

Software y estándares para la Web

Seminario 2: Amazon Web Services

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Software y estándares para la Web

Esquema

- ¿Qué es AWS?
- La estructura de AWS
- Elastic Cloud Service (EC2)
- Simple Storage Service (S3)
- Simple Database Service (SimpleDB)
- Simple Queue Service (SQS)
- Lanzamiento de una máquina virtual con Linux
- Conexión con SSH y SFTP
- Resumen
- Lecturas recomendadas
- Referencias
- Trabajos

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¿Qué es AWS?

- **Amazon Web Services (AWS)** es una plataforma de servicios en la nube
 - <https://aws.amazon.com/es/>
- Ofrece potencia de cómputo por medio de máquinas virtuales (**Grid Service**)
- Almacenamiento escalable de bases de datos (**Storage Service**)
- Otros servicios en la nube (**Queue Service**)
- Lenguajes y herramientas de desarrollo
 - <https://aws.amazon.com/es/tools/>
- Herramientas de Big Data

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La estructura de AWS: capas de infraestructura

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Capa de infraestructura software

Grid
Service

Storage
Service

Queue
Service

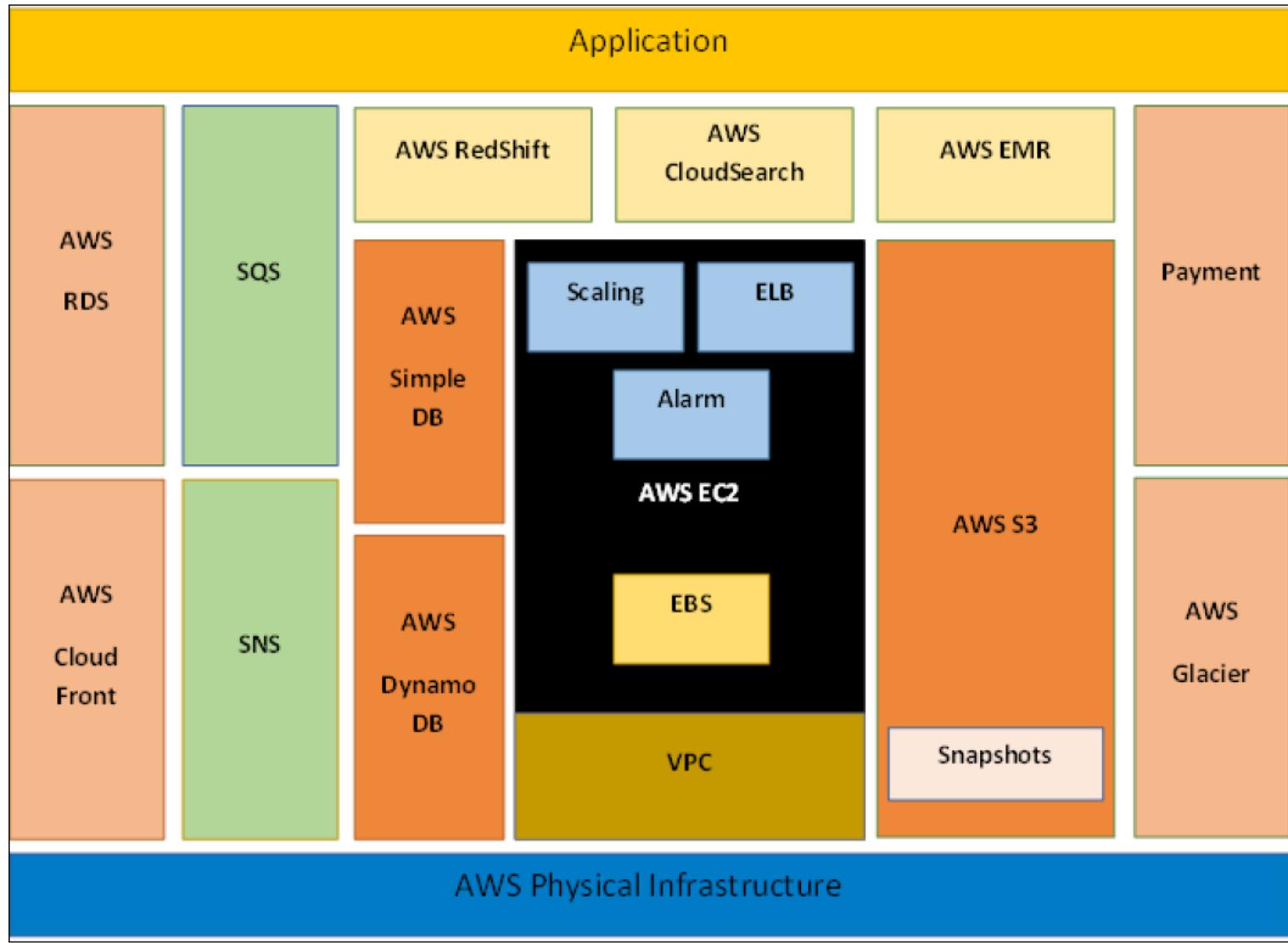
Capa de hardware escalable



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La estructura de AWS

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Algunos elementos de AWS: EC2, S3, SimpleDB y SQS

Elastic Cloud
Service (EC2)

Simple Storage
Service (S3)

Simple Database
Service (SimpleDB)

Simple Queue
Service (SQS)

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Servicios en AWS

The screenshot shows the AWS Management Console with the 'Services' tab selected. The top navigation bar includes 'History', 'EC2', and 'Console Home'. A search bar at the top right says 'Find a service by name or feature (for example, EC2, S3 or VM, storage.)'. Below the search bar are two buttons: 'Group' and 'A-Z'. The main content area is organized into several columns of services:

- Compute:** EC2, EC2 Container Service, Lightsail, Elastic Beanstalk, Lambda, Batch.
- Developer Tools:** CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, X-Ray.
- Analytics:** Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, Data Pipeline, QuickSight, AWS Glue.
- Application Services:** Step Functions, SWF, API Gateway, Elastic Transcoder.
- Storage:** S3, EFS, Glacier, Storage Gateway.
- Management Tools:** CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Trusted Advisor, Managed Services.
- Artificial Intelligence:** Lex, Amazon Polly, Rekognition, Machine Learning.
- Messaging:** Simple Queue Service, Simple Notification Service, Simple Email Service.
- Database:** RDS, DynamoDB, ElastiCache, Amazon Redshift.
- Business Productivity:** WorkDocs, WorkMail, Amazon Chime.
- Networking & Content Delivery:** VPC, CloudFront, Direct Connect, Route 53.
- Security, Identity & Compliance:** IAM, Inspector, Certificate Manager, Directory Service, WAF & Shield, Artifact, Amazon Macie.
- Internet Of Things:** AWS IoT, AWS Greengrass.
- Desktop & App Streaming:** WorkSpaces, AppStream 2.0.
- Contact Center:** Amazon Connect.
- Game Development:** Amazon GameLift.

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Esquema

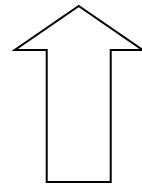
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Elastic Compute Cloud (EC2): Grid bajo demanda

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Máquina
Imagen
(OS + Apps)

Uso:

- Crea la imagen de una máquina
- Despliega la imagen a S3
- Inicia una o más instancias
- Utilizada como máquina habitual

Principales opciones:

- IPs Estáticas/Dinámicas
- Elección de número de *cores*
- Elección de localización
- Persistencia vía EBS (*Elastic Block Store*)

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Pantalla principal en AWS

The screenshot shows the AWS Management Console homepage. At the top, there's a navigation bar with icons for browser control, a search bar containing "eu-west-1.console.aws.amazon.com", and user information for "Juan Manuel Cueva Lovelle". Below the search bar, the AWS logo is visible, followed by "Services" and "Resource Groups" dropdown menus, and "Ireland" and "Support" links.

The main content area is divided into several sections:

- AWS services:** A search bar with placeholder text "Find a service by name or feature (for example, EC2, S3 or VM, storage)." Below it are two collapsed sections: "Recently visited services" and "All services".
- Build a solution:** A section titled "Build a solution" with the sub-instruction "Get started with simple wizards and automated workflows." It contains six items:
 - Launch a virtual machine**: With EC2 or Lightsail, ~1-2 minutes. Icon: A blue cube.
 - Build a web app**: With Elastic Beanstalk, ~6 minutes. Icon: A globe with a web icon.
 - Host a static website**: With S3, CloudFront, Route 53, ~5 minutes. Icon: A white page with a blue cloud icon.
 - Connect an IoT device**: With AWS IoT, ~5 minutes. Icon: A circular device with green and blue lights.
 - Start a development project**: With CodeStar, ~5 minutes. Icon: Two people working on a laptop.
 - Register a domain**: With Route 53, ~3 minutes. Icon: A globe with a "www" icon.
- Learn to build:** A section titled "Learn to build" with the sub-instruction "Learn to deploy your solutions through step-by-step guides, labs, and videos." It contains three items:
 - Websites**
 - DevOps**
 - Backup and recovery**
- Helpful tips:** A section with two items:
 - Manage your costs**: Get real-time billing alerts based on your cost and usage budgets. [Start now](#). Icon: A chart with a bell curve.
 - Create an organization**: Use AWS Organizations for policy-based management of multiple AWS accounts. [Start now](#). Icon: A cube inside a hexagon.
- Explore AWS:** A section with three items:
 - Apache MXNet**: Get started with the most scalable framework for deep learning in the cloud. [Learn more](#).
 - Build Applications with AWS Lambda**: Run and scale code for Python, Node.js, Java, or C# without provisioning or managing servers. [Learn more](#).
 - Amazon DynamoDB**: Fast and flexible NoSQL database service for any scale. [Learn more](#).

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Pantalla para crear una máquina virtual

The screenshot shows a web browser window with the URL eu-west-1.console.aws.amazon.com. The page title is "Launch a virtual machine". It compares two options: EC2 Instance and Lightsail Instance.

EC2 Instance
For users with cloud experience who need a flexible and scalable virtual machine*
Why EC2 ?

- Fully customizable instance tailored to your needs.
- Seamless integration with AWS services.
- Flexible solution that scales to support changing workloads.

Pricing

- Pay as you go. [Learn more](#)
- Free-tier eligible. [Learn more](#)

[Get started](#)

Lightsail Instance
For users new to the cloud or who need a virtual private server (VPS) for simple workloads
Why Lightsail ?

- Quick setup without the hassle of installing software or frameworks.
- Preconfigured VPS with a base operating system, development stacks, and a selection of applications.

