

# REPLICACIÓN DE SERVIDORES USANDO



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- Registro en amazon EC2
- Creación de una máquina virtual
- Configuración de instancias
- Instalación LAMP y NGINX
- Configuración NGINX
- Caso práctico



# ¿Qué es Amazon Ec2?

AMAZON EC2



[AWS.AMAZON.COM/EC2](https://aws.amazon.com/ec2)

# Registro en Amazon EC2

En primer lugar, nos registramos en Amazon EC2 en el siguiente enlace:

<https://console.aws.amazon.com/s3/home>

Amazon nos permite crear una cuenta gratuita para probar su producto, pero hay que tener cuidado ya que si superamos los servicios que nos ofrece gratuitamente, nos cobrará dichos servicios de nuestra tarjeta de crédito.



# Registro en Amazon EC2

En la siguiente captura de pantalla podemos observar los servicios que nos ofrece Amazon EC2 con el registro gratuito:

## **Las nuevas cuentas de AWS incluyen:**

### **12 meses de acceso a la capa gratuita de AWS**

Amazon EC2: 750 horas al mes de uso de instancias t2.micro de Windows y Linux

Amazon S3: 5 GB de almacenamiento

Amazon RDS: 750 h/mes de uso de una microinstancia de base de datos

Amazon DynamoDB: 25 GB de almacenamiento, hasta 200 millones de solicitudes al mes

### **Características de AWS Basic Support**

Servicio al cliente: 24x7x365

Foros de soporte

Documentación, documentos técnicos y guías de prácticas recomendadas

Visite [aws.amazon.com/es/free](https://aws.amazon.com/es/free) para conocer todos los demás términos.

# Registro en Amazon EC2

## Contact Information

\* Required Fields

Full Name\*

Company Name

Country\*


Address\*

City\*

State / Province or Region\*

Postal Code\*

Phone Number\*

Security Check 

[Refresh Image](#)

Please type the characters as shown above

**AWS Customer Agreement**  
☐ Check here to indicate that you have read and agree to the terms of the [AWS Customer Agreement](#)

[Create Account and Continue](#)

## Payment Information

Progress: Contact Information (✓) | Payment Information (●) | Identity Verification (●) | Support Plan (●) | Confirmation (●)

Please enter your payment information below. You will be able to try a broad set of AWS products for free via the Free Usage Tier. We will only bill your credit card for usage that is not covered by our Free Usage Tier.

AWS Free Usage Tier	Compute Amazon EC2	Storage Amazon S3	Database Amazon RDS
free for 1 year	750hrs/month*	5GB	750hrs/month*

[\\*View full offer details >](#)

Credit Card Number  Expiration Date

Cardholder's Name

☒ Use my contact address

☐ Use a new address

[Continue](#)

## Identity Verification

You will be called immediately by an automated system and prompted to enter the PIN number provided.

### 1. Provide a telephone number

Please enter your information below and click the "Call Me Now" button.

Country Code  Phone Number  Ext

[Call Me Now](#)

### 2. Call in progress

### 3. Identity verification complete

# Registro en Amazon EC2

## Support Plan

All customers receive free support. Choosing a paid support plan will allow you to receive one-on-one technical assistance from experienced engineers and access many other support features. Please see below.

Please Select One


☒ **Basic (Free)**

Contact Customer Service for account and billing questions, receive help for resources that don't pass system health checks, and access the AWS Community Forums.

☐ **Developer (\$49/month)**

Get started on AWS - ask technical questions and get a response to your web case within 12 hours during local business hours.

☐ **Business (Starting at \$100/month - [Pricing Example](#)) - Recommended**

24/7/365 real-time assistance by phone and chat, a 1 hour response to web cases, and help with 3rd party software. Access AWS Trusted Advisor to increase performance, fault tolerance, security, and potentially save money. 


☐ **Enterprise**

15 minute response to web cases, an assigned technical account manager (TAM) who is an expert in your use case, and white-glove case handling that notifies your TAM and the service engineering team of a critical issue.

