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**2348521**

## Significance of Auto Scaling in Cloud Computing

Auto Scaling is a cloud computing feature that automatically adjusts the number of compute resources (such as virtual machines) in response to changes in demand. This ensures that applications have the right amount of resources at any given time, improving performance and cost efficiency.

- Cost Efficiency: Auto Scaling ensures that you only pay for the resources you need by scaling down during low demand periods and scaling up during high demand periods. - Improved Availability: By automatically adding resources when demand increases, Auto Scaling helps maintain application availability and prevents performance degradation. - Optimized Performance: It ensures applications have sufficient resources to handle incoming traffic, maintaining optimal performance and user experience.
- Fault Tolerance: Auto Scaling can replace failed instances, ensuring that the overall system remains healthy and operational.
- Reduced Manual Intervention: It automates the process of scaling resources, reducing the need for manual monitoring and intervention.

# Types of Auto Scaling

### Metric-based Autoscaling

Metric-based auto scaling adjusts the number of compute resources based on specific performance metrics, such as CPU utilization, memory usage, or network traffic. When the metrics cross predefined thresholds, the system automatically scales resources up or down.

**How it Works:**

1. Define Metrics: Set performance metrics that will trigger scaling actions, such as average CPU utilization or request count per instance.
2. Set Thresholds: Establish threshold values for these metrics that will trigger scaling actions.
3. Monitoring: Continuously monitor the specified metrics.
4. Scaling Actions: When metrics exceed or fall below the defined thresholds, the system triggers scaling actions to add or remove resources.

Benefits:
- Responsive: Quickly adapts to real-time changes in demand.
- Efficient Resource Utilization: Ensures resources are allocated based on actual usage patterns.

**Schedule-based Autoscaling**

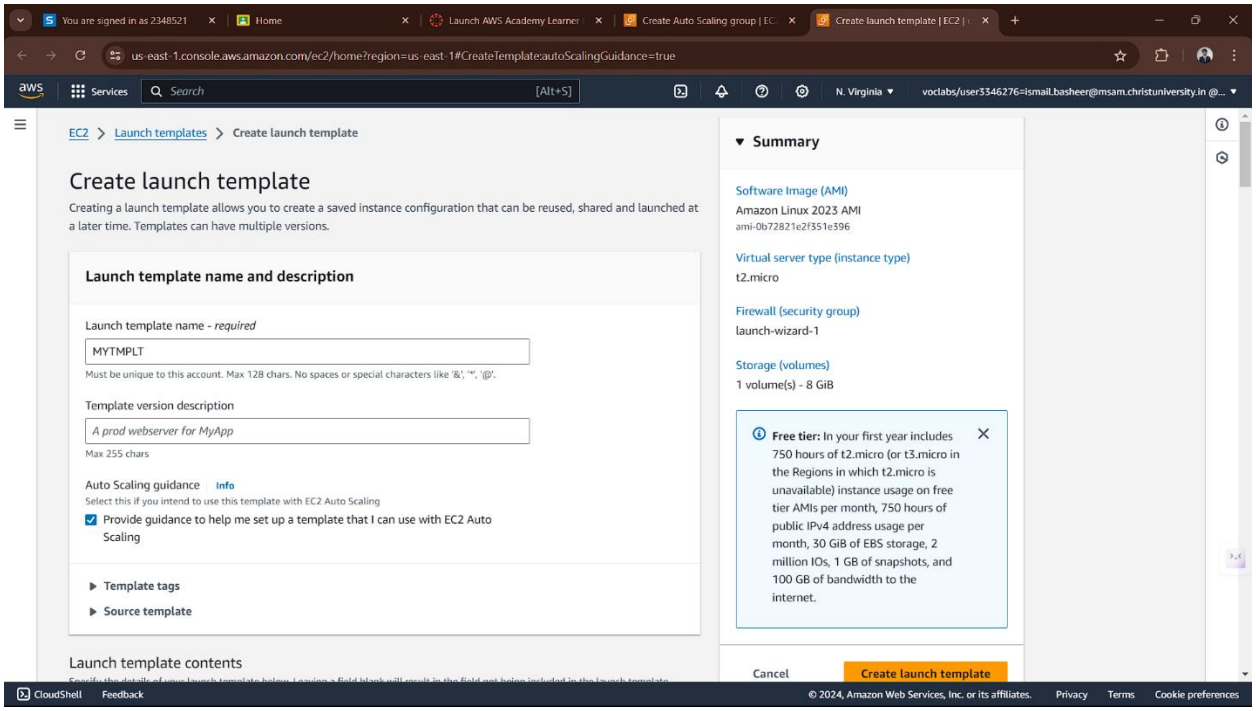
Schedule-based auto scaling adjusts the number of compute resources based on a predefined schedule. This method is useful when the demand is predictable, such as increasing resources during business hours and reducing them after hours.

