RTS RVOC Engine

en AWS Prerequisite Guide

Table of contents

1 Important Notices

This guide provides specific instructions for hosting the RTS RVOC Engine on Amazon Web Services. The AWS resources you set up will only be suitable for running the RVOC Engine. If you need to host multiple applications within the AWS account, please consult a cloud expert to ensure compatibility between the different applications. Your organization may require additional security measures that this datasheet does not cover. Always involve your security team before making cloud deployments. This manual guides you through setting up an AWS account. It is designed for users who are new to AWS and provides step-by-step instructions for configuring both the RVOC Engine standard and the RVOC Engine High Availability.

Before you begin, you must have:

- AWS account with administrator rights
- VPC
  - One public subnet
  - One private subnet NAT Gateway/internet connectivity
- At least 2 Elastic IP addresses, available for a non-high available system (Note, this may require an AWS service limit resource increase)
- AWS S3 bucket hosting the software packages
- (Option) Email sending service (AWS SES or any other SMTP compatible service)

For any questions related to configuring your AWS account or AWS services, please contact AWS support. RTS Intercoms support can only assist you with the RVOC Engine application.

2 Sign up for an AWS account

If you do not have an AWS account, complete the following steps:

1. Open https://portal.aws.amazon.com/billing/signup.
2. Follow the online instructions.
   Part of the sign-up procedure involves receiving a phone call and entering a verification code via the telephone.

Notice!
When you sign up for an AWS account, an AWS account root user is created. The root user has access to all AWS services and resources in the account. As a security best practice, assign administrative access to a user. Use the root user only to perform tasks that require root user access.

AWS sends you a confirmation email after the sign-up process is complete.
You can view your current account activity and manage your account by going to https://aws.amazon.com/ and choosing My Account.

3 VPC setup

Introduction to VPCs

A VPC is a virtual network dedicated to your AWS account. It logically isolates your network from other virtual networks in the AWS cloud. You can think of it as your own private space within AWS, where you can launch AWS resources like EC2 instances or, in our case, an RVOC Engine.

Key Concepts

- **Subnet** - A range of IP addresses in your VPC. Subnets can be public or private.
- **Public Subnet** - A subnet whose resources can be accessed from the internet.
- **Private Subnet** - A subnet whose resources cannot be accessed directly from the internet.
- **NAT Gateway** - A Network Address Translation (NAT) gateway enables instances in a private subnet to connect to the internet or other AWS services, but prevents the internet from initiating a connection with those instances.
- **Availability Zone (AZ)** - Distinct locations within an AWS region that are engineered to be isolated from failures in other Availability Zones.

3.1 VPC costs

While Amazon VPC provides the foundational networking infrastructure for your cloud intercom system at no additional charge, it is important to understand the cost implications of various VPC components and features.

Notice!

The following list only focuses on the VPC components deployed within this guide. There are others that are not listed here.

Free components	– VPC Creation and Management: Creating and maintaining VPCs incurs no cost – Subnets: Subnets within your VPC are free to create and manage – Route Tables: Custom routing configurations within your VPC – Security Groups and NACLs: Firewall and access control features – Internet Gateways: Components enabling internet connectivity – Gateway endpoints: For S3
Paid components	NAT Gateways – Hourly charges – Data processing Inter-AZ data transfer: – Data processing Data egress (internet out): – Data processing

For current pricing, see https://aws.amazon.com/pricing/.

3.2 Determine your IP address ranges

The resources in your VPC communicate with each other and with other resources over the internet using IP addresses. When you create VPCs and subnets, you can select their IP address ranges. When you deploy resources in a subnet, such as EC2 instances, they receive IP addresses from the IP address range of the subnet. For more information, see IP addressing for your VPCs and subnets.
IMPORTANT: RVOC Engine deployments require at least 27 subnets (this includes room for future updates of the product).

Example:
VPC CIDR: 10.10.0.0/23
- provides 512 total IP addresses
- Sufficient space to contain your required subnets with room for expansion

Public Subnet: 10.10.0.0/27
- Provides 32 IP addresses (30 usable)
- Available range: 10.10.0.0 - 10.10.0.31
- Usable IPs: 10.10.0.1 - 10.10.0.30
- Reserved: 10.10.0.0 (network), 10.10.0.31 (broadcast)
- Purpose: Internet-facing components, load balancers, NAT gateways

Private Subnet: 10.10.0.32/27
- Provides 32 IP addresses (30 usable)
- Available range: 10.10.0.32 - 10.10.0.63
- Usable IPs: 10.10.0.33 - 10.10.0.62
- Reserved: 10.10.0.32 (network), 10.10.0.63 (broadcast)
- Purpose: Backend services, databases, internal components

3.3 Select your availability zones

An AWS Region is a physical location where we cluster data centers, known as Availability Zones. Each Availability Zone has independent power, cooling, and physical security, with redundant power, networking, and connectivity. The Availability Zones in a region are physically separated by a meaningful distance, and interconnected through high-bandwidth, low-latency networking.
Select the region that has the lowest geographical distance from your physical location to minimize latency and improve application responsiveness; available regions can be found at https://www.aws-services.info/regions.html.

RVOC Standard deployment
An RVOC Standard deployment only requires a single Availability Zone to be selected.

RVOC High Availability deployment
An RVOC High Availability deployment requires two Availability Zones within the same region to be selected.

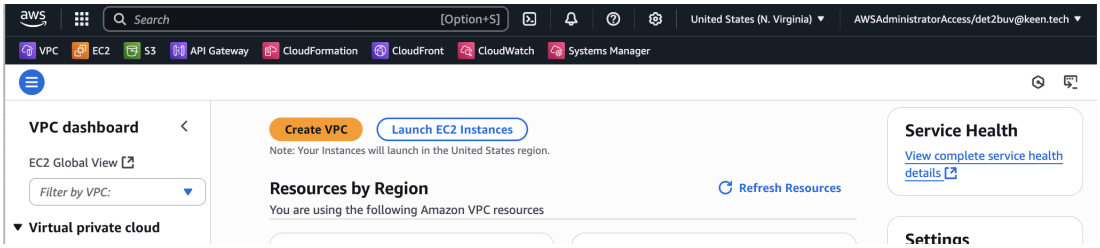
Example:
For your production facility in Washington DC, you'll want to select an AWS region that provides the lowest latency and highest reliability for your cloud intercom system.
Recommended AWS Region: US East (N. Virginia) - **us-east-1**
This is the ideal choice for your Washington DC location because:
- It's physically the closest AWS region to Washington DC (approximately 90 miles away)
- The minimal geographic distance will provide the lowest possible latency
- This proximity ensures voice communications remain clear with minimal delay
- The N. Virginia region has extensive connectivity options to the DC metro area

3.4 Standard mode VPC setup

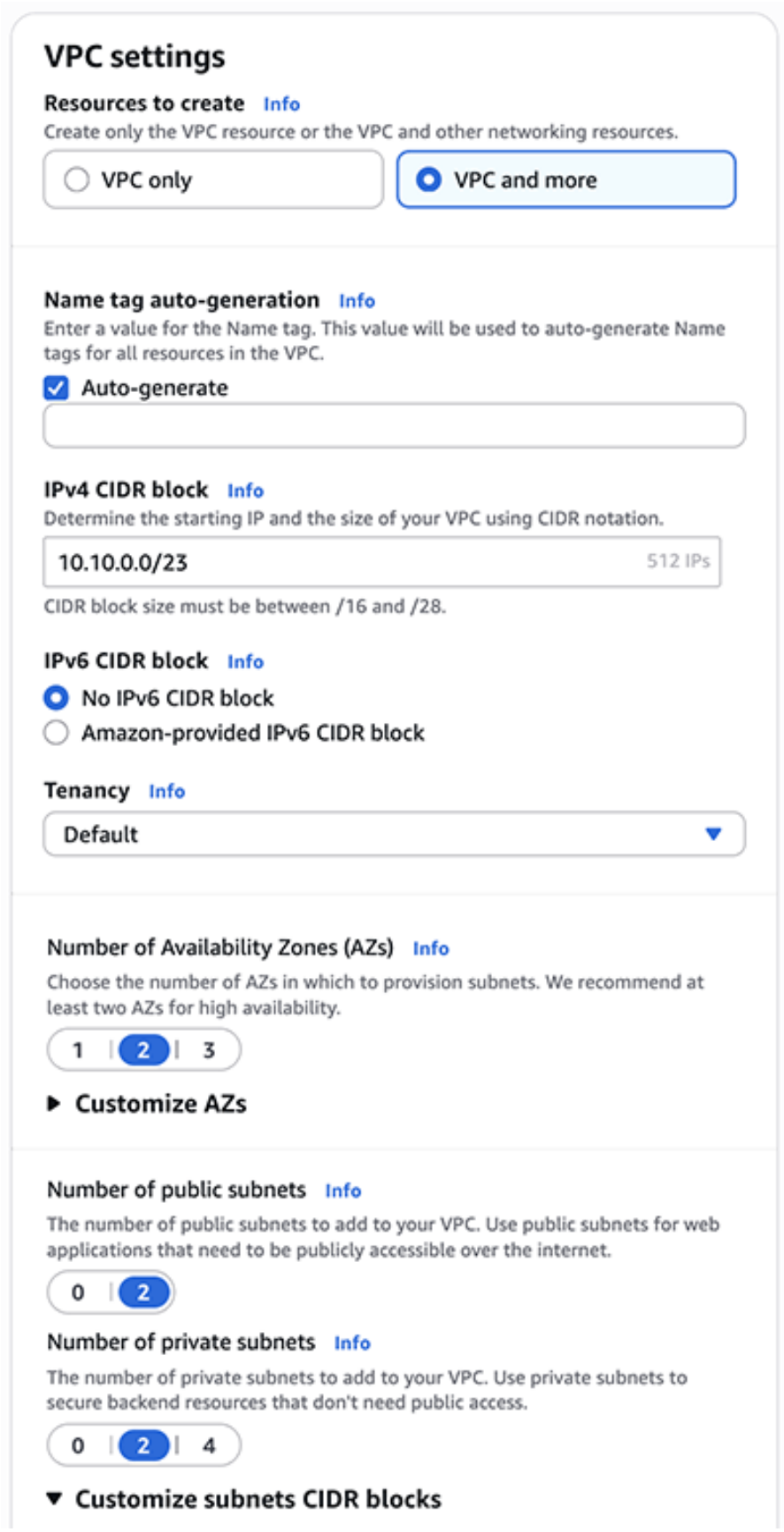
This section covers setting up a VPC with one public and one private subnet in the same Availability Zone using the VPC Wizard.

