logicworks

GenFlow

User Guide

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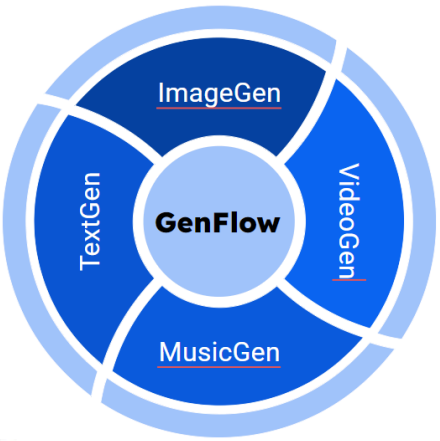
About GenFlow

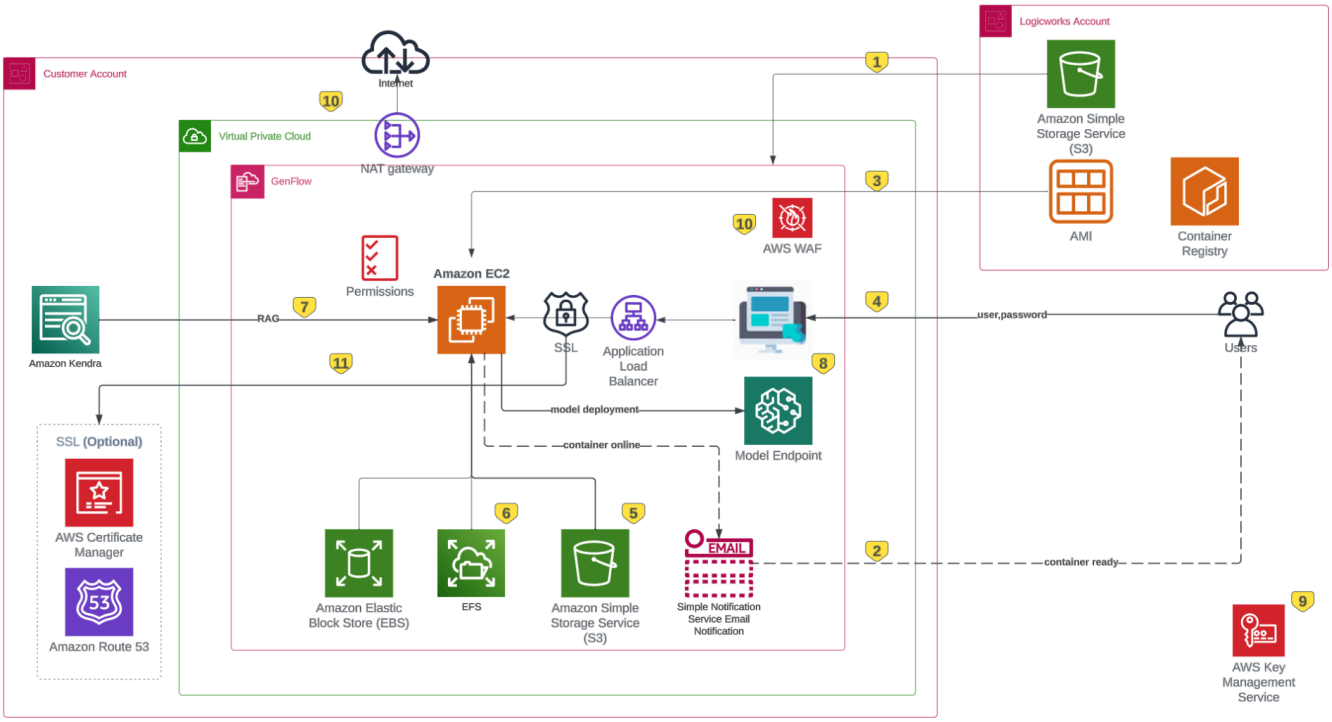
GenFlow is a no-code tool designed to democratize access to generative AI models, specifically tailored for non-technical domain experts. This platform prioritizes data privacy and security, ensuring that sensitive information remains protected. GenFlow encompasses a suite of applications including TextGen, ImageGen, VideoGen, and MusicGen, each delivered through AMI images curated by Logicworks. The solution provides a web UI interface playground, allowing users to explore the cutting-edge capabilities of state-of-the-art (SOTA) models in each respective modality.



Compared to AWS's Bedrock and Jumpstart, GenFlow distinguishes itself by providing a seamless no-code environment. This environment grants users access to the entire array of models available in HuggingFace, all within their Virtual Private Cloud (VPC), without any data leaving their account. Moreover, GenFlow offers the flexibility of customizable extensions, enabling users to integrate additional functionalities such as LORA fine-tuning, Kendra RAG integration, endpoint recommendation, and much more. This empowers users to tailor their AI experience to their specific needs and preferences.

GenFlow Solution Overview

The following image shows GenFlow architecture and the different AWS services involved in the solution.



No	AWS Service	Description
1	Amazon IAM	AWS Identity and Access Management (IAM) is a web service that helps you securely control access to AWS resources. With IAM, you can centrally manage permissions that control which AWS resources users can access. The CloudFormation stack has been developed following the least privileged principle by enforcing permission to the EC2 instance through the proper IAM policies and roles.
2	Amazon EC2	Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. This computer service will host TextGen and ImageFlow.
3	Application Load Balancer	For security reasons, the EC2 instance will be deployed in a private subnet only accessible within the same VPC. The application load balancer provides a secure way to access the instance without exposing the instance itself to the internet.

