enabled Disabled

Configure BGP * Enabled Disabled

Authentication Information (Preview)

Enable Key Vault Access Enabled Disabled

Azure recommends using a validated VPN device with your virtual network gateway. To view a list of validated devices and instructions for configuration, refer to Azure's [documentation](#) regarding validated VPN devices.

Review + create Previous Next : Tags > Download a template for automation

- En la pestaña “Review + Create”

Validation passed

Basics

Subscription	Azure for Students
Resource group	T3-2023630338-vnet_group2
Name	T3-2023630338-gateway-2
Region	West US 2
SKU	VpnGw2
Generation	Generation2
Virtual network	T3-2023630338-vnet-2
Subnet	GatewaySubnet (10.1.1.0/24)
Gateway type	Vpn
VPN type	RouteBased
Enable active-active mode	Disabled
Configure BGP	Disabled
Public IP address	T3-2023630338-ip-2

Tags

None

Create Previous Next Download a template for automation

- Recurso creado (segunda puerta de enlace)

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes links for Microsoft VirtualNetworkGateway, T3-2023630338-gateway-2 - Microsoft, and WhatsApp, along with a search bar and Copilot button. The main title is "T3-2023630338-gateway-2" under the "Virtual network gateway" category. The left sidebar lists various resources under "All resources", including "NetworkWatcher_eastus2", "NetworkWatcher_westus2", "T2-2023630338-image", "T3-2023630338-gateway-1", "T3-2023630338-gateway-2", "T3-2023630338-ip-1", "T3-2023630338-ip-2", "T3-2023630338-vnet-1", and "T3-2023630338-vnet-2". The main content area displays the "Overview" tab for the selected gateway, showing details like SKU (VpnGw2), Location (West US 2), Subscription (Azure for Students), and Public IP address (13.77.138.113). It also includes sections for "Health check", "Advisor Recommendations", and "Documentation". The bottom status bar shows the date (27/03/2025) and time (11:15 p.m.).

- Seleccionando la primera red virtual a conectar, y en el menú de "Configuración" seleccionando "Conexiones"

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes links for Microsoft VirtualNetworkGateway, T3-2023630338-gateway-1 - Microsoft, and WhatsApp, along with a search bar and Copilot button. The main title is "T3-2023630338-vnet-1 | Connected devices" under the "Virtual network" category. The left sidebar lists various settings and connected devices, with "Connected devices" currently selected. The main content area displays a table of connected devices, showing one entry: "T3-2023630338-gateway-1" (Virtual network gateway) connected via "GatewaySubnet". The bottom status bar shows the date (27/03/2025) and time (11:19 p.m.).

- Seleccionando el Gateway conectado y creando una conexión de la primera red a la segunda red

Se puede ver como la región es la misma que la de la primera Vnet

En la siguiente imagen se observa que seleccionamos el primer Gateway, y el segundo Gateway que estará en el otro extremo

- Pestaña "Review + Create"

The screenshot shows the 'Create connection' blade in the Microsoft Azure portal. At the top, there is a green banner indicating 'Validation passed'. Below this, the 'Basics' section lists connection details:

Subscription	Azure for Students
Resource Group	T3-2023630338-vnet_group
Region	eastus2
Connection type	VNet-to-VNet
Establish bidirectional connectivity	Yes
First connection name	T3-2023630338-conexion-1
Second connection name	T3-2023630338-conexion-2

The 'Settings' section contains the following configuration:

First virtual network gateway	T3-2023630338-gateway-1
Second virtual network gateway	T3-2023630338-gateway-2
IKE Protocol	IKEv2
IPsec / IKE policy	Default
Use policy based traffic selector	Disable
DPD timeout in seconds	45
Connection Mode	Default
Shared Key(PSK)	Zy9tXv42NkLpQm75WdJf18Ah

At the bottom, there are buttons for 'Create', 'Previous', 'Next', and 'Download a template for automation', along with a 'Give feedback' link. The taskbar at the bottom shows various open applications like WhatsApp, Copilot, and Microsoft Office.

- Recurso creado (primera y segunda conexión)

The screenshot shows the 'All resources' blade in the Microsoft Azure portal. On the left, a sidebar lists resources including 'NetworkWatcher_eastus2', 'T2-2023630338-image', 'T3-2023630338-conexion-1', 'T3-2023630338-conexion-2', 'T3-2023630338-gateway-1', 'T3-2023630338-gateway-2', 'T3-2023630338-ip-1', 'T3-2023630338-ip-2', 'T3-2023630338-vnet-1', and 'T3-2023630338-vnet-2'. The main area displays the details for the 'T3-2023630338-conexion-1' resource, which is a 'Connection' type. The 'Overview' tab is selected, showing the following information:

- Resource group: T3-2023630338-vnet_group
- Status: Connected
- Location: East US 2
- Subscription ID: e1d319c4-9458-4992-b305-fe400976ae65
- Tags: (edit) Add_tags
- Virtual network: T3-2023630338-vnet-1, T3-2023630338-vnet-2
- Virtual network gateway 1: T3-2023630338-gateway-1
- Virtual network gateway 2: T3-2023630338-gateway-2

At the bottom, there are navigation links for 'Page 1 of 1' and a URL bar showing the full resource path. The taskbar at the bottom is identical to the one in the previous screenshot.

