



## What is Cloud Computing?

- In simple words, Cloud Computing refers to a mode of storing data & applications remotely and accessing those files via the Internet.

Cloud Computing consist of 3 components:

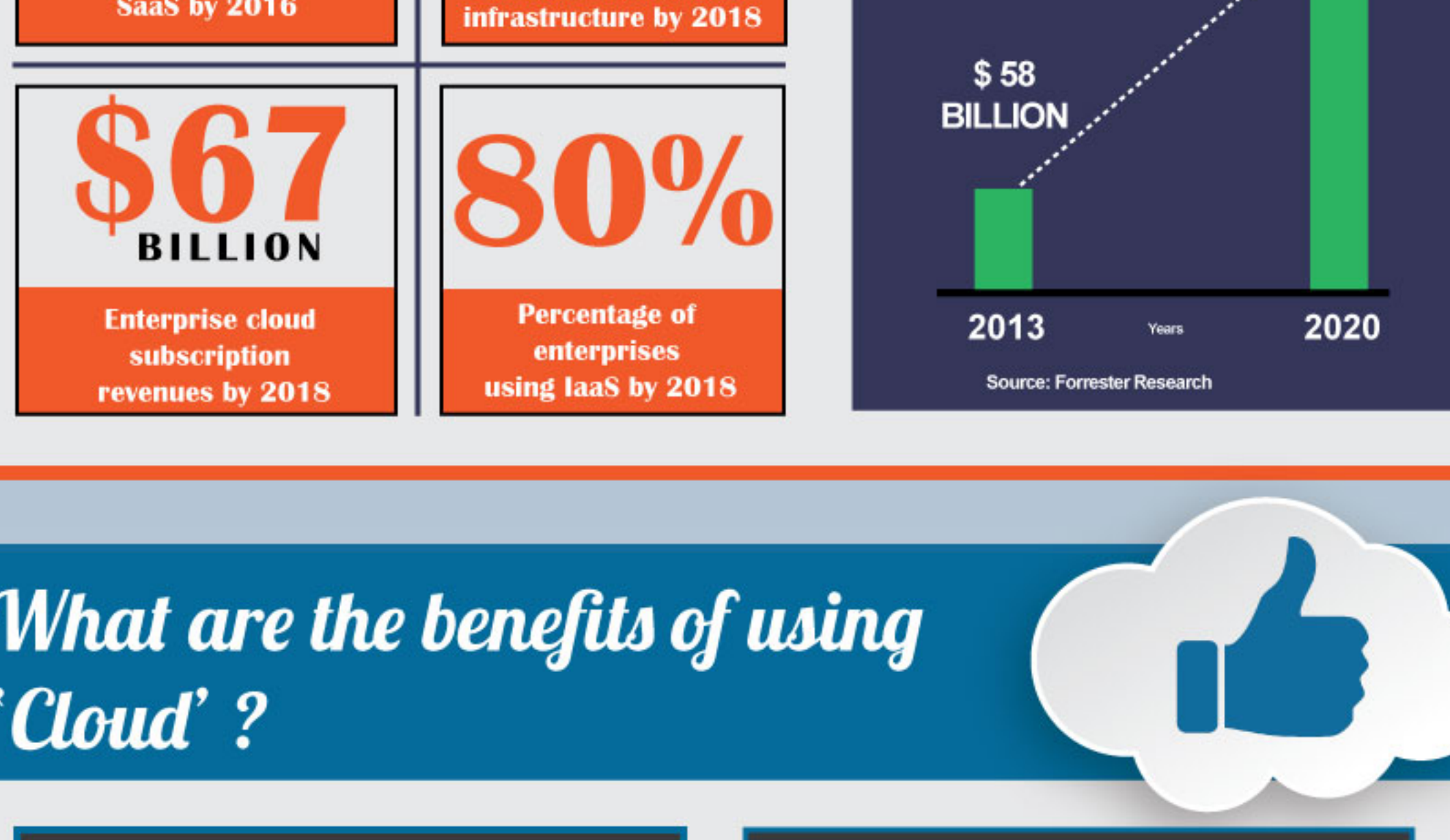
- Infrastructure as a Service(IaaS)
- Platform as a Service(PaaS)
- Software as a Service(SaaS)

## What is future of Cloud Computing?

The ability to upload data to "the cloud" and accessing it at our convenience (anytime, anywhere, on any device) is ensuring its bright future.



