

Setting your own EC2 in AWS

Advanced Bioinformatics: Genome Analysis

Course code: MSIB 32500

1. Create an account

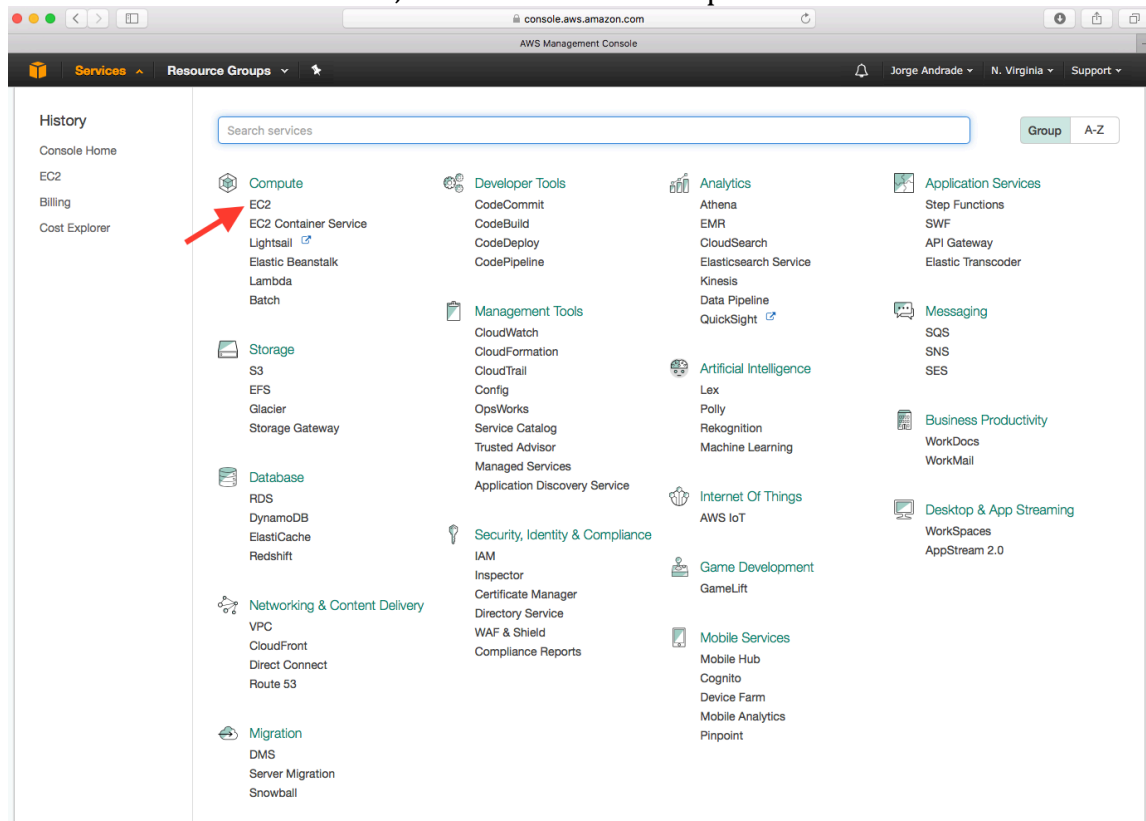
- Go to <http://aws.amazon.com>
- Sign In to the Console; I am a new user; ## create your log-in credentials for a Personal Account
- For the lectures we will be using AWS free instances but you will be requested to enter your payment information (CC) to create an account
- For security you will need verify your identity using a code send to the phone number you provided
- Select the free 'Basic' AWS support plan

2. Sign In to the AWS console

- Login to your console by visiting <https://console.aws.amazon.com> using your e-mail and password

3. Start EC2 Compute services

- Click on 'Services', select EC2 under Compute



- Click "Launch Instance" Button

console.aws.amazon.com

EC2 Management Console

Services Resource Groups

Jorge Andrade N. Virginia Support

EC2 Dashboard

Events

Tags

Reports

Limits

INSTANCES

Instances

Spot Requests

Reserved Instances

Scheduled Instances

Dedicated Hosts

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Snapshots

NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

LOAD BALANCING

Load Balancers

Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) region:

- 0 Running Instances
- 0 Elastic IPs
- 0 Dedicated Hosts
- 0 Snapshots
- 0 Volumes
- 0 Load Balancers
- 0 Key Pairs
- 1 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 US East (N. Virginia) region

Service Health

Service Status:

US East (N. Virginia):

US East (N. Virginia): This service is operating normally

Availability Zone Status:

us-east-1a: Availability zone is operating normally

Scheduled Events

US East (N. Virginia): No events

Account Attributes

Supported Platforms

VPC

Default VPC

vpc-f02b9796

Resource ID length management

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.

