

# AWS - AMAZON WEB SERVICES

---

Gabriele Vailati - Tarcisio Zago

Università degli Studi di Milano

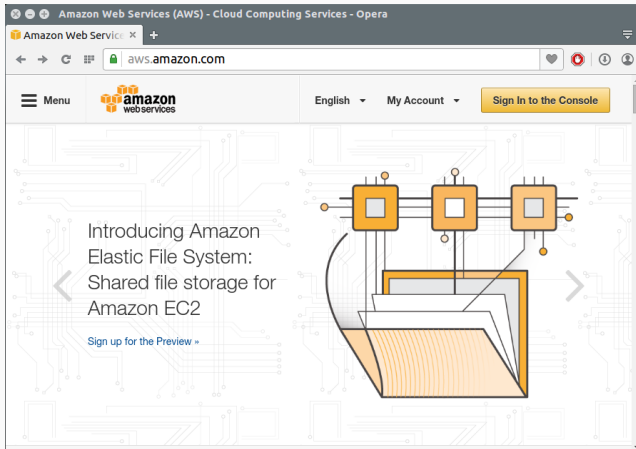
- Piattaforma di Cloud Computing
- Servizi web
  - Deployment
  - Database
  - Analysis
  - Storage
- Fruizione gratuita (*Free tier*) o a pagamento
- Utenti Amazon

## REGISTRAZIONE

---

# REGISTRAZIONE (1)

- Collegarsi a [aws.amazon.com](https://aws.amazon.com) → Sign in to the Console



# REGISTRAZIONE (2)

- Nuovo utente → I am a new user
- Vecchio utente → I am a returning user

The screenshot shows a web browser window titled "Amazon Web Services Sign In - Opera". The address bar displays "www.amazon.com/ap/signin". The page features the Amazon Web Services logo at the top left. The main heading is "Sign In or Create an AWS Account". Below this, a message states: "You may sign in using your existing Amazon.com account or you can create a new account by selecting 'I am a new user.'". A form for "My e-mail address is:" includes a text input field. Two radio buttons are present: "I am a new user." (selected) and "I am a returning user and my password is:" (with an associated password input field). A yellow button labeled "Sign in using our secure server" is located below the form. A link "Forgot your password?" is also visible. On the right side, a promotional box for "AWS re:Invent" announces that registration opens on "May 12, 2015" for a "Full conference pass \$1299". It includes a "Save the date and Sign up for email updates" button. At the bottom, a URL is displayed: "reinvent.aws.events.com/?sc\_channel=ha&sc\_campaign=event\_reinvent\_2015\_price\_907&trk=ha\_reinvent\_2015\_907".

Amazon Web Services

## Sign In or Create an AWS Account

You may sign in using your existing Amazon.com account or you can create a new account by selecting "I am a new user."

My e-mail address is:

☒ I am a new user.

☐ I am a returning user and my password is:

[Sign in using our secure server](#)

[Forgot your password?](#)

# AWS re:Invent

Registration opens:  
**May 12, 2015**  
Full conference pass \$1299

Save the date and  
[Sign up for email updates](#)

[reinvent.aws.events.com/?sc\\_channel=ha&sc\\_campaign=event\\_reinvent\\_2015\\_price\\_907&trk=ha\\_reinvent\\_2015\\_907](http://reinvent.aws.events.com/?sc_channel=ha&sc_campaign=event_reinvent_2015_price_907&trk=ha_reinvent_2015_907)

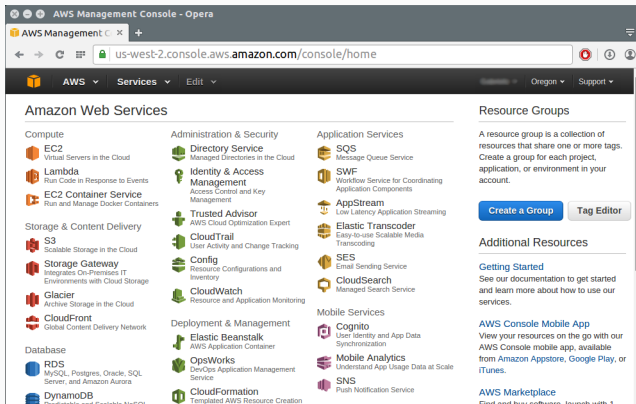
- Procedere con la registrazione inserendo
  - i propri dati personali per eventuali fatturazioni
  - i dati relativi al mezzo di pagamento
    - saranno addebitati solo costi relativi ai servizi a pagamento e per il saldo dei servizi free tier i cui limiti sono stati ecceduti

