



AWS TECHNICAL ESSENTIALS

AWS Technical Essentials Lab Book



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Getting Started

Overview

This lab book is a guided tour for learning AWS Technical Essentials. It comprises of demos for various web services.

Setup Checklist for AWS Tech Essentials

Here is what is expected on your machine in order for the lab to work.

Minimum System Requirements

- Intel Pentium 90 or higher (P166 recommended)
- Microsoft Windows 95, 98, or NT 4.0, 2k, XP.
- Memory: 32MB of RAM (64MB or more recommended)
- Internet Explorer 11.0 or higher
- Internet connection

Instructions

- You may also look up the on-line docs on AWS site.



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Learning More (Bibliography if applicable)

- Learning AWS- by Amit Shah and Aurobindo Sarkar



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Lab 1. EC2 Service:

Goals	Understand the steps to create Windows instance using AWS
Time	10 minutes

1.1: Creating EC2 instance on Windows

Step 1: Sign in with aws account to see the AWS home page.

The screenshot shows the AWS Home Page. On the left, there's a sidebar with 'AWS services' and 'Recently visited services' sections. Under 'AWS services', categories include Compute (EC2, Lambda, Batch), Storage (S3, EFS, Glacier, Storage Gateway), and Database (RDS, DynamoDB). Under 'Recently visited services', IAM, CloudFormation, and RDS are listed. To the right, there's a 'Helpful tips' section with links to 'Manage your costs' and 'Create an organization'. Below that is an 'Explore AWS' section with links to 'New Product Announcements', 'Migrate from Oracle to Amazon Aurora', and 'Introducing Amazon Kinesis Analytics'. A search bar at the top is empty.



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Step 2: Click on EC2 on the home page and select Launch Instance

The screenshot shows the AWS EC2 Dashboard. On the left, there's a sidebar with links like EC2 Dashboard, Instances, AMIs, and Network & Security. The main area has sections for Resources (listing 0 Running Instances, 0 Volumes, 1 Key Pairs, 0 Placement Groups, 0 Elastic IPs, 0 Snapshots, 0 Load Balancers, 2 Security Groups), Account Attributes (Supported Platforms: Amazon Linux, Default VPC: vpc-37af4e52), and Additional Information (Getting Started Guide, Documentation, All EC2 Resources, Forums, Pricing, Contact Us). Below these are sections for Create Instance (with a 'Launch Instance' button), Service Health (loading), and Scheduled Events (Asia Pacific (Tokyo): No events). At the bottom, there are links for Feedback, English, Copyright notice (© 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved.), Privacy Policy, and Terms of Use.



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Step 3: Select Microsoft Windows Server.

The screenshot shows the AWS EC2 Management Console interface. The top navigation bar includes tabs for Services, Edit, and various AWS services like Demystifying Cloud & Bio, Home - Dropbox, and EC2 Management Console. Below the navigation is a breadcrumb trail: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, 7. Review. A 'Cancel and Exit' button is on the right. The main content area is titled 'Step 1: Choose an Amazon Machine Image (AMI)'. It displays a list of AMI options:

Image	Name	Description	Select	Root device type	Virtualization type
Red Hat	Red Hat Enterprise Linux 6.5 (PV) - ami-5ebcef0c (64-bit) / ami-f0bfeca2 (32-bit)	Red Hat Enterprise Linux version 6.5 (PV), EBS-backed	Select	ebs	paravirtual
SUSE Linux	SuSE Linux Enterprise Server 11 sp3 (PV) - ami-3aa2ea88 (64-bit) / ami-14a2ea46 (32-bit)	SuSE Linux Enterprise Server 11 Service Pack 3 (PV), EBS-backed with Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available	Select	ebs	paravirtual
Ubuntu	Ubuntu Server 14.04 LTS (PV) - ami-9a7724c8 (64-bit) / ami-947724c6 (32-bit)	Ubuntu Server 14.04 LTS (PV), EBS-backed with support available from Canonical (http://www.ubuntu.com/cloud/services)	Select	ebs	paravirtual
Windows	Microsoft Windows Server 2012 R2 Base - ami-f67924a4	Microsoft Windows 2012 R2 Standard edition with 64-bit architecture, [English]	Select	ebs	hvm

At the bottom of the list, there are 'Free tier eligible' labels next to the first three options. On the right side of the list, there are 'Select' buttons and checkboxes for 64-bit and 32-bit options. The 'Microsoft Windows Server 2012 R2 Base' option is highlighted with a blue background and has its 'Select' button highlighted in blue. The status bar at the bottom indicates '© 2008 - 2014, Amazon Web Services, Inc. or its affiliates. All rights reserved.' and shows the date '6/19/2014'.

Step 4: Select t2 micro free tier

The screenshot shows the AWS EC2 Management Console interface. The top navigation bar includes tabs for Services, Edit, and various AWS services like Demystifying Cloud & Bio, Home - Dropbox, and EC2 Management Console. Below the navigation is a breadcrumb trail: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group, 7. Review. A 'Feedback' button is on the right. The main content area is titled 'Step 2: Choose an Instance Type'. It displays a table of instance types:

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
General purpose	t2.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

The 't2.micro' row is highlighted with a green background and has 'Free tier eligible' written below it. At the bottom of the table, there are 'Cancel', 'Previous', 'Review and Launch', and 'Next: Configure Instance Details' buttons. The status bar at the bottom indicates '© 2008 - 2015, Amazon Web Services, Inc. or its affiliates. All rights reserved.' and shows the date '11/23/2015'.



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Step 5: Select the subnet(any option is ok) Click on next

The screenshot shows the AWS EC2 Management Console interface. The URL in the address bar is <https://ap-northeast-1.console.aws.amazon.com/ec2/v2/home?region=ap-northeast-1#LaunchInstanceWizard:3>. The page title is "EC2 Management Console". The main navigation bar includes "AWS", "Services", "Edit", and tabs for "1. Choose AMI", "2. Choose Instance Type", "3. Configure Instance", "4. Add Storage", "5. Tag Instance", "6. Configure Security Group", and "7. Review". The "Configure Instance" tab is selected. The sub-header "Step 3: Configure Instance Details" is displayed. Below it, the text "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." is shown. The configuration form includes fields for "Number of instances" (set to 1), "Purchasing option" (checkbox for "Request Spot instances" is unchecked), "Network" (set to "vpc-37af4e52 (172.31.0.0/16) (default)"), "Subnet" (set to "subnet-59e7fa2d(172.31.0.0/20) | Default in ap-nor"), "Auto-assign Public IP" (dropdown set to "Use subnet setting (Enable)"), "IAM role" (dropdown set to "None"), "Shutdown behavior" (dropdown set to "Stop"), and "Enable termination protection" (checkbox is unchecked). At the bottom, there are buttons for "Cancel", "Previous", "Review and Launch" (which is highlighted in blue), and "Next: Add Storage". The status bar at the bottom right shows "11:44 AM 11/23/2015".

Step 6: Click next here



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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.](#)

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/sda1	snap-02f4a05725688b139	80	General Purpose SSD (GP2)	100 / 3000	N/A	<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: Add Tags

Step 7: Click AddTag button and type the name of the instance and Click on next

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.](#)

Create Tag (Up to 10 tags maximum)

Key (127 characters maximum)	Value (255 characters maximum)
Name	Pravin-Windows-VM

Cancel Previous Review and Launch Next: Configure Security Group

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Step 8: Create a new security group with some name. Click on Review and Launch

The screenshot shows the AWS EC2 Management Console interface. The URL in the address bar is <https://ap-northeast-1.console.aws.amazon.com/ec2/v2/home?region=ap-northeast-1#LaunchInstanceWizard:6>. The top navigation bar includes links for AWS Services, Edit, and tabs for 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Tag Instance, 6. Configure Security Group (which is currently selected), and 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: Pravin-Windows-SG

Description: launch-wizard-1 created 2015-11-23T11:49:50.691+05:30

Type	Protocol	Port Range	Source
RDP	TCP	3389	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.

Buttons at the bottom: Cancel, Previous, **Review and Launch**.

Step 9: Click on Launch Button



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Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click Launch to assign a key pair to your instance and complete the launch process.

AMI Details

Microsoft Windows Server 2016 Base - ami-68b2d06
Free tier eligible Microsoft Windows 2016 Datacenter edition. [English]
Root Device Type: ebs Virtualization type: hvm

If you plan to use this AMI for an application that benefits from Microsoft License Mobility, fill out the License Mobility Form. Don't show me this again

Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

Security Groups

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Step 10: Select create a new key pair option. Type key pair name and click Download key pair button and Click Launch Instance option

Step 7: Review Instance Launch

AMI Details

Ubuntu Server 16.04 LTS (HVM), SSD Volume Type Free tier eligible Ubuntu Server 16.04 LTS (HVM) EBS General Purpose
Root Device Type: ebs Virtualization type: hvm

Instance Type

Instance Type	ECUs	vCPUs
t2.micro	Variable	1

Security Groups

Security group name: ubsg1 Description: launch-wizard-1 created 2017-07-06T09:05:17Z
Type: SSH Protocol: TCP

Select an existing key pair or create a new key pair

A key pair consists of a public key that AWS stores, and a private key file that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about removing existing key pairs from a public AMI.

Create a new key pair
Key pair name:
Download Key Pair

You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created.

Cancel Launch Instances

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Step 11: Instance creation status will be shown

Your instances are now launching
The following instance launches have been initiated: i-091c96b3b22e9de68 View launch log

Get notified of estimated charges
Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

How to connect to your instances
Your instances are launching, and it may take a few minutes until they are in the running state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.
Click [View Instances](#) to monitor your instances' status. Once your instances are in the running state, you can connect to them from the Instances screen. [Find out how to connect to your instances.](#)

Here are some helpful resources to get you started

- [How to connect to your Linux instance](#)
- [Amazon EC2 User Guide](#)
- [Learn about AWS Free Usage Tier](#)
- [Amazon EC2 Discussion Forum](#)

While your instances are launching you can also
Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)

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Step 10: Click on the instance id. The instance creation would be successful once the status check column shows 2/2 check passed



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The screenshot shows the AWS EC2 Management Console interface. On the left, there's a navigation sidebar with options like EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES (selected), Instances, Spot Requests, Reserved Instances, Dedicated Hosts, IMAGES, AMIs, Bundle Tasks, ELASTIC BLOCK STORE Volumes, Snapshots, and NETWORK & SECURITY Security Groups, Elastic IPs, Placement Groups, Key Pairs, and Network Interfaces. The main content area displays a table of instances. One instance is selected, showing its details in a modal window. The instance ID is i-091c96b3b22e9da68, it's an t2.micro type in ap-northeast-2c, and it's currently running. Its public DNS is ec2-13-124-126-113.ap-northeast-2.compute.amazonaws.com. The modal also shows other details like Instance ID, Instance state, Instance type, Elastic IPs, Availability zone, Public DNS (IPv4), IPv4 Public IP, IPv6 IPs, Private DNS, and Private IPs.

