

SSIP-MSK PRODUCT ONBOARDING

SitadConsulting
SSIP@sitadconsulting.com

SITADCONSULTING

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1.0 Introduction

This document provides description of AWS services used by our product – **SSIP-MSK**, and also outlines the required steps for onboarding unto the product. SSIP-MSK is an acronym for “Self-Service Infrastructure Provisioning for Amazon Managed Streaming for Apache Kafka”. This product will provision a secure by default, highly available MSK Cluster with the following features enabled out of the box:

1. Authentication & Authorization
 - MTLS
 - IAM
2. Data Encryption
 - In transit and at rest
3. Open Monitoring, Observability and Logging
 - Prometheus (JMX, Node and Kafka Metrics)
 - LinkedIn CruiseControl
 - Amazon Managed Grafana
 - Amazon CloudWatch
4. An EC2 instance configured with required tools for cluster interaction
5. Effective resource tagging

We are using both Open Source Terraform and AWS service Catalog as the core element of this product. As part of our responsibility to ensure compliance and fairness in the use of Terraform Open Source in a commercial product, we will require proof that you have the appropriate license in place in order to use our product. In addition, the following products which we have incorporated as part of this product require license to access full functionality, these are; LinkedIn CruiseControl and Amazon Managed Grafana. Also, note that you are responsible for the running cost of AWS Services that would be provisioned as part of deploying this product. This cost is separate from your AWS Marketplace transaction charges.

****Please note that all provisioned resources will be tagged with metadata supplied by customer during product launch for easy identification.***

Prerequisites

1. Ensure that AWS Organization has been enabled and a Member Account that will host the **SSIP-MSK** product has been designated. Please refer - https://docs.aws.amazon.com/organizations/latest/userguide/orgs_manage_org_create.html
https://docs.aws.amazon.com/organizations/latest/userguide/orgs_tutorials_basic.html
2. Ensure that IAM Identity Centre has been enabled (required for single sign-on experience into Amazon Managed Grafana Console). Please refer - <https://docs.aws.amazon.com/singlesignon/latest/userguide/get-set-up-for-idc.html>
3. You have a mobile authenticator app installed on a mobile device (required to provide authentication code for single sign-on experience to Amazon Managed Grafana)
4. Ensure that no internal network access policy blocks internet access via VPC Internet Gateways (internet access is required to install MSK Cluster interaction tools)

2.0 Software Bill of Material

2.1 Amazon MSK

The product will provision a secure by default highly available Amazon MSK cluster with support for the following:

1. private broker nodes spread across three availability zones
2. Kafka versions – 3.5.1 – 3.7.x.kraft Kraft Mode
3. MTLS and IAM authentication with certificate issued by AWS Private CA
4. Encryption in transit and at rest enabled through AWS KMS and AWS Private CA respectively.
5. Broker logging via CloudWatch logs
6. Open monitoring through Prometheus JMX and Node exporter

2.2 Amazon Managed Grafana

The product will provision a secure by default highly available Grafana workspace with support for the following:

1. VPC based connectivity to data sources via private-link. The data sources in use include; Prometheus (available on provisioned EC2 instance), CloudWatch logs and metrics
2. Public and private access to Grafana workspace enabled via EC2 prefix-list and private-link respectively.
3. Grafana version 10.4
4. Single sign-on authentication via AWS IAM Identity Center

2.3 AWS Private Certificate Authority

The product will provision a private certificate (CA) authority. The ARN of CA certificate generated by the PCA is used to enable MTLS support for Amazon MSK.

2.4 AWS IAM Identity Center

The product will provision a group, user and permission set for use by Grafana for single sign-on authentication into Grafana console, managing Grafana workspace and Identity Center users.

<i>S/N</i>	<i>Group Display Name</i>	<i>User Name</i>
1	GrafanaAdmins	grafanaAdmin

2.5 Amazon EC2

The product will provision an EC2 instance configured with console access in addition to remote access via SSH. Links to all the tooling built together with the provisioned instance will be provided in [Appendix A](#). The provisioned instance is configured with the following:

1. Linux users – **kafka, kafkadev, prometheus and cruisecontrol**. These users are allowed to switch users via sudo without password. We recommend that each user should have a password set and the configured sudo access reviewed to reflect company standard as required.
2. Client.properties and producer.properties files – populated with configuration to support both IAM and TLS authentication (all files located in kafka conf path - /etc/kafka)
3. Apache Kafka – installed into kafka_home_dir (/opt/apps/kafka)
4. IAM-Auth jar library – aws-msk-iam-auth-2.1.1-all.jar added to Apache kafka lib path
5. Client Auth tool for MTLS – cloned and built (AuthMSK-1.0-SNAPSHOT.jar)
6. Prometheus instance – configured to retrieve both JMX and Node Metrics from MSK Cluster. These metrics are then polled by Grafana for visualization once the Prometheus data source has been setup in Grafana.
7. LinkedIn CruiseControl – cloned, built and configured including access to webui.
8. Both console and SSH access are enabled. Please note that for SSH access, a default public key is presented during product launch, customer should provide their own public key so they can gain access to the instance via SSH once deployed, alternatively, customer can gain access via console.

S/N	AWS Services in use	Link to Documentation
1	Amazon MSK	https://docs.aws.amazon.com/msk/?icmpid=docs_homepage_analytics
2	Amazon Managed Grafana	https://docs.aws.amazon.com/grafana/?icmpid=docs_homepage_mgmtgov
3	AWS Private Certificate Authority	https://docs.aws.amazon.com/privateca/?icmpid=docs_homepage_crypto
4	AWS IAM Identity Center	https://docs.aws.amazon.com/singlesignon/?icmpid=docs_homepage_security
5	Amazon EC2	https://docs.aws.amazon.com/ec2/?icmpid=docs_homepage_featuredsvcs
6	Amazon CloudWatch Logs	https://docs.aws.amazon.com/cloudwatch/
7	AWS Key Management Service	https://docs.aws.amazon.com/kms/

3.0 Product Internal IAM resources

These IAM resources are internal to the product and will be provisioned when the product is launched by the customer. All provisioned resources will have their names prefixed (supplied when launching product) and tagged for easy identification.

S/N	Name	Description
1	<prefix>KafkaClientInstanceRole	Assumable role by KafkaAdmin user and members of KafkaAdminGroup
2	<prefix>KafkaAuthorizationPolicy	Policy granting access to Kafka data plane operations. Attached to KafkaAdminRole below.
3	<prefix>KafkaAdminRole	Assumable role by KafkaAdmin user and members of KafkaAdminGroup
4	<prefix>KafkaAdminGroup	Group for KafkaAdmins
5	<prefix>KafkaAdminPolicy	Policy attached to KafkaAdminGroup for assuming roles above
6	<prefix>KafkaAdmin	KafkaAdmin user. Console access should be enabled for this user with password set. This will allow the user to be able to assume the KafkaAdminRole.
7	<prefix>GrafanaAdminRole	Associated with Grafana workspace

4.0 Product Personas

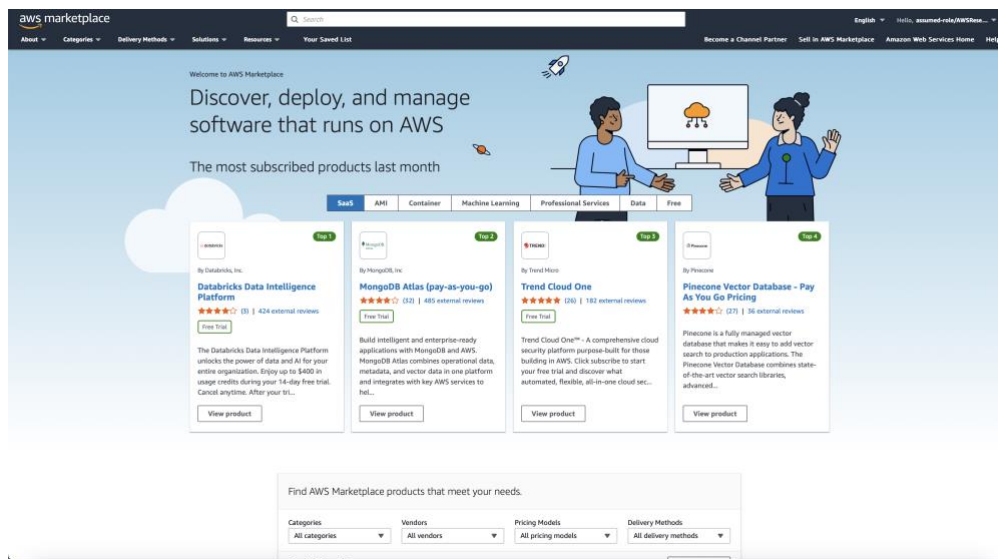
There are mainly two product personas. The product Owner and the product Enduser. These are designated IAM users already existing within the customer account. The table below set out their function and permission association.

S/N	Persona	Responsible for	Permission Assignment
1	Owner	1. Subscribing to the product on AWS marketplace 2. Launching CloudFormation template that deploys product dependent IAM resources into customer's account 3. Adding product to Service Catalog Portfolio. 4. Sharing product to Endusers	1. Designated user to be assigned the following AWS Managed policy: <i>AWSMarketplaceManageSubscriptions</i> 2. In addition, <i>a customer managed policy with content provided in Appendix B must be attached to the user</i> (this policy allows the deployment of product dependent IAM resources into customers account)
2	Enduser	1. Launching the product.	Designated user <i>must be added to IAM group – ssipmskgrp</i> (this <i>IAM group- ssipmskgrp</i> will be created into customers account once the CloudFormation template is Launched by Product Owner.)

4.0.1 Subscribing to product and launching CloudFormation template.

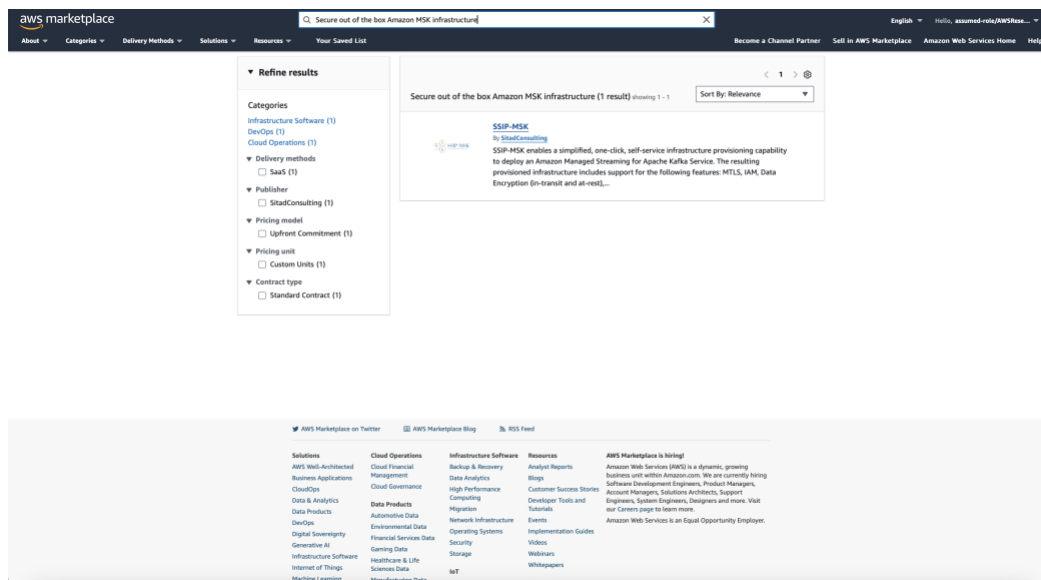
Please note that the product is going to be shared with the subscribing account, so please ensure that this is the account you intend to have the product deploy into.

1. As designated Product Owner login to ***AWS Marketplace***. ***Please ensure that the managed policy “AWSMarketplaceManageSubscriptions” and the customer managed policy in Appendix B has been attached to the designated Product Owner.***
2. The Product Owner login to ***AWS Marketplace*** is as shown below:



3. At the displayed Product Owner logon to **AWS Marketplace**, in the search box, type in any of the following search phrase to discover our service offering:
 1. Secure out of the box Amazon MSK infrastructure
 2. Workload ready Amazon Managed Streaming for Apache Kafka service
 3. Simplified self-service MSK infrastructure
 4. Simplified self-service infrastructure provisioning capability

Our service offering **SSIP-MSK** is displayed as shown below:



4. On the displayed service offering product page shown above, click on **SSIP-MSK**, you will be redirected to the product subscription page as shown below:

The screenshot displays the AWS Marketplace product page for SSIP-MSK, a product offered by SitadConsulting. The page is structured with a top navigation bar, a main header, and several content sections.