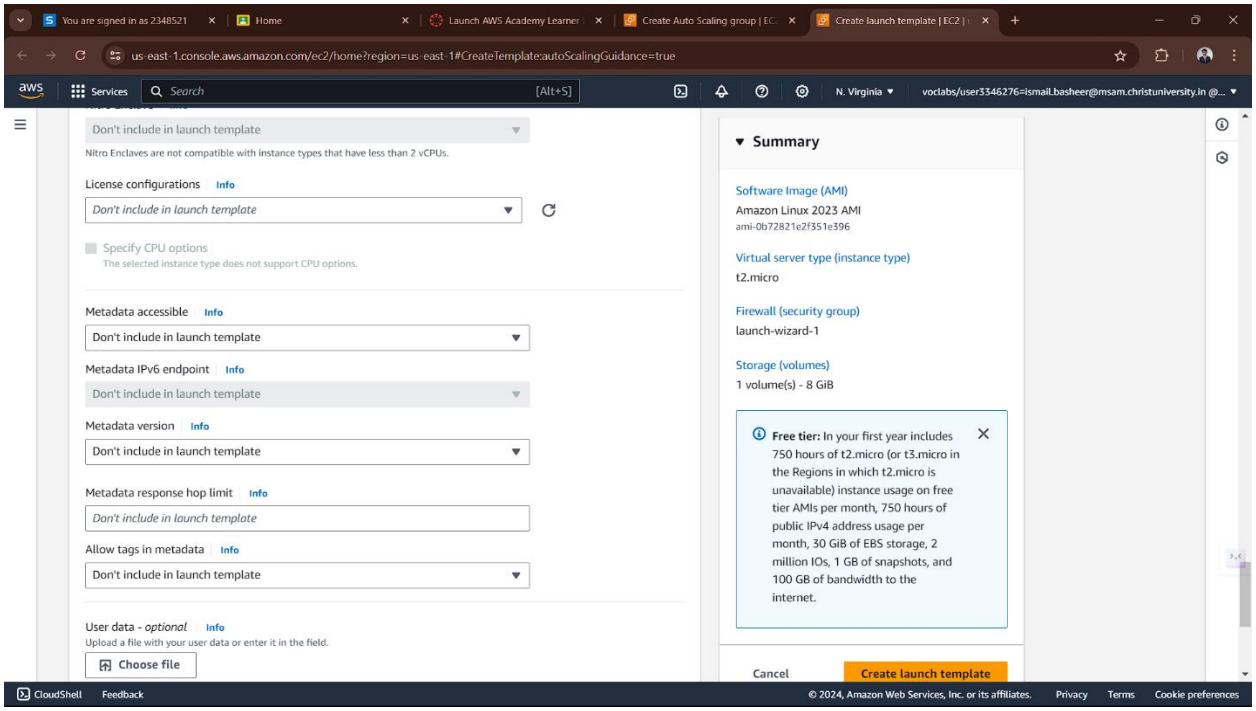
**How it Works:**

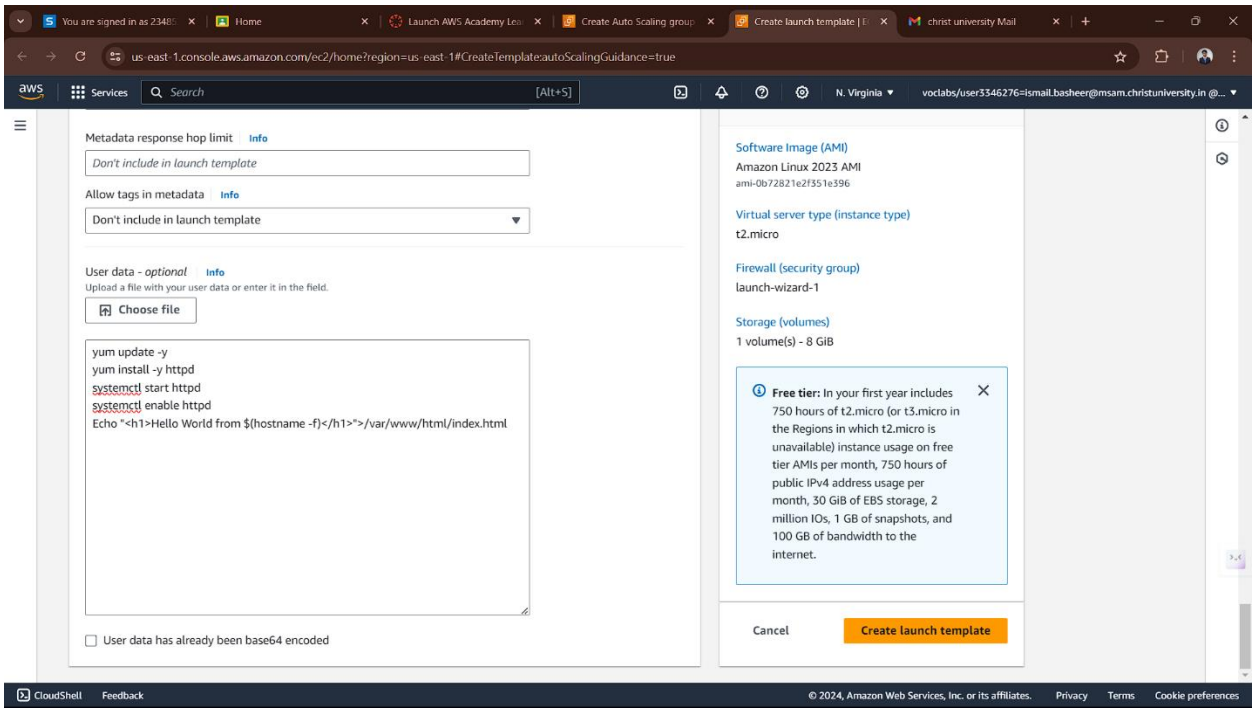
1. Define Schedules: Create a schedule specifying when to scale resources up or down.
2. Set Scaling Actions: Specify the number of resources to add or remove at each scheduled time.
3. Automated Execution: The system automatically adjusts resources according to the schedule.

