Environment Setup : Google Protocol Buffer v3 & gRPC

For the purpose of installing Google Protocol Buffer & gRPC, your existing AWS Cloud9's EC2 instance will need to be upgraded to have 30GB storage. The first few steps instruct how to make this change. Following that, installation instructions associated with gRPC and Google Protocol Buffer are mentioned. Steps to be followed :

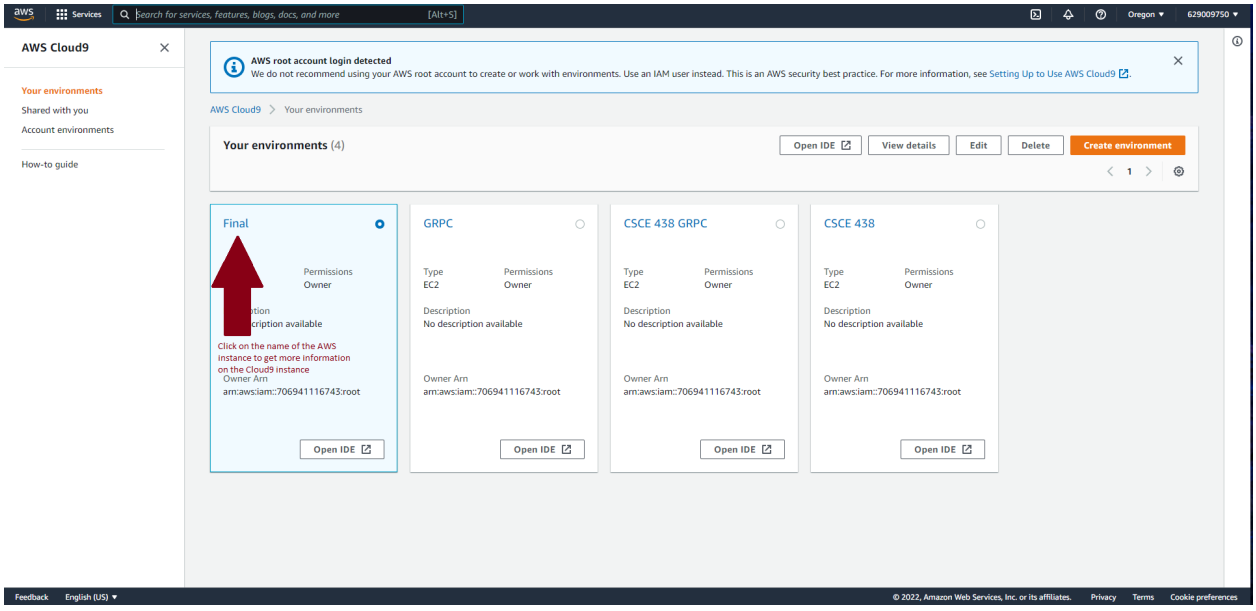
1. If you do not have AWS Cloud 9 setup, please follow the instructions in the **AWS Cloud 9 Setup Instructions** document
2. Your AWS EC2 instances are currently limited to 10 GB storage. For the purpose of setting up Google Protocol Buffer & gRPC, this needs to be expanded to 30 GB. These are the steps that needs to be followed (refer to the images in the last few pages for more information) :
    a. Go to AWS Cloud9 Home
    b. Click the name associated with the Cloud9 instance that you are planning to work on, this should open up a screen displaying the environment details
    c. Look for the title 'EC2 Instance' under the 'Environment Details' heading and click on the link that says 'Go to instance'
    d. Click on your instance name under 'Instances' table. This should display relevant information of your EC2 instance beneath the table.
    e. Navigate to the tab that says 'Storage' and click on the 'volume id' link which appears blue in color
    f. Click on your 'volume ID' name under 'Volumes' table. This should take you to a page wherein you have an option to click on the 'Modify' button towards the top right side of the screen
    g. On clicking this button, you would land on a screen that let's update Size (GiB) from 10 to 30. Confirm this operation by clicking on the orange colored button 'Modify'
    h. You have successfully raised a request to update your storage requirements
    i. After a few minutes, navigate to the EC2 instance screen (same as the one in step d.) that you had seen earlier. Click on the instance name under the 'Instances' and then you should have a dropdown menu button called 'Instance State' on the top right corner. Click on the option to 'Reboot instance'.
    j. Once the instance has rebooted, within Cloud9 terminal on running the command **df -h** you should see the entry **/dev/xvda1** having size 30 GB
3. gPRC installation commands once you are on the Cloud9 terminal :
    Path Setup
    a. export MY_INSTALL_DIR=$HOME/.grpc
    b. mkdir -p $MY_INSTALL_DIR
    c. export PATH="$MY_INSTALL_DIR/bin:$PATH"
    Installing dependencies
    a. sudo yum install -y autoconf libtool
    Installing latest version of CMake

