This document will guide you through the process of setting up a Mininet VM on Amazon Web Services. You will need to provide a credit card number, but the Free tier gives you 750 free hours or usage per month. This should be more than enough for the course. You are responsible for any fees you incur from incorrect usage of AWS.

## Prerequisites:

 Set up PuTTY/PuTTYgen. This can be obtained at: <u>www.chiark.greenend.org.uk/~sgtatham/putty/download.html</u> (Choose the Windows Installer)

## Step 1:

Go to http://aws.amazon.com/ec2/vm-import and select "Create Free Account"

Products Solutions Pricin	ng Software	Support Customers	Partners Enterprises	Startups Public	Sector	English 👻	My Account
PRODUCTS & SERVICES		VM Import/E	Export		Create F	ree Account	]
VM Import/Export	>						
RELATED LINKS Amazon EG2 Windows Instances VM Import/Export Management Console Documentation Release Notes Discussion Forum		VM Import/Export enables y export them back to your ou that you have built to meet into Amazon EC2 as ready- infrastructure, allowing you VM Import/Export is availab To import your images, use If you use the VMware vSpl part of the import process, Once your VM has been im Scalino, Elastic I oad Balan	you to easily import virtual machi n-premises environment. This off your IT security, configuration m to-use instances. You can also e to deploy workloads across you ble at no additional charge beyon the AWS CLI or other developer here virtualization platform, you c VM Import will convert your VM i ported, you can take advantage tione and CloudWatch to support	ne images from your exi ering allows you to level anagement, and complia xport imported instance I infrastructure. d standard usage charg tools to import a virtual an also use the AWS M nto an Amazon Sci elasticity, s your imported images.	isting environment to Amazon rage your existing investments ance requirements by bringing se back to your on-premises vi les for Amazon EC2 and Amaz machine (VM) image from you anagement Portal for vCenter II, which you can use to run Ar calability and monitoring via o	EC2 instances and in the virtual machines it hose virtual machines irtualization on S3. ur VMware environment, to import your VM. As mazon EC2 instances, ifferings like Auto	
		You can export previously in machine file format and a d then download and launch ' You can import Windows an formats. And you can expor supported operating system add support for additional of	imported EC2 instances using the imported EC2 instances and VM Im the exported VM within your on- nd Linux VMs that use VMware E rt previously imported EC2 instar ms, versions, and formats, please operating systems, versions and	Amazon EC2 API tools port/Export will automat premises virtualization in SX or Workstation, Micr coes to VMware ESX, Mi consult the VM Import formats in the future.	b. You simply specify the targe tically export the instance to the infrastructure. rosoft Hyper-V, and Citrix Xen icrosoft Hyper-V or Citrix Xen section of the Amazon EC2 Us	t instance, virtual ne S3 bucket. You can virtualization formats. For a full list of ser Guide. We plan to	
		AWS MOBILE SERVICES Easily build or enhar app with AWS Mobil Services	nce your	Build you - highly s	on aws ur website on AWS scalable, low cost, laterou		

## Step 2:

Go through the application process. (Note: You will need to input a credit card number.)

## Step 3:

Select the "Free" plan.



## Step 4:

Configure an Access and Secret Key at <u>http://console.aws.amazon.com/iam/home?#security\_credential</u> Make sure to copy these down-- you will not be able to retrieve them.

## Step 5:

Make sure you are on the Oregon region.