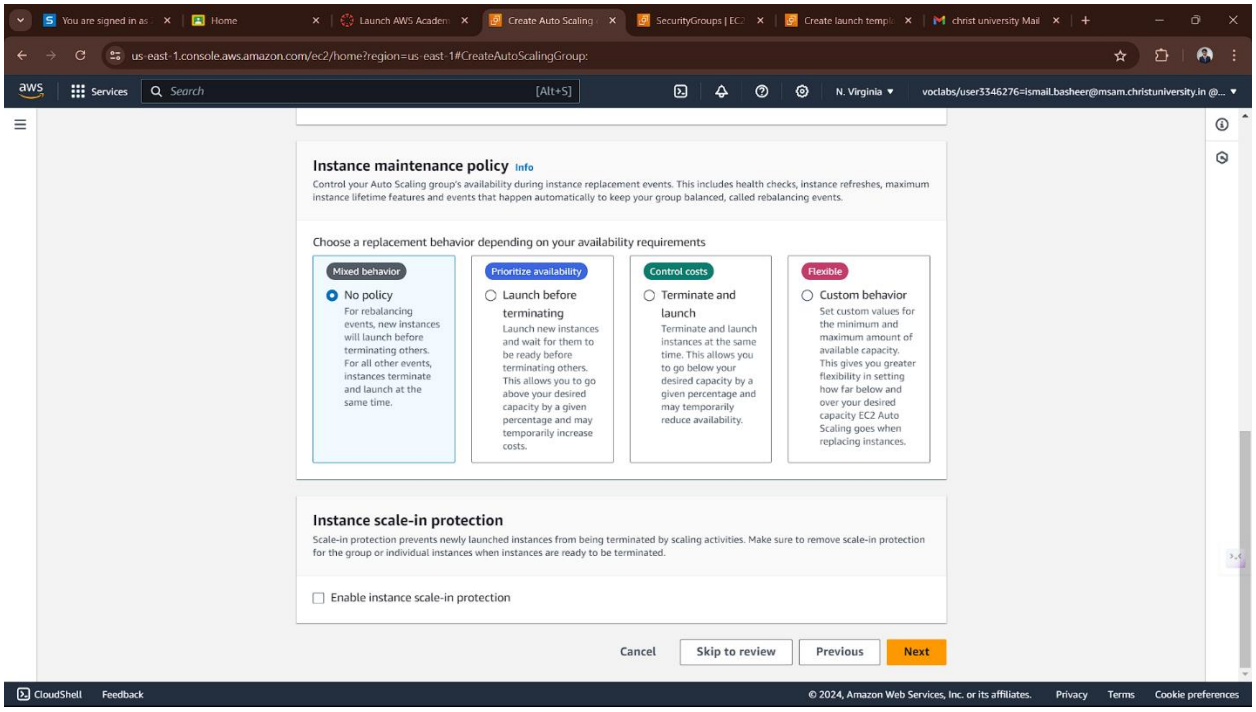
Benefits:
- Predictable Demand Management: Ideal for applications with predictable usage patterns.
- Cost Savings: Ensures resources are not over-provisioned during low-demand periods.