## I SERVIZI

---

# ACCESSO ALLA CONSOLE

- Ad autenticazione effettuata è possibile accedere alla Console di Gestione dei Servizi





- Uno dei Major Services di AWS
- Possibilità di attivare VM
- Distribuzioni di OS più comuni
  - Microsoft Windows
  - Linux (e.g. Ubuntu, SUSE, Red Hat)
- Diversi livelli di virtualizzazione
  - HVM
    - accesso al supporto per l'accelerazione HW
    - prestazioni elevate
  - PV
    - accelerazione HW non necessaria
    - prestazioni stabili
    - meno performante di HVM

# DASHBOARD EC2

The screenshot shows the AWS Management Console for the EC2 service in the us-west-2 (Oregon) region. The interface is divided into several sections:

- Left Navigation Panel:** Contains links to EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES (Instances, Spot Requests, Reserved Instances), IMAGES (AMIs, Bundle Tasks), ELASTIC BLOCK STORE (Volumes, Snapshots), and NETWORK & SECURITY (Security Groups, Elastic IPs, Placement Groups).
- Resources:** A central section showing the current EC2 resources in the US West (Oregon) region:
  - 2 Running Instances
  - 3 Volumes
  - 3 Key Pairs
  - 0 Placement Groups
  - 2 Elastic IPs
  - 0 Snapshots
  - 0 Load Balancers
  - 4 Security GroupsA blue callout box states: " Easily deploy Ruby, PHP, Java, .NET, Python, Node.js & Docker applications with [Elastic Beanstalk](#)." with a "Hide" button.
- Create Instance:** A section with a "Launch Instance" button. It includes a note: "To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance." and another note: "Note: Your instances will launch in the US West (Oregon) region".
- Account Attributes:** A section on the right showing account details:
  - Supported Platforms: VPC
  - Default VPC: vpc-126ddc77
  - Additional Information: Getting Started Guide, Documentation, All EC2 Resources, Forums, Pricing, Contact Us.
  - AWS Marketplace: Find free software trial products in the AWS Marketplace from the [EC2 Launch Wizard](#).
- Service Health & Scheduled Events:** Links at the bottom of the Resources section.
- Footer:** Includes a Feedback button, English language selector, copyright notice (© 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved.), and links to Privacy Policy and Terms of Use.

## LANCIO DI UN'ISTANZA EC2

---

# PASSO 1 - AMAZON MACHINE IMAGE

EC2 Management Console - Opera

us-west-2.console.aws.amazon.com/ec2/v2/home

AWS Services Edit

Oregon Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

## Step 1: Choose an Amazon Machine Image (AMI)

[Cancel and Exit](#)

**Free tier eligible** 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: paravirtual

**SUSE Linux**  
**Free tier eligible** **SUSE Linux Enterprise Server 11 SP3 (PV), SSD Volume Type - ami-5df2ab6d** **Select**  
64-bit  
SUSE Linux Enterprise Server 11 Service Pack 3 (PV), EBS General Purpose (SSD) Volume Type. Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available.  
Root device type: ebs Virtualization type: paravirtual

**Ubuntu**  
**Free tier eligible** **Ubuntu Server 14.04 LTS (PV), SSD Volume Type - ami-6989a659** **Select**  
64-bit  
Ubuntu Server 14.04 LTS (PV), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).  
Root device type: ebs Virtualization type: paravirtual

[Feedback](#) [English](#) © 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy Policy](#) [Terms of Use](#)