4	AWS WAF	AWS WAF helps protect against common web exploits and bots that can affect availability, compromise security, or consume excessive resources. It will be associated with the Application Load Balancer to enhance GenFlow security.
5	Amazon Sagemaker	Amazon SageMaker is a machine-learning platform that enables developers to create, train, and deploy machine-learning models in the cloud. SageMaker offers the ability to deploy machine learning models as endpoints, which can be invoked to make predictions on new data.
6	Amazon EBS	Amazon Elastic Block Store (Amazon EBS) is an easy-to-use, scalable, high-performance block-storage service designed for Amazon Elastic Compute Cloud (Amazon EC2). This volume will act as the principal file system of the EC2 instance.
7	Amazon EFS	Amazon Elastic File System (EFS) is designed to provide serverless, fully elastic file storage that lets you share file data without provisioning or managing storage capacity and performance. All data and models of TextGen/ImageFlow will be stored in an EFS that grows as needed with time.
8	Amazon S3	Amazon Simple Storage Service (Amazon S3) is an object storage service that offers industry-leading scalability, data availability, security, and performance. You can provide the ARN of any existing S3 bucket with data to grant the proper permissions to download data from the instance.
9	Amazon SNS	Amazon Simple Notification Service (Amazon SNS) is a managed service that provides message delivery from publishers to subscribers. It will be used to notify users when the instance is ready.
10	AWS KMS	AWS Key Management Service (KMS) gives you centralized control over the cryptographic keys used to protect your data. The service is integrated with other AWS services, making it easier to encrypt data you store in these services and control access to the keys that decrypt it. This service will be used to enforce security at rest on the different storage services (EBS, EFS and S3 bucket). Only some AWS services will have the permissions to access it.
11	Amazon AMI	An Amazon Machine Image (AMI) is a template that contains a software configuration (for example, an operating system, an application server, and applications). From an AMI, you launch an instance, which is a copy of the AMI running as a virtual server in the cloud.

12	Elastic Container Registry	Amazon Elastic Container Registry (Amazon ECR) is an AWS managed container image registry service that is secure, scalable, and reliable. Amazon ECR supports private repositories with resource-based permissions using AWS IAM.
13	NAT Gateway	NAT Gateway is a highly available AWS managed service that makes it easy to connect to the Internet from instances within a private subnet in an Amazon Virtual Private Cloud (Amazon VPC). It allows instances to reach the internet without being reachable from the internet.
14	Amazon Kendra	Amazon Kendra is an intelligent enterprise search service that helps you search across different content repositories with built-in connectors.

Security

Generative AI models available on the market have been trained with a large amount of data that makes them useful for general purposes. If you need to improve a generative model performance for specific use cases, it is required to re-train the model using LoRAs or use a retrieval-augmented generation (RAG) approach to consult an external knowledge base on the spot. Both alternatives involve the use of company proprietary data that may contain sensitive information about business processes or even personal information; therefore, security is a critical aspect to consider. GenFlow enhances security in the following ways:

- Use of KMS keys to encrypt storage services like EBS, EFS, and S3. Key rotation has been enabled to automatically rotate KMS keys periodically.
- VPC is designed to allow internet access securely through the use of a NAT Gateway that allows the instance to download models from the internet, without being reachable directly.
- GenFlow is accessed through an Application Load Balancer with WAF enabled. WAF is an AWS web application firewall that will protect GenFlow web applications from various application layer attacks such as cross-site scripting (XSS), SQL injection, and cookie poisoning, among others. The WAF rules enabled are:
    - Admin protection managed rule group
        - The Admin protection rule group contains rules that allow you to block external access to exposed administrative pages. This might be useful if you run third-party software or want to reduce the risk of a malicious actor gaining administrative access to your application.
    - Known bad inputs managed rule group
        - The Known bad inputs rule group contains rules to block request patterns that are known to be invalid and are associated with exploitation or discovery of vulnerabilities. This can help reduce the risk of a malicious actor discovering a vulnerable application.
    - Linux operating system managed rule group
        - The Linux operating system rule group contains rules that block request patterns associated with the exploitation of vulnerabilities specific to Linux, including Linux-specific Local File Inclusion (LFI) attacks. This can help prevent attacks that expose file contents or run code for which the attacker should not have had access. You should evaluate this rule group if any part of your application runs on Linux. You should use this rule group in conjunction with the POSIX operating system rule group.
    - POSIX operating system managed rule group

        - The POSIX operating system rule group contains rules that block request patterns associated with the exploitation of vulnerabilities specific to POSIX and POSIX-like operating systems, including Local File Inclusion (LFI) attacks. This can help prevent attacks that expose file contents or run code for which the attacker should not have had access. You should evaluate this rule group if any part of your application runs on a POSIX or POSIX-like operating system, including Linux, AIX, HP-UX, macOS, Solaris, FreeBSD, and OpenBSD.
    - Amazon IP reputation list managed rule group
        - The Amazon IP reputation list rule group contains rules that are based on Amazon internal threat intelligence. This is useful if you would like to block IP addresses typically associated with bots or other threats. Blocking these IP addresses can help mitigate bots and reduce the risk of a malicious actor discovering a vulnerable application.
    - Anonymous IP list managed rule group
        - The Anonymous IP list rule group contains rules to block requests from services that permit the obfuscation of viewer identity. These include requests from VPNs, proxies, Tor nodes, and web hosting providers. This rule group is useful if you want to filter out viewers that might be trying to hide their identity from your application. Blocking the IP addresses of these services can help mitigate bots and evasion of geographic restrictions.
    - AWS WAF Bot Control rule group
        - The Bot Control managed rule group provides rules that manage requests from bots. Bots can consume excess resources, skew business metrics, cause downtime, and perform malicious activities.