Or try these popular AMIs:

Cisco Cloud Services Router (CSR) 1000V - Direct Connect Multi-Gig

Provided by Cisco Systems, Inc.

Rating ★★★★★

Pay by the hour for Cisco software and

c. Select: Ubuntu Server 16.04 Amazon Machine Image (AMI)

Services Resource Groups

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

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

My AMIs

AWS Marketplace

Community AMIs

☐ Free tier only ⓘ

Amazon Linux

Free tier eligible

Amazon Linux AMI 2016.09.1 (HVM), SSD Volume Type - ami-9be6f38c

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 7.3 (HVM), SSD Volume Type - ami-b63769a1

Red Hat Enterprise Linux version 7.3 (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 SP2 (HVM), SSD Volume Type - ami-fde4e8ea

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.

Root device type: ebs Virtualization type: hvm

Select

64-bit

Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-e13739f6

Ubuntu Server 16.04 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

Microsoft Windows Server 2016 Base - ami-45e3ec52

Microsoft Windows 2016 Datacenter edition, [English]

Root device type: ebs Virtualization type: hvm

Select

64-bit

d. Select the Free tier t2.micro

Services ▾ Resource Groups ▾

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

Step 2: Choose an Instance Type

	Family ▾	Type ▾	vCPUs ⓘ	Memory (GiB) ▾	Instance Storage (GB) ⓘ	EBS-Optimized Available ⓘ	Network Performance ⓘ
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	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	t2.large	2	8	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate
<input type="checkbox"/>	General purpose	t2.2xlarge	8	32	EBS only	-	Moderate
<input type="checkbox"/>	General purpose	m4.large	2	8	EBS only	Yes	Moderate
<input type="checkbox"/>	General purpose	m4.xlarge	4	16	EBS only	Yes	High
<input type="checkbox"/>	General purpose	m4.2xlarge	8	32	EBS only	Yes	High
<input type="checkbox"/>	General purpose	m4.4xlarge	16	64	EBS only	Yes	High

Cancel Previous **Review and Launch** Next: Configure Instance Details

e. Click “Review and Launch” Button

4. Edit security groups by adding HTTPS and Custom TCP Rule for port 8888

- On Security Groups, click ‘Edit security groups’
- Leave SSH ‘Type’, ‘Protocol’ and ‘Port Range’ as-is; Select ‘Anywhere’ on ‘Source’
- Click ‘Add Rule’ and select ‘HTTPS’ on type, leave the default ‘Protocol’ and ‘Port Range’; Select ‘Anywhere’ on ‘Source’
- Click ‘Add Rule’ and select ‘Custom TCP Rule’ on type, enter ‘8888’ on ‘Port Range’; Select ‘Anywhere’ on ‘Source’
- Click ‘Review and Launch’ Button

Services ▾ Resource Groups ▾

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

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 ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ
SSH	TCP	22	Anywhere 0.0.0.0/0
HTTPS	TCP	443	Anywhere 0.0.0.0/0
Custom TCP Rule	TCP	8888	Anywhere 0.0.0.0/0