Source: Cisco Global Cloud Index, 2013-2018

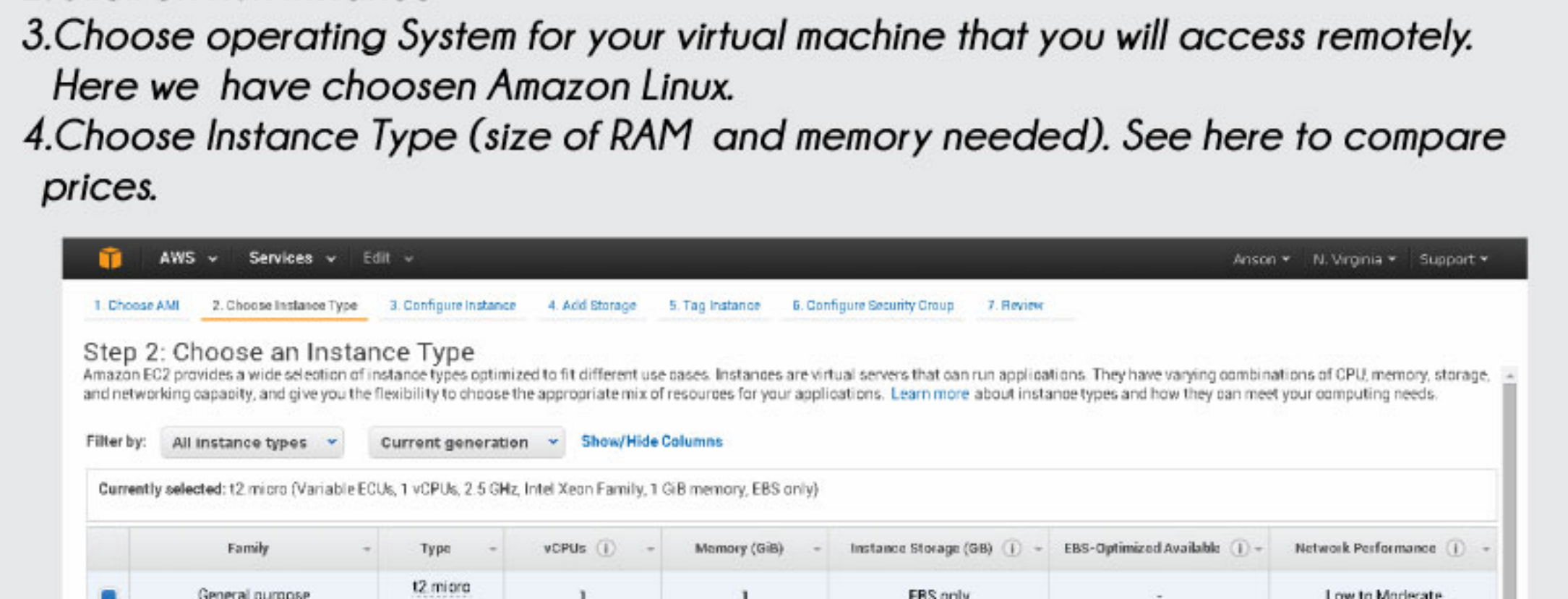


## What are the benefits of using 'Cloud' ?

- Cost Savings
- Accessibility
- Scalability
- Easy monitoring

Fact - In 2009, Boaz Allen Hamilton (BAH) study concluded that a cloud computing approach could save 50 to 67 percent of the lifecycle cost for a 1,000-server deployment