Notice!
For high availability deployments, go to the next section.

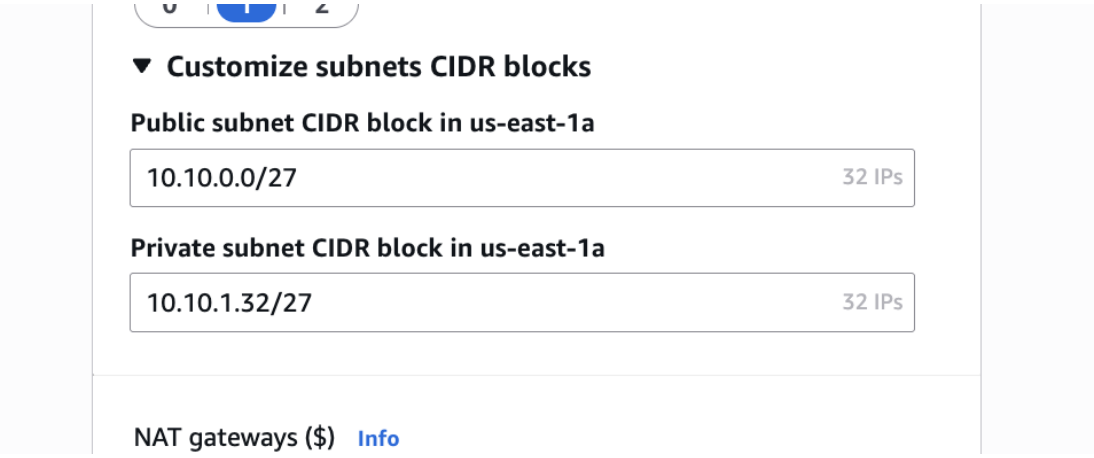
1. Log in to the AWS Management Console.
2. Navigate to the VPC service and the planned region.



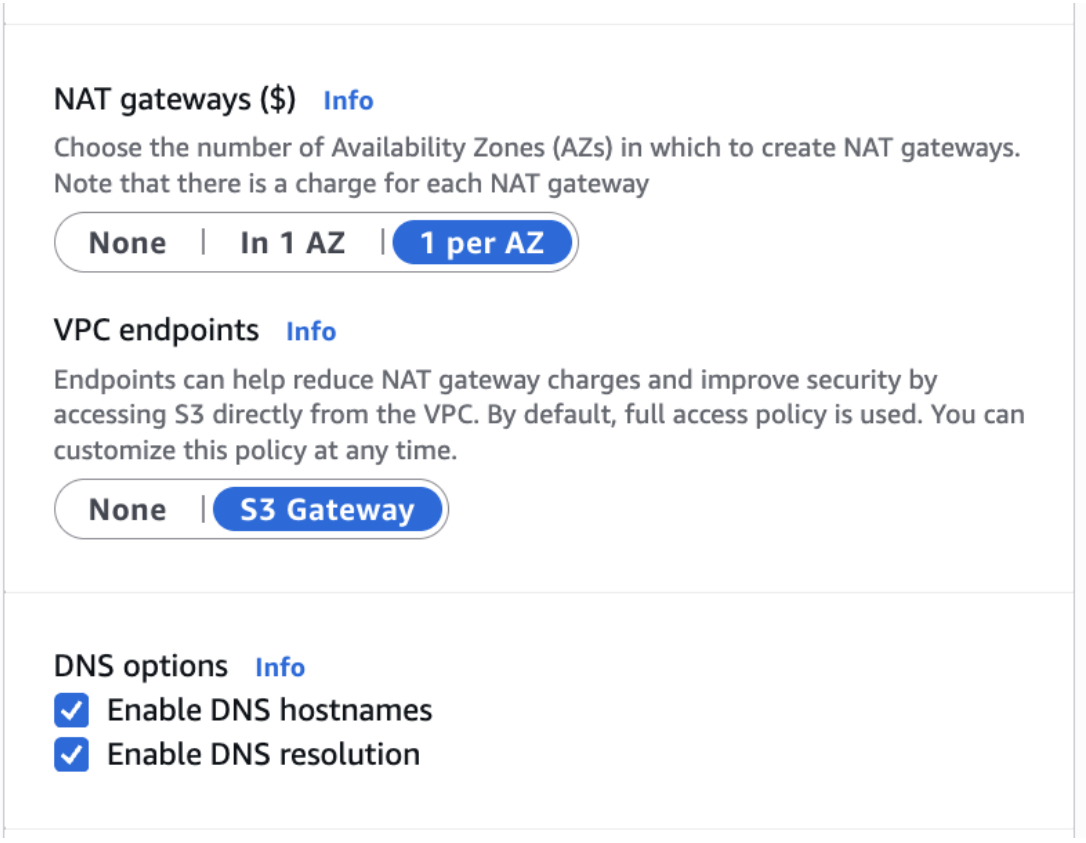
3. Select Create VPC.
4. Choose VPC and more.
5. Configure the VPC with a name, CIDR block (IP range), 1 Availability Zone, 1 Public Subnet and 1 Private Subnet.



6. Review the subnet allocations to ensure they match your planning.

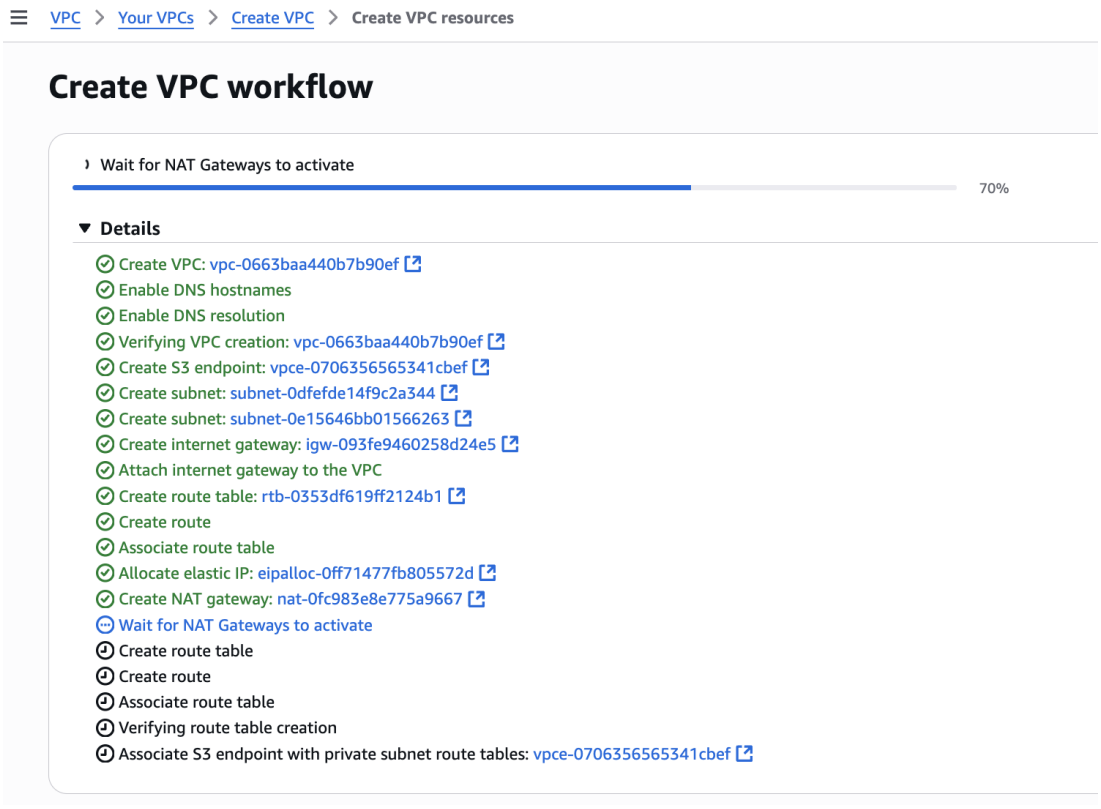


7. Create 1 NAT Gateway and the S3 VPC Endpoint.



Notice!
Without internet connectivity the intercom will not be installed correctly!