*If you select this option, you will not be charged immediately. We will contact you to discuss your needs and finalize the signup.*

Continue

## AWS Support Features

	Basic	Developer	Business	Enterprise
Customer Service - 24x7x365	●	●	●	●
Support Forums	●	●	●	●
Documentation, White Papers, Best Practice Guides	●	●	●	●
AWS Trusted Advisor 	4 checks	4 checks	37 checks	37 checks
Access to Technical Support	Support for Health Checks	Email (local business hours)	Phone, Chat, Email, Live Screen Sharing (24/7)	Phone, Chat, Email, Live Screen Sharing (24/7)
Primary Case Handling	Technical Customer Service Associate	Cloud Support Associate	Cloud Support Engineer	Sr. Cloud Support Engineer
Users who can create Technical Support		1 (account credentials only)	Unlimited (IAM supported)	Unlimited (IAM supported)
Response Time		<12 hours	<1 hour	<15 minutes

# Registro en Amazon EC2

Architecture Support		Building Blocks	Use Case Guidance	Application Architecture
Best Practice Guidance		•	•	•
AWS Support API <sup>?</sup>			•	•
Third-party Software Support <sup>?</sup>			•	•
Infrastructure Event Management <sup>?</sup>			Contact Us for Pricing	•
AWS Concierge <sup>?</sup>				•
Direct Access to Technical Account Manager (TAM)				•
White-glove Case Routing <sup>?</sup>				•
Management Business Reviews <sup>?</sup>				•

AWS Support Pricing

	Basic	Developer	Business	Enterprise
Pricing	Included	\$49/month	Greater of \$100 - or - 10% of monthly AWS usage for the first \$0-\$10K 7% of monthly AWS usage from \$10K-\$80K 5% of monthly AWS usage from \$80K-\$250K 3% of monthly AWS usage from \$250K+	Greater of \$15,000 - or - 10% of monthly AWS usage for the first \$0-\$150K 7% of monthly AWS usage from \$150K-\$500K 5% of monthly AWS usage from \$500K-\$1M 3% of monthly AWS usage from \$1M+
			<sup>?</sup>	<sup>?</sup>



# Registro en Amazon EC2

## Bienvenido a Amazon Web Services

Gracias por crear una cuenta de Amazon Web Services (AWS). Estamos procesando la activación de su cuenta. Para la mayoría de los clientes, la activación tarda solamente un par de minutos, pero a veces puede tardar unas horas si es necesario realizar otras verificaciones de la cuenta. Le avisaremos por correo electrónico cuando se active su cuenta.

[Iniciar Management Console](#)[Contactar con el departamento de ventas](#)

## Introducción



### Introducción Documentación

Instrucciones paso a paso para que se ponga en marcha con rapidez



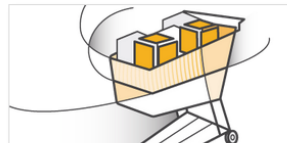
### AWS | Precios

Optimize los costes de sus cargas de trabajo tanto estables como variables.



### Soluciones de AWS

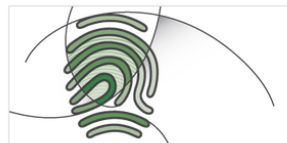
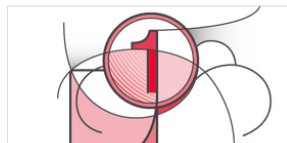
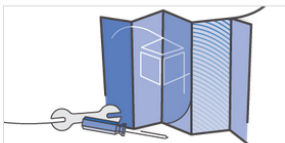
Encuentre la solución adecuada para sus necesidades



### Pruebas gratuitas de software

Inicie software popular en AWS en cuestión de minutos

## Recursos







# Creación de una máquina virtual

## Amazon Web Services





### Compute

-  **EC2**  
Virtual Servers in the Cloud
-  **Lambda**  
Run Code in Response to Events
-  **EC2 Container Service**  
Run and Manage Docker Containers




### Storage & Content Delivery

-  **S3**  
Scalable Storage in the Cloud
-  **Storage Gateway**  
Integrates On-Premises IT Environments with Cloud Storage
-  **Glacier**  
Archive Storage in the Cloud
-  **CloudFront**  
Global Content Delivery Network







### Database

-  **RDS**  
MySQL, Postgres, Oracle, SQL Server, and Amazon Aurora
-  **DynamoDB**  
Predictable and Scalable NoSQL Data Store
-  **ElastiCache**  
In-Memory Cache
-  **Redshift**  
Managed Petabyte-Scale Data Warehouse Service