Header: The top navigation bar includes links for 'About', 'Categories', 'Delivery Methods', 'Solutions', 'Resources', 'Your Saved List', 'Become a Chartered Partner', 'Sell on AWS Marketplace', 'Amazon Web Services Home', and 'Help'. The main header shows the product name 'SSIP-MSK' and a 'View purchase options' button.

Overview: This section provides a detailed description of the product, highlighting its features and benefits. It mentions that SSIP-MSK enables a simplified Self-Service Infrastructure Provisioning capability of a workload ready Amazon Managed Streaming for Apache Kafka Service. It also lists features such as MTLS, IAM, Data Encryption (in-transit and at-rest), Observability, Open Monitoring, AWS, Node, Kafka Metrics, CloudWatch logs and metrics, and more. A 'Highlights' box on the right lists key features: Simplified self-service infrastructure provisioning, Composable cloud infrastructure, One-click deployment, No-code deployment, and Workload ready infrastructure.

Details: This section provides information about the product's origin and categories. It states that the product is sold by 'SitadConsulting' and is categorized under 'Streaming solutions', 'Infrastructure as Code', and 'Cloud Operations'. The delivery method is listed as 'Software as a Service (SaaS)'.

Features and programs: This section highlights the 'Financing for AWS Marketplace purchases' program, which allows customers to pay for the product through the AWS Marketplace Finance program. It includes a link to 'View financing details'.

Pricing: This section displays the pricing for the product. It shows a '24-month contract' with a 'Cost/24 months' of \$0.001. A 'View purchase options' button is also present.

Vendor refund policy: This section states that the product is provided as part of a private offer arrangement.

Legal: This section includes the 'Vendor terms and conditions' and a 'Content disclaimer'.

Usage information: This section provides information about the product's usage, including a 'Delivery details' section that states the product is delivered as a Service (SaaS).

Resources: This section includes a 'Vendor resources' section with a link to 'SSIP-MSK PRODUCT ONBOARDING'.

Support: This section includes a 'Vendor support' section with a link to 'support@sitadconsulting.com' and an 'AWS Infrastructure support' section with a link to 'Get support'.

Customer reviews: This section includes a 'Write a review' button.

- At the displayed product subscription page above, at the top of the page on the right, click on **View purchase options** button, you will be redirected to **Purchase options** page as shown below:

[AWS Marketplace](#) > [SSIP-MSK](#) > [Subscribe to SSIP-MSK](#)

Subscribe to SSIP-MSK [info](#)
To create a subscription, review the pricing information and accept the terms for this software.

Offer details [info](#)
Offer ID
offer-vmscompyz55sq
Offered by
SitatConsulting
Offer type
Public

Contract configuration
Configure your contract duration and auto-renewal settings for the selected offer.

Contract duration
☒ 24 months ☐ 36 months

Auto-renewal
Choose which renewal option you want to use for your contract.
☒ Automatically renew this contract when it expires on Mar 27, 2027.
☐ Do not automatically renew this contract.

Auto-renewal terms
I acknowledge that when my contract automatically renews on Mar 27, 2027, the seller's pricing and end user license agreement (EULA) may have changed. I understand that my renewed contract will be based on the pricing and terms applicable on the renewal date.

Contract details

Contract duration	Start date	End date	Auto-renewal
24 months	Mar 27, 2025	Mar 27, 2027	☒ On

Pricing details and unit configuration
AWS Marketplace charges an upfront cost for a contract, which entitles you to use the product based on your contract terms and duration. Usage is limited to contract terms and duration. At expiration, subscription ends unless you renew or replace the contract.

Available units (1)
Select the units you want to buy. Usage-based charges apply in addition to contract fees.

Units	Description	Cost/unit
☒ Enterprise	Per Instance deployment	US\$0.001/Units

Total amount
Total contract cost
US\$0.00

Contract currency
United States Dollar (USD \$)

Tax details
Additional taxes may apply

Terms and conditions [Download EULA\(s\)](#)
By subscribing to this software, you agree to the pricing terms and the seller's End User License Agreement (EULA) [\(1\)](#). You also agree and acknowledge that AWS may, on your behalf, share information about the transaction (including your payment terms) with the respective seller, reseller or underlying provider, as applicable, in accordance with the AWS Privacy Notice [\(2\)](#). AWS will issue invoices and collect payments from you on behalf of the seller through your AWS account. Your use of AWS services is subject to the AWS Customer Agreement [\(3\)](#) or other agreement with AWS governing your use of such services. If you are receiving a private offer from a channel partner, you may click [here](#) [\(4\)](#) (for EPPD transaction) or [here](#) [\(5\)](#) (for SPFD transaction) for more information on the channel partner.

Purchase order (PO) number [info](#)
You can assign unique purchase order numbers to charges to include them on your invoices. [Learn more](#) [\(6\)](#).

Purchase order number option
☒ No purchase order
☐ Add a purchase order

Purchase details [info](#)

Offer ID offer-vmscompyz55sq	Offered by SitatConsulting	Total contract cost US\$0.00	Contract duration 24 months
Auto-renewal ☒ On	Number of units selected 1	Tax details Additional taxes may apply	Purchase order numbers -

[Back](#) [Subscribe](#)

6. At the displayed **Purchase options** page, click on **Contract duration** of your choice, next, click on **Enterprise**, scroll down to the end of the page and click on **Subscribe** button, after a few minutes, your purchase is complete, you will receive an email with details of the product purchased. A sample email and **purchase complete** page are shown below:

 **AWS Marketplace**

You accepted an AWS Marketplace offer

Inbox - Yahoo! 14:49

To: [REDACTED]

 This message is from a mailing list. [Unsubscribe](#) ×

Greetings from AWS Marketplace,

An AWS Marketplace offer has been accepted by AWS account [REDACTED] on January, 13 2025 02:47 PM UTC, and an agreement was created.

Review the following details:

[Seller details](#)
Seller name: SitadConsulting

[Product details](#)
Product name: SSIP-MSK
Product ID: prod-vhdrvzlia6rt2

[Offer details](#)
Offer name: Offer created on 2024-10-29T15:20:33.498Z
Offer ID: offer-vinxomyzp55q

[Agreement details](#)
Agreement ID: agmt-c234s222mrsfaqh1lyt3k16vq
Agreement start Date: January, 13 2025 02:47 PM UTC
Agreement end Date: January, 13 2027 02:47 PM UTC
Purchase amount: 0.001 (USD)

For SaaS products, register with the seller's website by visiting the procurement page to set up your account and start using the product. For more details, review our [Buyers guide](#).

The subscriber will receive entitlements to the product on the January, 13 2025 02:47 PM UTC. If there are processing issues, they will be notified in a separate email.

To review details of your agreement, visit the [Manage subscriptions page](#). For agreements on data products, visit the [AWS Data Exchange console](#).

If you have any questions about your agreement or need assistance, visit [AWS Support](#).

Regards,
The AWS Marketplace Team

AWS Marketplace > SSIP-MSK > Subscribe to SSIP-MSK

Subscribe to SSIP-MSK [Info](#)

To create a subscription, review the pricing information and accept the terms for this software.

☒ **Your purchase of SSIP-MSK is complete**

Next, set up your account and complete registration on the vendor's website. If you're unable to complete registration, return through the [Manage subscriptions](#) page on AWS Marketplace.

[Set up your account](#)

☐ **Financing for AWS Marketplace purchases**

AWS Marketplace now accepts line of credit payments through the PNC Vendor Finance program. This program is available to select AWS customers in the US, excluding NV, NC, ND, TN, & VT.

[View financing details](#)

Offer details [Info](#)

Offer ID offer-vinxomyzp55q	Offered by SitadConsulting	Offer type Public
---------------------------------------	--------------------------------------	-----------------------------

☐ **You already have contract(s) for this product.**
If needed, you can [modify](#) the existing agreement and set up your account on the [vendor's website](#).

Contract configuration

Configure your contract duration and auto-renewal settings for the selected offer.

Contract duration

☐ 24 months ☒ 36 months

Auto-renewal

Choose which renewal option you want to use for your contract.

☒ Automatically renew this contract when it expires on Jan 13, 2027

☐ Do not automatically renew this contract

☐ **Auto-renewal terms**
I acknowledge that when my contract automatically renews on **Jan 13, 2027**, the seller's pricing and end user license agreement (EULA) may have changed. I understand that my renewed contract will be based on the pricing and terms applicable on the renewal date.

Contract details

Contract duration 24 months	Start date Jan 13, 2025	End date Jan 13, 2027	Auto-renewal ☒ On
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Pricing details and unit configuration

AWS Marketplace charges an upfront cost for a contract, which entitles you to use the product based on your contract terms and duration. Usage is limited to contract terms and duration. At expiration, subscription ends unless you renew or replace the contract.

Available units (1)

Select the units you want to buy. Usage-based charges apply in addition to contract fees.

Units	Description	Cost/unit
☒ Enterprise	Per instance deployment	\$0.001/Units

Total amount

Total contract cost \$0.00	Contract currency United States Dollar USD (\$)	Tax details Additional taxes may apply
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Terms and conditions

[Download EULA\(s\)](#)

By subscribing to this software, you agree to the pricing terms and the seller's [End User License Agreement \(EULA\)](#). You also

7. At the displayed **Purchase completion** page, in the green box, click on **Set up your account** button, you will be redirected to Quick Launch page as shown below:

SSIP-MSK > Configure and launch

Configure and launch

▼ Before you begin

About Quick Launch

Quick Launch is an AWS Marketplace deployment option available for software as a service (SaaS) products. It reduces the time, resources, and steps required to configure, deploy, and launch this product. If you don't use Quick Launch, you'll need to manually configure the resources after launching the product using Step 4. [Learn more](#)



Finish later

We emailed a link to this page to the root user's email address. You can also return to this page from the Manage subscriptions page by choosing **Configure and launch** under **Actions**.

Step 1: Make sure you have required AWS permissions [Info](#)

Enable AWS Marketplace deployment parameters integration
This allows AWS Marketplace to create a [service-linked role](#) to manage vendor deployment parameters for the products you subscribe to on AWS Marketplace. This integration is one-time setup task, and is required if you want to use Quick Launch. [Learn more](#)

[Enable integration](#)

Request AWS permissions

SitadConsulting requires you to have [certain IAM permissions](#) to configure this software. If you don't have these permissions, share this page with your IT admin.

<https://aws.amazon.com/marketplace/saas/configuration?productId=prod-vhdrvzia6rt2>

Step 2: Log into an existing or new vendor account [Info](#)

We'll redirect you to the vendor's website to log into your account. We'll use your vendor credentials to configure your product, but we won't store them. **Keep this tab open and refresh the page after you are logged in.**

[Log in or create an account](#)
Step 3: Configure your software and AWS integration [Info](#)

[CloudFormation](#) allows you to automatically launch and configure your resources and their dependencies as a stack. The stack templates are reviewed and verified by AWS. Once the stack's status is **CREATE_COMPLETE**, return to this page to launch the product.

Deploy-ssip-msk-iam-resources [View required IAM permission](#)

This template deploys the required IAM resources that supports the provisioning of SSIP-MSK product

[Launch template](#)

Step 4: Launch your software

If you're using Quick Launch, verify that you've completed the configuration steps above before launching the product. If you're manually configuring your resources, choose **Launch software**.

[Launch software](#)

8. At the displayed **Configure and launch** page, follow the on-screen instruction and complete Step 1, 2 and 3
9. Step 1, click on **Enable integration**, once integration is enabled you see in a green bar the statement **AWS Marketplace deployment parameters integration enabled**, as shown below:

Step 1: Make sure you have required AWS permissions [Info](#)

✔ AWS Marketplace deployment parameters integration enabled.

