Assessment -11

Auto-Scaling & Load-Balancing

Trainee Name : Arun Parmar
Mentor Name : Ravi Kumar
College: UPES

1.Differences between ELB, ALB, and NLB. Where will you use which one?

	CLB	ALB	NLB
Protocols	TCP, SSL/TLS, HTTP, HTTPS	HTTP, HTTPS	TCP, TLS
Performance (a higher number is slower): the ability to handle more traffic	2	3	1 (fastest)
Host/Path-based routing	No	Yes	No
Sticky Session (for session-based applications)	Yes (redirect to the same machine)	Yes (redirect to the same target)	No
Static/Elastic IP	No	No	Yes
Load balancing to multiple ports on the same instance	No	Yes	Yes
Configurable idle connection timeout	Yes	Yes	No

- Have an AWS environment comprised of clearly defined services that can each be mapped to a specific address? **CLB will work for you.**
- Have a microservice architecture or a container-based infrastructure? Select ALB or NLB.
- Need host/path-based routing? **Choose ALB.**
- Want load balancer-generated cookies? **Select ALB.**
- Need support for both static and elastic IP addresses? **Go with NLB.**
- Want to support configurable idle connection timeout? **Either CLB or ALB can do this.**

2. Differences between step scaling and target scaling.

- Target tracking scaling:- Based on the target value for a specific metric, Increase or decrease the current capacity of the auto scaling group. All you do is pick CPU Utilization(Your metric and example for this post) set the value and that's it, auto scaling does the rest adding and removing the capacity in order to keep your metric(CPU utilization) as close as possible to the target value.

- Step scaling:- Based on a set of scaling adjustments, increase or decrease the current capacity of the group that vary based on the size of the alarm breach. For example:

  Threshold A - add 1 instance when CPU Utilization is between 40% and 50%

  Threshold B - add 2 instances when CPU Utilization is between 50% and 70%

  Threshold C - add 3 instances when CPU Utilization is between 70% and 90%

3.Differences between Launch configuration and launch template.

Launch template is similar to launch configuration which usually Auto Scaling group uses to launch EC2 instances. However, defining a launch template instead of a launch configuration allows you to have multiple versions of a template.

AWS recommends that we should use launch templates instead of launch configurations to ensure that we can leverage the latest features of Amazon EC2, such as T2 Unlimited instances.

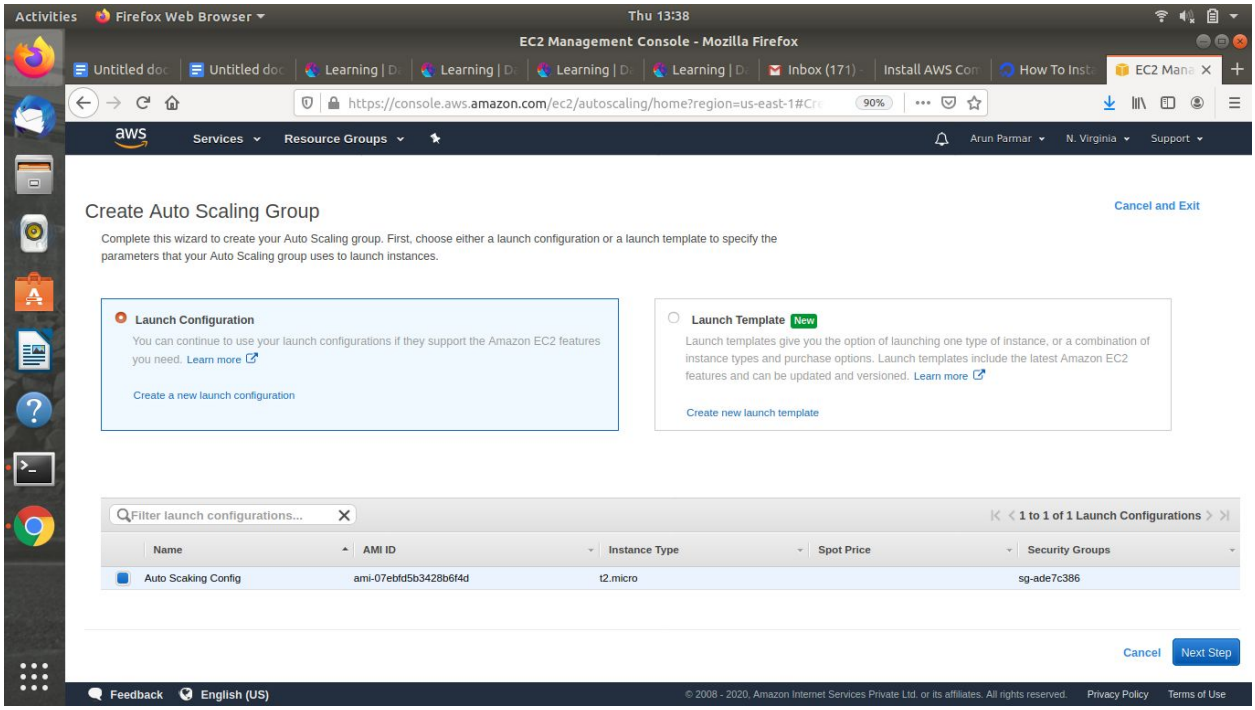
4.Differences between EC2 health check and load balancer health check.

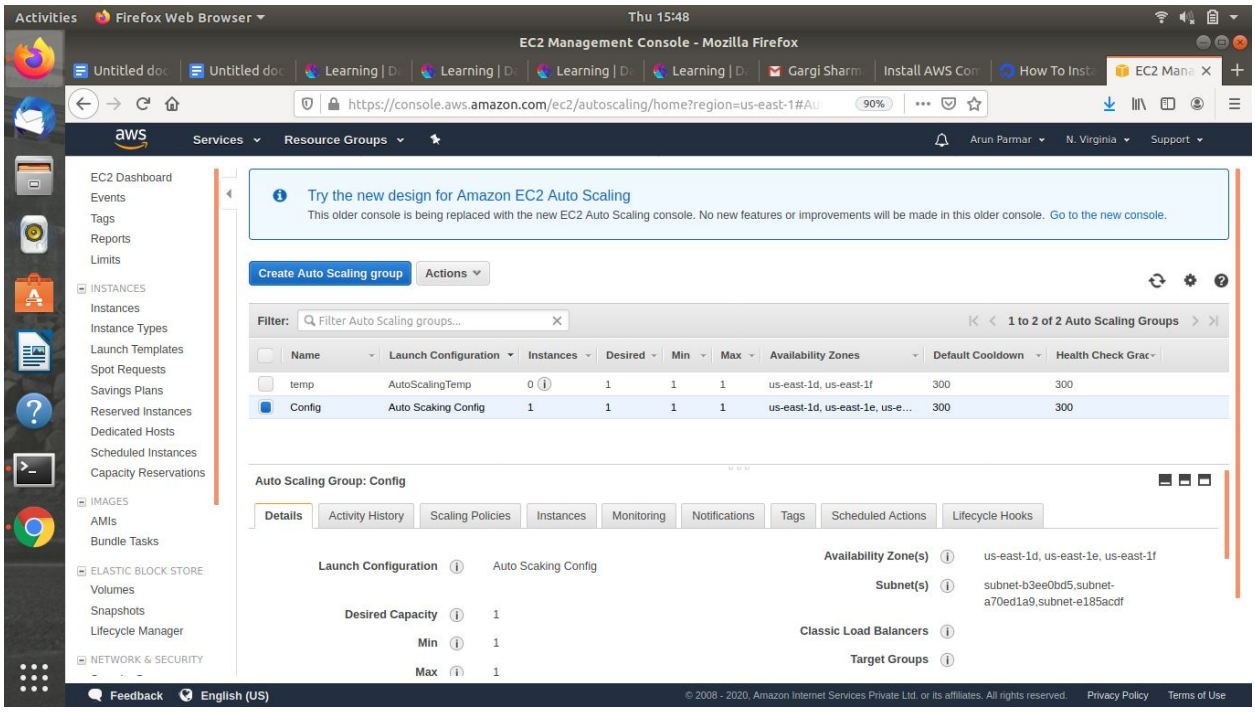
EC2 health check watches for instance availability from hypervisor and networking point of view. For example, in case of a hardware problem, the check will fail. Also, if an instance was misconfigured and doesn't respond to network requests, it will be marked as faulty.

ELB health check verifies that a specified TCP port on an instance is accepting connections OR a specified web page returns 2xx code. Thus ELB health checks are a little bit smarter and verify that actual app works instead of verifying that just an instance works.