3. Crea una máquina virtual con Ubuntu 20, 1GB, 1 CPU virtual y 30 GB de disco. Esta máquina se deberá conectar a la subred "default" de la primera red virtual.
- Información básica de la VM



- Sección de Disco (30 GiB)

Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.

Encryption at host Encryption at host is not registered for the selected subscription. [Learn more](#)

OS disk

OS disk size

OS disk type * The selected VM size supports premium disks. We recommend Premium SSD for high IOPS workloads. Virtual machines with Premium SSD disks qualify for the 99.9% connectivity SLA.

Delete with VM

Key management

Enable Ultra Disk compatibility

Data disks for T3-2023630338-1

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

< Previous Next : Networking > Review + create Give feedback

- En la sección de "Red" se puede ver como asociamos la VM a la primera Vnet, y somo se le conecta a la subred por default de dicha Vnet

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution. [Learn more](#)

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * Create new

Subnet * Manage subnet configuration

Public IP Create new

NIC network security group Basic

Public inbound ports * Allow selected ports

Select inbound ports *

This will allow all IP addresses to access your virtual machine. This is only

< Previous Next : Management > Review + create Give feedback

- Pestaña “Review + Create”

Validation passed

Help me create a low cost VM | Help me create a VM optimized for high availability | Help me choose the right VM size for my workload

Basics

Subscription	Azure for Students
Resource group	T3-2023630338-vnet_group
Virtual machine name	T3-2023630338-1
Region	East US 2
Availability options	Availability zone
Zone options	Self-selected zone
Availability zone	1
Security type	Standard
Image	Ubuntu Server 20.04 LTS - Gen2
VM architecture	x64
Size	Standard B1s (1 vcpu, 1 GiB memory)
Enable Hibernation	No
Authentication type	Password
Username	luisvelaVM1
Public inbound ports	SSH
Azure Spot	No

< Previous | Next > | **Create** | Download a template for automation | Give feedback

Validation passed

Help me create a low cost VM | Help me create a VM optimized for high availability | Help me choose the right VM size for my workload

Disks

OS disk size	Image default
OS disk type	Standard HDD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Ephemeral OS disk	No

Networking

Virtual network	T3-2023630338-vnet-1
Subnet	default (10.0.0.0/24)
Public IP	(new) T3-2023630338-1-ip
Accelerated networking	Off
Place this virtual machine behind an existing load balancing solution?	No
Delete public IP and NIC when VM is deleted	Disabled

Management

< Previous | Next > | **Create** | Download a template for automation | Give feedback

Validation passed

Help me create a low cost VM | Help me create a VM optimized for high availability | Help me choose the right VM size for my workload

Management

Microsoft Defender for Cloud	Basic (free)
System assigned managed identity	Off
Login with Microsoft Entra ID	Off
Auto-shutdown	Off
Backup	Disabled
Enable periodic assessment	Off
Enable hotpatch	Off
Patch orchestration options	Azure-orchestrated patching (preview): patches will be installed by Azure
Reboot setting	Reboot if required

Monitoring

Alerts	Off
Boot diagnostics	Off
Enable OS guest diagnostics	Off
Enable application health monitoring	Off

Advanced

< Previous | Next > | Create | Download a template for automation | Give feedback

14°C Despejado | 12:54 a.m. 28/03/2025 | ESP LAA

- Primera máquina virtual creada

T3-2023630338-1 | Virtual machine

Search | Help me copy this VM in any region

Overview

Resource group (move) : T3-2023630338-vnet_group
Status : Running
Location : East US 2 (Zone 1)
Subscription (move) : Azure for Students
Subscription ID : e1d319c4-9458-4992-b305-fe400976ae65
Availability zone : 1
Tags (edit) : Add tags

Properties | Monitoring | Capabilities (7) | Recommendations | Tutorials

Virtual machine
Computer name : T3-2023630338-1
Operating system : Linux (ubuntu 20.04)
VM generation : V2

Networking
Public IP address : 172.200.212.136 (Network interface t3-2023630338-1811_z1)
Public IP address (IPv6) : -

14°C Despejado | 12:56 a.m. 28/03/2025 | ESP LAA

4. Crea una máquina virtual con Ubuntu 20, 1GB, 1 CPU virtual y 30 GB de disco. Esta máquina se deberá conectar a la subred “default” de la segunda red virtual.

The screenshot shows the 'Create a virtual machine' wizard in Microsoft Azure. The 'Instance details' section is visible, including fields for 'Virtual machine name' (T3-2023630338-2), 'Region' (US West US 2), 'Availability options' (Availability zone), and 'Zone options' (Self-selected zone). The 'Availability zone' dropdown shows 'Zone 2' selected. The 'Security type' is set to 'Standard'. At the bottom, there are buttons for '< Previous', 'Next : Disks >', and 'Review + create'.