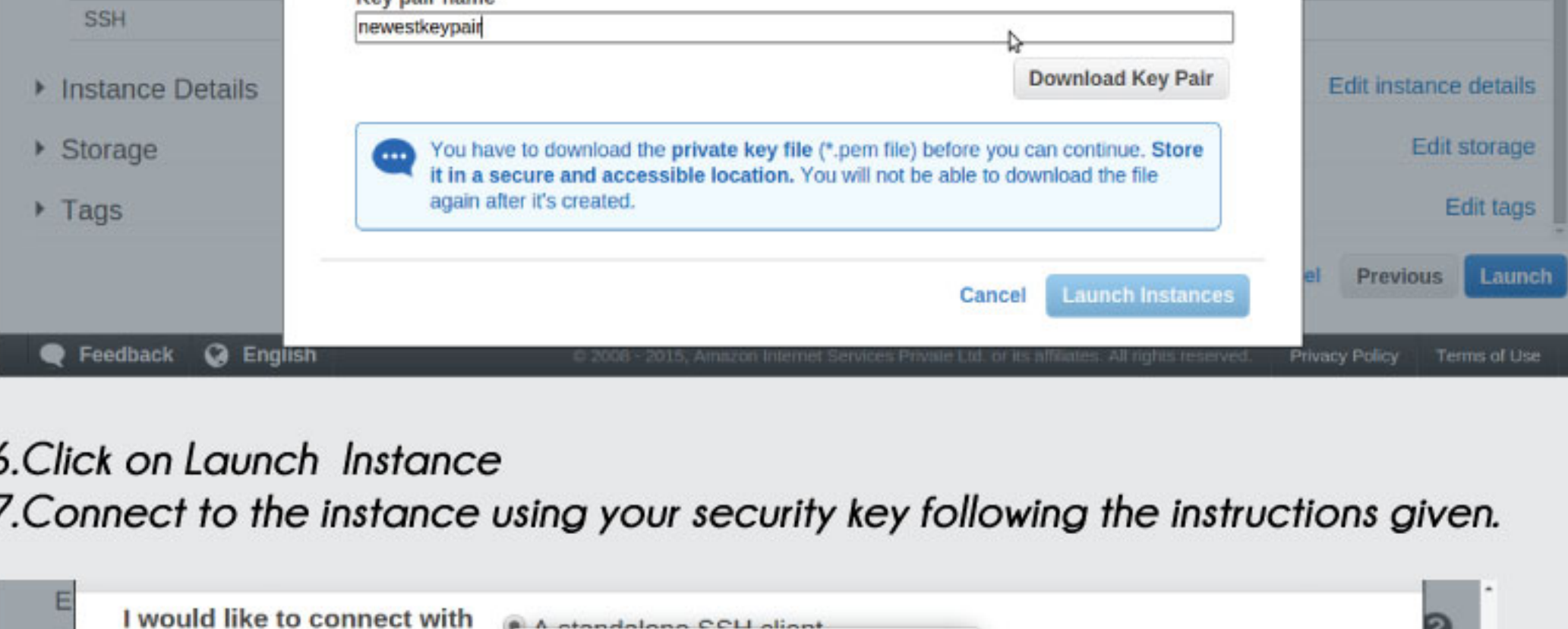
## What are the different services available for Cloud Computing?



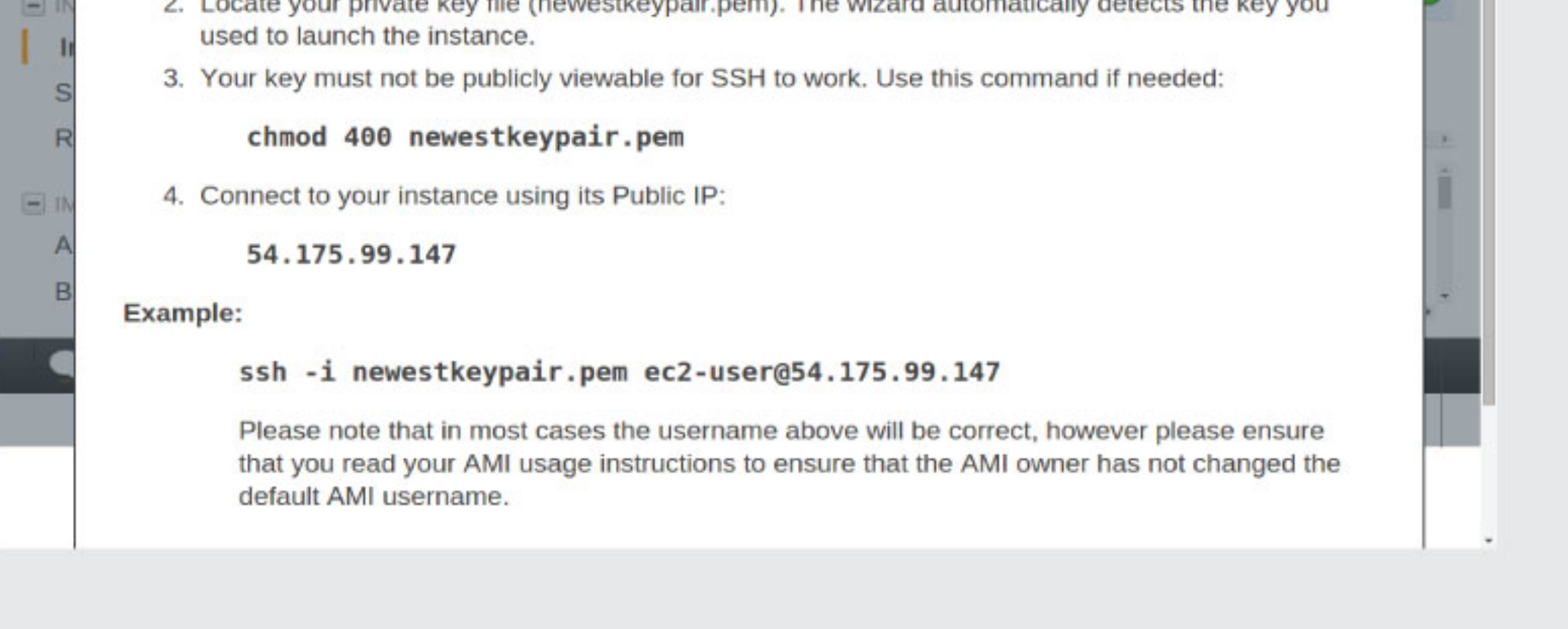
Amazon Web Services (AWS) is probably the most widely used service in cloud computing on the basis of its features such as ease of use, mobile access and help & support.

