CLOUD COMPUTING AWS FINAL PROJECT

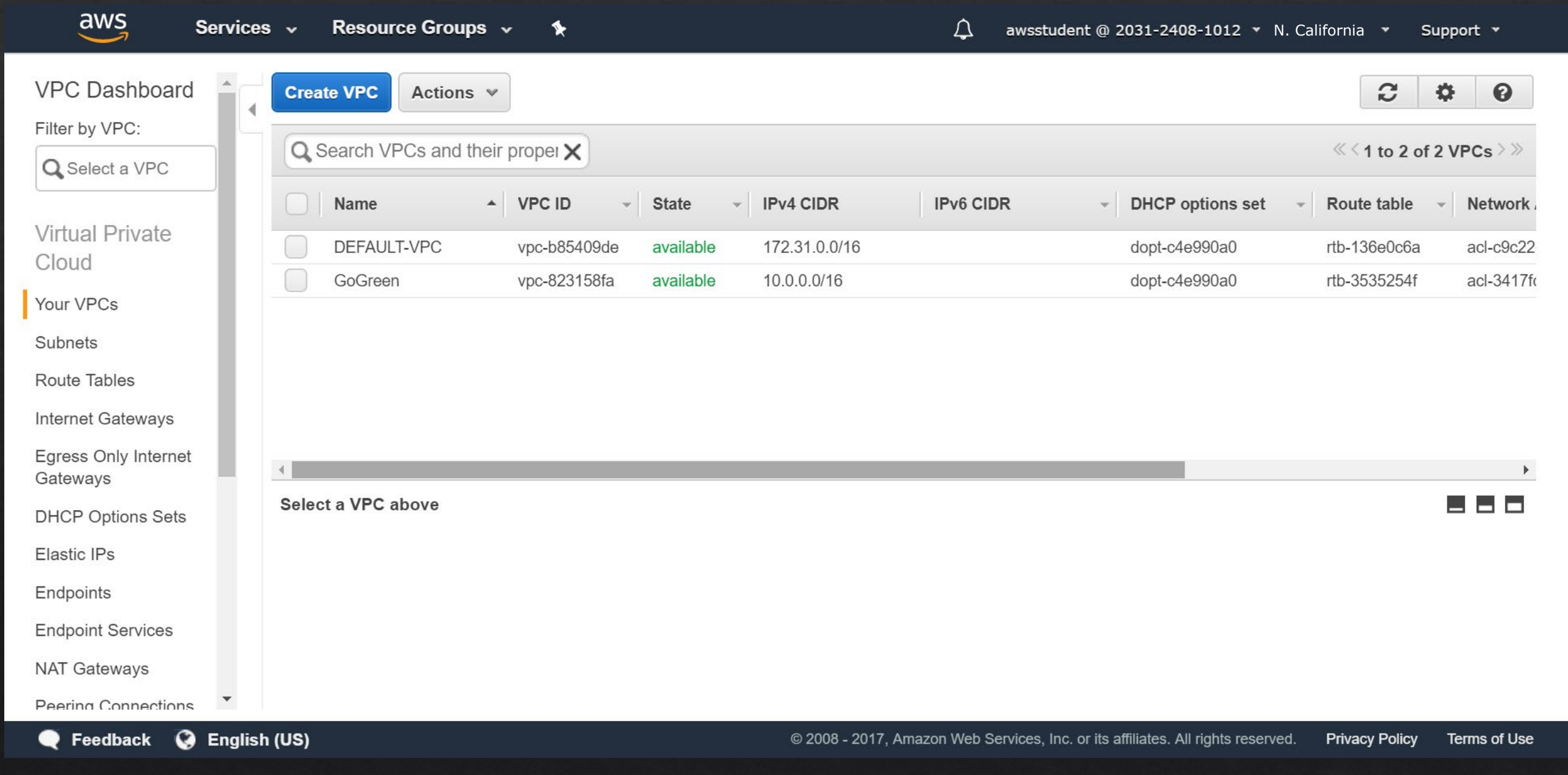
GoGreen Insurance Company

Aishwarya Srivastava
Kushal S Hebbar
Sidhanth Aggarwal

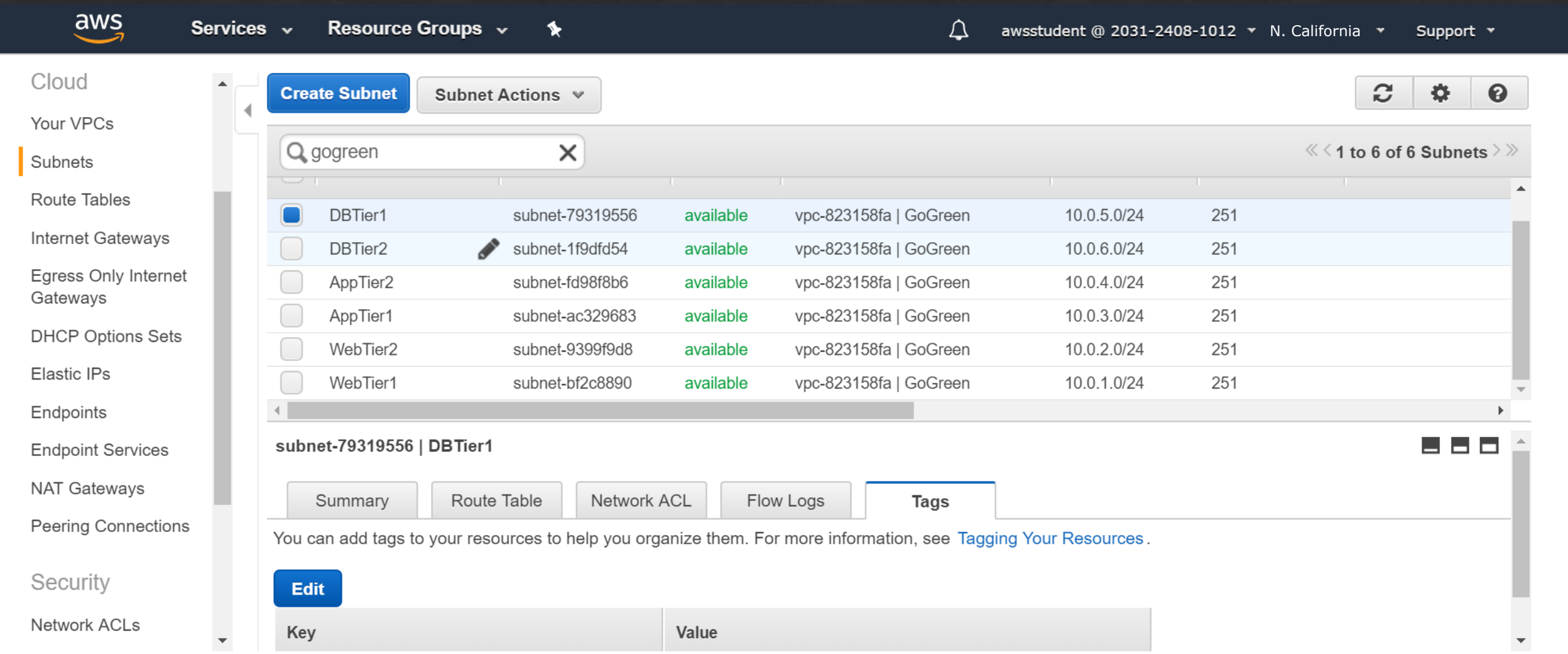
BACKGROUND

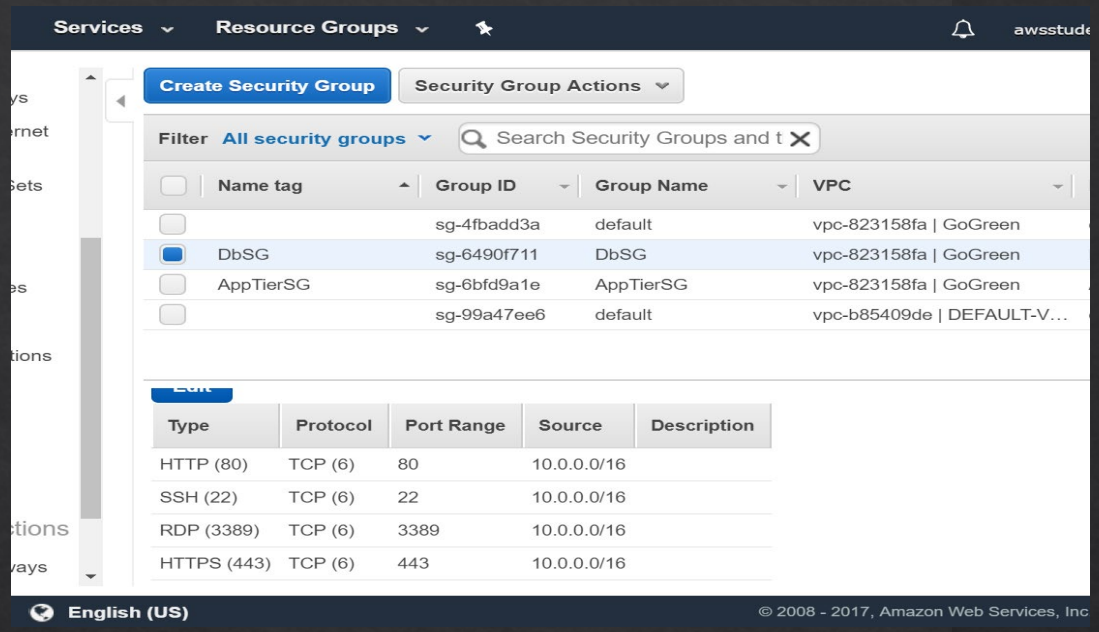
Company:	GoGreen Insurance Company
Locations:	Europe, South America Southern California (headquarters)
Application:	CRM web application allows sales personnel to input and edit customer data.
Technical:	3-tier web app stores customer data and documents. Converts the documents into multiple formats (e.g. images for web/mobile)
Goal:	Go *paperless* for all user data, documents and pictures