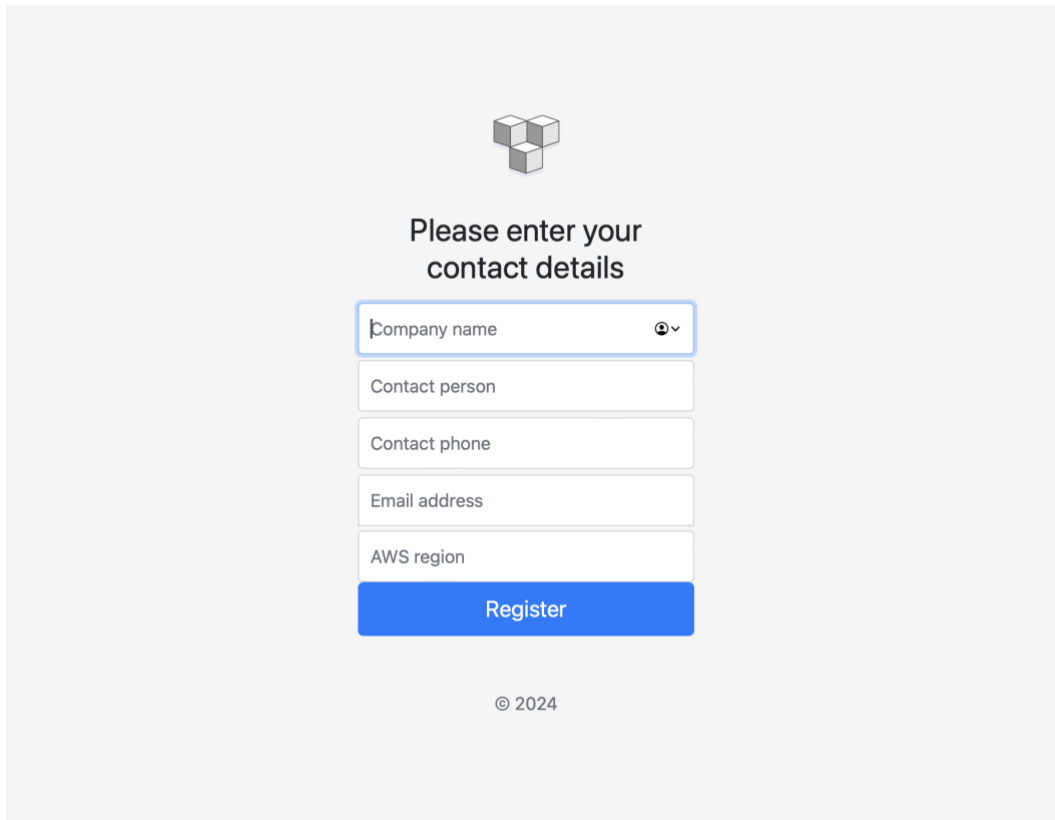


Request AWS permissions

SitadConsulting requires you to have [certain IAM permissions](#) to configure this software. If you don't have these permissions, share this page with your IT admin.

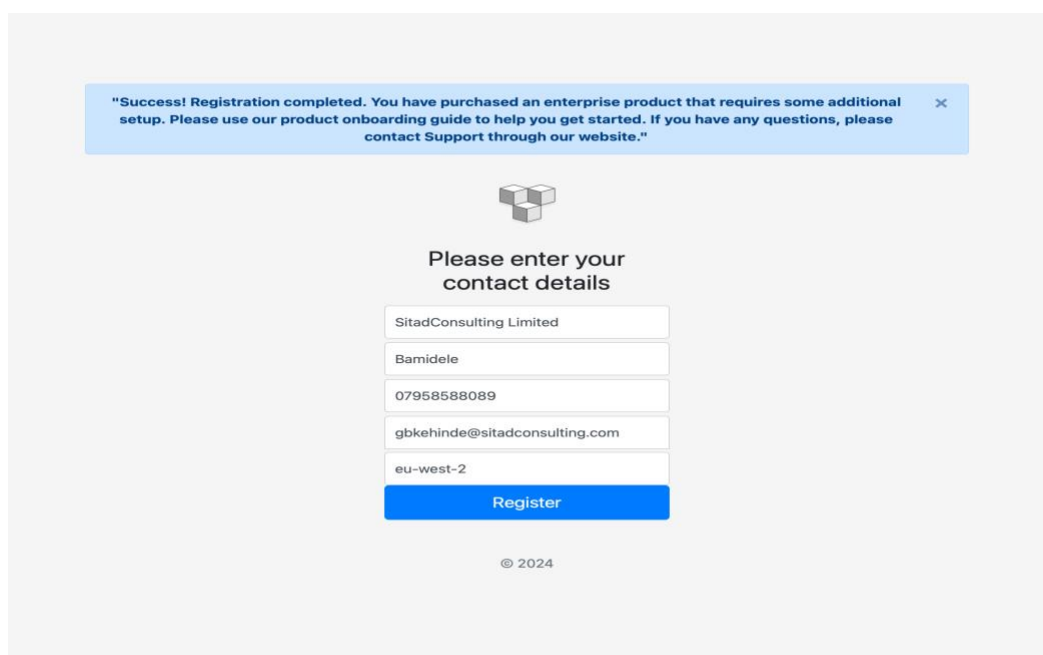
https://aws.amazon.com/marketplace/saas/configuration?productId=prod-vhdrvzia6rt2&ref_=aws-mp-console-subscription-table-action

10. Step 2, click on **Log in or create account**, you will be redirected to the account creation page as shown below:



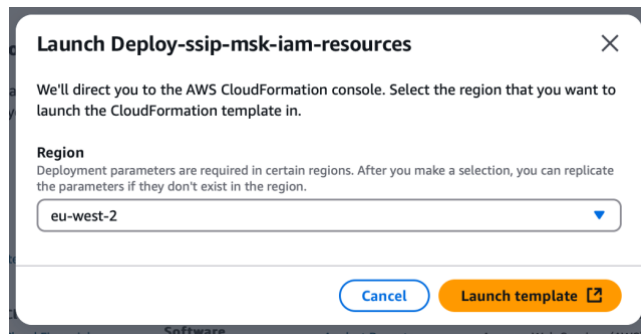
The screenshot shows a registration form titled "Please enter your contact details". At the top is a logo consisting of three stacked cubes. Below the title are five input fields: "Company name" (with a dropdown arrow), "Contact person", "Contact phone", "Email address", and "AWS region". A blue "Register" button is at the bottom of the form. Below the button is the copyright notice "© 2024".

11. At the displayed account creation page, ***please note that each field must be filled in with correct information to capture the details of the product Owner (We can only grant access to the product when all fields have been entered correctly)*** and click **Register** button, a successful registration banner is displayed as shown below:

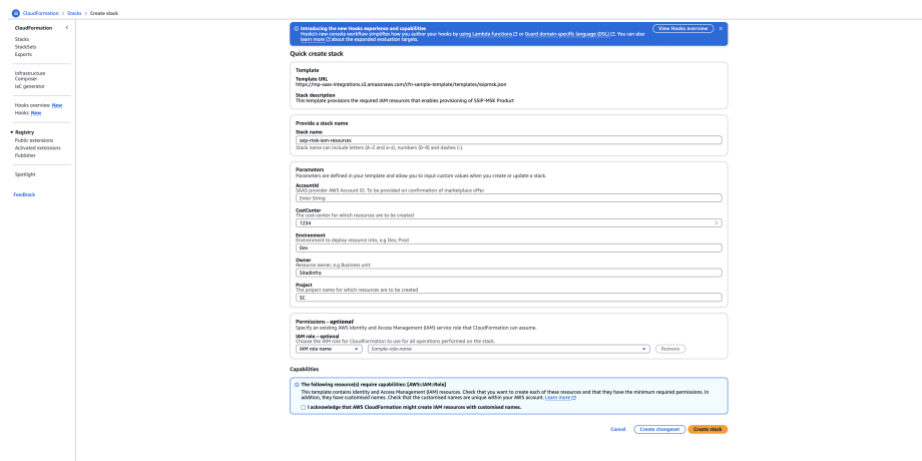


The screenshot shows the same registration form as in the previous image, but with a success banner at the top. The banner text reads: "Success! Registration completed. You have purchased an enterprise product that requires some additional setup. Please use our product onboarding guide to help you get started. If you have any questions, please contact Support through our website." The input fields are now filled with the following data: "SitadConsulting Limited", "Bamidele", "07958588089", "gbkehinde@sitadconsulting.com", and "eu-west-2". The blue "Register" button is still present at the bottom of the form. Below the button is the copyright notice "© 2024".

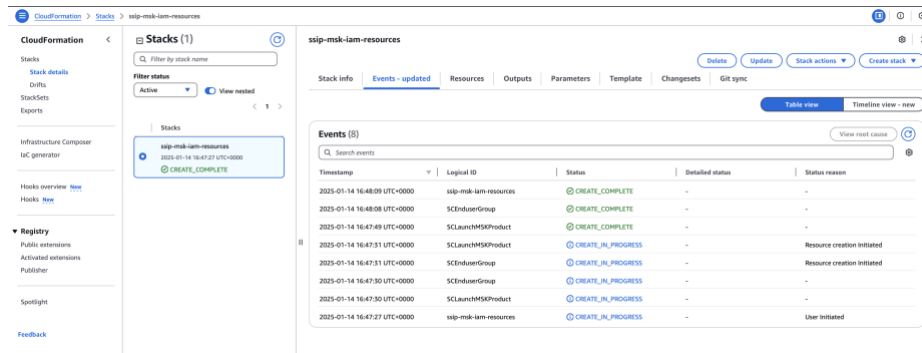
12. Step 3, click on **Launch template** button to deploy product dependent IAM resources, follow the on-screen prompts, at the displayed Launch **Deploy-ssip-msk-iam-resources** screen, shown below, use the drop-down arrow to choose the AWS region you specified in step 12 above, click Launch template, you will be redirected to the CloudFormation console



13. At the displayed **CloudFormation console** screen, on the right-pane, under parameter section, fill-in the pertinent details, tick **I acknowledge that AWS CloudFormation might create IAM resources with customised names**, and click on **Create stack** button. The **AccountID** parameter is provided via AWS Secret Manager deployed into customer account after product subscription is complete. Retrieve the **AccountID** from Secret Manager.

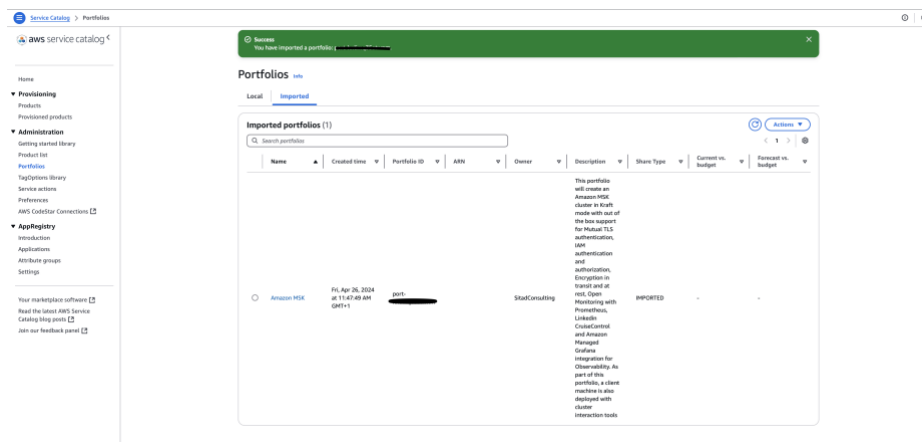


14. After a few minutes the stack is created as shown below:



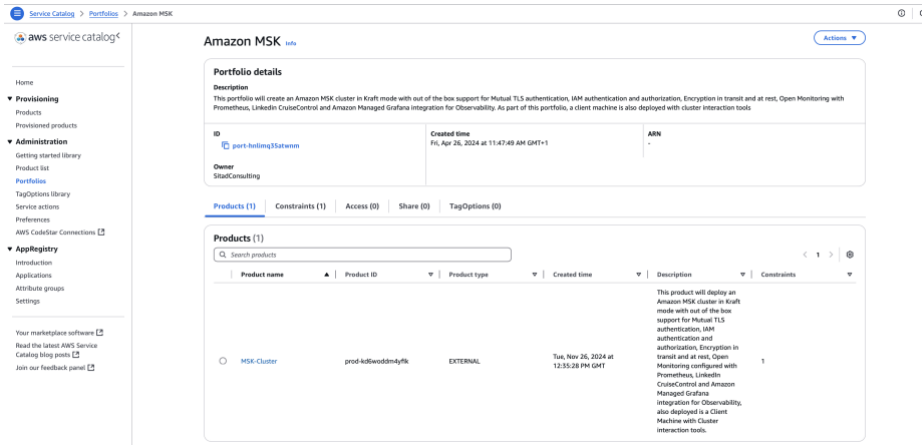
4.0.2 Adding product to Service Catalog Portfolio.