## How to use R Programming on the cloud ?

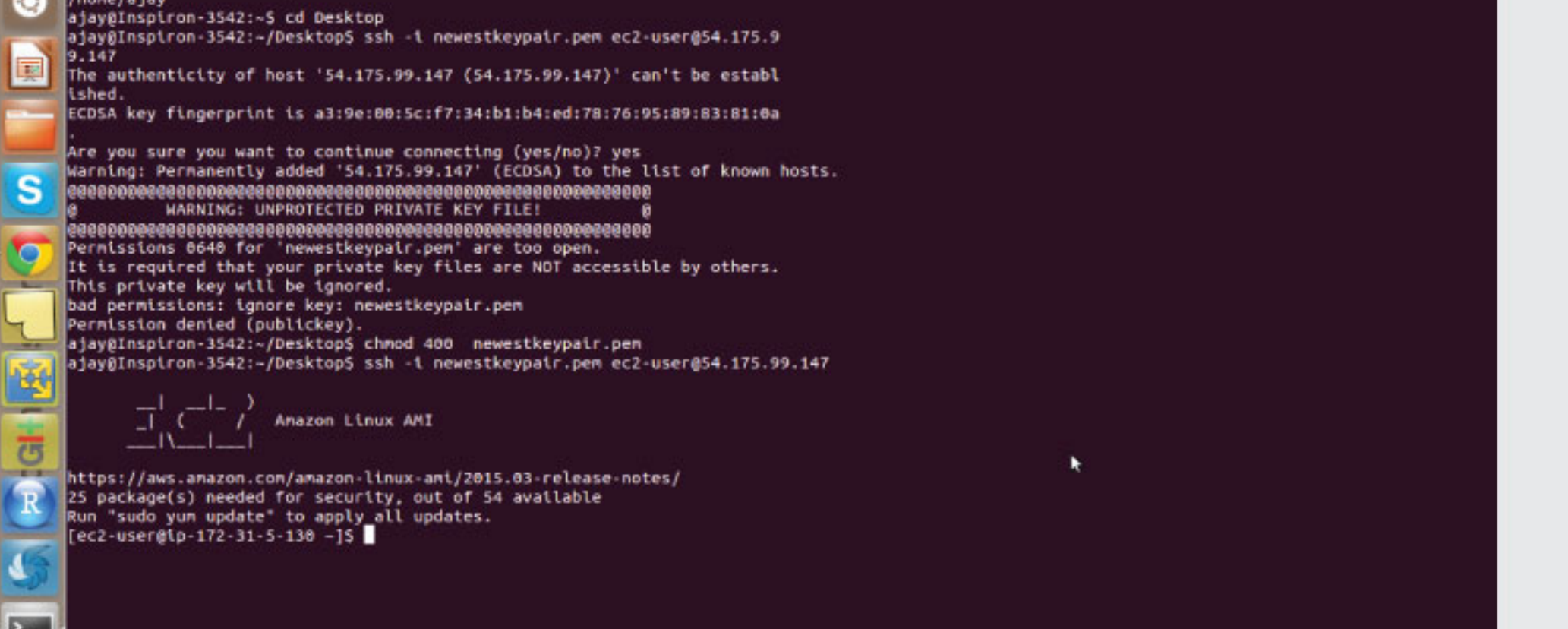
- 1.Login to Amazon Web Services (AWS) Console
- 2.Click on Run Instance
- 3.Choose operating System for your virtual machine that you will access remotely. Here we have chosen Amazon Linux.
- 4.Choose Instance Type (size of RAM and memory needed). See here to compare prices.