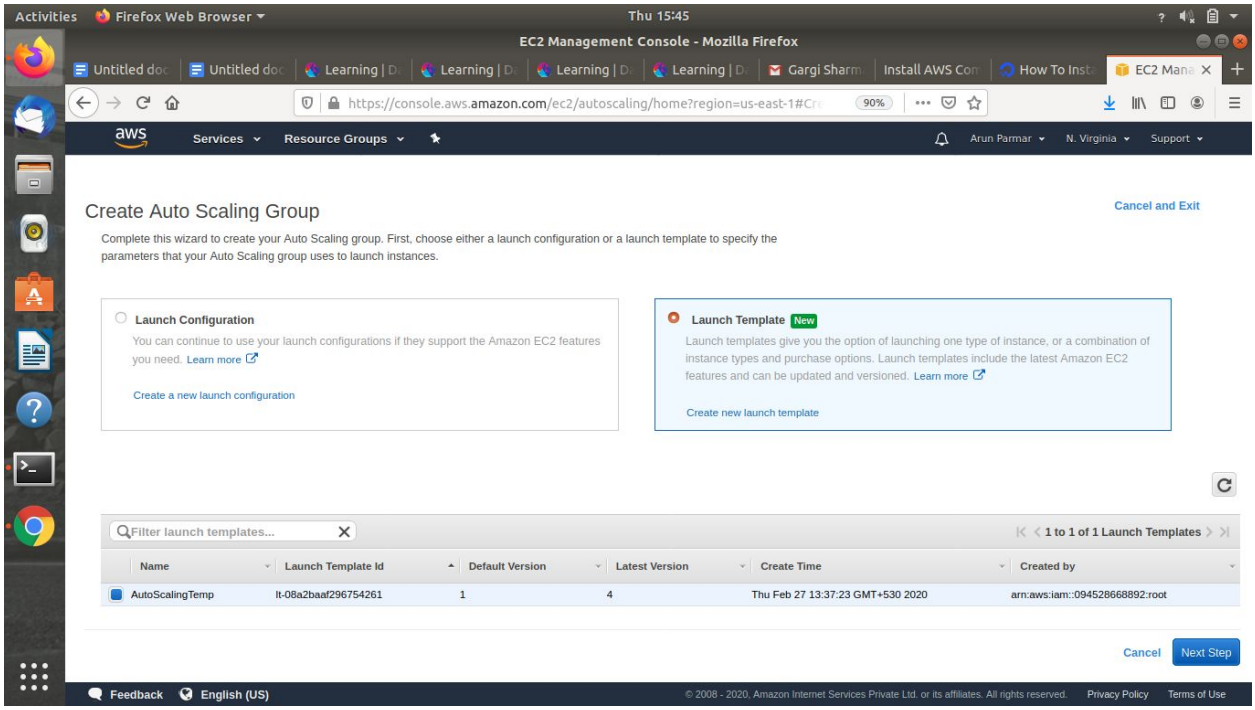
5.Create 2 auto-scaling groups with

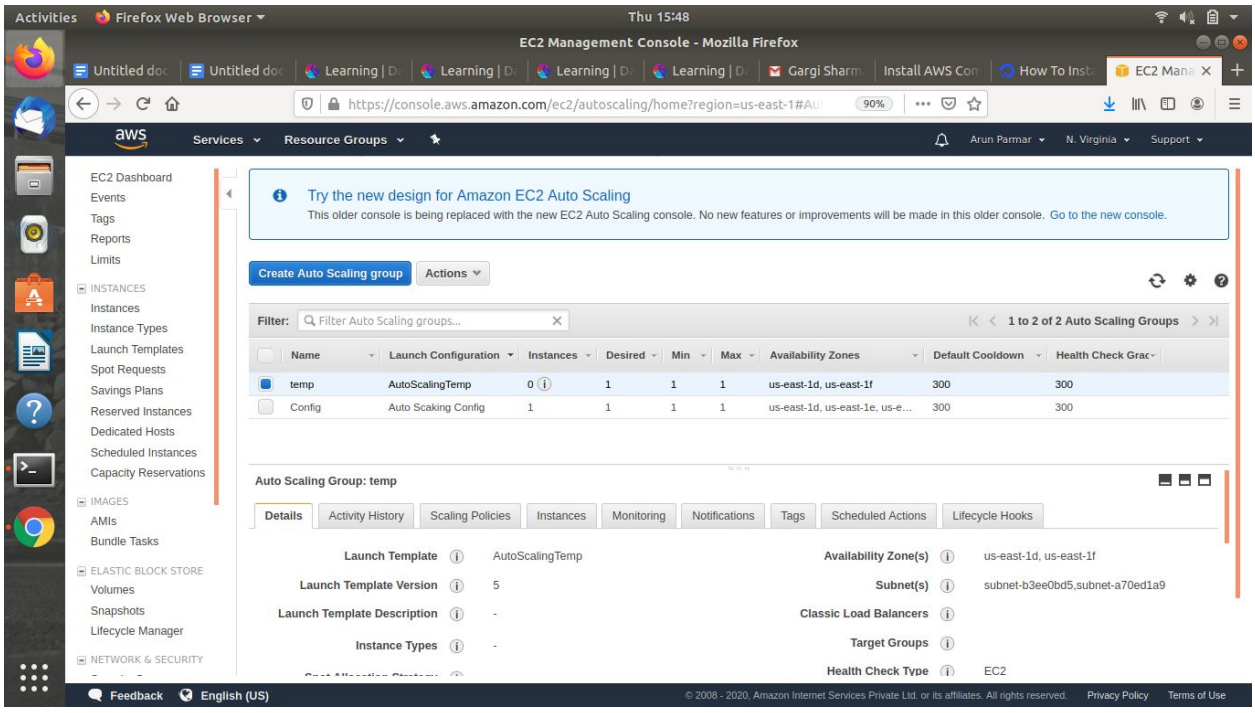
- launch configuration



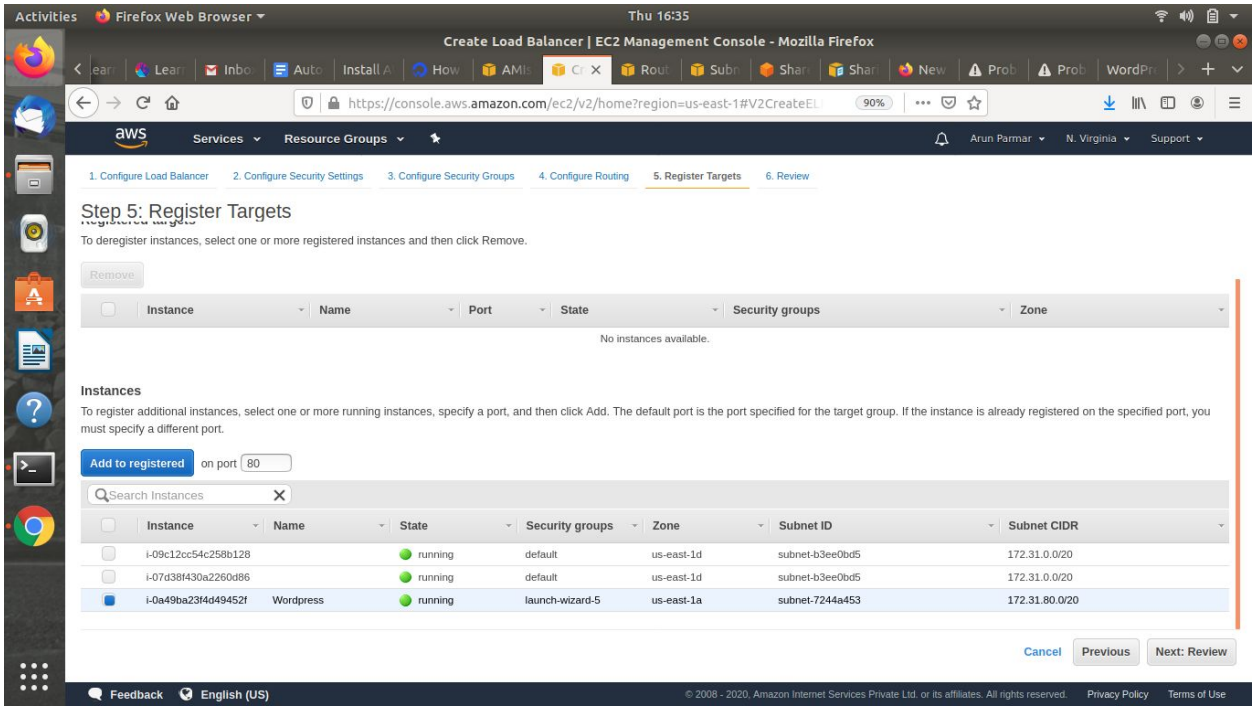


- launch template





6. Setup autoscaling Wordpress application with the Application load balancer. Auto-scaling should be triggered based on CPU usage of EC2 instances.


Activities
Firefox Web Browser
Thu 16:35
Create Load Balancer | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#V2CreateEL
90%
aws
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Load Balancer
2. Configure Security Settings
3. Configure Security Groups
4. Configure Routing
5. Register Targets
6. Review
Step 5: Register Targets
To deregister instances, select one or more registered instances and then click Remove.
Remove
Instance
Name
Port
State
Security groups
Zone
No instances available.
Instances
To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.
Add to registered
on port
80
Search Instances
Instance
Name
State
Security groups
Zone
Subnet ID
Subnet CIDR
i-09c12cc54c258b128
running
default
us-east-1d
subnet-b3ee0bd5
172.31.0.0/20
i-07d38f430a2260d86
running
default
us-east-1d
subnet-b3ee0bd5
172.31.0.0/20
i-0a49ba23f4d49452f
Wordpress
running
launch-wizard-5
us-east-1a
subnet-7244a453
172.31.80.0/20
Cancel
Previous
Next: Review
Feedback
English (US)
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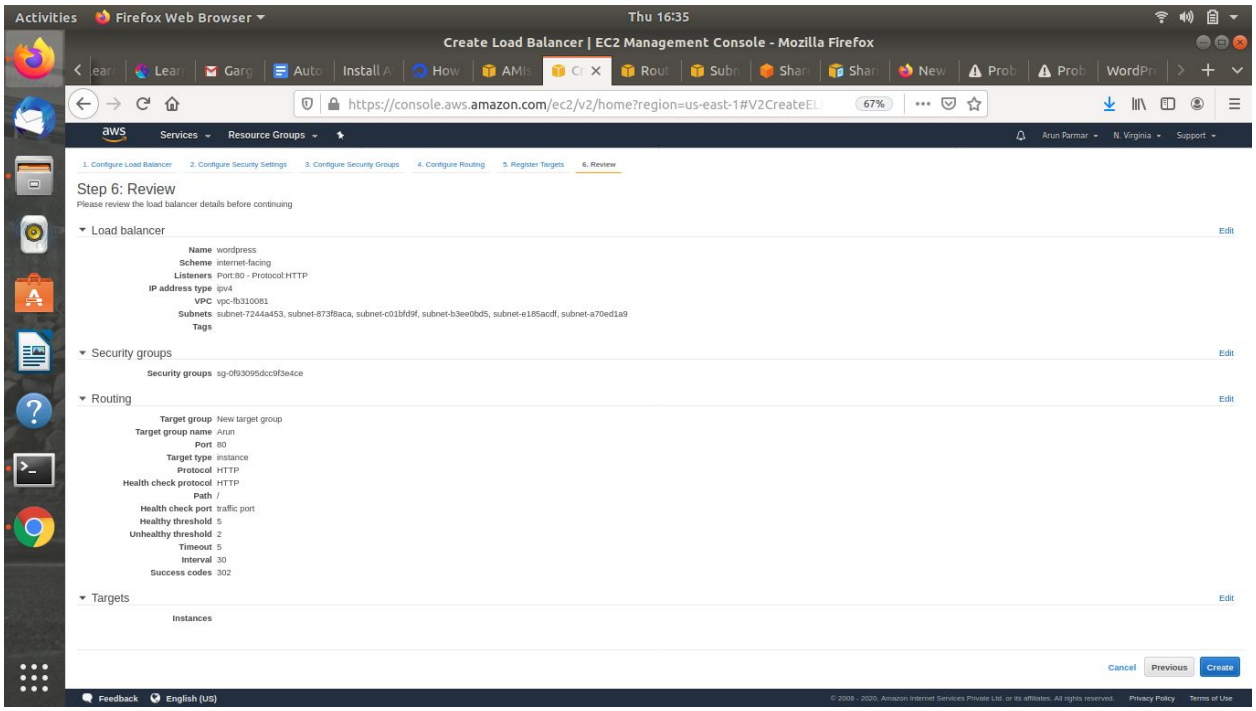
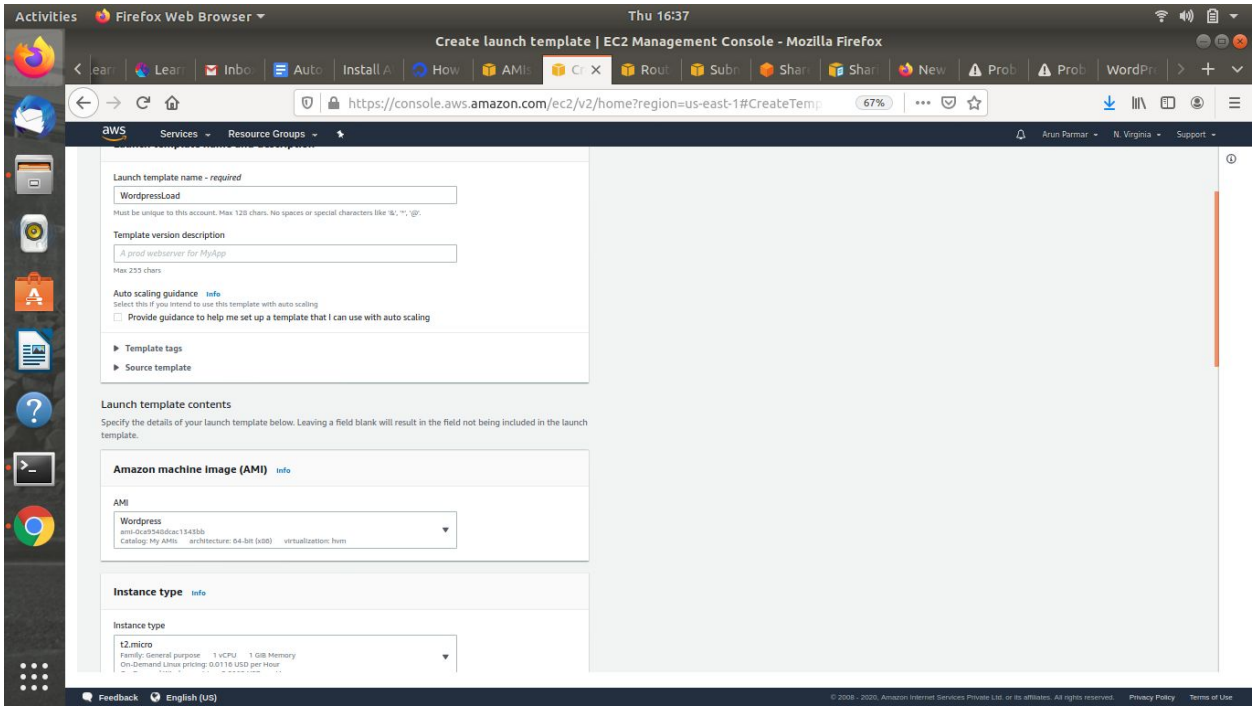
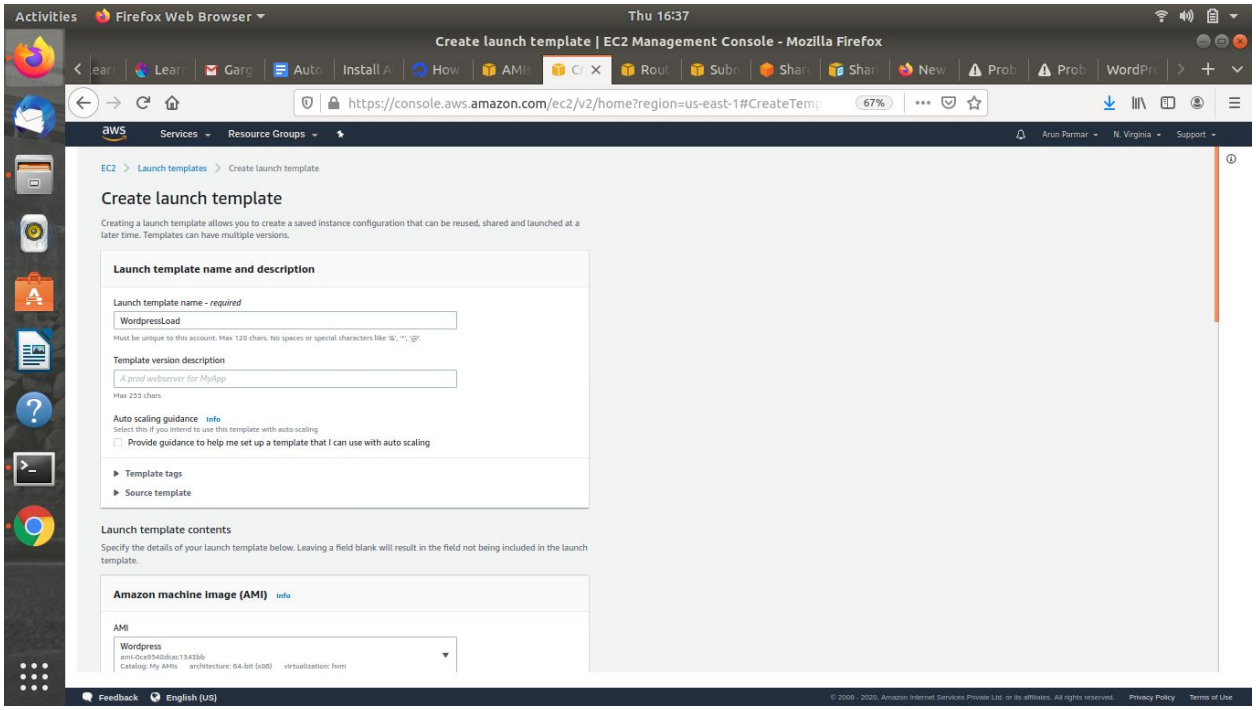
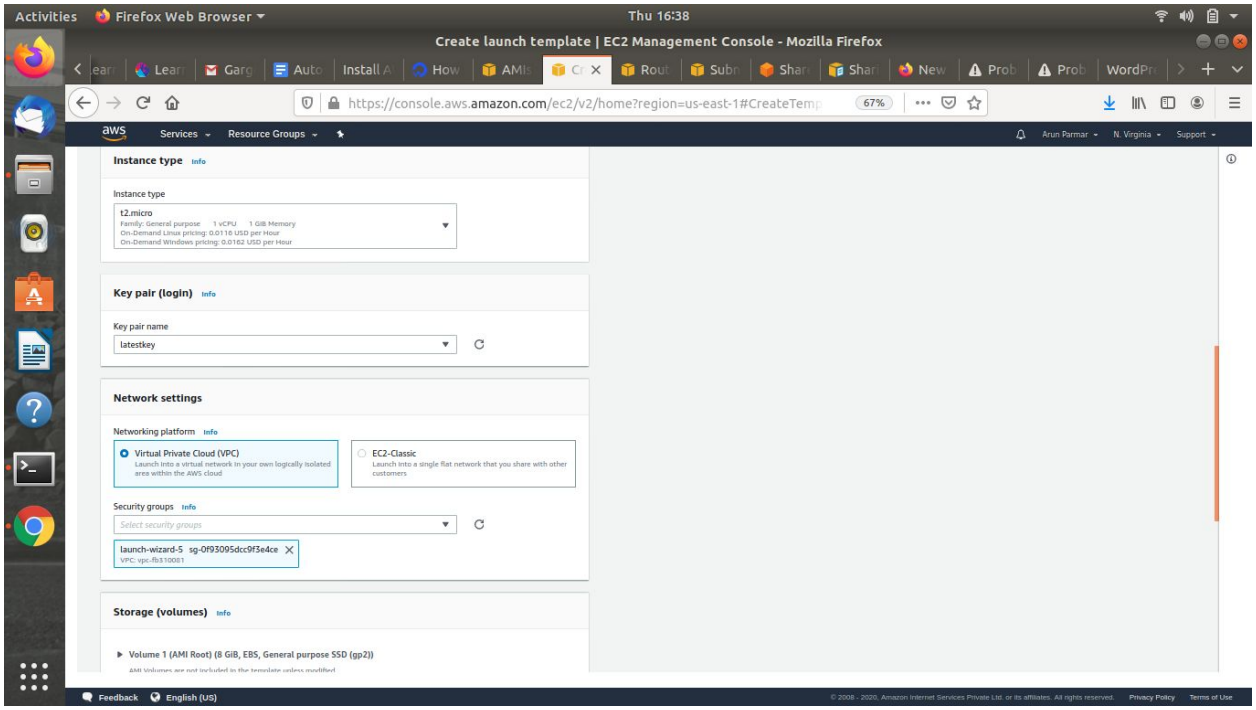