1. As product Owner logon to AWS console and search for **Service Catalog** service and click on **Service Catalog**
2. At the displayed Service Catalog console, on the left-pane, under **Administration** click on **Portfolios**.
3. At the displayed Portfolios page, click on the tab **Imported**, next, on the right end, click **Action** button, then click **Import portfolio**, leave the default choice of **AWS account**, next, enter the **Portfolio ID** (provided via AWS Secret Manager deployed into customer account after product subscription is complete. Retrieve the **Portfolio ID** from Secret Manager) and click **Import**, the portfolio is imported as shown below:

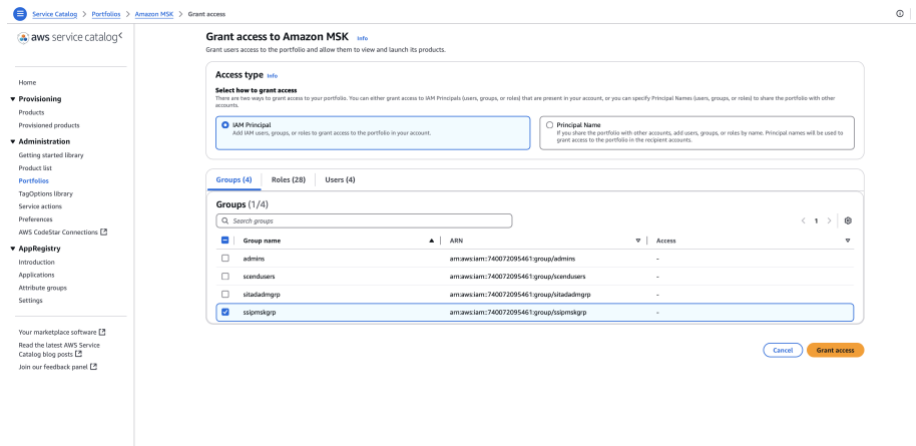


4.0.3 Sharing the product

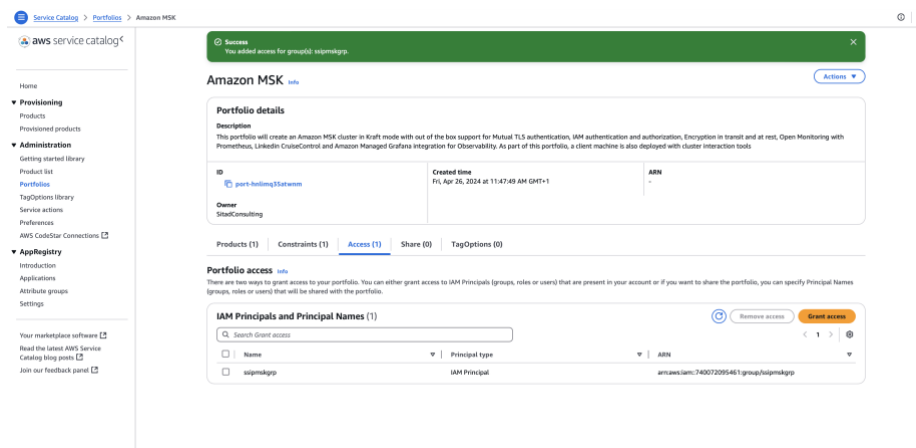
1. As the product Owner, and logon on to Service Catalog, on the left-pane under **Administration**, click on **Portfolios**, at the displayed right-pane **Portfolios** page click on the **Imported** tab, next click on **Amazon MSK** portfolio, the portfolio will be displayed as shown below:



2. At the displayed **Amazon MSK** portfolio, click on the **Access** tab, at the displayed **Portfolio access** section, click on **Grant access** button, the **Grant access to Amazon MSK** page, select the group **ssipmskgrp**, as shown below:



3. After selecting the group **ssipmskgrp**, click on **Grant access** button, access is granted as shown below:

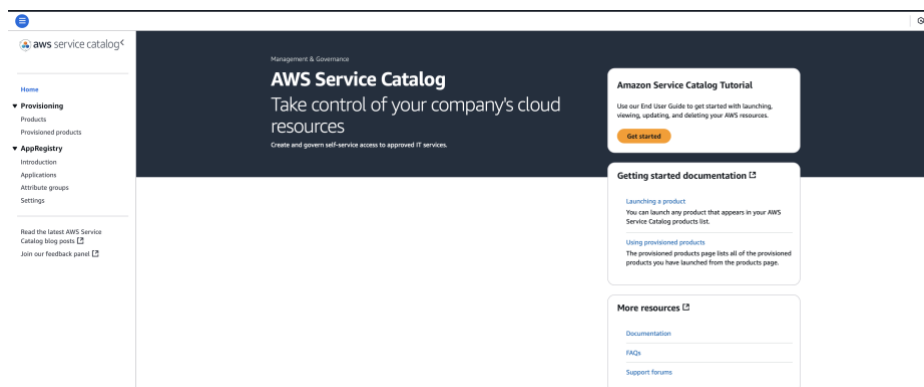


4.0.4 Launching the product.

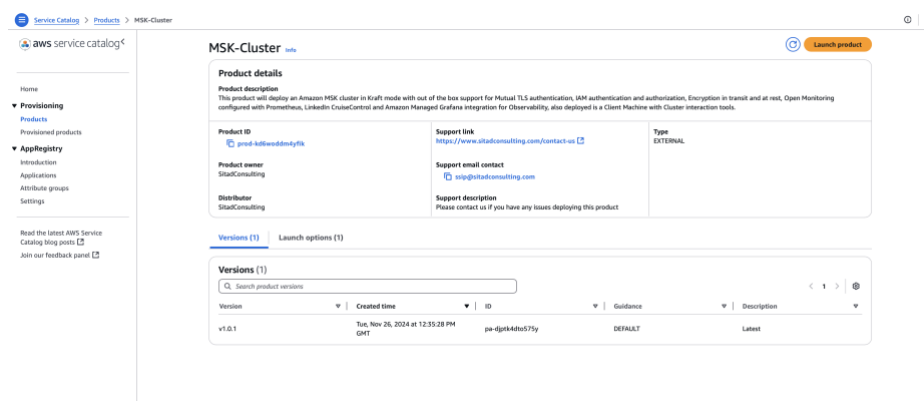
Before attempting to launch the product, please ensure that the product Owner has completed section 4.0.1, 4.0.2 and 4.0.3 above. In section 4.0.1, the CloudFormation template deploys the dependent IAM resources required to ensure a successful product launch. The table below describes the IAM resources deployed by CloudFormation template.

S/N	IAM Resources	Name	Usage
1	IAM Group	ssipmskgrp	Designated product Enduser must be added to this group by the customer , after which the user can proceed with executing the steps outlined in this section
2	IAM Role	SCLaunch-MSKProducts	This role is assumed by Service Catalog, it contains all dependent IAM permission to support launching of the product

1. As product Enduser, logon to AWS console and search for *Service Catalog*, then click on the displayed Service Catalog, you will be redirected to the page shown below



2. At the displayed **Service Catalog** console menu items, under **Provisioning**, click on **Products**, on the displayed right-pane **Products** page, click on the **MSK-Cluster** product, the **MSK-Cluster**, product details page is displayed as shown below:



3. At the displayed **MSK-Cluster** product details page, click on **Launch product** button, the **Launch: MSK-Cluster** page is displayed as shown below:

Launch: MSK-Cluster

This product will deploy an Amazon MSK cluster in Kraft mode with out of the box support for Mutual TLS authentication, IAM authentication and authorization, Encryption in transit and at rest, Cloud Monitoring configured with Prometheus, Lindeith CloudControl and Amazon Managed Grafana integration for Observability, also deployed is a Client Machine with Cluster interaction tools.

Provisioned product name

Enter a unique name or select. Generate name to provide a name automatically.

Enter provisioned product name

The name must start with a letter (a-z, A-Z, a-d) or number (0-9). Other valid characters include hyphen (-), underscore (_), and period (.).

☐ Generate name

Product versions (1/1)

Search product versions

< 1 >

Version	Created time	ID	Guide
v1.0.0	Thu, Apr 3, 2025 at 9:18:55 AM GMT+1	pe-8845d8f9m24	Default

Parameters

ca_cert_usage_mode

Enter the usage mode for the general purpose certificates that typically require a reissuance mechanism, or short lived certificates that may optionally omit reissuance because they expire quickly. Short-lived certificate validity is limited to seven days. Defaults to GENERAL_PURPOSE. Valid values: GENERAL_PURPOSE and SHORT_LIVED_CERTIFICATE

GENERAL_PURPOSE

Default value can be overridden.

ca_cert_validity_value

If type is DAYS, MONTHS, or YEARS, the relative time until the certificate expires. If type is ABSOLUTE, the date in seconds since the time epoch. If type is END_DATE, the date in RFC 3339 format.

1

Default value can be overridden.

cert_common_name

Fully qualified domain name (FQDN) associated with the certificate subject. Must be less than or equal to 64 characters in length.

stadaia

Default value can be overridden.

cert_country_code

Two digit code that specifies the country in which the certificate subject is located. Must be less than or equal to 2 characters in length.

UK

Default value can be overridden.

cert_locality

Location town, city or town in which the certificate subject is located. Must be less than or equal to 128 characters in length.

London

Default value can be overridden.

cert_organization_name

Local name of the organization with which the certificate subject is affiliated. Must be less than or equal to 64 characters in length.

stadaiconsulting

Default value can be overridden.

cert_organizational_unit_name

Subdivision or unit of the organization (such as sales or finance) with which the certificate subject is affiliated. Must be less than or equal to 64 characters in length.

stadiinfra

Default value can be overridden.

cert_center

The cert center for which resources are to be created.

1234

Default value can be overridden.

eks_storage_provisioned_volume_throughput

Throughput value of the EBS volumes for the data drive on each Kafka broker node in MB per second. The minimum value is 250. The maximum value varies between broker type.

250

Default value can be overridden.

enable_provisioned_throughput

Whether to enable EBS Storage provisioned throughput.

false

Default value can be overridden.

env_name

The name of the environment.

dev

Default value can be overridden.

grafana_admin_user_primary_email_address_value

Grafana Admin User Primary Email Address. e.g. user@company.com

user@stadaiconsulting.com

Default value can be overridden.

grafana_managed_profile_list_name

Name of the AWS managed profile list to be created. e.g. com-organization-name-region-grafana

com.stadaiconsulting.eu-west-2-grafana

Default value can be overridden.

grafana_public_eks_access

The public IP block to be granted access to grafana workspace instance

86.129.219.158/32

Default value can be overridden.

kafka_client_instance_monitoring

Whether to enable EC2 detailed monitoring on the client instance

true

Default value can be overridden.

kafka_client_instance_public_key

An RSA Public Key for remote access into Kafka client instance

ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCAgZCqUq5v5p175MprvE8/HM5P9WQ3H=EKWJyly

Default value can be overridden.

kafka_client_instance_type

Kafka client instance type

t3.medium

Default value can be overridden.

msk_cluster_eks_storage_info_volume_size

The size in GB of the EBS volume for the data drive on each broker node. Minimum value of 1 and maximum value of 16384

500

Default value can be overridden.

msk_cluster_enhanced_monitoring

Specify the desired enhanced MSK CloudWatch monitoring level. Possible values are: DEFAULT, PDR_BROKER, PDR_TOPIC, PDR_BROKER, or PDR_TOPIC_PDR_PARTITION

PDR_TOPIC_PDR_PARTITION

Default value can be overridden.

msk_cluster_kafka_instance_type

Kafka instance type

kafka.t4g.xlarge

Default value can be overridden.

msk_cluster_kafka_provisioned_throughput_instance_type

Kafka instance type

kafka.t4g.xlarge

Default value can be overridden.

msk_cluster_kafka_version

Specify the desired Kafka software version. Choose from the following "5.5.1", "5.6.0", "5.7.x", "5.7.x.kafka"

5.7.x.kafka

Default value can be overridden.

msk_cluster_ms_kafka_broker_logs_retention_in_days

Specifies the number of days you want to retain log events in the specified log group. Possible values are: 1, 3, 5, 7, 14, 30, 60, 90, 120, 150, 180, 360, 430, 540, 791, 1096, 1827, 2192, 2557, 2922, 3286, 3650, and 0. If you select 0, the events in the log group are always retained and never expire.

365

Default value can be overridden.

project

The project name for which resources are to be created. Two letter code recommended

SC

Default value can be overridden.

remote_access_to_kafka_client_instance_port_82

Set of CIDR IP allowed remote access to Kafka client instance on port 82

[196.129.219.158/32]

Default value can be overridden.

remote_access_to_kafka_client_instance_port_9090

Set of CIDR IP allowed remote access to Kafka client instance on port 9090

[196.129.219.158/32]

Default value can be overridden.

remote_access_to_kafka_client_instance_port_9091

Set of CIDR IP allowed remote access to Kafka client instance on port 9091

[196.129.219.158/32]

Default value can be overridden.

resource_owner

Name to be used for tagging owner of infrastructure resources

stadiinfra

Default value can be overridden.

st_key_password

SSL key password

=====

Default value can be overridden.

st_keystore_password

SSL keystore password

=====

Default value can be overridden.