- En la siguiente imagen se puede ver el tamaño de disco requerido.

The screenshot shows the 'Create a virtual machine' wizard in Microsoft Azure, specifically the 'VM disk encryption' and 'OS disk' configuration sections. Under 'VM disk encryption', it notes that encryption at host is not registered. Under 'OS disk', the 'OS disk size' is set to 'Image default (30 GiB)' and the 'OS disk type' is 'Standard HDD (locally-redundant storage)'. A note states that the selected VM size supports premium disks. Other options shown include 'Delete with VM' (checked), 'Key management' (Platform-managed key), and 'Enable Ultra Disk compatibility'. At the bottom, there is a section for 'Data disks for T3-2023630338-2'.

- En la pestaña de red se puede ver como asociamos la VM a la segunda Vnet, y somo se le conecta a la subred por default de dicha Vnet

Virtual network * ⓘ T3-2023630338-vnet-2
Create new

Subnet * ⓘ default (10.1.0.0/24)
Manage subnet configuration

Public IP ⓘ (new) T3-2023630338-2-ip
Create new

NIC network security group ⓘ None
Basic (selected)
Advanced

Public inbound ports * ⓘ None
Allow selected ports (selected)

Select inbound ports * ⓘ SSH (22)

⚠️ This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Delete public IP and NIC when VM is

< Previous Next : Management > Review + create Give feedback

- Pestaña "Review + Create"

Validation passed

Help me create a low cost VM Help me create a VM optimized for high availability Help me choose the right VM size for my workload

Basics

Subscription	Azure for Students
Resource group	T3-2023630338-vnet_group2
Virtual machine name	T3-2023630338-2
Region	West US 2
Availability options	Availability zone
Zone options	Self-selected zone
Availability zone	2
Security type	Standard
Image	Ubuntu Server 20.04 LTS - Gen2
VM architecture	x64
Size	Standard B1s (1 vcpu, 1 GiB memory)
Enable Hibernation	No
Authentication type	Password
Username	luisvelaVM2
Public inbound ports	SSH
Azure Spot	No

< Previous Next > Create Download a template for automation Give feedback

All resources - Microsoft Azure Create a virtual machine - Microsoft WhatsApp

https://portal.azure.com/#create/Microsoft.VirtualMachine T3-2023630338-vnet-2 Copilot

Microsoft Azure

Home > Create a resource >

Create a virtual machine

Validation passed

Help me create a low cost VM Help me create a VM optimized for high availability Help me choose the right VM size for my workload

Disks

OS disk size	Image default
OS disk type	Standard HDD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Ephemeral OS disk	No

Networking

Virtual network	T3-2023630338-vnet-2
Subnet	default (10.1.0.0/24)
Public IP	(new) T3-2023630338-2-ip
Accelerated networking	Off
Place this virtual machine behind an existing load balancing solution?	No
Delete public IP and NIC when VM is deleted	Disabled

Management

< Previous Next > Create Download a template for automation Give feedback

14°C Despejado

ESP LAA 01:04 a.m. 28/03/2025

All resources - Microsoft Azure Create a virtual machine - Microsoft WhatsApp

https://portal.azure.com/#create/Microsoft.VirtualMachine T3-2023630338-vnet-2 Copilot

Microsoft Azure

Home > Create a resource >

Create a virtual machine

Validation passed

Help me create a low cost VM Help me create a VM optimized for high availability Help me choose the right VM size for my workload

Management

Microsoft Defender for Cloud	Basic (free)
System assigned managed identity	Off
Login with Microsoft Entra ID	Off
Auto-shutdown	Off
Backup	Disabled
Enable periodic assessment	Off
Enable hotpatch	Off
Patch orchestration options	Azure-orchestrated patching (preview): patches will be installed by Azure
Reboot setting	Reboot if required

Monitoring

Alerts	Off
Boot diagnostics	Off
Enable OS guest diagnostics	Off
Enable application health monitoring	Off

Advanced

< Previous Next > Create Download a template for automation Give feedback

14°C Despejado

ESP LAA 01:04 a.m. 28/03/2025

- Máquina virtual creada

T3-2023630338-2

Virtual machine

Status: Running

Location: West US 2 (Zone 2)

Subscription (move): Azure for Students

Subscription ID: e1d319c4-9458-4992-b305-fe400976ae65

Availability zone: 2

Tags: (edit) : Add tags

Properties

Virtual machine	Networking
Computer name: T3-2023630338-2	Public IP address: 20.51.123.58 (Network interface: t3-2023630338-2917_z2)
Operating system: Linux	Public IP address (IPv6): -
VM generation: V2	Private IP address: 10.1.0.4
VM architecture: x64	Private IP address (IPv6): -