### Networking

-  **VPC**  
Isolated Cloud Resources
-  **Direct Connect**  
Dedicated Network Connection to AWS
-  **Route 53**  
Scalable DNS and Domain Name Registration





### Administration & Security

-  **Directory Service**  
Managed Directories in the Cloud
-  **Identity & Access Management**  
Access Control and Key Management
-  **Trusted Advisor**  
AWS Cloud Optimization Expert
-  **CloudTrail**  
User Activity and Change Tracking
-  **Config**  
Resource Configurations and Inventory
-  **CloudWatch**  
Resource and Application Monitoring







### Deployment & Management

-  **Elastic Beanstalk**  
AWS Application Container
-  **OpsWorks**  
DevOps Application Management Service
-  **CloudFormation**  
Templated AWS Resource Creation
-  **CodeDeploy**  
Automated Deployments




### Analytics

-  **EMR**  
Managed Hadoop Framework
-  **Kinesis**  
Real-time Processing of Streaming Big Data
-  **Data Pipeline**  
Orchestration for Data-Driven Workflows
-  **Machine Learning**  
Build Smart Applications Quickly and Easily




### Application Services

-  **SQS**  
Message Queue Service
-  **SWF**  
Workflow Service for Coordinating Application Components
-  **AppStream**  
Low Latency Application Streaming
-  **Elastic Transcoder**  
Easy-to-use Scalable Media Transcoding
-  **SES**  
Email Sending Service
-  **CloudSearch**  
Managed Search Service

### Mobile Services

-  **Cognito**  
User Identity and App Data Synchronization
-  **Mobile Analytics**  
Understand App Usage Data at Scale
-  **SNS**  
Push Notification Service

### Enterprise Applications

-  **WorkSpaces**  
Desktops in the Cloud
-  **WorkDocs**  
Secure Enterprise Storage and Sharing Service
-  **WorkMail** PREVIEW  
Secure Email and Calendaring Service

# Creación de una máquina virtual

## Resources

You are using the following Amazon EC2 resources in the EU West (Ireland) region:

0 Running Instances

0 Volumes

0 Key Pairs

0 Placement Groups

0 Elastic IPs

0 Snapshots

0 Load Balancers

1 Security Groups

💬 Easily deploy Ruby, PHP, Java, .NET, Python, Node.js & Docker applications with [Elastic Beanstalk](#).

Hide

## Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Launch Instance

Note: Your instances will launch in the EU West (Ireland) region

## Service Health

**Service Status:**

🟢 EU West (Ireland):  
This service is operating normally

**Availability Zone Status:**

🟢 eu-west-1a:  
Availability zone is operating normally

🟢 eu-west-1b:  
Availability zone is operating normally

🟢 eu-west-1c:  
Availability zone is operating normally

[Service Health Dashboard](#)

## Scheduled Events

**EU West (Ireland):**

No events

## Account Attribution

[Supported Platform VPC](#)

**Default VPC**  
vpc-03d46866

**Additional Info**

Getting Started Guide

Documentation

All EC2 Resources

Forums

Pricing

Contact Us

US East (N. Virginia)

US West (Oregon)

US West (N. California)

**EU (Ireland)**

EU (Frankfurt)

Asia Pacific (Singapore)

Asia Pacific (Tokyo)

Asia Pacific (Sydney)

South America (São Paulo)

## AWS Marketplace

Find **free software trial** products in the AWS Marketplace from [EC2 Launch Wizard](#).  
Or try these popular AMIs:

[Vyatta Virtual Router/Firewall/VPN](#)

Provided by Vyatta, Inc.  
Rating ★★★★★  
Pay by the hour for software and AWS usage  
[View all Networking](#)


[Alert Logic Threat Manager for AWS](#)

Provided by Alert Logic, Inc.  
Rating ★★★★★  
Pay by the hour for software and AWS usage  
[View all Security Software](#)

[TIRCO Snoopfire Analytics Platform \(Hourly\)](#)

# Creación de una máquina virtual

1 to 22 of 22 AMIs



Amazon Linux

Free tier eligible


**Amazon Linux AMI 2015.03 (HVM), SSD Volume Type** - ami-a10897d6

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.