Pricing

- Predictable flat-rate monthly payment as low as \$5/month. [Learn more](#)
- Up to 750 hours free with the \$5 plan. [Learn more](#)

[Go to Lightsail](#)

*This wizard creates an EC2 t2.micro instance with default configurations. For more options, use the [EC2 launch instance wizard](#).

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Instancias en ejecución (running) y paradas (stopped)

The screenshot shows the AWS EC2 Management Console interface. The left sidebar contains navigation links for EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, AMIs, Bundle Tasks, Elastic Block Store, Volumes, Snapshots, and Network & Security. The main content area displays a table of running and stopped instances. The columns are: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, Alarm Status, and Public DNS (IPv4). The table shows three instances: one running (t2.micro) and two stopped (t2.micro and m3.medium).

	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
		i-038888637e06620c1	t2.micro	eu-west-1c	running	2/2 checks ...	None	ec2-34-252-240-121
		i-06d7cbe739efeb988	t2.micro	eu-west-1b	stopped		None	ec2-34-252-240-121
		i-ae6a0f17	m3.medium	eu-west-1c	stopped		None	ec2-52-18-160-101

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Localizaciones de los centros de datos de AWS

Grado en



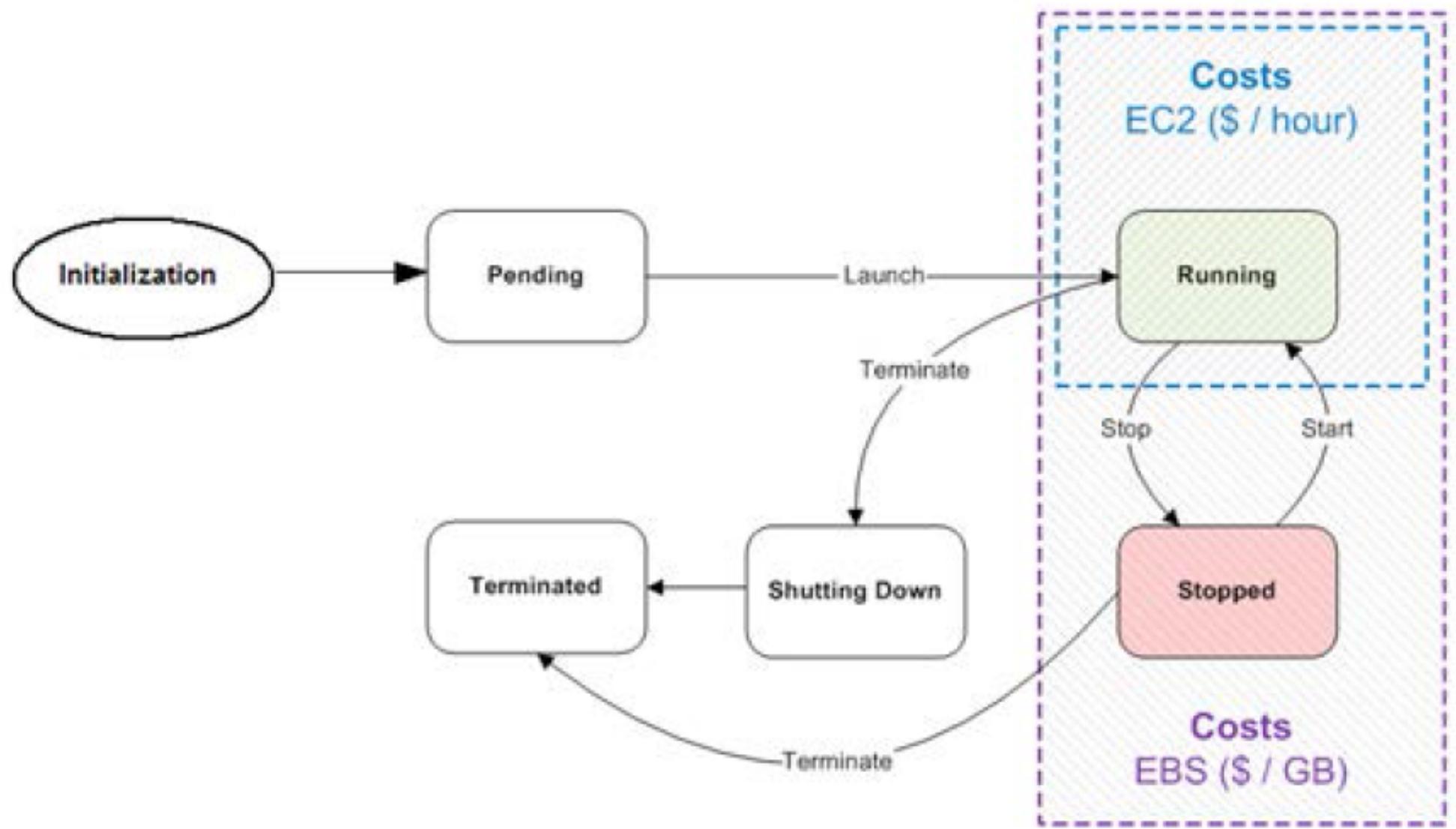
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Localizaciones de EC2 y la finalización de su URL

Region name	Endpoint
US East (Northern Virginia)	ec2.us-east-1.amazonaws.com
US West (Oregon)	ec2.us-west-2.amazonaws.com
US West (Northern California)	ec2.us-west-1.amazonaws.com
EU (Ireland)	ec2.eu-west-1.amazonaws.com
Asia Pacific (Singapore)	ec2.ap-southeast-1.amazonaws.com
Asia Pacific (Sydney)	ec2.ap-southeast-2.amazonaws.com
Asia Pacific (Tokyo)	ec2.ap-northeast-1.amazonaws.com
South America (Sao Paulo)	ec2.sa-east-1.amazonaws.com

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Facturación de EC2



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Ejemplo de casos de uso de EC2

Procesado Batch

- Todas las instancias se pueden configurar con el mismo código
- Cada instancia puede operar sobre un subconjunto de datos
- Se pueden especificar particiones con un archivo de configuración

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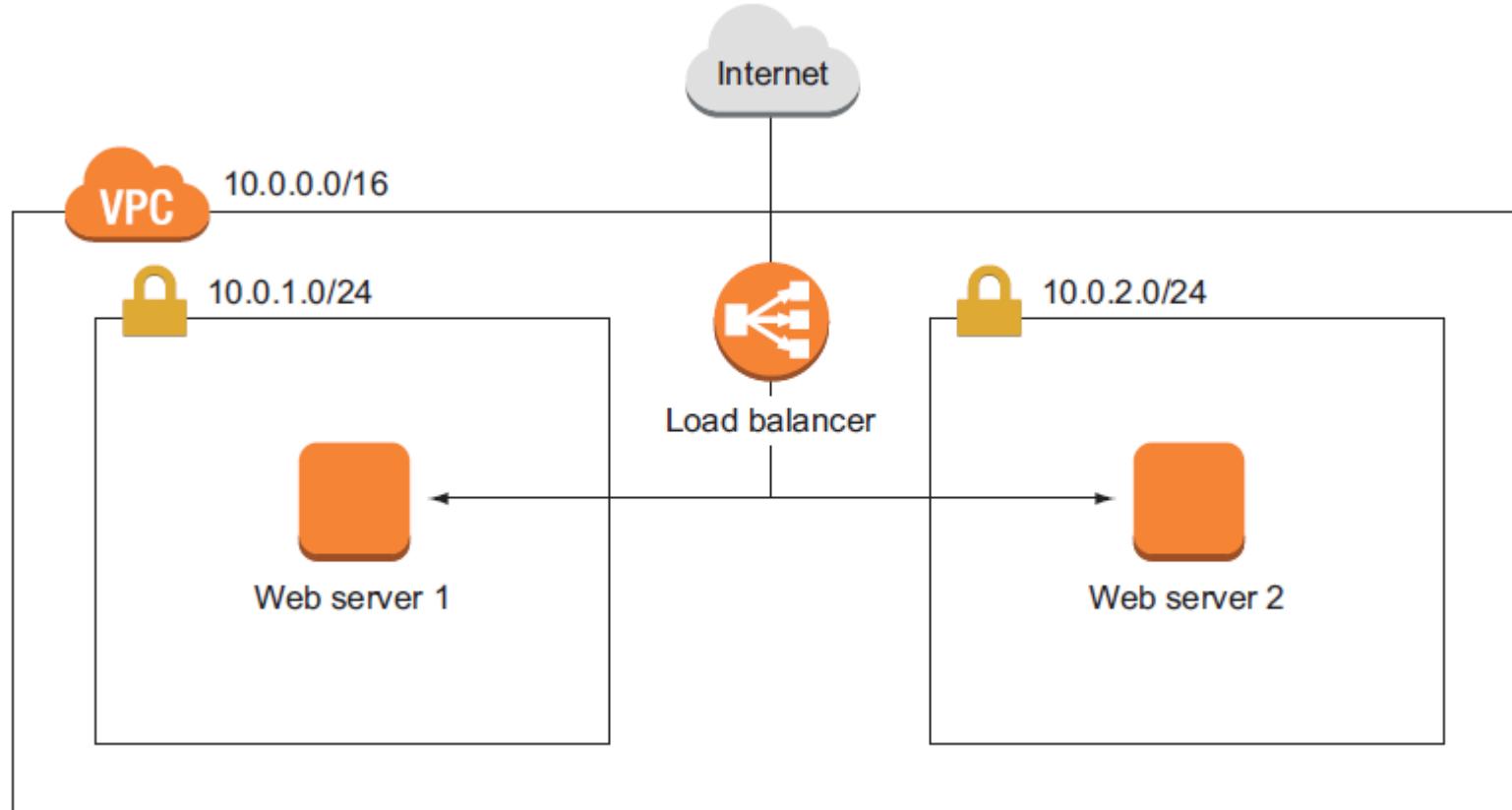
Servicios Web

- Todas las instancias se pueden configurar con el mismo código
- Se pueden configurar una o más instancias para realizar un balanceo de carga (por ejemplo usando HAProxy)
- El servidor de DNS distribuye las peticiones entre las cargas balanceadas

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Balanceo de carga entre dos servidores Web

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EC2 versus empresas de hosting Web

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Ventajas

- Se pueden añadir nuevas instancias en cualquier momento
- Control completo sobre las máquinas y elección del sistema operativo
- Habitualmente más barato (aunque depende de cada caso)