# Step 6:

### Select Launch Instance

shboard	Resources	
	You are using the following Amazon EC2 resources in the US West (Oregon) region:	
	0 Running Instances	0 Elastic IPs
	0 Dedicated Hosts	0 Snapshots
S	0 Volumes	0 Load Balancers
	0 Key Pairs	1 Security Groups
uests	0 Placement Groups	
Instances		
d Instances	Need fast reliable scalable fully-managed message queuing? Try Amazon Simple Que	ue Service
ds	Hood last, foliable, sourable, fairy managed message queding . Hy Anazon omple dat	
Hosts		
	Create Instance	
	To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC	2 instance.
asks	To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC	22 instance.
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ISKS LOCK STORE S & SECURITY Groups t Groups	To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC Launch Instance Note: Your instances will launch in the US West (Oregon) region Service Health Service Status: US West (Oregon): This caprice is operating permative	22 instance. Scheduled Events US West (Oregon): No events
sks LOCK STORE & SECURITY rroups t Groups	To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC Launch Instance Note: Your instances will launch in the US West (Oregon) region Service Health Service Status: US West (Oregon): This service is operating normally	22 instance. Scheduled Events US West (Oregon): No events
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ISKS LOCK STORE S & SECURITY Groups t Groups Interfaces	To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC Launch Instance Note: Your Instances will launch in the US West (Oregon) region Service Health C <sup>4</sup> Service Status: US West (Oregon): This service is operating normally Availability Zone Status: US west-2a:	2 instance. Scheduled Events US West (Oregon): No events
asks ILOCK STORE S & SECURITY Groups 3 It Groups Interfaces ANCING Incers	To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC Launch Instance Note: Your instances will launch in the US West (Oregon) region Service Health C <sup>4</sup> Service Status: US West (Oregon): This service is operating normally Availability Zone Status: us-west-2a: Availability zone is operating normally	2 instance. Scheduled Events US West (Oregon): No events
ISKS LOCK STORE S & SECURITY Groups t Groups Interfaces ANCING Incers	To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC Launch Instance Note: Your instances will launch in the US West (Oregon) region Service Health C <sup>4</sup> Service Status: US West (Oregon): This service is operating normally Availability Zone Status: us-west-2a: Availability zone is operating normally us-west-2b:	2 instance. Scheduled Events US West (Oregon): No events

Step 7: Select Community AMIs

1. Choose AMI 2. Choose Ins	stance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review
Step 1: Choose an An AMI is a template that conta	Amazon Machine Image (AMI) ains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user commu
Quick Start	
My AMIs	Amazon Linux AMI 2015.09.1 (HVM), SSD Volume Type - ami-f0091d91
AWS Marketplace	Amazon Linux 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 packages.
Community AMIs	Root device type: ebs Virtualization type: hvm
EFree tier only (j)	Red Hat Enterprise Linux 7.2 (HVM), SSD Volume Type - ami-775e4f16         Red Hat         Red Hat Enterprise Linux version 7.2 (HVM), EBS General Purpose (SSD) Volume Type         Free tier eligible         Root device type: ebs       Virtualization type: hvm
	3 SUSE Linux Enterprise Server 12 SP1 (HVM), SSD Volume Type - ami-d2627db3
	SUSE Linux SUSE Linux Enterprise Server 12 Service Pack 1 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, Root device type: ebs Virtualization type: hvm
	O Ubuntu Server 14.04 LTS (HVM), SSD Volume Type - ami-5189a661
	Ubuntu Ubuntu Server 14.04 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
	Microsoft Windows Server 2012 R2 Base - ami-83a5bce2
	Windows Microsoft Windows 2012 R2 Standard edition with 64-bit architecture. [English]
	Root device type: ebs Virtualization type: hvm
	Are you launching a database instance? Try Amazon RDS.
	Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale a relational database of your choice (MySQL, PostgreSQL, Oracle,

# Step 8:

# Search for "ami-96139ba6", and press Select.





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 smazon 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

Family	- Туре -	vCPUs (j) -	Memory (GiB) -	Instance Storage (GB) (i) -	EBS-Optimized Available (i) +	Network Performance (i
Micro instances	t1.micro Free lier eligible	1	0.613	EBS only	-	Very Low
General purpose	t2.nano	1	0.5	EBS only		Low to Moderate
General purpose	12.micro Free tier eligible	1	1	EBS only		Low to Moderate
General purpose	t2.small	1	2	EBS only		Low to Moderate
General purpose	t2.medium	2	4	EBS only		Low to Moderate
General purpose	t2.large	2	8	EBS only		Low to Moderate
General purpose	m4.large	2	8	EBS only	Yes	Moderate
General purpose	m4.xlarge	4	16	EBS only	Yes	High
General purpose	m4.2xlarge	8	32	EBS only	Yes	High
General purpose	m4.4xlarge	16	64	EBS only	Yes	High
General purpose	m4.10xlarge	40	160	EBS only	Yes	10 Gigabit
General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate

# Step 10:

Select Create a New Key Pair, name the key, and download it.

hey allo	ir consists of a <b>public key</b> that AWS stores, and a <b>private key file</b> that you stor w you to connect to your instance securely. For Windows AMIs, the private key f	re. Together, file is required
o obtain	the password used to log into your instance. For Linux AMIs, the private key file	e allows you to
securely	SSH into your instance.	
Note: Th	e selected key pair will be added to the set of keys authorized for this instance	Learn more
about re	moving existing key pairs from a public AMI.	Leanninore
Crea	ate a new key pair	•
Key	pair name	
key		
	Download H	Key Pair
6	You have to download the private key file (*.pem file) before you can contin	nue.
	Store it in a secure and accessible location. You will not be able to down	load the
	file again after it's created.	