Lab 2. Connecting to Windows instance

Goals	Understand the steps to connect to Windows instance
Time	10 minutes

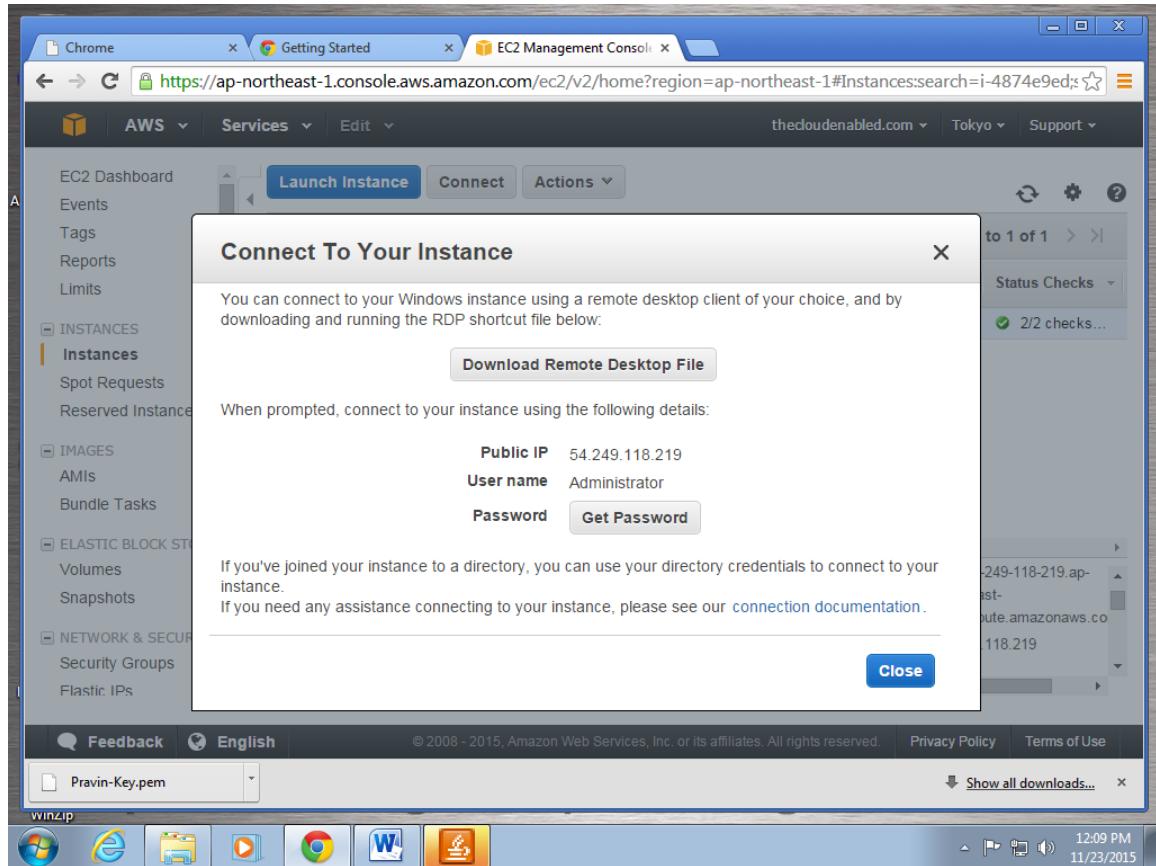
Step 1: Click on Connect button in the below screen

This screenshot is identical to the one above, showing the AWS EC2 Management Console with a single instance listed. However, the 'Connect' button in the top navigation bar is highlighted with a yellow box, drawing attention to it as the next step in the process.



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Step 2: Click on download remote desktop file and then click on Get Password button
Copy the password, Select the key pair file and hit the Decrypt password button





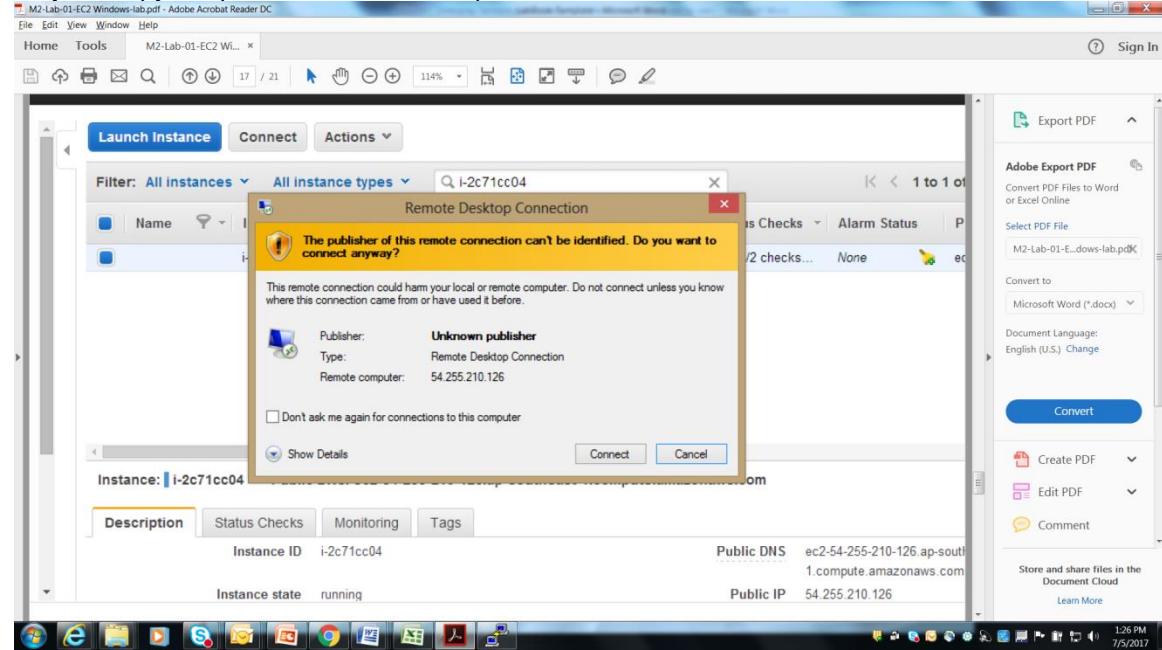
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The screenshot shows the AWS EC2 Management Console interface. A modal dialog box titled "Connect To Your Instance" is open in the center. It contains instructions for connecting to a Windows instance using a remote desktop client or RDP, along with a "Download Remote Desktop File" button. Below this, connection details are provided: Public IP (54.249.118.219), User name (Administrator), and Password (V*kZCqW(Q9c)). There is also a note about using directory credentials if joined to a directory. The background shows the EC2 Dashboard with various navigation links like EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Images, Elastic Block Store, Network & Security, and a sidebar for Status Checks.

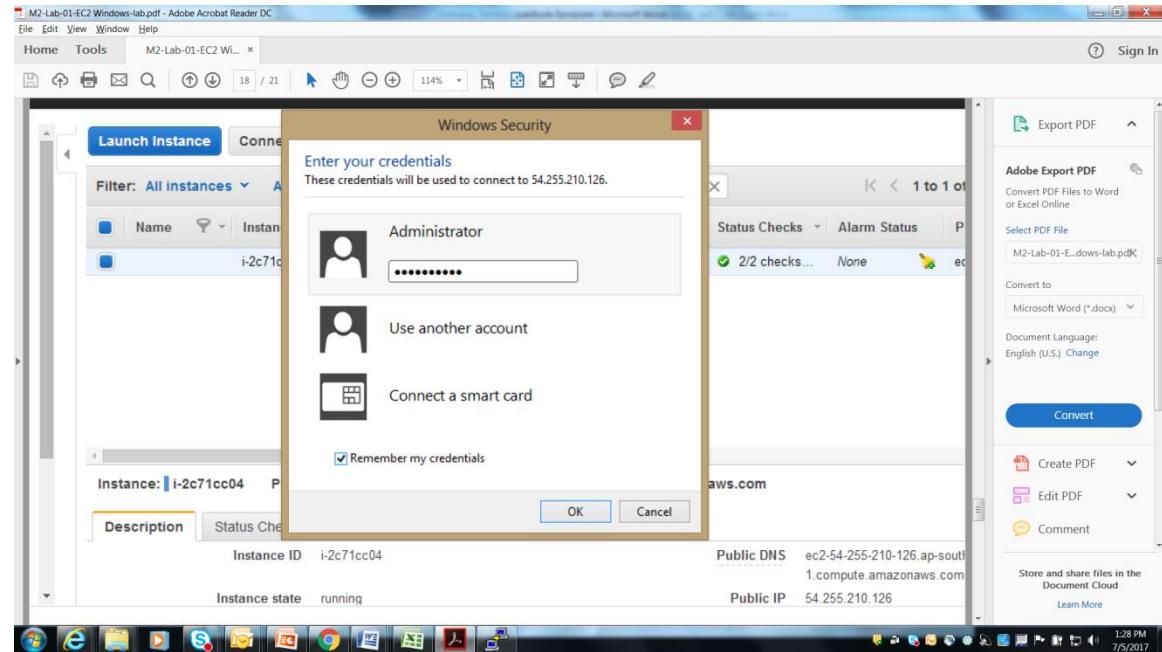


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Step 3: Copy the password, Click on rdp file and then connect.