Inconvenientes

- Es obligatorio gestionar instancias e imágenes de máquinas juntas
- No hay soporte técnico dedicado, aunque se puede contratar
(Premium support o RightScale solutions)

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Esquema

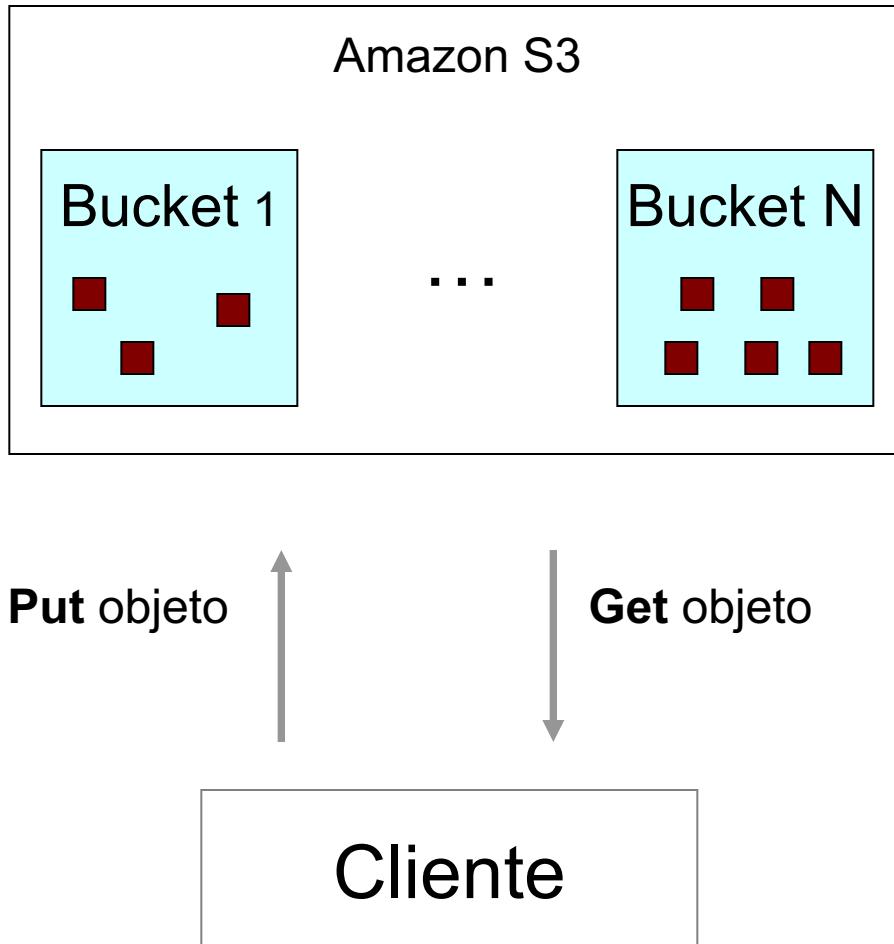
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Simple Storage Service (S3): SGBD orientado a objetos

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Objetivo:

Put/Get objetos en buckets
(cangilones) utilizando
claves únicas

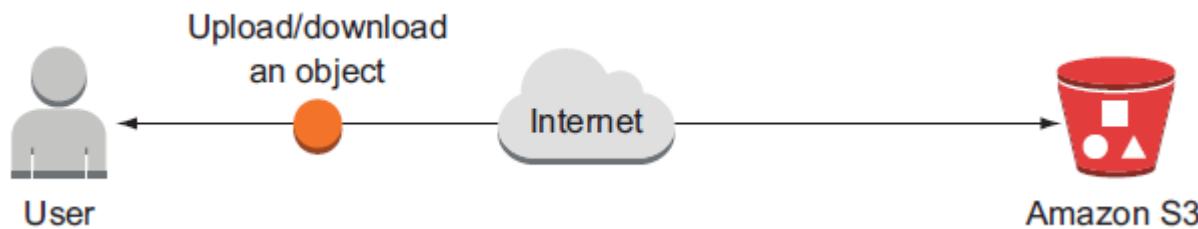
Características principales:

- Acceso Público/Privado
- Soporta objetos muy grandes

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Objetos en S3

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Object

Globally unique key

Metadata

Access control
File type
Tags
Size
Creation date

Data

HTML and CSS
Image and video
JSON
Executable
BLOB

Object

/awsinaction/img/cloud.png

Metadata

Public read
Image/png
Cloud,nature
20 KB
2015-01-01

Data



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Creación de un “Bucket” en S3

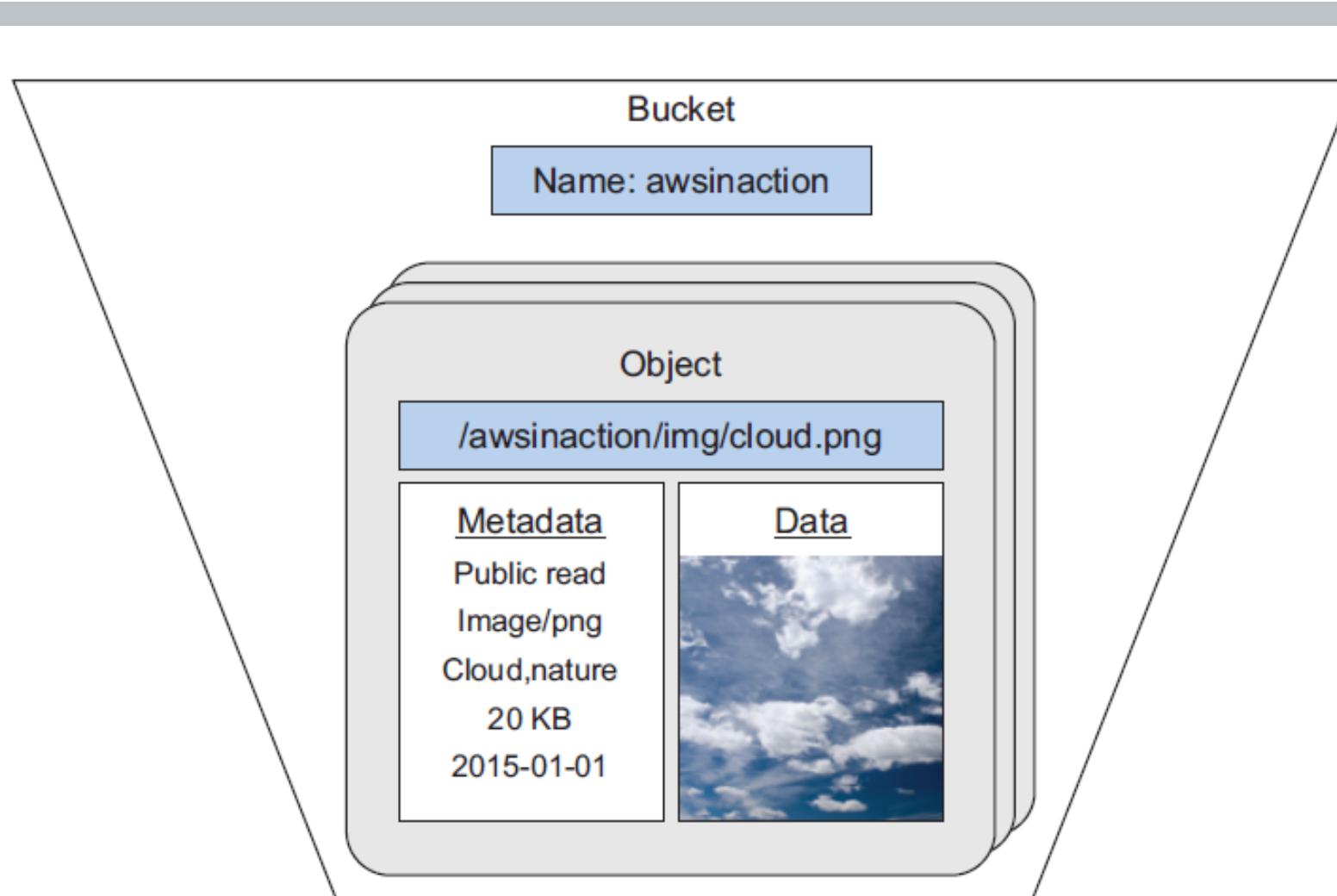
The screenshot shows the Amazon S3 console. At the top, there's a navigation bar with a yellow cube icon, 'Services' dropdown, and 'Edit' dropdown. The main title is 'Welcome to Amazon Simple Storage Service'. Below it, a paragraph explains S3 as storage for the Internet designed for developers. It highlights its scalability, reliability, security, and cost-effectiveness. A note says you can store objects from 1 byte to 5 terabytes each, with an unlimited number of objects. It also mentions that each object is stored in a bucket with a unique key. A call-to-action button labeled 'Create Bucket' is highlighted with a blue oval. Below this, there's a section titled 'S3 at a glance' with three categories: 'Create' (with a single cube icon), 'Add' (with multiple cubes), and 'Manage' (with a cube and gears). At the bottom, there's a copyright notice for 2008-2014, links to 'Privacy Policy' and 'Terms of Use', and a small logo.