You can get additional information about these WAF rules at the following link:
https://docs.aws.amazon.com/waf/latest/developerguide/aws-managed-rule-groups-list.html

Pre-requisites

- AWS account with service quota available to run **G5 on-demand instances**. If your account is brand new, or you haven't used G5 instances before, please refer to this section.
- VPC and at least three subnets with internet access. If you don't have an existing VPC, you can deploy a simple VPC with public subnets.
- Provide your AWS Account to Logicworks team to request permission to access the AMI image and ECR Container.
- Currently, the AMI is only available in the region: us-east-2
- **(Optional**) Existing S3 bucket to upload/download models.
- **(Optional)** Existing EFS and Security group associated with its mount targets.

Observations

- Sometimes the selected AZ **runs out of capacity to create GPU instances**. If that is the case, **delete** the CloudFormation stack and **try again in another Availability Zone**.
- If you did not provide a S3 bucket name, a new one will be created. If you are re-creating the stack, make sure to provide the bucket name to import it, if not, it will fail trying to create another bucket with the same name.
- The EFS volume and S3 bucket, created by the CloudFormation stack, will not be deleted. Make sure to delete them to avoid being charged.
- **IMPORTANT:** The CloudFormation stack name should be all lowercase.

CloudFormation Templates

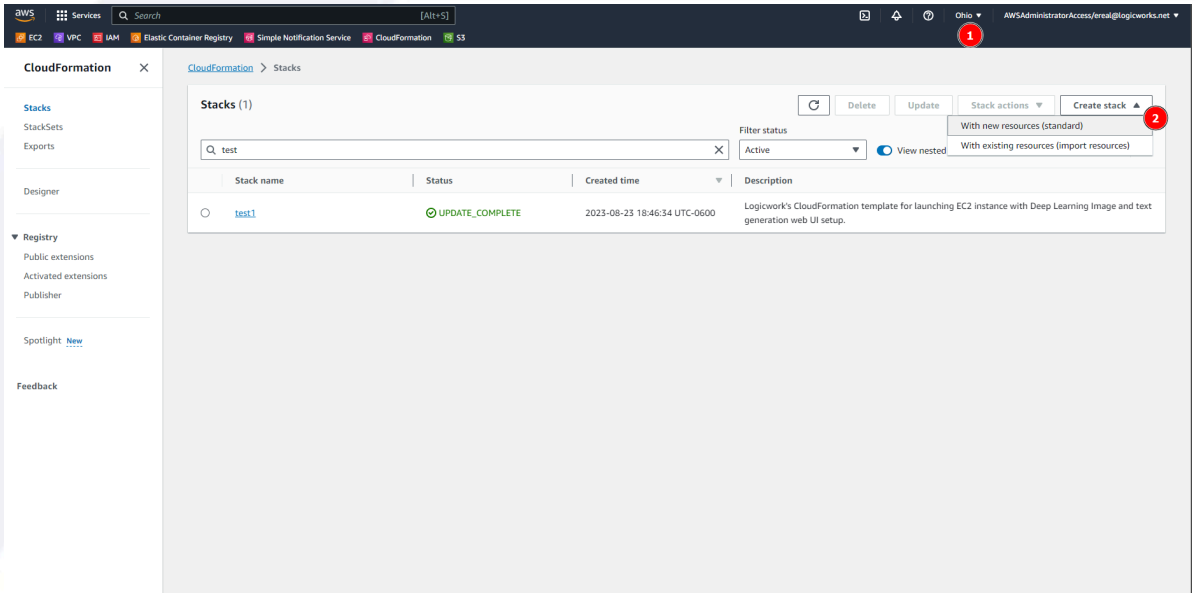
GenFlow is deployed using best practices and enforcing security through infrastructure as code, to learn how to deploy a CloudFormation stack you can check this section: Deploy CloudFormation template.

As a prerequisite for deploying GenFlow, it is required to have a VPC in place with at least 3 private subnets and 3 public subnets, where the resources can be deployed and internet access. If you don't have one, you can use this VPC Template to deploy one in your AWS account. Then you can use the GenFlow Template to deploy the compute resources and unleash the Generative AI capabilities for your organization.