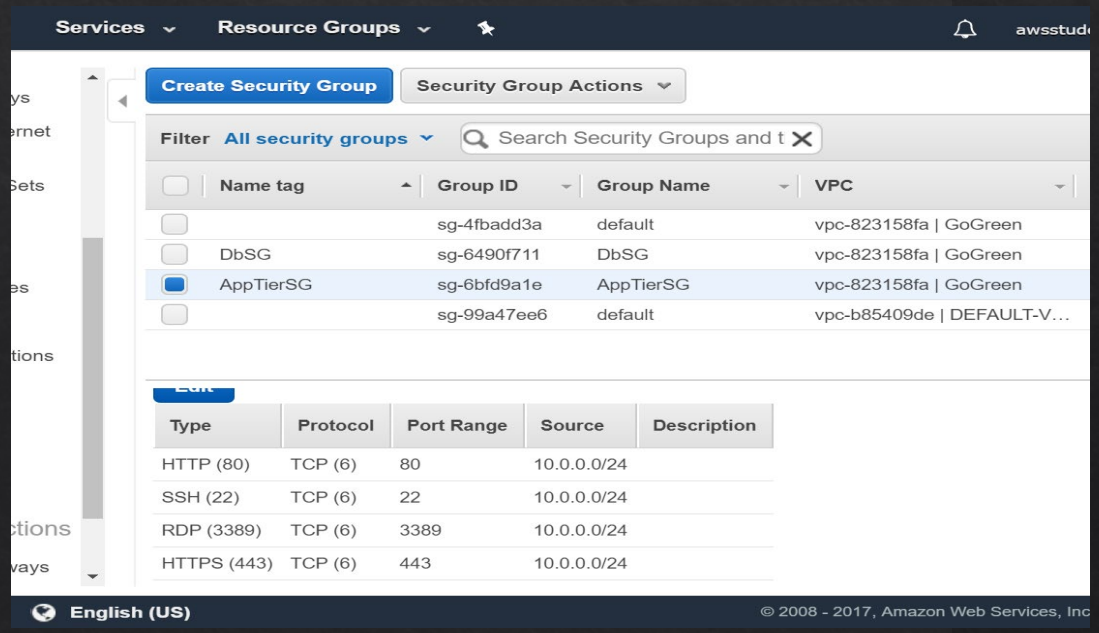
VPC


aws
Services
Resource Groups
awsstudent @ 2031-2408-1012
N. California
Support
VPC Dashboard
Filter by VPC:
Select a VPC
Virtual Private Cloud
Your VPCs
Subnets
Route Tables
Internet Gateways
Egress Only Internet Gateways
DHCP Options Sets
Elastic IPs
Endpoints
Endpoint Services
NAT Gateways
Peering Connections
Create VPC
Actions
Search VPCs and their proper
1 to 2 of 2 VPCs
Name
VPC ID
State
IPv4 CIDR
IPv6 CIDR
DHCP options set
Route table
Network
DEFAULT-VPC vpc-b85409de available 172.31.0.0/16 dopt-c4e990a0 rtb-136e0c6a acl-c9c22
GoGreen vpc-823158fa available 10.0.0.0/16 dopt-c4e990a0 rtb-3535254f acl-3417f
Select a VPC above
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

Subnets

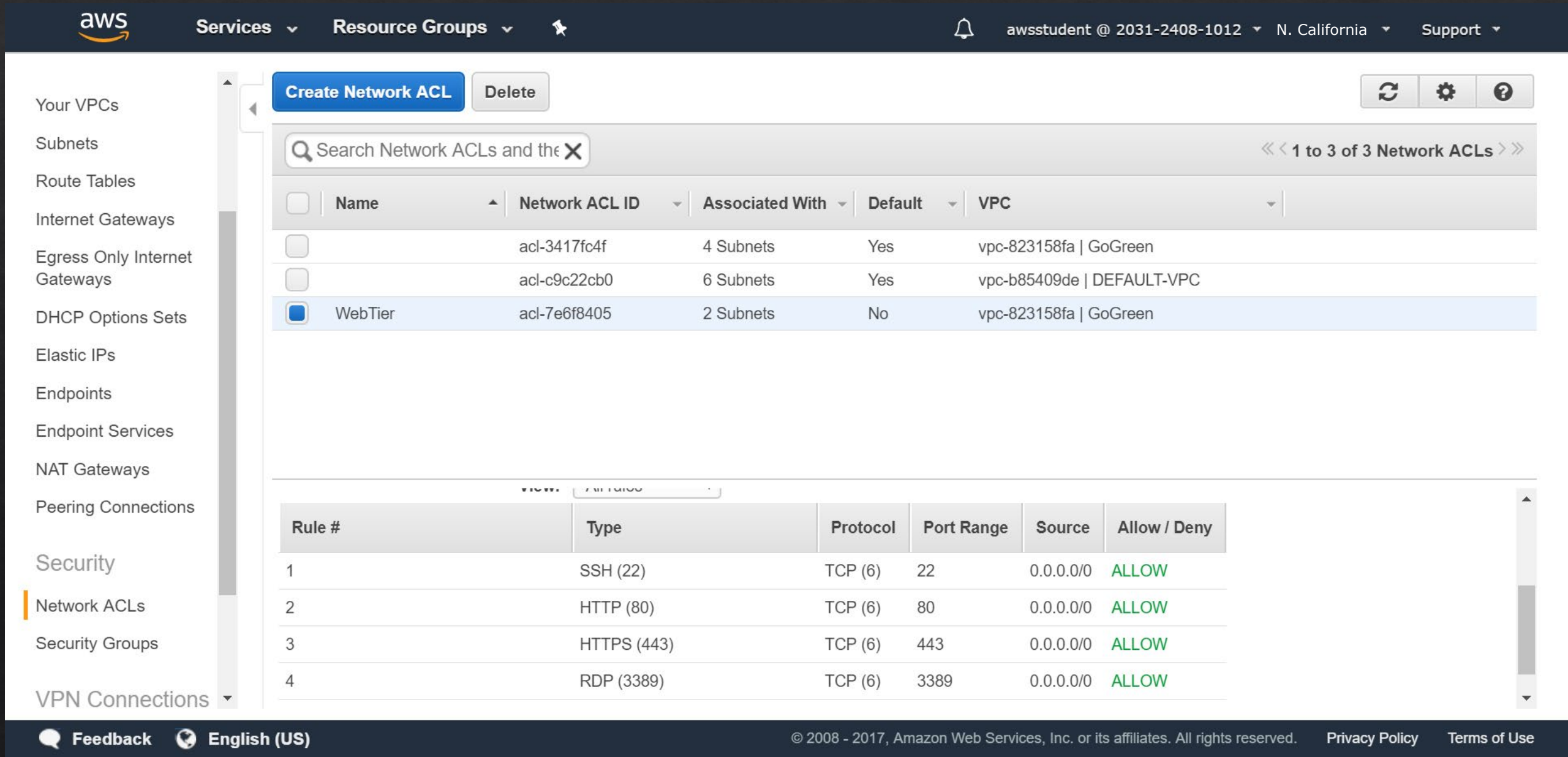

aws
Services
Resource Groups
awsstudent @ 2031-2408-1012
N. California
Support
Cloud
Your VPCs
Subnets
Route Tables
Internet Gateways
Egress Only Internet Gateways
DHCP Options Sets
Elastic IPs
Endpoints
Endpoint Services
NAT Gateways
Peering Connections
Security
Network ACLs
Create Subnet
Subnet Actions
gogreen
1 to 6 of 6 Subnets
DBTier1 subnet-79319556 available vpc-823158fa | GoGreen 10.0.5.0/24 251
DBTier2 subnet-1f9dfd54 available vpc-823158fa | GoGreen 10.0.6.0/24 251
AppTier2 subnet-fd98f8b6 available vpc-823158fa | GoGreen 10.0.4.0/24 251
AppTier1 subnet-ac329683 available vpc-823158fa | GoGreen 10.0.3.0/24 251
WebTier2 subnet-9399f9d8 available vpc-823158fa | GoGreen 10.0.2.0/24 251
WebTier1 subnet-bf2c8890 available vpc-823158fa | GoGreen 10.0.1.0/24
subnet-79319556 | DBTier1
Summary
Route Table
Network ACL
Flow Logs
Tags
You can add tags to your resources to help you organize them. For more information, see Tagging Your Resources.
Edit
Key
Value
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use