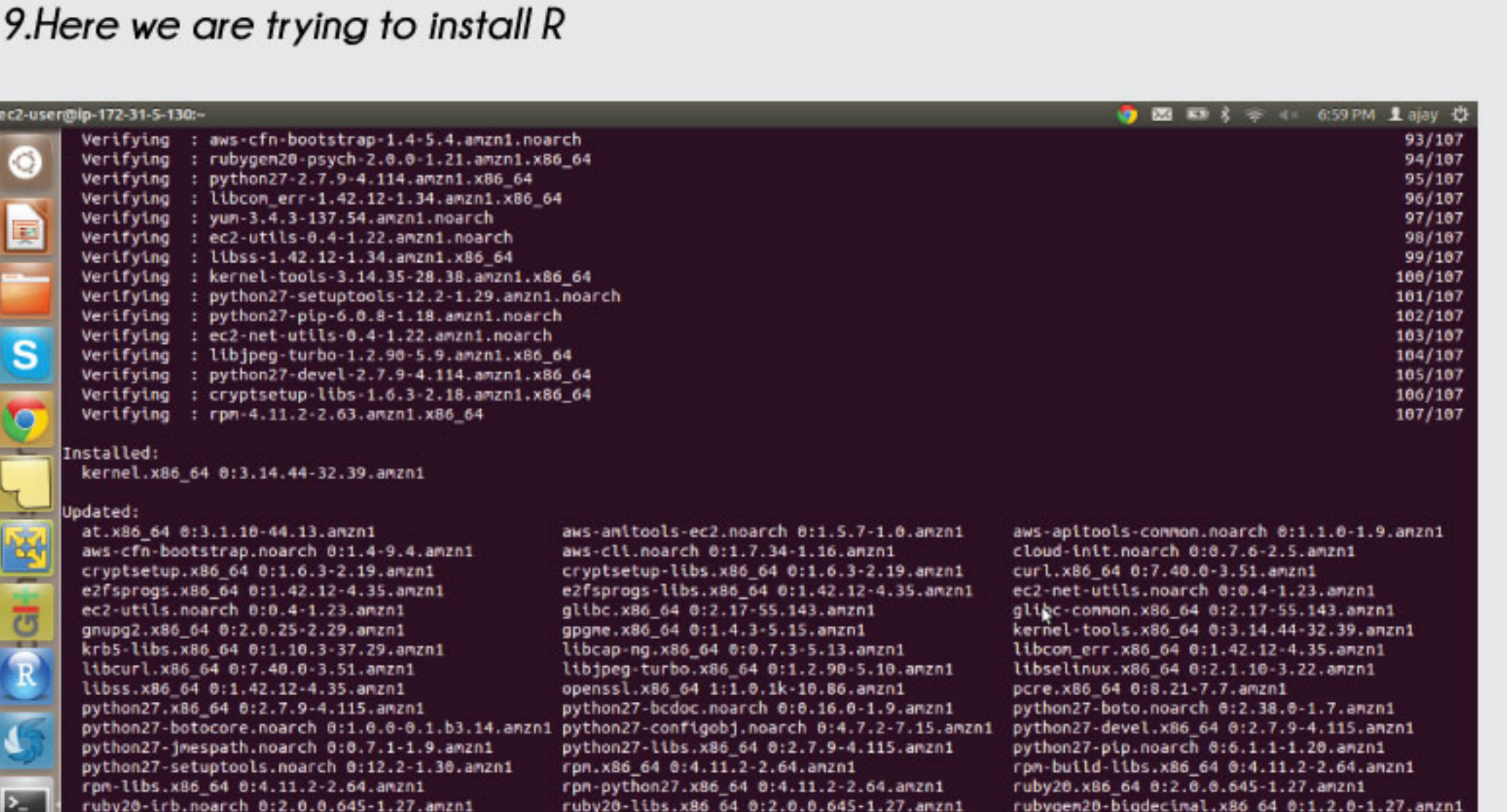
- 5.Create a security key. This is needed for a secure cracker-proof login to the remote machine. Note you can use remote desktop for Windows operating systems but you will need to use SSH for Linux Instances.