Add Rule

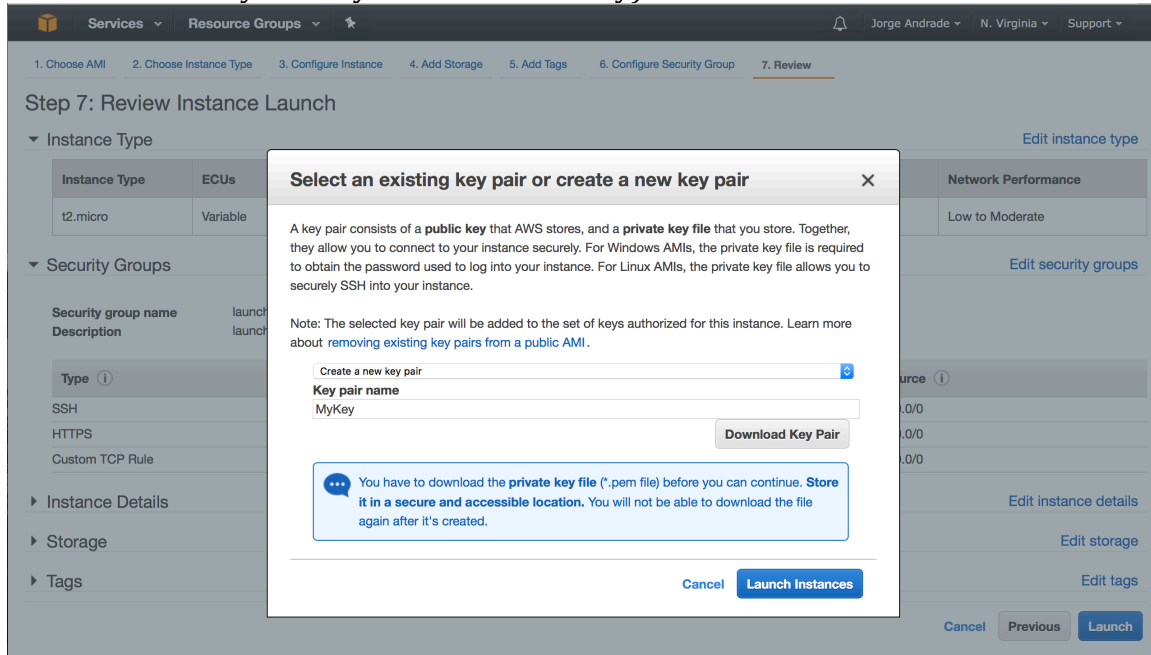
Warning

Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Previous **Review and Launch**

5. Launch your instance and create your key pairs

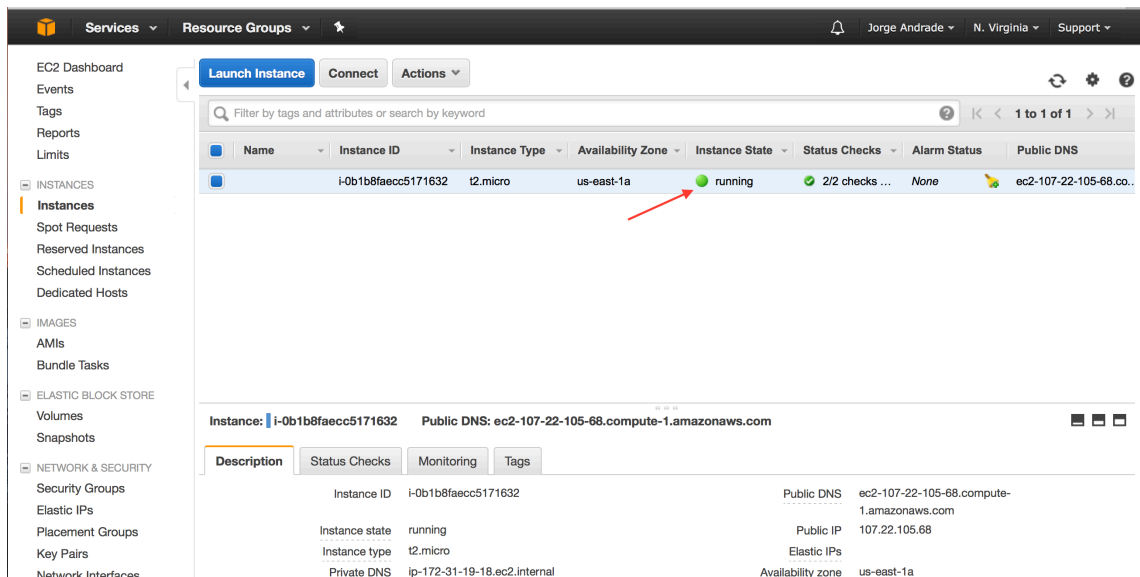
- After you click 'Review and Launch', click on 'Launch'
- Select 'Create a new key pair', write a name like: *MyKey* and Click on 'Download KeyPair', save your key file ('MyKey.pem') in a particular location on your local computer, note that you will need to know where this file is located later on (for convenience you may want to save it directly under your *home* directory). Click on 'Launch Instances'