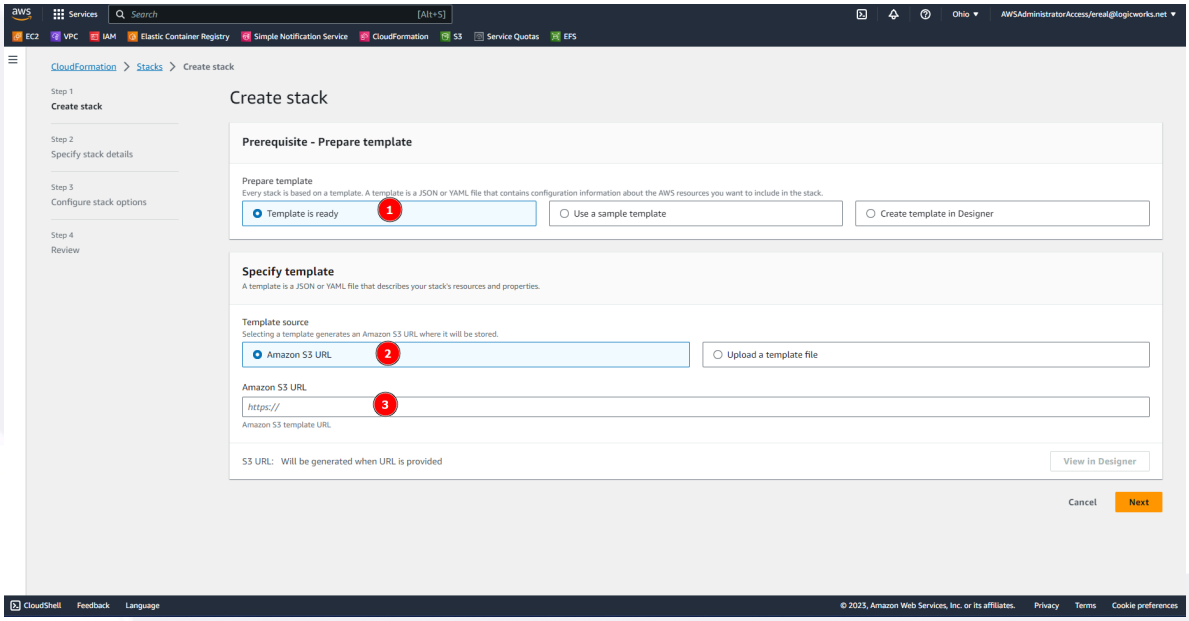
Deploy Cloudformation template

Through AWS Console

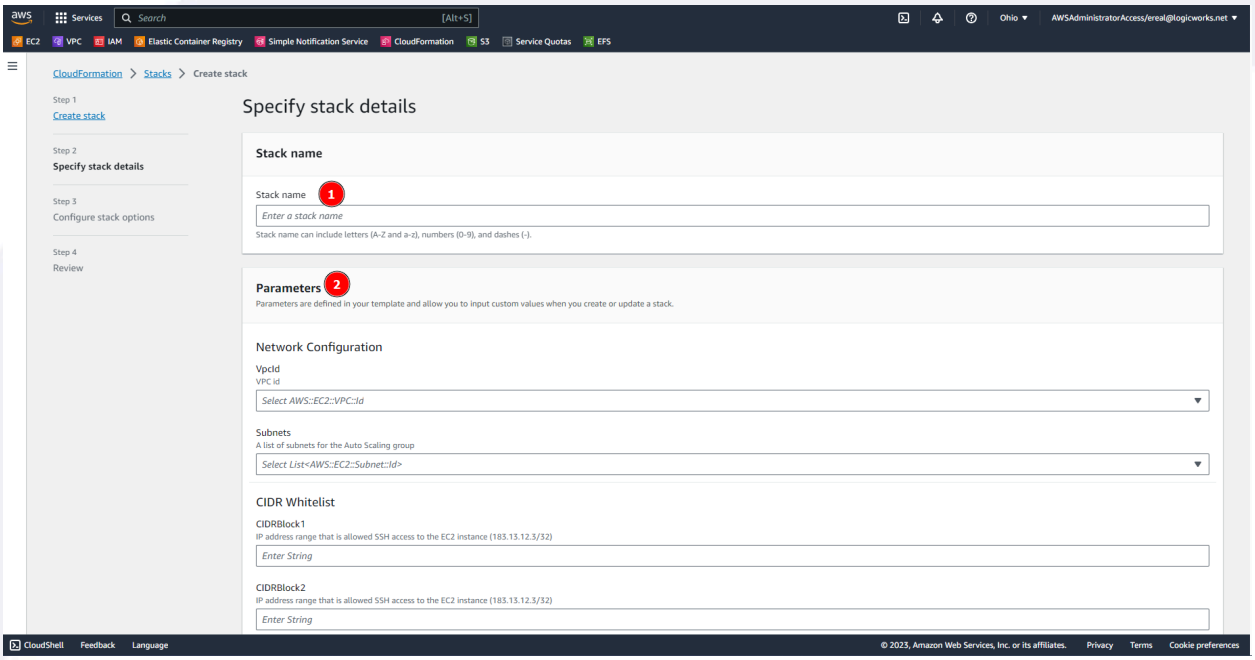
- Go to AWS Console
- Go to CloudFormation page https://console.aws.amazon.com/cloudformation/
- From the navigation bar, select the us-east-2 Region.
- On the upper right, click on the Create Stack dropdown and Click on With new resources (standard).



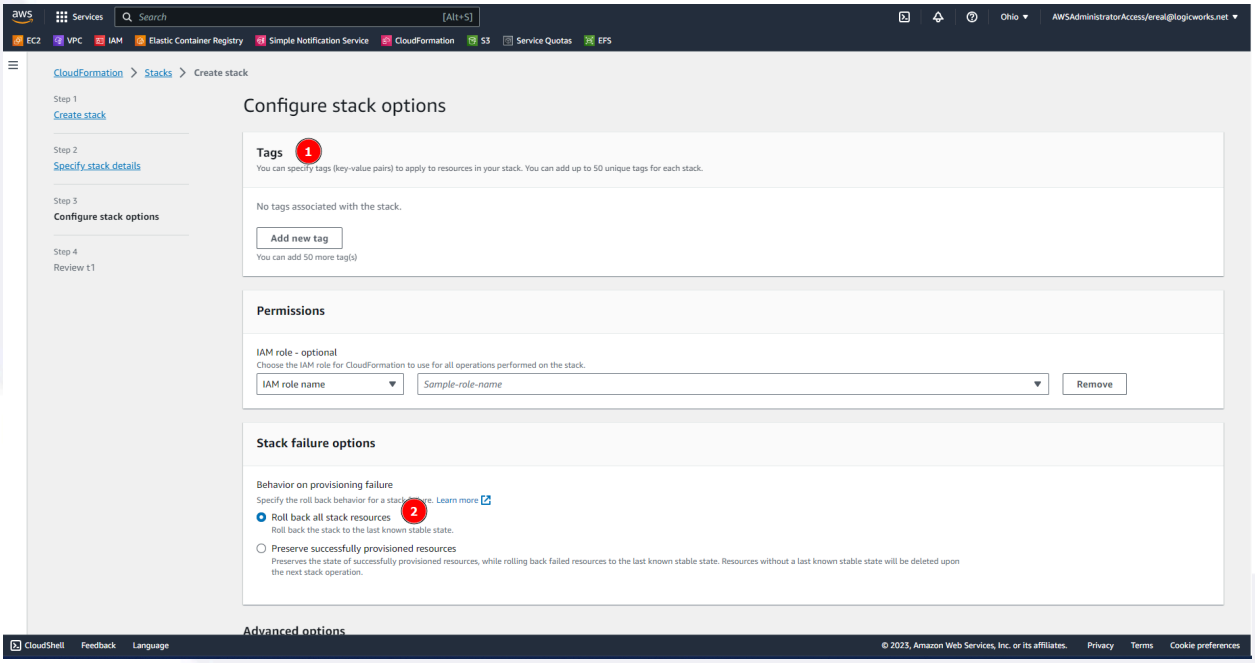
- Select template is ready option.
- Choose Amazon S3 URL option.
- In the Amazon S3 URL field, paste the template URL provided in the next sections.