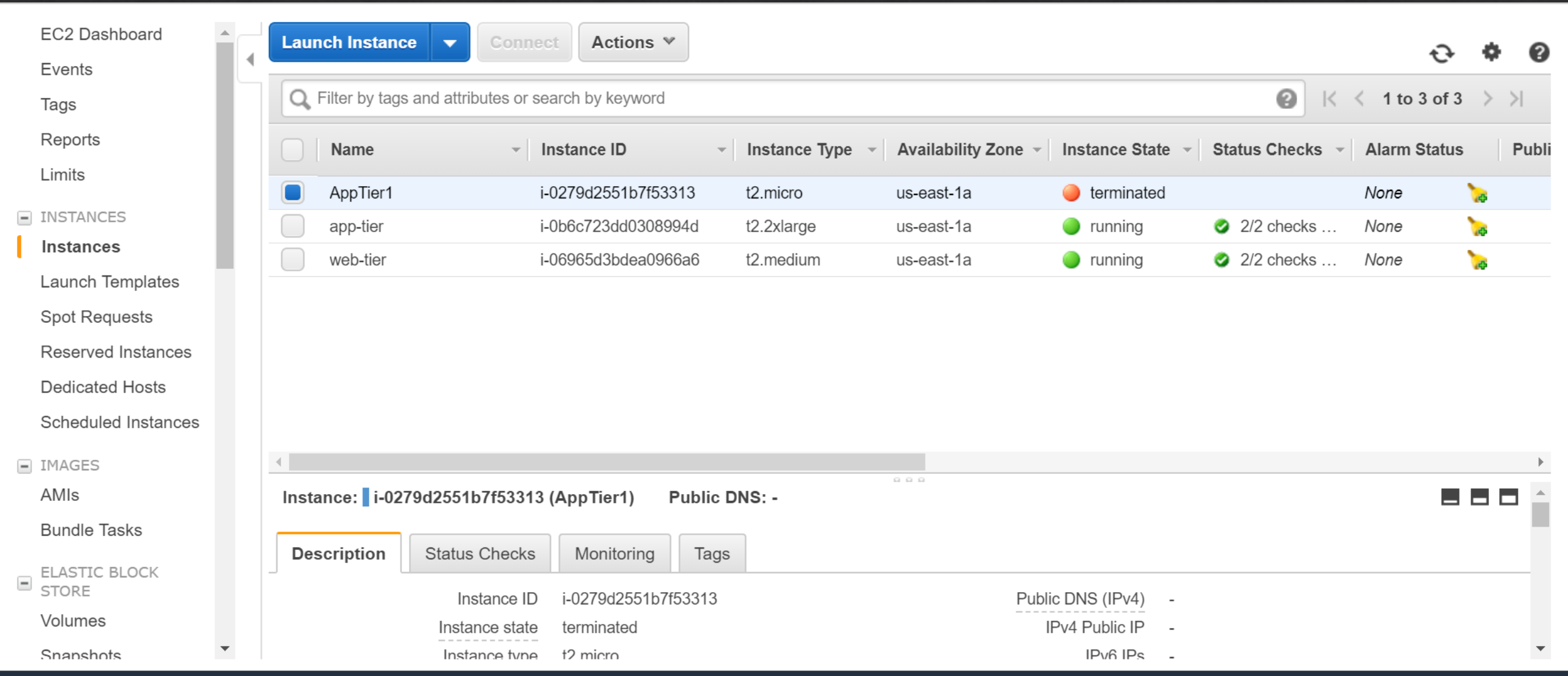


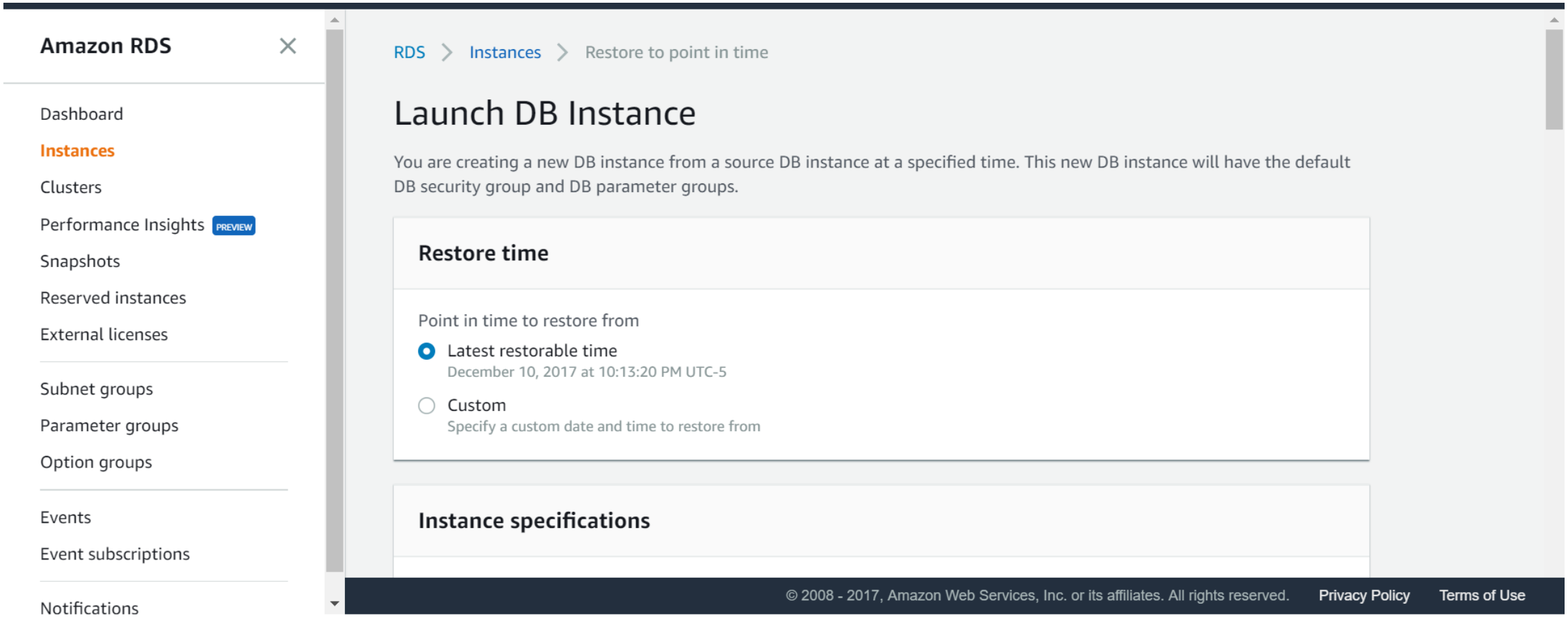
Security groups

Network ACL

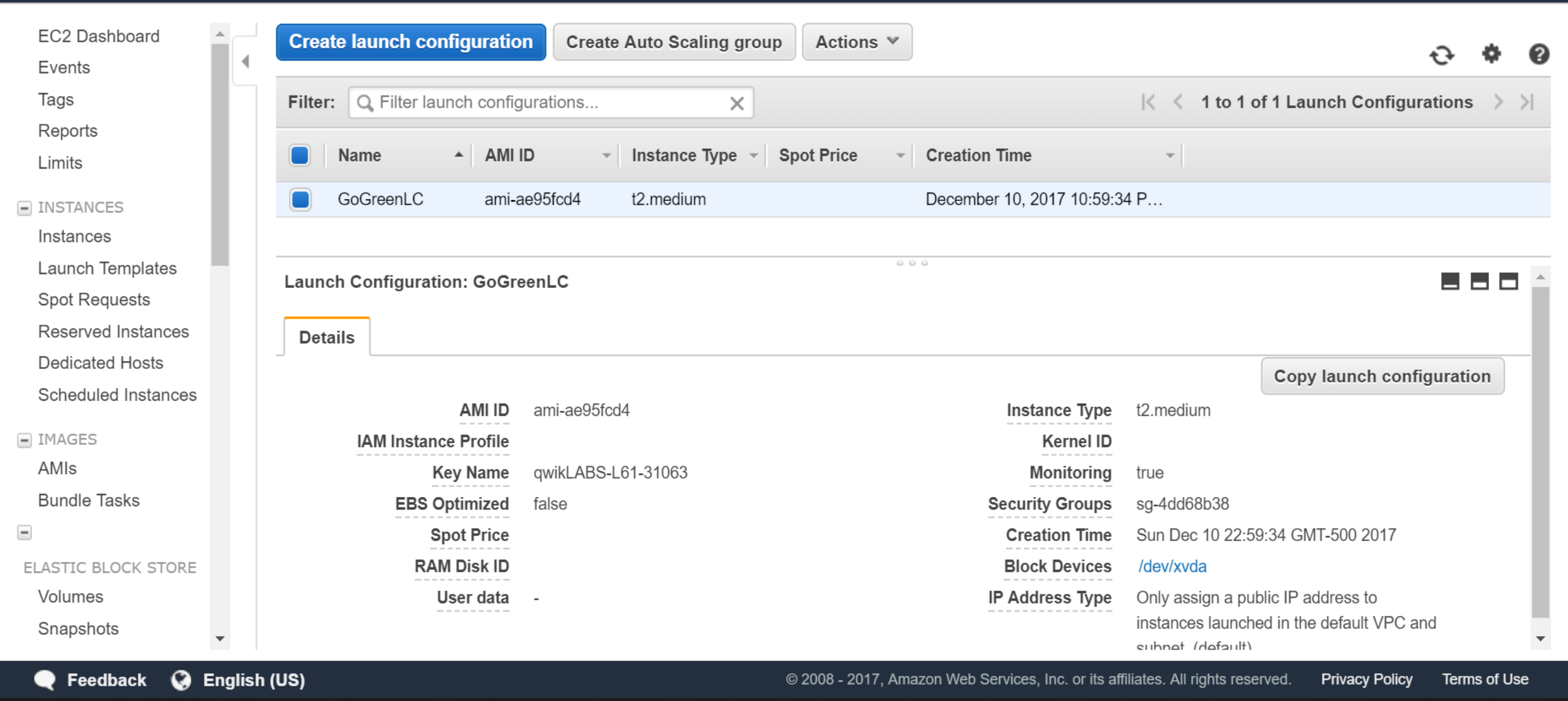

aws
Services
Resource Groups
awsstudent @ 2031-2408-1012
N. California
Support
Your VPCs
Subnets
Route Tables
Internet Gateways
Egress Only Internet Gateways
DHCP Options Sets
Elastic IPs
Endpoints
Endpoint Services
NAT Gateways
Peering Connections
Security
Network ACLs
Security Groups
VPN Connections
Create Network ACL
Delete
Search Network ACLs and the
1 to 3 of 3 Network ACLs
Name
Network ACL ID
Associated With
Default
VPC
acl-3417fc4f
4 Subnets
Yes
vpc-823158fa | GoGreen
acl-c9c22cb0
6 Subnets
Yes
vpc-b85409de | DEFAULT-VPC
WebTier
acl-7e6f8405
2 Subnets
No
vpc-823158fa | GoGreen
Rule #
Type
Protocol
Port Range
Source
Allow / Deny
1
SSH (22)
TCP (6)
22
0.0.0.0/0
ALLOW
2
HTTP (80)
TCP (6)
80
0.0.0.0/0
ALLOW
3
HTTPS (443)
TCP (6)
443
0.0.0.0/0
ALLOW
4
RDP (3389)
TCP (6)
3389
0.0.0.0/0
ALLOW
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