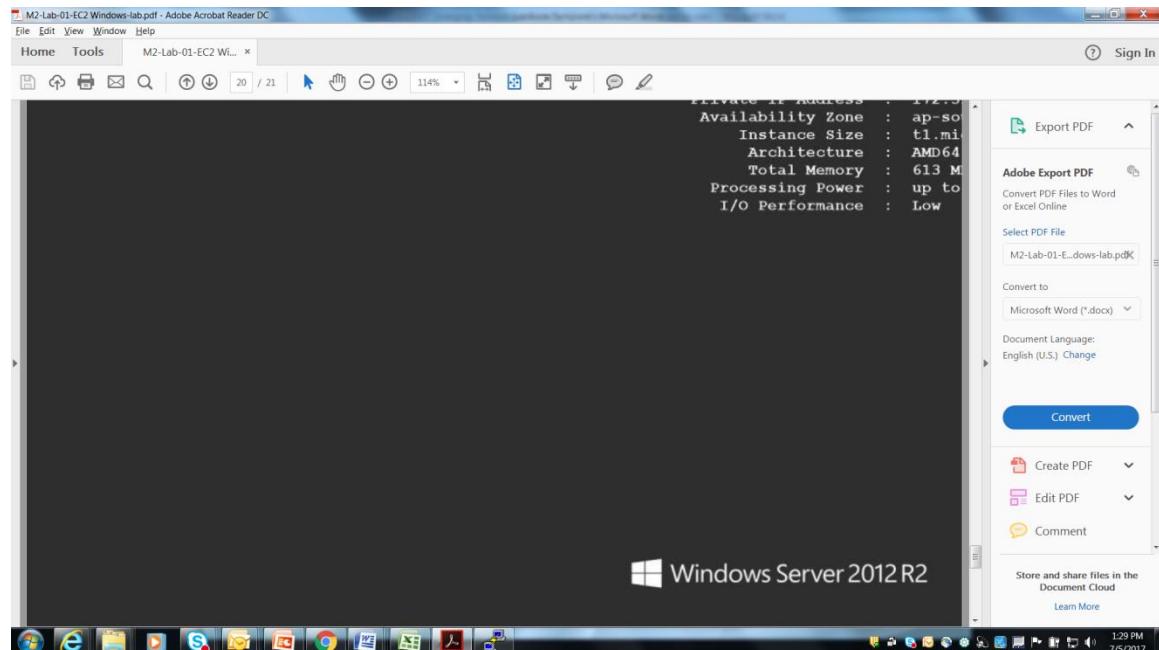
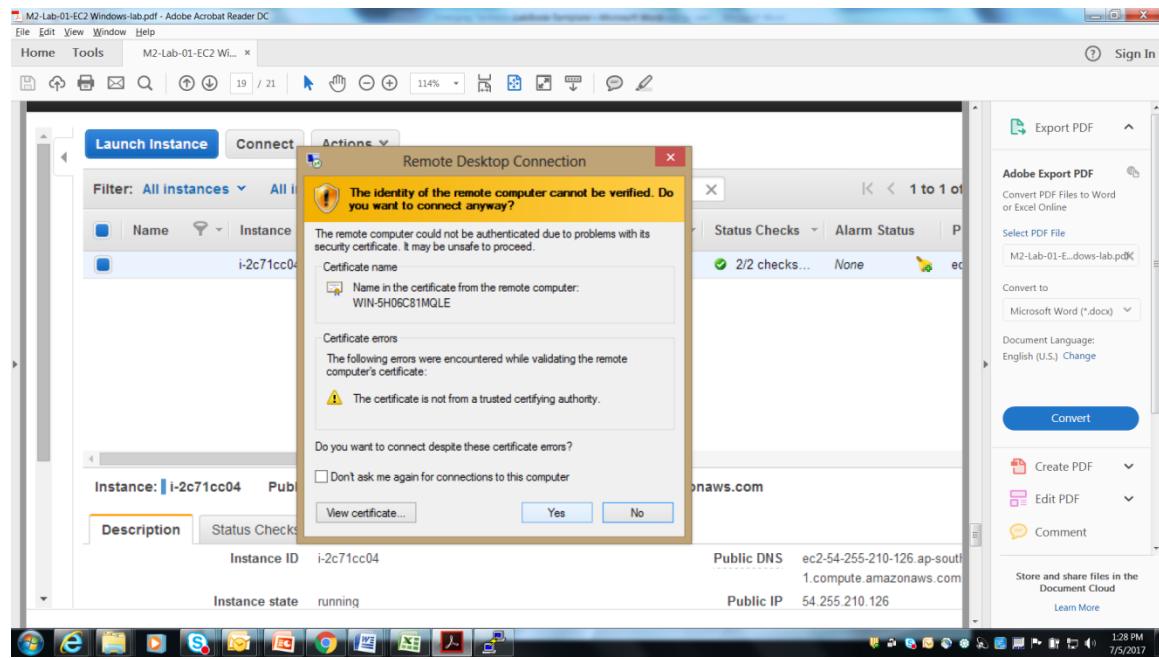


Step 4: Type the user name as Administrator and paste the password in the password text box you will get connected to the instance (VM)





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Lab 3. Configure IIS service on Windows

Goals	Understand the steps to configure IIS
Time	10 minutes



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Step 1: After connecting to the instance click on Server Manager

The screenshot shows the Windows Server 2012 R2 Local Server properties and events screen. The left navigation pane shows 'Local Server' selected. The main area displays server properties and a list of events.

PROPERTIES
For WIN-IPRBHPLRN6

IN-IPRBHPLRN6	Last installed updates	Never
ORKGROUP	Windows Update	Not configured
	Last checked for updates	Never
Public: On	Windows Error Reporting	Off
Enabled	Customer Experience Improvement Program	Not participating
Enabled	IE Enhanced Security Configuration	On
Enabled	Time zone	(UTC) Coordinated Universal Time
v4 address assigned by DHCP, IPv6 enabled	Product ID	00252-70000-00000-AA535 (activated)
Microsoft Windows Server 2012 R2 Standard	Processors	Intel(R) Xeon(R) CPU E5-2676 v3 @ 2.40GHz
en HVM domU	Installed memory (RAM)	1 GB
	Total disk space	29.66 GB

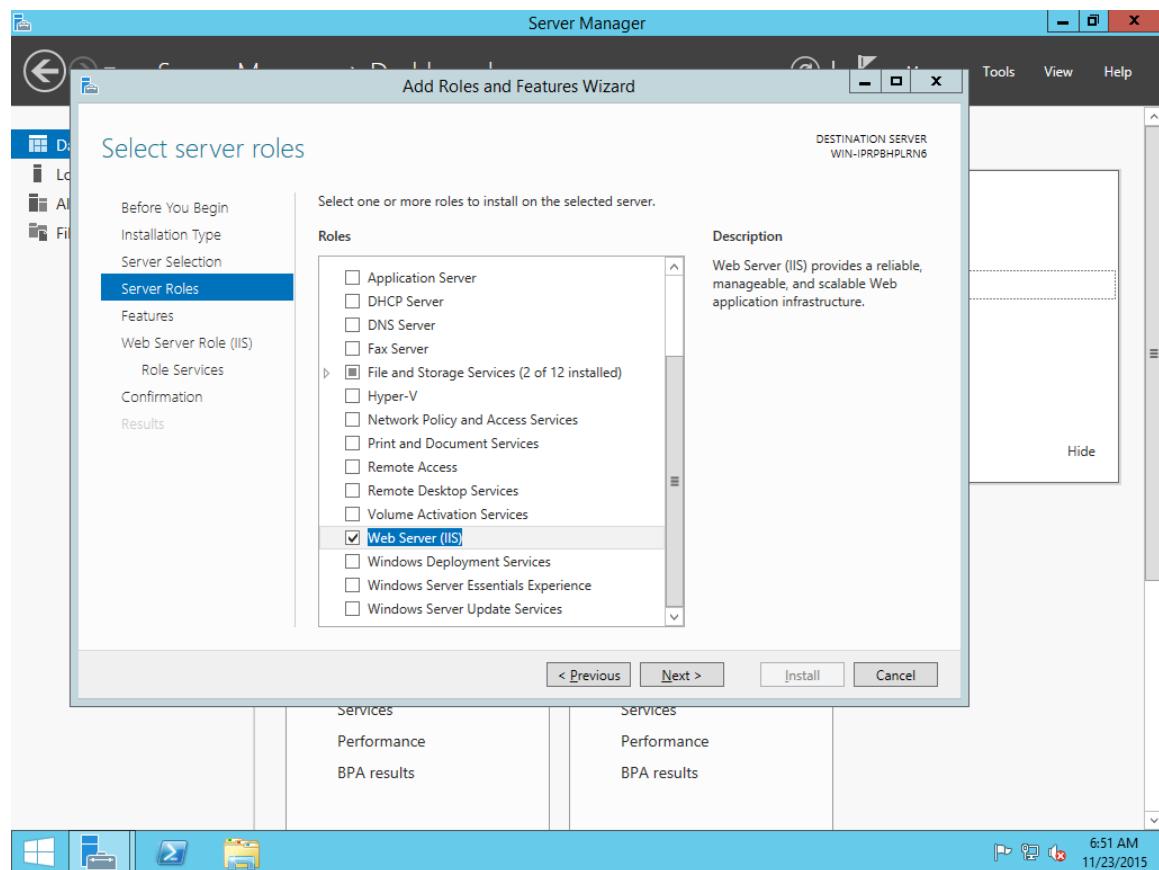
EVENTS
All events | 4 total

Server Name	ID	Severity	Source	Log	Date and Time
WIN-IPRBHPLRN6	4202	Error	Microsoft-Windows-Iphlpsvc	System	11/23/2015 6:32:07 AM
WIN-IPRBHPLRN6	10149	Warning	Microsoft-Windows-Windows Remote Management	System	11/23/2015 3:14:18 AM
WIN-IPRBHPLRN6	7023	Error	Microsoft-Windows-Service Control Manager	System	11/23/2015 3:13:23 AM

Step 2: Click on Dashboard, Click on role and features, Click on next, next, select IIS Web Server option



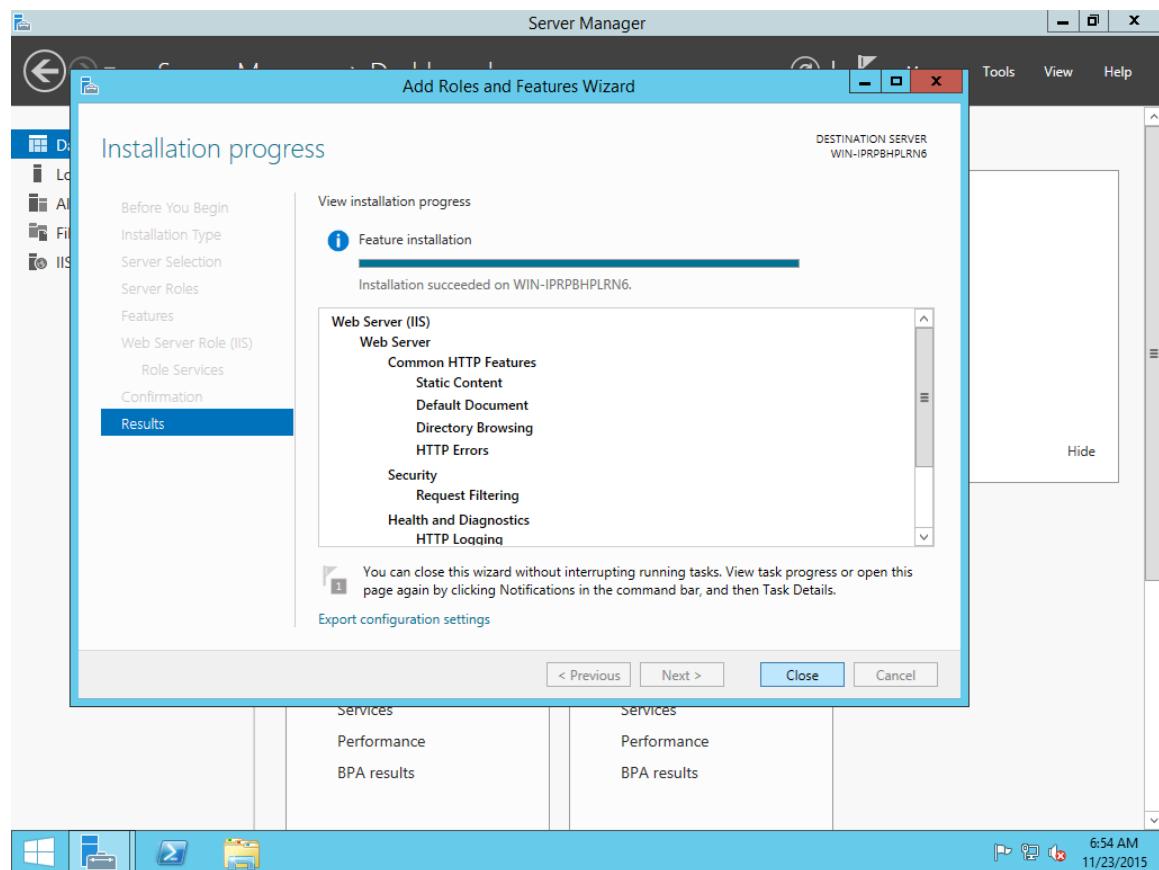
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Step 3: Click on Next 3 times and then select install