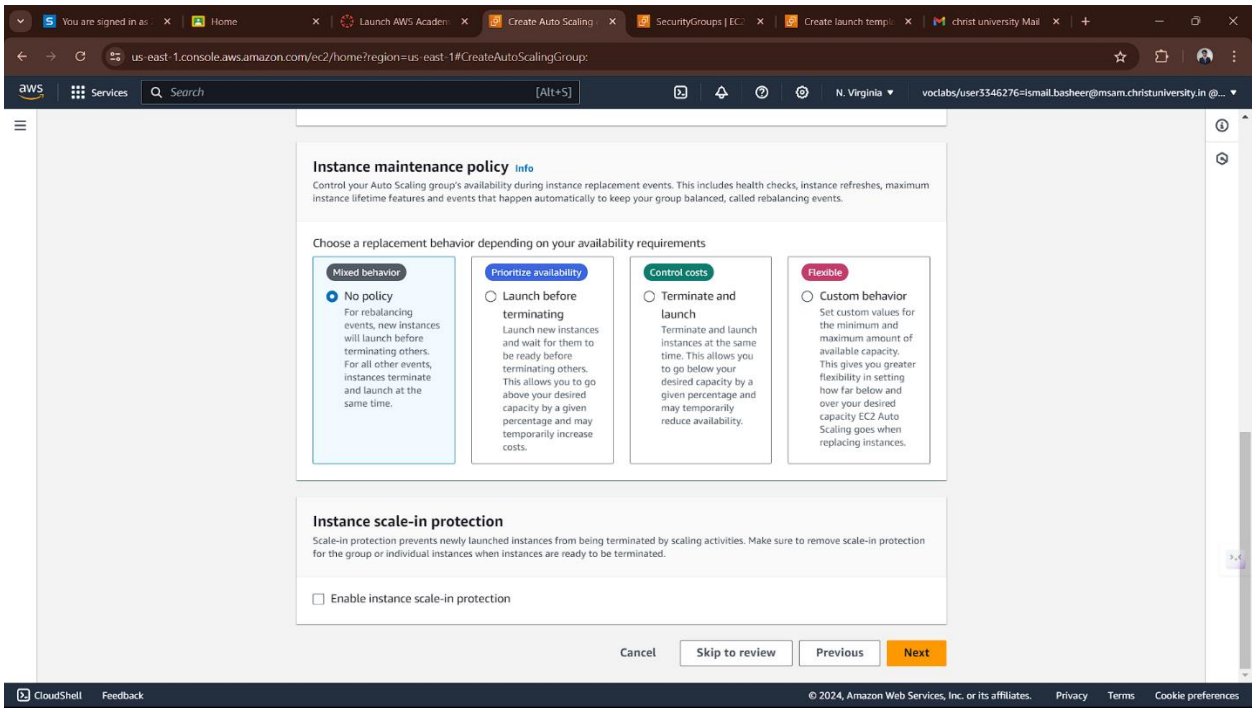
# 3.CREATING THE AUTO-SCALING GROUP



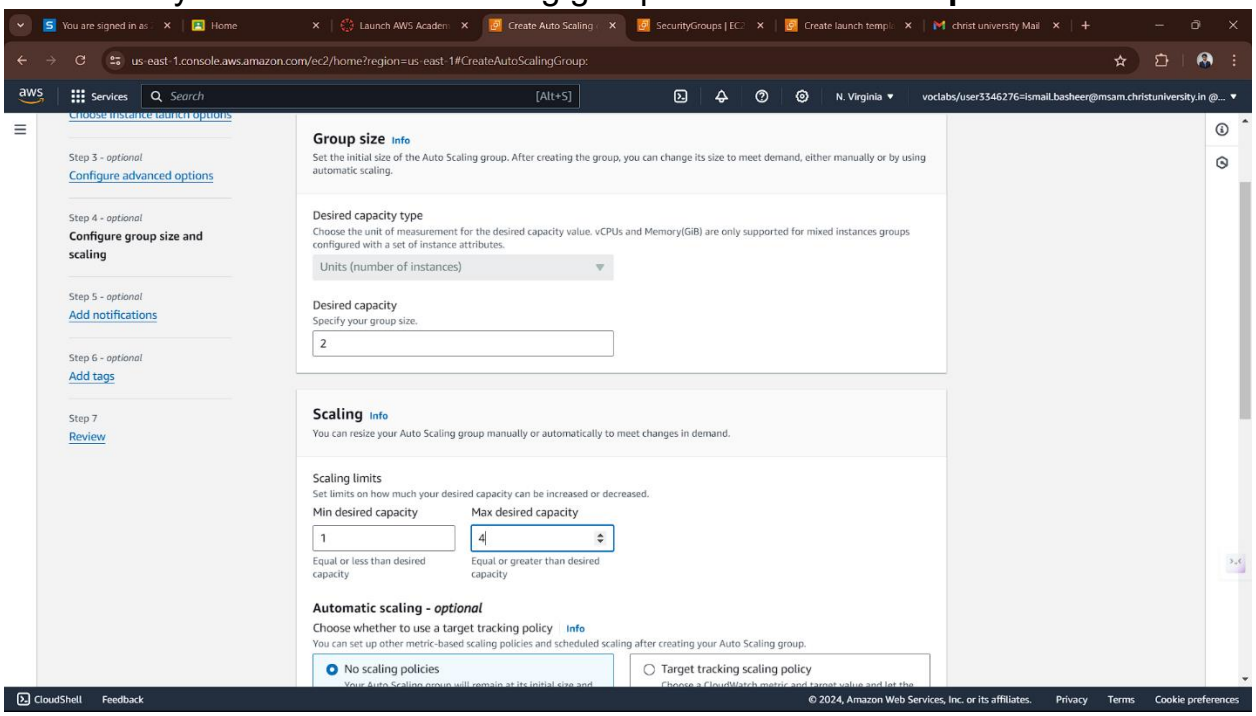



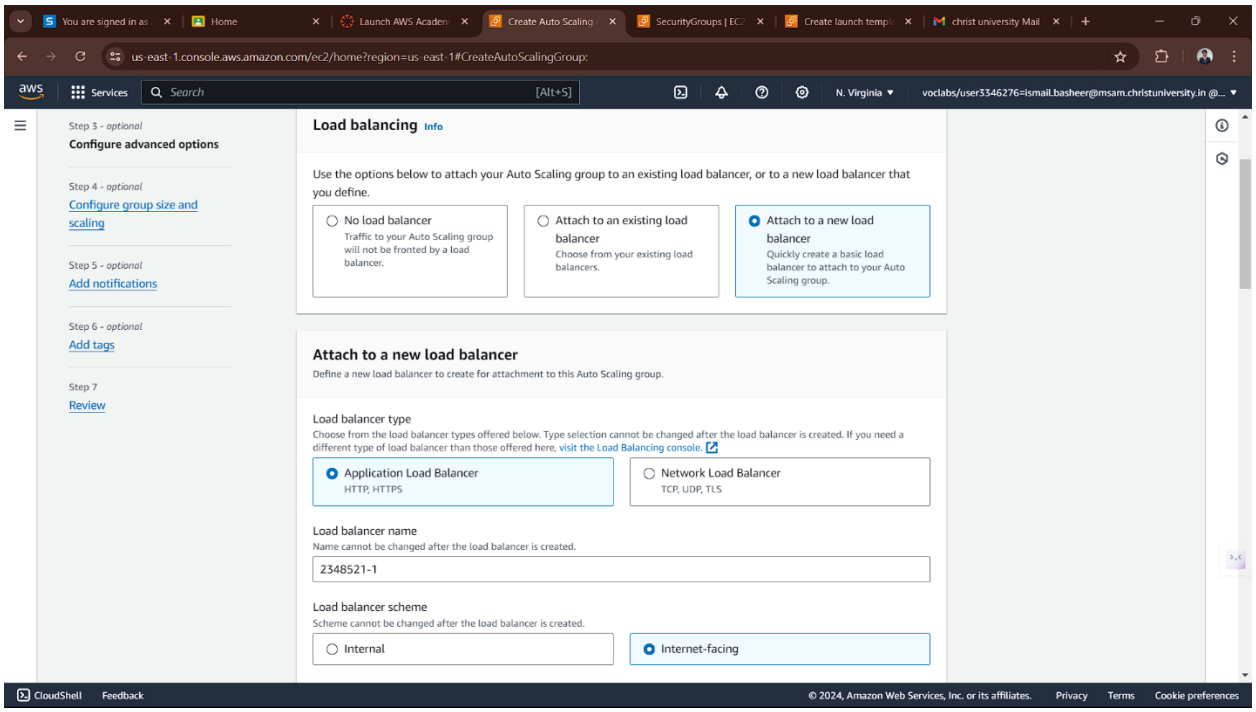

Metadata response hop limit Info
Don't include in launch template
Allow tags in metadata Info
Don't include in launch template
User data - optional Info
Upload a file with your user data or enter it in the field.
Choose file
yum update -y
yum install -y httpd
systemctl start httpd
systemctl enable httpd
Echo "<h1>Hello World from $(hostname -f)</h1>">/var/www/html/index.html
User data has already been base64 encoded
Software Image (AMI)
Amazon Linux 2023 AMI
ami-0b72821e2f351e396
Virtual server type (instance type)
t2.micro
Firewall (security group)
launch-wizard-1
Storage (volumes)
1 volume(s) - 8 GiB
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.
Cancel
Create launch template