Instances

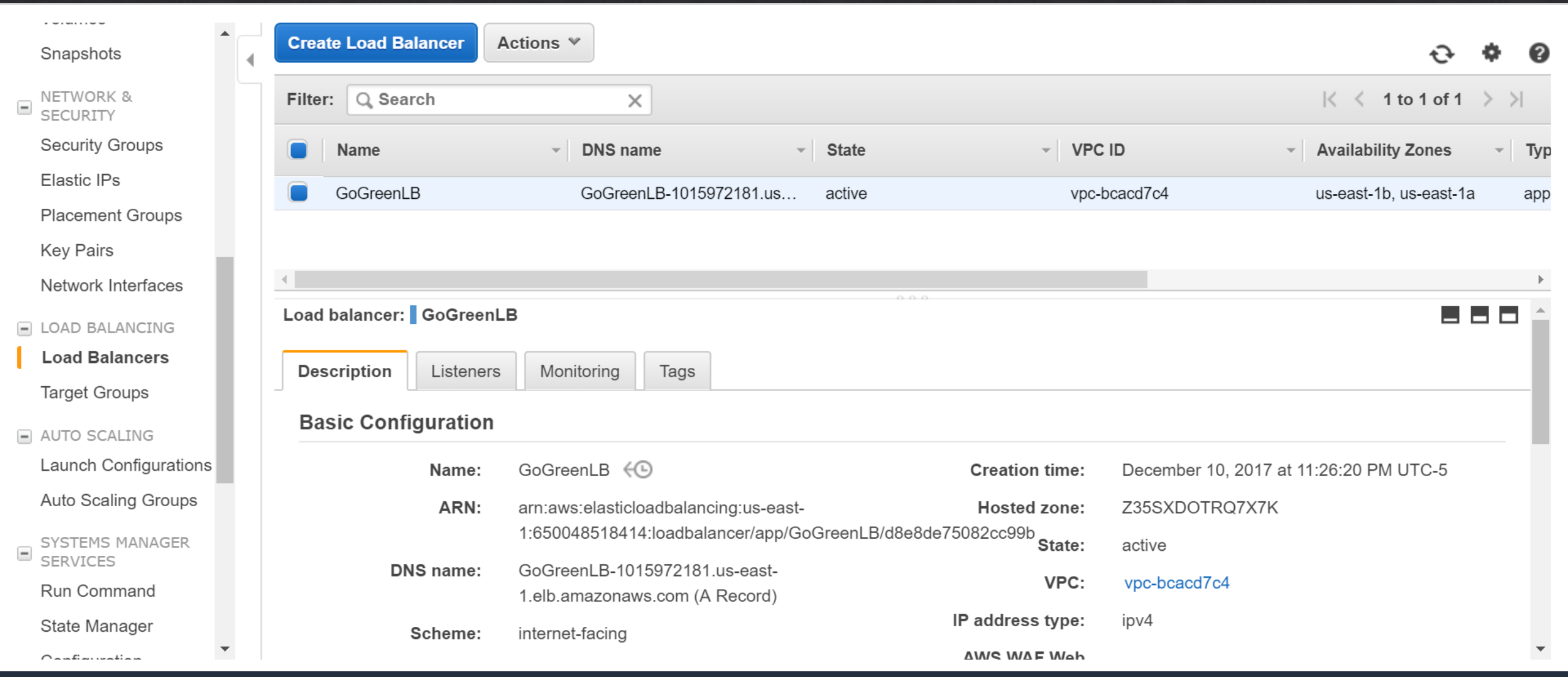

EC2 Dashboard
Events
Tags
Reports
Limits
INSTANCES
Instances
Launch Templates
Spot Requests
Reserved Instances
Dedicated Hosts
Scheduled Instances
IMAGES
AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
Launch Instance
Connect
Actions
Filter by tags and attributes or search by keyword
1 to 3 of 3
Name
Instance ID
Instance Type
Availability Zone
Instance State
Status Checks
Alarm Status
Publi
AppTier1 i-0279d2551b7f53313 t2.micro us-east-1a terminated None
app-tier i-0b6c723dd0308994d t2.2xlarge us-east-1a running 2/2 checks … None
web-tier i-06965d3bdea0966a6 t2.medium us-east-1a running 2/2 checks … None
Instance: i-0279d2551b7f53313 (AppTier1) Public DNS: -
Description
Status Checks
Monitoring
Tags
Instance ID i-0279d2551b7f53313
Instance state terminated
Instance type t2.micro
Public DNS (IPv4) -
IPv4 Public IP -
IPv6 IPs -
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use


Amazon RDS
Dashboard
Instances
Clusters
Performance Insights
PREVIEW
Snapshots
Reserved instances
External licenses
Subnet groups
Parameter groups
Option groups
Events
Event subscriptions
Notifications
RDS
Instances
Restore to point in time
Launch DB Instance
You are creating a new DB instance from a source DB instance at a specified time. This new DB instance will have the default DB security group and DB parameter groups.
Restore time
Point in time to restore from
Latest restorable time
December 10, 2017 at 10:13:20 PM UTC-5
Custom
Specify a custom date and time to restore from
Instance specifications
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

Launch Configuration



ELB


Snapshots
NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
LOAD BALANCING
Load Balancers
Target Groups
AUTO SCALING
Launch Configurations
Auto Scaling Groups
SYSTEMS MANAGER SERVICES
Run Command
State Manager
Create Load Balancer
Actions
Filter:
Search
1 to 1 of 1
Name
DNS name
State
VPC ID
Availability Zones
Typ
GoGreenLB
GoGreenLB-1015972181.us…
active
vpc-bcacd7c4
us-east-1b, us-east-1a
app
Load balancer: GoGreenLB
Description
Listeners
Monitoring
Tags
Basic Configuration
Name: GoGreenLB
ARN: arn:aws:elasticloadbalancing:us-east-1:650048518414:loadbalancer/app/GoGreenLB/d8e8de75082cc99b
DNS name: GoGreenLB-1015972181.us-east-1.elb.amazonaws.com (A Record)
Scheme: internet-facing
Creation time: December 10, 2017 at 11:26:20 PM UTC-5
Hosted zone: Z35SXDOTRQ7X7K
State: active
VPC: vpc-bcacd7c4
IP address type: ipv4
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

amazon web services

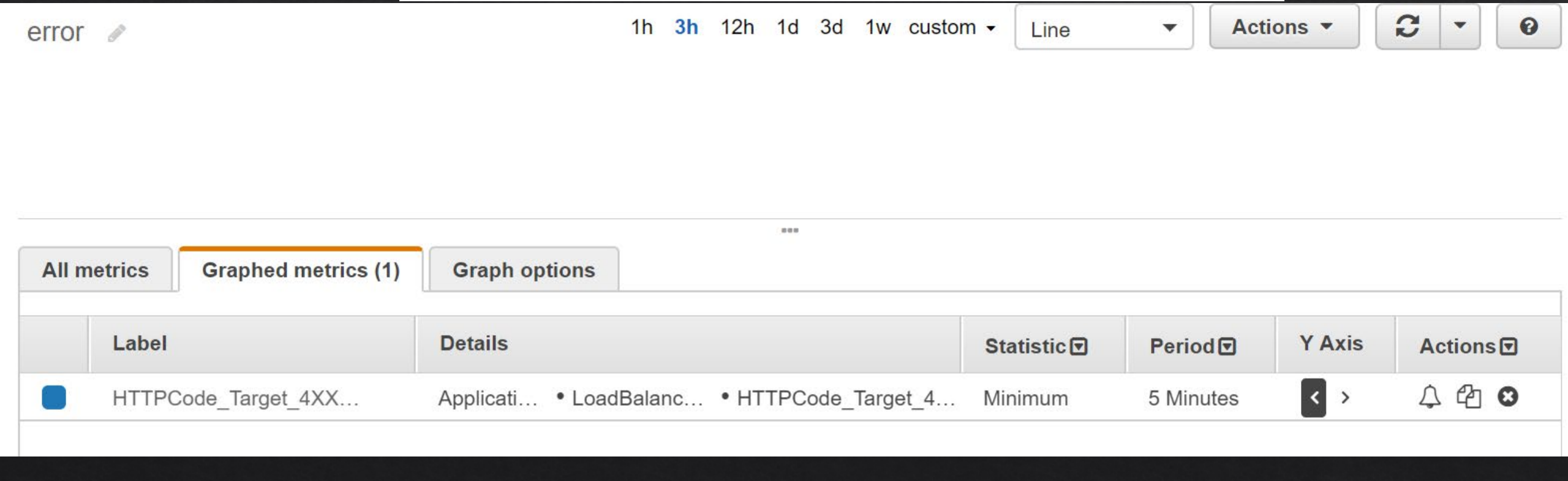
Simple Notification Service

Subscription confirmed!

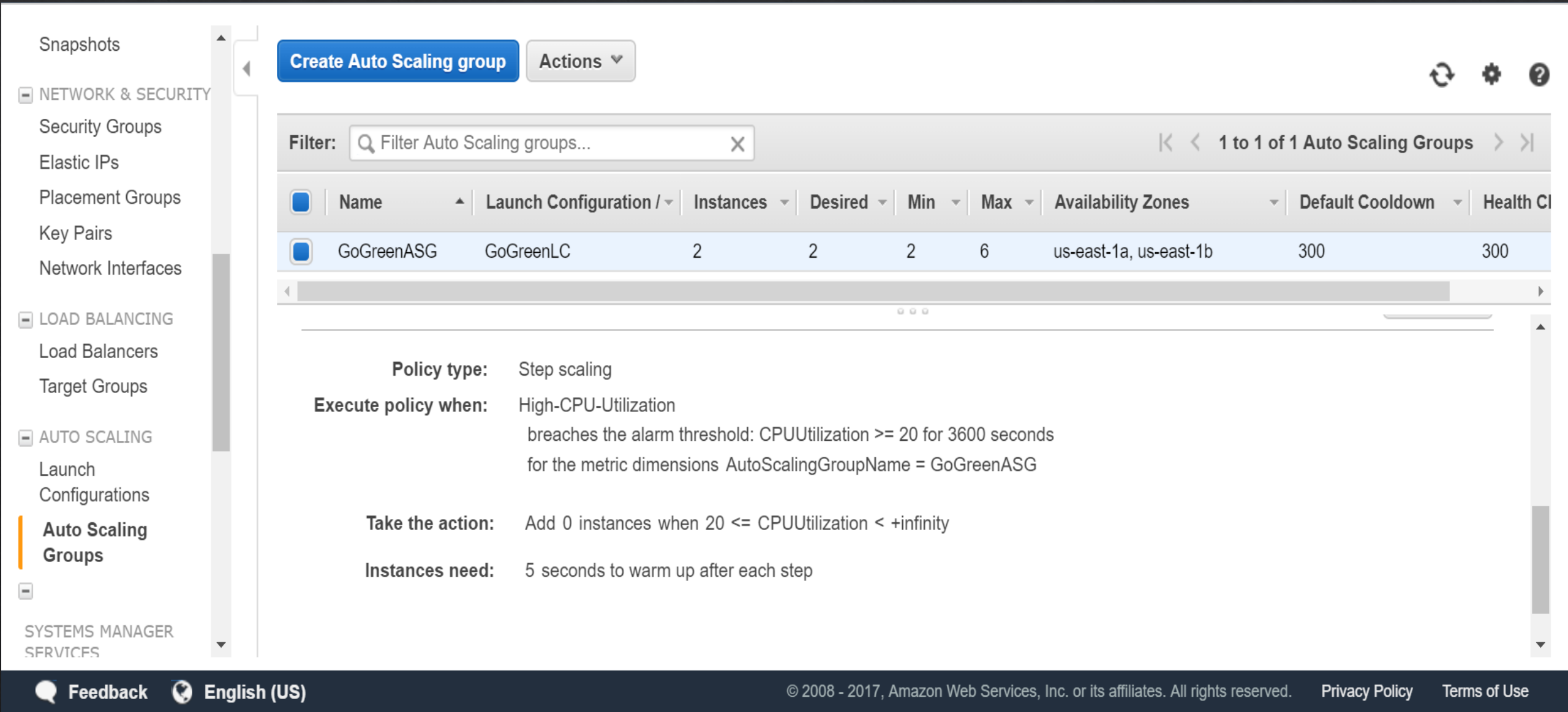
You have subscribed aishwas@clemson.edu to the topic:
error.

Your subscription's id is:
arn:aws:sns:us-east-1:666981041715:error:e45c83e6-188a-4f60-847e-cffcffcfcc4d

If it was not your intention to subscribe, click here to unsubscribe.