Manage tags - optional

You can use tags to categorize your resources.

Cancel

Launch product

SITADCONSULTING

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4. At the displayed **Launch: MSK-Cluster** page, assign a name to the deployment or click the **Generate name**, next review the **Parameters section**, ensure **pertinent details are entered for the following**:
 - a. Please update certificate related parameters (cert_common_name, cert_country_code, cert_organization_name, cert_organizational_unit_name, cert_locality), **with pertinent details**.
 - b. Tagging parameters (cost-center, environment, project(a 2 letter code), resource-owner)
 - c. Please update remote access parameters **to reflect pertinent details**.
 - d. Kafka_Client_instance_public_key parameter (please note that a value for SSH public key **must be provided, customer must set a dummy SSH key value if they are not providing a real SSH public key**)
 - e. Please update Grafana parameters (grafana_managed_prefix_list_name, grafana_public_cidr_access, grafana_admin_user_primary_email_address_value), **with pertinent details**.
 - f. Kafka parameters (if enabling provisioned throughput, then ensure the supported Kafka instance type is specified)
 - g. Update value for ssl_keystore_password and ssl_key_password

After updating parameters **with pertinent details**, click on **Launch product** button at the end of the page, after successful deployment of the product the screen shown below is displayed

The screenshot displays the AWS Service Catalog console. At the top, a green success banner indicates that the 'deploy-ssipmsk' product was successfully launched. The main content area shows the 'Provisioned product details' for 'deploy-ssipmsk'. This section includes a product description, a table of provisioned product details, and a 'More details' link.

Provisioned product details

Provisioned product ID	User name	Status
pp-aws2kq672zy	SCUser1	Available

Product name	User ARN	Created
MSK-Cluster	arn:aws:iam::740072095461:user/SCUser1	Tue, Feb 4, 2025 at 10:34:41 AM GMT

Provisioned product ARN	Version name	Product type
arn:aws:servicecatalog:us-east-1:740072095461:stack/deploy-ssipmsk/pp-aws2kq672zy	v1.0.1	EXTERNAL

Resources (45)

AWS Service Catalog stores resources for Terraform and External products in AWS Resource Groups, which are then surfaced in AWS Service Catalog. For resources not supported in AWS Resource Group, the resource is created but not listed here. For more information, review [AWS supported resources](#) today.

Resource ARN	Type
e2e59565-889b-40b9-803b-ed5509f1766d	AWS-ACMPCA-CertificateAuthority
arn:aws:ec2:us-east-1:740072095461:dhcp-options/dhcp-030ca5e0d2599e9db	AWS-EC2-DHCPOptions
arn:aws:ec2:us-east-1:740072095461:elastic-ip/elastic-ip-05fe02aed2920c05e	AWS-EC2-EIP
arn:aws:ec2:us-east-1:740072095461:elastic-ip/elastic-ip-0a48e709f2371447	AWS-EC2-EIP
arn:aws:ec2:us-east-1:740072095461:elastic-ip/elastic-ip-0ccdef5f4963e4da9	AWS-EC2-EIP
arn:aws:ec2:us-east-1:740072095461:instance/i-0f4156720078f0db0	AWS-EC2-Instance
arn:aws:ec2:us-east-1:740072095461:internet-gateway/igw-00a551f52c715cf3	AWS-EC2-InternetGateway
key-022a50c4ca95380a0	AWS-EC2-KeyPair
arn:aws:ec2:us-east-1:740072095461:launch-template/lt-0c9975e75c0d8894a	AWS-EC2-LaunchTemplate
nat-019f7742b67ee8653	AWS-EC2-NatGateway
nat-04727d584a9b02d61	AWS-EC2-NatGateway
nat-0bd200ba90caffbe8	AWS-EC2-NatGateway
pl-0f7b749f5301cbb2	AWS-EC2-PrefixList
rtb-013818b7a97cce6d	AWS-EC2-RouteTable
rtb-04809b790d0ee487f	AWS-EC2-RouteTable
rtb-058b090e1a5825308	AWS-EC2-RouteTable
rtb-0bc5733f8d68164	AWS-EC2-RouteTable
arn:aws:ec2:us-east-1:740072095461:security-group/sg-019f6c812a5f8b088	AWS-EC2-SecurityGroup
arn:aws:ec2:us-east-1:740072095461:security-group/sg-0461d667a479880a6	AWS-EC2-SecurityGroup
arn:aws:ec2:us-east-1:740072095461:security-group/sg-0961f46235d8d5a16	AWS-EC2-SecurityGroup

5.0 Post Provisioning tasks

Login to the Kafka client instance to start LinkedIn CruiseControl service and access the WebUI

Please note that the customer is required to replace the default SSH public key provided during product launch to be able to gain access to the instance after deployment.

Start a remote ssh sessions to the instance, example shown below:

```
ssh -i "SCKafkaClientInstancePubkey.pem" ec2-user@ec2-54-234-163-97.compute-1.amazonaws.com
```

Warning: Identity file SCKafkaClientInstancePubkey.pem not accessible: No such file or directory.

```
, #_
~\ ####_ Amazon Linux 2023
~~ \#####\
~~ \###|
~~ \#/___ https://aws.amazon.com/linux/amazon-linux-2023
~~ V~' '->
~~~ /
~~ ._. _/
/_/_/
/_/m/'
Last login: Fri Oct 18 16:28:11 2024 from 86.133.201.101
[ec2-user@ip-10-0-49-224 ~]$
```

At the \$ prompt displayed above, switch user to cruisecontrol as shown below:

```
[ec2-user@ip-10-0-49-224 ~]$ sudo su – cruisecontrol
```

Press the return key so that the cruisecontrol user session is displayed as shown below:

```
[cruisecontrol@ip-10-0-49-224 ~]$
```

At the display cruisecontrol user prompt, change into “cruise-control” directory as show below:

```
[cruisecontrol@ip-10-0-49-224 ~]$ cd cruise-control
```

Press the return key, the “cruise-control” directory is displayed as shown below:

```
[cruisecontrol@ip-10-0-49-224 cruise-control]$
```

At the displayed “cruise-control” directory prompt, start the CruiseControl service as show below:

```
[cruisecontrol@ip-10-0-49-224 cruise-control]$ ./kafka-cruise-control-start.sh -  
daemon config/cruisecontrol.properties 9091
```

Press the enter key.

Next, check that the CruiseControl service is running, execute the command below:

```
[cruisecontrol@ip-10-0-49-224 cruise-control]$ ps -ef | grep cruise | grep java  
cruisec+ 29724 1 11 17:09 pts/1 00:00:17 java -Xmx1G -server -XX:+UseG1GC -  
XX:MaxGCPauseMillis=20 -XX:InitiatingHeapOccupancyPercent=35 -  
XX:+DisableExplicitGC -Djava.awt.headless=true -Dcom.sun.management.jmxremote  
-Dcom.sun.management.jmxremote.authenticate=false -  
Dcom.sun.management.jmxremote.ssl=false -Dkafka.logs.dir=./logs -  
Dlog4j.configurationFile=file:./config/log4j.properties -cp ./cruise-  
control/build/dependant-libs/*:./cruise-control/build/libs/*:./cruise-control-metrics-  
reporter/build/libs/* com.linkedin.kafka.cruisecontrol.KafkaCruiseControlMain  
config/cruisecontrol.properties 9091  
cruisec+ 29927 29605 0 17:12 pts/1 00:00:00 grep --color=auto java
```

The output shows that the CruiseControl service started ok.

Next, access CruiseControl Web UI to visualize the state of your Kafka Clusters.

Setup a remote ssh tunnel into your Kafka Client Instance as shown below:

```
sitadconsulting@sitads-MBP ~ % ssh -L 9091:127.0.0.1:9091 -i ssh -i  
"SCKafkaClientInstancePubkey.pem" ec2-user@ec2-54-234-163-97.compute-  
1.amazonaws.com
```

Press the return key, a tunnel session is established as shown below:

```
Warning: Identity file ssh not accessible: No such file or directory.  
Warning: Identity file SCKafkaClientInstancePubkey.pem not accessible: No such file  
or directory.  
The authenticity of host 'ec2-54-234-163-97.compute-1.amazonaws.com  
(54.234.163.97)' can't be established.  
ED25519 key fingerprint is  
SHA256:vGP++ny3ABPIpyO1iSJH5W718kqVxQMeqtBShBM4gsg.  
This key is not known by any other names.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'ec2-54-234-163-97.compute-1.amazonaws.com'  
(ED25519) to the list of known hosts.  
, #_  
~\ ####_ Amazon Linux 2023  
~~ \#####\
```

```

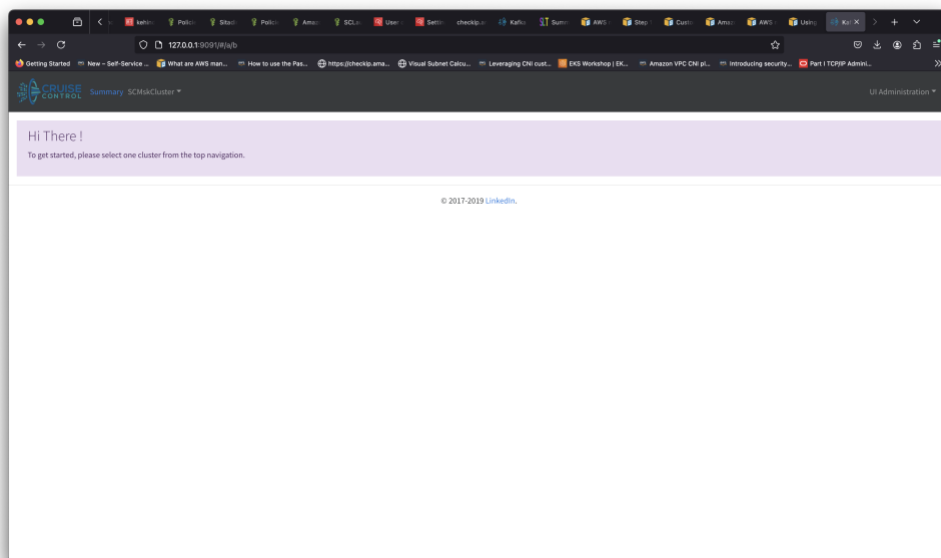
~~ \###/
~~ \#/___ https://aws.amazon.com/linux/amazon-linux-2023
~~  V~'!_>
~~~ /
~~~ ._/
~~~ _/_/
~~~ _/_/
~~~ _/m/'

```

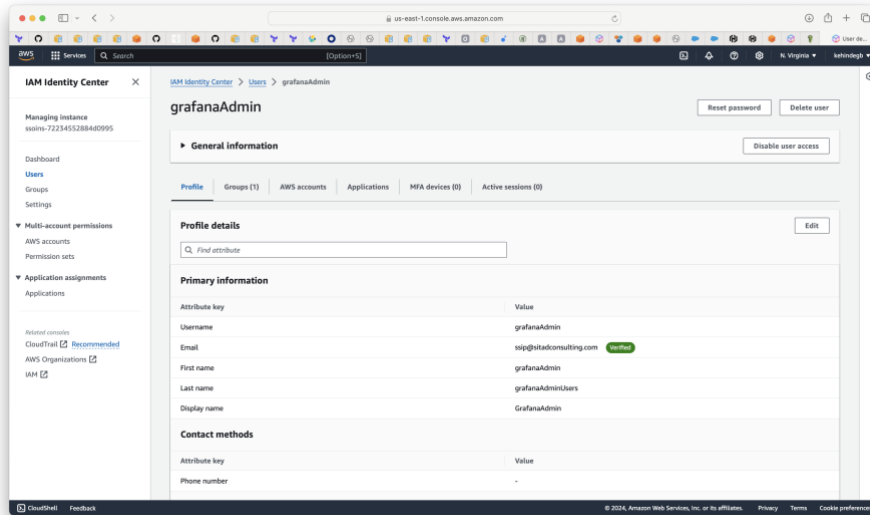
Last login: Fri Oct 18 16:41:52 2024 from 86.133.201.101