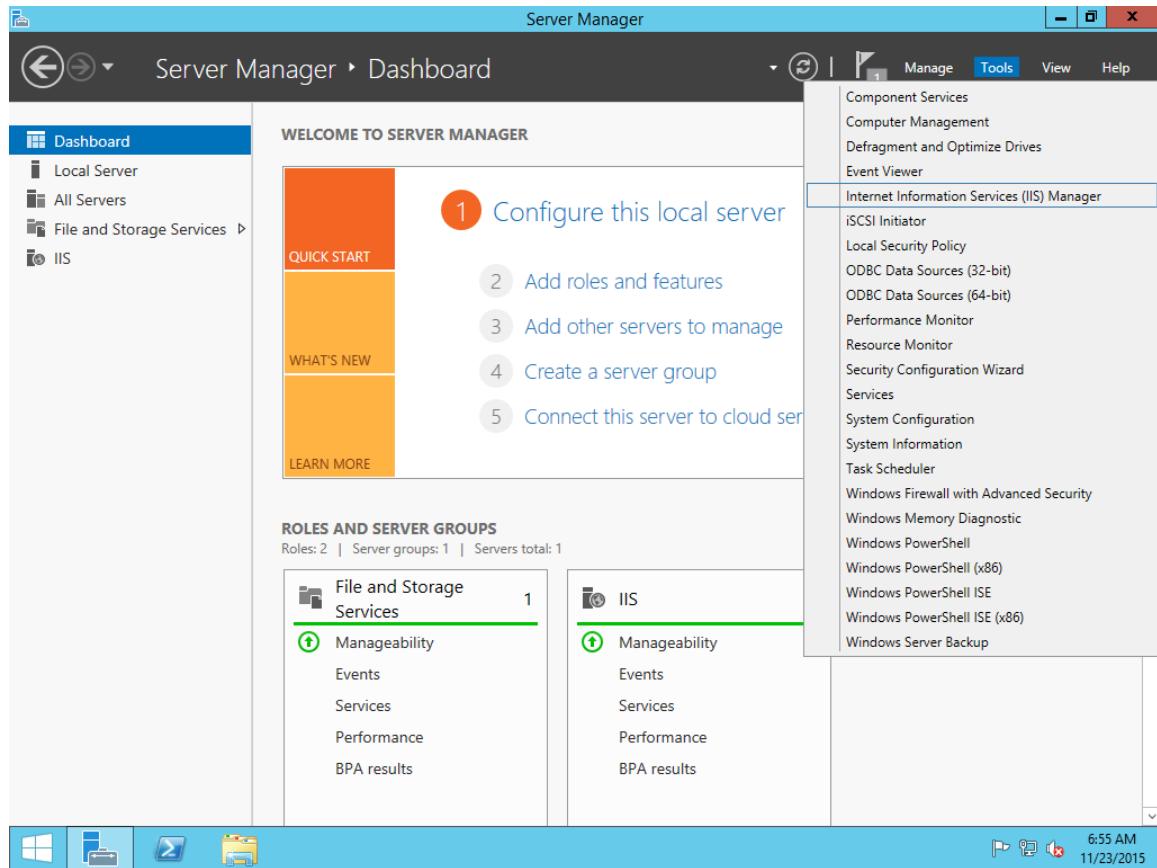
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Step 4: Click on close, click on Tools-IIS Manager to see the configuration



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Step 5: Go to EC2 dashboard select the instance created and add HTTP rule as part of the security group assigned to the instance as shown in the screen below. Click on the security group name assigned to the instance to modify the inbound rules



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The screenshot shows the AWS EC2 Management Console. On the left, there's a sidebar with various services like EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Images, AMIs, and Elastic Block Store. The main area shows a table of instances. One instance, 'ubintus1', is selected. To its right, detailed information is displayed, including its instance type (t2.micro), availability zone (ap-northeast-2c), security group (ubuntuSG), and AMI ID. At the bottom of this panel, there are tabs for 'Feedback', 'English', and a dropdown menu for 'ubuntukey1.pem'. Below the main content, there's a taskbar with icons for various Windows applications.

Step 6: select the Inbound option as shown in the image below

This screenshot shows the 'Create Security Group' page in the AWS EC2 Management Console. The sidebar on the left includes 'Instances', 'Security Groups', and 'Network & Security'. The main area displays a table with one row for a security group named 'sg-11347579' with 'ubuntuSG' as its group name and 'vpc-a0940bc9' as its VPC ID. Below the table, there are tabs for 'Description', 'Inbound' (which is highlighted with a yellow box), 'Outbound', and 'Tags'. Under the 'Inbound' tab, there's an 'Edit' button followed by a table with columns for Type (SSH), Protocol (TCP), Port Range (22), and Source (0.0.0.0/0). The bottom of the screen shows a standard Windows taskbar with various application icons.

Step 7: select the Edit button to add the rule



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The screenshot shows the AWS EC2 Management Console with the 'Edit inbound rules' dialog box open. The rule configuration is as follows:

Type	Protocol	Port Range	Source
SSH	TCP	22	Custom 0.0.0.0/0

At the bottom of the dialog box, there is a note: "NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created." Below the note are 'Add Rule' and 'Save' buttons.

Click on Add Rule select HTTP from drop down and hit the save button

The screenshot shows the AWS EC2 Management Console with the 'Edit inbound rules' dialog box open. The rule configuration has been updated:

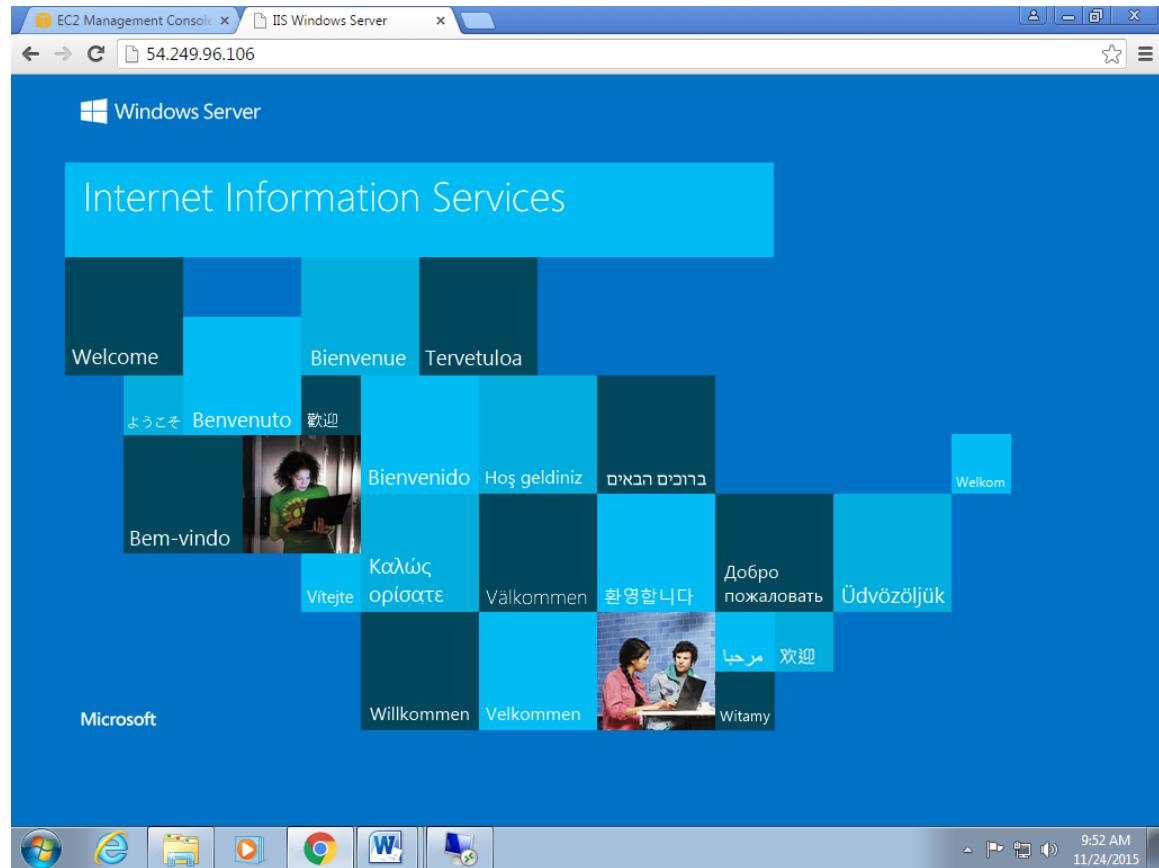
Type	Protocol	Port Range	Source
HTTP	TCP	80	Custom 0.0.0.0/0

At the bottom of the dialog box, there is a note: "NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created." Below the note are 'Cancel' and 'Save' buttons, with 'Save' being the active button.

Step 8: Copy the public IP and check in the local browser to see the page as shown below



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Lab 4. Create Ubuntu Instance

Goals	Understand the steps to create Ubuntu Instance
Time	10 minutes

Step 1: On aws home screen click on EC2 Dashboard and then select EC2 instance, select Ubuntu Server 16.04 by clicking on select button on the right of the screen



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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

AMI Name	Description	Select	64-bit
Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-e21cc38c	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.	Select	64-bit
SUSE Linux Enterprise Server 12 SP2 (HVM), SSD Volume Type - ami-5060b73e	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.	Select	64-bit
Red Hat Enterprise Linux 7.2 (HVM), SSD Volume Type - ami-908f50fe	Red Hat Enterprise Linux version 7.2 (HVM), EBS General Purpose (SSD) Volume Type	Select	64-bit
Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-94d20dfa	Ubuntu Server 16.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (http://www.ubuntu.com/cloud/services).	Select	64-bit

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Step 2: Click on General purpose t2 micro free tier option and then click next button

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 Current generation Show/Hide Columns

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes
General purpose	t2.2xlarge	8	32	EBS only	-	Moderate	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

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Step 3: Select the subnet either 2c or 2a in the following screen and click on Next Add Storage



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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-a0940bc9 (default)

Subnet: subnet-c0b7128d | Default in ap-northeast-2c
4091 IP Addresses available

Auto-assign Public IP: Use subnet setting (Enable)

IAM role: None

Shutdown behavior: Stop

Enable termination protection: Protect against accidental termination
 Enable CloudWatch detailed monitoring
Additional charges apply.

Monitoring: Enable CloudWatch detailed monitoring
Additional charges apply.

Tenancy: Shared - Run a shared hardware instance
Additional charges will apply for dedicated tenancy.

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Step 4: click on Next button in the below screen

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.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encrypted
Root	/dev/sda1	snap-0a2bd5125e8cd60e7	8	General Purpose SSD (GP2)	100 / 3000	N/A	<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.

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Step 5: click on Next Configure security group button in the below screen



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Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.

A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	(127 characters maximum)	Value	(255 characters maximum)
This resource currently has no tags			

Choose the Add tag button or click to add a Name tag.
Make sure your IAM policy includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

Step 6: In the below screen click on create a new security group option, type the name of security group as shown in the screen. Click on Review and Launch button

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: ubuntuSG
Description: launch-wizard-1 created 2017-07-05T12:41:31.055+05:30

Type	Protocol	Port Range	Source
SSH	TCP	22	Custom 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



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Step 7: Click on Review and Launch button and in the step select Launch button to see the below screen. Select the Create new key pair option. Type the keypair name and then click on the Download Key Pair button and then click on Launch Instance button

The screenshot shows the AWS EC2 Management Console interface. The main window displays the 'Step 7: Review Instance Launch' wizard. On the left, there are sections for 'AMI Details' (Ubuntu Server 16.04 LTS (HVM), SSD Volume), 'Instance Type' (I2.micro), and 'Security Groups' (ubuntuSG). A central modal dialog box is open, prompting the user to 'Select an existing key pair or create a new key pair'. It lists an existing key pair 'ubuntukey1' and provides a field to 'Create a new key pair' with the name 'ubuntukey1'. A note at the bottom of the dialog box states: 'You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created.' At the bottom of the dialog are 'Cancel' and 'Launch Instances' buttons.