8. Review and create the VPC.



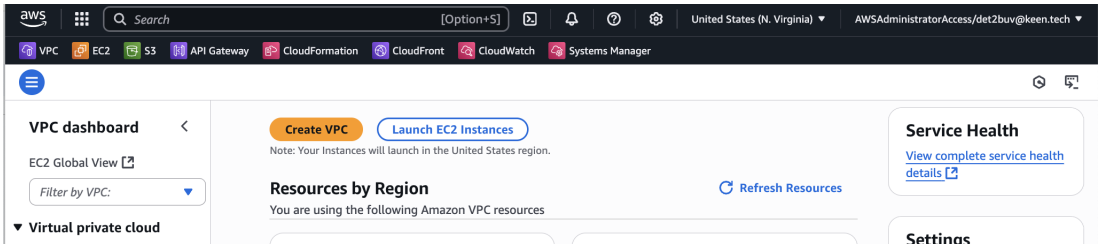
9. Wait for your VPC workflow to complete.
   Your VPC is now ready for use with an RVOC Engine

Notice!
The VPC will incur costs (even when not used) due to the resources created.

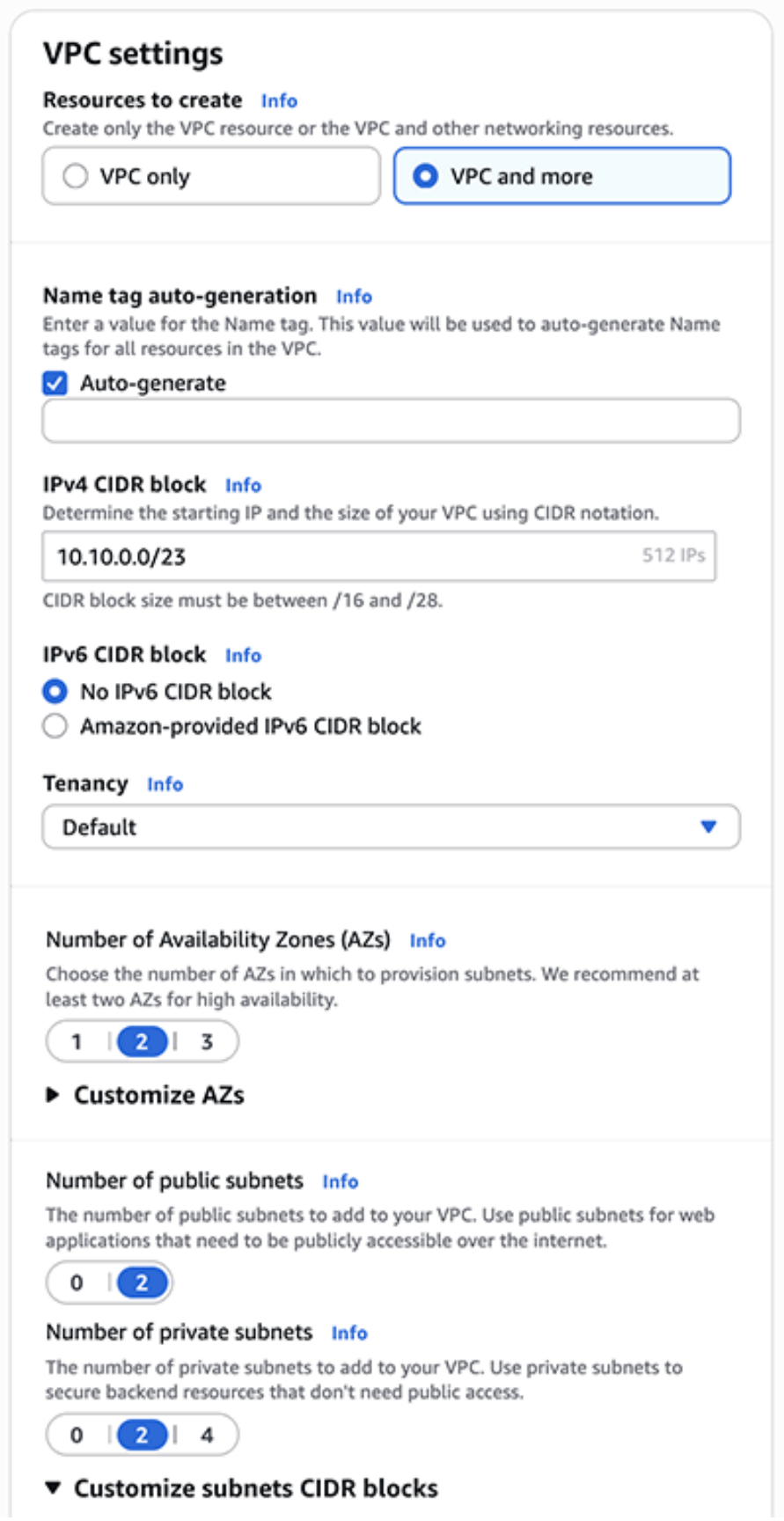
3.5 High Availability mode VPC setup

This section covers setting up a VPC with two public and two private subnets across two different Availability Zones using the VPC wizard

