Virtual Web Server in Azure Cloud

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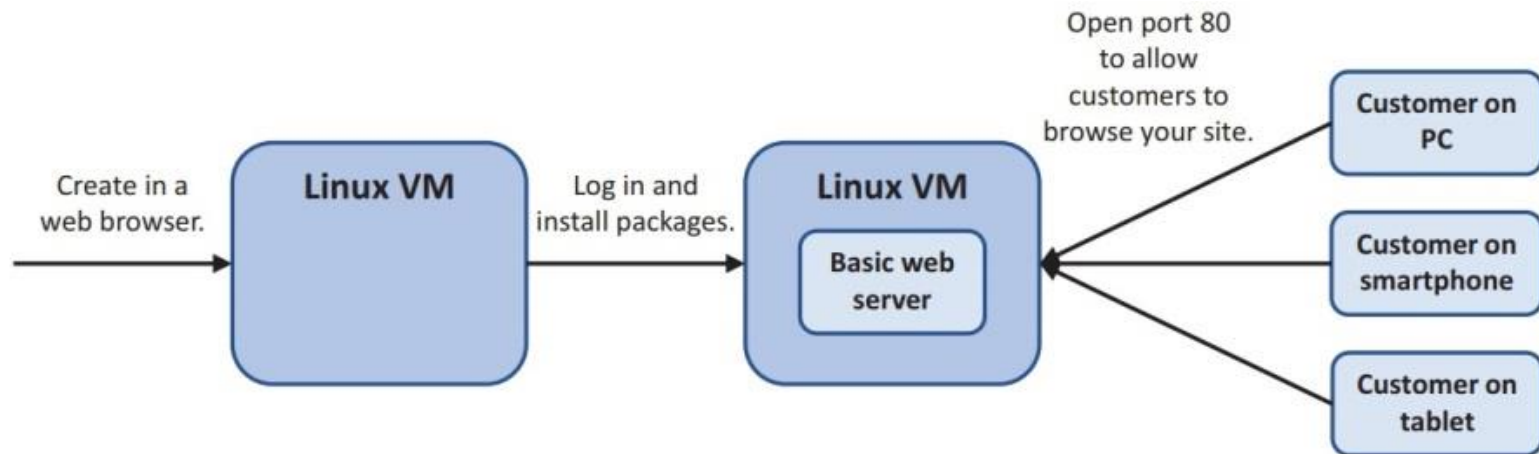❑ Management tools