Instance maintenance policy Info
Control your Auto Scaling group's availability during instance replacement events. This includes health checks, instance refreshes, maximum instance lifetime features and events that happen automatically to keep your group balanced, called rebalancing events.
Choose a replacement behavior depending on your availability requirements
Mixed behavior
No policy
For rebalancing events, new instances will launch before terminating others. For all other events, instances terminate and launch at the same time.
Prioritize availability
Launch before terminating
Launch new instances and wait for them to be ready before terminating others. This allows you to go above your desired capacity by a given percentage and may temporarily increase costs.
Control costs
Terminate and launch
Terminate and launch instances at the same time. This allows you to go below your desired capacity by a given percentage and may temporarily reduce availability.
Flexible
Custom behavior
Set custom values for the minimum and maximum amount of available capacity. This gives you greater flexibility in setting how far below and over your desired capacity EC2 Auto Scaling goes when replacing instances.
Instance scale-in protection
Scale-in protection prevents newly launched instances from being terminated by scaling activities. Make sure to remove scale-in protection for the group or individual instances when instances are ready to be terminated.
Enable instance scale-in protection
Cancel
Skip to review
Previous
Next

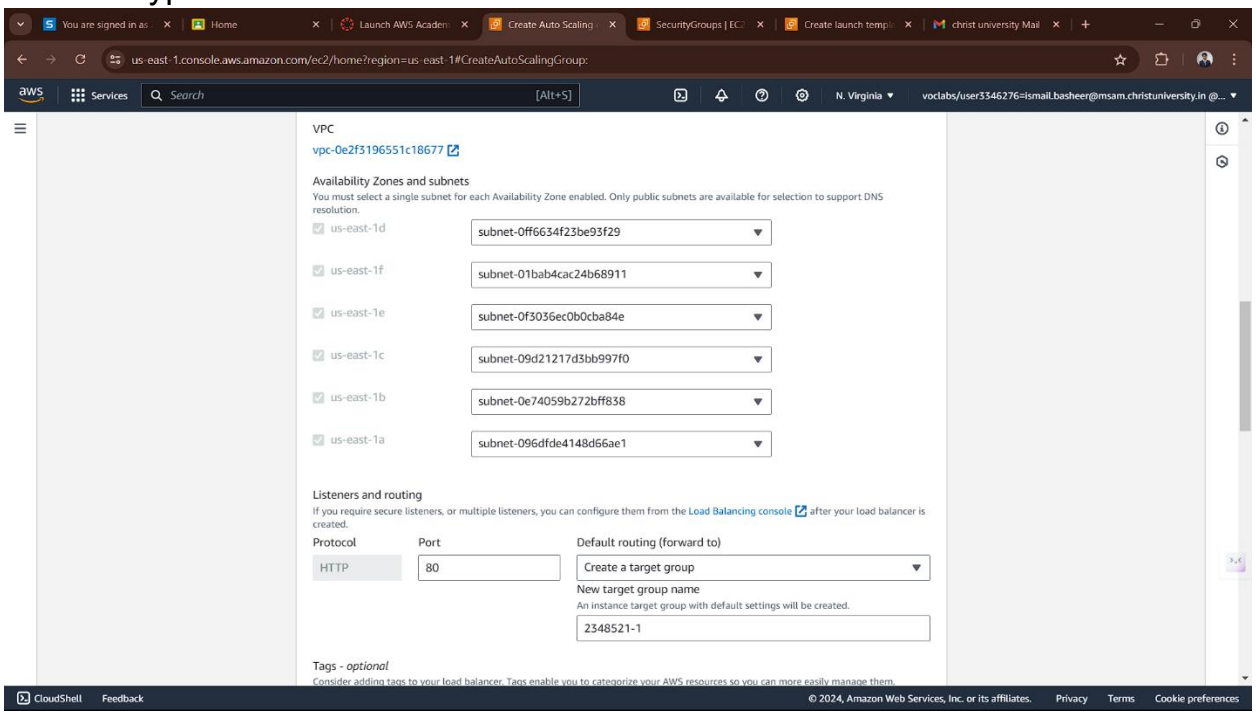


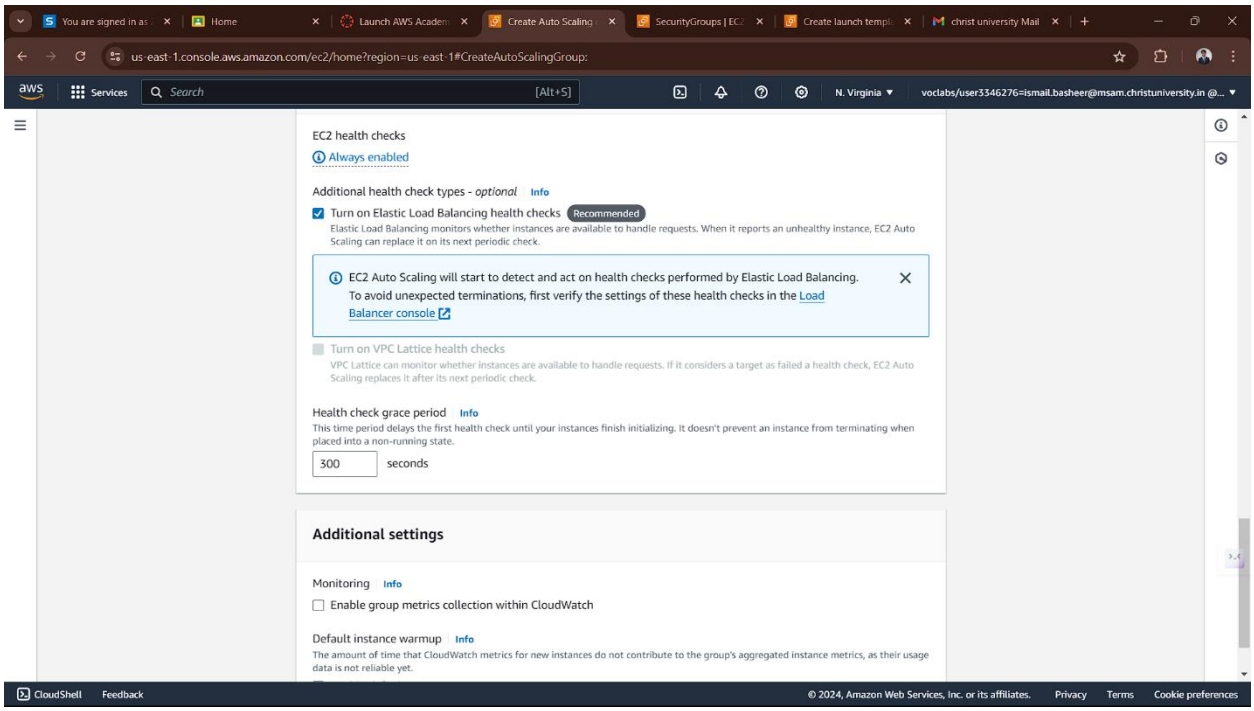

Successfully created an auto-scaling group **2348534AutoShop**.