1. Log in to the AWS Management Console.
2. Navigate to the VPC service and the planned region.

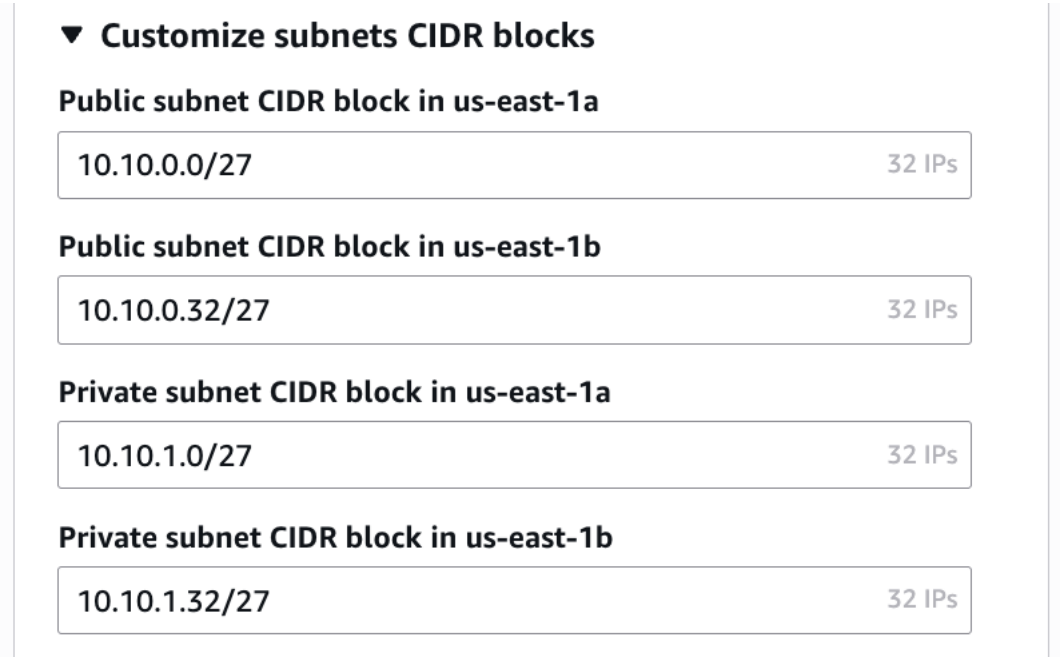


3. Select Create VPC.
4. Choose VPC and more.

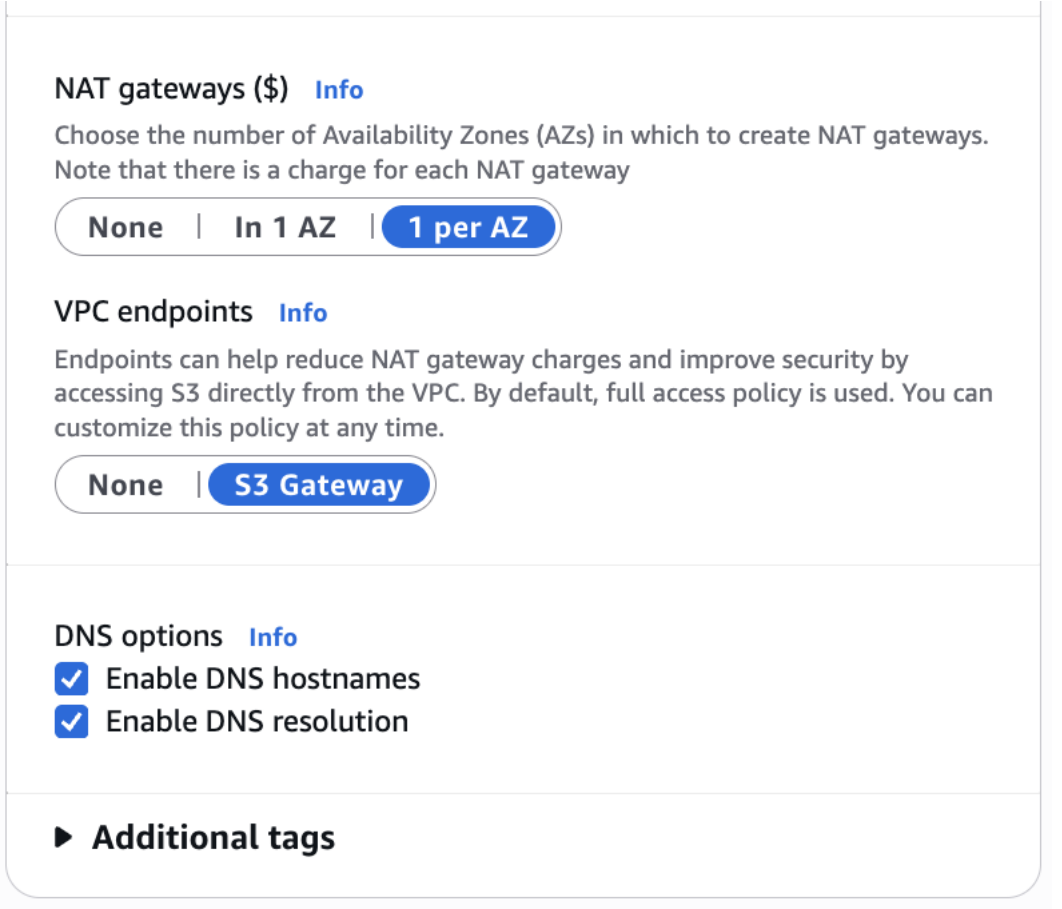


5. Configure the VPC with a name, CIDR block (IP range), 2 Availability Zones, 2 Public Subnets and 2 Private Subnets.

6. Review the subnet allocations to ensure they match your planning.

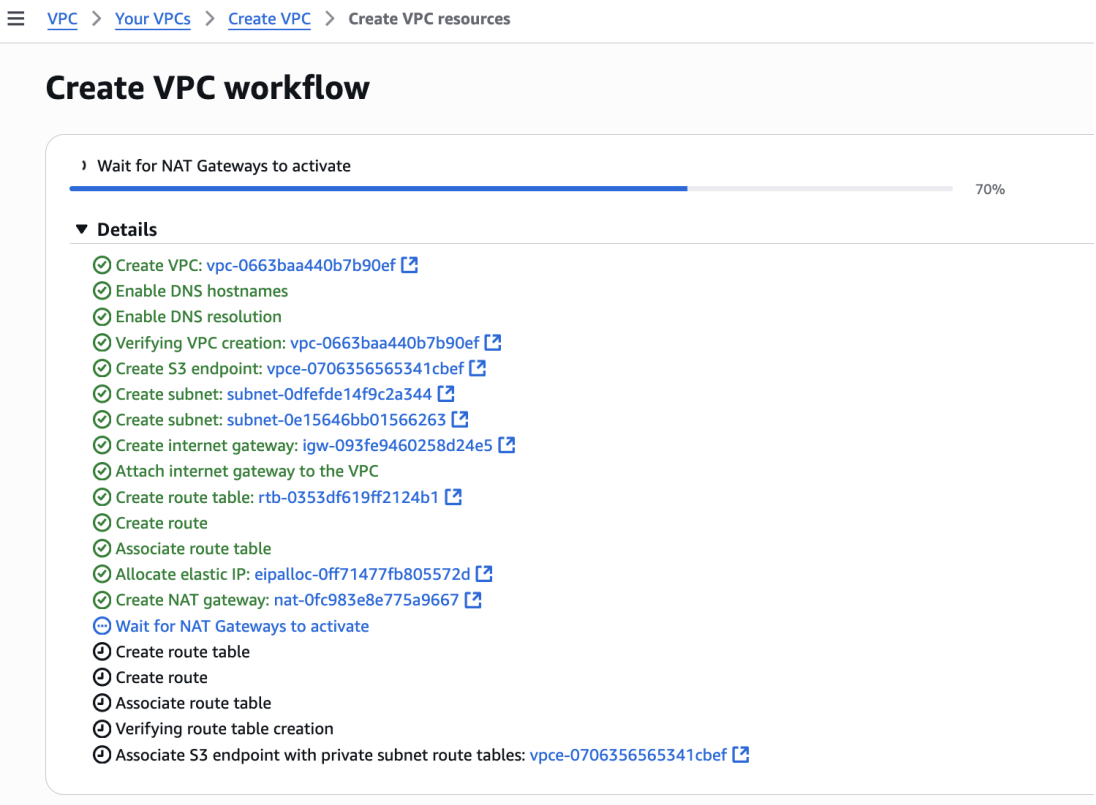


7. Create 2 NAT Gateways (1 per AZ) and the S3 VPC Endpoint.



Notice!
Without internet connectivity the intercom will not be installed correctly.

8. Review and create the VPC.



9. Wait for your VPC workflow to complete.
   Your VPC Is now ready for use with an RVOC Engine

Notice!
The VPC will incur costs (even when not used) due to the resources created.

4 (Optional) Amazon SES

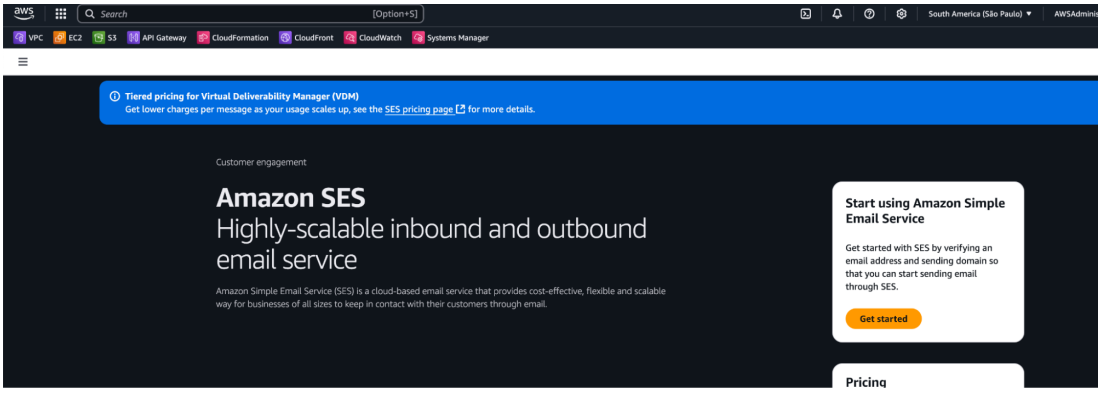
Amazon Simple Email Service (SES) provides a reliable, cost-effective email solution that will enhance the user experience of the RVOC Engine with critical notification capabilities:

1. System Notifications
   – Alert administrators about intercom system status changes
2. User Management
   – Send welcome emails during user onboarding
   – Send password reset notifications

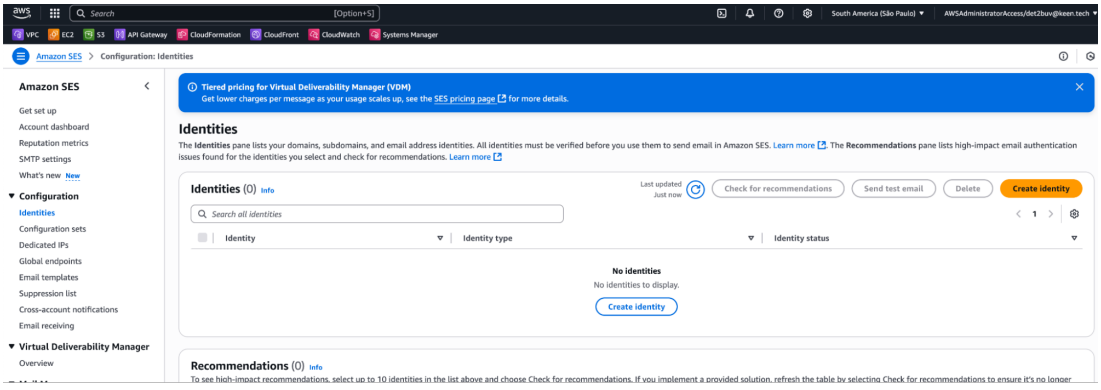
In this section we show how to setup Amazon SES with Domain ownership through Route53. Other configurations are possible, please see the Amazon SES documentation for other options.