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Varios objetos en un “Bucket”

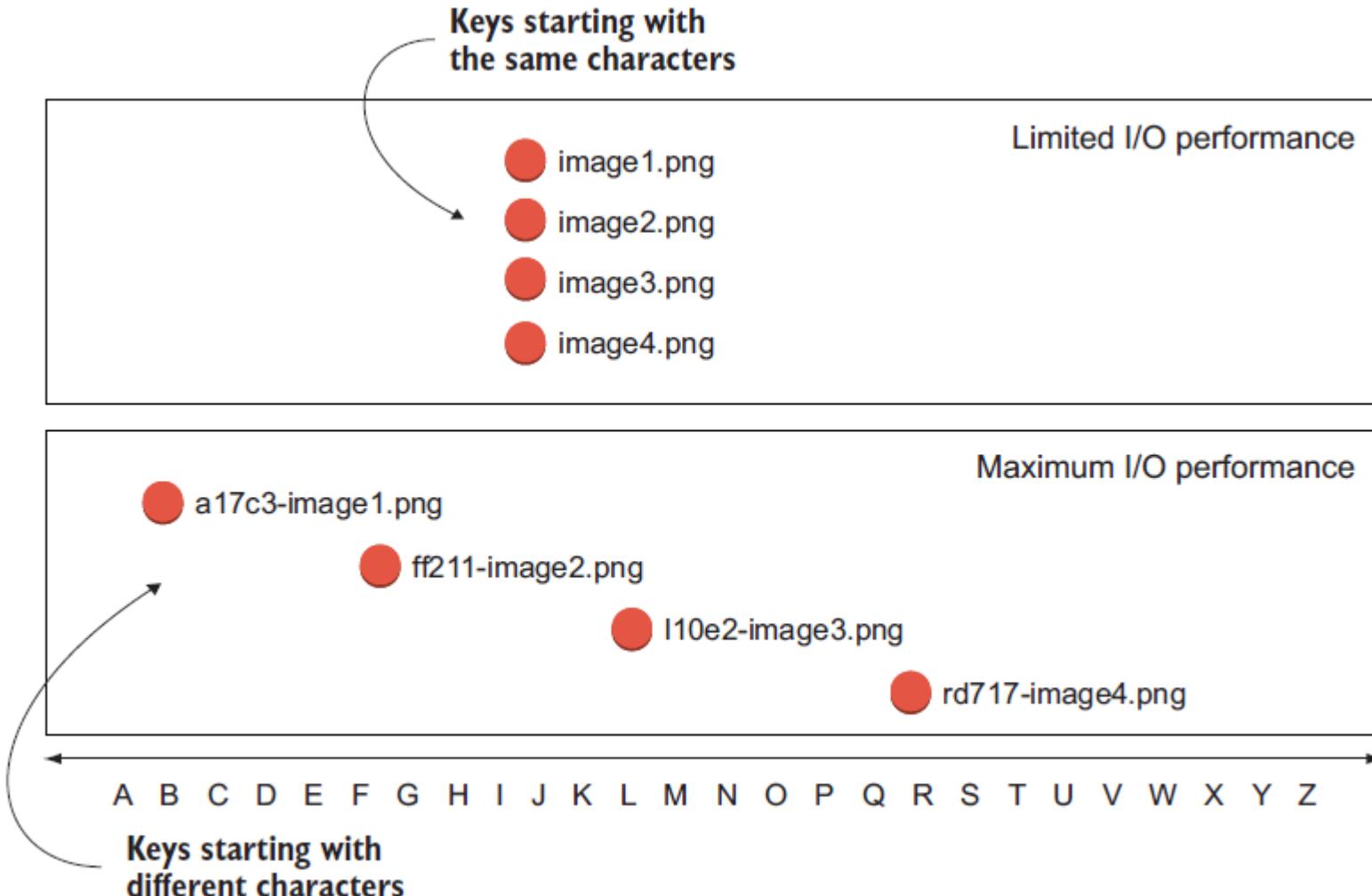


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Mejora de rendimiento: Las claves deben empezar por caracteres diferentes

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Ejemplos de casos de uso de S3

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Almacenamiento de imágenes/video

- Se pueden almacenar en S3 y servirlas directamente
- La lectura es 10 veces más rápida que la escritura

Serialización de objetos Java

- Se puede definir una clave única basada en los atributos de los objetos
- Se puede escribir una versión serializada en binario a un stream
- Se pueden escribir bytes en S3
- Se pueden leer los bytes cuando sea necesario

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Almacén de fotos en S3: canon-demo

The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with links for 'Services', 'Resource Groups', and 'Support'. A banner at the top of the main content area encourages users to try S3 Object Tagging. Below this, there's a search bar labeled 'Search for buckets' and buttons for '+ Create bucket', 'Delete bucket', and 'Empty bucket'. On the right, it displays '1 Buckets' and '1 Regions'. The main table lists the single bucket 'canon-demo' with details: Region: EU (Ireland), Date created: Oct 13, 2015 2:22:41 PM.

Bucket name	Region	Date created
canon-demo	EU (Ireland)	Oct 13, 2015 2:22:41 PM

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Almacén de fotos en S3: lista de fotogramas

The screenshot shows the AWS S3 Management Console interface. At the top, there's a header bar with the S3 Management Console logo, a search bar indicating 'Es seguro' and the URL 'https://console.aws.amazon.com/s3/buckets/canon-demo/?region=eu-west-1&tab=overview', and navigation icons. Below the header is a dark navigation bar with 'Services', 'Resource Groups', and user information ('Juan Manuel Cueva Lovelle').

The main area shows the 'Amazon S3 > canon-demo' bucket. A tab bar at the top of this section includes 'Objects' (selected), 'Properties', 'Permissions', and 'Management'. Below this is a search bar with placeholder text 'Type a prefix and press Enter to search. Press ESC to clear.' and a search icon.

Below the search bar are action buttons: 'Upload', 'Create folder', and a 'More' dropdown menu. The 'More' menu is currently set to 'All' (selected) and 'Deleted objects'. To the right of these buttons is the region 'EU (Ireland)' and a refresh icon.

The main content area displays a table of objects in the 'canon-demo' bucket. The columns are 'Name', 'Last modified', 'Size', and 'Storage class'. The table lists seven JPEG files:

Name	Last modified	Size	Storage class
20151016-125551.jpg	Oct 16, 2015 5:55:52 AM	82.4 KB	Standard
20151016-125952.jpg	Oct 16, 2015 5:59:53 AM	83.3 KB	Standard
20151019-121309.jpg	Oct 19, 2015 5:13:10 AM	71.8 KB	Standard
20151019-122551.jpg	Oct 19, 2015 5:25:52 AM	68.0 KB	Standard
20151019-133839.jpg	Oct 19, 2015 6:38:41 AM	74.2 KB	Standard
20151019-135033.jpg	Oct 19, 2015 6:50:34 AM	71.6 KB	Standard

At the bottom right of the table, it says 'Viewing 1 to 20'.

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Almacén de fotos en S3: metadatos de un fotograma

20151016-125551.jpg X

Download Copy path

Latest version ▾

Object	Key	20151016-125551.jpg
	Size	84361
	Expiration	N/A
	date	
	Expiration	N/A
	rule	
	ETag	52bd5c0ebdf1bd4ce9ac1417494e5290
	Last write	Oct 16, 2015 5:55:52 AM GMT-0500
	Link	https://s3-eu-west-1.amazonaws.com/canon-demo/20151016-125551.jpg
	Tags	0 Tags

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Almacén de fotos en S3: Fotograma



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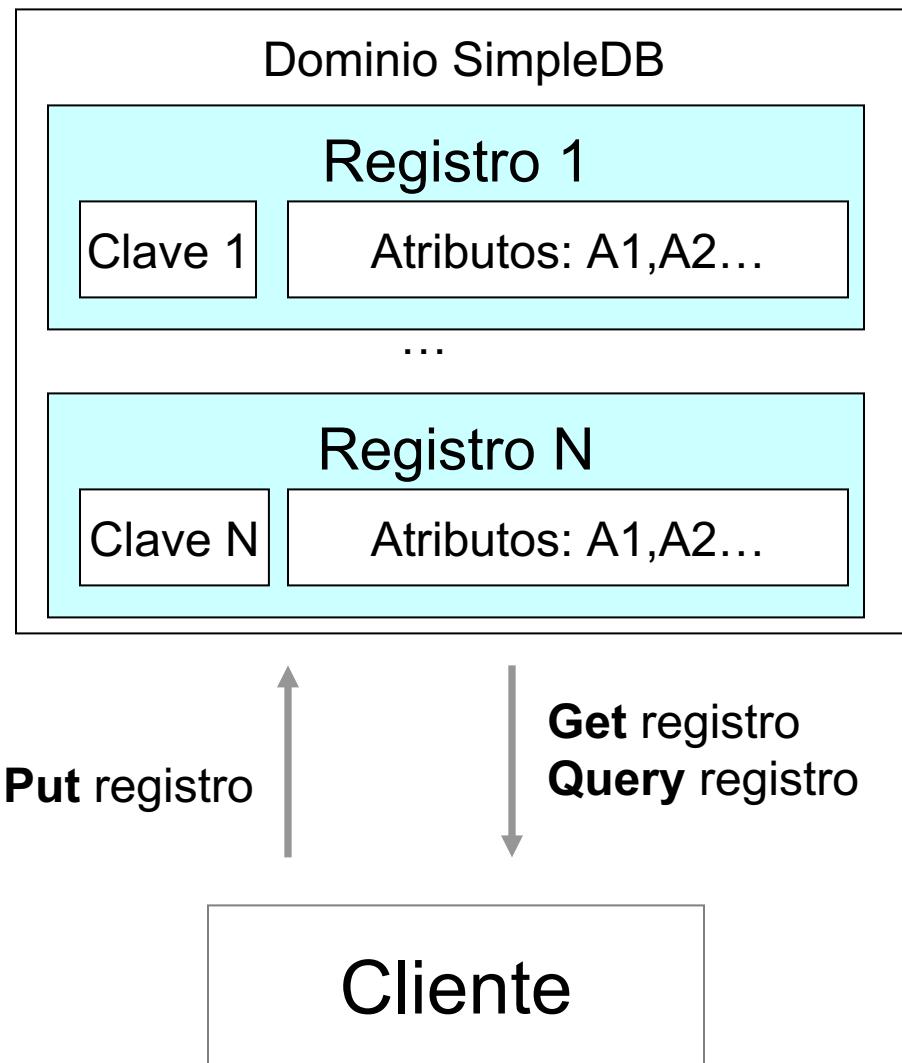
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Simple Database Service (SimpleDB)

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Objetivo:

- Crea una base de datos plana con tablas auto-indexadas

Características principales:

- Cada atributo está indexado
- La estructura de los registros es flexible
- Operadores básicos en las consultas
- Soporte de ordenación

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Ejemplo de casos de uso de SimpleDB

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Indexación de archivos multimedia almacenados en S3

- Usan la misma clave que en S3
- Escriben el registro usando cada metadato de un elemento como atributo