Auto scaling group



CloudWatch
Dashboards
Alarms
ALARM 1
INSUFFICIENT 0
OK 1
Billing
Events
Rules
Event Buses
Logs
Metrics

Favorites
Add a dashboard

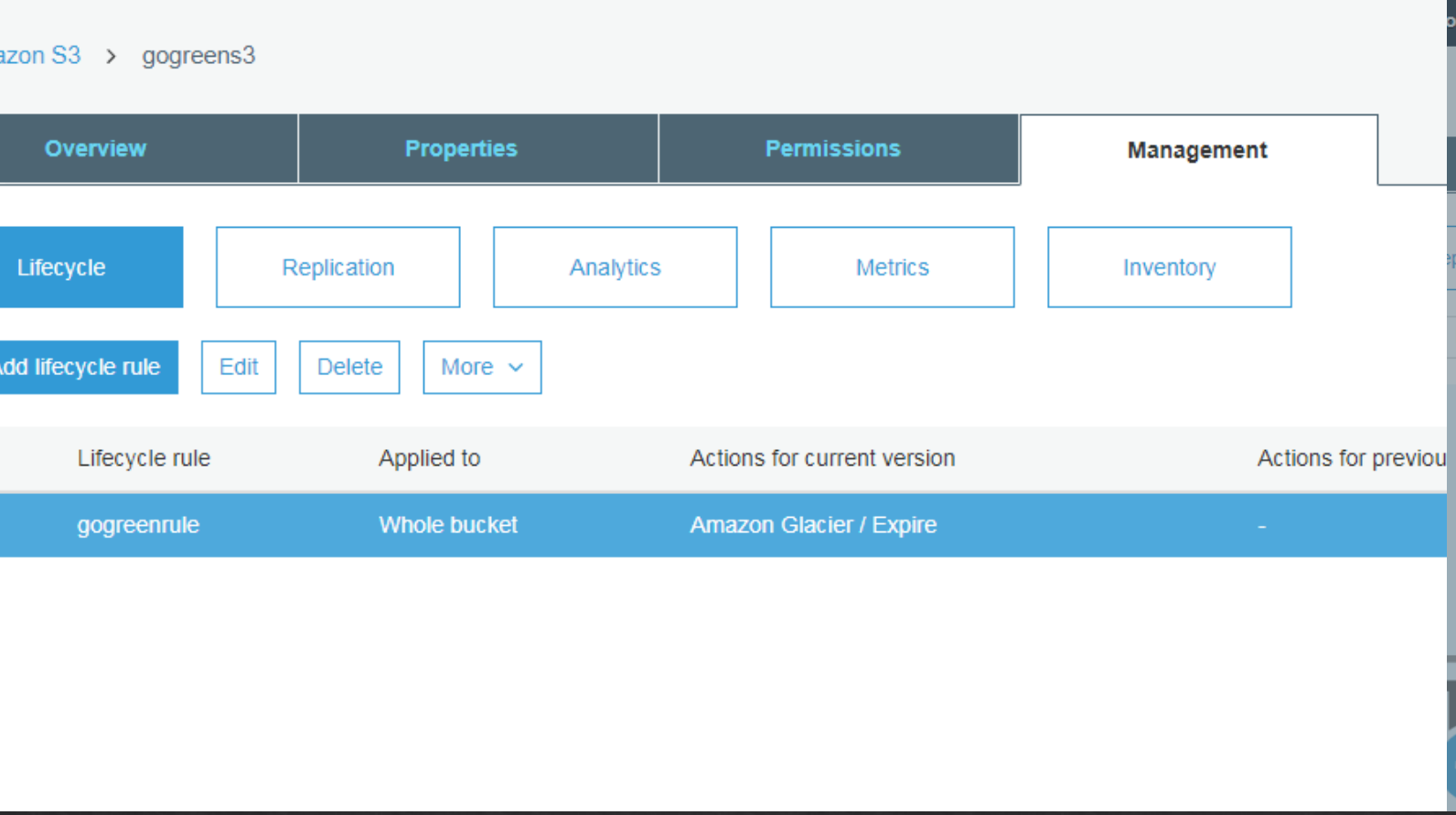
Create Alarm | Add to Dashboard | Actions

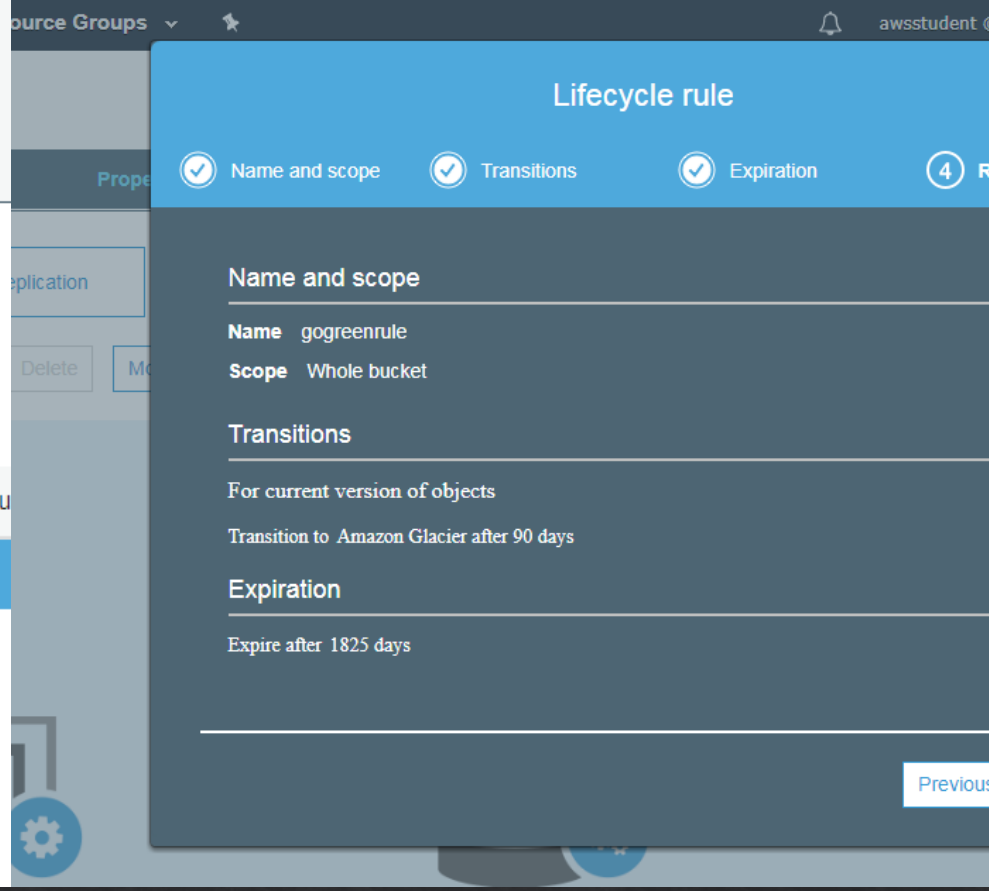
Filter: All alarms | Search Alarms | Hide all AutoScaling alarms | 1 to 2 of 2 alarms

State	Name	Threshold	Config Status
ALARM	awsec2-asg-webtier-High-Network-In	NetworkIn >= 750 for 1 datapoints within 5 minutes	
OK	High-Network-In	NetworkIn <= 300 for 1 datapoints within 5 minutes	