Activities
Firefox Web Browser
Thu 16:35
Create Load Balancer | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#V2CreateEL
67%
aws
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Load Balancer
2. Configure Security Settings
3. Configure Security Groups
4. Configure Routing
5. Register Targets
6. Review
Step 6: Review
Please review the load balancer details before continuing
Load balancer
Edit
Name wordpress
Scheme internet-facing
Listeners Port:80 - Protocol:HTTP
IP address type ipv4
VPC vpc-fb310081
Subnets subnet-7244a453, subnet-873f8aca, subnet-c01bfd9f, subnet-b3ee0bd5, subnet-e185acdf, subnet-a70ed1a9
Tags
Security groups
Edit
Security groups sg-0f93095dcc9f3e4ce
Routing
Edit
Target group New target group
Target group name Arun
Port 80
Target type instance
Protocol HTTP
Health check protocol HTTP
Path /
Health check port traffic port
Healthy threshold 5
Unhealthy threshold 2
Timeout 5
Interval 30
Success codes 302
Targets
Edit
Instances
Cancel
Previous
Create
Feedback
English (US)
Privacy Policy
Terms of Use


Activities
Firefox Web Browser
Thu 16:37
Create launch template | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#CreateTemp
aws
Services
Resource Groups
Launch template name - required
WordpressLoad
Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '*', '@'.
Template version description
A prod webserver for MyApp
Max 255 chars
Auto scaling guidance Info
Select this if you intend to use this template with auto scaling
Provide guidance to help me set up a template that I can use with auto scaling
Template tags
Source template
Launch template contents
Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.
Amazon machine image (AMI) Info
AMI
Wordpress
Instance type Info
Instance type
t2.micro
Family: General purpose 1 vCPU 1 GiB Memory
On-Demand Linux pricing: 0.0116 USD per Hour
Feedback
English (US)
Privacy Policy
Terms of Use


Activities
Firefox Web Browser
Thu 16:37
Create launch template | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#CreateTemp
aws
Services
Resource Groups
EC2 > Launch templates > Create launch template
Create launch template
Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.
Launch template name and description
Launch template name - required
WordpressLoad
Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '*', '@'.
Template version description
A prod webserver for MyApp
Max 255 chars
Auto scaling guidance Info
Select this if you intend to use this template with auto scaling
Provide guidance to help me set up a template that I can use with auto scaling
Template tags
Source template
Launch template contents
Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.
Amazon machine image (AMI) Info
AMI
Wordpress
Feedback
English (US)
Privacy Policy
Terms of Use