Step 8: The instance creation will be in processed as shown in the below screen. Click on the instance id to see the status check column will change from initializing to 2/2 in the next step

The screenshot shows the AWS EC2 Management Console 'Launch Status' page. It displays a message: 'Your instances are now launching' followed by the instance ID 'i-0e2ab02cd487936a4' and a link to 'View launch log'. Below this, there is a section titled 'Get notified of estimated charges' with a note: 'Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier)'. Further down, there is a section titled 'How to connect to your instances' with links to the 'Amazon EC2: User Guide' and 'Amazon EC2: Discussion Forum'. At the bottom, there is a note: 'While your instances are launching you can also Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)'.

Step 9: The instance will be created once the status check is passed

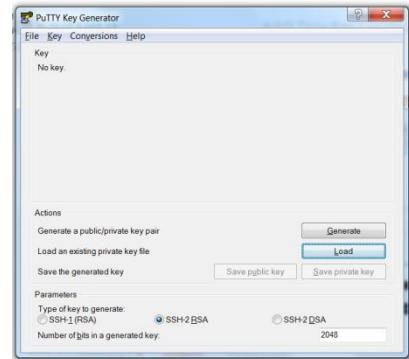


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Lab 5. Connecting to Ubuntu Instance

Goals	Understand the steps to connect to Ubuntu Instance
Time	10 minutes

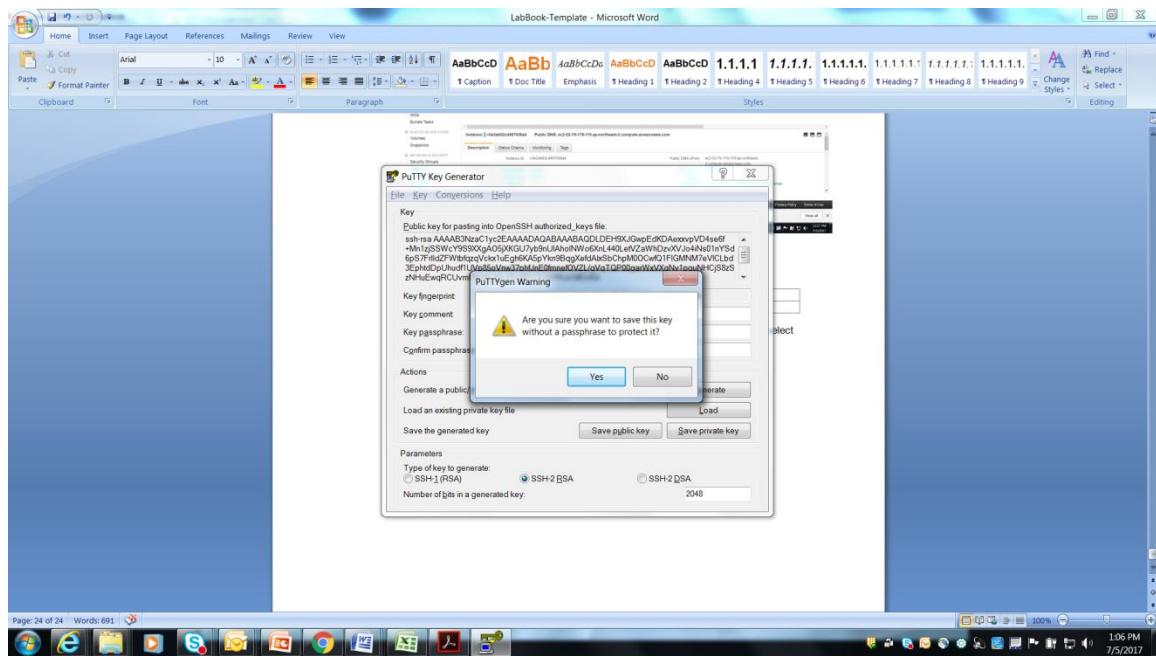
Step 1: Start puttygen software to see the below screen. Click on load button and select the downloaded pem file and hit the ok button



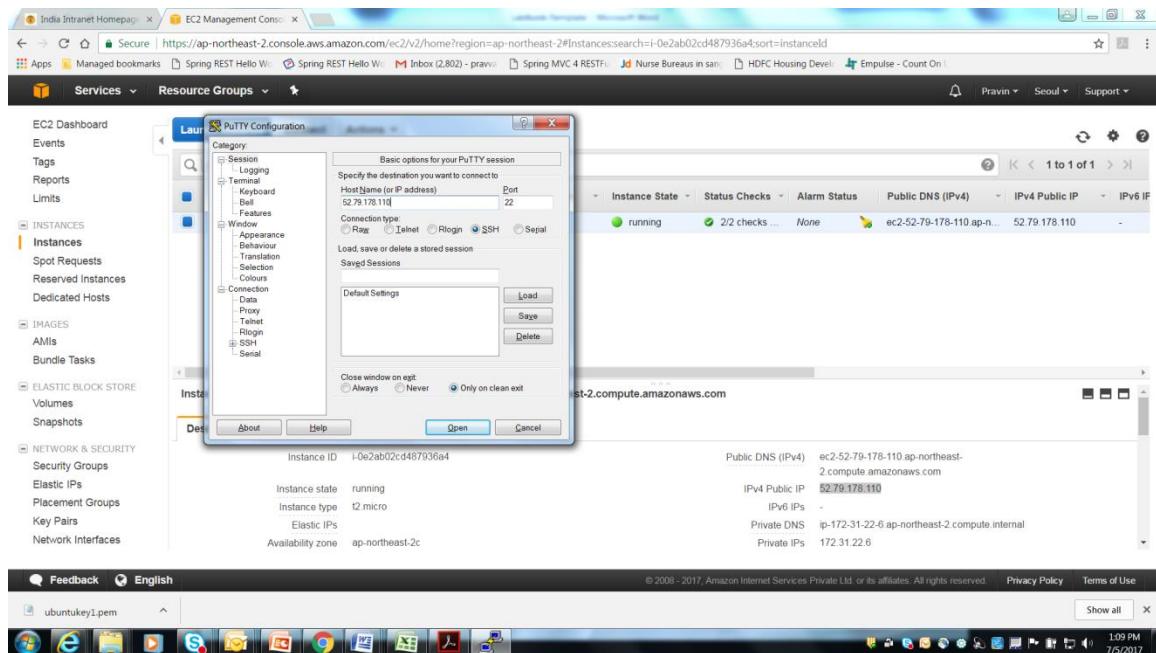
Step 2: Click on save private key button and click Yes to save the ppk file . Close this application



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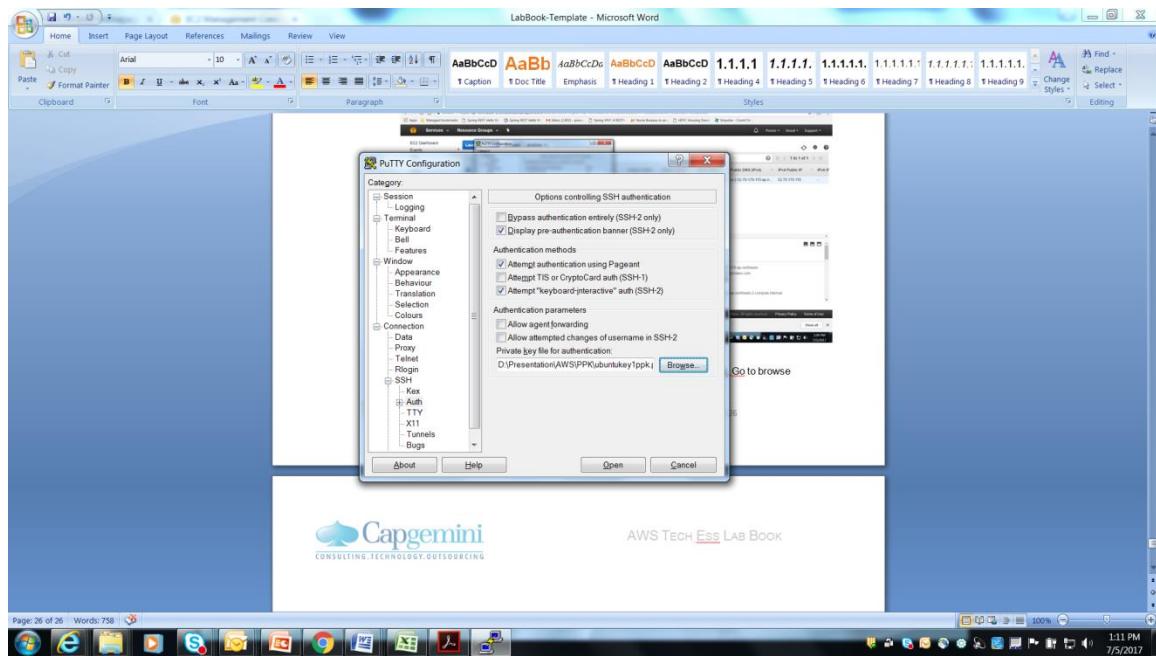
Step 3: Open the Putty application and in the host Name type the public IP of the instance



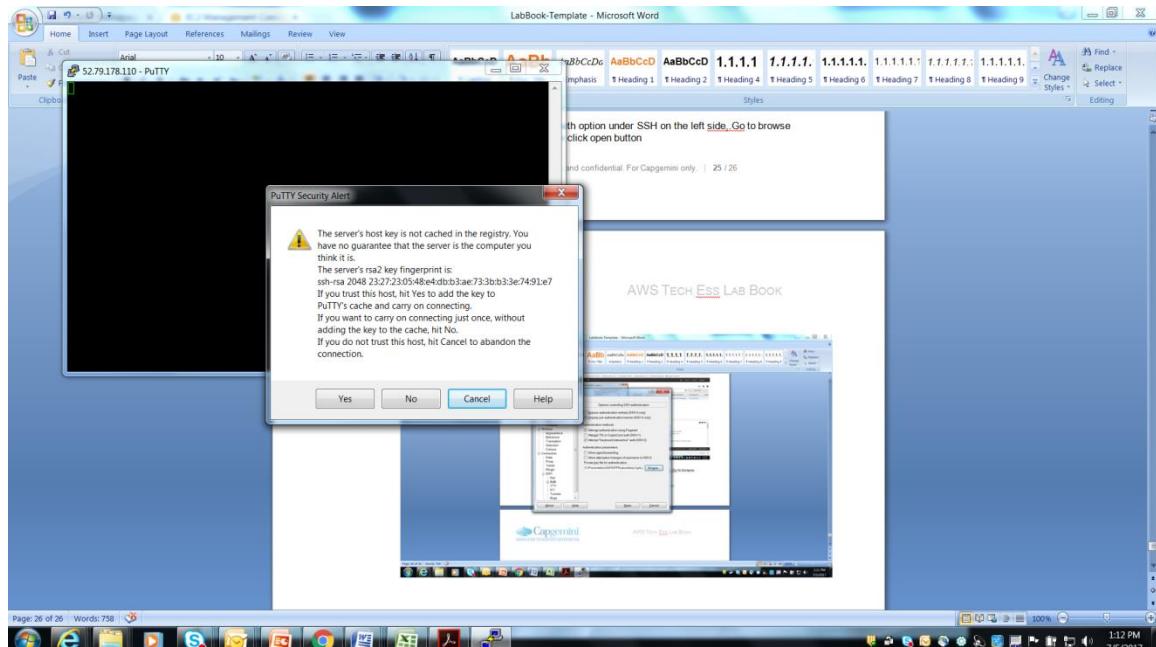
Step 4: In the Putty app, select the Auth option under SSH on the left side,. Go to browse and select the ppk file name and then click open button