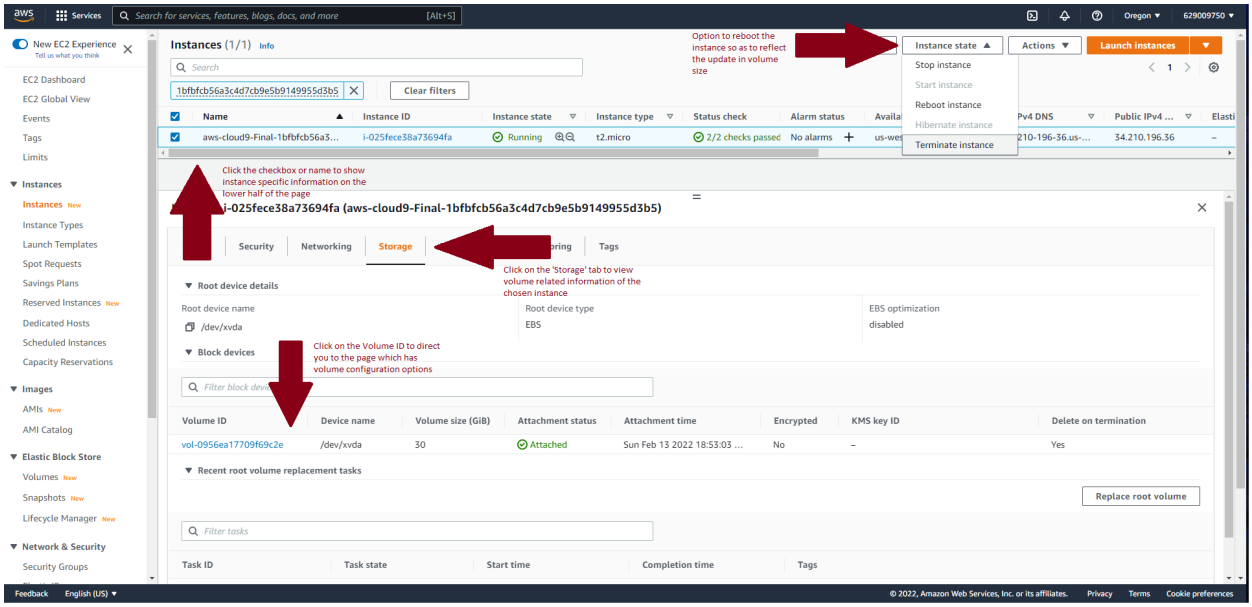
a. wget -q -O cmake-linux.sh https://github.com/Kitware/CMake/releases/download/v3.19.6/cmake-3.19.6-Linux-x86_64.sh
b. sh cmake-linux.sh -- --skip-license --prefix=$MY_INSTALL_DIR
c. rm cmake-linux.sh

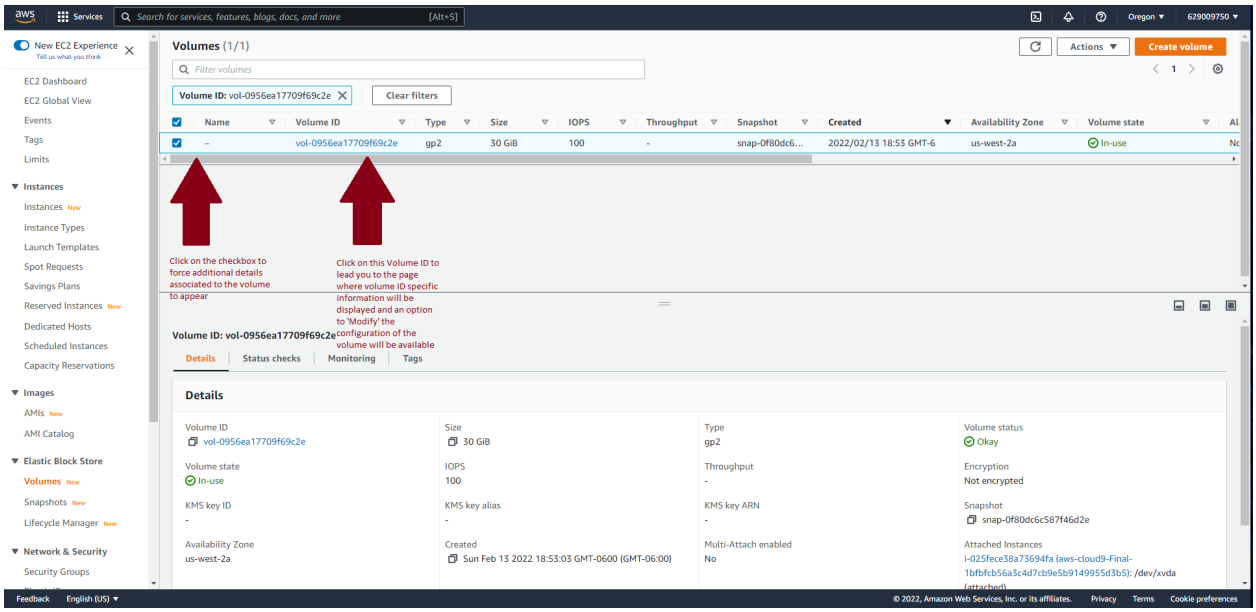
Cloning, building and installing gRPC & Protobuf