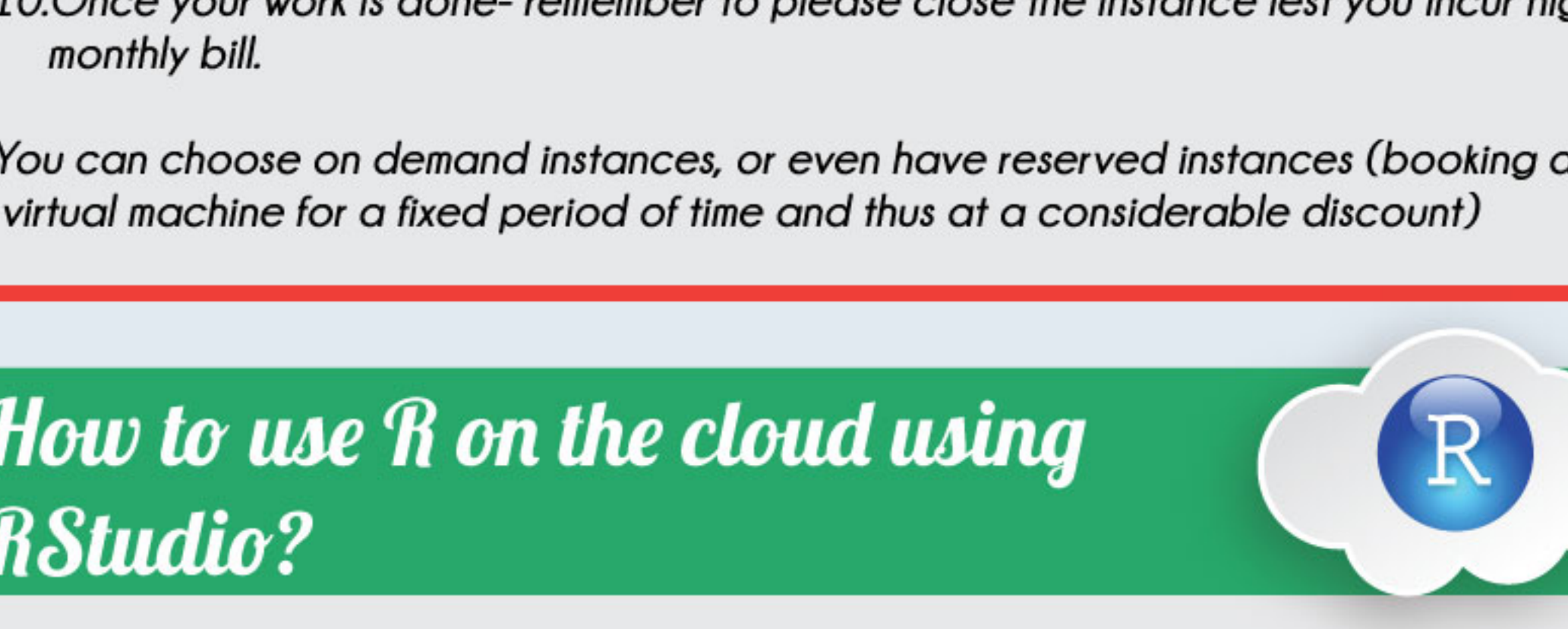
- 6.Click on Launch Instance
- 7.Connect to the instance using your security key following the instructions given.



- 8.Now work on your remote machine just as you would work on a local machine.



- 9.Here we are trying to install R



- 10.Once your work is done- remember to please close the instance lest you incur high monthly bill.

You can choose on demand instances, or even have reserved instances (booking a virtual machine for a fixed period of time and thus at a considerable discount)