Activities
Firefox Web Browser
Thu 16:38
Create launch template | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#CreateTemp
aws
Services
Resource Groups
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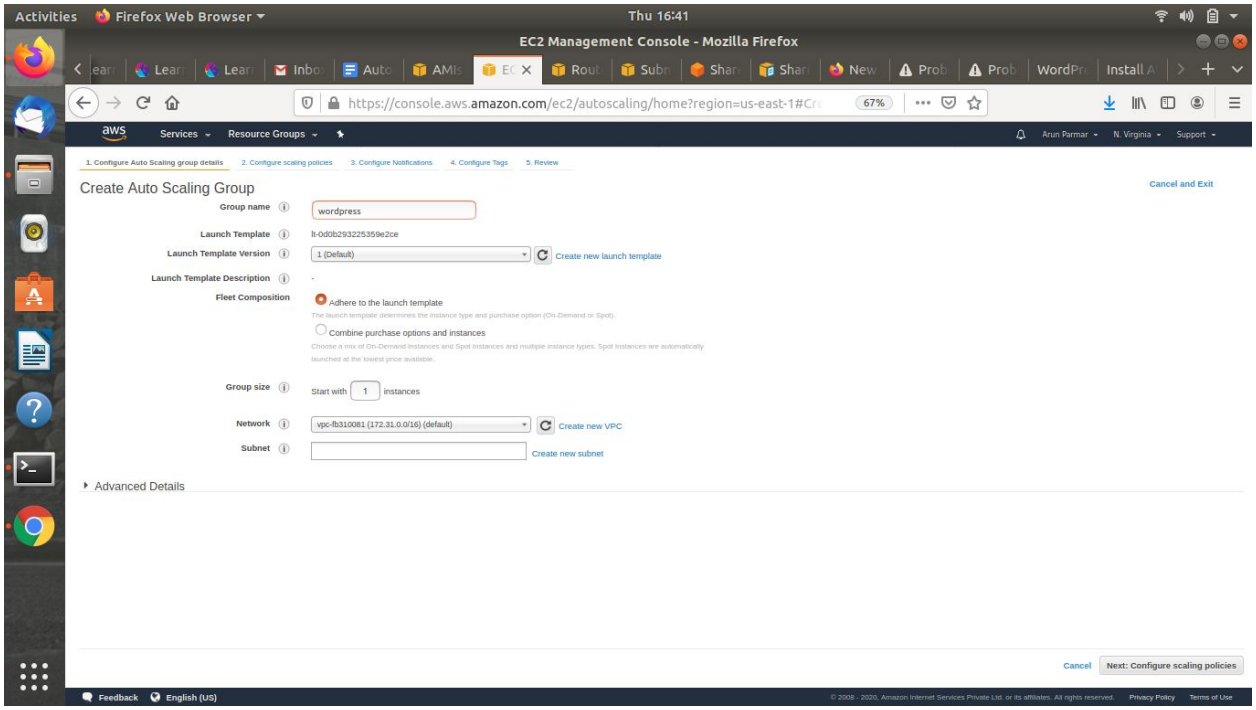
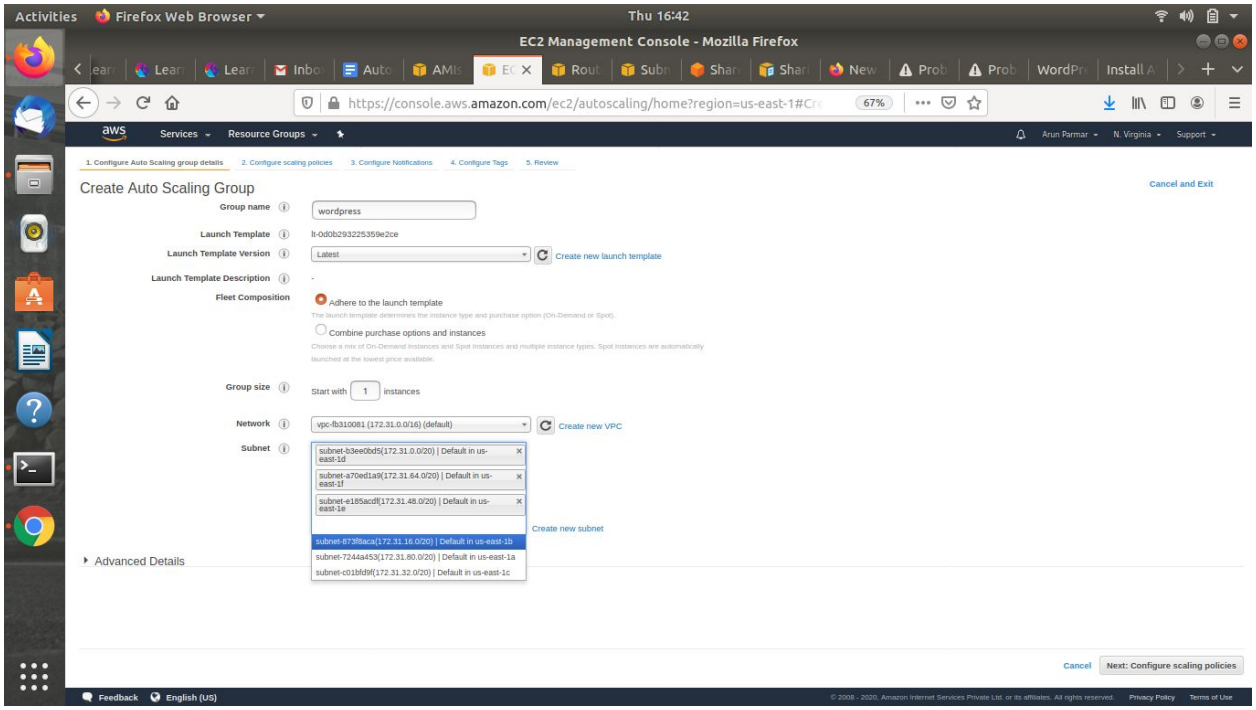
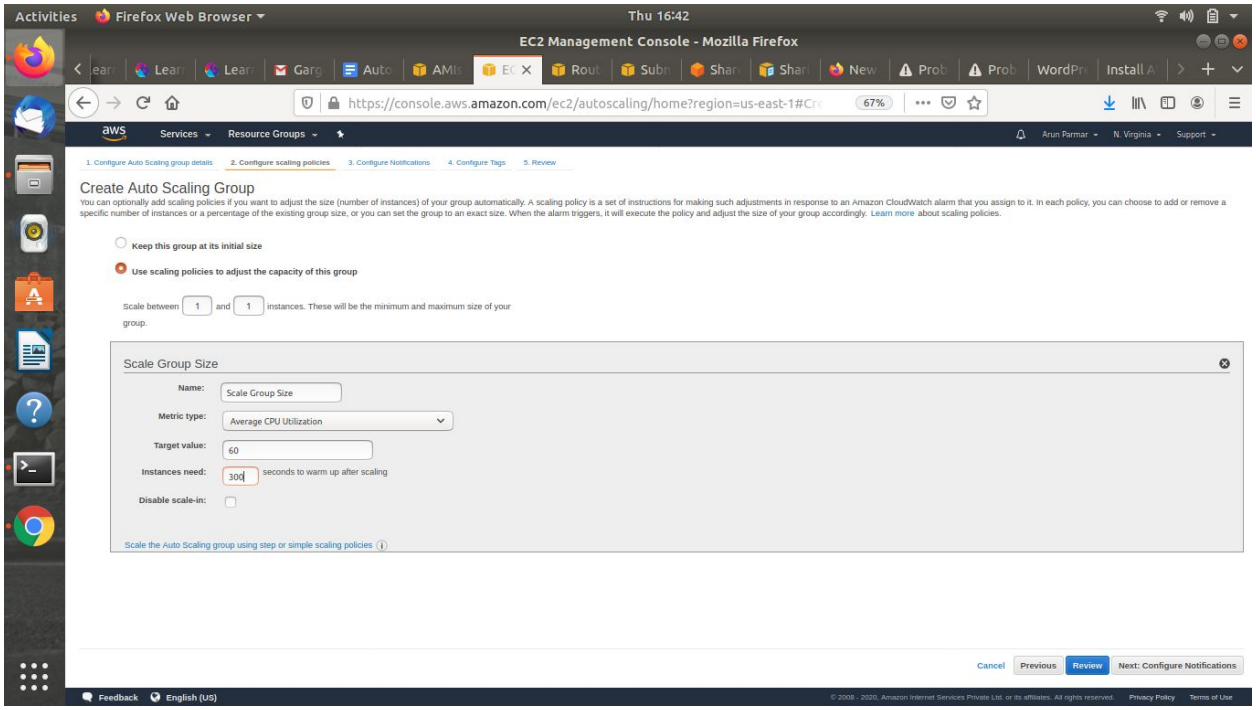
Support
Instance type Info
Instance type
t2.micro
Family: General purpose 1 vCPU 1 GiB Memory
On-Demand Linux pricing: 0.0116 USD per Hour
On-Demand Windows pricing: 0.0162 USD per Hour
Key pair (login) Info
Key pair name
latestkey
Network settings
Networking platform Info
Virtual Private Cloud (VPC)
Launch into a virtual network in your own logically isolated area within the AWS cloud
EC2-Classic
Launch into a single flat network that you share with other customers
Security groups Info
Select security groups
launch-wizard-5 sg-0f93095dcc9f3e4ce
VPC: vpc-fb310081
Storage (volumes) Info
Volume 1 (AMI Root) (8 GiB, EBS, General purpose SSD (gp2))
Feedback
English (US)
Privacy Policy
Terms of Use


Activities
Firefox Web Browser
Thu 16:41
EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/autoscaling/home?region=us-east-1#Cr
aws
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Auto Scaling group details
2. Configure scaling policies
3. Configure Notifications
4. Configure Tags
5. Review
Create Auto Scaling Group
Cancel and Exit
Group name
wordpress
Launch Template
lt-0d0b293225359e2ce
Launch Template Version
1 (Default)
Create new launch template
Launch Template Description
Fleet Composition
Adhere to the launch template
Combine purchase options and instances
Group size
Start with 1 instances
Network
vpc-fb310081 (172.31.0.0/16) (default)
Create new VPC
Subnet
Create new subnet
Advanced Details
Cancel
Next: Configure scaling policies
Feedback
English (US)
Privacy Policy
Terms of Use


Activities
Firefox Web Browser
Thu 16:42
EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/autoscaling/home?region=us-east-1#Cr
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Auto Scaling group details
2. Configure scaling policies
3. Configure Notifications
4. Configure Tags
5. Review
Create Auto Scaling Group
Cancel and Exit
Group name
wordpress
Launch Template
lt-0d0b293225359e2ce
Launch Template Version
Latest
Create new launch template
Launch Template Description
Fleet Composition
Adhere to the launch template
Combine purchase options and instances
Group size
Start with 1 instances
Network
vpc-fb310081 (172.31.0.0/16) (default)
Create new VPC
Subnet
subnet-b3ee0bd5(172.31.0.0/20) | Default in us-east-1d
subnet-a70ed1a9(172.31.64.0/20) | Default in us-east-1f
subnet-e185acdf(172.31.48.0/20) | Default in us-east-1e
Create new subnet
subnet-673f8aca(172.31.16.0/20) | Default in us-east-1b
subnet-7244a453(172.31.80.0/20) | Default in us-east-1a
subnet-c01bfd9f(172.31.32.0/20) | Default in us-east-1c
Advanced Details
Cancel
Next: Configure scaling policies
Feedback
English (US)
Privacy Policy
Terms of Use