Almacenamiento de objetos planos

- Se puede usar SimpleDB como un almacenamiento de datos no-anidados

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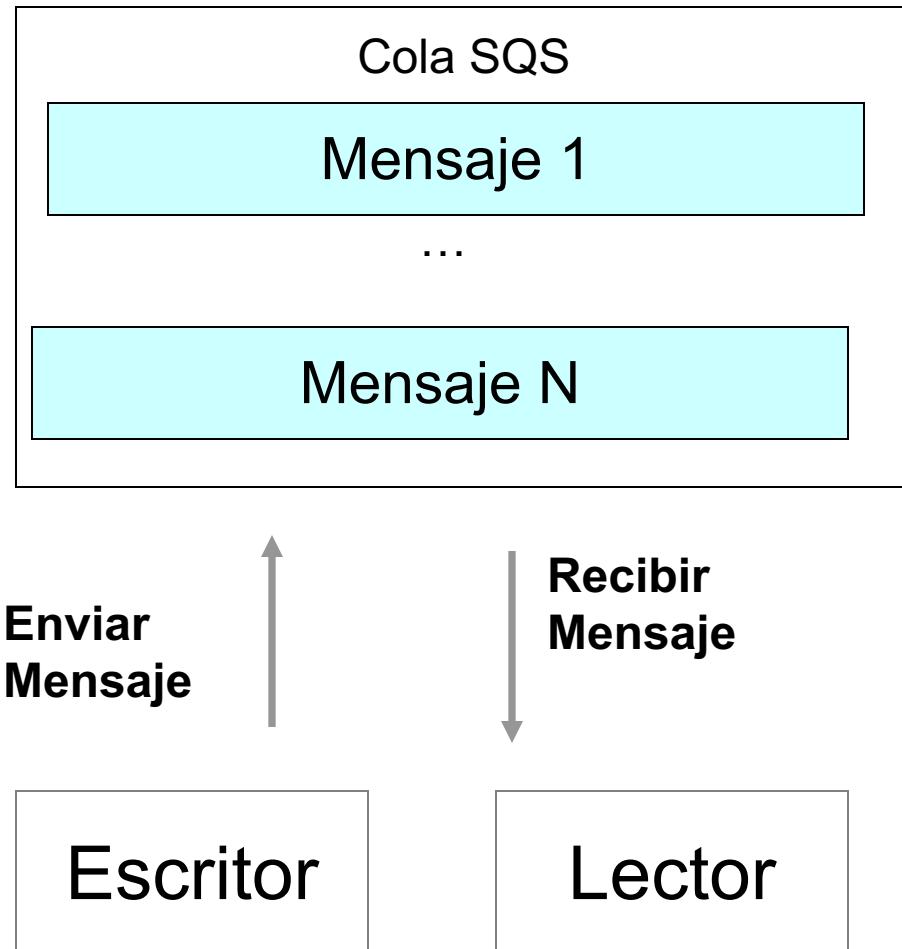
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Simple Queue Service (SQS)

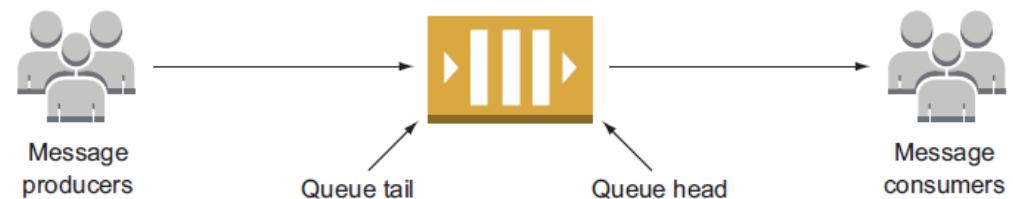


Objetivo:

- Crear una cola de mensajes infinita

Características principales:

- Múltiples colas
- Hasta 4K de mensajes
- Bloqueo de mensajes



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Ejemplos de casos de uso de SQS

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Actualización de amigos en Twitter

- Para cada actualización genera una tarea para actualizar a los amigos
- El proceso de actualización se realiza en orden

Publicación / Subscripción

- Los mensajes enviados a la cola pueden recibirse por múltiples subscriptores

Procesos Pipeline

- Utiliza diferentes colas, por ejemplo para colocar y ordenar a través de una pipeline

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Esquema

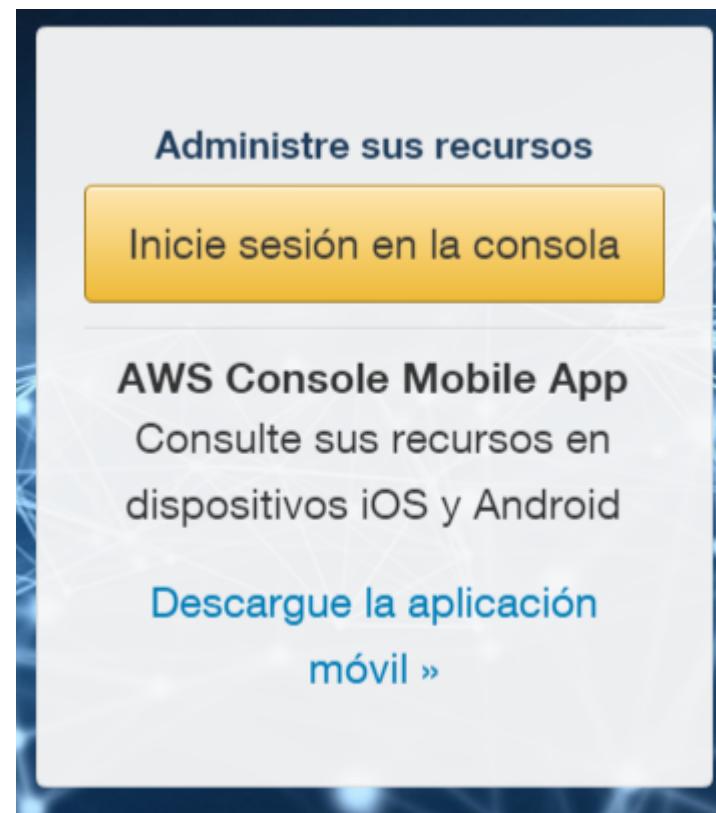
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- Conexión con SSH y SFTP
- Instalar Python
- Ejecutar Python
- Instalar un servidor Web
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Lanzamiento de una máquina virtual con Linux

- Amazon **Elastic Compute Cloud** (EC2) es el servicio de Amazon Web Services que se utiliza para crear y ejecutar máquinas virtuales en la nube
- Se denominan "**instancias**"
- Iniciar sesión en
 - <https://aws.amazon.com/es/>



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Paso 1: Lanzamiento de una instancia de Amazon EC2 (I)

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The screenshot shows the AWS Management Console homepage. At the top, there are three browser tabs: 'Recibidos (110) - cuevalo', 'Recibidos (23.116) - cuev...', and 'AWS Management Conso...'. The main navigation bar includes 'Services' (selected), 'Resource Groups', and other options. The user is signed in as 'Juan Manuel Cueva Lovelle' from 'Ireland'. Below the navigation, there's a search bar and a 'Helpful tips' section with links to 'Manage your costs' and 'Create an organization'. A 'Build a solution' section lists various quick-start guides: 'Launch a virtual machine' (With EC2, ~1 minute), 'Build a web app' (With Elastic Beanstalk, ~6 minutes), 'Deploy a serverless microservice' (With Lambda, API Gateway, ~2 minutes), 'Host a static website' (With S3, CloudFront, Route 53, ~5 minutes), 'Create a backend for your mobile app' (With Mobile Hub, ~5 minutes), and 'Register a domain' (With Route 53, ~3 minutes).

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Paso 1: Lanzamiento de una instancia de Amazon EC2 (II)

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The screenshot shows the AWS EC2 Management Console interface. The left sidebar has sections for EC2 Dashboard, Instances, AMIs, Elastic Block Store, and Network & Security. The main content area displays EC2 Resources: 0 Running Instances, 1 Elastic IP, 0 Dedicated Hosts, 0 Snapshots, 2 Volumes, 0 Load Balancers, 2 Key Pairs, 3 Security Groups, and 0 Placement Groups. A callout box suggests trying Amazon Lightsail for free. Below this is a 'Create Instance' section with a 'Launch Instance' button. The Service Health section shows 'Service Status' and 'EU West (Ireland)'. The right sidebar contains 'Account Attributes' (Supported Platforms: VPC, Default VPC: vpc-a1d5a5c4), 'Resource ID length management', 'Additional Information' (Getting Started Guide, Documentation, All EC2 Resources, Forums, Pricing, Contact Us), and 'AWS Marketplace' information.

Resources

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

0 Running Instances	1 Elastic IPs
0 Dedicated Hosts	0 Snapshots
2 Volumes	0 Load Balancers
2 Key Pairs	3 Security Groups
0 Placement Groups	

Just need a simple virtual private server? Get everything you need to jumpstart your project - compute, storage, and networking – for a low, predictable price. [Try Amazon Lightsail for free](#).

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:

Scheduled Events

EU West (Ireland):

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Paso 1: Lanzamiento de una instancia de Amazon EC2 (III)

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del Software

The screenshot shows the AWS EC2 Management Console interface. The top navigation bar includes tabs for 'Recibidos (110)', 'Recibidos (23.116)', and 'EC2 Management Conso'. Below the navigation is a toolbar with icons for Services, Resource Groups, and Support, along with user information for Juan Manuel Cueva Lovelle.

The main content area displays the 'Launch Instance Wizard' steps: 1. Choose AMI (highlighted), 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. A 'Cancel and Exit' button is also present.

Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Quick Start

	AMIs	Actions
My AMIs		
AWS Marketplace		
Community AMIs		

Free tier only (i)

Amazon Linux AMI 2017.03.0 (HVM), SSD Volume Type - ami-e5083683

Amazon Linux Free tier eligible 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

Red Hat Enterprise Linux 7.3 (HVM), SSD Volume Type - ami-02ace471

Red Hat Free tier eligible Red Hat Enterprise Linux version 7.3 (HVM), EBS General Purpose (SSD) Volume Type

Root device type: ebs Virtualization type: hvm

Select

SUSE Linux Enterprise Server 12 SP2 (HVM), SSD Volume Type - ami-9186a1e2

SUSE Linux Free tier eligible SUSE Linux Enterprise Server 12 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, and Legacy modules enabled.

Select

1 to 31 of 31 AMIs

https://eu-west-1.console.aws.amazon.com/console/home?region=eu-west-1

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Paso 2: Elegir el tipo de instancia

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The screenshot shows the AWS EC2 Management Console interface. The browser tab is 'EC2 Management Console'. The navigation bar includes 'Services' (selected), 'Resource Groups', and 'Support'. The breadcrumb path is 'https://eu-west-1.console.aws.amazon.com/ec2/v2/home?region=eu-west-1#LaunchInstanceWizard:'. Below the navigation is a progress bar with steps 1-7: '1. Choose AMI', '2. Choose Instance Type' (highlighted in orange), '3. Configure Instance', '4. Add Storage', '5. Add Tags', '6. Configure Security Group', and '7. Review'. The main content area is titled 'Step 2: Choose an Instance Type'. It explains that Amazon EC2 provides a wide selection of instance types optimized for different use cases. A table lists instance types by family, type, vCPUs, memory, storage, network performance, and IPv6 support. The 't2.micro' instance is selected, highlighted with a green border. The table columns are: Family, Type, vCPUs, Memory (GiB), Instance Storage (GB), EBS-Optimized Available, Network Performance, and IPv6 Support.