Overview

Let's assume that you work for a pizza store that wants to expand its operations and accept online orders for pizza delivery or takeout. To build an online presence, you need a website.
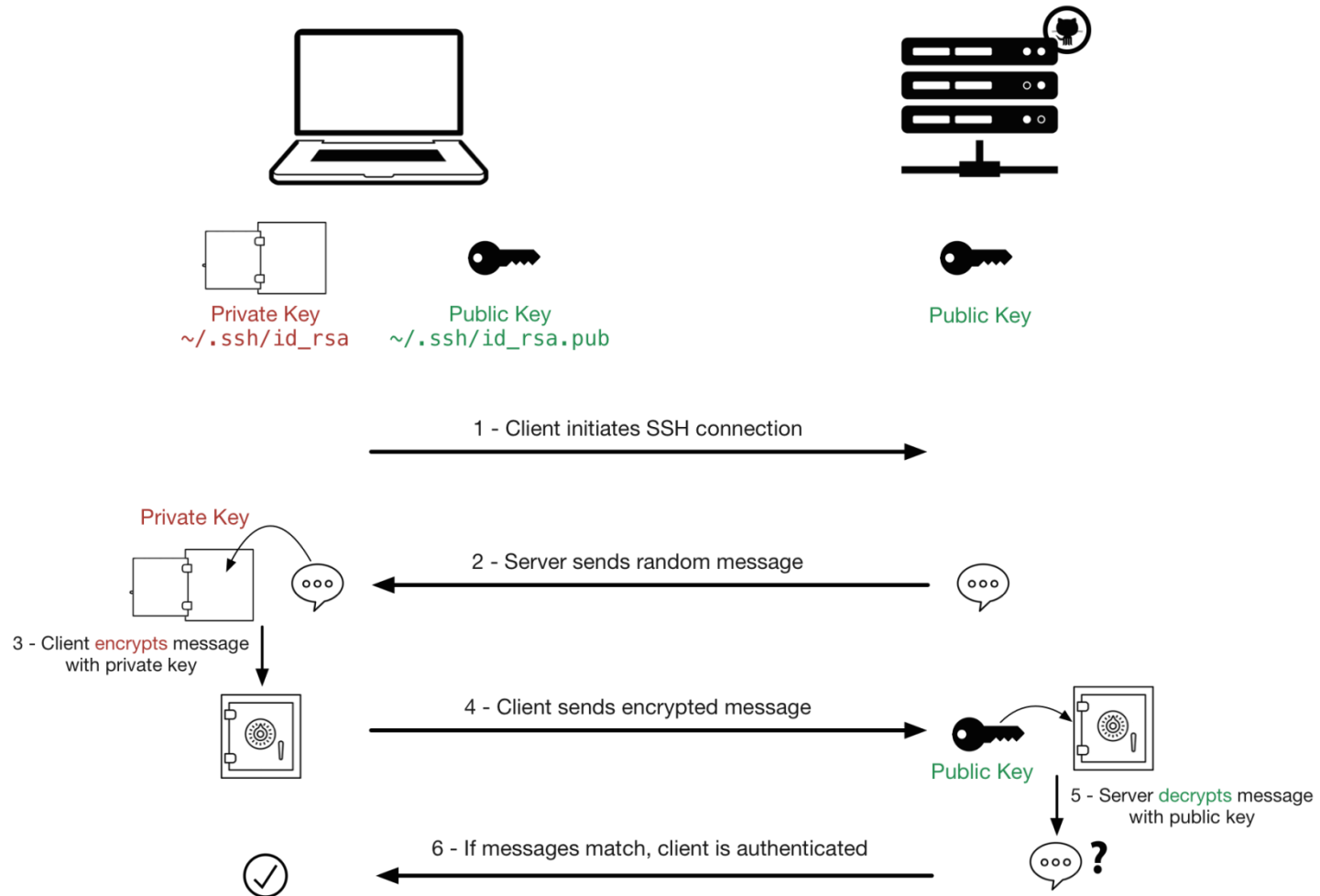
Overview

So, you create an Ubuntu Linux VM and install a basic webserver. You'll then open a network port for customers to access your website on the internet.

Public Key Authentication-SSH

Private Key
~/.ssh/id_rsa

Public Key
~/.ssh/id_rsa.pub

Public Key

1 - Client initiates SSH connection

Private Key

2 - Server sends random message

3 - Client encrypts message
with private key

4 - Client sends encrypted message

Public Key

5 - Server decrypts message
with public key

6 - If messages match, client is authenticated

Public Key Authentication-SSH

Generating the Key pair (public, private):

With commands,

  ssh-keygen

And follow the instruction in the command prompt. Therefore, both the keys will be saved in the specified directory.

Or

Use **PuTTYgen** application,

It's easy to generate public and private keys with this and store them in desired folder.

You can view both the keys using notepad.

Creating a VM in Azure

Follow the steps below to create a VM with Ubuntu server 18.04 LTS,

1. Go to https://portal.azure.com and login with the Microsoft account credential you used for Azure account
2. *Create a resource* -> *Compute* -> *Ubuntu Server 18.04 LTS*
3. Configuration the *Basics* for VM
4. Choose *SSH public key* as authentication type and give your username and public key
5. Select *Allow selected ports* from *Public inbound ports* and choose *SSH(22)*
6. Select *Review + create*
7. Finally, after reviewing everything select the *Create* button.