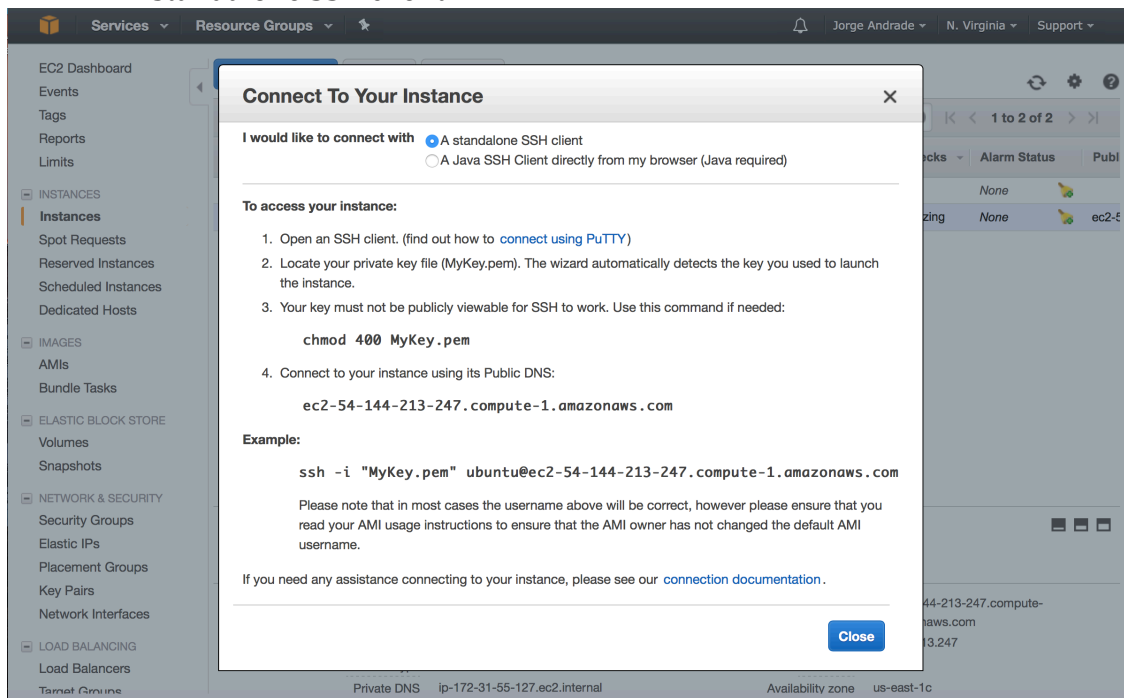
- Click on 'View Instances'

6. Connect to your Elastic Compute Cloud

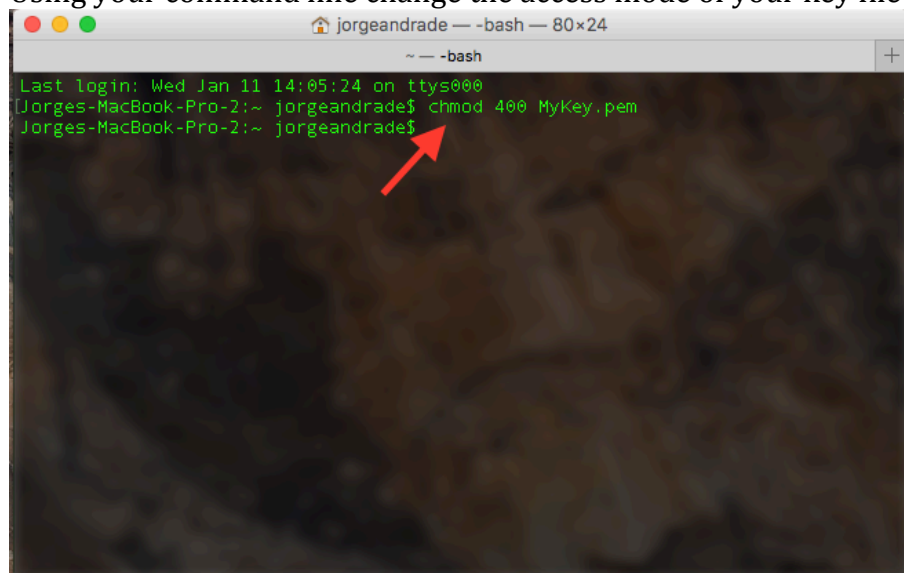
- When you click on 'View Instances' you can see the 'Instance State' status, when this is on green as 'running' your instance has been provisioned