5. Conectarse a la primera máquina virtual mediante SSH y hacer ping a la segunda máquina virtual usando la IP privada

- Comprobando la IP de la segunda máquina virtual (10.1.0.4)

T3-2023630338-2

Virtual machine

Status: Ready

Operating system: Linux (ubuntu 20.04)

VM generation: V2

VM architecture: x64

Agent status: Ready

Agent version: 2.12.0.2

Hibernation: Disabled

Host group: -

Host: -

Proximity placement group: -

Colocation status: N/A

Networking

Virtual machine	Networking
Computer name: T3-2023630338-2	Public IP address: 20.51.123.58 (Network interface: t3-2023630338-2917_z2)
Operating system: Linux (ubuntu 20.04)	Public IP address (IPv6): -
VM generation: V2	Private IP address: 10.1.0.4
VM architecture: x64	Private IP address (IPv6): -
Agent status: Ready	Virtual network/subnet: T3-2023630338-vnet-2/default
Agent version: 2.12.0.2	DNS name: Configure

- Conectando a la primera maquina virtual por SSH

```
luisvelaVM1@T3-2023630338 ~ + - x
luisvelaVM1@172.200.212.136's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1082-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Fri Mar 28 07:15:14 UTC 2025

System load: 0.0          Processes:           102
Usage of /: 5.4% of 28.89GB Users logged in: 0
Memory usage: 31%          IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '22.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Fri Mar 28 07:09:06 2025 from 187.190.4.97
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

luisvelaVM1@T3-2023630338-1:~$ |
```

- Enviando un ping desde la primera maquina virtual a la segunda.

```
luisvelaVM1@T3-2023630338-1:~$ ping 10.1.0.4
PING 10.1.0.4 (10.1.0.4) 56(84) bytes of data.
64 bytes from 10.1.0.4: icmp_seq=1 ttl=64 time=68.3 ms
64 bytes from 10.1.0.4: icmp_seq=2 ttl=64 time=67.5 ms
64 bytes from 10.1.0.4: icmp_seq=3 ttl=64 time=67.7 ms
64 bytes from 10.1.0.4: icmp_seq=4 ttl=64 time=67.8 ms
64 bytes from 10.1.0.4: icmp_seq=5 ttl=64 time=69.9 ms
64 bytes from 10.1.0.4: icmp_seq=6 ttl=64 time=67.7 ms
64 bytes from 10.1.0.4: icmp_seq=7 ttl=64 time=69.7 ms
64 bytes from 10.1.0.4: icmp_seq=8 ttl=64 time=68.2 ms
64 bytes from 10.1.0.4: icmp_seq=9 ttl=64 time=67.9 ms
64 bytes from 10.1.0.4: icmp_seq=10 ttl=64 time=67.7 ms
64 bytes from 10.1.0.4: icmp_seq=11 ttl=64 time=67.9 ms
64 bytes from 10.1.0.4: icmp_seq=12 ttl=64 time=67.8 ms
64 bytes from 10.1.0.4: icmp_seq=13 ttl=64 time=67.9 ms
64 bytes from 10.1.0.4: icmp_seq=14 ttl=64 time=67.9 ms
64 bytes from 10.1.0.4: icmp_seq=15 ttl=64 time=68.3 ms
^C
--- 10.1.0.4 ping statistics ---
15 packets transmitted, 15 received, 0% packet loss, time 14010ms
rtt min/avg/max/mdev = 67.524/68.140/69.867/0.687 ms
luisvelaVM1@T3-2023630338-1:~$ |
```

6. Conectarse a la segunda máquina virtual mediante SSH y hacer ping a la primera máquina virtual usando la IP privada
 - Comprobando la IP de la primera máquina virtual (10.0.0.4)

The screenshot shows the Azure portal interface for a virtual machine named "T3-2023630338-1". The left sidebar contains navigation links like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Resource visualizer, Connect, Networking, Settings, Availability + scale, Security, Backup + disaster recovery, and Operations. The main content area displays the VM's properties under the "Virtual machine" tab, including Computer name (T3-2023630338-1), Operating system (Linux (ubuntu 20.04)), VM generation (V2), VM architecture (x64), Agent status (Ready), Agent version (2.12.0.2), Hibernation (Disabled), Host group (-), and Host (-). To the right, the "Networking" section provides details about the network interface, showing a Public IP address of 72.200.212.136 and a Private IP address of 10.0.0.4.