0 Alarms selected

Select an alarm above

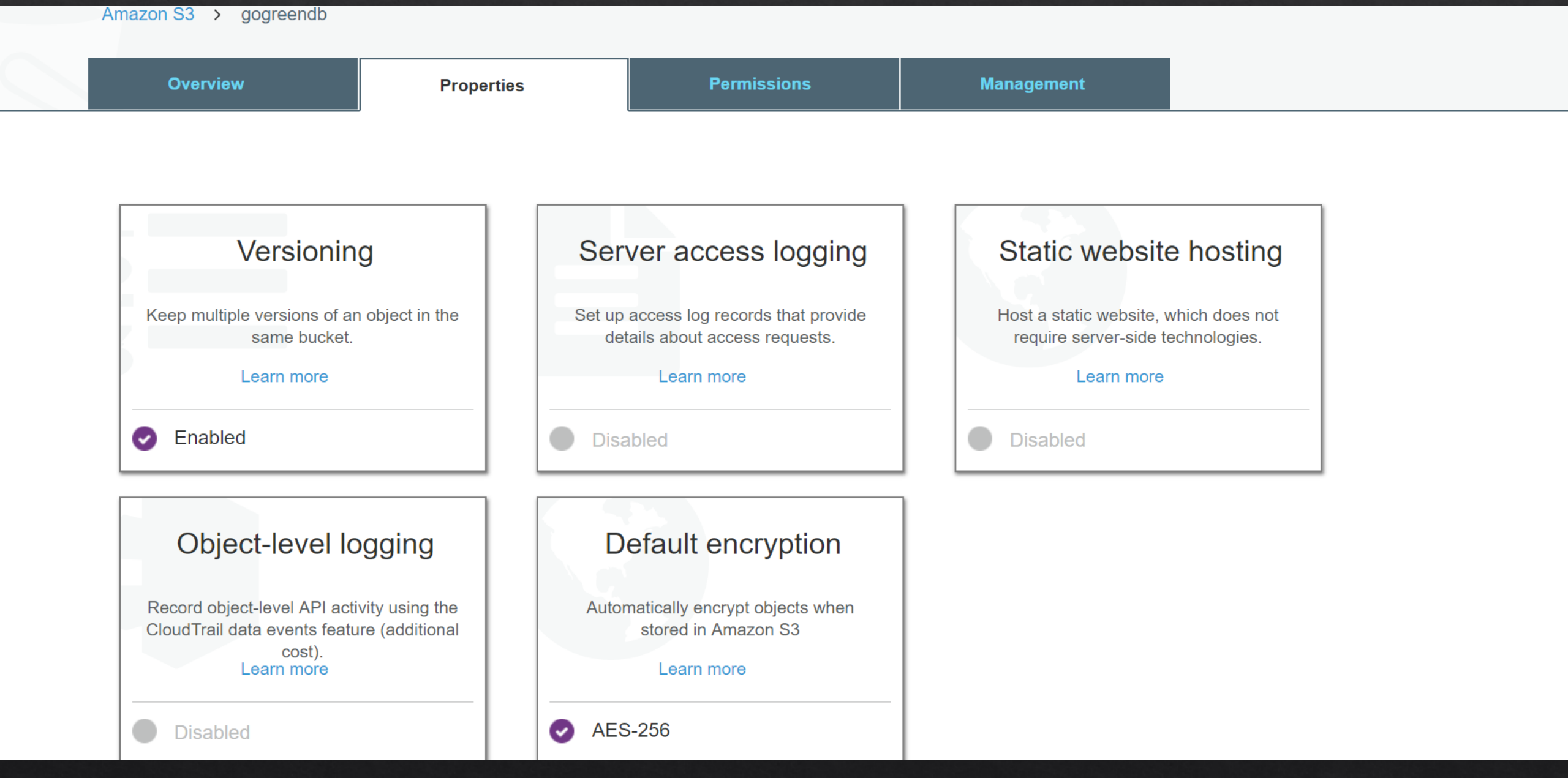




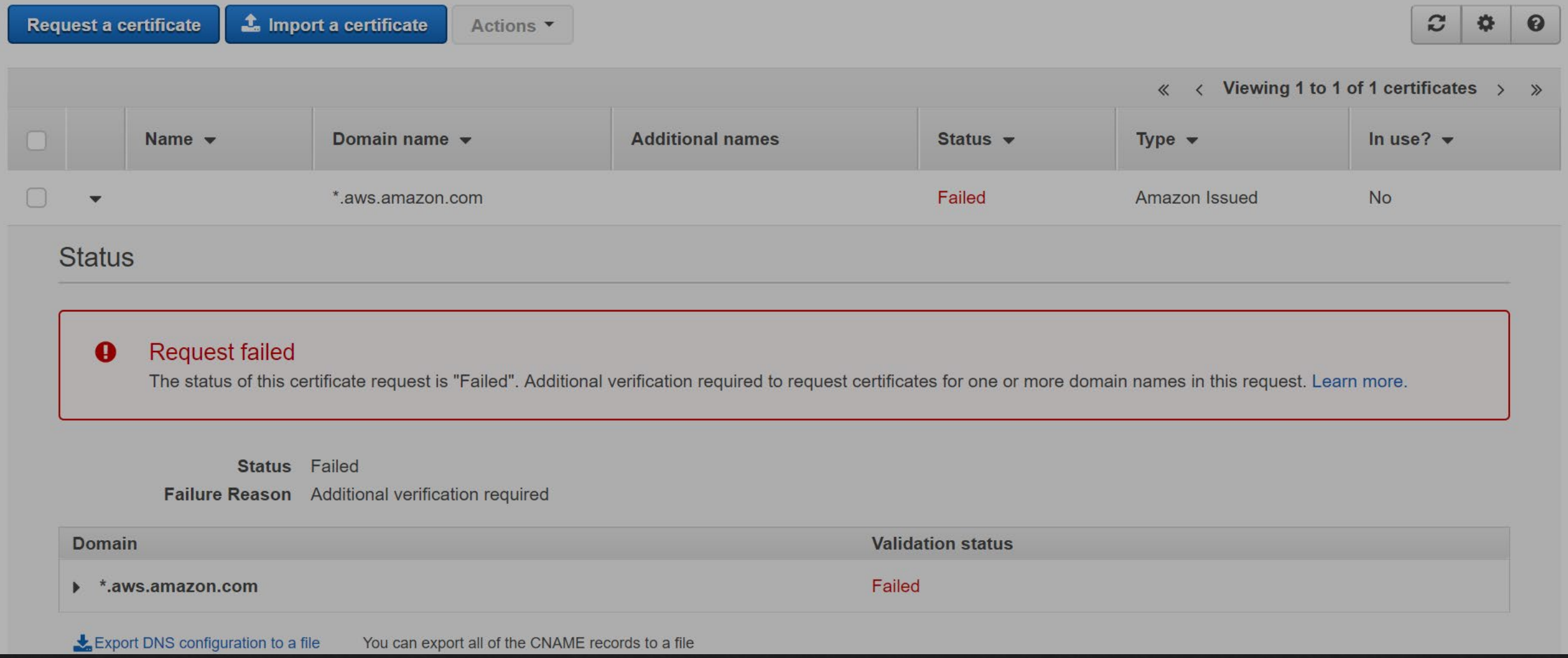
Lifecycle policy from S3 to Glacier

- Versioning enabled to make multiple copies

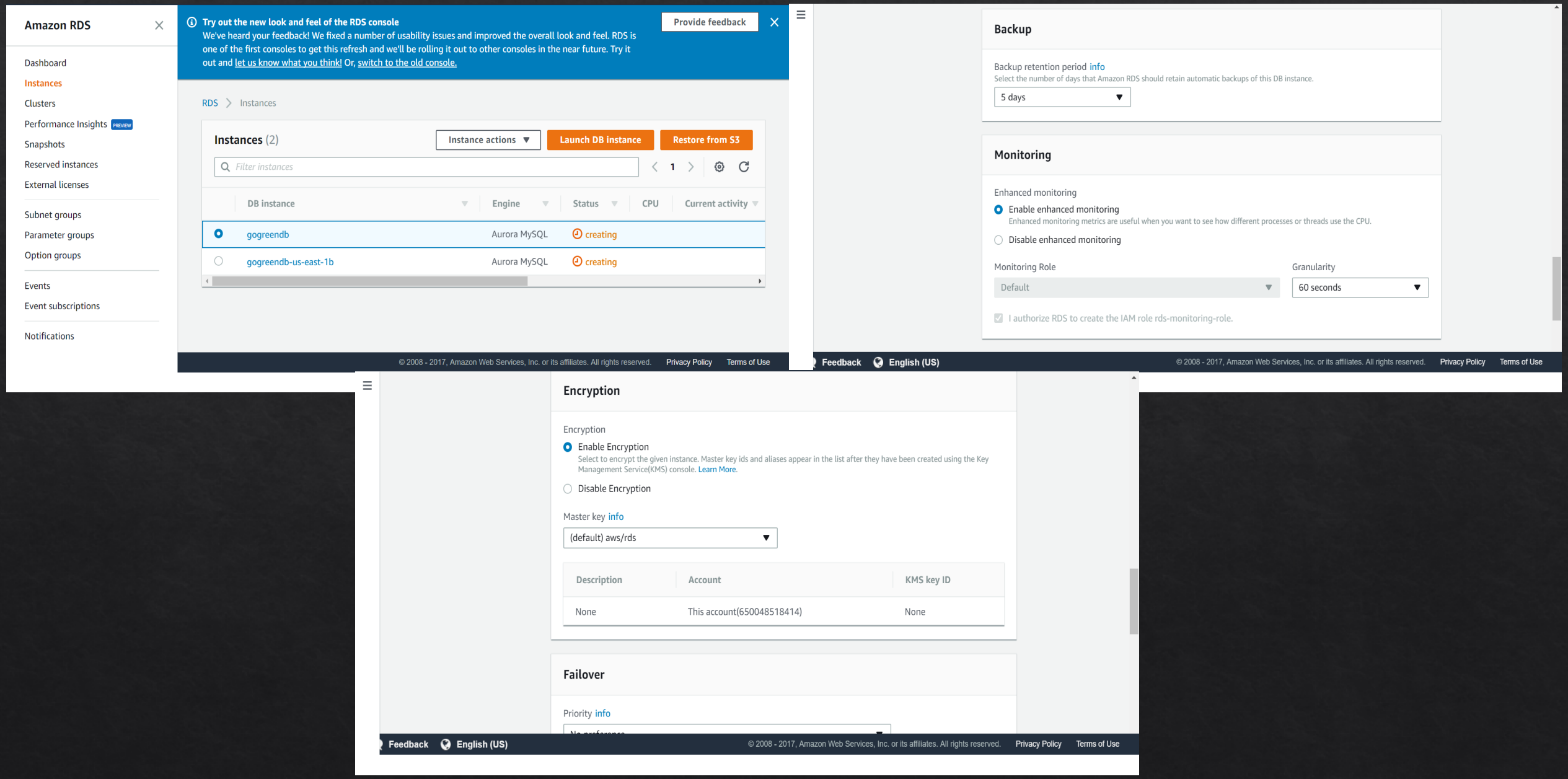
Encryption


Amazon S3 > gogreendb
Overview
Properties
Permissions
Management
Versioning
Keep multiple versions of an object in the same bucket.
Learn more
Enabled
Server access logging
Set up access log records that provide details about access requests.
Learn more
Disabled
Static website hosting
Host a static website, which does not require server-side technologies.
Learn more
Disabled
Object-level logging
Record object-level API activity using the CloudTrail data events feature (additional cost).
Learn more
Disabled
Default encryption
Automatically encrypt objects when stored in Amazon S3
Learn more
AES-256

Encryption during transit



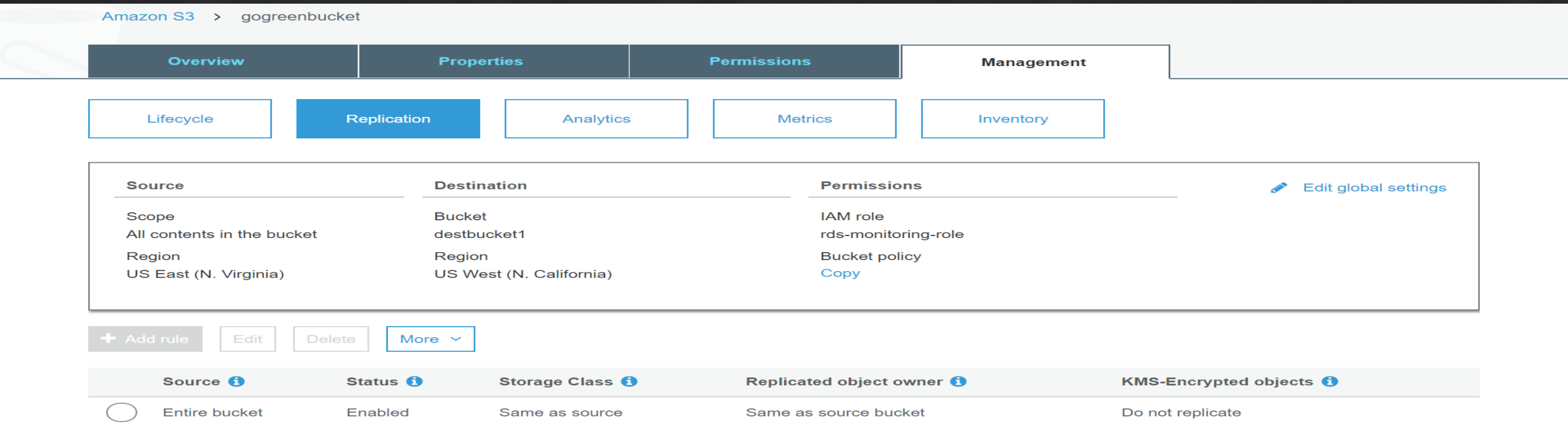
RDS


Amazon RDS
Dashboard
Instances
Clusters
Performance Insights PREVIEW
Snapshots
Reserved instances
External licenses
Subnet groups
Parameter groups
Option groups
Events
Event subscriptions
Notifications
Try out the new look and feel of the RDS console
We've heard your feedback! We fixed a number of usability issues and improved the overall look and feel. RDS is one of the first consoles to get this refresh and we'll be rolling it out to other consoles in the near future. Try it out and let us know what you think! Or, switch to the old console.
Provide feedback
RDS > Instances
Instances (2)
Instance actions
Launch DB instance
Restore from S3
Filter instances
DB instance
Engine
Status
CPU
Current activity
gogreendb
Aurora MySQL
creating
gogreendb-us-east-1b
Aurora MySQL
creating
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use
Backup
Backup retention period info
Select the number of days that Amazon RDS should retain automatic backups of this DB instance.
5 days
Monitoring
Enhanced monitoring
Enable enhanced monitoring
Enhanced monitoring metrics are useful when you want to see how different processes or threads use the CPU.
Disable enhanced monitoring
Monitoring Role
Default
Granularity
60 seconds
I authorize RDS to create the IAM role rds-monitoring-role.
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use
Encryption
Encryption
Enable Encryption
Select to encrypt the given instance. Master key ids and aliases appear in the list after they have been created using the Key Management Service(KMS) console. Learn More.
Disable Encryption
Master key info
(default) aws/rds
Description
Account
KMS key ID
None
This account(650048518414)
None
Failover
Priority info
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