[ec2-user@ip-10-0-49-224 ~]\$

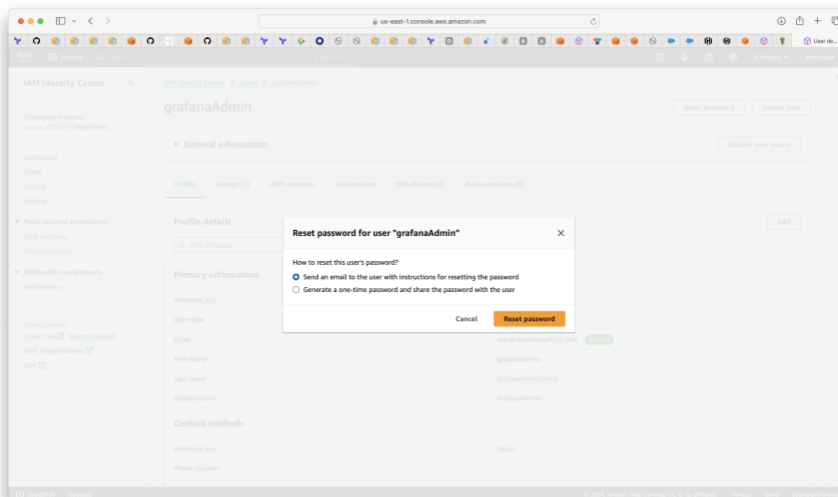
Next, fire up a browser of your choosing and enter in the address bar this localhost url – `http://127.0.0.1:9091`



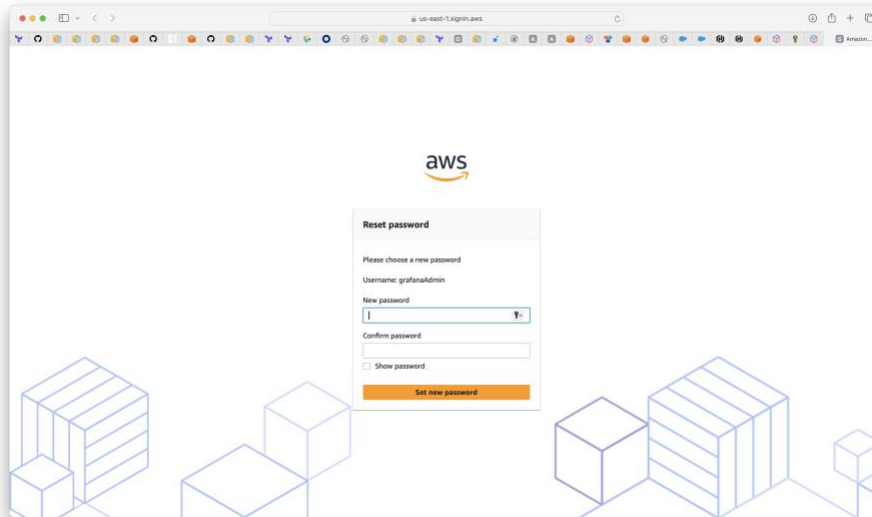
At the left-hand side of the page, click on your Cluster name and navigate to the Kafka Cluster Load Tab, the page below is displayed.



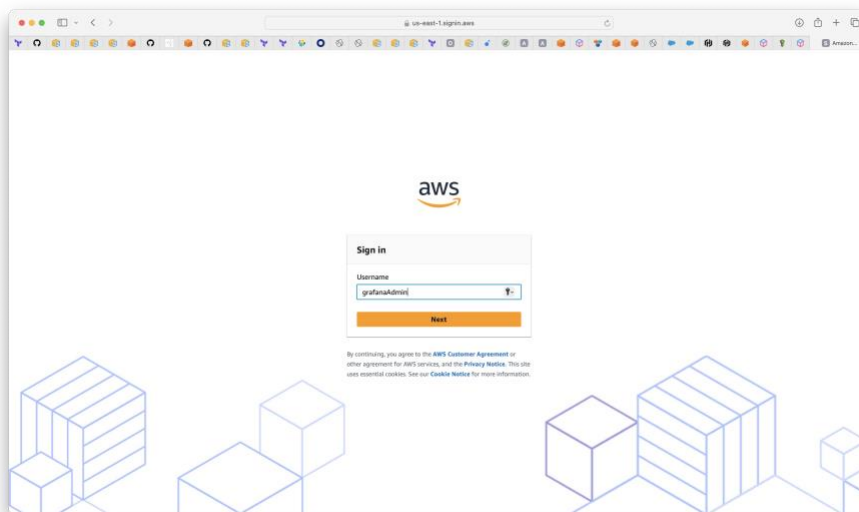
4.0.7 Next, in the same window on the right pane, click on “Reset password” button, a dialog box is displayed as show below, click on the “Reset password” button to send an email with instructions for resetting the user’s password



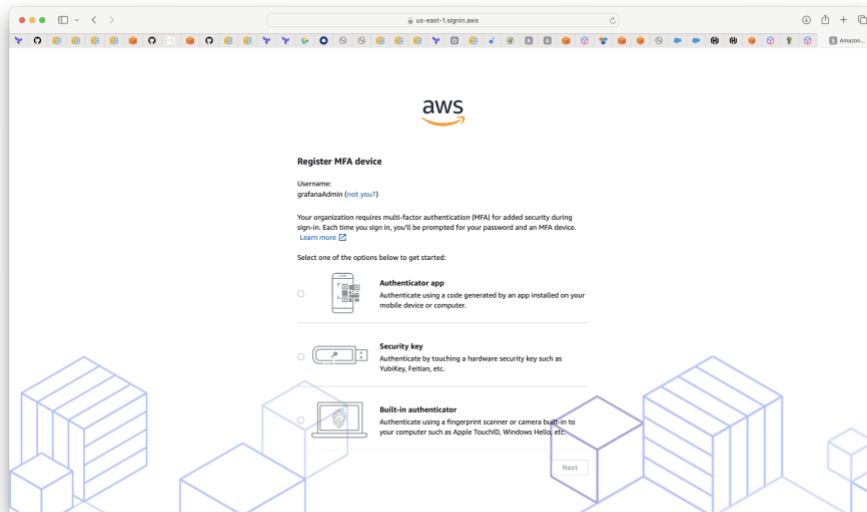
4.0.8 In the mail you received, click on the “Rest password” button, you will be redirected to a new browser page to set you password as shown below:



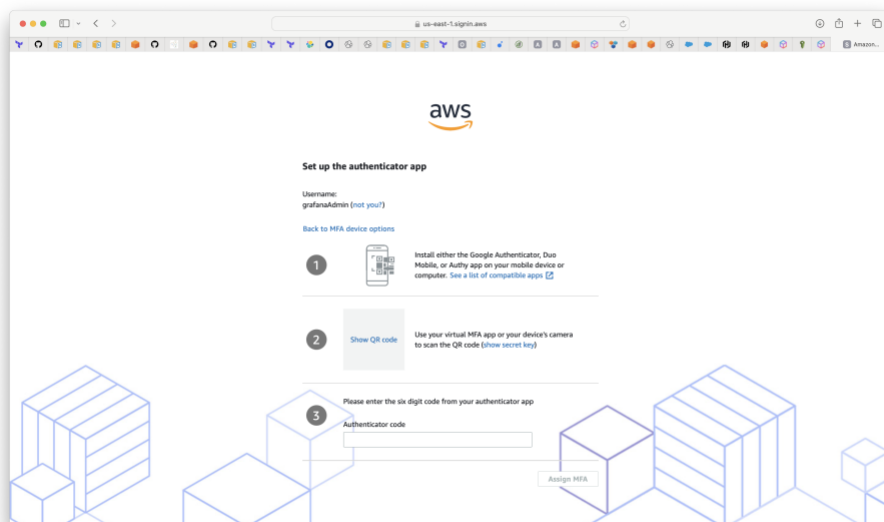
4.0.9 After setting your password, you will be redirected to sign-in page as shown below:



4.0.10 Click next and enter your new password, after entering your new password, you will be redirected to Register an MFA device as shown below:

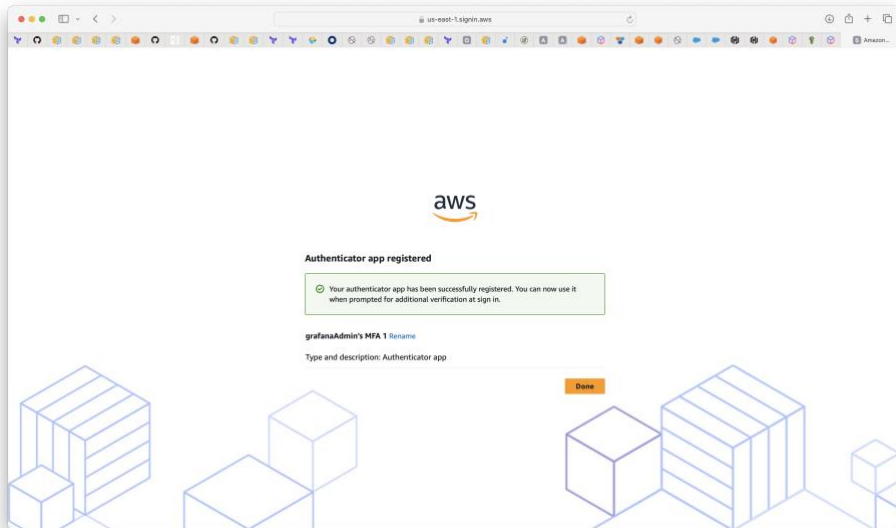


4.0.11 select the “Authenticator app” option and click next, a new page to Setup the authenticator app is displayed as shown below:

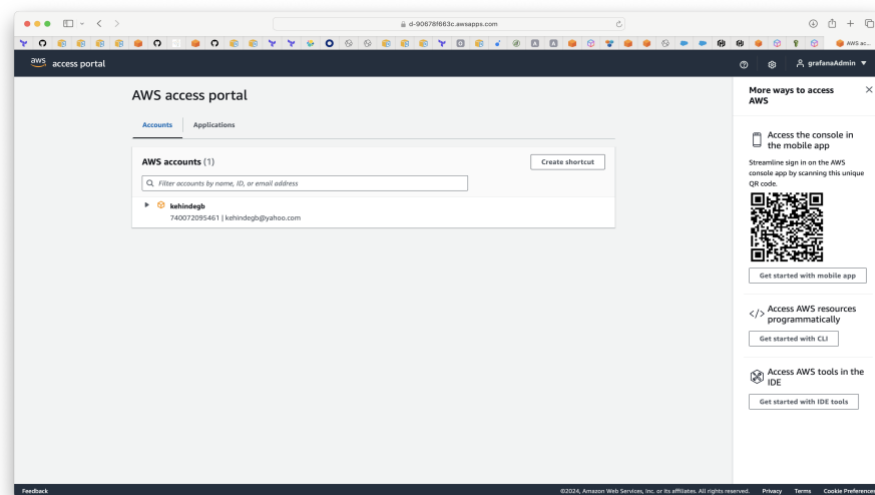


4.0.12 If you already have a virtual MFA device, then click option 2 to reveal the QR code. Scan the code using your virtual MFA device. The grafanaAdmin user will be configure.

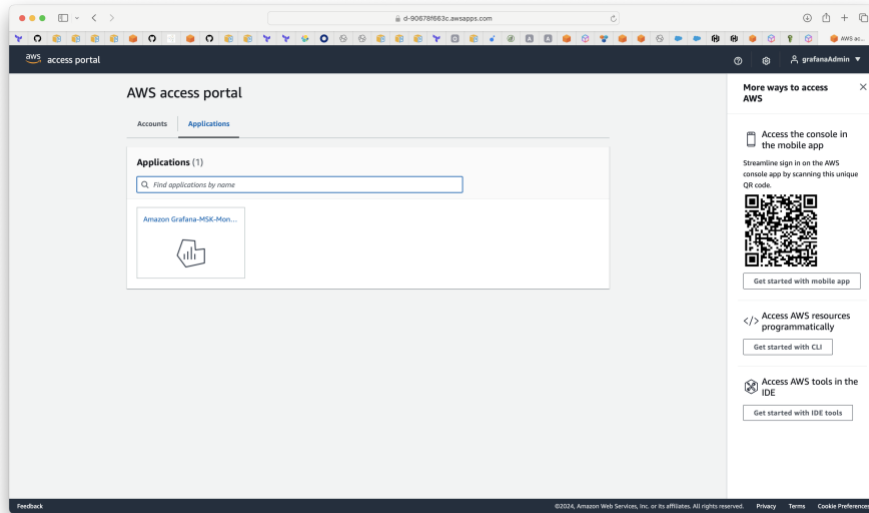
4.0.13 Next, enter the code provided by your virtual MFA device in the box, a new page is display indicating your Authenticator app is registered as shown below