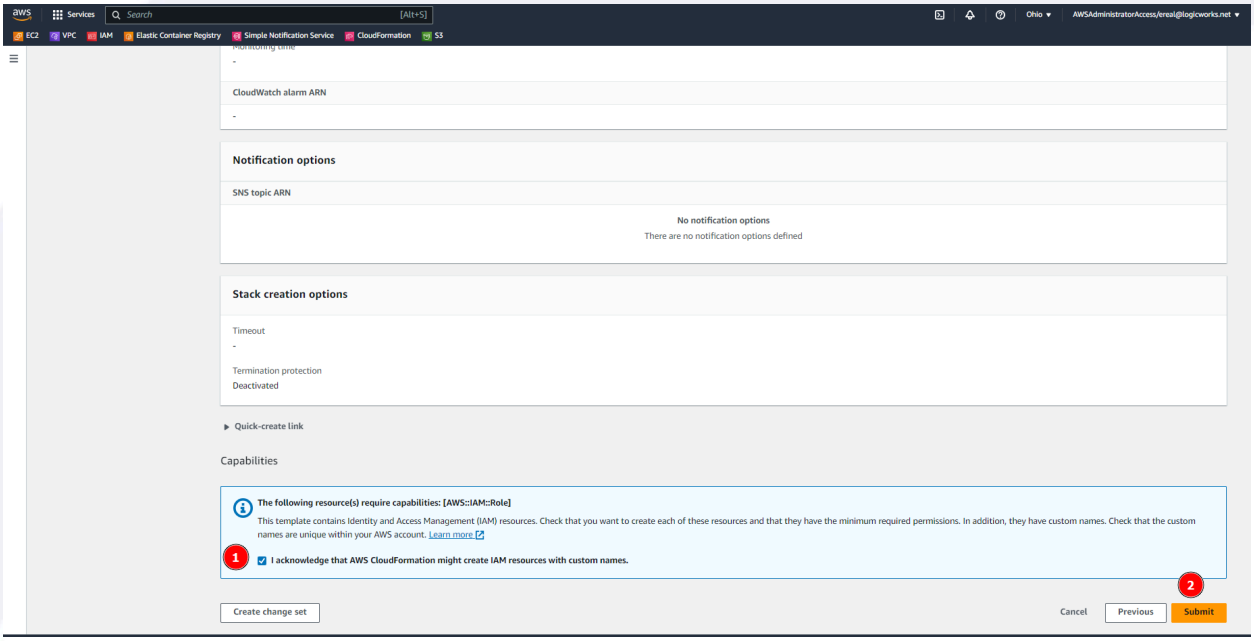
- Give a name to the CloudFormation stack to deploy. **It must be unique and lowercase**.
- Set the parameters values of the CloudFormation Stack. Check the Parameters Table of the respective CloudFormation stack.



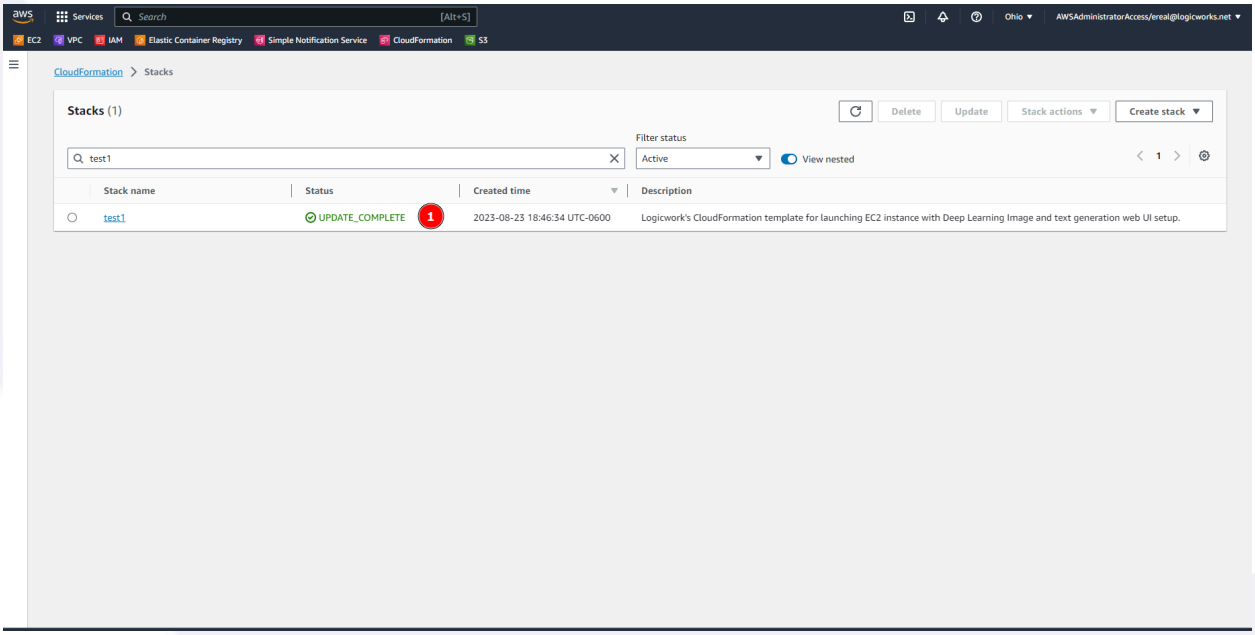
- Add tags to add to the AWS Resources created by the CloudFormation stack.
- Select the option Roll back all stack resources.