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Connecting to the VM

Follow the steps below to connect to the VM from your local machine,

1. Go to the _Dashboard_ on your Azure portal
2. Select your VM from _all resources_ section
3. Click on _Connect_
4. Then copy the _login using VM account_ box and paste it on the command prompt of your local machine in which the private key is located
5. Press Enter and type 'yes'(only for the first time)
6. Finally, it would connect your local machine to your VM.

Installing Web Server into the VM

Installing the LAMP web stack which includes Linux, Apache (a web server), MySQL (a database server), and PHP (a web programming language) in your VM(Ubuntu Server 18.04 LTS),

Type the following **command line** in VM,

*sudo apt-get update && sudo apt install -y lamp-server^*

The first command updates the available packages, then it begins to install lamp-server where (^) in the end tells to install the entire set of packages that make up the LAMP server. That's it! Your web server is up and running, but you won't be able to access it in a web browser just yet. To do that, you need to allow web traffic to reach the VM.

Allowing Web Traffic to reach the VM

When you created the VM, a network security group was created for you. A rule was added that allows remote management: in this case, that was SSH. To allow visitors to access your web server over the internet, you need to create a rule in the network security group that allows web traffic. To do so, open your Cloud Shell(Bash shell) window from the Azure portal and run the following command with your specified VM name and it's resource group to open port 80,

az vm open-port -g resource_group -n VM_name --port 80

In your web browser, paste the public IP of your VM, the default Apache website loads.

Hosting your website in Azure(IaaS)

You can host your website in LAMP server you installed earlier into the VM. Before to get started, you need to install phpmyadmin into the VM to manage SQL database for your website. Run the following command to install phpmyadmin,

sudo apt-get install phpmyadmin –y

Now you have to create a user and password for your MySQL database server with the following commands,

sudo mysql –p –u root   (press enter for empty password)
CREATE USER 'username'@' %' IDENTIFIED BY 'your_password';
GRANT ALL PRIVILEGES ON *.* TO 'username'@' %' WITH GRANT OPTION;

Now you can login to phpmyadmin with this username and password. Go to '*IP_of_your_VM/phpmyadmin*' and create or import database for your website.

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Hosting your website in Azure(IaaS)

Now, you have to upload all the html, css, php files into your server. To do this, you can use FileZilla which is a free open-source software consisting of FileZilla Client and FileZilla Server. So download and install FileZilla in your local machine.

Click the red marked box as in the picture to open the Site Manager. Then put your server IP in the host and 22 as port. User would be the username of your VM and browse the key file to the private key of your SSH, finally press the connect.
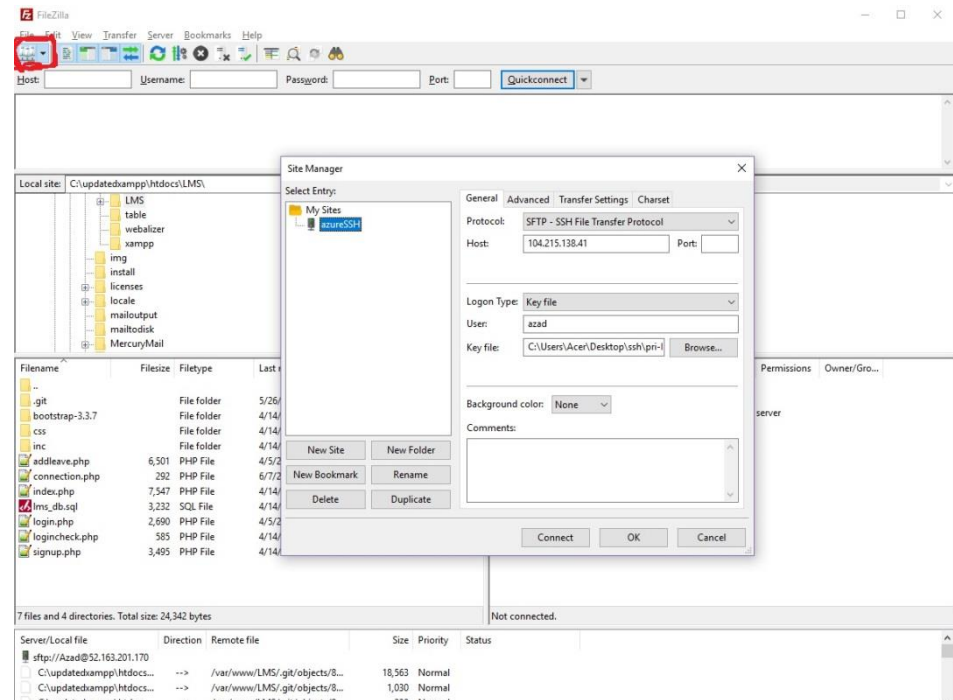
Hosting your website in Azure(IaaS)

