

ARQUITECTURA DE RED VPC EN AWS

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1. Diseño de la Red Virtual (VPC)

Configuraremos una red lógica denominada [demo-vpc-dianalozano](#) utilizando el bloque de direcciones **10.0.0.0/16**.

The screenshot shows the 'Create VPC' wizard in the AWS Management Console. The 'VPC settings' section is selected. The 'Resources to create' dropdown is set to 'VPC only'. The 'Name tag - optional' field contains 'demo-vpc-dianalozano'. The 'IPv4 CIDR block' dropdown is set to 'IPv4 manual input' and shows '10.0.0.0/16'. The 'IPv6 CIDR block' dropdown is set to 'No IPv6 CIDR block'. The 'Tenancy' dropdown is set to 'Default'. The 'VPC encryption control' section shows 'Monitor mode' selected. The 'Tags' section shows a single tag 'Name: demo-vpc-dianalozano'.

2. Segmentación en Subredes

Creamos dos subredes dentro de la VPC para organizar los recursos según su nivel de exposición:

- **Subred Pública (public-subnet-1-dianalozano):** Configurada con el CIDR 10.0.1.0/24 para alojar el servidor web.
- **Subred Privada (private-subnet-1-dianalozano):** Configurada con el CIDR 10.0.2.0/24 para recursos internos sin salida directa a internet.

SUBNET PUBLICA

≡ [VPC](#) > [Subnets](#) > Create subnet ① 🔍 ⌂

Create subnet [Info](#)

VPC

VPC ID
Create subnets in this VPC.
vpc-0fbc07f19be6a3fa5 (demo-vpc-dianalozano)

Associated VPC CIDRs

IPv4 CIDRs
10.0.0.0/16

Subnet settings
Specify the CIDR blocks and Availability Zone for the subnet.

Subnet 1 of 1

Subnet name
Create a tag with a key of 'Name' and a value that you specify.
public-subnet-1-dianalozano
The name can be up to 256 characters long.

Availability Zone [Info](#)
Choose the zone in which your subnet will reside, or let Amazon choose one for you.
United States (N. Virginia) / use1-az4 (us-east-1c)

IPv4 VPC CIDR block [Info](#)
Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.
10.0.0.0/16

IPv4 subnet CIDR block
10.0.1.0/24 256 IPs
◀ ▶ ▲ ▼

Tags - optional
Key Value - optional [Remove](#)
[Add new tag](#)
You can add 49 more tags.
[Remove](#)

[Add new subnet](#)

[Cancel](#) **Create subnet**

⌚ You have successfully created 1 subnet: subnet-0212c1d1e70060962 ×

Subnets (1) [Info](#) Last updated less than a minute ago

[Actions](#) [Create subnet](#)

[Clear filters](#)

| <input type="checkbox"/> Name | Subnet ID | State | VPC |
|--|--|--|---------------------------------|
| <input type="checkbox"/> public-subnet-1-dianalozano | subnet-0212c1d1e70060962 | Available | vpc-0fbc07f19be6a3fa5 demo... |

SUBNET PRIVADA

The screenshot shows the 'Create subnet' wizard in the AWS VPC console. The top navigation bar shows 'VPC > Subnets > Create subnet'. The main section is titled 'Create subnet' with a 'Info' link. The 'VPC' section shows a dropdown for 'VPC ID' containing 'vpc-0fb0719be6a3fa5 (demo-vpc-dianalozano)'. The 'Associated VPC CIDRs' section shows 'IPv4 CIDRs' as '10.0.0.0/16'. The 'Subnet settings' section is expanded, showing 'Subnet 1 of 1'. It includes fields for 'Subnet name' (set to 'private-subnet-1-dianalozano'), 'Availability Zone' (set to 'United States (N. Virginia) / us-east-1a (us-east-1)'), 'IPv4 VPC CIDR block' (set to '10.0.0.0/16'), 'IPv4 subnet CIDR block' (set to '10.0.2.0/24'), and a 'Tags - optional' section with a single tag 'Name: private-subnet-1-dianalozano'. At the bottom are 'Cancel' and 'Create subnet' buttons.

3. Conectividad y Tablas de Ruteo

Para habilitar la comunicación con internet en la subred pública, se realizaron los siguientes pasos:

1. **Internet Gateway (IGW):** Cree [demo-igw-dianalozano](#) y la vincule a la VPC.
2. **Tabla de Ruteo Pública (public-rt):** Añadi una ruta estática hacia 0.0.0.0/0 con destino al IGW.
3. **Tabla de Ruteo Privada:** Luego cree una tabla independiente asociada a la subred privada sin ruta al IGW, asegurando su aislamiento.