- Check the box to acknowledge the creation of some IAM roles and policies.
- Click the Submit button.



- Wait until the CloudFormation stack gets to the Create_Complete or Update_complete status.



Using AWS Cli

You will need a terminal with access to AWS Services (Through IAM roles or Access Keys)

```
#!/bin/bash

# (Optional) Configure your access keys in the terminal
aws configure

# Set your stack's parameters
stack_name=<StackName>
template_url=<TemplateUrl>
region=<AWSRegion>

# Create the cloudformation stack
aws cloudformation create-stack \
    --stack-name $stack_name \
  --template-url $template_url \
  --capabilities CAPABILITY_IAM \
  --region $region

# Update the cloudformation stack
aws cloudformation update-stack \
  --stack-name $stack_name \
  --template-url $template_url \
  --capabilities CAPABILITY_IAM \
  --region $region
```

```
# Wait until update process is done...
aws cloudformation wait stack-update-complete \
    --stack-name $stack_name --region $region
echo ">>>>> Done..."

# Destroy the stack
aws cloudformation delete-stack --stack-name $stack_name --region $region
```

OBSERVATIONS:

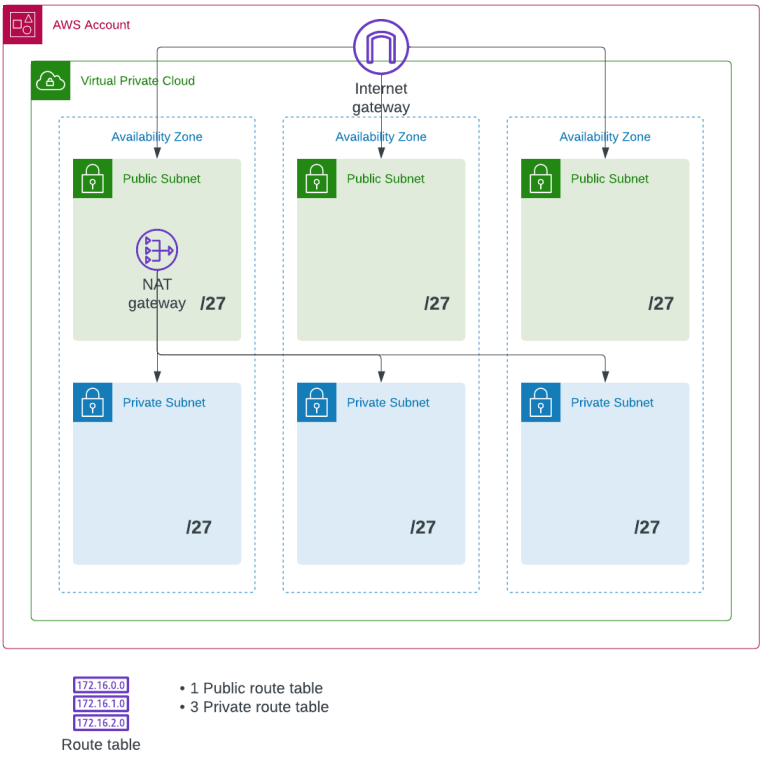
- If the CloudFormation stack fails the first time, you would need to delete the stack and start over the creation process.
- If you get the error ***"Bucket name should not contain uppercase characters"***, delete the stack and create a new one using only lowercase for the stack name.
- If you get the error: ***"You have requested more vCPU capacity than your current vCPU limit of 0 allows for the instance bucket that the specified instance type belongs to. Please visit http://aws.amazon.com/contact-us/ec2-request to request an adjustment to this limit"***. You would need to enable vCPU capacity in that AWS region using these instructions.

VPC Template (Optional)

Template URL

https://genflow-artifacts.s3.us-east-2.amazonaws.com/templates/network_private_main.yml

Diagram



Parameters

Name	Type	Description
Prefix	String	Keyword that identifies each resource created from different stacks that uses the same template.
Cidr	String	IP block for the VPC. Default: 10.0.0.0/16

Outputs

Name	Value
VpcID	ID of the VPC.
PublicASubnetID	Public subnet on Availability Zone A
PublicBSubnetID	Public subnet on Availability Zone B
PublicCSubnetID	Public subnet on Availability Zone C
PrivateASubnetID	Private subnet on Availability Zone A
PrivateBSubnetID	Private subnet on Availability Zone B
PrivateCSubnetID	Private subnet on Availability Zone C

GenFlow Template

Template URL

https://genflow-artifacts.s3.us-east-2.amazonaws.com/templates/genflow_production_genflow_production_release-v1.yml

Parameters

Name	Type	Description
VpcId	AWS::EC2::VPC::Id	ID of the VPC where the instance will be deployed.
PublicSubnetA	AWS::EC2::Subnet::Id	ID of the Subnet to deploy the Application Load Balancer. Make sure that the subnet belongs to the VPC selected.
PublicSubnetB	AWS::EC2::Subnet::Id	ID of the Subnet to deploy the Application Load Balancer. Make sure that the subnet belongs to the VPC selected.
PublicSubnetC	AWS::EC2::Subnet::Id	ID of the Subnet to deploy the Application Load Balancer. Make sure that the subnet belongs to the VPC selected.
PrivateSubnetA	AWS::EC2::Subnet::Id	ID of the Subnet to deploy the instance. It is required to have Internet access. (Internet gateway or through a NAT Gateway/Instance). Make sure that the subnet belongs to the VPC selected.
PrivateSubnetB	AWS::EC2::Subnet::Id	ID of the Subnet to deploy the instance. It is required to have Internet access. (Internet gateway or through a NAT Gateway/Instance). Make sure that the subnet belongs to the VPC selected.
PrivateSubnetC	AWS::EC2::Subnet::Id	ID of the Subnet to deploy the instance. It is required to have Internet access. (Internet gateway or through a NAT Gateway/Instance). Make sure that the subnet belongs to the VPC selected.
PublicIP1	String	For security reasons, we recommend that you pass your public IP in this parameter to whitelist it and provide access only to you (i.e. 183.13.12.3). If you want to provide access to everyone on the internet,