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes

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

Filter by: All instance types ▾ Current generation ▾ Show/Hide Columns

Cancel Previous Review and Launch Next: Configure Instance Details

<https://eu-west-1.console.aws.amazon.com/console/home?region=eu-west-1>

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Paso 3: Configurar la instancia

The screenshot shows the AWS EC2 Management Console interface. At the top, there are three tabs: 'Recibidos (109) - cuevalo', 'Recibidos (23.116) - cuev...', and 'EC2 Management Cons...'. The URL in the address bar is <https://eu-west-1.console.aws.amazon.com/ec2/v2/home?region=eu-west-1#LaunchInstanceWizard>. The main navigation bar includes 'Services', 'Resource Groups', and user information for 'Juan Manuel Cueva Lovelle'.

The wizard is currently at Step 3: Configure Instance Details. The steps are numbered 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review.

The configuration details are as follows:

- Network:** vpc-a1d5a5c4 (default) | [Create new VPC](#)
- Subnet:** No preference (default subnet in any Availability Zone) | [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 - Run a shared hardware instance
Additional charges will apply for dedicated tenancy.

Below the configuration, there is a section titled 'Advanced Details' with a disclosure arrow.

At the bottom of the wizard, there are buttons for 'Cancel', 'Previous', 'Review and Launch' (which is highlighted in blue), and 'Next: Add Storage'.

The footer of the page includes links for 'Feedback', 'English', 'Privacy Policy', and 'Terms of Use', along with a copyright notice: '© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.'

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Informática
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Software y estándares para la Web

Paso 4: Añadir almacenamiento

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Informática
del Software

The screenshot shows the AWS EC2 Management Console interface. The top navigation bar includes tabs for 'Recibidos (109) - cuevalo', 'Recibidos (23.116) - cuev...', and 'EC2 Management Console'. The main menu has 'Services' and 'Resource Groups' dropdowns. On the right, there's a user profile for 'Juan Manuel Cueva Lovelle', a location dropdown for 'Ireland', and a 'Support' link.

The breadcrumb navigation at the top indicates the current step: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage (highlighted in orange), 5. Add Tags, 6. Configure Security Group, and 7. Review.

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.

The main content area displays a table for managing storage volumes. The columns are: Volume Type, Device, Snapshot, Size (GiB), Volume Type, IOPS, Throughput (MB/s), Delete on Termination, and Encrypted.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/xvda	snap-070e08749c497ec2e	8	General Purpose SSD (GP2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

At the bottom, there are buttons for 'Cancel', 'Previous', 'Review and Launch' (which is highlighted in blue), and 'Next: Add Tags'.

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Paso 5: Añadir clave y etiqueta

The screenshot shows a web browser window with three tabs open: 'Recibidos (109) - cuevalo', 'Recibidos (23.116) - cuev...', and 'EC2 Management Console'. The main content area is the 'Launch Instance Wizard' at step 5, 'Add Tags'. The navigation bar above the steps includes 'Services', 'Resource Groups', and user information for 'Juan Manuel Cueva Lovelle'. The steps are numbered 1 to 7: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags (which is highlighted), 6. Configure Security Group, and 7. Review.

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.

A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	(127 characters maximum)	Value	(255 characters maximum)	Instances	Volumes	X
MiClave		MaquinaLinux		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	X

Add another tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

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Informática
del Software

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Paso 6: Configuración del grupo de seguridad

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Informática
del Software

The screenshot shows the AWS Management Console with three tabs open in the top bar: 'Recibidos (109) - cuevalo', 'Recibidos (23.116) - cuev...', and 'EC2 Management Console'. The main content area is titled 'Step 6: Configure Security Group' under the heading '6. Configure Security Group'. Below this, a sub-section explains that a security group is a set of firewall rules that control traffic for an instance. It provides instructions to add rules to allow specific traffic, such as HTTP and HTTPS. A link to learn more about security groups is provided.

Assign a security group:

- Create a new security group
- Select an existing security group

Security group name: launch-wizard-3

Description: launch-wizard-3 created 2017-04-10T21:40:46.795-05:00

Type	Protocol	Port Range	Source
SSH	TCP	22	My IP 201.219.222.70/32

Add Rule

At the bottom right, there are buttons for 'Cancel', 'Previous', and 'Review and Launch'.

The URL in the address bar is <https://eu-west-1.console.aws.amazon.com/ec2/v2/home?region=eu-west-1#LaunchInstanceWizard>.

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Paso 7: Revisión de la instancia y lanzamiento

The screenshot shows the AWS EC2 Management Console interface during the 'Step 7: Review Instance Launch' process. At the top, there are three tabs: 'Recibidos (109) - cuevalo', 'Recibidos (23.116) - cuev', and 'EC2 Management Console'. The URL in the address bar is <https://eu-west-1.console.aws.amazon.com/ec2/v2/home?region=eu-west-1#LaunchInstanceWizard>. The top navigation bar includes 'Services', 'Resource Groups', a user dropdown for 'Juan Manuel Cueva Lovelle', and links for 'Ireland' and 'Support'.

The main content area shows the configuration details for the instance launch:

- AMI:** t2.micro
- Variable:** Variable
- Instances:** 1
- Storage:** 1 EBS only
- Security Group:** -
- Network:** Low to Moderate

Below this, the 'Security Groups' section is expanded, showing:

Type	Protocol	Port Range	Source
SSH	TCP	22	201.219.222.70/32

Other sections shown include 'Instance Details', 'Storage', and 'Tags', each with an 'Edit' link. At the bottom right are 'Cancel', 'Previous', and a large blue 'Launch' button. The footer contains links for 'Feedback', 'English', 'Privacy Policy', and 'Terms of Use'.

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Ingeniería
Informática
del Software

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Paso 8: Seleccionar clave y descargarla

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Informática
del Software

Select an existing key pair or create a new key pair X

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](#).

Create a new key pair

Key pair name

Download Key Pair



You have to download the **private key file** (*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.

Cancel

Launch Instances

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Paso 9: Estado del lanzamiento

Grado en
Ingeniería
Informática
del Software

The screenshot shows the AWS EC2 Management Console interface. At the top, there are three tabs: 'Recibidos (109) - cuevalo', 'Recibidos (23.116) - cuev', and 'EC2 Management Conso'. The main content area is titled 'Launch Status' and displays a green notification box: 'Your instances are now launching. The following instance launches have been initiated: i-038888637e06620c1' with a link to 'View launch log'. Below this, there is a blue info box: 'Get notified of estimated charges. Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier)'. At the bottom, there is a section titled 'How to connect to your instances' with text about instance launching and connecting, followed by a 'Helpful resources' section.



Software y estándares para la Web

Paso 10: Instancias

The screenshot shows the AWS EC2 Management Console interface. The left sidebar navigation bar includes links for EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES (with Instances selected), Spot Requests, Reserved Instances, Scheduled Instances, Dedicated Hosts, IMAGES (with AMIs selected), and ELASTIC BLOCK STORE (with Volumes selected). The main content area displays a table of instances. A search bar at the top of the table shows the filter "MiClave : MaquinaLinux". The table columns are Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, Alarm Status, and Public DNS (IPv4). One instance is listed: i-038888637e06620c1, t2.micro, eu-west-1c, running, 2/2 checks, None, and ec2-34-253-121-46.eu-west-1.compute.amazonaws.com. Below the table, detailed information for this instance is shown: Instance: i-038888637e06620c1, Public DNS: ec2-34-253-121-46.eu-west-1.compute.amazonaws.com. The "Description" tab is active. At the bottom, there are links for Instance ID (i-038888637e06620c1), Public DNS (IPv4) (ec2-34-253-121-46.eu-west-1.compute.amazonaws.com), and Monitoring.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
	i-038888637e06620c1	t2.micro	eu-west-1c	running	2/2 checks ...	None	ec2-34-253-121-46.eu-west-1.compute.amazonaws.com

Instance: i-038888637e06620c1 Public DNS: ec2-34-253-121-46.eu-west-1.compute.amazonaws.com

Description Status Checks Monitoring Tags

Instance ID: i-038888637e06620c1 Public DNS (IPv4): ec2-34-253-121-46.eu-west-1.compute.amazonaws.com

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Esquema

- ¿Qué es AWS?
- La estructura de AWS
- Elastic Cloud Service (EC2)
- Simple Storage Service (S3)
- Simple Database Service (SimpleDB)
- Simple Queue Service (SQS)
- Lanzamiento de una máquina virtual con Linux
- **Conexión con SSH y SFTP**
- Resumen
- Lecturas recomendadas
- Trabajos

Grado en
Ingeniería
Informática
del Software

Software y estándares para la Web

Conexión con SSH y SFTP: Instalar bitvise

- Instalar **bitvise** (cliente SSH)
 - <https://www.bitvise.com/ssh-client-download>

The screenshot shows a Microsoft Edge browser window with the URL <https://www.bitvise.com/ssh-client-download>. The page is titled "bitvise >". The main content area features a "Download Bitvise SSH Client (Tunnelier)" section with a link to the installer (version 7.29, size 21.8 MB). Below this, there's information about upgrading from previous versions and a "Try our SSH Server!" section. On the left, a sidebar menu lists various Bitvise products and services. At the top, there are navigation buttons and a search bar.