VPC > Internet gateways > Create internet gateway

Create internet gateway Info

An internet gateway is a virtual router that connects a VPC to the internet. To create a new internet gateway specify the name for the gateway below.

Internet gateway settings

Name tag
Creates a tag with a key of 'Name' and a value that you specify.

demo-igw-dianalozano

Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional

You can add 49 more tags.

Create route table Info

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - optional
Creates a tag with a key of 'Name' and a value that you specify.

public-rt-dianalozano

VPC
The VPC to use for this route table.

vpc-0fbc07f19be6a3fa5 (demo-vpc-dianalozano)

Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional

You can add 49 more tags.

VPC > Route tables > rtb-05a0786e9ccfe0e24 > Edit routes

Edit routes

| Destination | Target | Status | Propagated | Route Origin | |
|-------------|-----------------------|--------|------------|------------------|---------------------------------------|
| 10.0.0.0/16 | local | Active | No | CreateRouteTable | |
| 0.0.0.0/0 | Internet Gateway | - | No | CreateRoute | <input type="button" value="Remove"/> |
| | igw-0a0633f4393ac65ad | | | | |

The screenshot shows the AWS VPC Route Tables page. The top navigation bar includes 'VPC' (selected), 'Route tables', and the specific route table ID 'rtb-05a0786e9ccfe0e24'. A green success message box at the top right states: 'Updated routes for rtb-05a0786e9ccfe0e24 / public-rt-dianalozano successfully' with a 'Details' link. The main content area is titled 'rtb-05a0786e9ccfe0e24 / public-rt-dianalozano' with an 'Actions' dropdown. The 'Details' tab is selected, showing the following information:

- Route table ID:** rtb-05a0786e9ccfe0e24
- Main:** No
- Owner ID:** vpc-0fbc07f19be6a3fa5 | demo-vpc-dianalozano
- Explicit subnet associations:** -
- Edge associations:** -

Below the details, there are tabs for 'Routes', 'Subnet associations', 'Edge associations', 'Route propagation', and 'Tags'. The 'Routes' tab is selected, showing a table with two entries:

| Destination | Target | Status | Propagated | Route Origin |
|-------------|-----------------------|--------|------------|--------------------|
| 0.0.0.0/0 | igw-0a0633f4393ac65ad | Active | No | Create Route |
| 10.0.0.0/16 | local | Active | No | Create Route Table |

4. Security Group

Se configuró el grupo de seguridad [sgdianalozano](#) para filtrar el tráfico entrante a la instancia. Se habilitaron los puertos:

- SSH (22):** Para acceso administrativo.
- HTTP (80):** Para permitir el tráfico de usuarios al servidor web.

The screenshot shows the AWS EC2 Security Groups page. The top navigation bar includes 'EC2' (selected), 'Security Groups', and the specific security group ID 'sg-0e09017c08a256767 - demo-sg-dianalozano'. A green success message box at the top right states: 'Security group (sg-0e09017c08a256767 | demo-sg-dianalozano) was created successfully' with a 'Details' link. The main content area is titled 'sg-0e09017c08a256767 - demo-sg-dianalozano' with an 'Actions' dropdown. The 'Details' tab is selected, showing the following information:

| Security group name | Security group ID | Description | VPC ID |
|---------------------|----------------------|-------------|-----------------------|
| demo-sg-dianalozano | sg-0e09017c08a256767 | seguridad | vpc-0fbc07f19be6a3fa5 |

Below the details, there are tabs for 'Inbound rules', 'Outbound rules', 'Sharing', 'VPC associations', 'Related resources - new', and 'Tags'. The 'Inbound rules' tab is selected, showing a table with two entries:

| Name | Security group rule ID | IP version | Type | Protocol |
|------|------------------------|------------|------|----------|
| - | sgr-0fa8e7e86bdc32fec | IPv4 | HTTP | TCP |
| - | sgr-0a83bb3a9f8a25d22 | IPv4 | SSH | TCP |

5. Lanzamiento y Automatización (User Data)

Desplegamos una instancia EC2 en la subred pública. Se utilizó un script de **User Data** para automatizar la instalación de Apache y la creación de una página personalizada con el nombre del host y la fecha.

The screenshot shows the AWS CloudWatch Metrics console. A metric named 'MyCustomMetric' is selected. The chart displays a single data point at time 0 with a value of 1. The x-axis represents time, and the y-axis represents the metric value.

6. Resultados y Verificación

La validación final se realizó accediendo a la **IP Pública (3.91.43.233)**. El navegador mostró el mensaje configurado, confirmando que la infraestructura de red (VPC, IGW, Subnets y Security Groups) está correctamente integrada.



It works!