Root device type: ebs    Virtualization type: hvm

Select

64-bit



Red Hat

Free tier eligible


**Red Hat Enterprise Linux 7.1 (HVM), SSD Volume Type** - ami-25158352

Red Hat Enterprise Linux version 7.1 (HVM), EBS General Purpose (SSD) Volume Type

Root device type: ebs    Virtualization type: hvm

Select

64-bit



SUSE Linux

Free tier eligible


**SUSE Linux Enterprise Server 12 (HVM), SSD Volume Type** - ami-e801af9f

SUSE Linux Enterprise Server 12 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, and Legacy modules enabled.

Root device type: ebs    Virtualization type: hvm

Select

64-bit



Ubuntu

Free tier eligible


**Ubuntu Server 14.04 LTS (HVM), SSD Volume Type** - ami-47a23a30

Ubuntu Server 14.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root device type: ebs    Virtualization type: hvm

Select

64-bit



Windows

Free tier eligible


**Microsoft Windows Server 2012 R2 Base** - ami-032b4b74

Microsoft Windows 2012 R2 Standard edition with 64-bit architecture. [English]

Root device type: ebs    Virtualization type: hvm

Select

64-bit




Amazon RDS

**Are you launching a database instance? Try Amazon RDS.**

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale a relational database of your choice (MySQL, PostgreSQL, Oracle, SQL Server) in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database management tasks, freeing you up to focus on your applications and business. [Learn more.](#)

Launch a database using RDS

Hide



Windows

Free tier eligible

**Microsoft Windows Server 2012 R2 with SQL Server Express** - ami-3f2b4b48

Microsoft Windows Server 2012 R2 Standard edition, 64-bit architecture, Microsoft SQL Server 2014 Express edition. [English]

Select

64-bit

# Creación de una máquina virtual

## Step 2: Choose an Instance Type

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family ▾	Type ▾	vCPUs ⓘ ▾	Memory (GiB) ▾	Instance Storage (GB) ⓘ ▾	EBS-Optimized Available ⓘ ▾	Network Performance ⓘ ▾
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.large	2	7.5	1 x 32 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.xlarge	4	15	2 x 40 (SSD)	Yes	High
<input type="checkbox"/>	General purpose	m3.2xlarge	8	30	2 x 80 (SSD)	Yes	High
<input type="checkbox"/>	Compute optimized	c4.large	2	3.75	EBS only	Yes	Moderate

# Creación de una máquina virtual

## Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot Instances to take advantage

Number of instances ⓘ

1

Purchasing option ⓘ

☐ Request Spot Instances

Network ⓘ

vpc-03d46866 (172.31.0.0/16) (default) ▼

 [Create new VPC](#)

Subnet ⓘ

No preference (default subnet in any Availability Zon ▼

[Create new subnet](#)

Auto-assign Public IP ⓘ

Use subnet setting (Enable) ▼

IAM role ⓘ

None ▼

 [Create new IAM role](#)

Shutdown behavior ⓘ

Stop ▼

Enable termination protection ⓘ

☐ Protect against accidental termination

Monitoring ⓘ

☐ Enable CloudWatch detailed monitoring

[Additional charges apply.](#)

Tenancy ⓘ

Shared tenancy (multi-tenant hardware) ▼

[Additional charges will apply for dedicated tenancy.](#)

► [Advanced Details](#)

# Creación de una máquina virtual

## Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.




Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Delete on Termination ⓘ	Encrypted ⓘ
Root	/dev/sda1	snap-960a04c0	<input type="text" value="8"/>	General Purpose (SSD) ▼	24 / 3000	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

# Creación de una máquina virtual

## Step 5: Tag Instance

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more](#) about tagging your Amazon EC2 resources.

Key (127 characters maximum)	Value (255 characters maximum)	
<input type="text" value="NameS1"/>	<input type="text" value="S1"/>	<input type="button" value="✕"/>
<div> A tag with that key already exists</div>		
<input type="text" value="NameS2"/>	<input type="text" value="S2"/>	<input type="button" value="✕"/>
<div> A tag with that key already exists</div>		
<input type="text" value="NameS3"/>	<input type="text" value="S3"/>	<input type="button" value="✕"/>
<div> A tag with that key already exists</div>		
<input type="text" value="NameB"/>	<input type="text" value="Balancer"/>	<input type="button" value="✕"/>
<div><input type="button" value="Create Tag"/> (Up to 10 tags maximum)</div>		



# Creación de una máquina virtual

## Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a new security group

☐ Select an existing security group

Security group name:

Description:

Type <small>i</small>	Protocol <small>i</small>	Port Range <small>i</small>	Source <small>i</small>	
SSH ▾	TCP	22	My IP ▾ 217.216.43.122/32	✕
<div>Add Rule</div>				

# Creación de una máquina virtual

## ▼ AMI Details



### Ubuntu Server 14.04 LTS (HVM), SSD Volume Type - ami-47a23a30

Free tier  
eligible

Ubuntu Server 14.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root Device Type: ebs    Virtualization type: hvm

## ▼ Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

## ▼ Security Groups

Security group name

servers\_group

Description

servers\_group created 2015-05-26T17:16:29.518+02:00

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ
SSH	TCP	22	0.0.0.0/0

# Creación de una máquina virtual

## ▼ Instance Details

Number of instances	4	Purchasing option	On demand
Network	vpc-03d46866		
Subnet	No preference (default subnet in any Availability Zone)		
EBS-optimized	No		
Monitoring	No		
Termination protection	No		
Shutdown behavior	Stop		
IAM role	None		
Tenancy	default		
Kernel ID	Use default		
RAM disk ID	Use default		
User data			
Assign Public IP	Use subnet setting (Enable)		
Network interfaces			

## ▼ Storage

Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Delete on Termination ⓘ	Encrypted ⓘ
Root	/dev/sda1	snap-960a04c0	8	gp2	24 / 3000	Yes	Not Encrypted

## ▼ Tags

Key	Value
NameS1	S1
NameS2	S2
NameS3	S3
NameB	Balancer

# Creación de una máquina virtual

Select an existing key pair or create a new key pair


A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair

Select a key pair

No key pairs found

 **No key pairs found**

You don't have any key pairs. Please create a new key pair by selecting the **Create a new key pair** option above to continue.

Cancel

Launch Instances

# Configuración de instancias

Create Security Group

Security group name ⓘ

http\_group

Description ⓘ

http\_connection

VPC ⓘ

vpc-03d46866 (172.31.0.0/16) \*

▼

\* denotes default VPC

Security group rules:

Inbound

Outbound

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	
HTTP ▼	TCP	80	Anywhere ▼	0.0.0.0/0 <div>✕</div>