Activities
Firefox Web Browser
Thu 16:42
EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/autoscaling/home?region=us-east-1#Cr
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Auto Scaling group details
2. Configure scaling policies
3. Configure Notifications
4. Configure Tags
5. Review
Create Auto Scaling Group
You can optionally add scaling policies if you want to adjust the size (number of instances) of your group automatically. A scaling policy is a set of instructions for making such adjustments in response to an Amazon CloudWatch alarm that you assign to it. In each policy, you can choose to add or remove a specific number of instances or a percentage of the existing group size, or you can set the group to an exact size. When the alarm triggers, it will execute the policy and adjust the size of your group accordingly. Learn more about scaling policies.
Keep this group at its initial size
Use scaling policies to adjust the capacity of this group
Scale between 1 and 1 instances. These will be the minimum and maximum size of your group.
Scale Group Size
Name:
Scale Group Size
Metric type:
Average CPU Utilization
Target value:
60
Instances need:
300
seconds to warm up after scaling
Disable scale-in:
Scale the Auto Scaling group using step or simple scaling policies
Cancel
Previous
Review
Next: Configure Notifications
Feedback
English (US)
Privacy Policy
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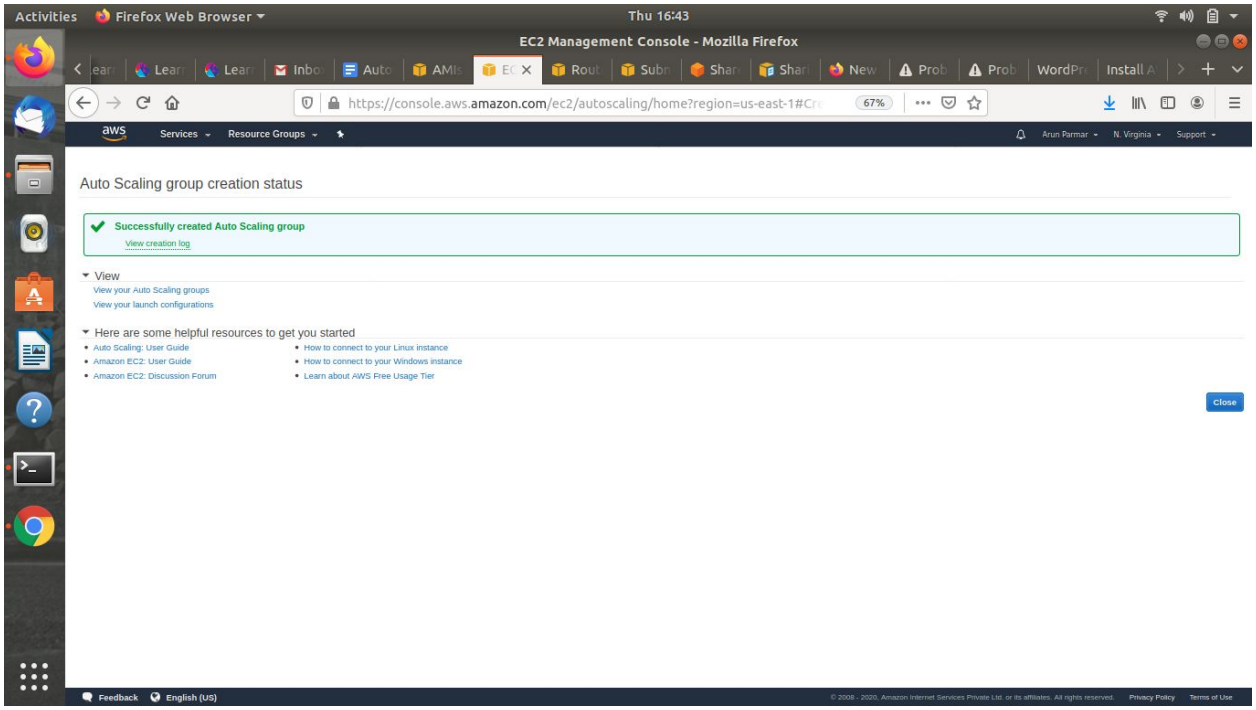
Activities
Firefox Web Browser
Thu 16:43
EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/autoscaling/home?region=us-east-1#Cr
67%
aws
Services
Resource Groups
Arun Parmar
N. Virginia
Support
Auto Scaling group creation status
Successfully created Auto Scaling group
View creation log
View
View your Auto Scaling groups
View your launch configurations
Here are some helpful resources to get you started
Auto Scaling: User Guide
Amazon EC2: User Guide
Amazon EC2: Discussion Forum
How to connect to your Linux instance
How to connect to your Windows instance
Learn about AWS Free Usage Tier
Close
Feedback
English (US)
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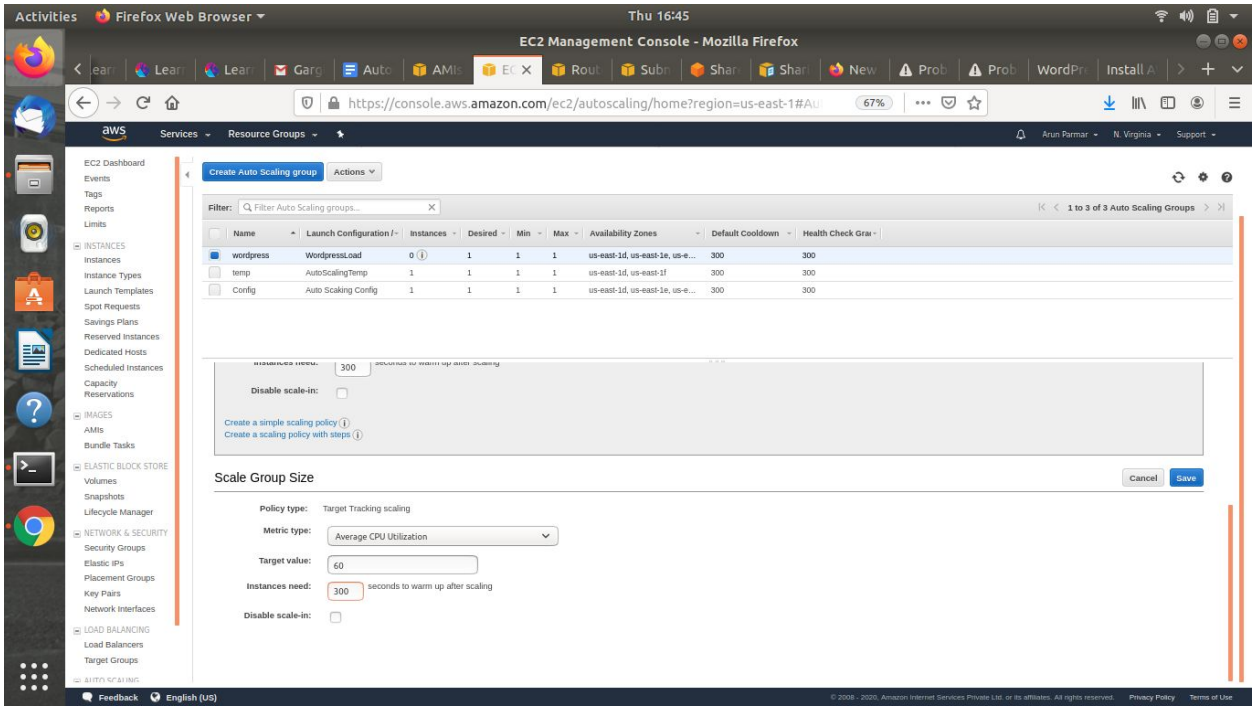
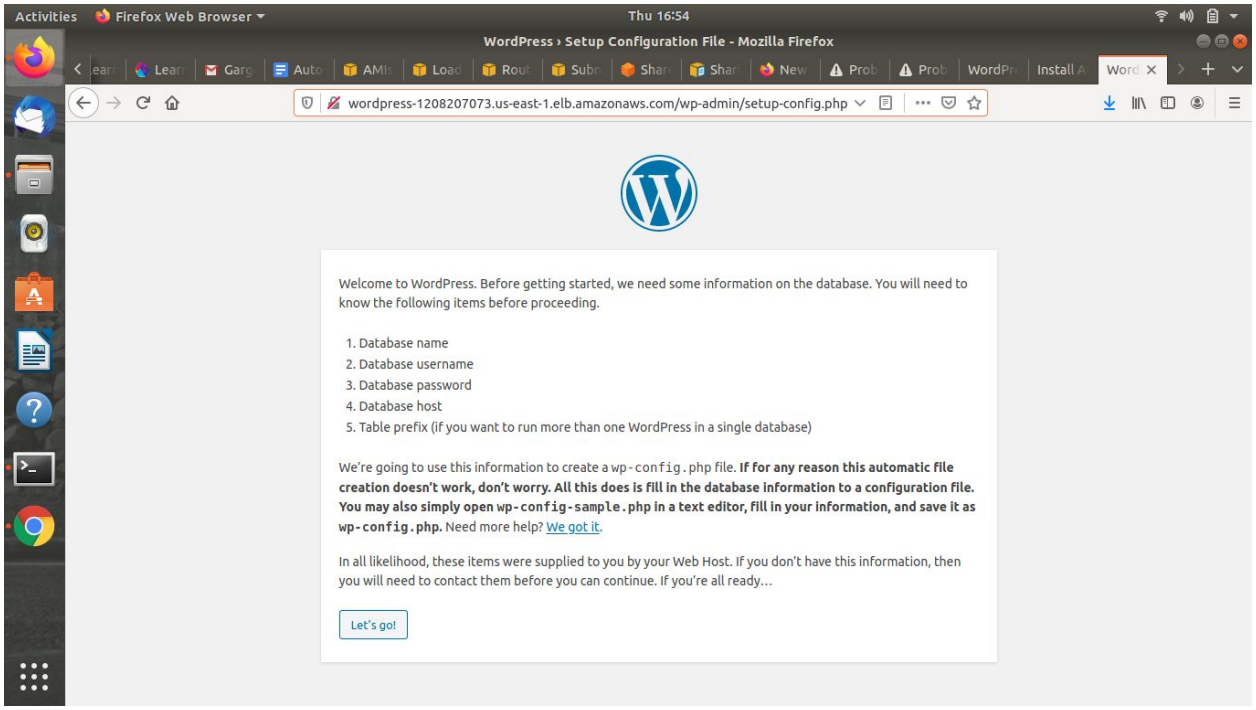
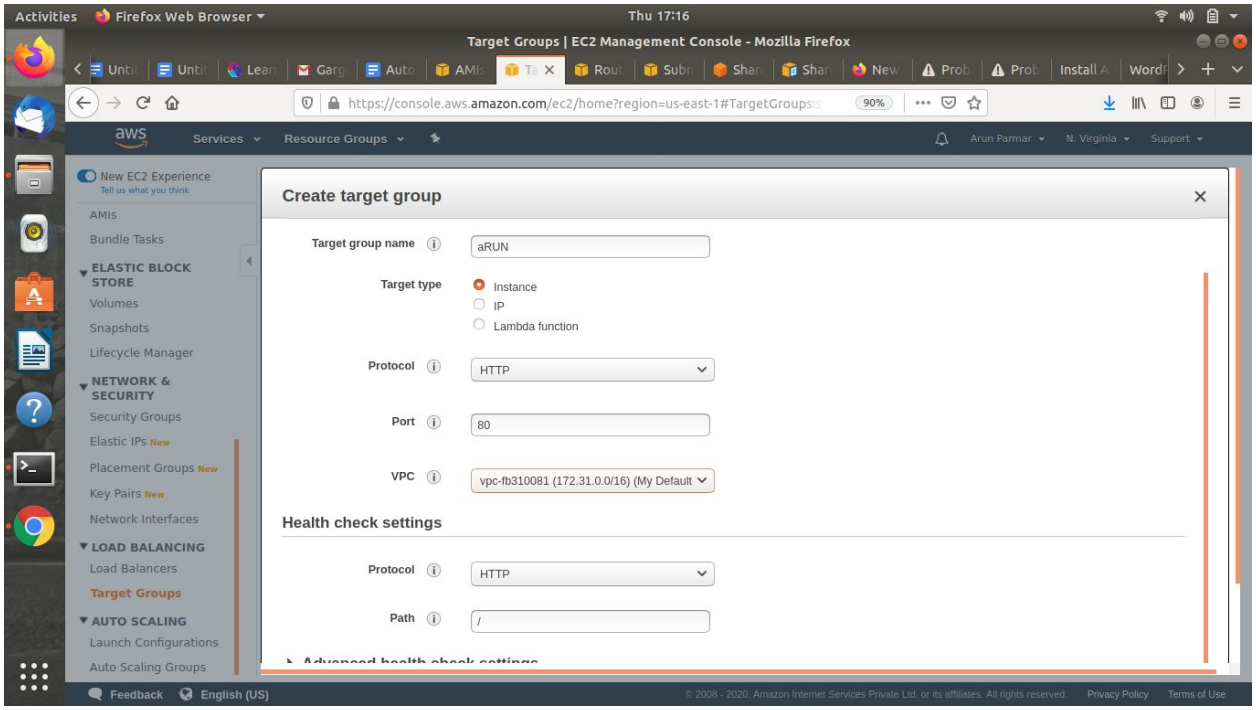


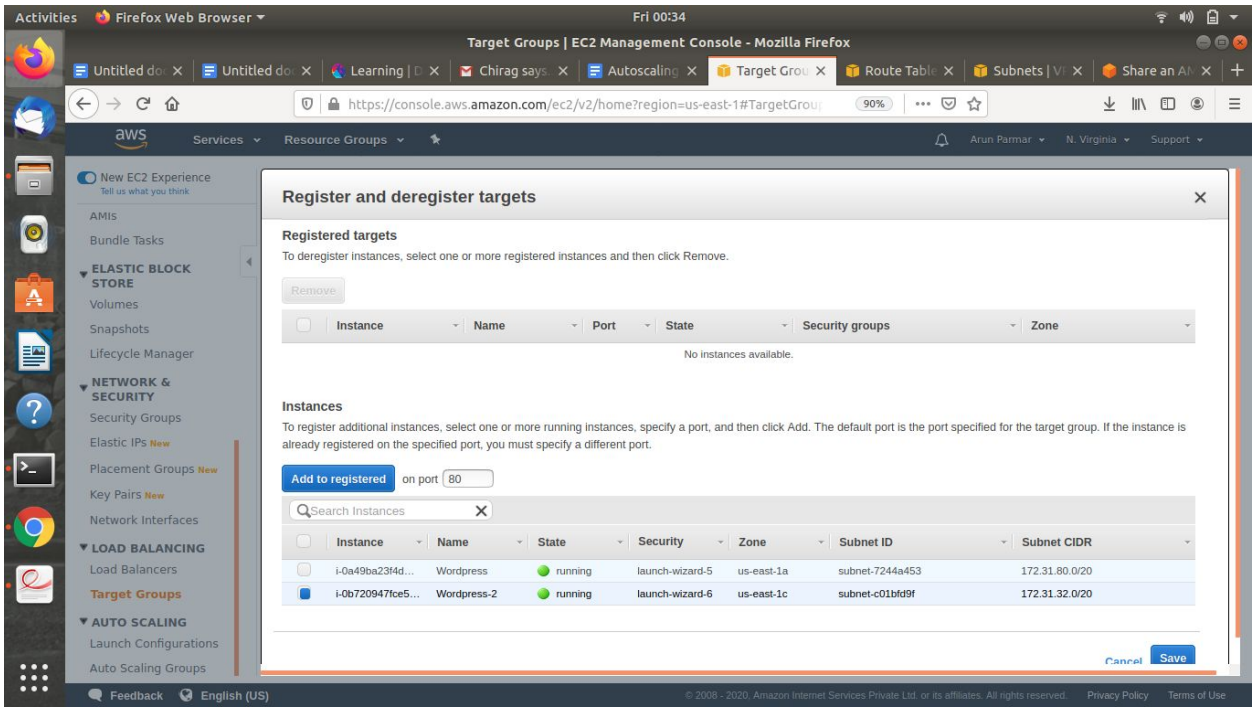


7.Create another Wordpress website and use the ALB created above to send traffic to this website based on the hostname