## How to use R on the cloud using RStudio?

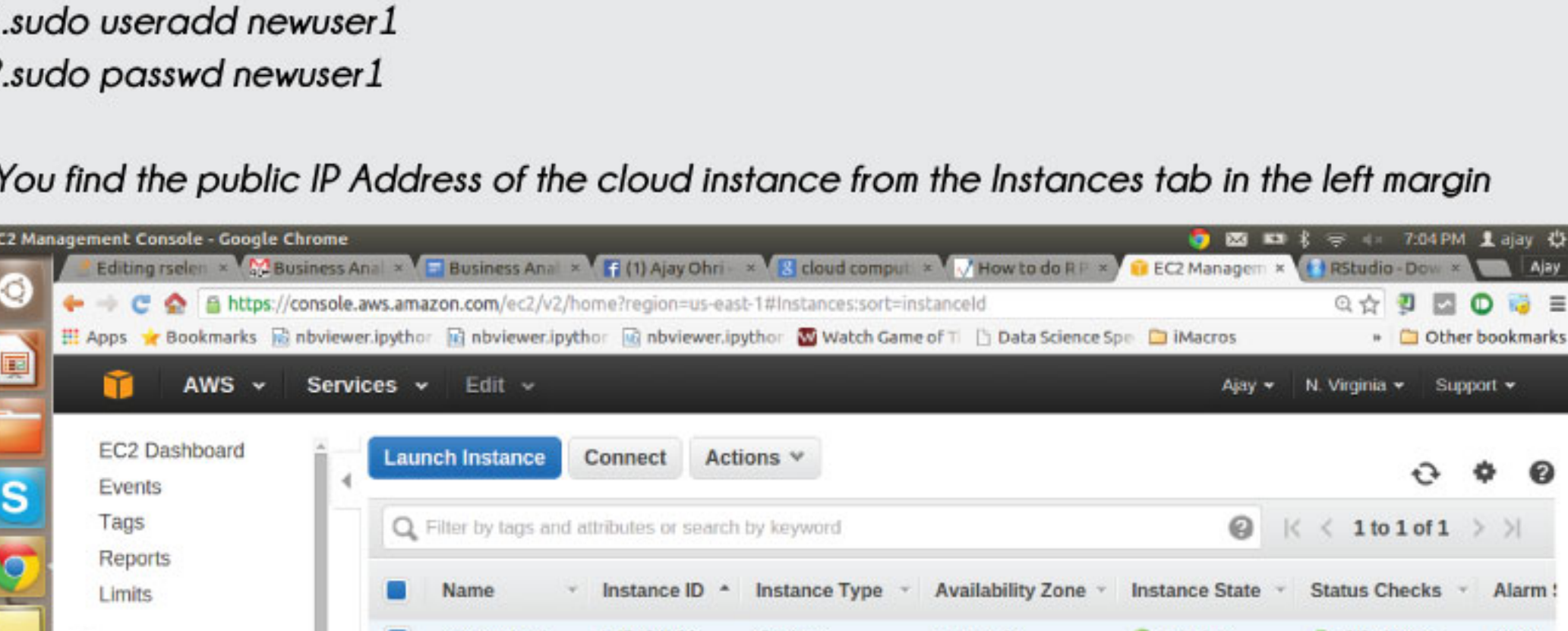
- We installed R already using sudo yum install R
- Download the RStudio server to your virtual machine and then install RStudio Server

\$ wget http://download2.rstudio.org/rstudio-server-rhel5-0.99.442-i686.rpm  
\$ sudo yum install --nogpgcheck rstudio-server-rhel5-0.99.442-i686.rpm

- You verify the installation

\$ sudo rstudio-server verify-installation

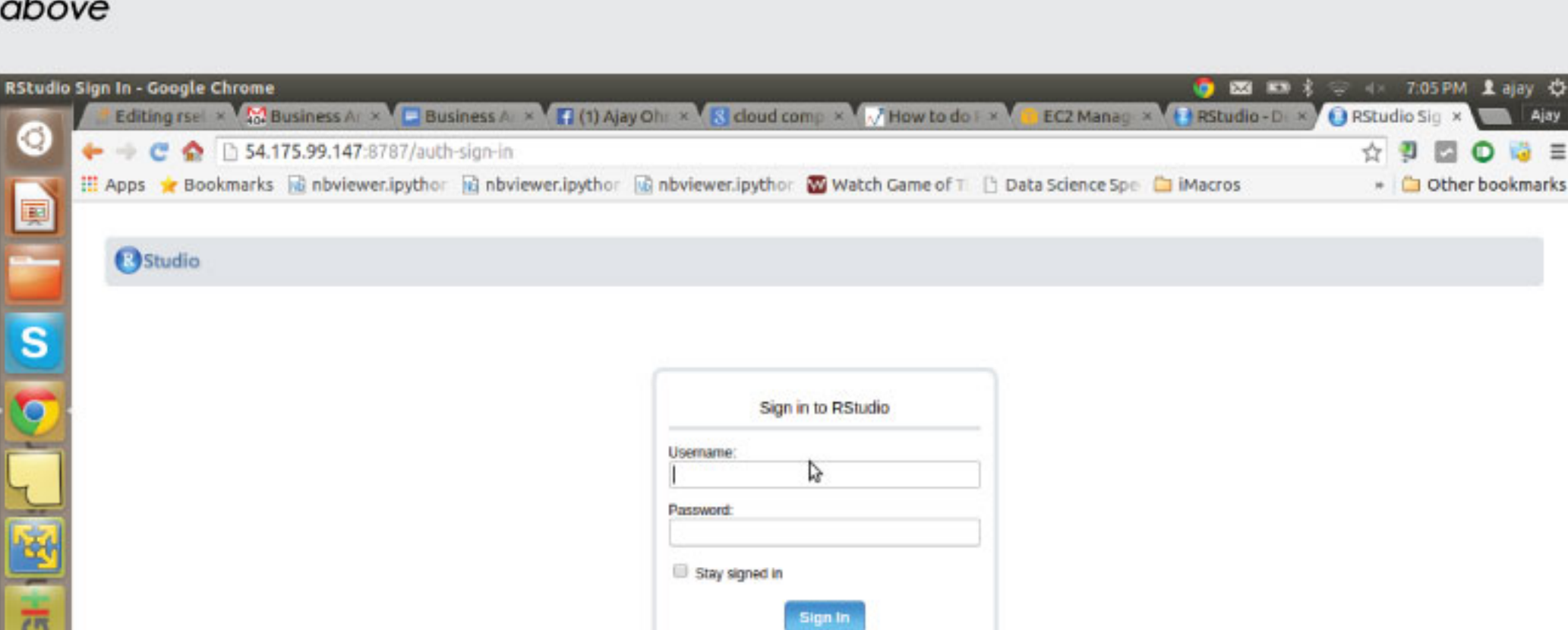
- You open the 8787 port using the security group in AWS Console(left margin Security Groups) by creating a custom TCP rule (click Edit on the tab below)