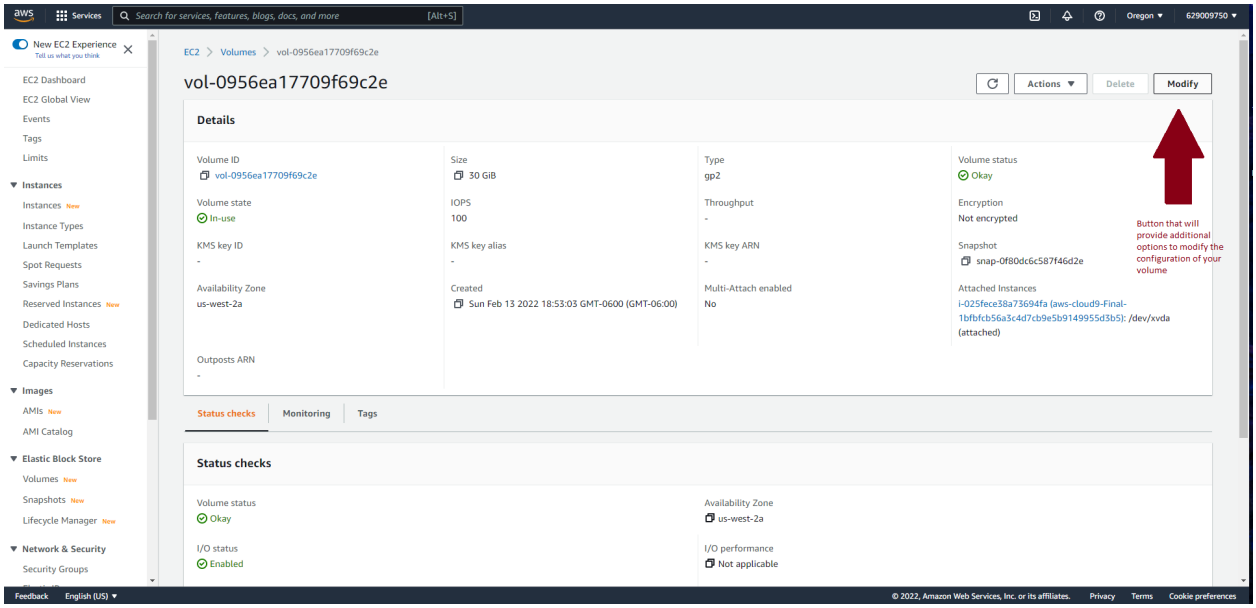
a. git clone --recurse-submodules -b v1.43.0 https://github.com/grpc/grpc
b. cd grpc
c. mkdir -p cmake/build
d. pushd cmake/build
e. cmake -DgRPC_INSTALL=ON -DgRPC_BUILD_TESTS=OFF -DCMAKE_INSTALL_PREFIX=$MY_INSTALL_DIR ../..
f. make
g. make install
h. export PKG_CONFIG_PATH=$MY_INSTALL_DIR/lib/pkgconfig/
i. export PKG_CONFIG_PATH=$MY_INSTALL_DIR/lib64/pkgconfig:$PKG_CONFIG_PATH

Images for reference




Option to reboot the instance so as to reflect the update in volume size
Instance state
Actions
Launch instances
Stop instance
Start instance
Reboot instance
Hibernate instance
Terminate instance
Click the checkbox or name to show instance specific information on the lower half of the page
i-025fece38a73694fa (aws-cloud9-Final-1bfbfcb56a3c4d7cb9e5b9149955d3b5)
Security
Networking
Storage
Tags
Click on the 'Storage' tab to view volume related information of the chosen instance
Root device details
Block devices
Click on the Volume ID to direct you to the page which has volume configuration options
Recent root volume replacement tasks
Replace root volume