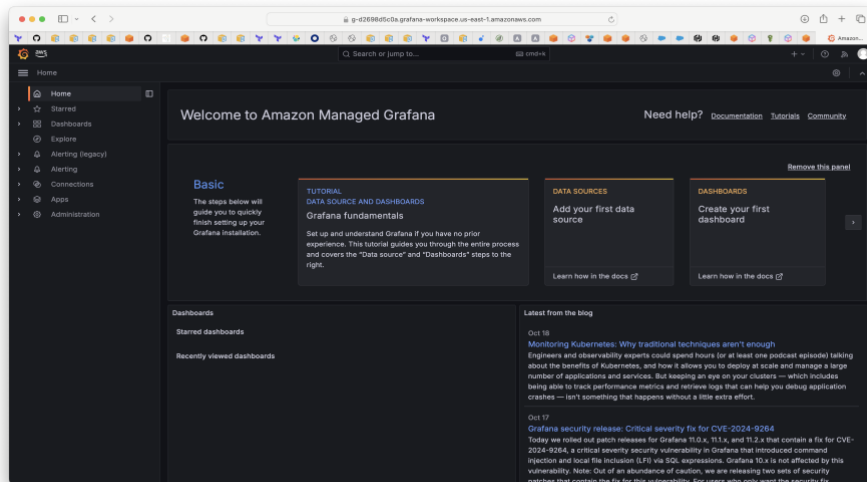
4.0.14 Next, click done and you will be redirected to the sign-in. Sign-in as “grafanaAdmin” user, after entering your password, you will be prompted to authenticate with MFA code. Once you supply the code, you will be redirected to “AWS Access Portal” page as shown below:



4.0.15 Next, click on the Applications tab, you will see your registered application as shown below:

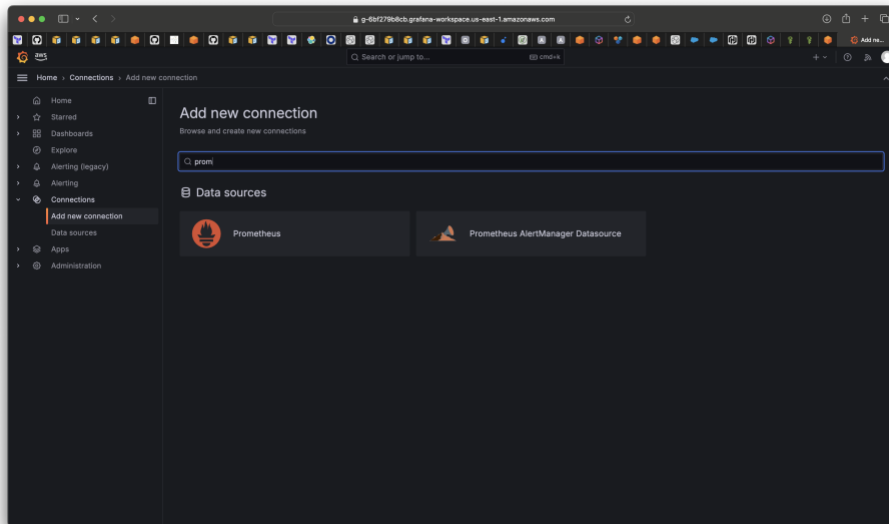


4.0.16 Next, click on your configured application and you will be redirected to the Amazon Managed Grafana Console as shown below:

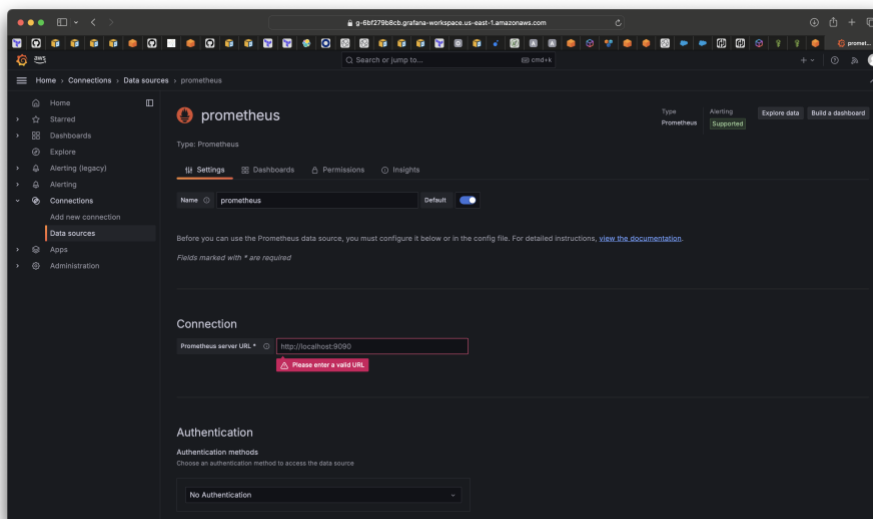


4.0.17 Configure Prometheus Data Source Connection

At the displayed Grafana Web UI console, on the left pane, click on “Connections” and then click “Add new connection”, in the display “Add new connection” window on the right pane, start typing “prom” and the Prometheus data source is displayed as show below:



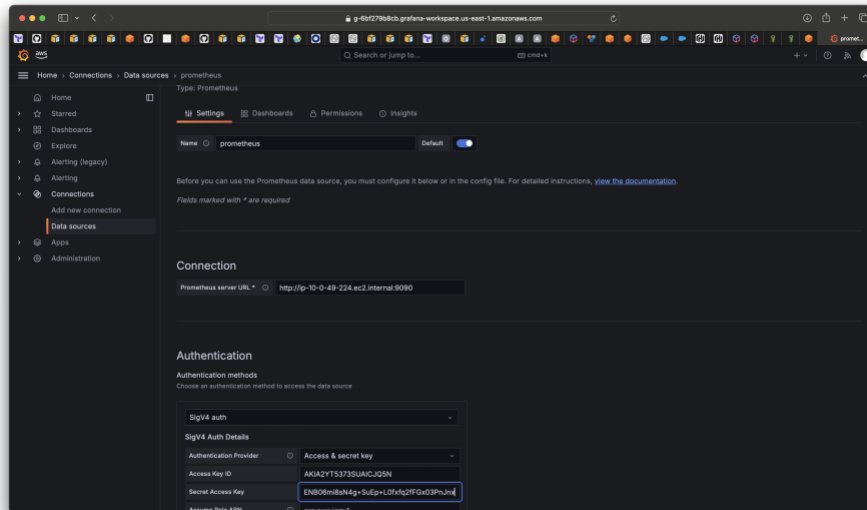
Click on Prometheus, and on the displayed window, click on “Add new data source button”, the window below is displayed



At the displayed window, under Connection, Prometheus server URL box, enter the private DNS name of your Kafka Client instance including the port at which Prometheus is running – 9090

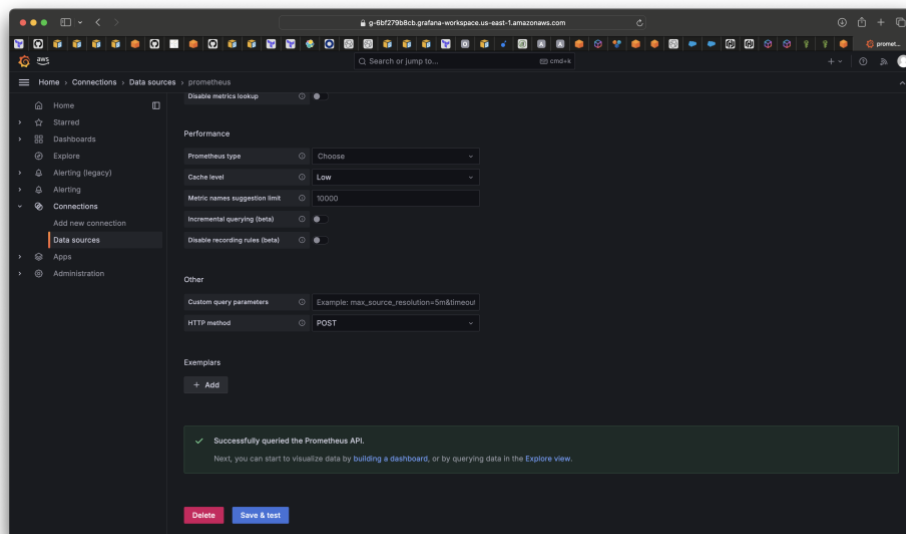
Still, in the same window above, under Authentication section, click on the drop-down list and select SigV4Auth, in the Authentication Provider drop down list, select Access & Secret Key. Next enter the value for Access Key ID and Secret Access Key (to get these values, logon to your Kafka Client Instance. The values are obtainable under the kafka user account AWS credentials)

Once these values have been populated, as show below:

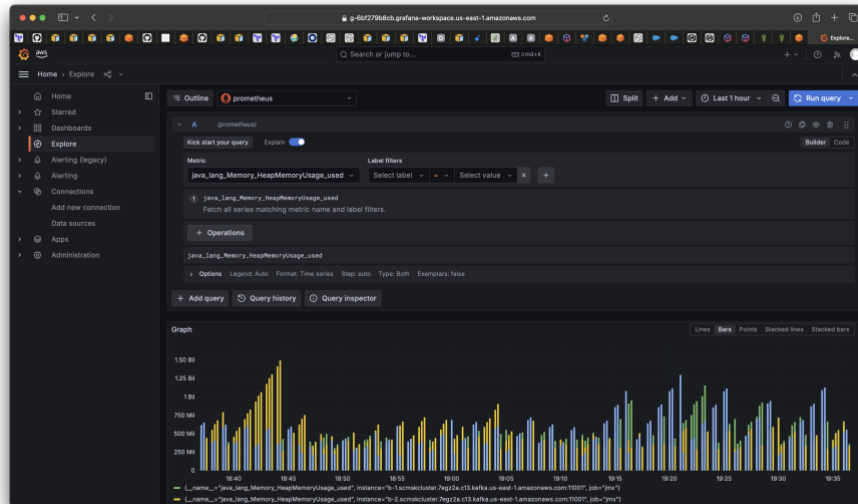


Next, scroll down to the bottom of the page and click on the button “Save & Test”

The window shown below is displayed, indicating a successful query of the Prometheus API



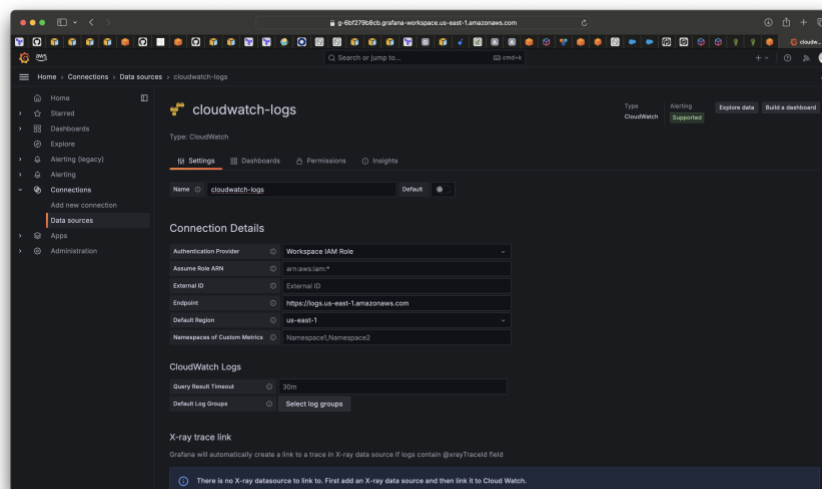
Next, on the left pane, click on Explore, on the displayed window, on the right pane, Prometheus is selected in the Outline section, under Metric, select are metric of your choosing and click on run query to display the visuals for that metric as shown below:



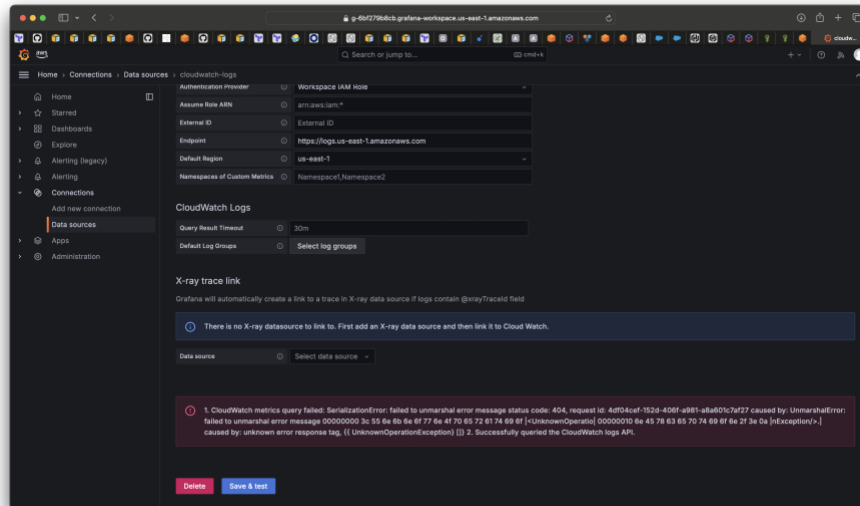
Configure CloudWatch Data Source Connection

Follow the same process for Prometheus above but search for CloudWatch Data Source.