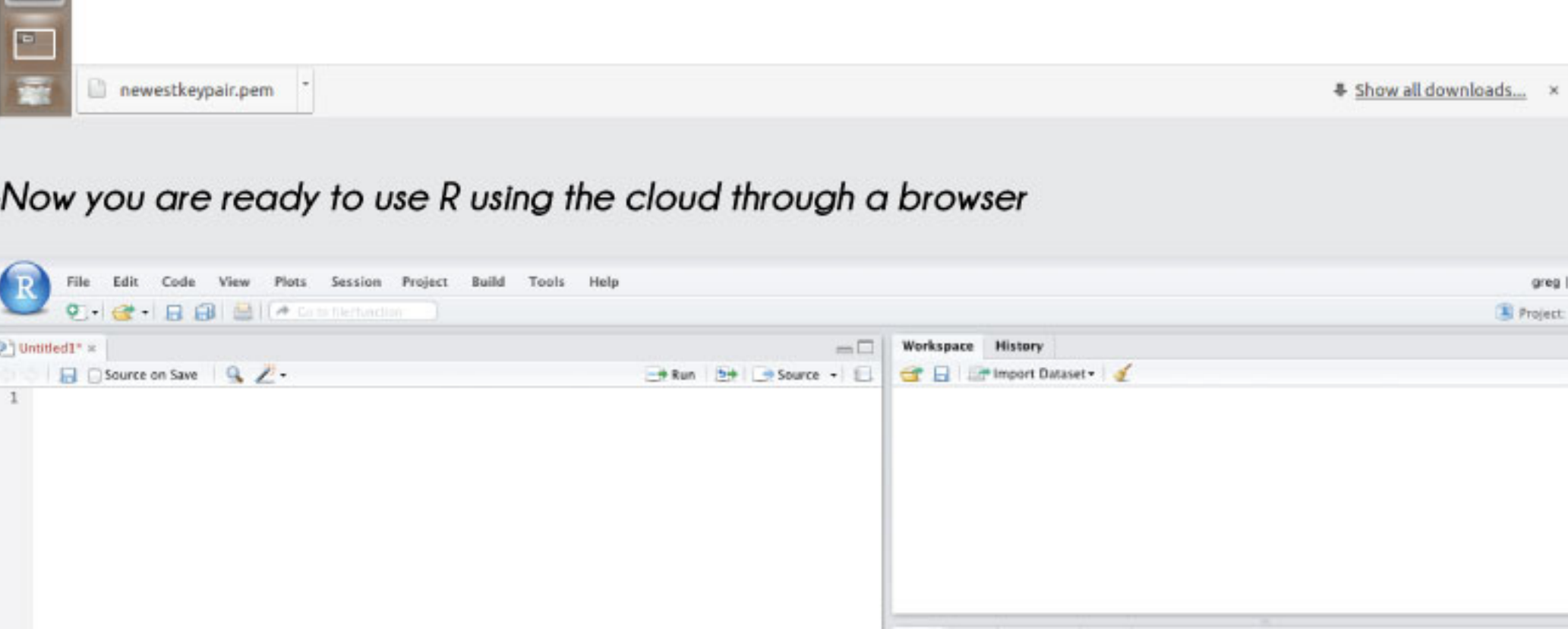
- You create a new user with a new password using the SSH terminal for your virtual machine cloud instance

- 1.sudo useradd newuser1
- 2.sudo passwd newuser1

- You find the public IP Address of the cloud instance from the Instances tab in the left margin



- You open your browser to IPAddress: 8787 and then login using the user Id and password created above



- Now you are ready to use R using the cloud through a browser