- Conectando por SSH

```

PS C:\Users\luisvelas> SSH luisvelaVM2@128.85.67.219
luisvelaVM2@128.85.67.219's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1082-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Fri Mar 28 07:34:51 UTC 2025

System load:  0.64      Processes:           110
Usage of /:   5.3% of 28.89GB  Users logged in:     0
Memory usage: 32%          IPv4 address for eth0: 10.1.0.5
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '22.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Fri Mar 28 07:34:53 2025 from 187.190.4.97
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

luisvelaVM2@T3-2023630338-2:~$ |

```

- Enviando un ping desde la segunda máquina virtual a la primera.

```

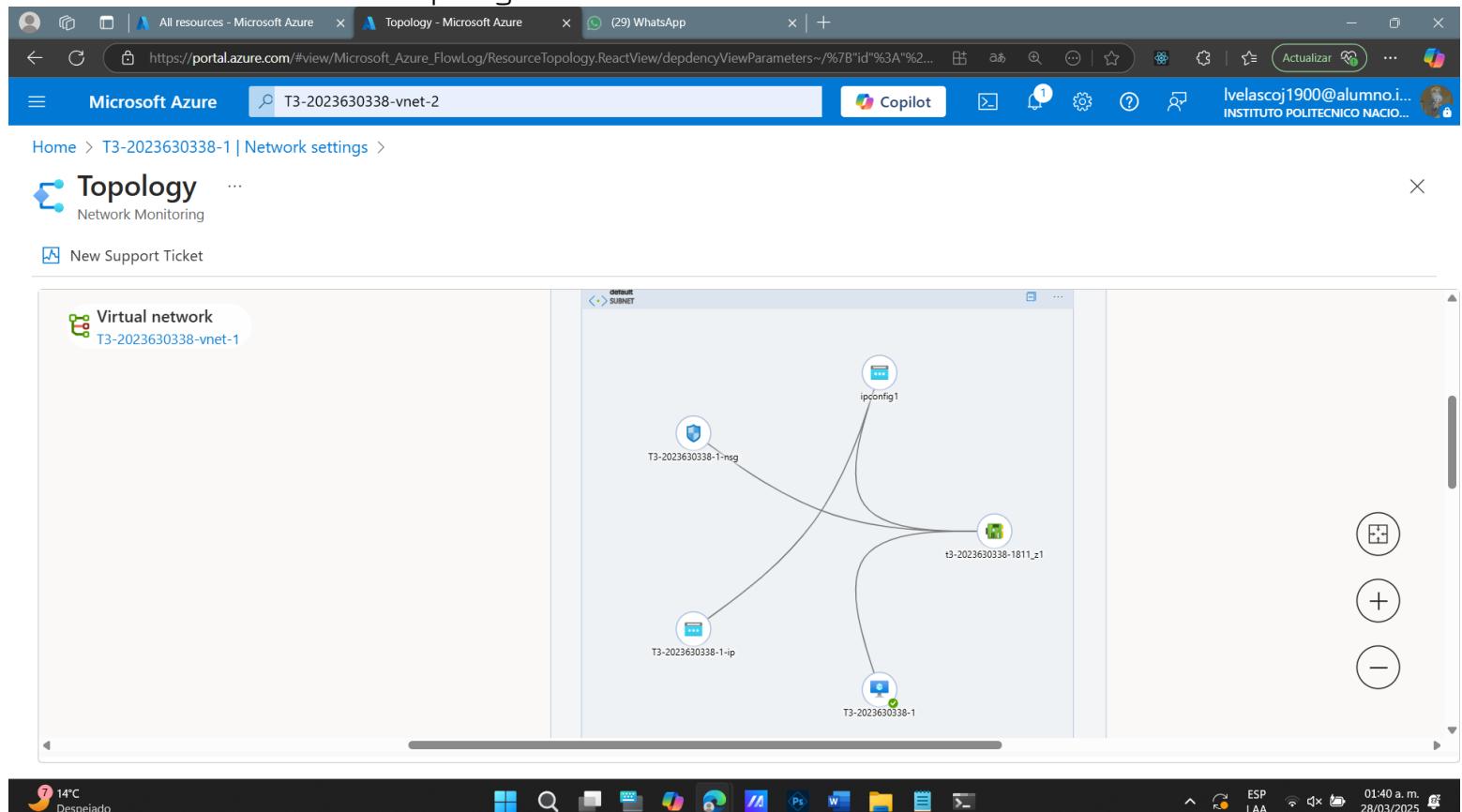
luisvelaVM1@T3-2023630338-~$ ping 10.0.0.4
PING 10.0.0.4 (10.0.0.4) 56(84) bytes of data.
64 bytes from 10.0.0.4: icmp_seq=1 ttl=64 time=68.5 ms
64 bytes from 10.0.0.4: icmp_seq=2 ttl=64 time=67.8 ms
64 bytes from 10.0.0.4: icmp_seq=3 ttl=64 time=67.6 ms
64 bytes from 10.0.0.4: icmp_seq=4 ttl=64 time=68.0 ms
64 bytes from 10.0.0.4: icmp_seq=5 ttl=64 time=67.9 ms
64 bytes from 10.0.0.4: icmp_seq=6 ttl=64 time=67.9 ms
64 bytes from 10.0.0.4: icmp_seq=7 ttl=64 time=68.2 ms