Add Rule

Cancel

Create

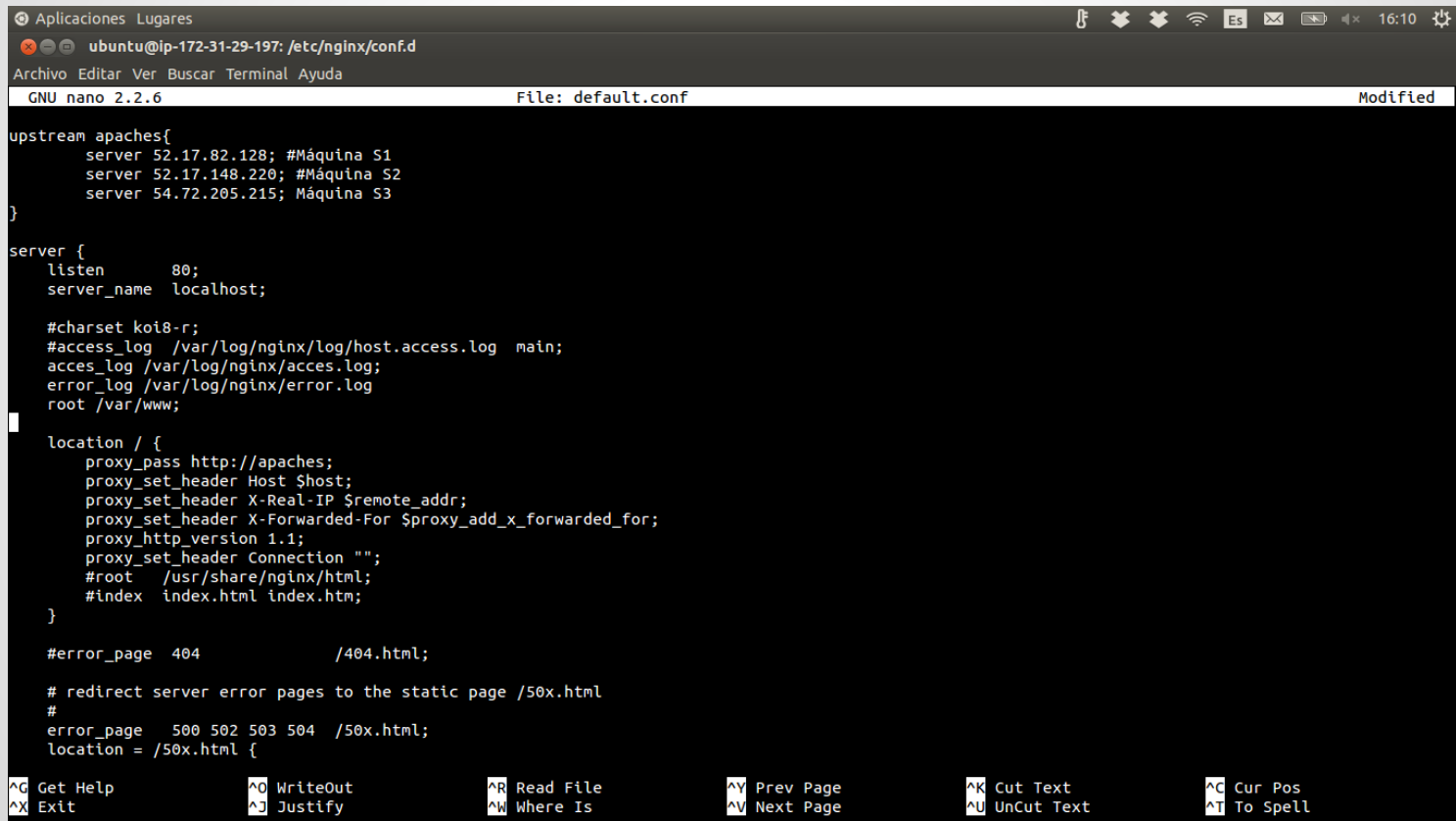
# Instalación LAMP y NGINX

Disponemos de 3 máquinas que actúan como servidor web y 1 que actúa como balanceador.

En las 3 primeras máquinas instalamos LAMP.

En la máquina que actúa como balanceador instalamos NGINX.

# Configuración NGINX



The screenshot shows a terminal window with the title bar "Aplicaciones Lugares" and a status bar at the bottom. The terminal is running the nano text editor, editing the file "/etc/nginx/conf.d/default.conf". The configuration file content is as follows:

```
upstream apaches{
    server 52.17.82.128; #Máquina S1
    server 52.17.148.220; #Máquina S2
    server 54.72.205.215; Máquina S3
}

server {
    listen      80;
    server_name localhost;

    #charset koi8-r;
    #access_log /var/log/nginx/log/host.access.log  main;
    acces_log /var/log/nginx/acces.log;
    error_log /var/log/nginx/error.log
    root /var/www;

    location / {
        proxy_pass http://apaches;
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_http_version 1.1;
        proxy_set_header Connection "";
        #root /usr/share/nginx/html;
        #index index.html index.htm;
    }

    #error_page 404              /404.html;

    # redirect server error pages to the static page /50x.html
    #
    error_page 500 502 503 504 /50x.html;
    location = /50x.html {
```

The status bar at the bottom of the nano editor displays the following shortcuts:

<b>^G</b> Get Help	<b>^O</b> WriteOut	<b>^R</b> Read File	<b>^Y</b> Prev Page	<b>^K</b> Cut Text	<b>^C</b> Cur Pos
<b>^X</b> Exit	<b>^J</b> Justify	<b>^W</b> Where Is	<b>^N</b> Next Page	<b>^U</b> UnCut Text	<b>^T</b> To Spell

# Caso práctico

- Mostramos cómo se crean nuevas instancias en Amazon EC2 y como se configuran.
- Añadimos la dirección IP de la nueva máquina al balanceador NGINX.
- Ejecutamos CURL para realizar la prueba final.



# Valoraciones Finales

Al finalizar nuestro trabajo final de la asignatura sobre la plataforma Amazon Ec2...

- hemos aprendido a emplear los conocimientos que adquirimos durante la asignatura para aplicarlos en una granja web más cercana a la realidad.
- hemos aprendido a usar una plataforma sencilla que nos facilite la creación de una arquitectura web capaz de alojar nuestras aplicaciones.
- hemos aprendido a generar instancias de nuestras máquinas servidoras para poder replicarlas o balancear la carga.

**Gracias por vuestra atención!!**