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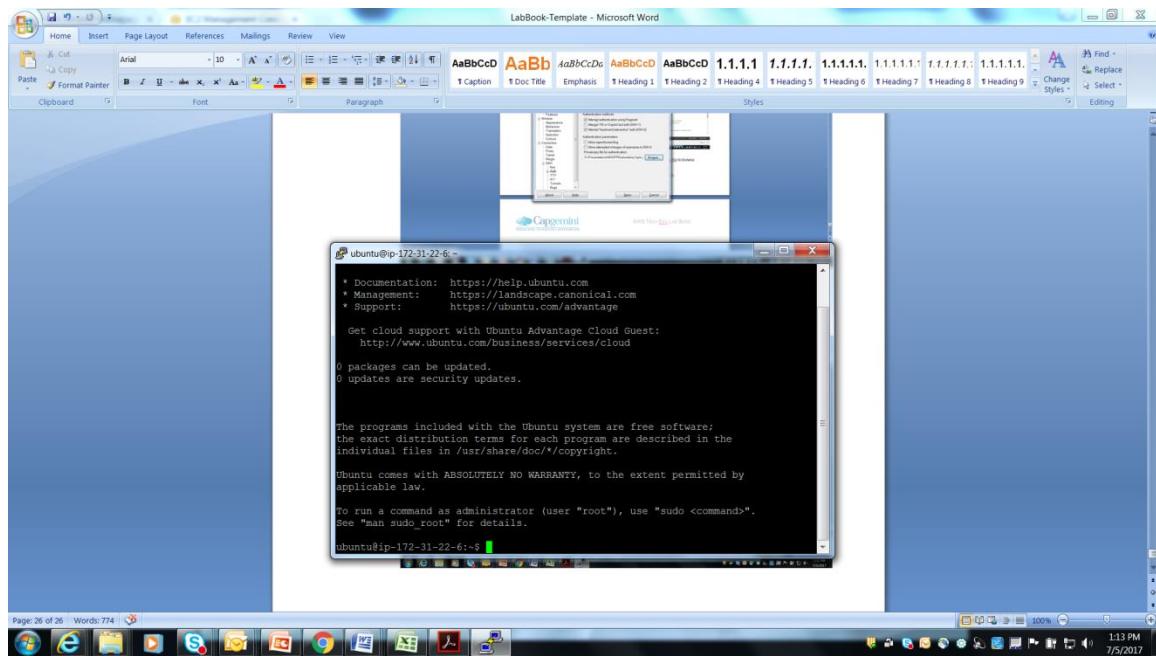
Step 5: Select Yes option and type the user name as ubuntu and hit enter key



Step 5: Once you get the below screen you will be connected to the instance



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Lab 6. Creating and Attaching volume to Ubuntu Instance

Goals	Understand the steps to create and attach volume to Ubuntu Instance
Time	10 minutes

Step 1: On EC2 dashboard select Volumes under Elastic Block store option as shown in the below screen



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The screenshot shows the AWS EC2 Management Console dashboard. On the left, there's a sidebar with navigation links for EC2 Dashboard, Events, Tags, Reports, Limits, Instances, AMIs, and ELASTIC BLOCK STORE. Under Instances, it lists Instances, Spot Requests, Reserved Instances, and Dedicated Hosts. Under AMIs, it lists AMIs and Bundle Tasks. Under ELASTIC BLOCK STORE, it lists Volumes and Snapshots. The main content area displays the following statistics:

Category	Value
Running Instances	1
Dedicated Hosts	0
Volumes	1
Key Pairs	2
Placement Groups	0
Elastic IPs	0
Snapshots	0
Load Balancers	0
Security Groups	3

Below the stats, a message encourages users to try Amazon Lightsail. The 'Create Instance' section has a 'Launch Instance' button. The 'Service Health' section shows 'Asia Pacific (Seoul)' is operating normally. The 'Scheduled Events' section shows 'No events'. On the right, there are sections for 'Account Attributes' (Supported Platforms: VPC; Default VPC: vpc-a0940bc9; Resource ID length management), 'Additional Information' (Getting Started Guide, Documentation, All EC2 Resources, Forums, Pricing, Contact Us), and 'AWS Marketplace' (listing Barracuda NextGen Firewall F-Series - PAYG). The bottom status bar shows the URL https://ap-northeast-2.console.aws.amazon.com/ec2/v2/home?region=ap-northeast-2#Vol..., the date 7/5/2017, and the time 1:37 PM.

Step 2: Click on create volume button

The screenshot shows the 'Create Volume' dialog. The sidebar on the left is identical to the previous dashboard. The main area has tabs for 'Create Volume' (selected) and 'Actions'. A search bar at the top of the table allows filtering by Name, Volume ID, Size, Volume Type, IOPS, Snapshot, Created, Availability Zone, State, Alarm Status, and Attachment Info. Below the search bar is a table showing one volume entry:

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created	Availability Zone	State	Alarm Status	Attachment Info
vol-0b5dbe22e9e11d2c1	vol-0b5dbe22e9e11d2c1	8 GiB	gp2	100 / 3000	snap-0a2bd512...	July 5, 2017 at 12:53...	ap-northeast-2c	In-use	None	i-0e2ab02cd48

Below the table is a detailed view of the volume 'vol-0b5dbe22e9e11d2c1'. It shows the following details:

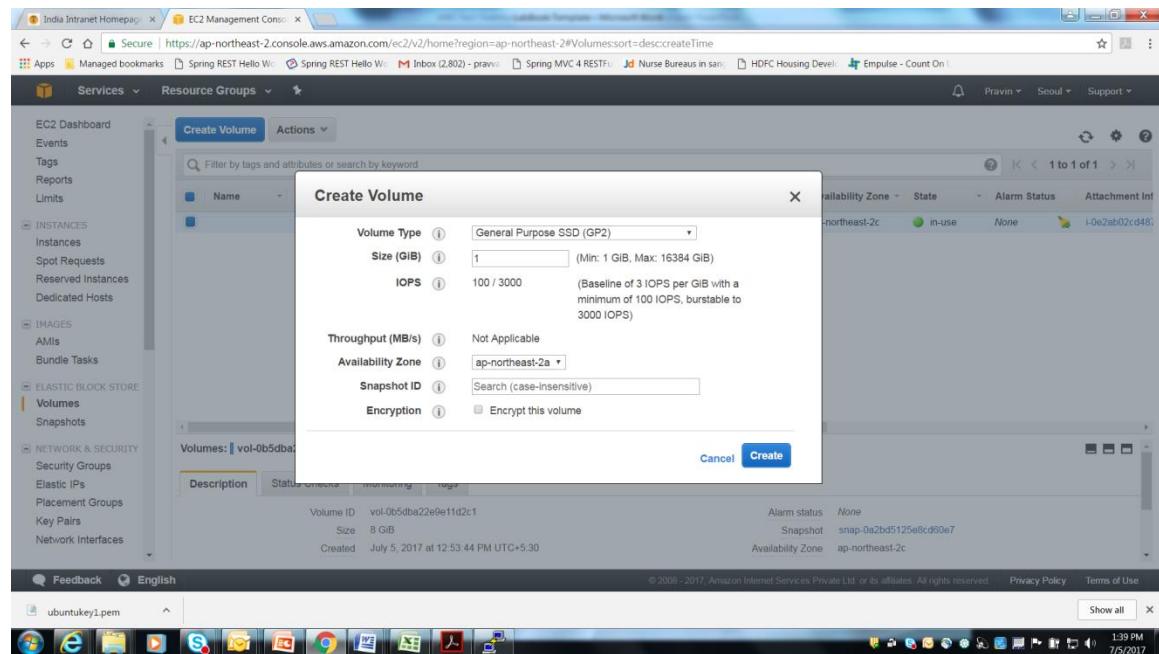
Description	Volume ID	Volume Type	Size	Snapshot	Created	Availability Zone	State	Alarm Status	Attachment Info
Volume ID: vol-0b5dbe22e9e11d2c1	vol-0b5dbe22e9e11d2c1	gp2	8 GiB	snap-0a2bd512...	July 5, 2017 at 12:53...	ap-northeast-2c	In-use	None	i-0e2ab02cd48
Size: 8 GiB									
Created: July 5, 2017 at 12:53:44 PM UTC+5:30									

The bottom status bar shows the URL https://ap-northeast-2.console.aws.amazon.com/ec2/v2/home?region=ap-northeast-2#Vol..., the date 7/5/2017, and the time 1:38 PM.

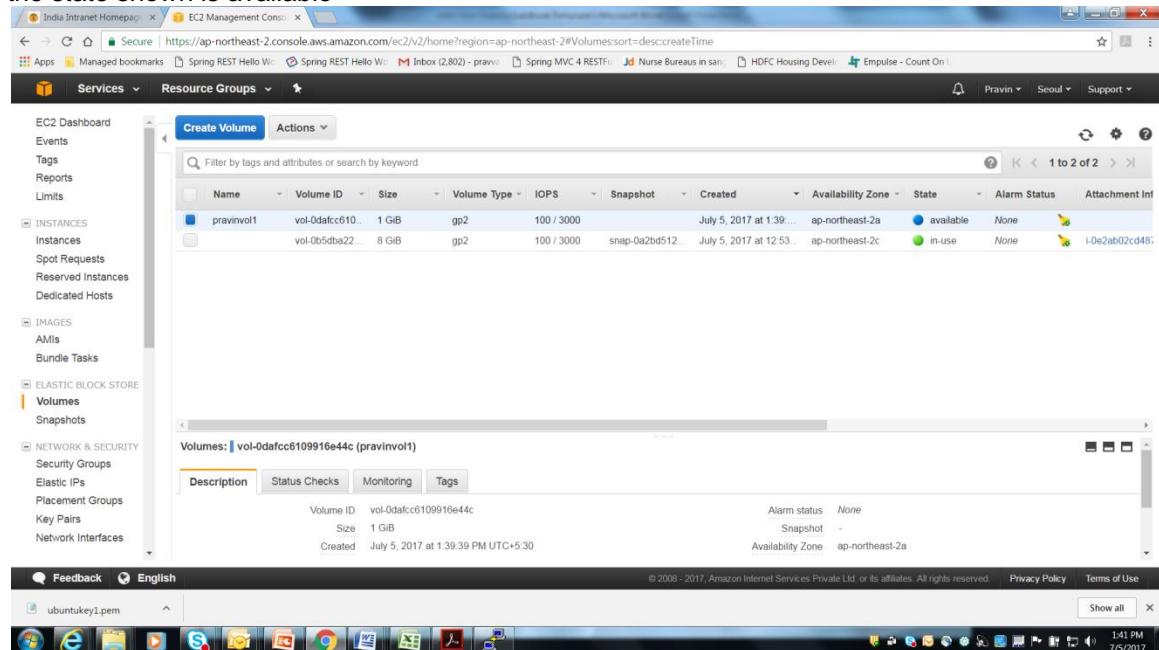
Step 3: Change the volume size from 100 to 1 and select the availability zone same as the instance availability zone and hit the create button