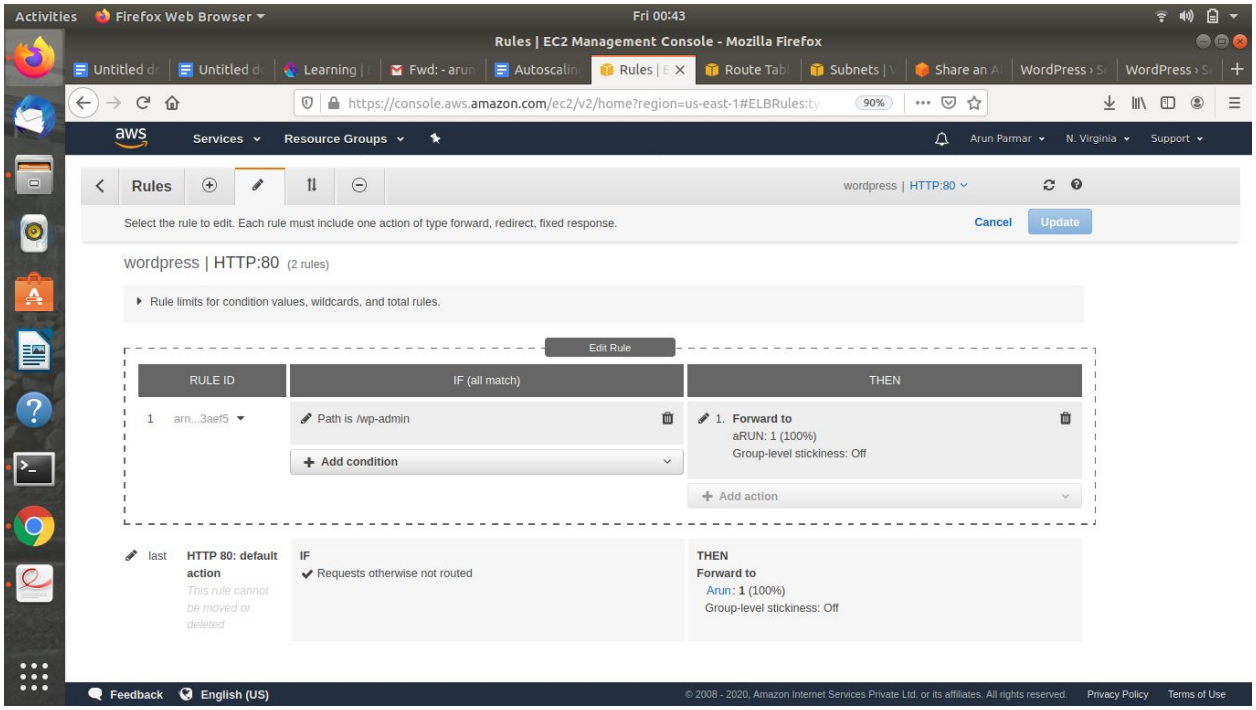
- Create another target group



Add instances to target group (ASG2)

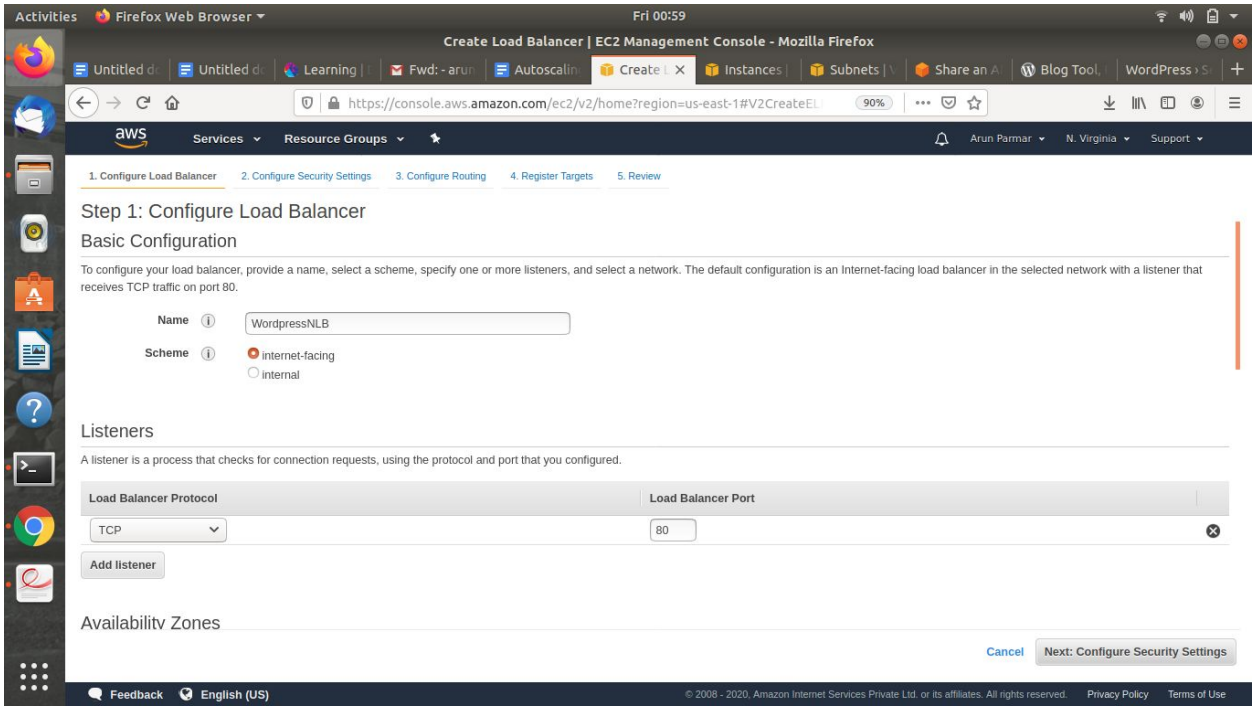


Select load balancer and go to view and edit rules



Output with ALB & Output with ALB/wp-admin will be different.

8.Use NLB that replaces the ALB in the above setup.