## PASSO 2 - TIPOLOGIA DI ISTANZA

EC2 Management Console - Opera

EC2 Management Co x Speed Dial x +

← → ↺ ⚙ us-west-2.console.aws.amazon.com/ec2/v2/home

ⓘ

AWS ▾

Services ▾

Edit ▾

Customize ▾

Oregon ▾

Support ▾

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Tag Instance

6. Configure Security Group

7. Review

### Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by:

All instance types ▾

All generations ▾

Show/Hide Columns

Currently selected: t1.micro (Variable ECUs, 1 vCPUs, 0.613 GiB memory, EBS only)

	Family ▾	Type ▾	vCPUs ⓘ ▾	Memory (GiB) ▾	Instance Storage (GB) ⓘ ▾	EBS-Optimized Available ⓘ ▾	Network Performance ⓘ
	Micro instances	t1.micro Free tier eligible	1	0.613	EBS only	-	Very Low
	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate

Cancel

Previous

Review and Launch

Next: Configure Instance Details

Feedback

English

© 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Privacy Policy

Terms of Use

# PASSO 3 - DETTAGLI

EC2 Management Console - Opera

EC2 Management Co x Speed Dial x +

us-west-2.console.aws.amazon.com/ec2/v2/home

AWS Services Edit

Oregon Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

## 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 of the lower pricing, assign an access management role to the instance, and more.


Number of instances ⓘ

1

Purchasing option ⓘ

☐ Request Spot Instances

Network ⓘ

vpc-126ddc77 (172.31.0.0/16) (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

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

[Feedback](#) [English](#) © 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy Policy](#) [Terms of Use](#)

# PASSO 4 - STORAGE

The screenshot shows the AWS Management Console in the 'Add Storage' step. The breadcrumb trail at the top indicates the sequence: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage (highlighted), 5. Tag Instance, 6. Configure Security Group, and 7. Review. The main heading is 'Step 4: Add Storage', followed by explanatory text and a link to learn more about storage options. Below this is a table with columns for Type, Device, Snapshot, Size (GiB), Volume Type, IOPS, Delete on Termination, and Encrypted. The 'Root' volume is listed with device /dev/sda1, snapshot snap-0e023b4e, size 8 GiB, General Purpose (SSD) volume type, 24 / 3000 IOPS, and is not encrypted. An 'Add New Volume' button is present. A blue information box at the bottom states that free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. At the bottom right, there are navigation buttons: 'Cancel', 'Previous', 'Review and Launch' (highlighted), and 'Next: Tag Instance'. The footer contains a feedback link, language selection (English), and copyright information for Amazon Web Services, Inc. (2008-2015), along with links to the Privacy Policy and Terms of Use.

EC2 Management Console - Opera

us-west-2.console.aws.amazon.com/ec2/v2/home

AWS Services Edit

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 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.

Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Delete on Termination ⓘ	Encrypted ⓘ
Root	/dev/sda1	snap-0e023b4e	8	General Purpose (SSD) ▼	24 / 3000	<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.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Tag Instance](#)

[Feedback](#) [English](#) © 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy Policy](#) [Terms of Use](#)

# PASSO 5 - TAG

The screenshot shows the AWS Management Console in the 'us-west-2' region. The breadcrumb trail indicates the current step is '5. Tag Instance' within the instance creation process. The page title is 'Step 5: Tag Instance'. A descriptive paragraph explains that a tag is a case-sensitive key-value pair and provides an example: key = Name, value = Webserver. Below this, there is a form with two input fields: 'Key' (with a 127-character limit) and 'Value' (with a 255-character limit). The 'Key' field contains the text 'Name'. To the right of the 'Value' field is a close button (X). Below the input fields is a 'Create Tag' button and a note '(Up to 10 tags maximum)'. At the bottom of the form, there are four buttons: 'Cancel', 'Previous', 'Review and Launch' (which is highlighted in blue), and 'Next: Configure Security Group'. The footer of the console includes a 'Feedback' link, a language selector set to 'English', and copyright information for Amazon Web Services, Inc. (2008-2015), along with links to 'Privacy Policy' and 'Terms of Use'.