Instance type is selected as t2.micro




EC2 health checks
Always enabled
Additional health check types - optional Info
Turn on Elastic Load Balancing health checks Recommended
Elastic Load Balancing monitors whether instances are available to handle requests. When it reports an unhealthy instance, EC2 Auto Scaling can replace it on its next periodic check.
EC2 Auto Scaling will start to detect and act on health checks performed by Elastic Load Balancing. To avoid unexpected terminations, first verify the settings of these health checks in the Load Balancer console
Turn on VPC Lattice health checks
VPC Lattice can monitor whether instances are available to handle requests. If it considers a target as failed a health check, EC2 Auto Scaling replaces it after its next periodic check.
Health check grace period Info
This time period delays the first health check until your instances finish initializing. It doesn't prevent an instance from terminating when placed into a non-running state.
300
seconds
Additional settings
Monitoring Info
Enable group metrics collection within CloudWatch
Default instance warmup Info
The amount of time that CloudWatch metrics for new instances do not contribute to the group's aggregated instance metrics, as their usage data is not reliable yet.
CloudShell
Feedback
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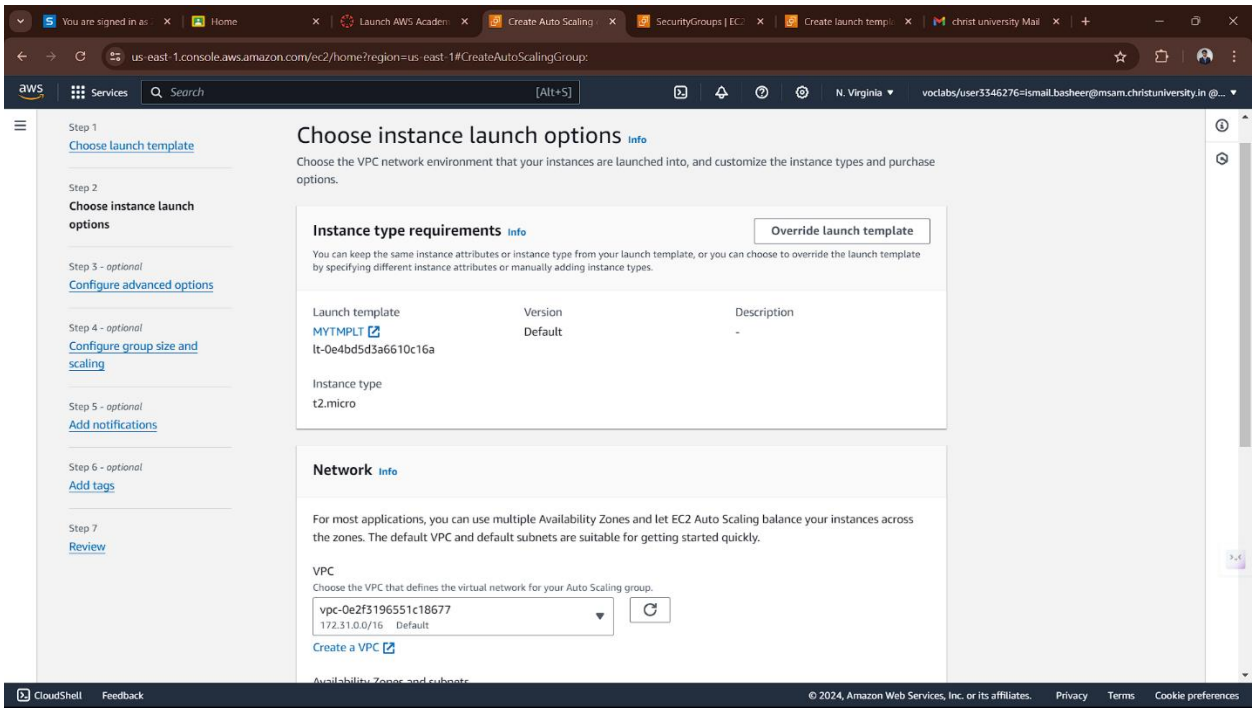
Step 1
Choose launch template
Step 2
Choose instance launch options
Step 3 - optional
Configure advanced options
Step 4 - optional
Configure group size and scaling