Activities
Firefox Web Browser
Fri 00:59
Create Load Balancer | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#V2CreateEL
aws
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Load Balancer
2. Configure Security Settings
3. Configure Routing
4. Register Targets
5. Review
Step 1: Configure Load Balancer
Basic Configuration
To configure your load balancer, provide a name, select a scheme, specify one or more listeners, and select a network. The default configuration is an Internet-facing load balancer in the selected network with a listener that receives TCP traffic on port 80.
Name
WordpressNLB
Scheme
internet-facing
internal
Listeners
A listener is a process that checks for connection requests, using the protocol and port that you configured.
Load Balancer Protocol
Load Balancer Port
TCP
80
Add listener
Availability Zones
Cancel
Next: Configure Security Settings
Feedback
English (US)
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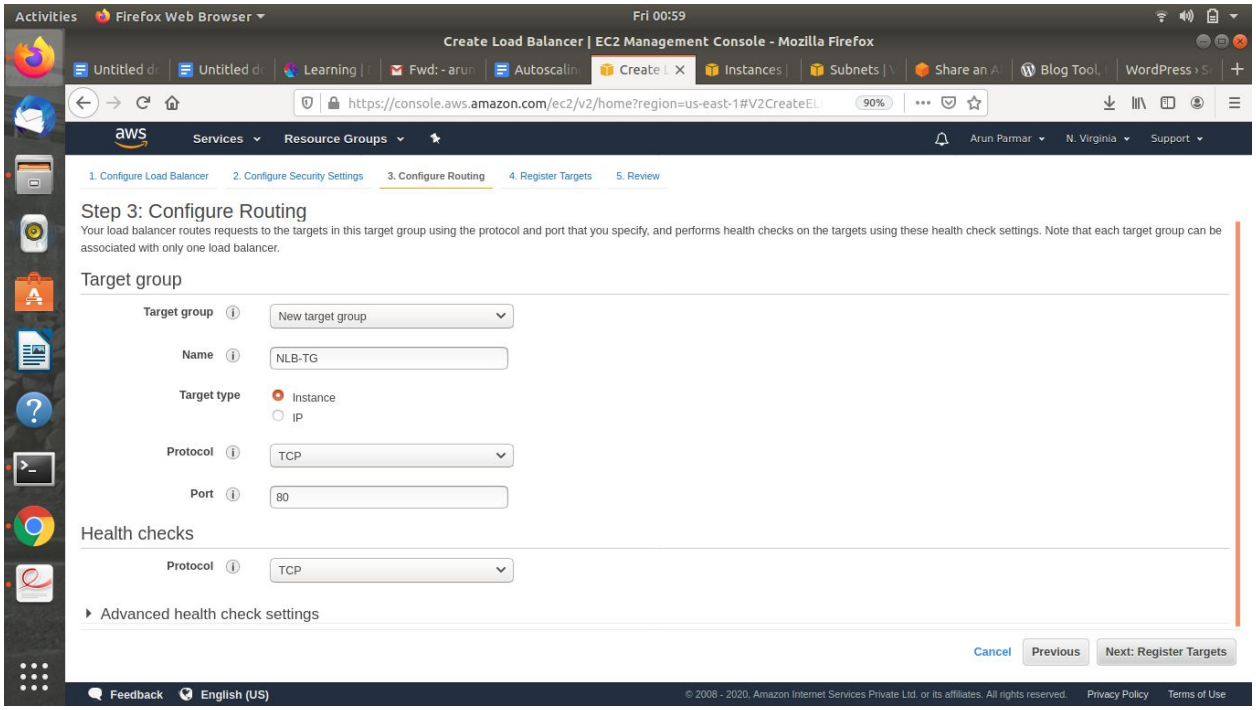
Activities
Firefox Web Browser
Fri 00:59
Create Load Balancer | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#V2CreateEL
aws
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Load Balancer
2. Configure Security Settings
3. Configure Routing
4. Register Targets
5. Review
Step 3: Configure Routing
Your load balancer routes requests to the targets in this target group using the protocol and port that you specify, and performs health checks on the targets using these health check settings. Note that each target group can be associated with only one load balancer.
Target group
Target group
New target group
Name
NLB-TG
Target type
Instance
IP
Protocol
TCP
Port
80
Health checks
Protocol
TCP
Advanced health check settings
Cancel
Previous
Next: Register Targets
Feedback
English (US)
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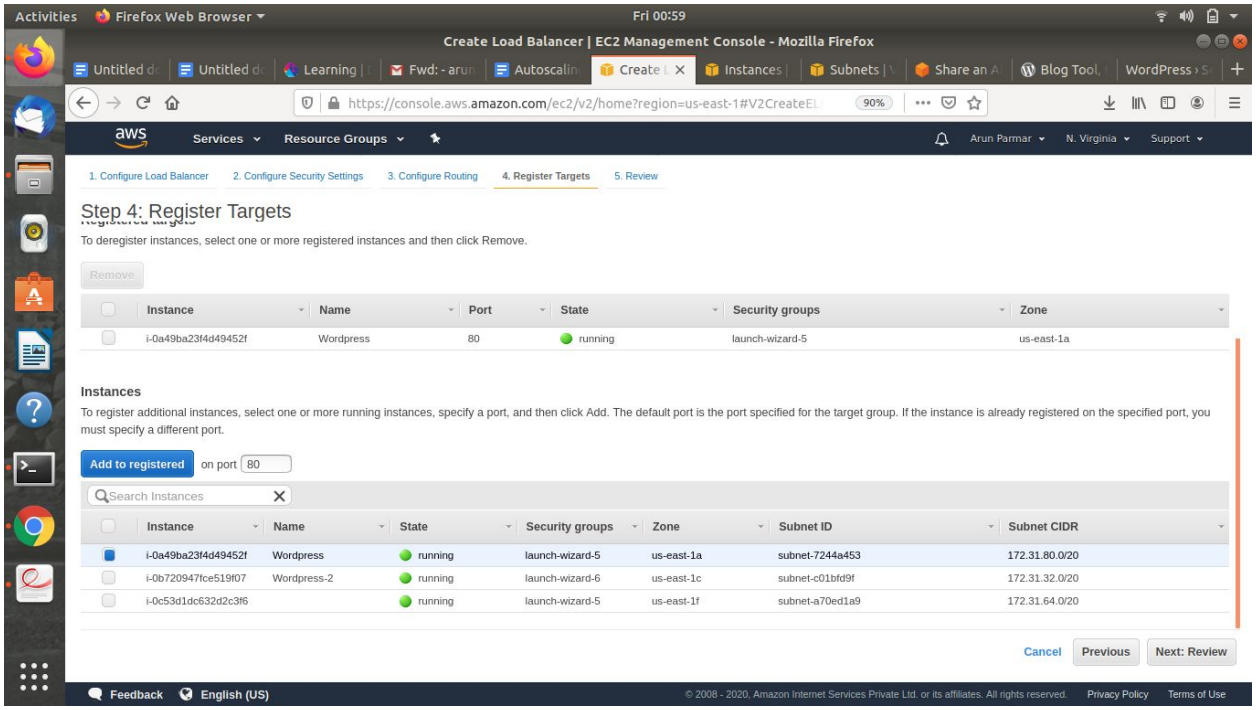
Activities
Firefox Web Browser
Fri 00:59
Create Load Balancer | EC2 Management Console - Mozilla Firefox
https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#V2CreateEL
aws
Services
Resource Groups
Arun Parmar
N. Virginia
Support
1. Configure Load Balancer
2. Configure Security Settings
3. Configure Routing
4. Register Targets
5. Review
Step 4: Register Targets
To deregister instances, select one or more registered instances and then click Remove.
Remove
Instance
Name
Port
State
Security groups
Zone
i-0a49ba23f4d49452f
Wordpress
80
running
launch-wizard-5
us-east-1a
Instances
To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.
Add to registered
on port
80
Search Instances
Instance
Name
State
Security groups
Zone
Subnet ID
Subnet CIDR
i-0a49ba23f4d49452f
Wordpress
running
launch-wizard-5
us-east-1a
subnet-7244a453
172.31.80.0/20
i-0b720947fce519f07
Wordpress-2
running
launch-wizard-6
us-east-1c
subnet-c01bfd9f
172.31.32.0/20
i-0c53d1dc632d2c3f6
running
launch-wizard-5
us-east-1f
subnet-a70ed1a9
172.31.64.0/20
Cancel
Previous
Next: Review
Feedback
English (US)
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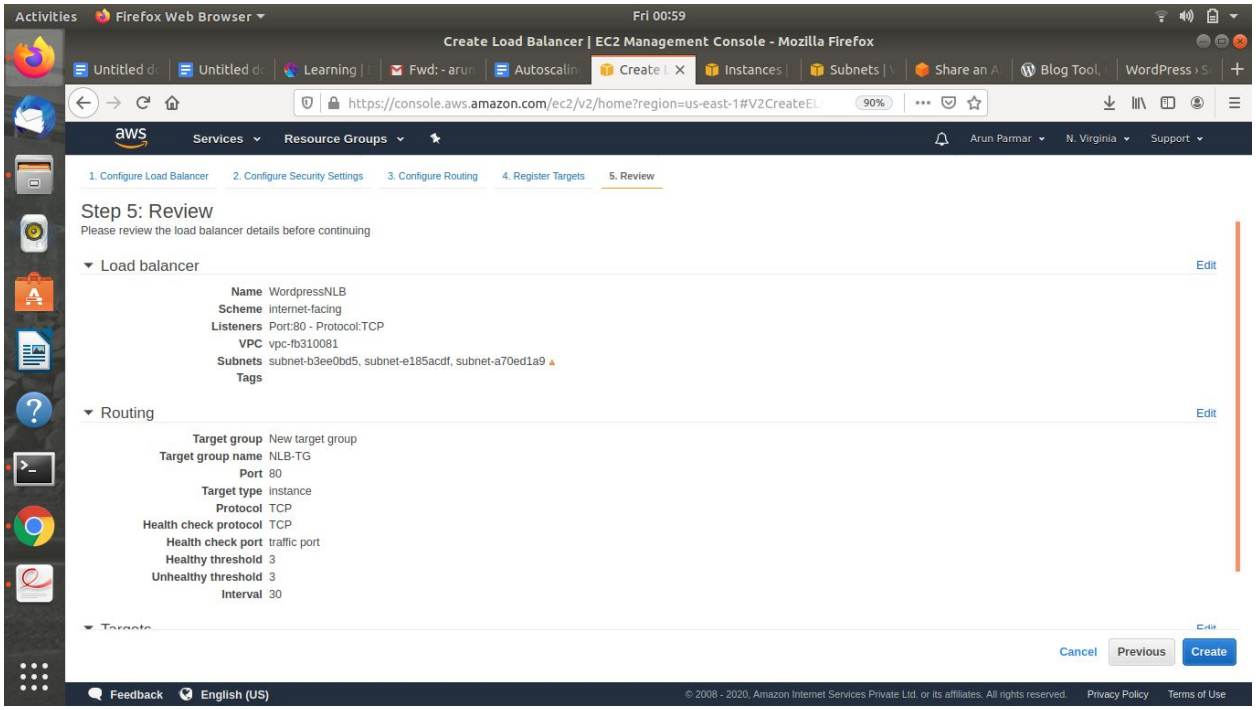
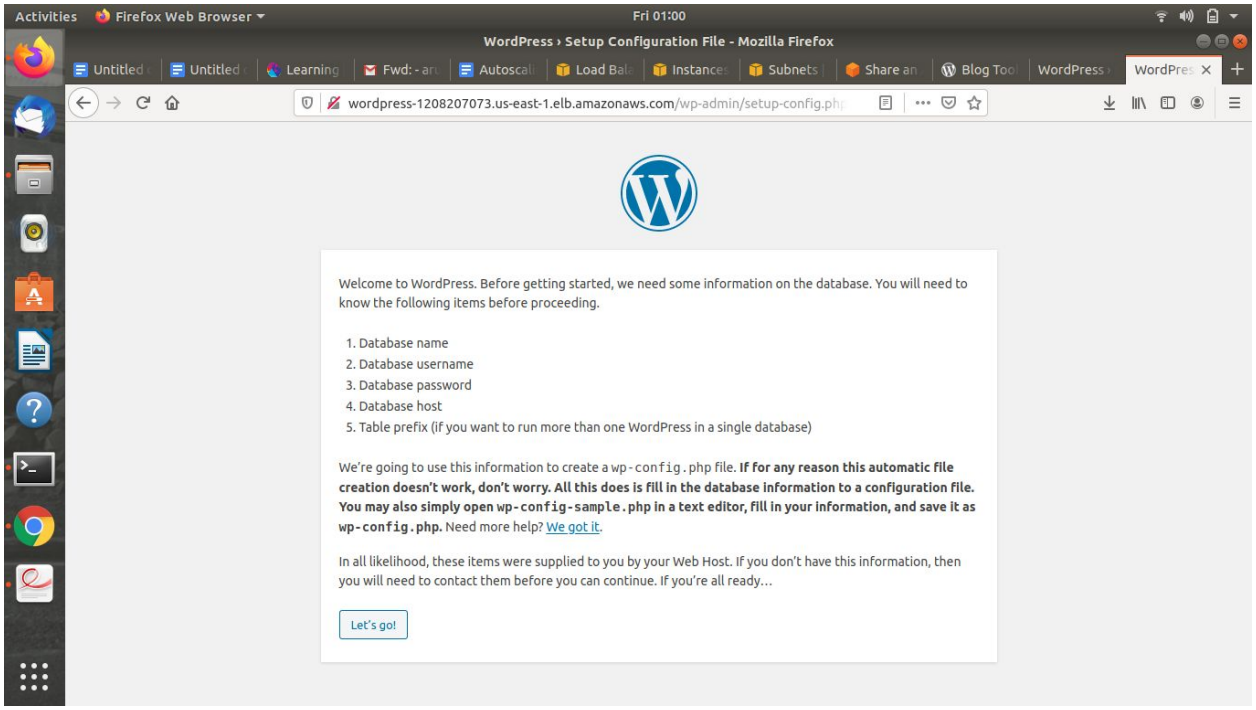
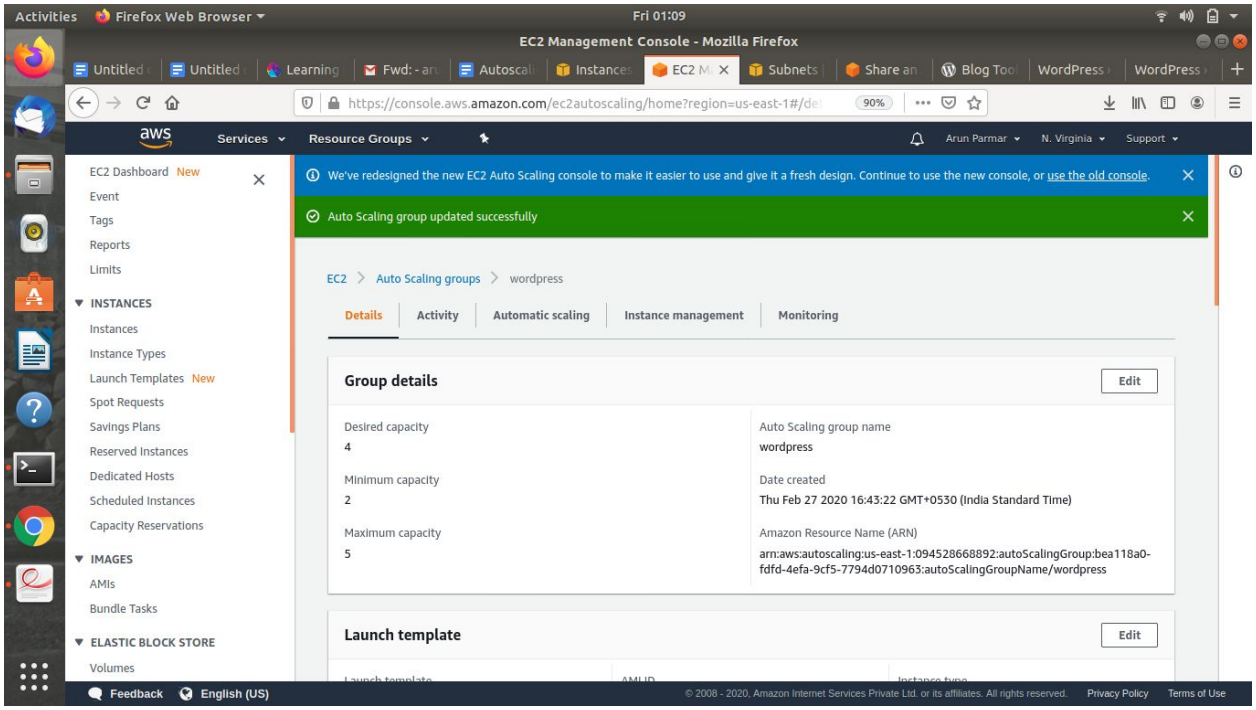