- b. Explore the other available attributes of your instance including: Public DNS, Public IP, Key Name, etc.
- c. With your instance selected, click on 'Connect' button
- d. Read the instructions on how to connect to your instance; select 'A standalone SSH client'



- e. On your computer/laptop, open a *command line* window, on Mac you can use the *Terminal*, on Windows you can use *PuTTY* or the *command prompt*
- f. Using your command line change the access mode of your key file to 400



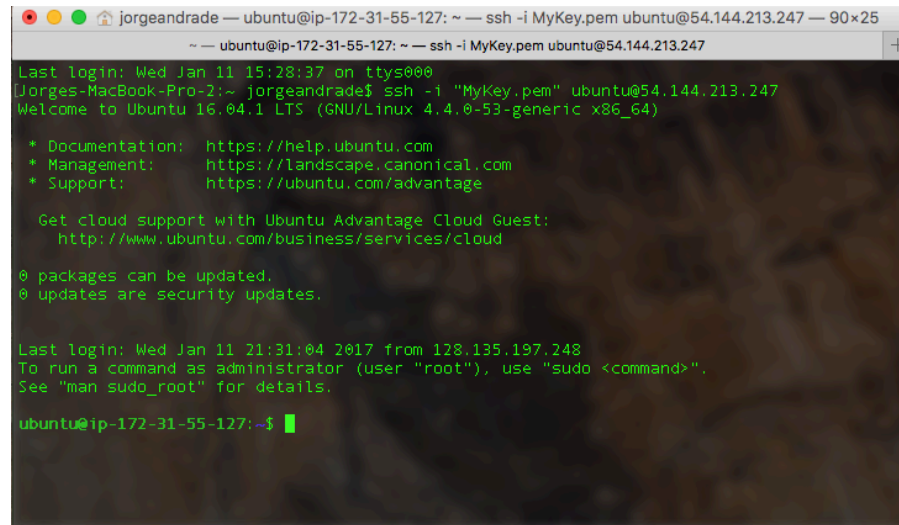
- g. Using your command line terminal connect to your Instance using SSH. You can use the provided Public DNS or IP address

Example: Using DNS

```
ssh -i "MyKey.pem" ubuntu@ec2-54-144-213-247.compute-1.amazonaws.com
```

Example: Using IP

```
ssh -i "MyKey.pem" ubuntu@54.144.213.247
```

A terminal window titled "jorgeandrade — ubuntu@ip-172-31-55-127: ~ — ssh -i MyKey.pem ubuntu@54.144.213.247 — 90x25". The terminal shows the output of an SSH command. It starts with "Last login: Wed Jan 11 15:28:37 on ttys000". Then it shows the command "[Jorges-MacBook-Pro-2:~ jorgeandrade\$ ssh -i "MyKey.pem" ubuntu@54.144.213.247" and the response "Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 4.4.0-53-generic x86_64)". Below this, there are links for documentation, management, and support. Then it says "Get cloud support with Ubuntu Advantage Cloud Guest: http://www.ubuntu.com/business/services/cloud". Next, it says "0 packages can be updated." and "0 updates are security updates.". Then it shows "Last login: Wed Jan 11 21:31:04 2017 from 128.135.197.248". Then it says "To run a command as administrator (user "root"), use "sudo <command>". See "man sudo_root" for details.". Finally, it shows the prompt "ubuntu@ip-172-31-55-127:~\$".

```
jorgeandrade — ubuntu@ip-172-31-55-127: ~ — ssh -i MyKey.pem ubuntu@54.144.213.247 — 90x25
~ — ubuntu@ip-172-31-55-127: ~ — ssh -i MyKey.pem ubuntu@54.144.213.247
Last login: Wed Jan 11 15:28:37 on ttys000
[Jorges-MacBook-Pro-2:~ jorgeandrade$ ssh -i "MyKey.pem" ubuntu@54.144.213.247
Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 4.4.0-53-generic x86_64)

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

Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.

Last login: Wed Jan 11 21:31:04 2017 from 128.135.197.248
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-55-127:~$
```

You can now start installing the software you need on the cloud, to install R use the following command:

```
sudo apt-get install r-base
```