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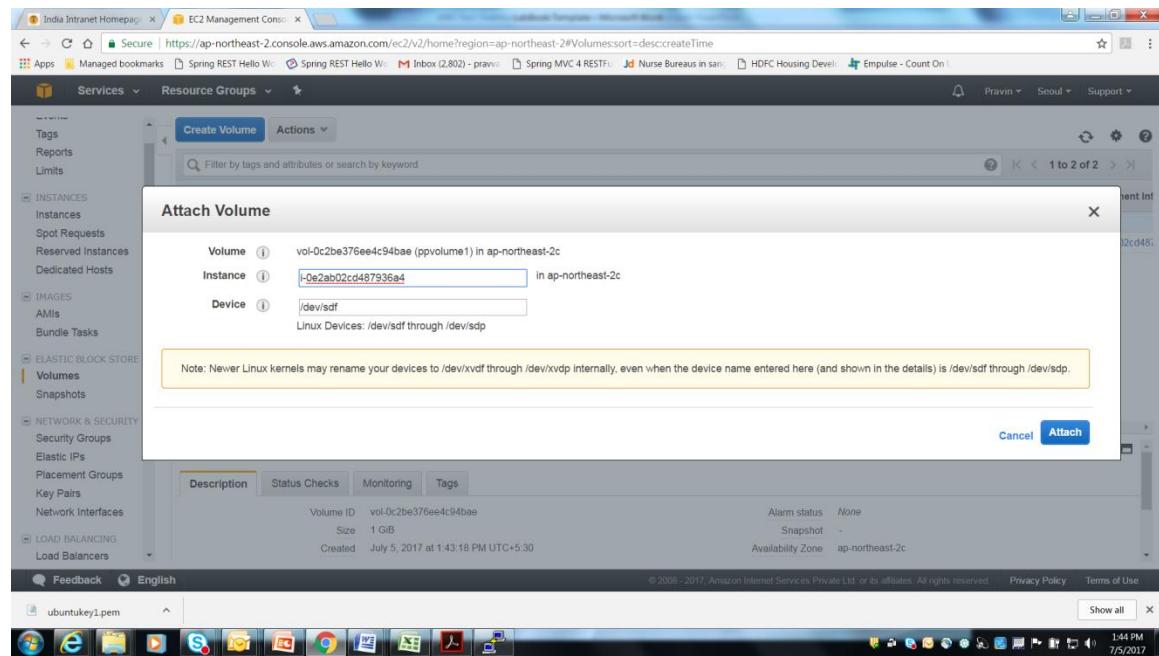
Step 4: Type the name of the volume , please ensure give the name to the volume where the state shown is available



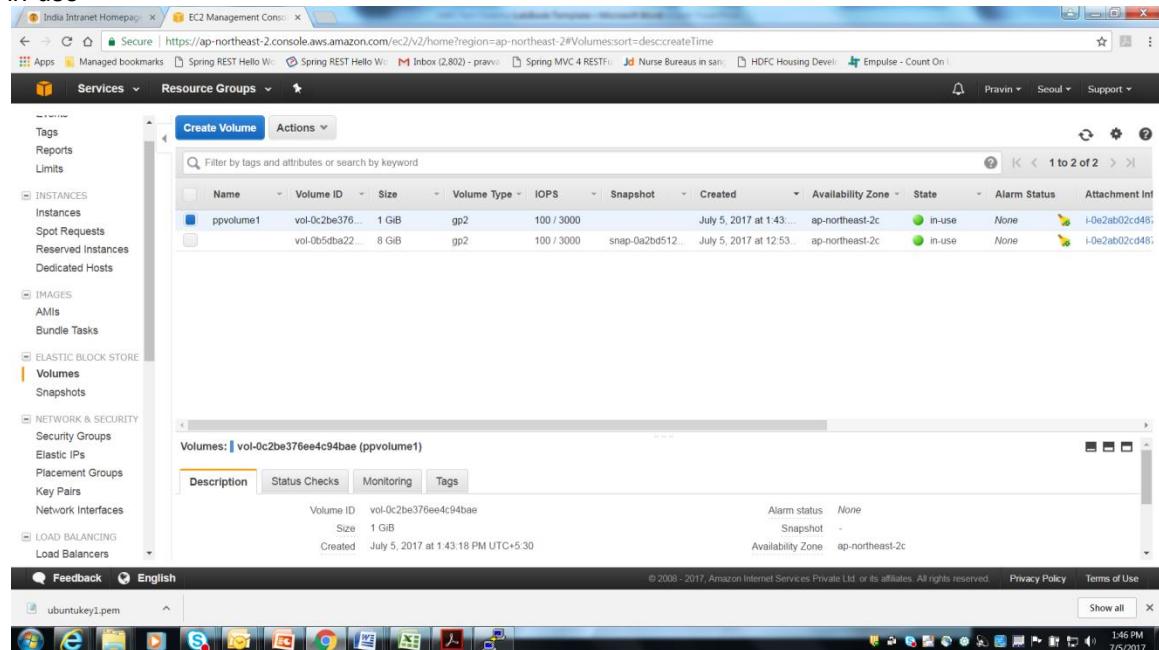
Step 5: Click on Actions button and select attach volume, select the instance id to see the below screen. Click Attach button



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Step 6: The volume will be attached and the State column will change from available to in-use



Step 6: Connect to the ubuntu instance and issue the below commands

```
sudo su  
apt-get update  
fdisk /dev/xvdf
```



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Type p and then enter 3 times

Type the command w . This will save the partition table

Issue the command fdisk -l . This will show you the partition name

Issue the command mkfs.ext3 /dev/xvdf1 -- to format

Create a folder by command mkdir pravin

Now mount the volume on the folder: mount /dev/xvdf1 pravin/

df -h : will show the new volume

cd pravin

Now you create files on the volume.

Unmount the volume by issuing the following command

cd..

umount /dev/xvdf1

Step 7: Select the volume created from the EC2 dashboard. Click on Actions-Detach volume- Yes Detach

Volume Type	IOPS	Snapshot	Created	Availability Zone	State	Alarm Status	Attachment Info
gp2	100 / 3000	-	July 5, 2017 at 1:43...	ap-northeast-2c	in-use	None	i-0e2ab02c48;
gp2	100 / 3000	snap-0a2bd512	July 5, 2017 at 12:53	ap-northeast-2c	in-use	None	i-0e2ab02c48;

Lab 7. Configuring Apache web server on ubuntu instance

Goals	Understand the steps to configure apache web server on ubuntu instance
Time	10 minutes