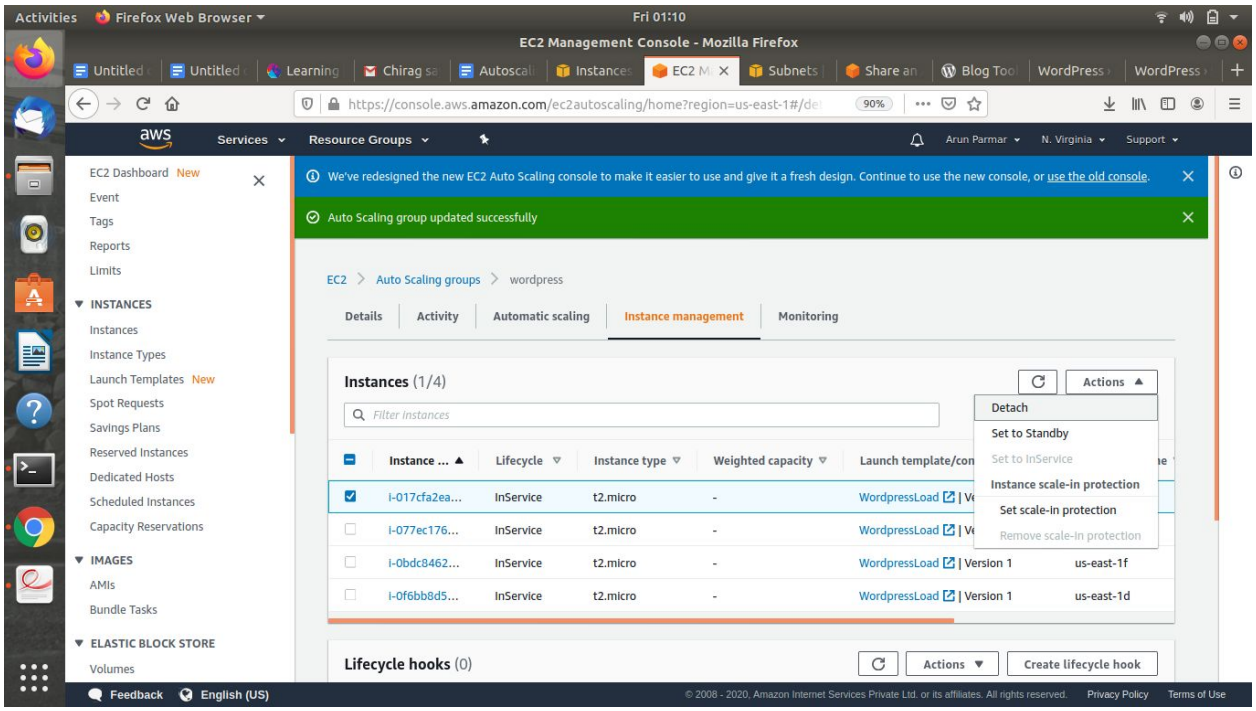


9.Take an instance out of the ASG.

Reduce minimum size of the auto scaling group



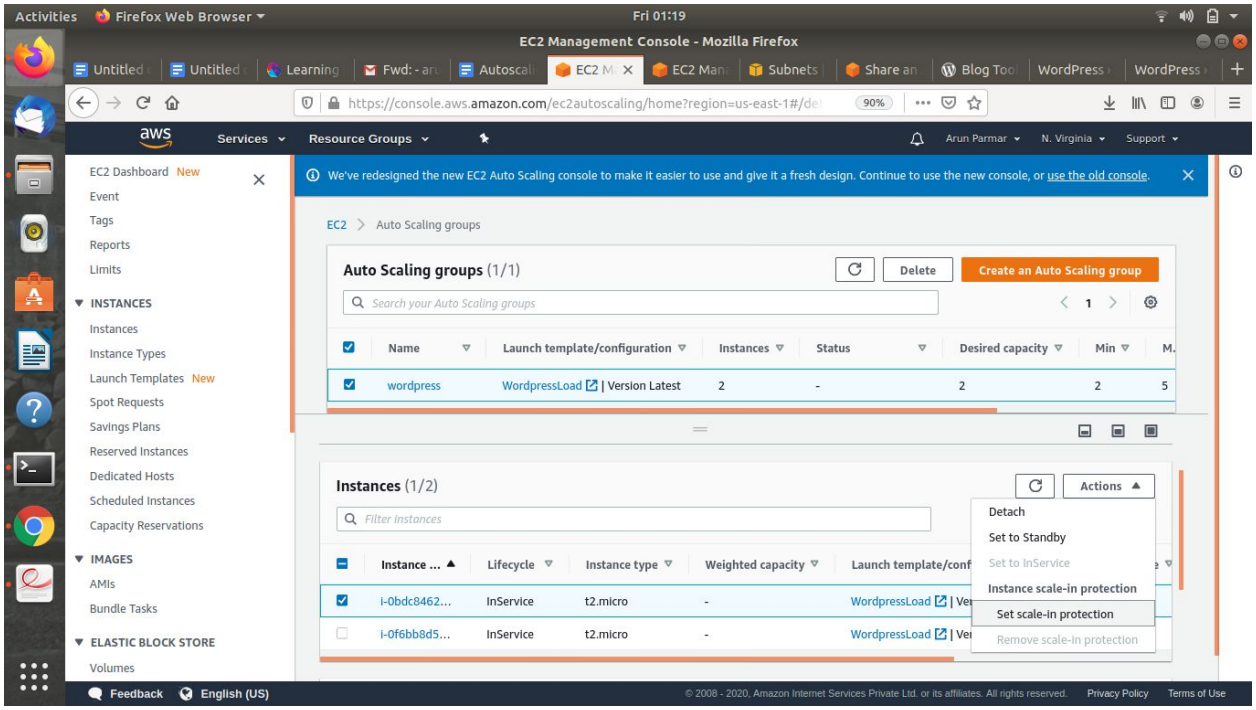
Go to instances pane, select the instances to be detached



10.Put scale-in protection on an instance in the ASG.

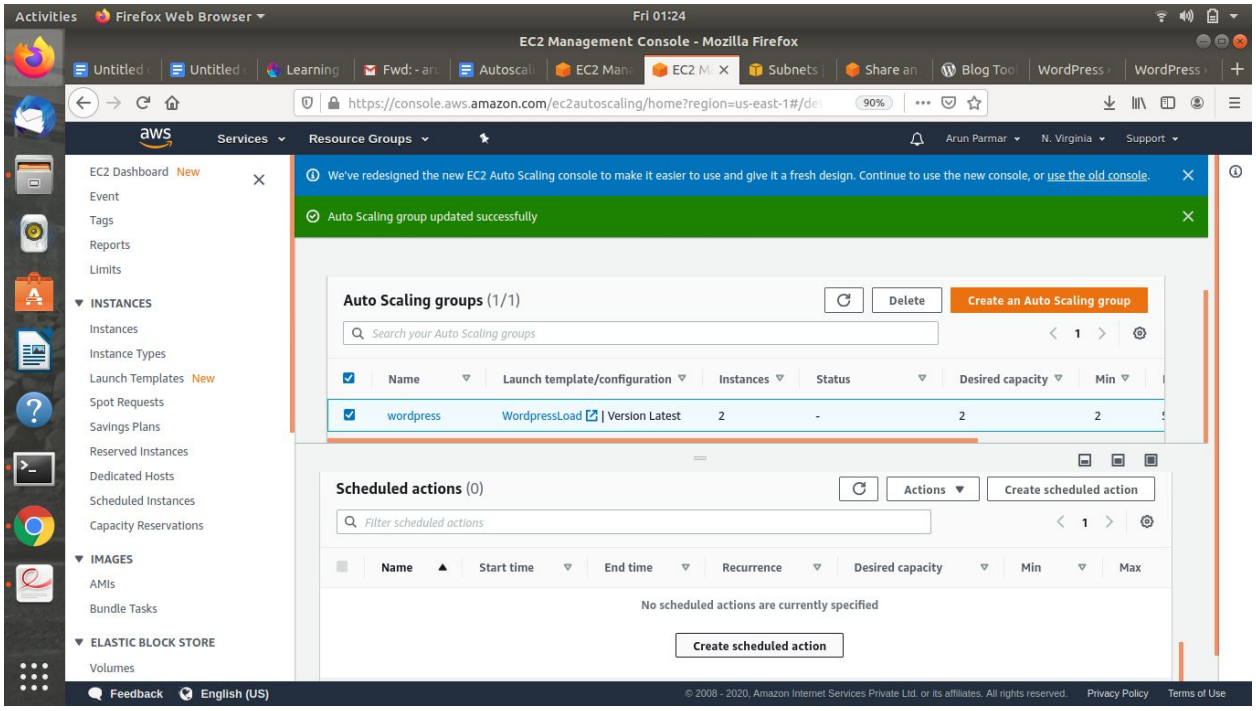
Select the ASG , go to instances, select the instance to enable scale in protection and then

choose instance scale in

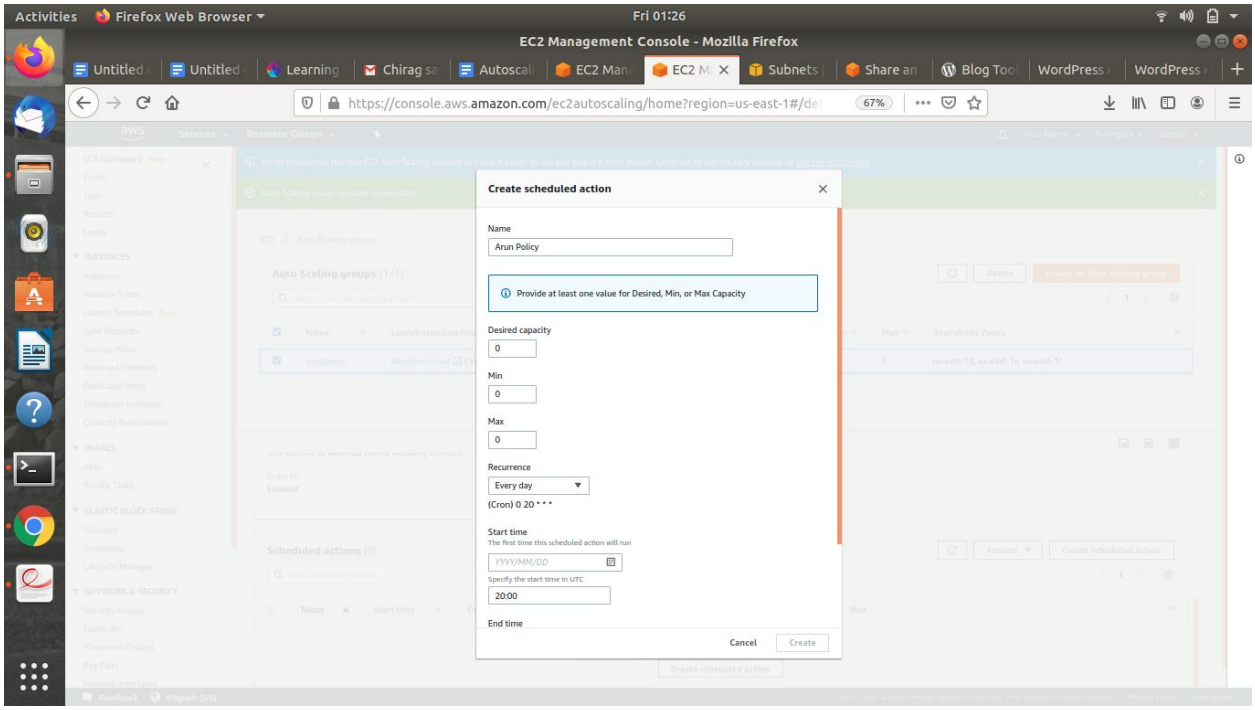


11.Put Schedules in ASG to:

Select auto scaling group and go to scheduled policies



- Remove all instances of the ASG at 8 PM



- Launch a minimum of 2 instances at 10 AM