EC2 Management Console - Opera

us-west-2.console.aws.amazon.com/ec2/v2/home

AWS Services Edit

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

### 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="Name"/>	<input type="text"/>

(Up to 10 tags maximum)

[Feedback](#) [English](#) © 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy Policy](#) [Terms of Use](#)



# PASSO 6 - SECURITY GROUP

The screenshot shows the AWS Management Console in a browser window titled "EC2 Management Console - Opera". The address bar shows "us-west-2.console.aws.amazon.com/ec2/v2/home". The navigation bar includes "AWS", "Services", "Edit", "Oregon", and "Support". The breadcrumb trail shows steps 1 through 7, with "6. Configure Security Group" highlighted.

## 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	Anywhere 0.0.0.0/0

**Warning**

Rules with source of 0.0.0.0/0 allow all IP addresses access to your instance. We recommend either specifying specific IP addresses or using AWS managed rules.

Feedback English © 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use

# PASSO 7 - REVISIONE

EC2 Management Console - Opera

us-west-2.console.aws.amazon.com/ec2/v2/home

AWS Services Edit

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

## Step 7: Review Instance Launch

▼ AMI Details [Edit AMI](#)

**Free tier eligible** **Ubuntu Server 14.04 LTS (PV), SSD Volume Type - ami-6989a659**  
Ubuntu Server 14.04 LTS (PV), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).  
Root Device Type: ebs Virtualization type: paravirtual

▼ Instance Type [Edit instance type](#)

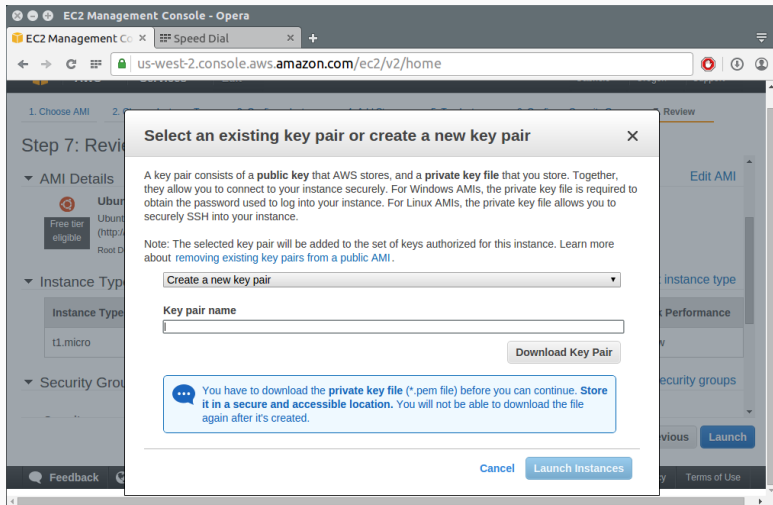
Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t1.micro	Variable	1	0.613	EBS only	-	Very Low

▼ Security Groups [Edit security groups](#)

[Cancel](#) [Previous](#) [Launch](#)

Feedback English © 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use

## PASSO 8 - KEY PAIR

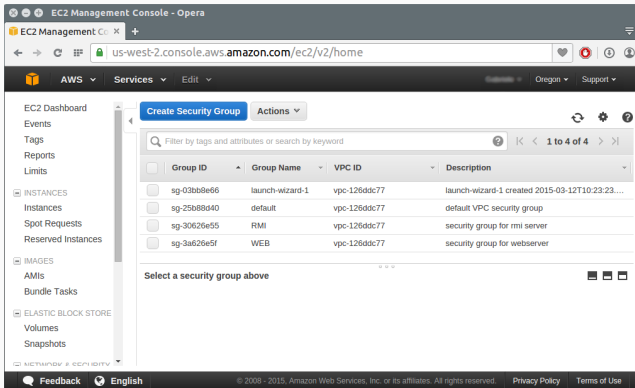


## SECURITY GROUP

---

# COSA È UN SECURITY GROUP

- Sicurezza dell'istanza
- Regole di firewalling
  - filtraggio delle connessioni *inbound* e *outbound*