4.1 Set up Amazon SES with domain authentication

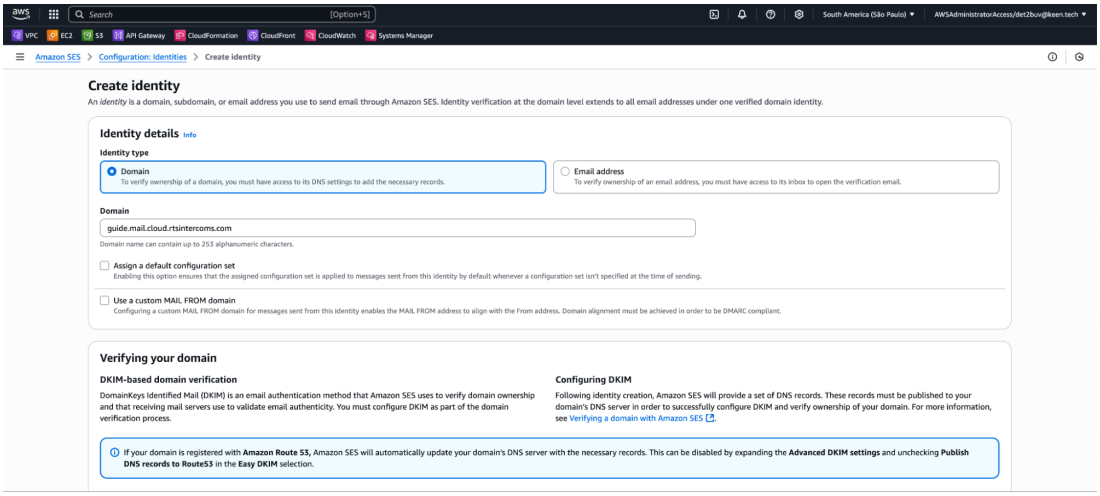
1. Navigate to the Amazon Simple Email Service in the region in which you want to deploy the intercom.



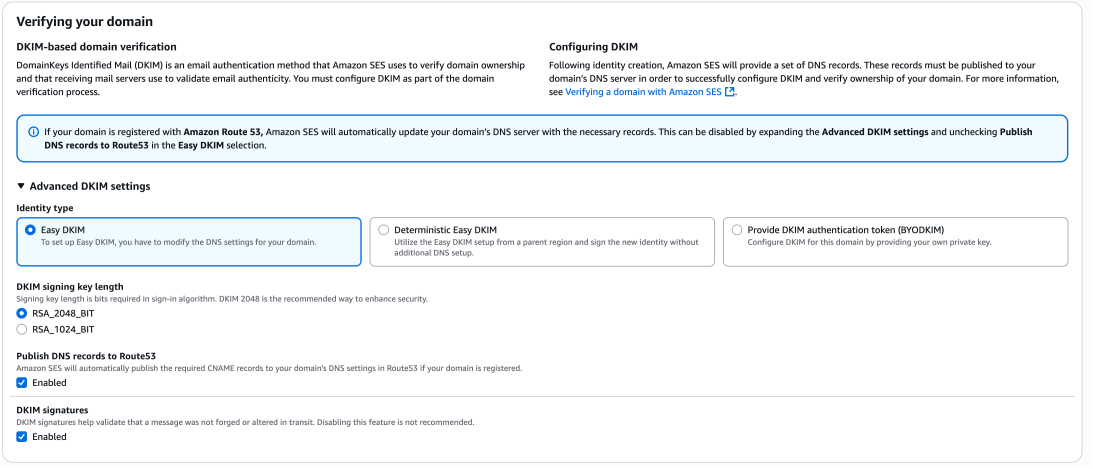
2. Click the Menu icon in the right navigation, and navigate to Configuration Identities.



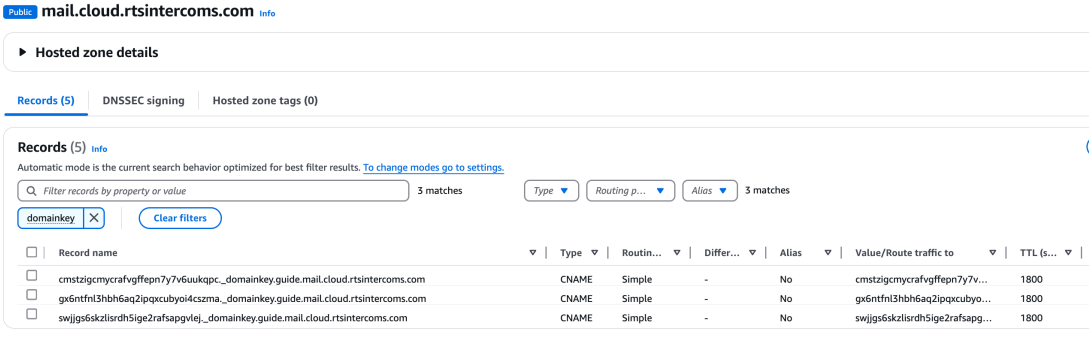
3. Click Create Identity.
4. Click Domain and provide the domain you want to use to send emails from.
   – In this example, we configure SES to send emails from “something”@guide.mail.cloud.rtsintercoms.com, in the same AWS account a Route53 hosted zone exists for mail.cloud.rtsintercoms.com.



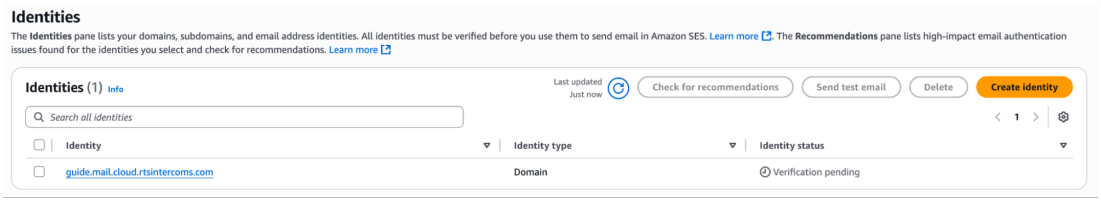
5. Scroll down and select Easy DKIM.
   Use all default settings as below:



6. Click Create Identity.
   – Amazon SES automatically creates the required DNS entries in Route53. Validate whether the entries are created by Navigating to Route53, opening the hosted zone which is registered, look for “domainkey”. Amazon SES should have created at least 3 entries:



   – Amazon SES shows the created identity as “Verification Pending”, wait until the Identity Status moves to Verified. This can take up to 2 hours. In case the identity does not go to “Verified”, contact your cloud administrator or AWS Support.



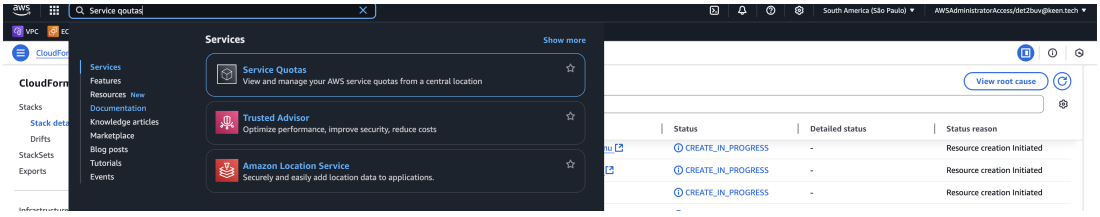
   - Amazon SES initially places all new accounts in a "sandbox" environment with significant limitations. Once your domain is verified you must request production access.
7. Navigate to SES console | Account dashboard | Production Access.
8. Complete the request form with:
   - Select: Transactional
   - Reason: We have installed RVOC Engine (see https://rtsintercoms.com/rvoc). RVOC Engine uses Amazon SES to send invitation emails to users which are added through a manual sign-up process as well as password reset request.
9. Production approval typically processes within 24-48 hours.

5 Amazon EC2 - Elastic IP

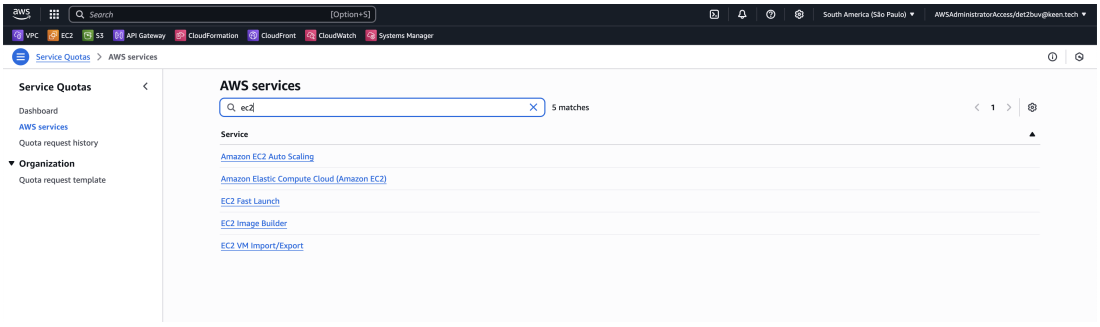
A standard deployment requires 2 public IP addresses (1 for Intercom, 1 for Turn server), a high-available deployment requires 4 addresses (2 for Intercom, 2 for Turn Server, 2 for Global Accelerator). Additional Elastic IP addresses are required for your VPC Setup (1 IP for a single AZ VPC, at least 2 IP's for a multi AZ VPC).