Grado en
Ingeniería
Informática
del Software

Software y estándares para la Web

Conexión con SSH y SFTP: Configurar *bitvise*

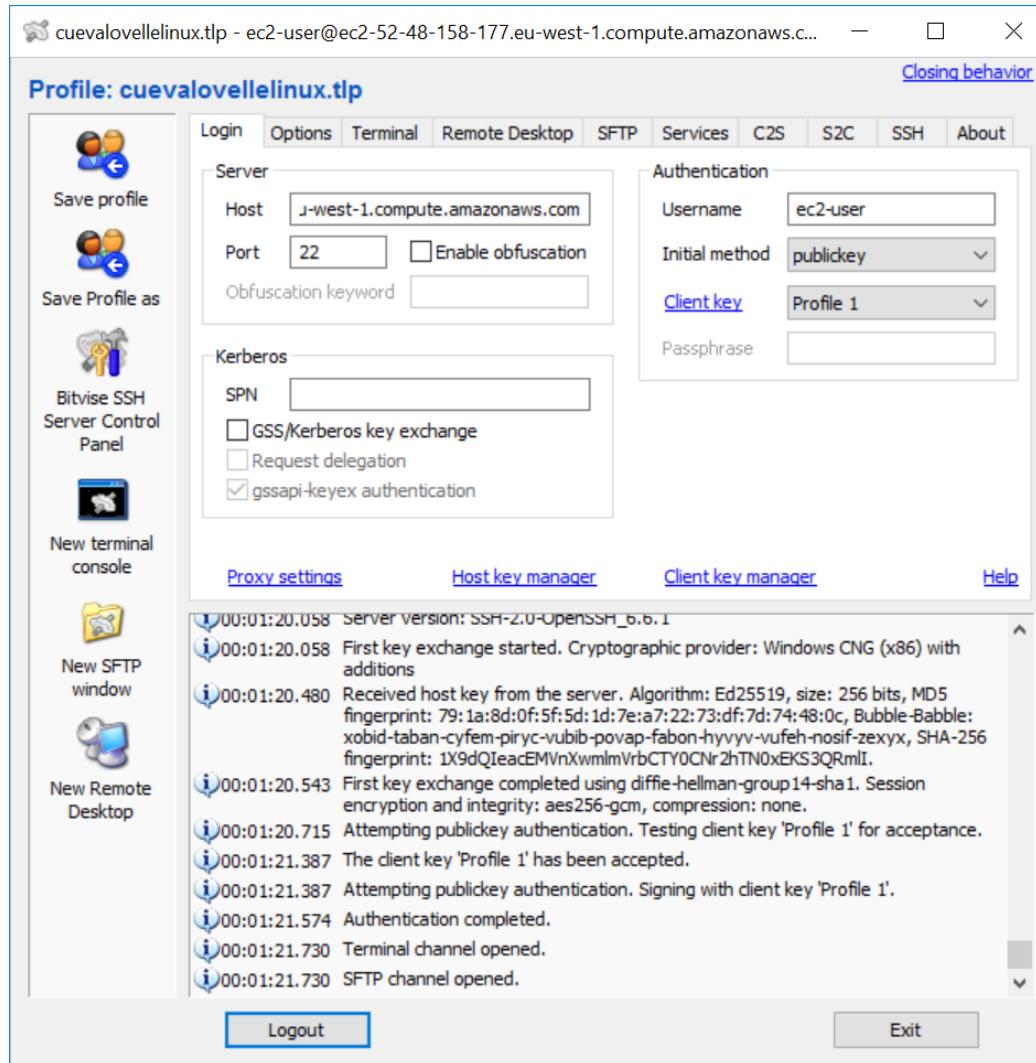
- **Host:** ec2-52-48-158-177.eu-west-1.compute.amazonaws.com
- **Port:** 22
- **Username:** ec2-user
 - En Amazon Linux y Red Hat Enterprise Linux (RHEL)
- **Username:** ubuntu
 - En Ubuntu Linux
- **Initial method:** publickey
- **Client key manager > import >** miClave.pem
- **Client key:** Global1 o Profile1

Grado en
Ingeniería
Informática
del Software

Software y estándares para la Web

Conexión con SSH y SFTP: Conectar con *bitvise*

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Ingeniería
Informática
del Software



Software y estándares para la Web

Conexión con SSH y SFTP: terminal SSH

```
[cuevalovelinux.tlp - ec2-user@ec2-52-48-158-177.compute.amazonaws.com:22 - Bitvise xterm] Last login: Tue Apr 11 05:08:24 2017 from 201.219.222.70  
_ _ | ( _ | _ ) Amazon Linux AMI  
_ _ | \ _ | _ |  
https://aws.amazon.com/amazon-linux-ami/2017.03-release-notes/  
2 package(s) needed for security, out of 2 available  
Run "sudo yum update" to apply all updates.  
[ec2-user@ip-172-31-25-244 ~]$
```

Software y estándares para la Web

Conexión con SSH y SFTP: Transferencia de archivos SFTP

The screenshot shows the Bitvise SFTP interface with two main panes: 'Local files' on the left and 'Remote files' on the right.

Local files: Located at `C:\Users\Juan Manuel Cueva\Dropbox\Asignaturas\UDISTRITAL\ISOS\03-Python`. The list includes various Python files and a CSV file, with details like Name, Size, Type, Date Modified, and Attributes.

Name	Size	Type	Date Modified	Attributes
015-Modulo-statistics.py	655	Python File	27/03/2017 11:35	A
016-Modulo-random.py	950	Python File	27/03/2017 12:01	A
017-Sumatorio.py	639	Python File	27/03/2017 12:23	A
018-Visor-Archivo.py	523	Python File	08/11/2016 19:05	A
019-Archivo-CSV.py	766	Python File	08/11/2016 19:07	A
019-test.csv	308	Archivo de ...	06/11/2016 20:44	A
020-Crear-CSV.py	1.223	Python File	08/11/2016 19:09	A
020-Oviedo.csv	365	Archivo de ...	27/03/2017 17:08	A
021-Linea-Comandos-CSV.py	1.132	Python File	27/03/2017 17:15	A
022-Ver-Linea-Comandos.py	414	Python File	08/11/2016 10:24	A
023-datetime.py	2.005	Python File	10/11/2016 8:32	A
024-iteradores.py	422	Python File	09/11/2016 18:17	A
025-diccionarios.py	2.514	Python File	14/11/2016 12:06	A
026-diccionario-morse.py	2.313	Python File	14/11/2016 13:39	A
100-Clases-Punto-Polygonal.py	8.394	Python File	21/11/2016 10:15	A
101-Objetos.py	700	Python File	21/11/2016 10:31	A
200-JSON-Meteo.py	3.776	Python File	13/11/2016 15:19	A
600-array.py	315	Python File	28/03/2017 0:13	A
601-array2D.py	197	Python File	28/03/2017 0:34	A
700-grafica2D.py	321	Python File	27/03/2017 23:57	A
701-Anguleiro-149-QTotalCuenca.txt	48.510	Documento ...	04/09/2013 2:05	A
701-Hidrograma.py	1.986	Python File	28/03/2017 1:18	A
800-Integral.py	732	Python File	28/03/2017 14:02	A
801-Solucion-Ecuaciones.py	435	Python File	28/03/2017 14:11	A
800-c-149-QTotalCuenca.txt	500	Documento ...	28/03/2017 11:14	A

Remote files: Located at `/home/ec2-user/Python`. The list includes various Python files, with details like Name, Size, Type, Date Modified, and Permissions.

Name	Size	Type	Date Modified	Permissions
000-Hola.py	189	Python File	24/11/2016 7:21	-rw-rw-r-
001-String.py	103	Python File	26/03/2017 1:59	-rw-rw-r-
002-input.py	132	Python File	26/03/2017 8:35	-rw-rw-r-
003-if-string.py	250	Python File	26/03/2017 8:46	-rw-rw-r-
004-string-indices.py	264	Python File	26/03/2017 8:58	-rw-rw-r-
005-subString.py	293	Python File	26/03/2017 9:06	-rw-rw-r-
006-variables-simples.py	675	Python File	26/03/2017 9:16	-rw-rw-r-
007-lista.py	1.406	Python File	08/11/2016 18:40	-rw-rw-r-
008-if-bisiesto.py	349	Python File	08/11/2016 18:45	-rw-rw-r-
009-if-else.py	396	Python File	08/11/2016 9:33	-rw-rw-r-
010-funciones.py	315	Python File	08/11/2016 18:52	-rw-rw-r-
011-Tokenizer.py	740	Python File	08/11/2016 18:54	-rw-rw-r-
012-Bucle-for.py	880	Python File	08/11/2016 9:40	-rw-rw-r-
013-Fibonacci.py	472	Python File	27/03/2017 11:07	-rw-rw-r-
014-Modulo-math.py	1.001	Python File	27/03/2017 11:17	-rw-rw-r-
015-Modulo-statistics.py	655	Python File	27/03/2017 11:35	-rw-rw-r-
016-Modulo-random.py	950	Python File	27/03/2017 12:01	-rw-rw-r-
017-Sumatorio.py	0	Python File	11/04/2017 0:14	-rw-rw-r-

At the bottom, there are upload and download progress bars and status messages.

Uploading: **019-Archivo-CSV.py**
Overall time left: **00:00:39**
23 items left, 19 uploaded

Uploading local file: 019-Archivo-CSV.py

Download: Binary | Resume | Overwrite | Start | Download | Pause

Software y estándares para la Web

Esquema

- ¿Qué es AWS ?
- La estructura de AWS
- Elastic Cloud Service (EC2)
- Simple Storage Service (S3)
- Simple Database Service (SimpleDB)
- Simple Queue Service (SQS)
- Lanzamiento de una máquina virtual con Linux
- Conexión con SSH y SFTP
- **Resumen**
- Lecturas recomendadas
- Trabajos

Grado en
Ingeniería
Informática
del Software

Software y estándares para la Web

Resumen

- La plataforma AWS “**Amazon Web Services**” es una plataforma de servicios en la nube
- AWS (**Amazon Web Services**)
 - Tiene una **capacidad de procesamiento** colosal por medio de máquinas virtuales (**Elastic Cloud Service, EC2**)
 - Es un **almacén** permanente de la información usando sistemas de gestión de bases de datos SQL y nonSQL
 - **Simple Database Service (SimpleDB)**
 - **Simple Storage Service (S3)**
 - Tiene **escalabilidad** permite adaptarse a las necesidades de computación y almacenamiento
 - Incluye servicios y herramientas (**Simple Queue Service SQS, Big Data, etc.**)
 - Tiene alta **disponibilidad** da confianza y fiabilidad
 - Tiene altos niveles de **seguridad**
 - Tiene bajos **costes**