# CREAZIONE DI UN SECURITY GROUP

- Informazioni principali
  - nome
  - regole

The screenshot shows the 'Create Security Group' page in the AWS EC2 Management Console. The browser address bar indicates the URL is `us-west-2.console.aws.amazon.com/ec2/v2/home`. The page title is 'Create Security Group'. Below the title, there are three input fields: 'Security group name', 'Description', and 'VPC'. The 'VPC' dropdown is set to 'vpc-126ddc77 (172.31.0.0/16) \*', with a note below it stating '\* denotes default VPC'. Under the 'Security group rules' section, the 'Inbound' tab is selected. A table for rules is shown with columns: 'Type', 'Protocol', 'Port Range', and 'Source'. The first row has 'Custom TCP Rule' in the Type column, 'TCP' in the Protocol column, '0' in the Port Range column, and 'Custom IP' in the Source column. An 'Add Rule' button is located below the table.

EC2 Management Console - Opera

us-west-2.console.aws.amazon.com/ec2/v2/home

### Create Security Group

Security group name

Description

VPC

\* denotes default VPC

Security group rules:

Inbound Outbound

Type	Protocol	Port Range	Source
Custom TCP Rule	TCP	0	Custom IP

Add Rule

- Ogni regola è una quadrupla

*⟨Tipo, Protocollo, Porta, Sorgente⟩*

- Esempi:

· SSH	TCP	22	anywhere
· Custom TCP	TCP	1099	anywhere
· Custom TCP	TCP	1100	anywhere
· Custom TCP	TCP	8080	anywhere

## ELASTIC IPS

---

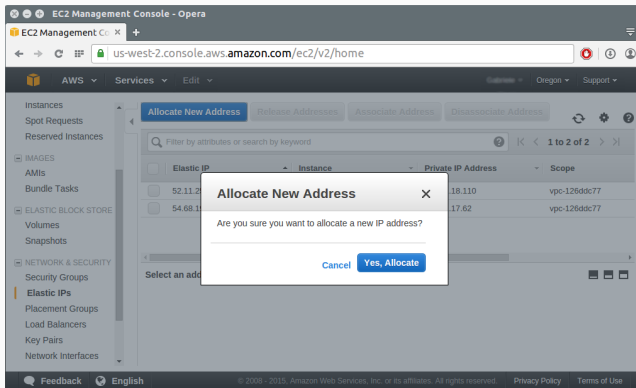


# COSA È UN IP ELASTICO

- Assegnamento dinamico degli indirizzi IP
- Restart di un'istanza → nuovo IP
- Soluzione: IP elastici
  - Indirizzi IP *prenotati*
  - Restart di un'istanza → stesso IP

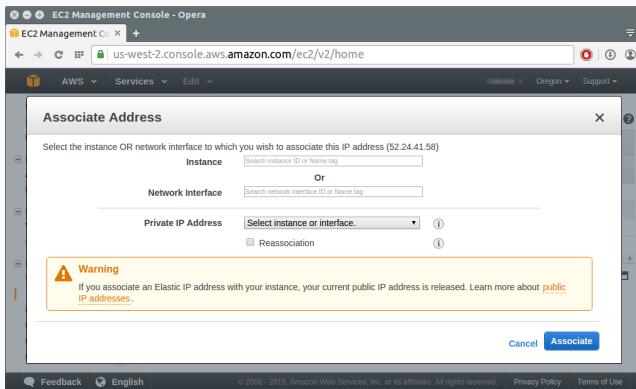
# ALLOCAZIONE DI UN ELASTIC IP

- Dashboard EC2 → Elastic IPs



# ASSEGNAIMENTO DI UN ELASTIC IP

- Selezionare l'istanza a cui associare l'indirizzo IP elastico



## INTERAGIRE CON UN'ISTANZA

---

- Protocollo SSH

```
ssh -i file.pem ubuntu@<IndirizzoIP|DNSPubblico>
```

- Protocollo SCP

```
scp -i file.pem /path/filedatrasferire  
ubuntu@<IndirizzoIP|DNSPubblico>:pathdestinazione
```

DOMANDE?