Notice!
By default only 5 elastic IP's are available per AWS account / region, additional Elastic IP's require a service quota increase.

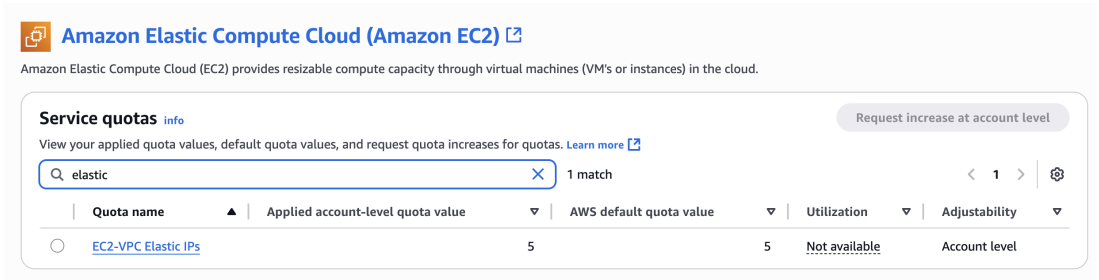
1. Navigate to the Service Quota service in the region in which you require the additional addresses.



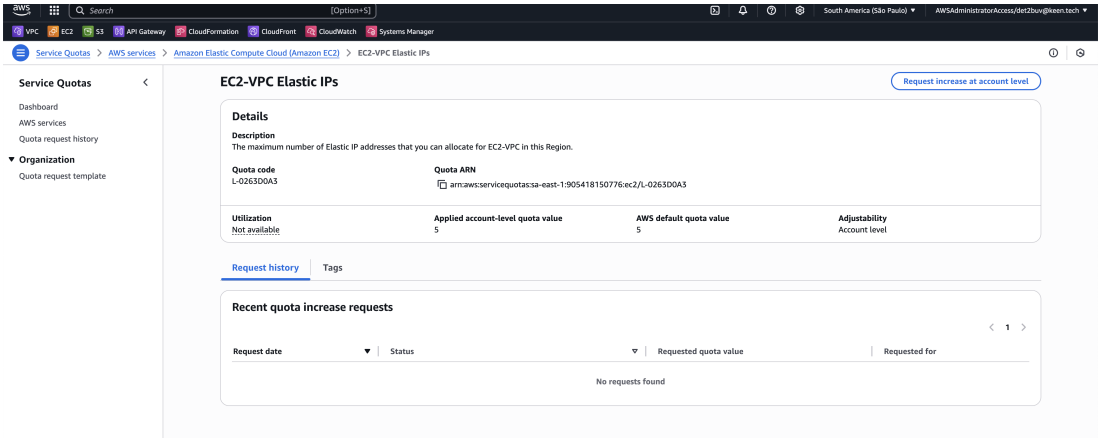
2. Search to the Amazon Elastic Compute Cloud (Amazon EC2) Service and select it.



3. Lookup the EC2-VPC Elastic IPs quota:



4. Select the quota and request an increase at account level. A typical good number to request for RVOC high availability deployments is 10 (including your NAT gateway IP's).

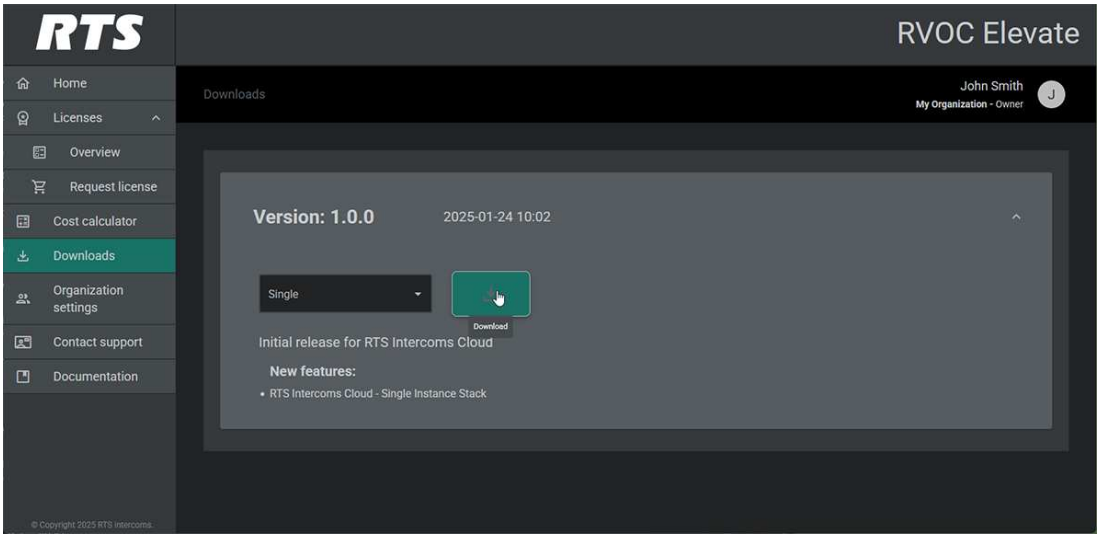


5. Depending on your level of support the service quota increase may take anywhere between 30 minutes and 2 days.

6 Download the installer package

Before you can create RVOC Engine, you must download the installer package from RVOC Elevate at https://cloud.rtsintercoms.com.

1. Open RVOC Elevate.
2. Navigate to **Downloads**.



3. Select **Single** from the drop down menu.
4. Click the **Download** icon.
   The system sends the installer package to your computer.

Package contents:

– Intercom-core-single.json - This template file is used with the AWS CloudFormation service. It provides the details of the AWS infrastructure as shown in RTS template.

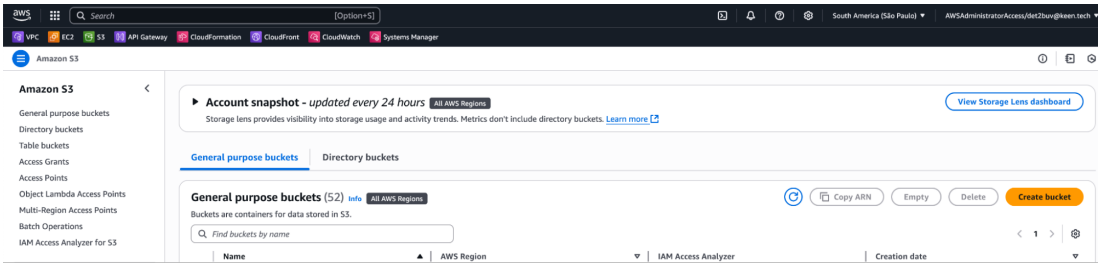
7 Amazon S3 bucket

RVOC Engine requires a bucket to be created which hosts the RVOC engine software.

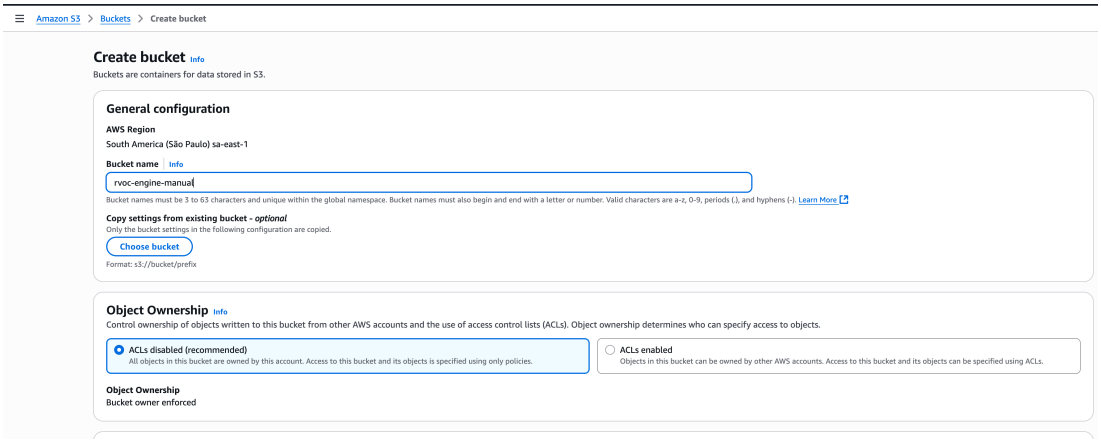
Notice!
Amazon S3 is a global service, to decrease latency it is advised to create the S3 bucket in the same region as you are planning to deploy the RVOC engine.