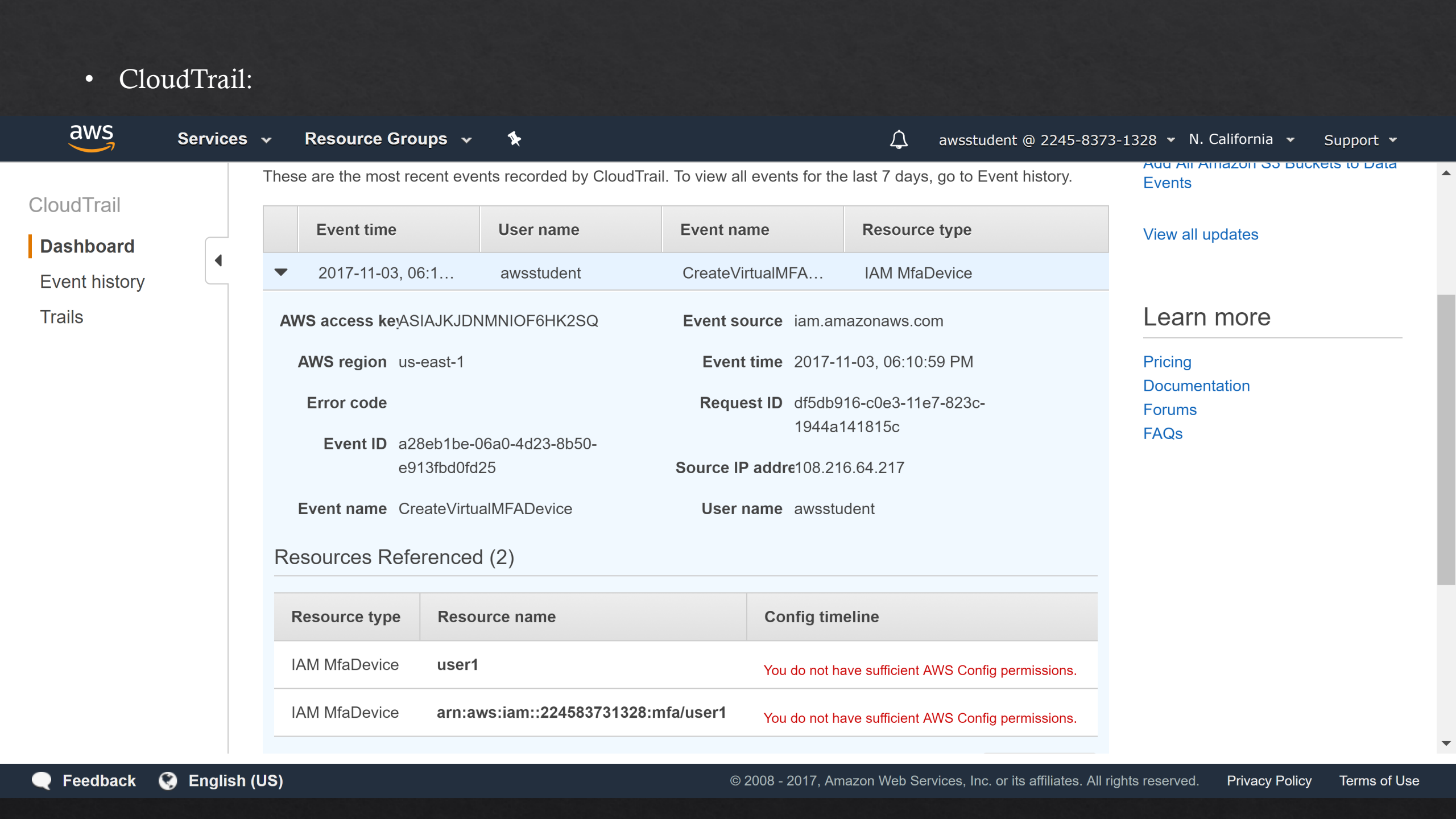
Additional Services

List any additional AWS services that you would use for your solution and why?

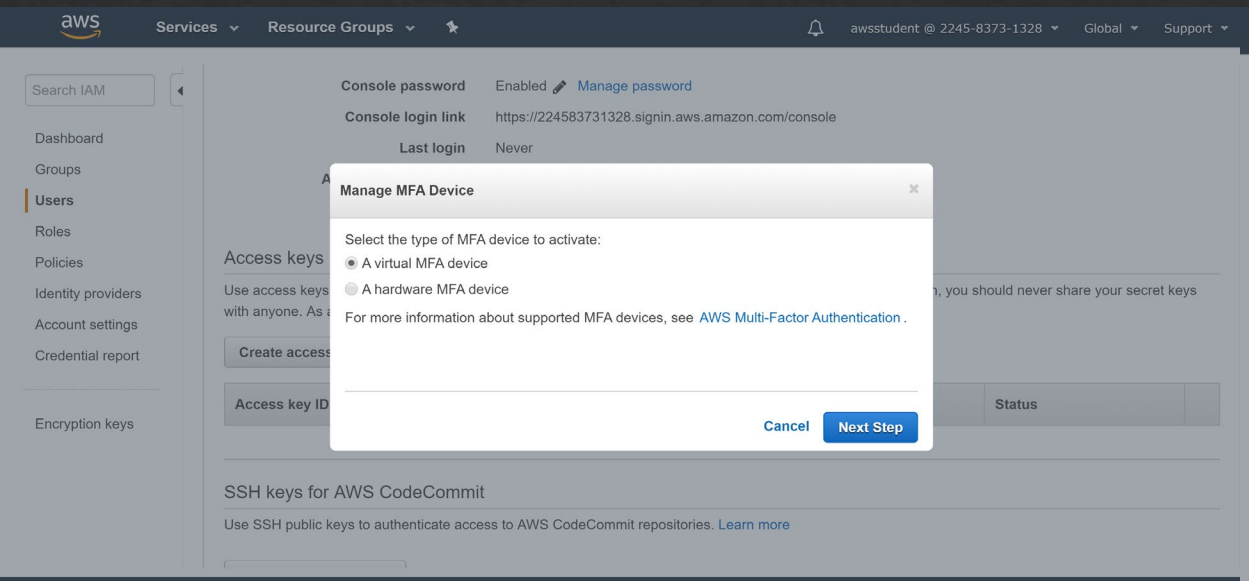
- Cross-Region Replication for S3 buckets:

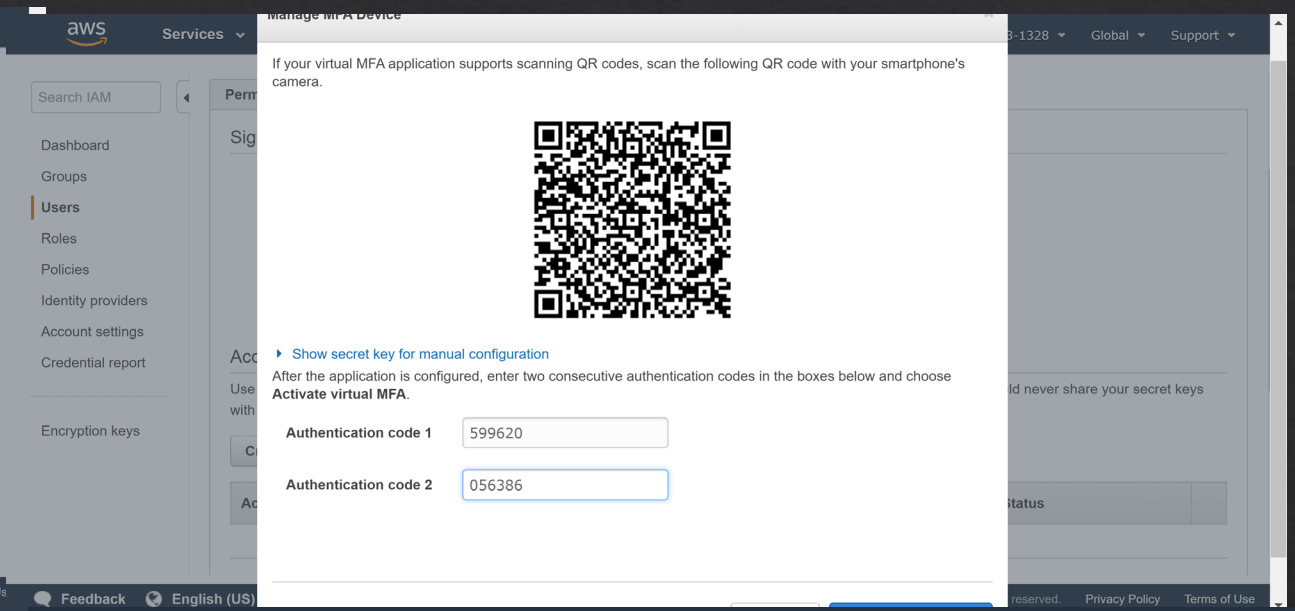


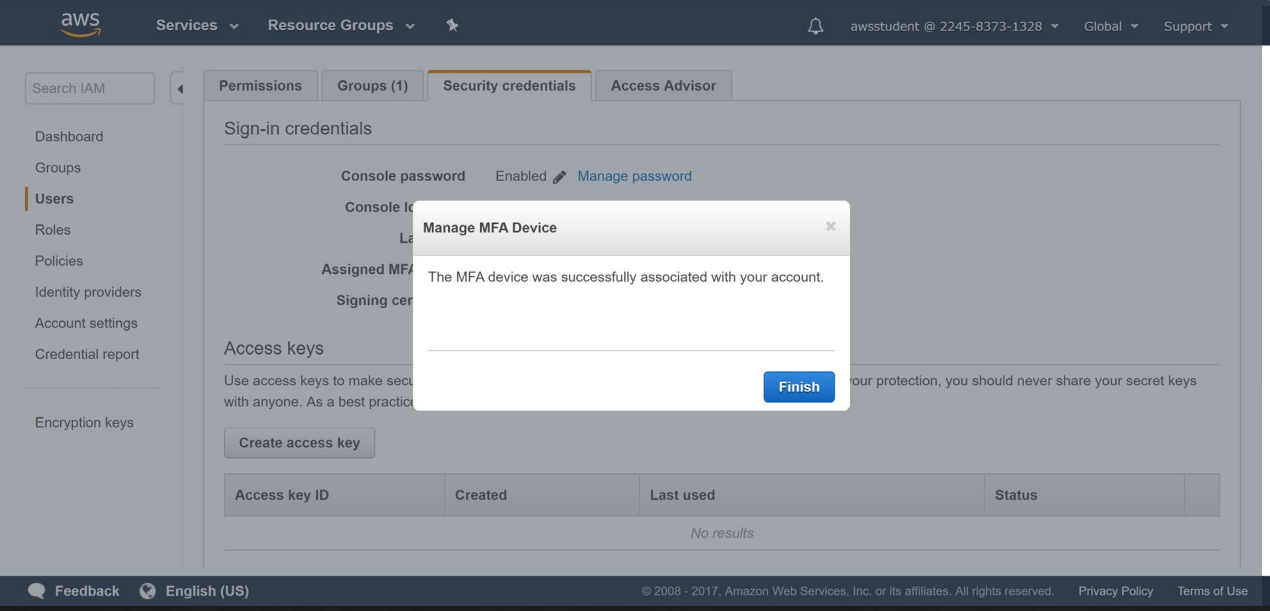
- CloudTrail:

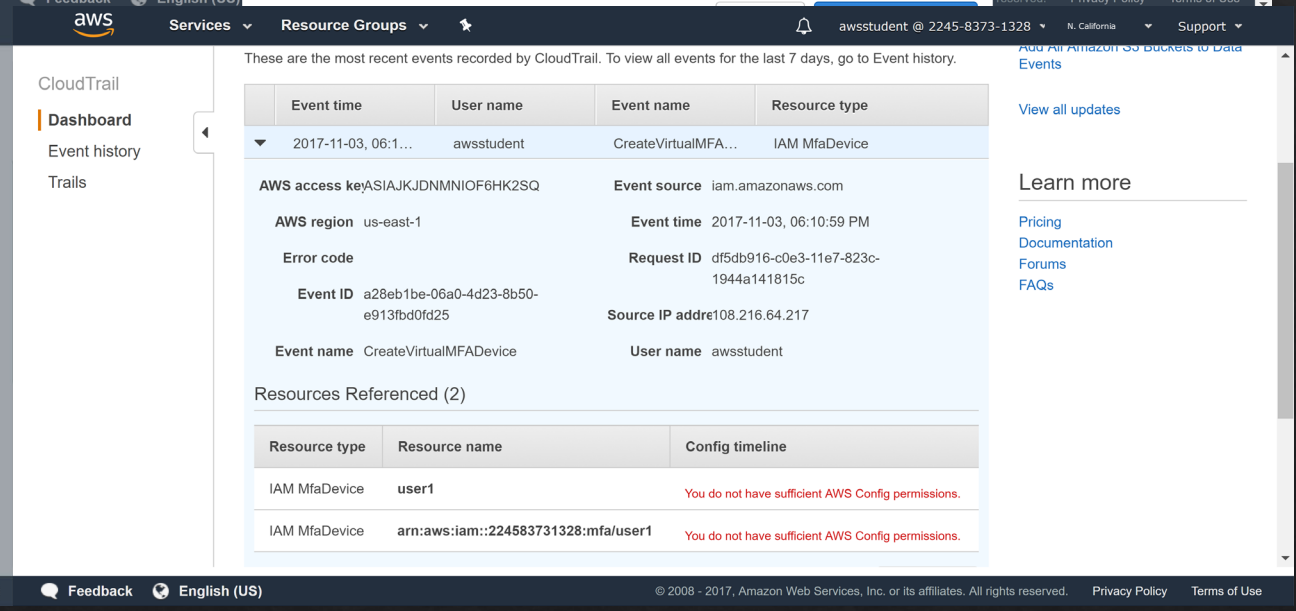

aws
Services
Resource Groups
awsstudent @ 2245-8373-1328
N. California
Support
CloudTrail
Dashboard
Event history
Trails
These are the most recent events recorded by CloudTrail. To view all events for the last 7 days, go to Event history.
Event time
User name
Event name
Resource type
2017-11-03, 06:1…
awsstudent
CreateVirtualMFA…
IAM MfaDevice
AWS access key
ASIAJKJDNMNIOF6HK2SQ
Event source
iam.amazonaws.com
AWS region
us-east-1
Event time
2017-11-03, 06:10:59 PM
Error code
Request ID
df5db916-c0e3-11e7-823c-1944a141815c
Event ID
a28eb1be-06a0-4d23-8b50-e913fbd0fd25
Source IP addre
108.216.64.217
Event name
CreateVirtualMFADevice
User name
awsstudent
Resources Referenced (2)
Resource type
Resource name
Config timeline
IAM MfaDevice
user1
You do not have sufficient AWS Config permissions.
IAM MfaDevice
arn:aws:iam::224583731328:mfa/user1
You do not have sufficient AWS Config permissions.
Add All Amazon S3 Buckets to Data Events
View all updates
Learn more
Pricing
Documentation
Forums
FAQs
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

MFA


Services
Resource Groups
awsstudent @ 2245-8373-1328
Global
Support
Search IAM
Dashboard
Groups
Users
Roles
Policies
Identity providers
Account settings
Credential report
Encryption keys
Console password
Enabled
Manage password
Console login link
https://224583731328.signin.aws.amazon.com/console
Last login
Never
Manage MFA Device
Select the type of MFA device to activate:
A virtual MFA device
A hardware MFA device
For more information about supported MFA devices, see AWS Multi-Factor Authentication .
Cancel
Next Step
Access keys
Use access keys
with anyone. As
Create access
Access key ID
Status
SSH keys for AWS CodeCommit
Use SSH public keys to authenticate access to AWS CodeCommit repositories. Learn more
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use


Services
Manage MFA Device
If your virtual MFA application supports scanning QR codes, scan the following QR code with your smartphone's camera.
Show secret key for manual configuration
After the application is configured, enter two consecutive authentication codes in the boxes below and choose Activate virtual MFA.
Authentication code 1
599620
Authentication code 2
056386
Dashboard
Groups
Users
Roles
Policies
Identity providers
Account settings
Credential report
Encryption keys
Feedback
English (US)
Privacy Policy
Terms of Use


Services
Resource Groups
awsstudent @ 2245-8373-1328
Global
Support
Search IAM
Permissions
Groups (1)
Security credentials
Access Advisor
Sign-in credentials
Console password
Enabled
Manage password
Manage MFA Device
The MFA device was successfully associated with your account.
Finish
Assigned MFA
Signing cer
Access keys
Use access keys to make secu
with anyone. As a best practic
our protection, you should never share your secret keys
Create access key
Access key ID
Created
Last used
Status
No results
Dashboard
Groups
Users
Roles
Policies
Identity providers
Account settings
Credential report
Encryption keys
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use


Services
Resource Groups
awsstudent @ 2245-8373-1328
N. California
Support
CloudTrail
Dashboard
Event history
Trails
These are the most recent events recorded by CloudTrail. To view all events for the last 7 days, go to Event history.
Event time
User name
Event name
Resource type
2017-11-03, 06:1…
awsstudent
CreateVirtualMFA…
IAM MfaDevice
AWS access key
ASIAJKJDNMNIOF6HK2SQ
Event source
iam.amazonaws.com
AWS region
us-east-1
Event time
2017-11-03, 06:10:59 PM
Error code
Request ID
df5db916-c0e3-11e7-823c-1944a141815c
Event ID
a28eb1be-06a0-4d23-8b50-e913fbd0fd25
Source IP addre
108.216.64.217
Event name
CreateVirtualMFADevice
User name
awsstudent
Resources Referenced (2)
Resource type
Resource name
Config timeline
IAM MfaDevice
user1
You do not have sufficient AWS Config permissions.
IAM MfaDevice
arn:aws:iam::224583731328:mfa/user1
You do not have sufficient AWS Config permissions.
Add All Amazon S3 Buckets to Data Events
View all updates
Learn more
Pricing
Documentation
Forums
FAQs
Feedback
English (US)
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

Search IAM

Dashboard
Groups
Users
Roles
Policies
Identity providers
Account settings
Credential report

Encryption keys

Password Policy

You have unsaved changes to your password policy.

A password policy is a set of rules that define the type of password an IAM user can set. For more information about password policies, go to Managing Passwords in Using IAM.

Currently, this AWS account does not have a password policy. Specify a password policy below.

Minimum password length: 8

- [x] Require at least one uppercase letter
- [x] Require at least one lowercase letter
- [x] Require at least one number
- [x] Require at least one non-alphanumeric character
- [x] Allow users to change their own password
- [x] Enable password expiration

Password expiration period (in days): 90

- [x] Prevent password reuse

Number of passwords to remember: 3

- [ ] Password expiration requires administrator reset

Apply password policy Delete password policy

VPC Details

VPC	Region	Subnets	AZs
GoGreen	N. California	6 Subnets	us-west-1a & us-west-1c

Subnet Name	VPC	Subnet type (Public/private)	AZ
AppTier1	GoGreen	Private subnet	us-west-1a
AppTier2	GoGreen	Private subnet	us-west-1c
WebTier1	GoGreen	Public subnet	us-west-1a
WebTier2	GoGreen	Public subnet	us-west-1c
DbTier1	GoGreen	Private subnet	us-west-1a
DbTier2	GoGreen	Private subnet	us-west-1c

Security Details

Security Group	SG Name	Rule	Source
App Tier	AppTierSG	HTTP, SSH, RDP, HTTPS	10.0.0.0/24
Database Tier	DbSG	HTTP, SSH, RDP, HTTPS	10.0.0.0/16

Network ACL	ACL Name	Rule	Source
Web Tier	WebTier	HTTP, SSH, RDP, HTTPS	0.0.0.0/0

Other Security Options	Justification
Multi-Factor Authentication	Using MFA to enable 2 factor authentication
Password Policy	Applied stringent password policy
Encryption	Encryption applied at rest and transit

Encryption Options

- Based on the requirements, list your encryption options:

Requirement	Solution
Encryption option for **data at rest**	Server side encryption by S3 AES-256
Encryption option for **data in transit**	SSL certification

Instance Details

Tier	AMI	Tag	Type	Size	Justification	# of instances
Web	Amazon Linux AMI	**Key: Name Value: web-tier**	t2.medium	4 GiB	Current architecture has 2vCPUs/4-GB Memory	1
App	Amazon Linux AMI	**Key: Name Value: app-tier**	t2.2xlarge	32 GiB	4 vCPUs/32-GB Memory	1

Web Tier Requirements

Requirement	Solution
Architecture must be flexible and handle any peak in traffic or performance.	AutoScaling and Elastic Load Balancer
The overall acceptable incoming network bandwidth is between 300 Mbps and 750 Mbps.	m4.large provides 450 Mbps bandwidth
Application administrators want to be notified by email if there are more than 100 “400 HTTP errors” per minute in the application.	Simple Notification Service in ELB

App Tier Requirements

Requirement	Solution
Architecture must be flexible and handle any peak in traffic or performance.	AutoScaling and ELB
Overall memory and CPU utilization should not go above 80% and 75% respectively or below 30% for either.	Metrics specified in ASG
Internet access is required for patching and updates without exposing the servers.	Security group inbound and outbound rules

Database Tier Requirements

Requirement	Solution
Database needs consistent storage performance at 21,000 IOPS.	Implemented in RDS
High availability is a requirement.	• RDS backup every 5th day: Fault tolerance • Read replicas
No change to the database schema can be made at this time.	