Therefore, you can see the all the directories of your local machine in the left and server site in the right.

Upload all the required files/folder into the home directory of server site and then move them into */var/www/html* of server site using command prompt. That's it and now your website is on the internet.
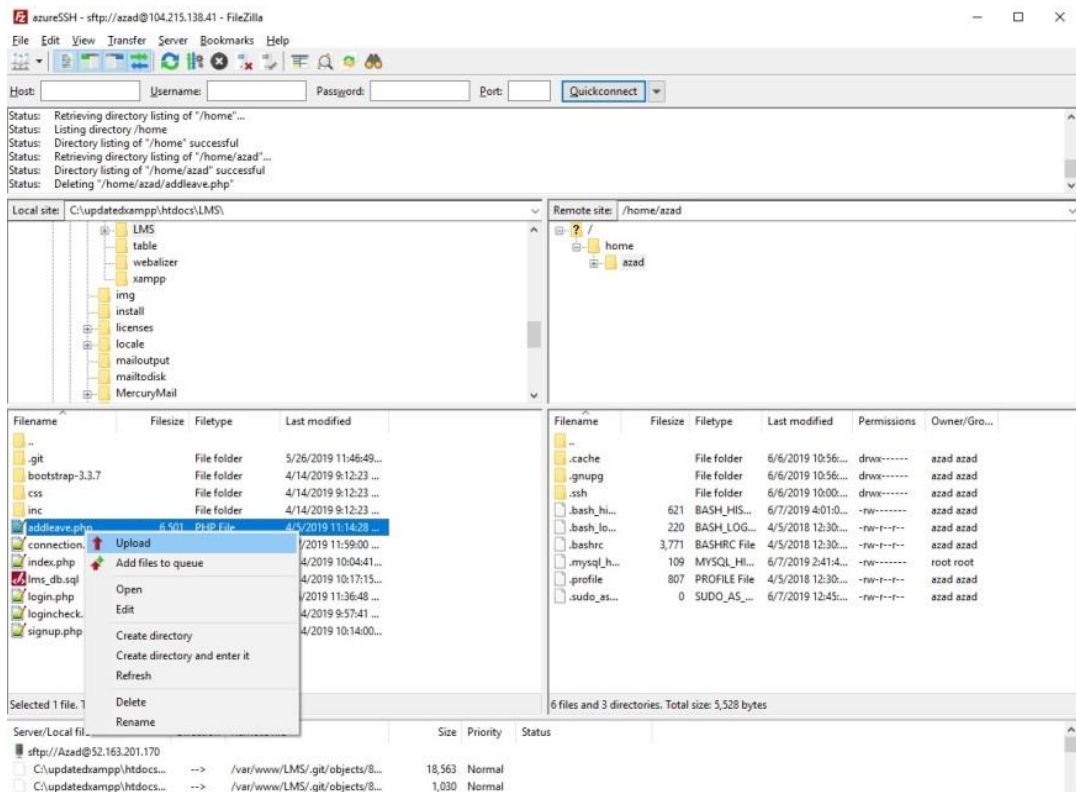
References

Book: *"Learn Azure in a Month of Lunches"* by **Iain Foulds**.

Thank you