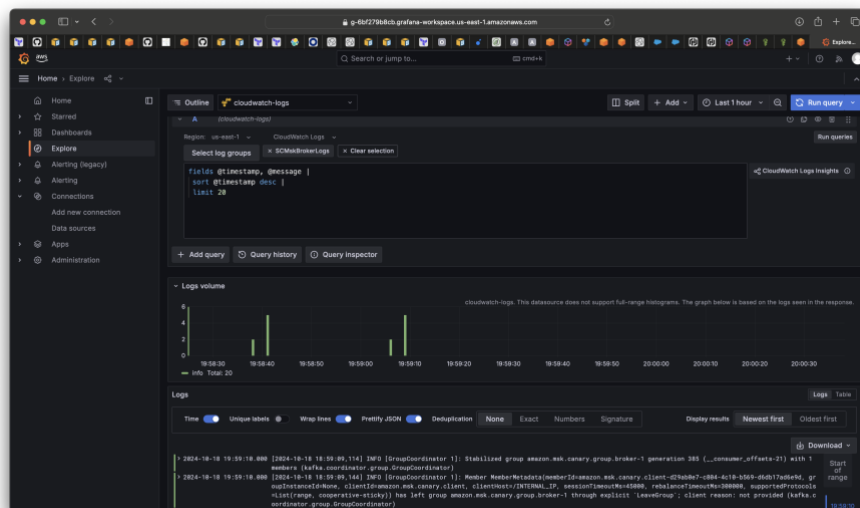
Setup CloudWatch logs Data Source as shown below:



Once the Connection Details section has been filled in, scroll down to bottom of the page and click on the Save & test" button. The window below shows that the Logs endpoint has been queried successfully

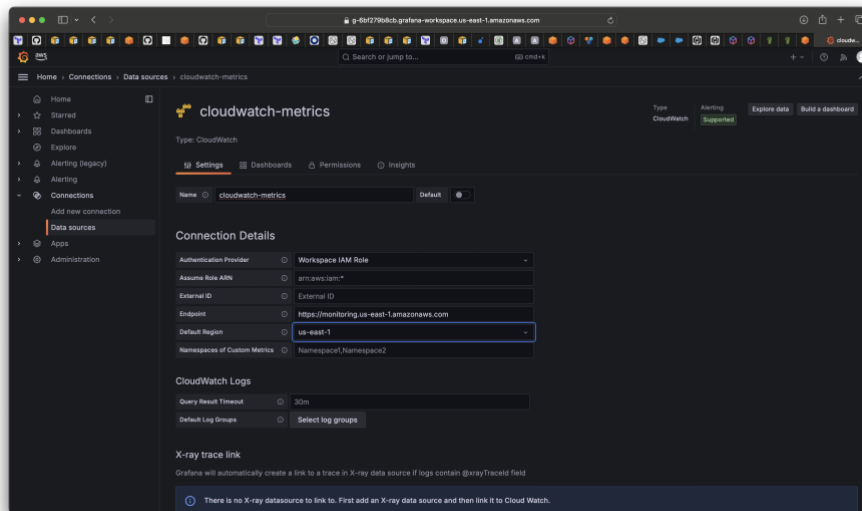


Next, Explore Logs, using the same process as before. Sample Log visualization is displayed as show below:

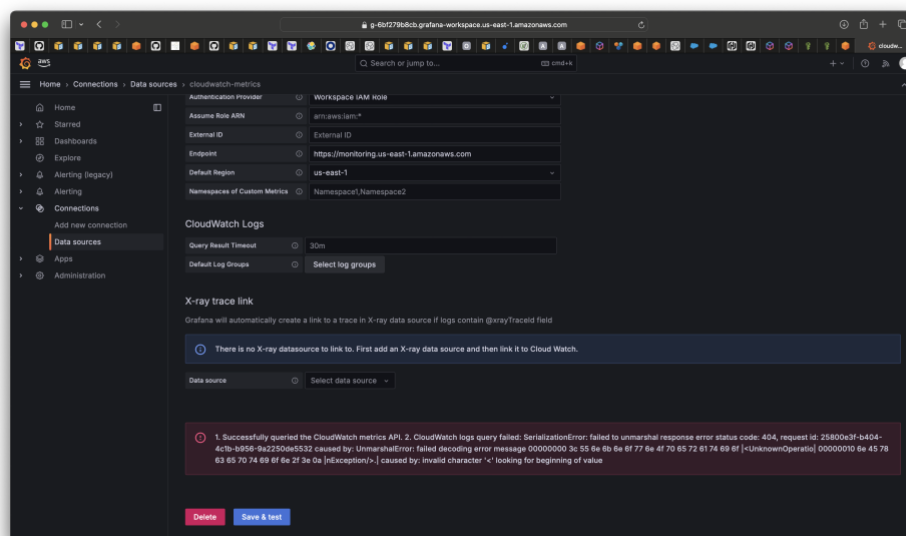


Next, repeat this same process for the monitoring end point to capture CloudWatch Metrics.

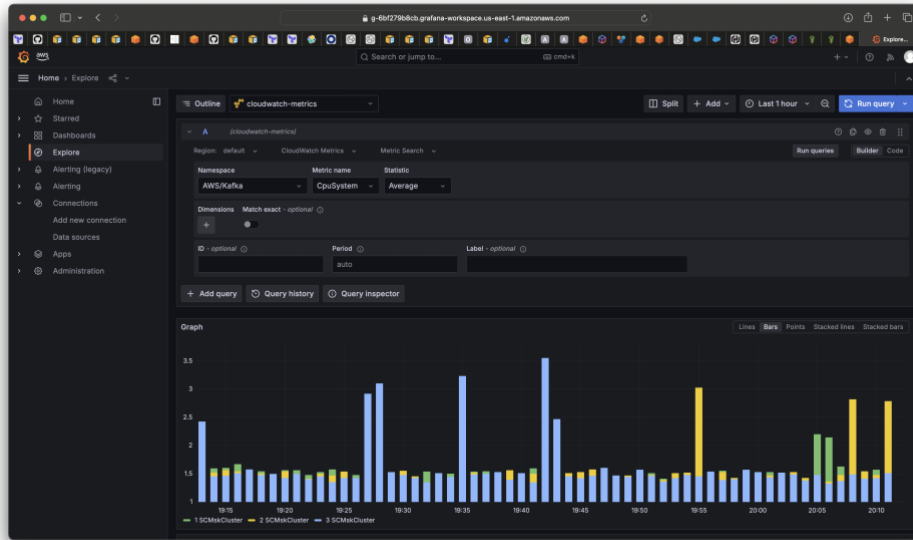
Setup CloudWatch Metrics Data Source as shown below:



Once the Connection Details section has been filled in, scroll down to bottom of the page and click on the 'Save & test' button. The window below shows that the Metrics endpoint has been queried successfully



Next, explore Metric, Sample Kafka Metrics is displayed as shown below:



Appendix A Resource Links

- * <https://github.com/linkedin/cruise-control>
- * <https://github.com/linkedin/cruise-control-ui>
- * <https://github.com/prometheus/prometheus/releases>
- * <https://github.com/aws-samples/amazon-msk-client-authentication>
- * <https://github.com/adoptium/temurin8-binaries/releases>
- * <https://dlcdn.apache.org/maven/maven-3/3.9.5/binaries/>
- * <https://github.com/aws/aws-msk-iam-auth/releases>
- * <https://archive.apache.org/dist/kafka/3.7.0/>

*These represent the links from which all the tooling built together with the provisioned EC2 instance were sourced.

Appendix B Customer Managed Policy

Below is the IAM policy to attach to the designated product Owner user.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [ "iam:Get*", "iam:List*", "cloudformation:ValidateTemplate" ],
      "Resource": "*"
    },
    {
      "Effect": "Allow",
      "Action": "iam:CreateGroup",
      "Resource": "*"
    },
    {
      "Effect": "Allow",
      "Action": "iam:*GroupPolicy",
      "Resource": "arn:aws:iam::*:group/ssip*",
      "Condition": { "ArnLike": { "iam:PolicyARN": "arn:aws:iam::aws:policy/AWSMarketplace*" } }
    },
    {
      "Effect": "Allow",
      "Action": "iam:*GroupPolicy",
      "Resource": "arn:aws:iam::*:group/ssip*"
    },
    {
      "Effect": "Allow",
      "Action": "iam:*Group",
      "Resource": "arn:aws:iam::*:group/ssip*"
    },
    {
      "Effect": "Allow",
      "Action": [ "iam:CreatePolicy", "iam:CreateRole", "iam:Tag*" ],
      "Resource": "*"
    },
    {
      "Effect": "Allow",
      "Action": "iam:*RolePolicy",
      "Resource": "*",
      "Condition": { "ArnLike": { "iam:PolicyARN":
"arn:aws:iam::*:policy/SCLaunch*ManagedPolicy" } }
    },
    {
      "Effect": "Allow",
      "Action": "iam:Delete*",
```

```

    "Resource": [ "arn:aws:iam::*:policy/SCLaunch*ManagedPolicy",
"arn:aws:iam::*:role/SCLaunch-MSK*" ]
  },
  {
    "Effect": "Allow",
    "Action": [ "cloudformation:CreateStack" ],
    "Resource": "*"
  },
  {
    "Effect": "Allow",
    "Action": [ "cloudformation:De*", "cloudformation:Get*", "cloudformation:List*" ],
    "Resource": "arn:aws:cloudformation:*:*:stack/*/*"
  },
  {
    "Effect": "Allow",
    "Action": "cloudformation:CreateUploadBucket",
    "Resource": "*"
  },
  {
    "Effect": "Allow",
    "Action": "cloudformation:DeleteStack",
    "Resource": "arn:aws:cloudformation:*:*:stack/ssip*/*"
  },
  {
    "Effect": "Allow",
    "Action": [ "cloudformation:Get*", "servicecatalog:Describe*", "servicecatalog:List*",
"servicecatalog:*Product*", "ssm:Describe*", "ssm:Get*", "config:Describe*" ],
    "Resource": "*"
  },
  {
    "Effect": "Allow",
    "Action": [ "servicecatalog:Describe*", "servicecatalog:List*",
"servicecatalog:*ProvisionedProduct*" ],
    "Resource": "*",
    "Condition": { "StringEquals": { "servicecatalog:userLevel": "self" } }
  },
  {
    "Effect": "Allow",
    "Action": "servicecatalog:*Portfolio*",
    "Resource": "arn:aws:catalog:*:*:portfolio/*"
  },
  {
    "Effect": "Allow",
    "Action": "s3:CreateBucket",
    "Resource": "arn:aws:s3:::cf-templates-*"
  },
  {
    "Effect": "Allow",
    "Action": "s3:List*",
    "Resource": "*"
  },
},

```

```

{
  "Effect": "Allow",
  "Action": [ "s3:List*", "s3:Get*" ],
  "Resource": "arn:aws:s3:::cf-templates-*"
},
{
  "Effect": "Allow",
  "Action": [ "s3:Put*", "s3:Get*", "s3:Delete*" ],
  "Resource": "arn:aws:s3:::cf-templates-*/*"
},
{
  "Effect": "Allow",
  "Action": [ "iam:CreateServiceLinkedRole", "iam:GetServiceLinkedRoleDeletionStatus",
    "iam>DeleteServiceLinkedRole" ],
  "Resource": [ "arn:aws:iam::*:role/aws-service-
    role/deployment.marketplace.amazonaws.com/AWSServiceRoleForMarketplaceDeployment" ],
  "Condition": { "StringLike": { "iam:AWSServiceName":
    [ "deployment.marketplace.amazonaws.com" ] }}
},
{
  "Effect": "Allow",
  "Action": "account:ListRegions",
  "Resource": [ "arn:aws:account::*:account" ]
},
{
  "Effect": "Allow",
  "Action": [ "ec2:Describe*", "license-manager:Get*", "license-manager:List*", "license-
    manager-user-subscriptions:List*", "notifications:List*", "servicecatalog:List*", "sns:List*" ],
  "Resource": "*"
}
]
}

```

Appendix C Service Availability Regions

Region Name	Region	Available
US East (N. Virginia)	us-east-1	Yes
Europe (London)	eu-west-2	Yes
US West (Oregon)	us-west-2	Coming soon
Europe (Stockholm)	eu-north-1	Coming soon