64 bytes from 10.0.0.4: icmp_seq=8 ttl=64 time=67.8 ms
64 bytes from 10.0.0.4: icmp_seq=9 ttl=64 time=67.7 ms
64 bytes from 10.0.0.4: icmp_seq=10 ttl=64 time=67.3 ms
64 bytes from 10.0.0.4: icmp_seq=11 ttl=64 time=68.0 ms
64 bytes from 10.0.0.4: icmp_seq=12 ttl=64 time=70.7 ms
64 bytes from 10.0.0.4: icmp_seq=13 ttl=64 time=67.4 ms
64 bytes from 10.0.0.4: icmp_seq=14 ttl=64 time=69.5 ms
64 bytes from 10.0.0.4: icmp_seq=15 ttl=64 time=67.5 ms
64 bytes from 10.0.0.4: icmp_seq=16 ttl=64 time=67.8 ms
64 bytes from 10.0.0.4: icmp_seq=17 ttl=64 time=70.3 ms
64 bytes from 10.0.0.4: icmp_seq=18 ttl=64 time=67.3 ms
64 bytes from 10.0.0.4: icmp_seq=19 ttl=64 time=67.6 ms
64 bytes from 10.0.0.4: icmp_seq=20 ttl=64 time=67.5 ms
64 bytes from 10.0.0.4: icmp_seq=21 ttl=64 time=67.7 ms
64 bytes from 10.0.0.4: icmp_seq=22 ttl=64 time=67.6 ms
64 bytes from 10.0.0.4: icmp_seq=23 ttl=64 time=74.6 ms
64 bytes from 10.0.0.4: icmp_seq=24 ttl=64 time=71.4 ms
64 bytes from 10.0.0.4: icmp_seq=25 ttl=64 time=68.0 ms
^C
--- 10.0.0.4 ping statistics ---
25 packets transmitted, 25 received, 0% packet loss, time 24037ms
rtt min/avg/max/mdev = 67.328/68.457/74.601/1.638 ms
luisvelaVM2@T3-2023630338-2:~$ |

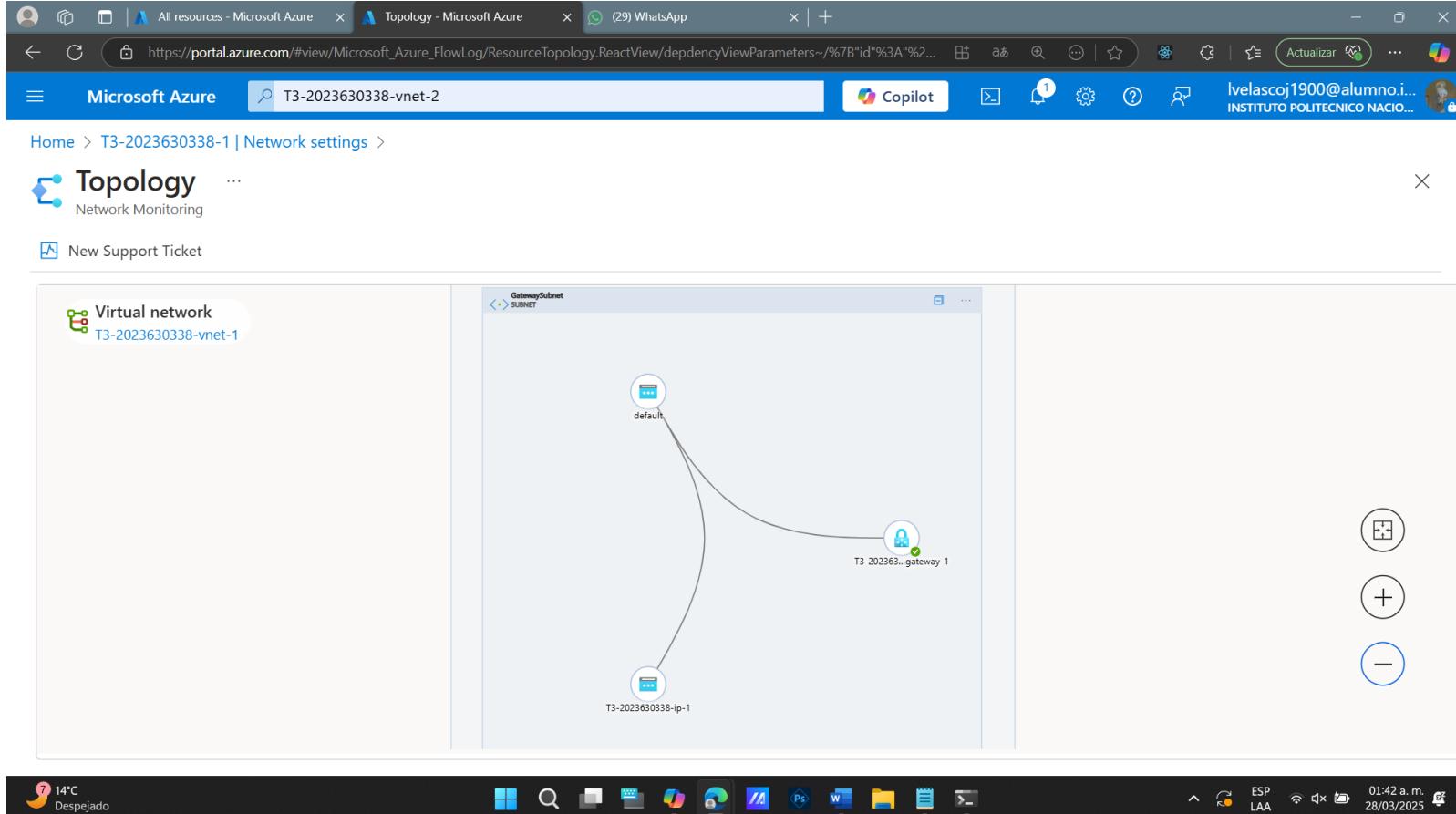
```