Step 1: SSH to ubuntu instance

Issue the following commands

sudo su

apt-get update

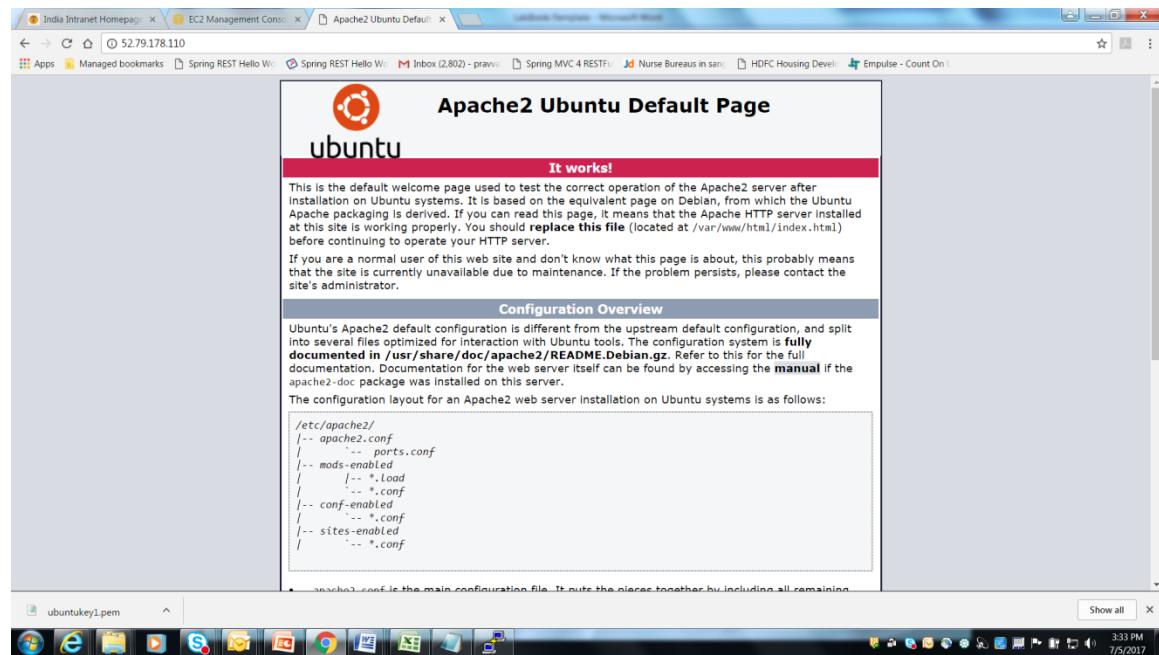


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```
apt-get install apache2 -y
```

Step 2: Modify ubuntu instance security group by add the HTTP rule

Step 3: Go to the browser and type the public ip address to see the following screen



Lab 8. ELB

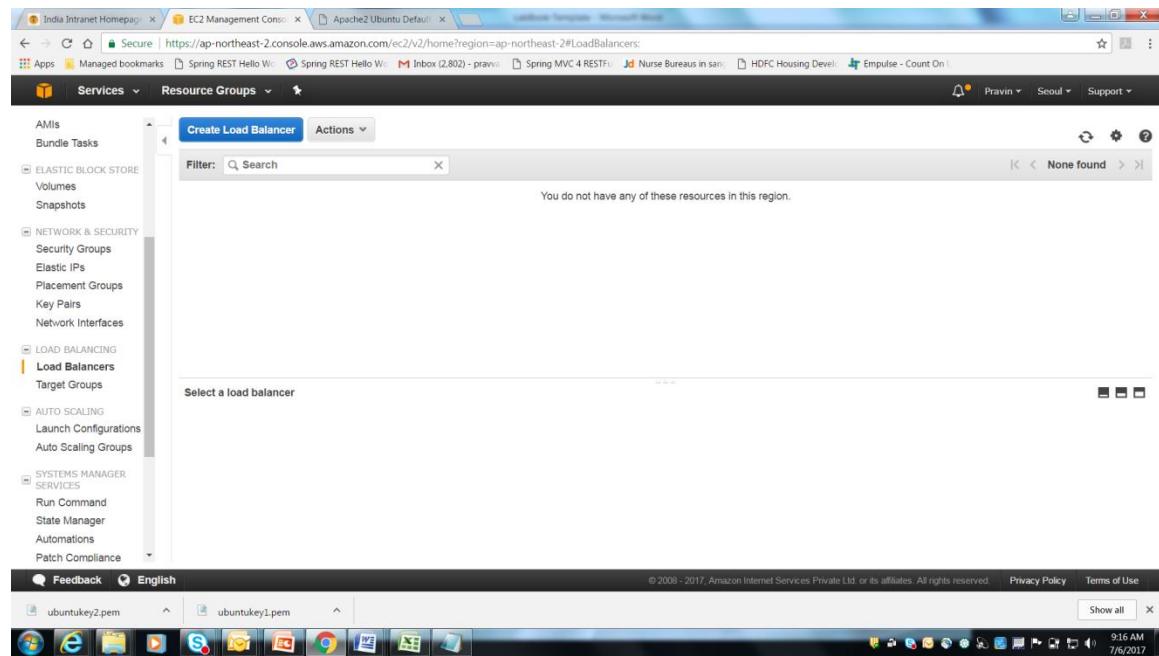
Goals	Understand the steps to configure ELB
Time	10 minutes

Step 1: Create two ubuntu instances and install apache server on both the instances. Modify index page for one of the instance by changing some content of index.html file. The index.html file is available in /var/www/html folder. May be change the heading of the page, This will help understand that when we configure ELB then we can differentiate to which instance ELB sends the request.

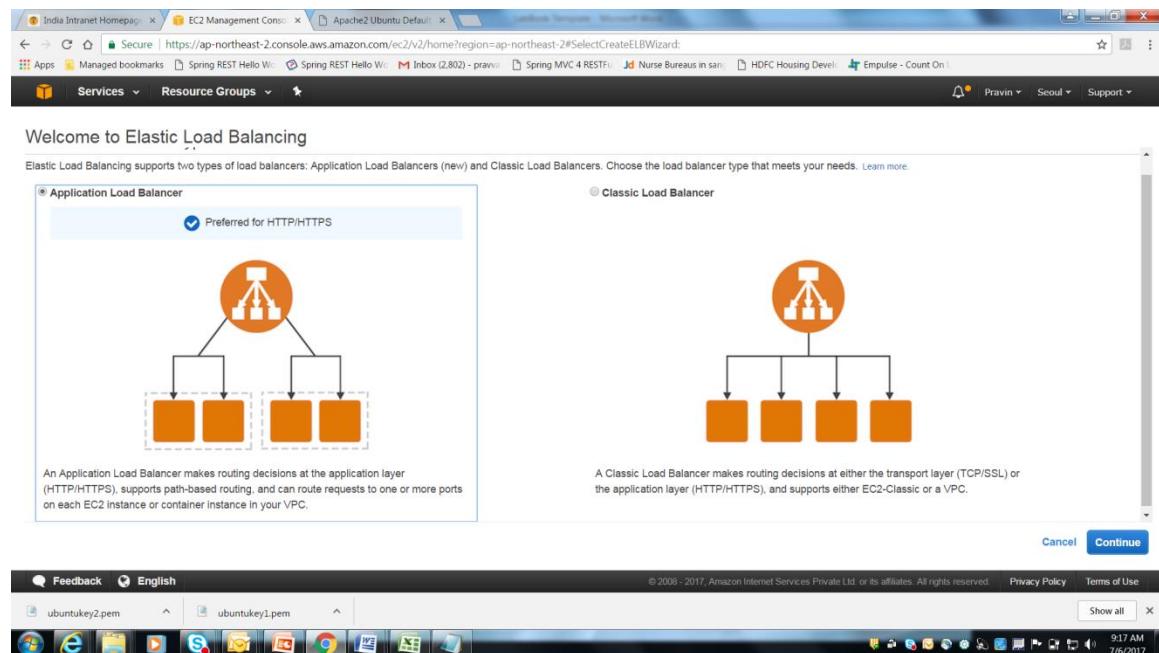
Step 2: Go to EC2 Dashboard, on the left click on the menu option Load Balancers under Load Balancing header to see the below screen



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Step 2: Click on Create Load Balancer button. You will see the below screen



Step 3: Select Classic Load Balancer and click continue button to see the below screen. Type the name of the ELB in Load Balancer Name text box and click next button



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Step 1: Define Load Balancer

Basic Configuration

This wizard will walk you through setting up a new load balancer. Begin by giving your new load balancer a unique name so that you can identify it from other load balancers you might create. You will also need to configure ports and protocols for your load balancer. Traffic from your clients can be routed from any load balancer port to any port on your EC2 instances. By default, we've configured your load balancer with a standard web server on port 80.

Load Balancer name: MyLB
Create LB Inside: My Default VPC (172.31.0.0/16)
Create an internal load balancer: (what's this?)
Enable advanced VPC configuration:
Listener Configuration:

Load Balancer Protocol	Load Balancer Port	Instance Protocol	Instance Port
HTTP	80	HTTP	80

Add

Cancel Next: Assign Security Groups

Step 4: create new security group, give the group name. Click next

Step 2: Assign Security Groups

You have selected the option of having your Elastic Load Balancer inside of a VPC, which allows you to assign security groups to your load balancer. Please select the security groups to assign to this load balancer. This can be changed at any time.

Assign a security group: Create a new security group
 Select an existing security group

Security group name: elbsg
Description: quick-create-1 created on Thursday, July 6, 2017 at 9:59:08 AM UTC+5:30

Type	Protocol	Port Range	Source
Custom TCP Rule	TCP	80	Custom 0.0.0.0/0

Add Rule

Cancel Previous Next: Configure Security Settings

Step 5: Click next



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Step 3: Configure Security Settings

⚠ Improve your load balancer's security. Your load balancer is not using any secure listener.
If your traffic to the load balancer needs to be secure, use either the HTTPS or the SSL protocol for your front-end connection. You can go back to the first step to add/configure secure listeners under Basic Configuration section. You can also continue with current settings.

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Show all ×
ubuntukey2.pem | ubuntukey1.pem
Cancel Previous Next: Configure Health Check
1. Define Load Balancer 2. Assign Security Groups 3. Configure Security Settings 4. Configure Health Check 5. Add EC2 Instances 6. Add Tags 7. Review

Step 6: Click next

Step 4: Configure Health Check
Your load balancer will automatically perform health checks on your EC2 instances and only route traffic to instances that pass the health check. If an instance fails the health check, it is automatically removed from the load balancer. Customize the health check to meet your specific needs.

Ping Protocol: HTTP
Ping Port: 80
Ping Path: /index.html

Advanced Details

Response Timeout	5	seconds
Interval	30	seconds
Unhealthy threshold	2	
Healthy threshold	10	

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Show all ×
ubuntukey2.pem | ubuntukey1.pem
Cancel Previous Next: Add EC2 Instances
1. Define Load Balancer 2. Assign Security Groups 3. Configure Security Settings 4. Configure Health Check 5. Add EC2 Instances 6. Add Tags 7. Review

Step 7: Select the checkbox next to both the instances and click next



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Step 5: Add EC2 Instances
The table below lists all your running EC2 Instances. Check the boxes in the Select column to add those instances to this load balancer.

Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR
i-0e2ab02c...	ubinstance1	running	ubuntuSG	ap-northeas...	subnet-cb7128d	172.31.16.0/20
i-0eb04fk71...		running	ubuntu2sg	ap-northeas...	subnet-cb7128d	172.31.16.0/20

Availability Zone Distribution
2 Instances in ap-northeast-2c

Enable Cross-Zone Load Balancing (Optional)
 Enable Connection Draining (Optional) [300] seconds

Cancel Previous Next: Add Tags

Step 8: Click Review and Create button

Step 6: Add Tags
Apply tags to your resources to help organize and identify them.

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	Value
<input type="text"/>	<input type="text"/>

Create Tag

Review and Create

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Step 9: Click Create



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Step 7: Review
Please review the load balancer details before continuing

Define Load Balancer

Load Balancer name: MyELB
Scheme: internet-facing
Port Configuration: 80 (HTTP) forwarding to 80 (HTTP)

Configure Health Check

Ping Target: HTTP:80/index.html
Timeout: 5 seconds
Interval: 30 seconds
Unhealthy threshold: 2
Healthy threshold: 10

Add EC2 Instances

Cross-Zone Load Balancing: Enabled
Connection Draining: Enabled, 300 seconds
Instances: i-0e2ab02cd487936a4 (ubinstance1), i-0eb04fc7150ba9c56

VPC Information

Cancel Previous Create

Step 10: The load balancer will be created. Click on Close button. Please note this will take some minutes before it becomes active

Load Balancer Creation Status

Successfully created load balancer
Load balancer MyELB was successfully created.
Note: It may take a few minutes for your instances to become active in the new load balancer.

Close

Step 11: SSH to the instance and install apache service on the new instance created.

Step 12: Go to the Load Balancer created and hit the DNS Name to check if the request goes to any one instance. Try making multiple requests to check for the working of Load balancer.



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Name	DNS name	State	VPC ID	Availability Zones	Type
MyELB	MyELB-978080116.ap-northeast-2.elb.amazonaws.com	Active	vpc-a0940bc9	ap-northeast-2a, ap-northeast-2c	classic

Lab 9. S3

Goals	Understand the steps to use S3 service
Time	10 minutes

Step 1: Create bucket in s3 by going to home page of aws. Select s3 from storage section. You will see the below screen



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The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with links for 'Switch to the old console', 'Discover the new console', and 'Quick tips'. Below the navigation bar, the main content area is titled 'Amazon S3' and displays a search bar labeled 'Search for buckets'. There are three buttons at the top of the list: '+ Create bucket', 'Delete bucket', and 'Empty bucket'. The list shows two buckets:

Bucket name	Region	Date created
elasticbeanstalk-ap-northeast-2-322915146254	Asia Pacific (Seoul)	Jan 13, 2017 3:25:50 PM
p3buck	Asia Pacific (Seoul)	Jul 6, 2017 10:27:43 AM

At the bottom right, there are buttons for '2 Buckets' and '1 Regions'. The status bar at the bottom right indicates the time as '10:29 AM' and the date as '7/6/2017'.

Step 2: Click on Create bucket, give the name and hit the create button

The screenshot shows the 'Create bucket' dialog box overlaid on the S3 Management Console. The dialog has four tabs: 'Name and region' (selected), 'Set properties', 'Set permissions', and 'Review'. The 'Name and region' tab contains fields for 'Bucket name' (set to 'mubuck') and 'Region' (set to 'Asia Pacific (Seoul)'). Below these, there's a section for 'Copy settings from an existing bucket' with a dropdown menu set to 'Select bucket (optional)'. At the bottom of the dialog are 'Create', 'Cancel', and 'Next' buttons. The background shows the same S3 console interface as the previous screenshot.

Step 3: The bucket will be created. Select your bucket and you can upload the files inside the bucket. Click the Get Started button



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Step 4: Click on Add files to add the object inside the bucket. Hit the add files, select your file and then click Upload button



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The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with tabs for 'Objects', 'Properties', 'Permissions', and 'Management'. Below the navigation bar is a search bar with placeholder text 'Type a prefix and press Enter to search. Press ESC to clear.' Underneath the search bar are three buttons: 'Upload', '+ Create folder', and 'More'. To the right of these buttons, it says 'Asia Pacific (Seoul)' with a refresh icon. Below this, a message 'Viewing 1 to 1' is displayed. The main content area shows a table with one row of data. The columns are 'Name', 'Last modified', 'Size', and 'Storage class'. The single item listed is 'index.html', which was last modified on Jul 6, 2017 at 10:36:02 AM, has a size of 62.0 B, and is stored in the Standard storage class. Another message 'Viewing 1 to 1' is located below the table.

Name	Last modified	Size	Storage class
index.html	Jul 6, 2017 10:36:02 AM	62.0 B	Standard