Step 11:

Select Launch Instances

# Step 12:

Select View Instances

# Step 13:

Find your instance's IP. Make a note of this.

Launch Instand	ce Connect Acti	ons 👻									<b>Q</b> 0	•
Q Filter by tags	s and attributes or search b	oy keyword								0	K < 1 to 1 of	1 > 3
Name	<ul> <li>Instance ID</li> </ul>	<ul> <li>Instance Type</li> </ul>	Availability Zone -	Instance State ~	Status Checks ~	Alarm Statu	s Public DNS	<ul> <li>Public IP</li> </ul>	<ul> <li>Key Name</li> </ul>	- Monitoring	Launch Time	
	i-041c92de	t1.micro	us-west-2c	🥚 running	🛛 Initializing	None	🍃 ec2-52-34-255-	168.us 52.34.:	key	disabled	January 17, 20	16 at 9:32
•												
Instance: 1-04	Public DNS	: ec2-52-34-255-168.L	s-west-2.compute.ar	nazonaws.com							-	
Description	Status Checks M	onitoring Tags										
	Instance ID i-041	Ic92de					Public DNS	ec2-52-34-255-168.us-w	est-2.compute.amazona	ws.com		
	Instance state runn	ing					Public IP	52.34.255.168				

The following steps will assume a Windows operating system, and the Putty suite installed (PuTTY and PuTTYgen). Mac should be somewhat similar-- please consult Lincoln's guide for info on setting up X11 forwarding.

## Step 14:

Convert the key pair to a Putty key. Open PuttyGen, click Load, and select the key you downloaded (you'll have to view all files).

PuTTY Key Generator				?	×
ile Key Conversions Help					
Key					
No key.					
Actions					
Actions Generate a public/private key pa	ir			Generate	
Actions Generate a public/private key pa	ir		ſ	Generate	
Actions Generate a public/private key pa Load an existing private key file	ir		(	Generate Load	
Actions Generate a public/private key pa Load an existing private key file Save the generated key	ir	Save p <u>u</u> blic	: key	Generate Load	key
Actions Generate a public/private key pa Load an existing private key file Save the generated key Parameters	ir	Save p <u>u</u> blic	; key	Generate Load	key
Actions Generate a public/private key pa Load an existing private key file Save the generated key Parameters Type of key to generate: O SSH-1 (RSA)	ir ) SSH-2 RSA	Save p <u>u</u> blic	c key	Generate Load Save private I	key

and Pull LYgen). Mac should be somewhat similar-- please consult Lincoln's c

# Step 15:

Click Save Private Key, and save it somewhere.

e Key Conversio	ons Help			
Kev				
Public key for pasting	into OpenSSH authorized	keys file:		
				^
L	-			~
Key fingerprint:	ssh-rsa 2048 22:3c:13:	70:19:99:af:a8:8b:8c:95	5.ff.f <mark>9:1b:95:d3</mark>	
Key <u>c</u> omment:	imported-openssh-key			
Key p <u>a</u> ssphrase:				
Confirm passphrase:				
	1			
Actions				
Generate a public/priv	vate key pair		<u>G</u> enerate	
Load an existing priva	te key file		Load	
Save the generated k	ey [	Save p <u>u</u> blic key	<u>S</u> ave private ke	y
Parameters				
Type of key to genera OSSH- <u>1</u> (RSA)	te:	⊖ ssh	2 <u>D</u> SA	
	and the second		00.00	_

# Step 16:

Open PuTTY, type your instance's IP address in the Host Name Field, and navigate to Connection > SSH > Auth



# Step 17:

Select Browse, and find the Key you created with PuTTYgen.

# Step 18:

Select Open. When prompted for a username, use "ubuntu".