To create a bucket and upload the RVOC Engine software follow the following steps:

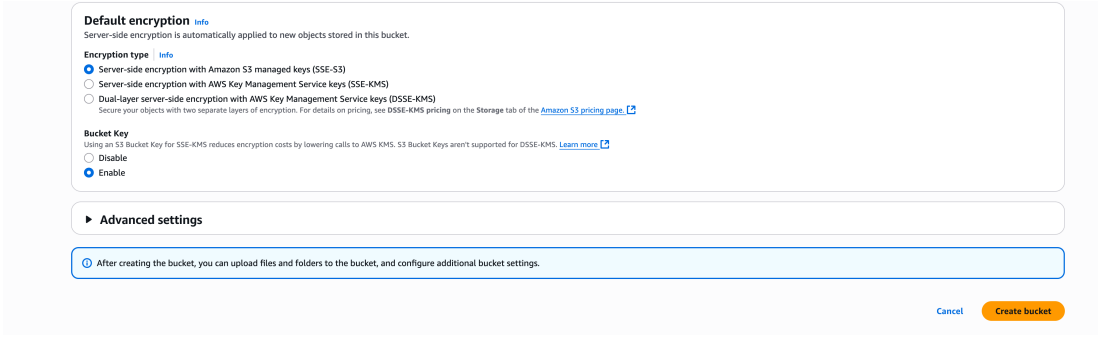
1. Select the region in which you are planning to deploy the RVOC Engine.
2. Navigate to the Amazon S3 service.
3. Click Create Bucket.



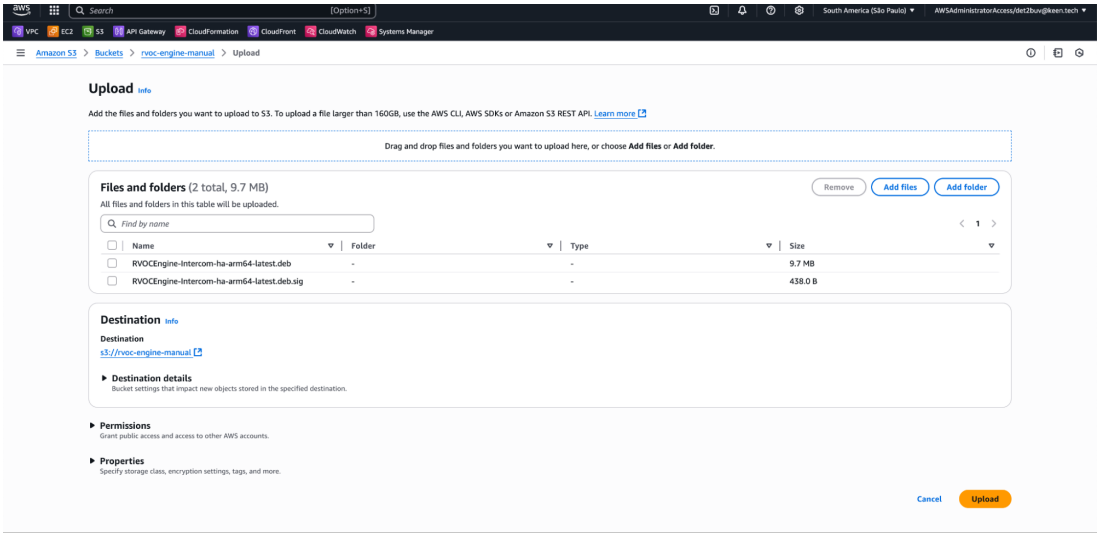
4. Provide a name for the Amazon S3 bucket.
   The name has to be globally unique, note that creation will fail when the name is already in use.



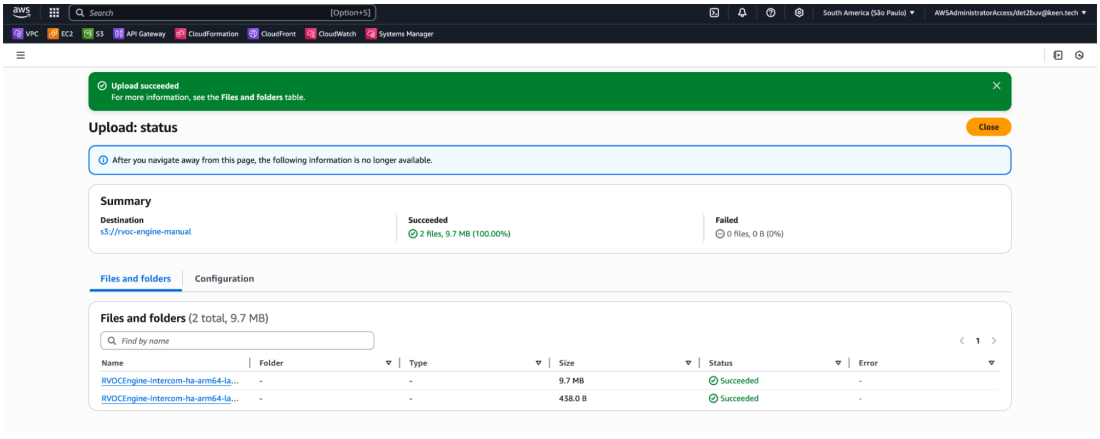
5. Keep all settings defaults, scroll down and click Create Bucket.
   When creation fails because the bucket name already exists, change the name and try again.



6. Navigate to the newly created bucket and drag and drop the installer files (RVOC-Intercom-arm64.latest.deb / RVOC-Intercom-arm64.latest.deb.sig or RVOC-Intercom-ha-arm64.latest.deb / RVOC-Intercom-ha-arm64.latest.deb.sig) into the bucket:



7. Review the files to be uploaded files and click upload.
   Wait for the upload to successfully complete:



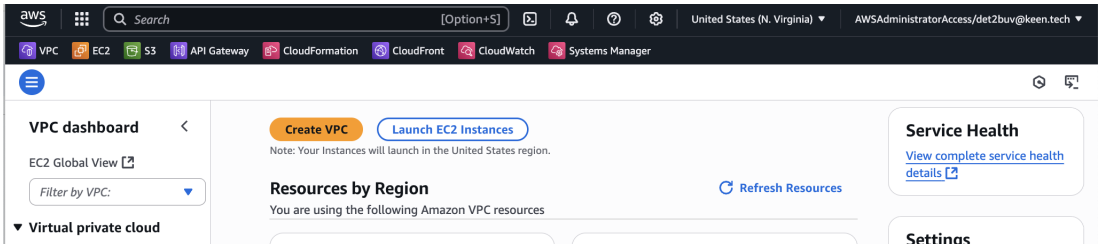
8 Delete your VPC

When you've completed your work with a Virtual Private Cloud (VPC), deleting it is an important clean-up step to avoid unnecessary charges and maintain good resource hygiene. This deletion process should only be performed after your deployment work is finished, not as a prerequisite before starting new work. You should retain your VPC throughout the active development and deployment phases, then delete it once you no longer need the associated resources and networking infrastructure.

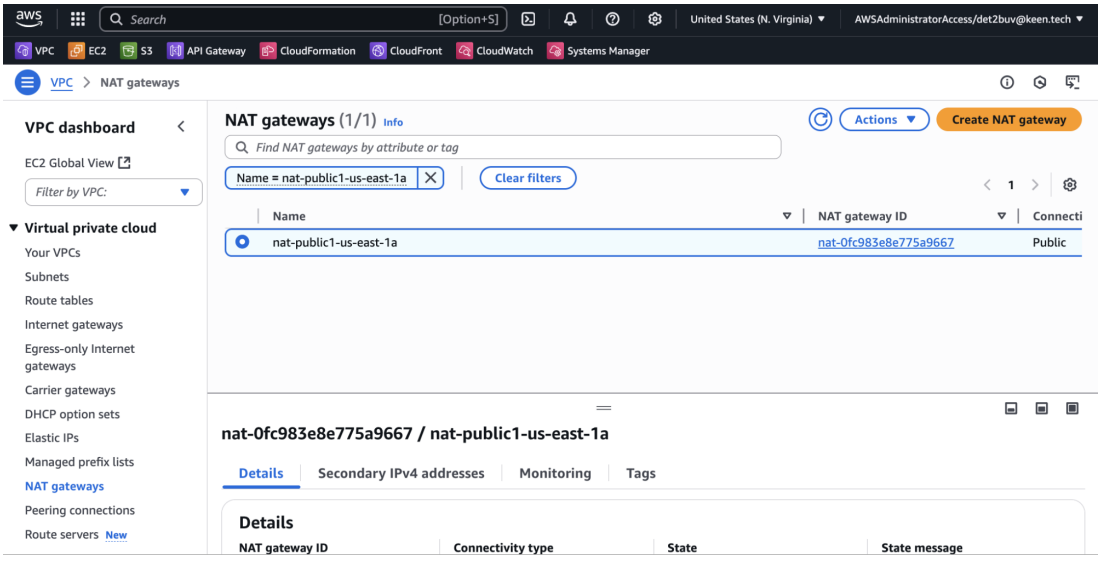
Notice!
Do not perform the deletion while RVOC is in use.