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Choose instance launch options Info
Choose the VPC network environment that your instances are launched into, and customize the instance types and purchase options.
Instance type requirements Info
Override launch template
You can keep the same instance attributes or instance type from your launch template, or you can choose to override the launch template by specifying different instance attributes or manually adding instance types.
Launch template
MYTMPLT
lt-0e4bd5d3a6610c16a
Version
Default
Description
-
Instance type
t2.micro
Network Info
For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.
VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.
vpc-0e2f3196551c18677
172.31.0.0/16 Default
Create a VPC
CloudShell
Feedback
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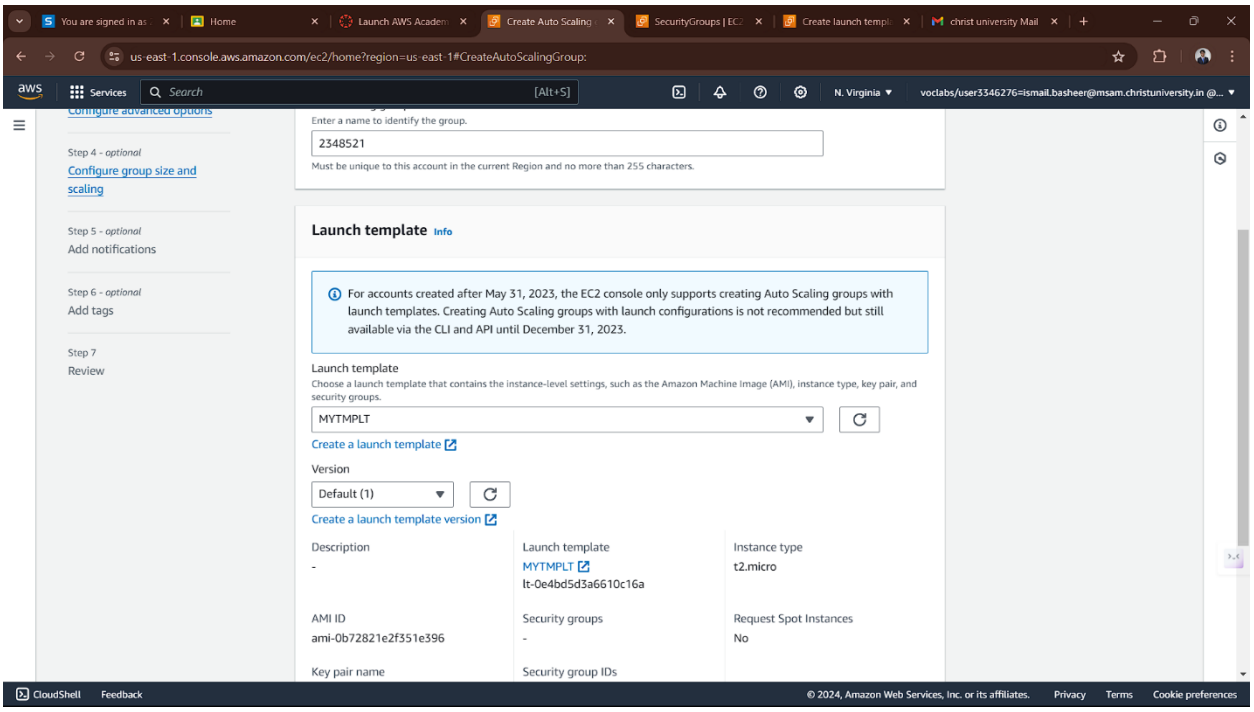
Configure advanced options
Step 4 - optional
Configure group size and scaling
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
Enter a name to identify the group.
2348521
Must be unique to this account in the current Region and no more than 255 characters.
Launch template Info
For accounts created after May 31, 2023, the EC2 console only supports creating Auto Scaling groups with launch templates. Creating Auto Scaling groups with launch configurations is not recommended but still available via the CLI and API until December 31, 2023.
Launch template
Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.
MYTMPLT
Create a launch template
Version
Default (1)
Create a launch template version
Description
-
Launch template
MYTMPLT
lt-0e4bd5d3a6610c16a