14°C Despejado

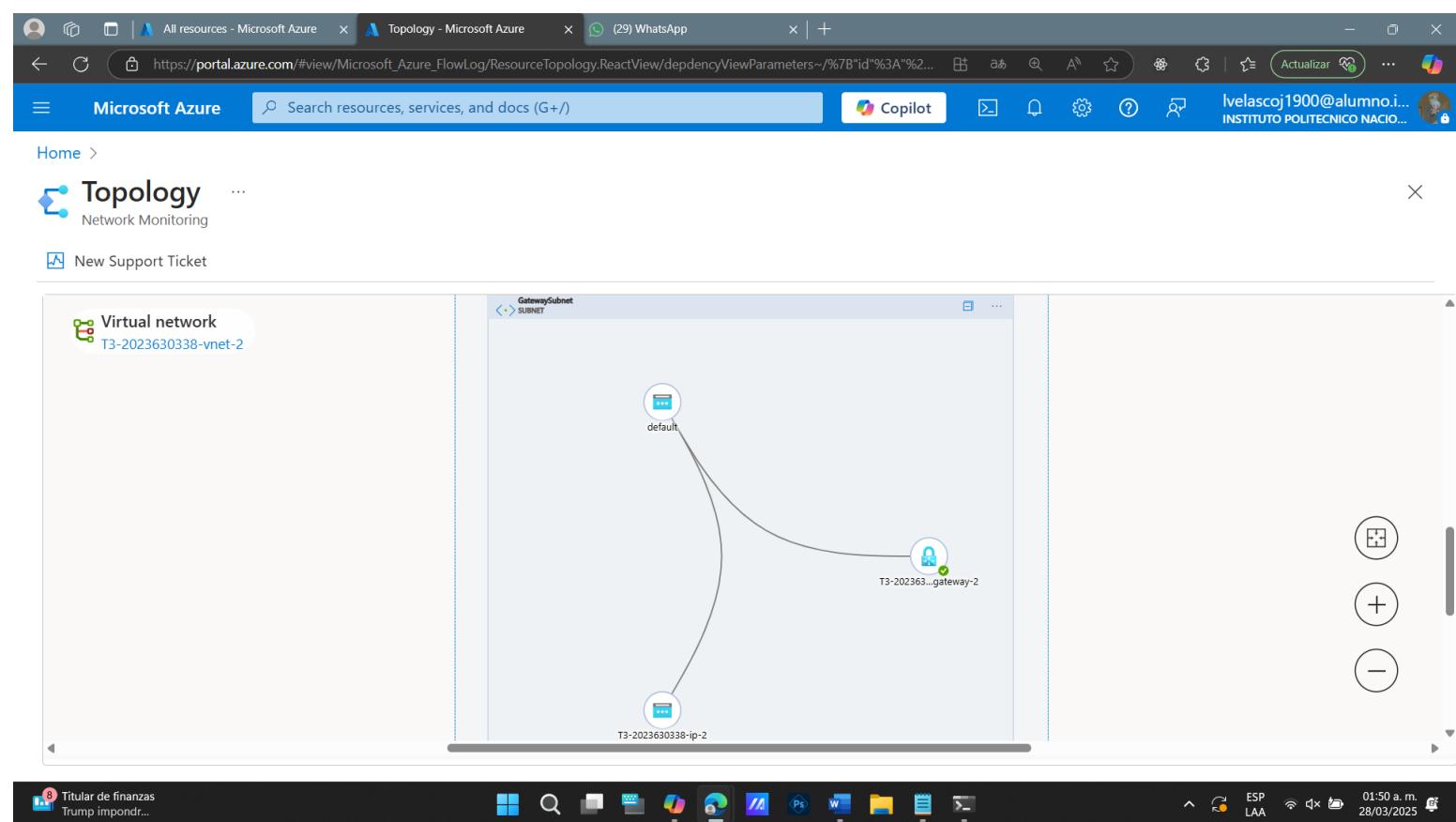
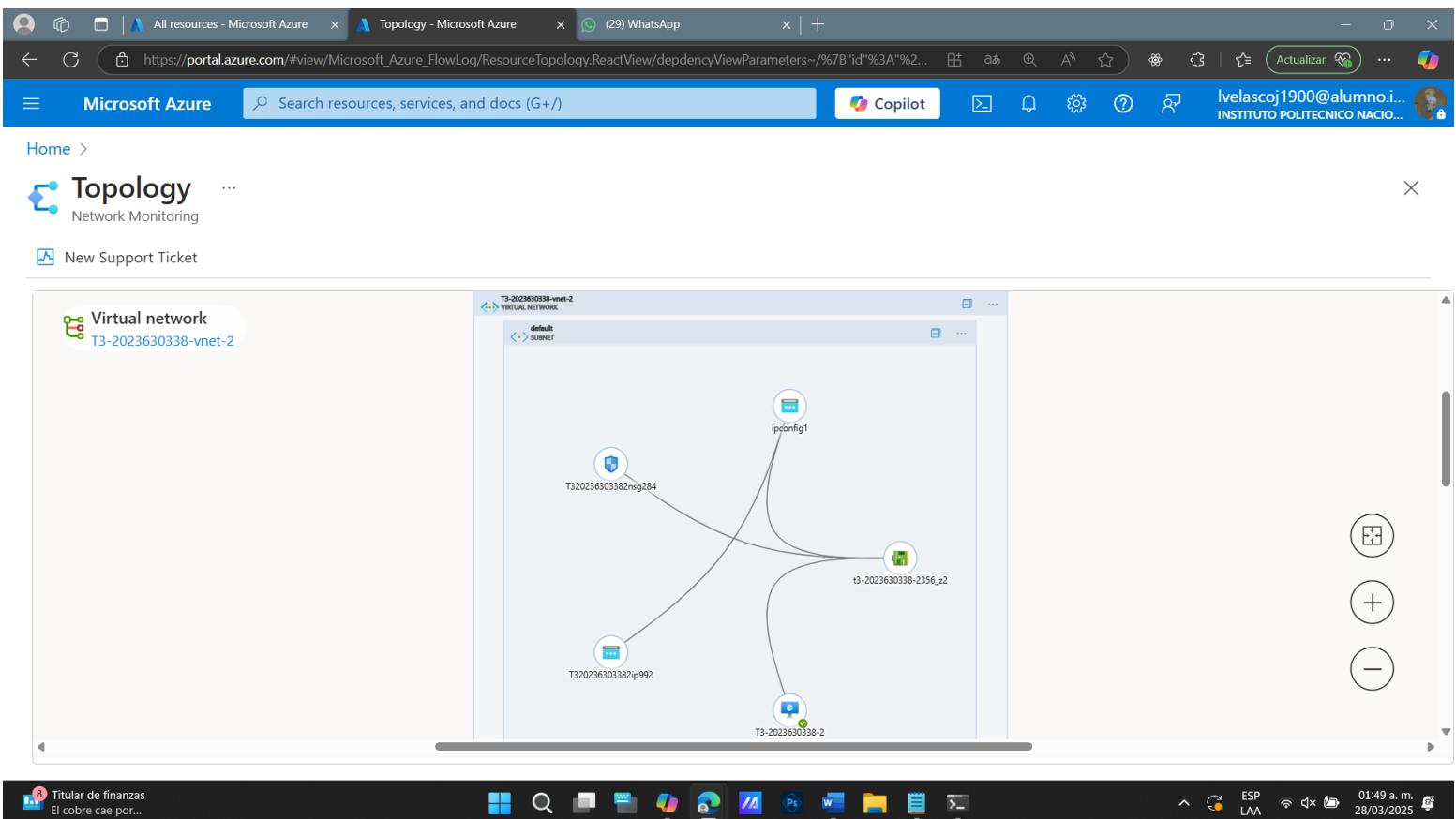
Microsoft Windows [versión: 10] (Windows 10 Pro) | 28/03/2025 01:37 a.m.

7. Seleccionar la primera máquina virtual. Seleccionar "Configuración de red".
Seleccionar "Ver topología".





8. Seleccionar la segunda máquina virtual. Seleccionar "Configuración de red".
Seleccionar "Ver topología".



CONCLUSIONES

Al termino de esta tarea, entiendo la importancia de las redes privadas, así como su configuración, que por cierto se debe de ser muy cuidadoso en esta, ya que la seguridad de nuestro sistema puede depender de esta configuración. También he entendido como es que funcionan las subredes dentro de una Vnet y su rango de IPs posibles, esto por si queremos crear varias instancias de maquinas virtuales para diferentes usos, que en este caso solo creamos una maquina virtual por cada Vnet y nos sobraron bastantes rangos de IP's por usar.

Por otro lado, el implementar una Vnet-to-Vnet me puso a pensar en sus beneficios, así como sus desventajas (que a mi manera de verlo, las mas claras son las que tienen que ver con el costo); pero considero que también tiene ventajas, como por ejemplo la comunicación aislada de sistemas o servicios, ya que diferentes personas pueden estar trabajando en una Vnet y otras en otra Vnet sin necesidad de afectarse entre sí.