		you can write "PUBLIC". For production use, we do not recommend making it PUBLIC.
PublicIP2	String	For security reasons, we recommend that you pass your public IP in this parameter to whitelist it and provide access only to you (i.e. 183.13.12.3). If you want to provide access to everyone on the internet, you can write "PUBLIC". For production use, we do not recommend making it PUBLIC.
PublicIP3	String	For security reasons, we recommend that you pass your public IP in this parameter to whitelist it and provide access only to you (i.e. 183.13.12.3). If you want to provide access to everyone on the internet, you can write "PUBLIC". For production use, we do not recommend making it PUBLIC.
Email1ToNotify	String	Email that will receive an email notification once the instance is ready to be used.
Email2ToNotify	String	Email that will receive an email notification once the instance is ready to be used.
Email3ToNotify	String	Email that will receive an email notification once the instance is ready to be used.
AppType	String	Application to deploy on the EC2 instance.
AuthCreds	String	Authentication credentials for TextGen. Value should be like username:password; or comma-delimit multiple like u1:p1,u2:p2,u3:p3
GrafanaPassword	String	Authentication credentials for Grafana..
TextGenerationModels	String	Comma separated list of hugging face models to download. Default: NousResearch/Llama-2-7b-chat-hf
StableDifussionModels	String	Comma separated list of hugging face models to download. Default: stabilityai/stable-diffusion-xl-base-1.0
InstanceType	String	Instance Size, it is required to have GPU available, G5 family is recommended.

InstanceAZ	String	AZ where the EC2 instance will be deployed.
StorageCapacity	Number	Storage capacity for the EBS
EfsId	String	(Optional) ID of existing EFS storage volume.
EfsSg	String	(Optional) Security group to allow access to the ec2 instance.
ExistingS3BucketName	String	Bucket name to allow EC2 to download and upload files.
LogicworksAccount	String	ID of the AWS Account where the Custom AMI and the Custom Docker Image were published.
LogicworksSupportPublicIP	String	For security reasons, we recommend that you pass your public IP in this parameter to whitelist it and provide access only to Logicworks support engineer (i.e. 183.13.12.3). If you want to provide access to everyone on the internet, you can write "PUBLIC". For production use, we do not recommend making it PUBLIC.

Observations

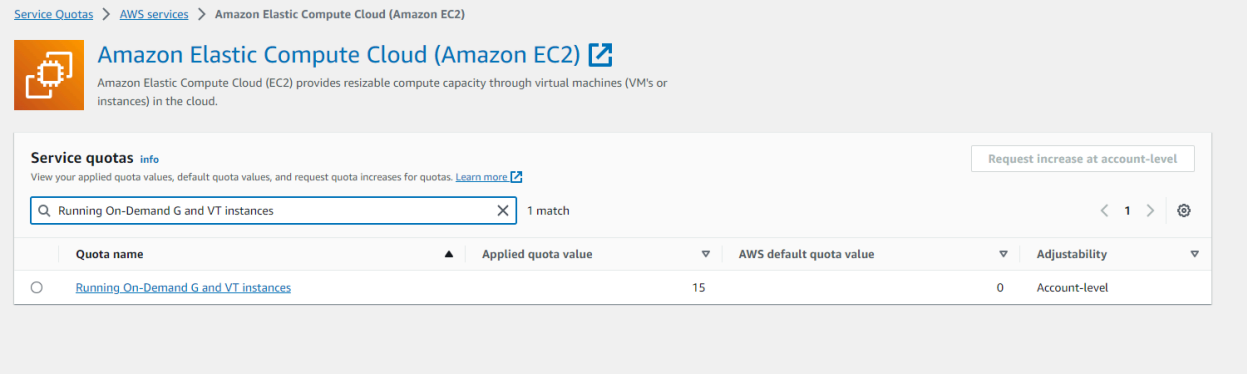
- If you have an existing EFS, you can reuse it with the current CloudFormation stack. You would need to have a Security Group associated with the mount targets and provide the **EfsID** and the security group ID (**EfsSg**) when deploying the stack.
- If you have an existing S3 bucket with models and LoRas previously trained, you can reuse it with the CloudFormation stack, providing the name as the **ExistingS3BucketName** parameter.
- You will need to provide the KMS key used when creating the EFS and S3 Bucket.

Increase service quota to run G5 on-demand instances

- Open the Amazon EC2 console at https://console.aws.amazon.com/servicequotas/home/services/ec2/quotas
- From the navigation bar, select the Region in which to launch your resources. You can select any Region that's available to you, regardless of your location.
- Search for Running On-Demand G and VT instances
- Submit a quota increase request.
    - The quota depends on the vCPU number of the G5 instance size that you want to deploy. We recommend requesting a quota increase of 15, but you can always come back and request another quota increase if needed.