Instance type
t2.micro
AMI ID
ami-0b72821e2f351e396
Security groups
-
Request Spot Instances
No
Key pair name
Security group IDs
CloudShell
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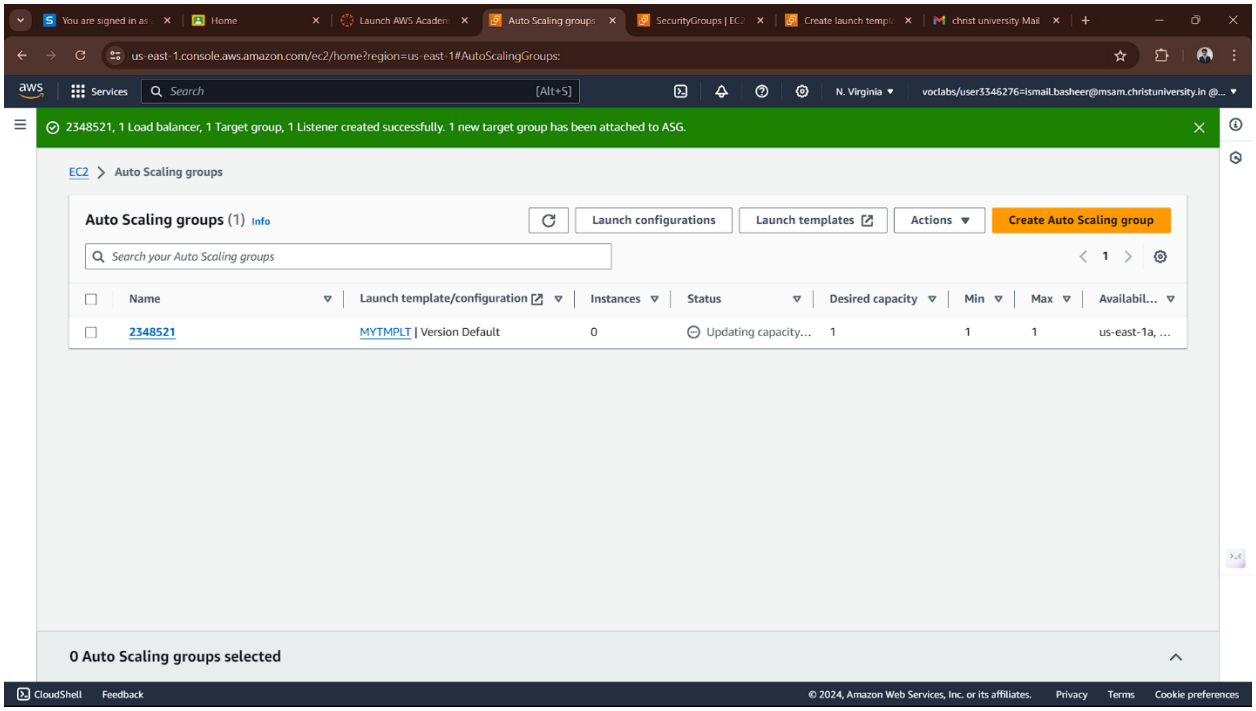
2348521, 1 Load balancer, 1 Target group, 1 Listener created successfully. 1 new target group has been attached to ASG.
EC2
Auto Scaling groups
Auto Scaling groups (1) Info
Launch configurations
Launch templates
Actions
Create Auto Scaling group
Search your Auto Scaling groups
Name
Launch template/configuration
Instances
Status
Desired capacity
Min
Max
Availabil...
2348521
MYTMPLT | Version Default
0
Updating capacity...
1
1
1
us-east-1a, ...
0 Auto Scaling groups selected
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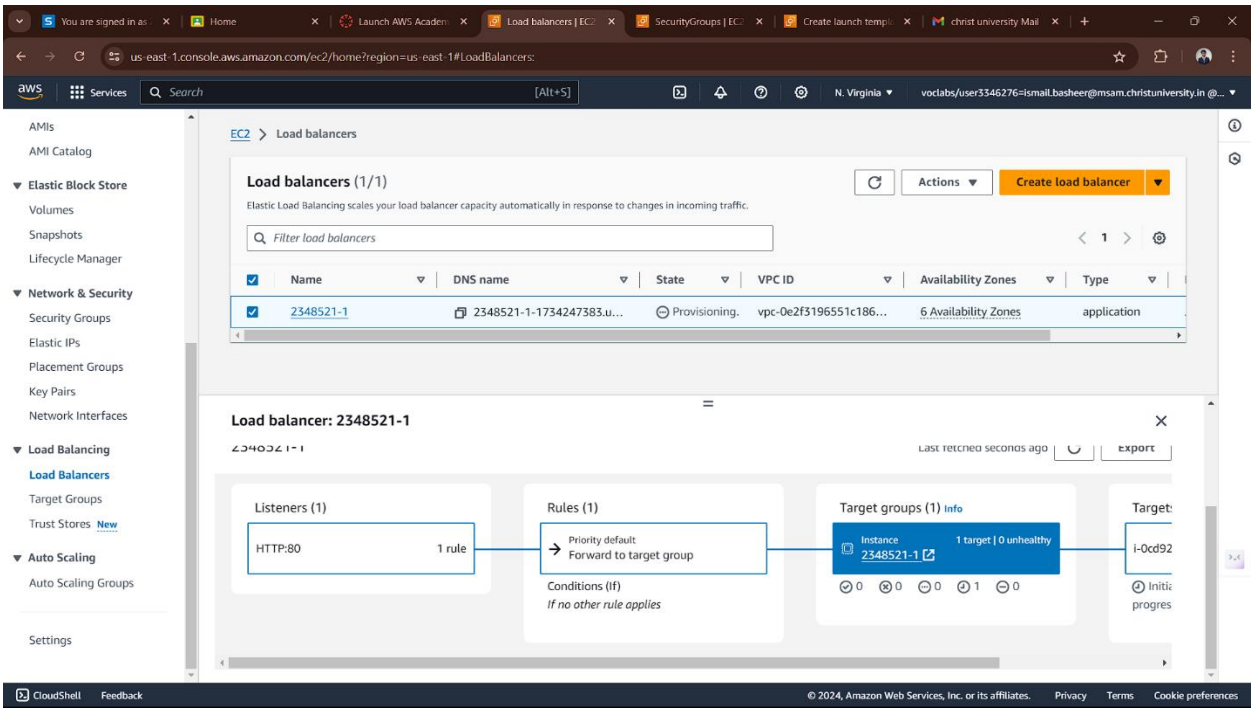
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancers:
Services
Search
[Alt+S]
N. Virginia
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Trust Stores New
Auto Scaling
Auto Scaling Groups
Settings
EC2 > Load balancers
Load balancers (1/1)
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.
Actions
Create load balancer
Filter load balancers
Name
DNS name
State
VPC ID
Availability Zones
Type
2348521-1
2348521-1-1734247383.u...
Provisioning.
vpc-0e2f3196551c186...
6 Availability Zones
application
Load balancer: 2348521-1
Export
Listeners (1)
HTTP:80
1 rule
Rules (1)
Priority default
Forward to target group
Conditions (If)
If no other rule applies
Target groups (1) Info
Instance
2348521-1
1 target | 0 unhealthy
Target
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