Volumes (1/1)
Actions
Create volume
Click on the checkbox to force additional details associated to the volume to appear
Click on this Volume ID to lead you to the page where volume ID specific information will be displayed and an option to 'Modify' the configuration of the volume will be available
Volume ID: vol-0956ea17709f69c2e
Details
Status checks
Monitoring
Tags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New EC2 Experience
Tell us what you think
EC2 Dashboard
EC2 Global View
Events
Tags
Limits
Instances
Instances New
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances New
Dedicated Hosts
Scheduled Instances
Capacity Reservations
Images
AMIs New
AMI Catalog
Elastic Block Store
Volumes New
Snapshots New
Lifecycle Manager New
Network & Security
Security Groups
EC2 > Volumes > vol-0956ea17709f69c2e
vol-0956ea17709f69c2e
Actions
Delete
Modify
Details
Volume ID
vol-0956ea17709f69c2e
Size
30 GiB
Type
gp2
Volume status
Okay
Volume state
In-use
IOPS
100
Throughput
-
Encryption
Not encrypted
KMS key ID
-
KMS key alias
-
KMS key ARN
-
Snapshot
snap-0f80dc6c587f46d2e
Availability Zone
us-west-2a
Created
Sun Feb 13 2022 18:53:03 GMT-0600 (GMT-06:00)
Multi-Attach enabled
No
Attached Instances
i-025fece38a73694fa (aws-cloud9-Final-1bfbfcb56a3c4d7cb9e5b9149955d3b5): /dev/xvda (attached)
Outposts ARN
-
Button that will provide additional options to modify the configuration of your volume
Status checks
Monitoring
Tags
Status checks
Volume status
Okay
Availability Zone
us-west-2a
I/O status
Enabled
I/O performance
Not applicable
Feedback
English (US)
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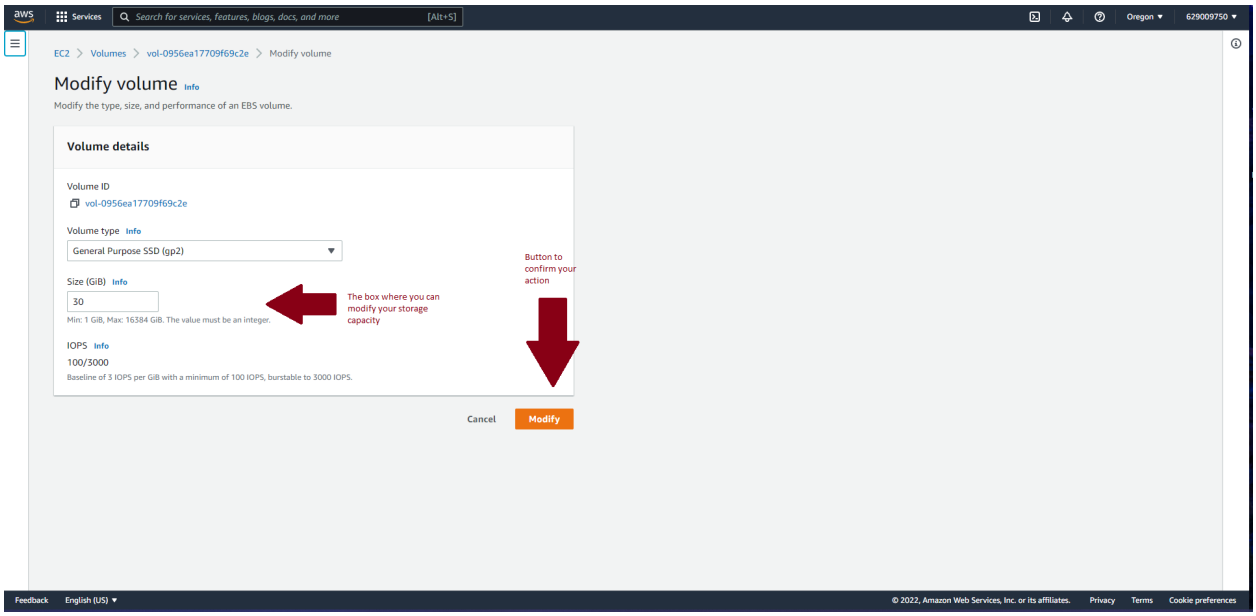
Services
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EC2 > Volumes > vol-0956ea17709f69c2e > Modify volume
Modify volume Info
Modify the type, size, and performance of an EBS volume.
Volume details
Volume ID
vol-0956ea17709f69c2e
Volume type Info
General Purpose SSD (gp2)
Size (GiB) Info
30
Min: 1 GiB, Max: 16384 GiB. The value must be an integer.
The box where you can modify your storage capacity
IOPS Info
100/3000
Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.
Button to confirm your action
Cancel
Modify
Feedback
English (US)
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