Grado en
Ingeniería
Informática
del Software

Software y estándares para la Web

Esquema

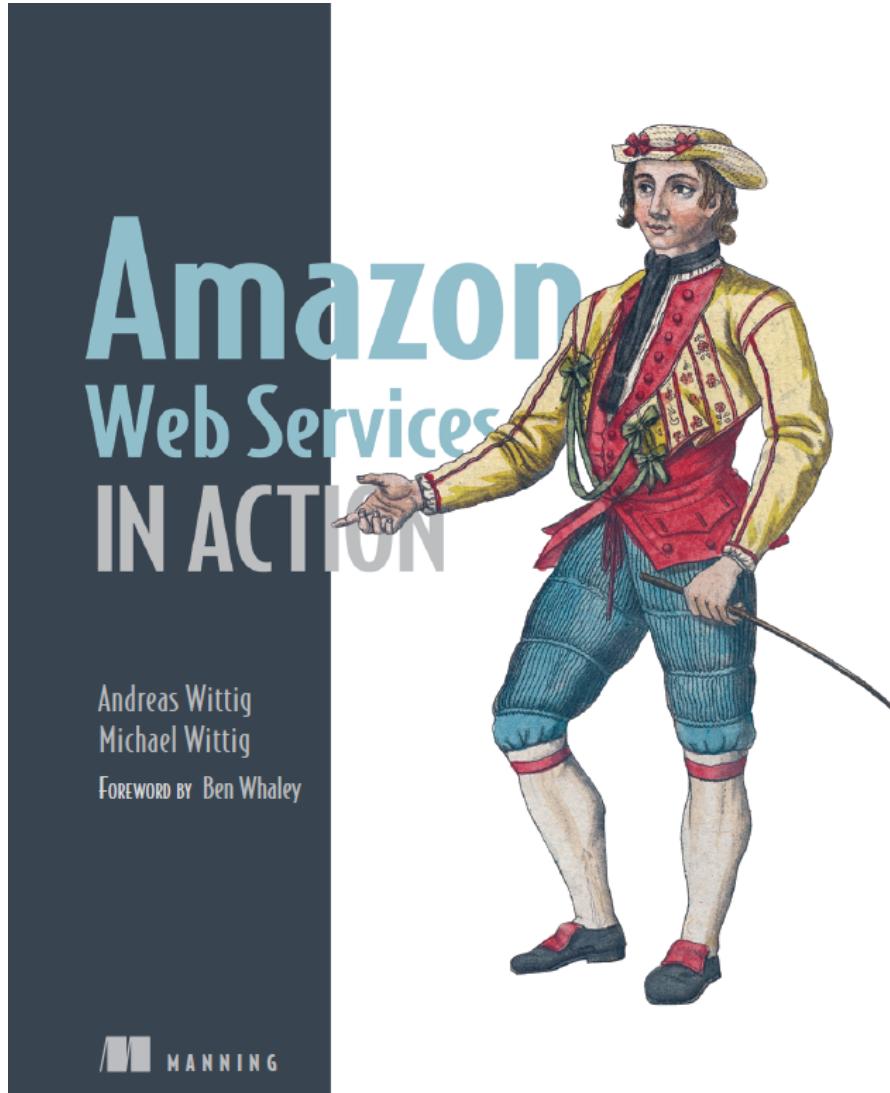
- ¿Qué es AWS?
- La estructura de AWS
- Elastic Cloud Service (EC2)
- Simple Storage Service (S3)
- Simple Database Service (SimpleDB)
- Simple Queue Service (SQS)
- Lanzamiento de una máquina virtual con Linux
- Conexión con SSH y SFTP
- Resumen
- **Lecturas recomendadas**
- Referencias
- Trabajos

Grado en
Ingeniería
Informática
del Software

Software y estándares para la Web

Lecturas recomendadas (I)

- Andreas Wittand
Michael Witting
- “**Amazon Web Services IN ACTION**”
- 2016, Manning

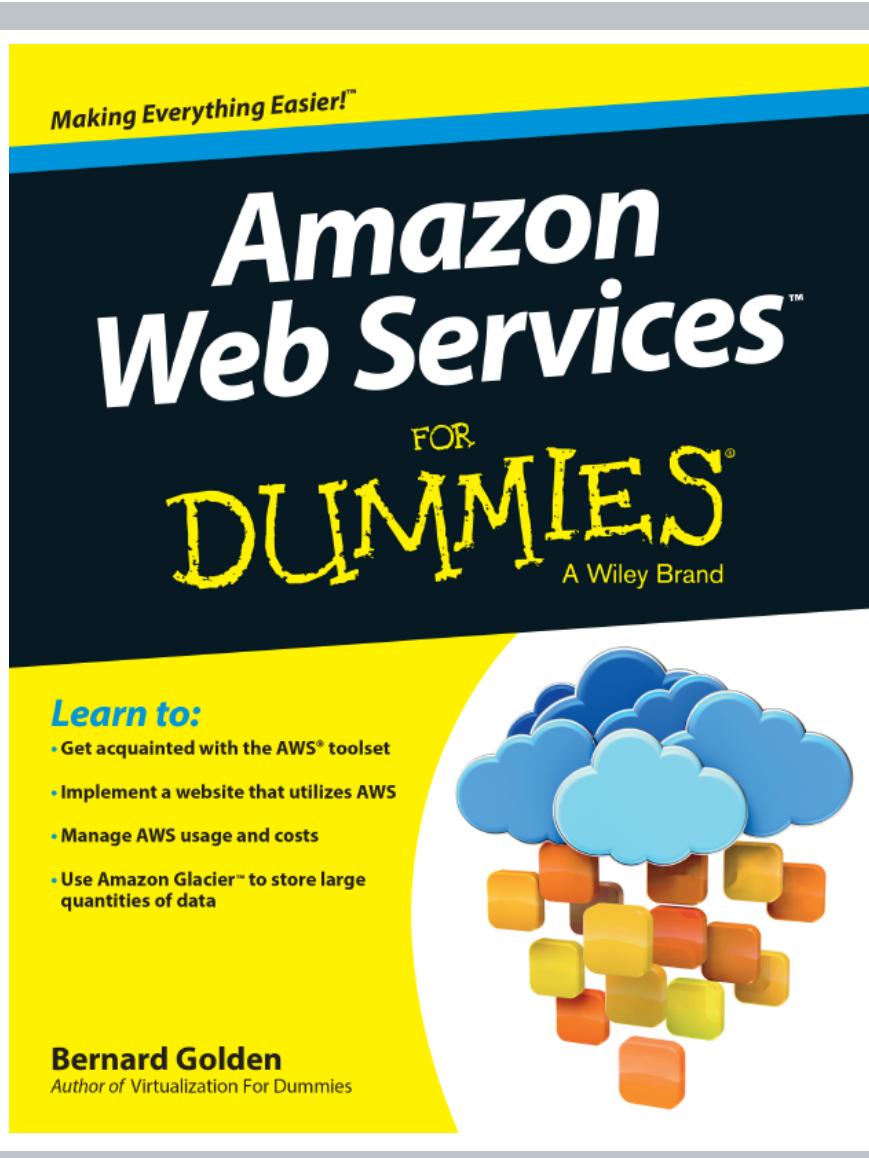


Grado en
Ingeniería
Informática
del Software

Software y estándares para la Web

Lecturas recomendadas (II)

- Bernard Golden
- “**Amazon Web Services for DUMMIES**”
- 2013, John Wiley & Sons .

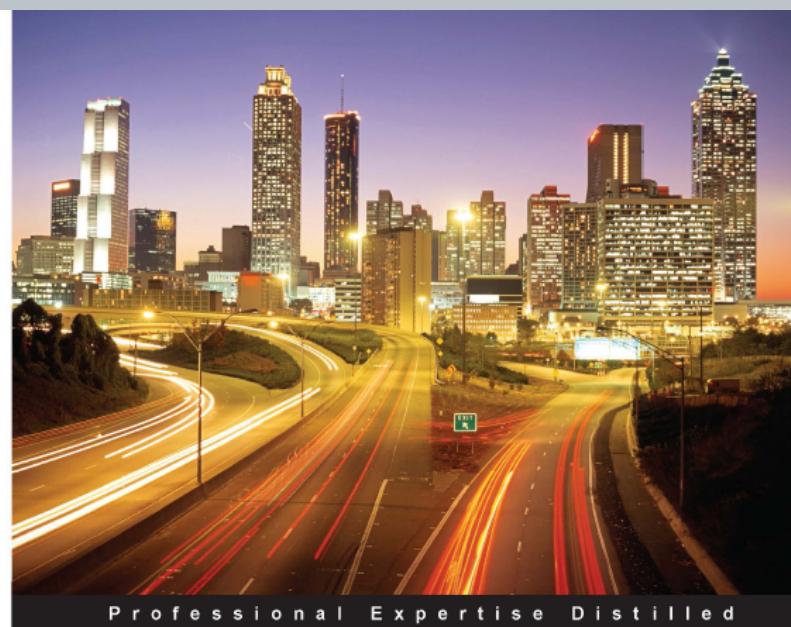


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Lecturas recomendadas (III)

- **Uchit Vyas**
- “Mastering AWS Development”
- 2015, PACKT enterprise



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Mastering AWS Development

Develop and migrate your enterprise application to the Amazon Web Services platform

Uchit Vyas

[PACKT] enterpriseSM
PUBLISHING professional expertise distilled

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Esquema

- ¿Qué es AWS?
- La estructura de AWS
- Elastic Cloud Service (EC2)
- Simple Storage Service (S3)
- Simple Database Service (SimpleDB)
- Simple Queue Service (SQS)
- Lanzamiento de una máquina virtual con Linux
- Conexión con SSH y SFTP
- Resumen
- Lecturas recomendadas
- **Referencias**
- Trabajos

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Referencias

- Amazon Web Services
 - <https://aws.amazon.com/es/>
- Herramientas para desarrolladores de AWS
 - <https://aws.amazon.com/es/tools/>
- Tutoriales de 10 minutos sobre AWS
 - <https://aws.amazon.com/es/getting-started/>
- Lanzamiento de una máquina virtual de Linux en AWS
 - <https://aws.amazon.com/es/getting-started/tutorials/launch-a-virtual-machine/>

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Trabajo (I): Entradas en la bitácora sobre AWS

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- Crear **varias entradas en la bitácora sobre AWS** (*Amazon Web Services*)
- Las entradas pueden ser sobre características generales de la plataforma o sobre módulos en concreto
- También pueden ponerse entradas sobre tutoriales de AWS
- Otras entradas pueden ser sobre lenguajes de programación y herramientas soportados por AWS
- Se deben encontrar videos con el desarrollo de aplicaciones en AWS. Las entradas contendrán el enlace al video y los comentarios personales sobre el video
- También pueden ponerse entradas sobre como AWS soporta el desarrollo de: aplicaciones, Web's, redes sociales, Big data, programas de mensajería, etc.

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Trabajo (II): Crear una máquina Linux en AWS

- Se debe **crear** una máquina en AWS con Linux
- Se elegirá **Amazon Linux**
- Se utilizarán **conexiones SSH y SFTP** a la máquina creada para probar su funcionamiento
- Después de crear la máquina y probarla **se eliminará** para no consumir el crédito del estudiante en AWS
- Se explicará todo **paso a paso en la bitácora** con capturas de pantallas

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