To delete all resources perform the following steps:

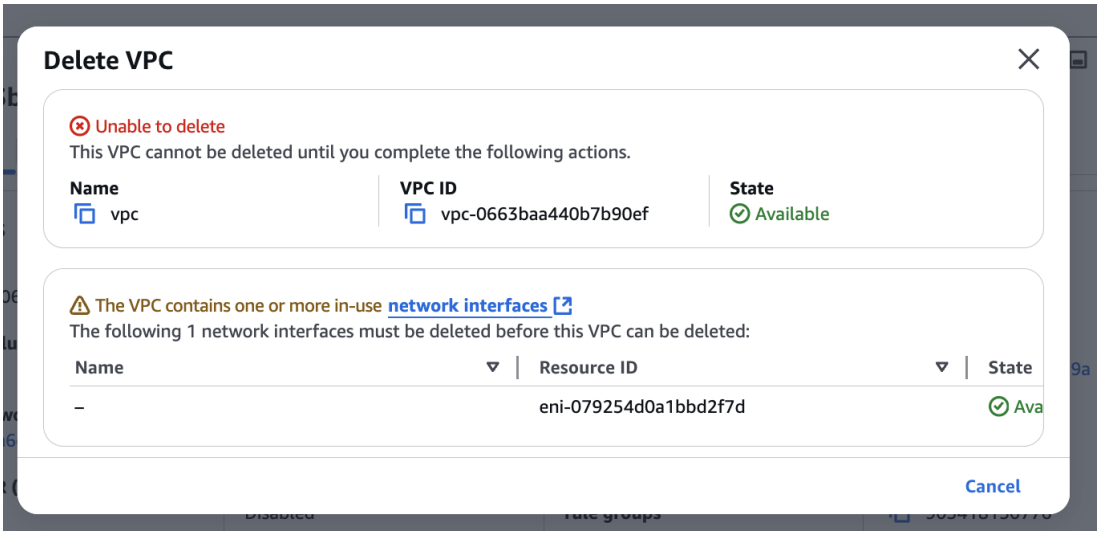
1. Log in to the AWS Management Console.
2. Navigate to the VPC service and the planned region.



3. Select the NAT Gateway service, locate the NAT gateway created and press delete NAT gateway.



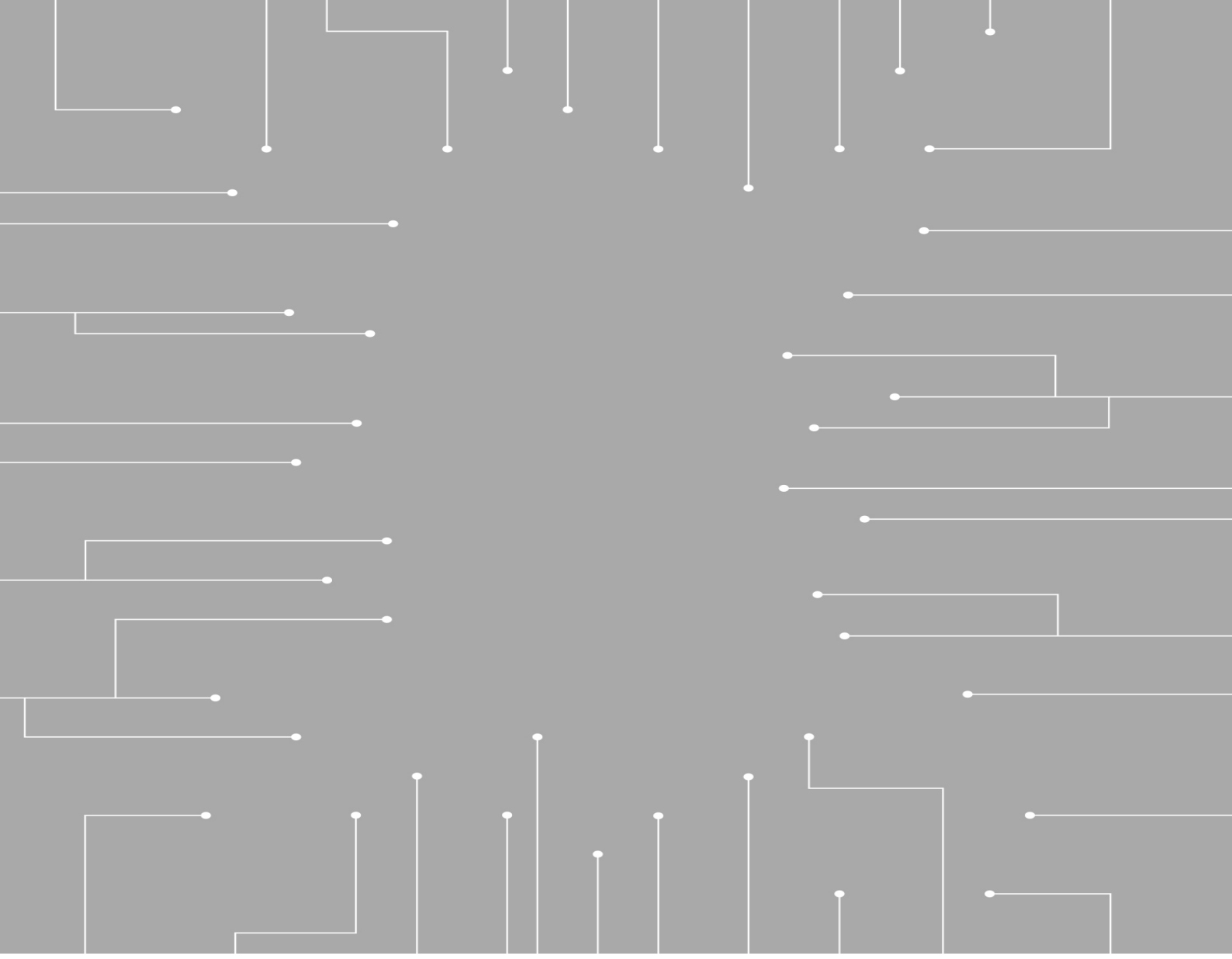
4. Wait for the NAT gateway to be deleted. This will take around 3 minutes.
5. Select the VPC service, locate the VPC created and select actions ->Delete VPC.
   A screen might pop-up which says “unable-to-delete”, delete any resources indicated here manually before retrying the delete operation.


Delete VPC
Unable to delete
This VPC cannot be deleted until you complete the following actions.
Name
vpc
VPC ID
vpc-0663baa440b7b90ef
State
Available
The VPC contains one or more in-use network interfaces
The following 1 network interfaces must be deleted before this VPC can be deleted:
Name
Resource ID
State
–
eni-079254d0a1bbd2f7d
Ava
Cancel

9 Frequently asked questions

Question	Answer
How to calculate the expected data egress costs for my RVOC engine?	You can calculate the expected data egress costs in RVOC elevate. Note, this calculation uses an estimation of the usages of the different ports. RVOC engine uses different techniques to limit the bandwidth usage to the necessary usage. Enabling VAD on RVON connections will help here greatly.
Why does an RVOC engine require a public and private subnet?	RVOC Engine deployments try to comply with public best practices such as CIS Benchmark Guidelines for AWS VPC Subnet Architecture. This recommends network segmentation for public and private resources, therefore the Intercom itself is placed in the private network later, while load balancers are used to disclose communication paths to the intercom.
How many private IP addresses does my RVOC engine use?	At a minimum the RVOC engine uses 4 private IP addresses in the public subnet, and 1 private IP address in the private subnet. However: – There are different deployment options which increases the number of IP addresses in use. – Depending on the traffic, the load balancers might scale requiring additional IP addresses.
What is the effect of the use of AWS Global Accelerator on my latency?	Note that AWS Global Accelerator is only used for RVON connections. AWS advertises that AWS Global Accelerator improves the network performance for up to 60%, the network improvement you will see will differ depending on your setup.
Why does RVOC engine require AWS global accelerator in case of High Availability.	AWS global accelerator provides a single global static IP to be used for RVON connections. Global accelerator automatically routes the traffic to the health and in use availability zone.
How many Elastic IP’s does RVOC require?	A standard deployment requires 2 public IP addresses (1 for Intercom, 1 for Turn server), a high-available deployment requires 6 addresses (2 for Intercom, 2 for Turn Server, 2 for Global Accelerator).

Question	Answer
	NOTE: By default only 5 elastic IP's are available per AWS account / region, additional Elastic IP's require a service quota increase.
Why does SMTP over port 25 not work?	AWS does restrict the usage of port 25 be default: https://repost.aws/knowledge-center/ec2-port-25-throttle. Move to a secure port or request AWS to remove the restriction.



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