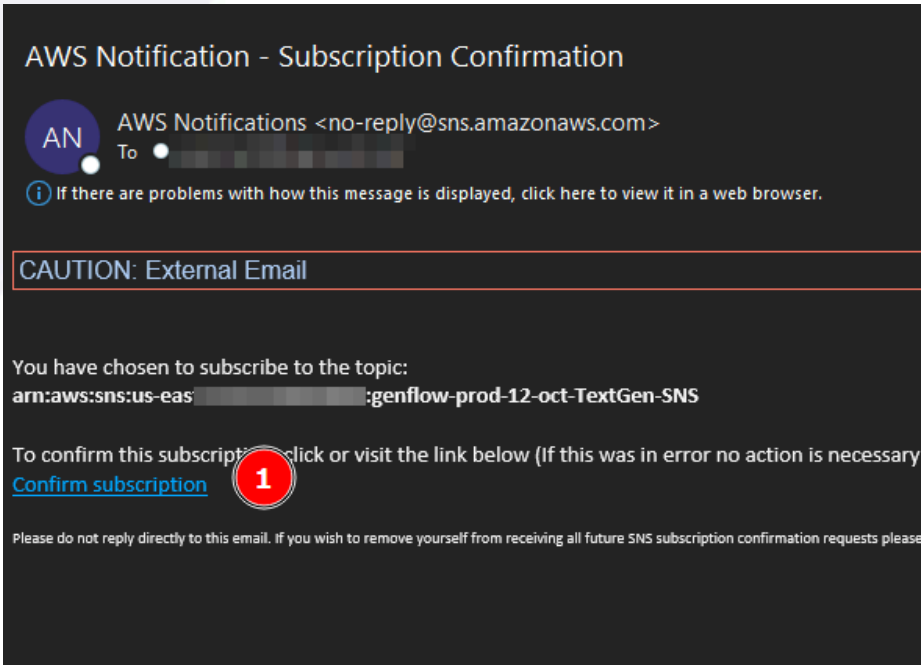
Instance Size	GPU	GPU Memory (GiB)	vCPUs
g5.xlarge	1	24	4
g5.2xlarge	1	24	8
g5.4xlarge	1	24	16
g5.8xlarge	1	24	32
g5.16xlarge	1	24	64

- This quota is regional. If you face a capacity limit error when trying to deploy the CloudFormation Stack or starting again a stopped instance. That is because sometimes availability zones run out of capacity to deploy certain EC2 instance sizes, and you would need to wait until there is available capacity, or change the instance size.

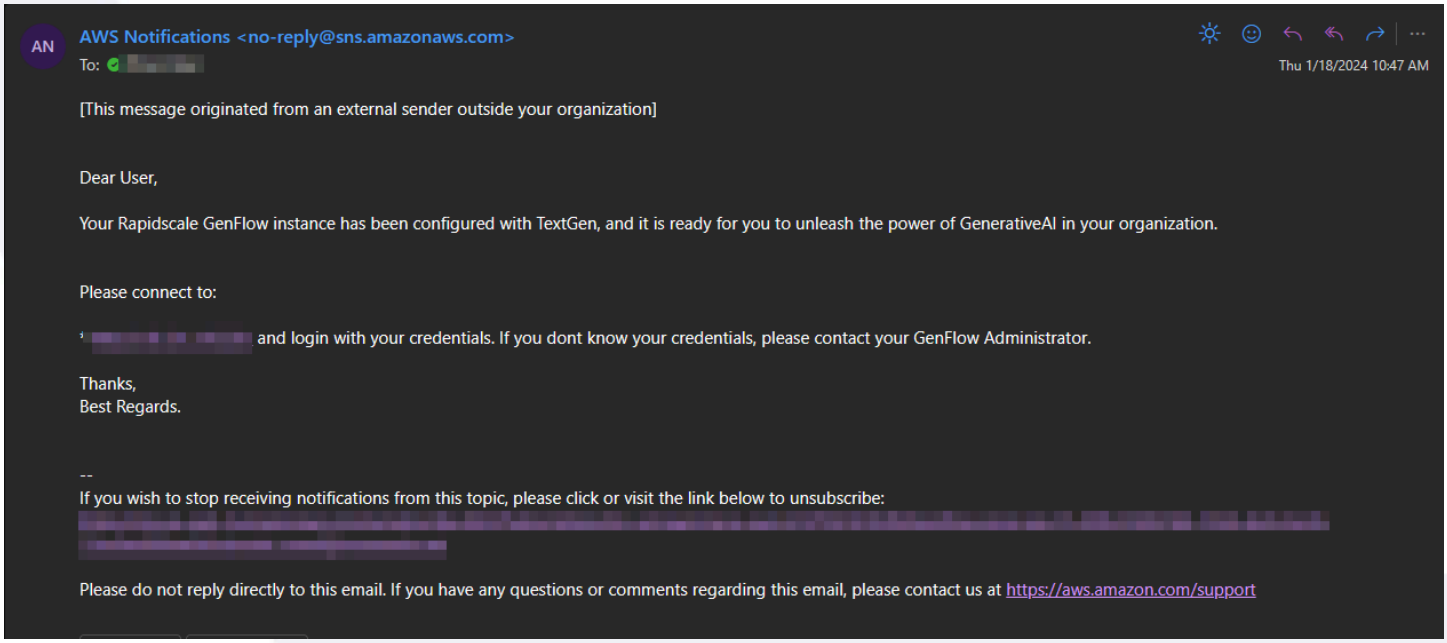


Access Endpoints

Once you have deployed the GenFlow CloudFormation template, it will create a CloudFormation stack with all the resources required. Each email registered will receive a confirmation email for the SNS subscription. Please click the Confirm subscription link to be able to receive your credentials and endpoints via email.



Once your instance is ready, you will receive an email like this one:



AN **AWS Notifications <no-reply@sns.amazonaws.com>**

To: [redacted]

Thu 1/18/2024 10:47 AM

[This message originated from an external sender outside your organization]

Dear User,

Your Rapidscale GenFlow instance has been configured with TextGen, and it is ready for you to unleash the power of GenerativeAI in your organization.

Please connect to:

' [redacted] and login with your credentials. If you dont know your credentials, please contact your GenFlow Administrator.

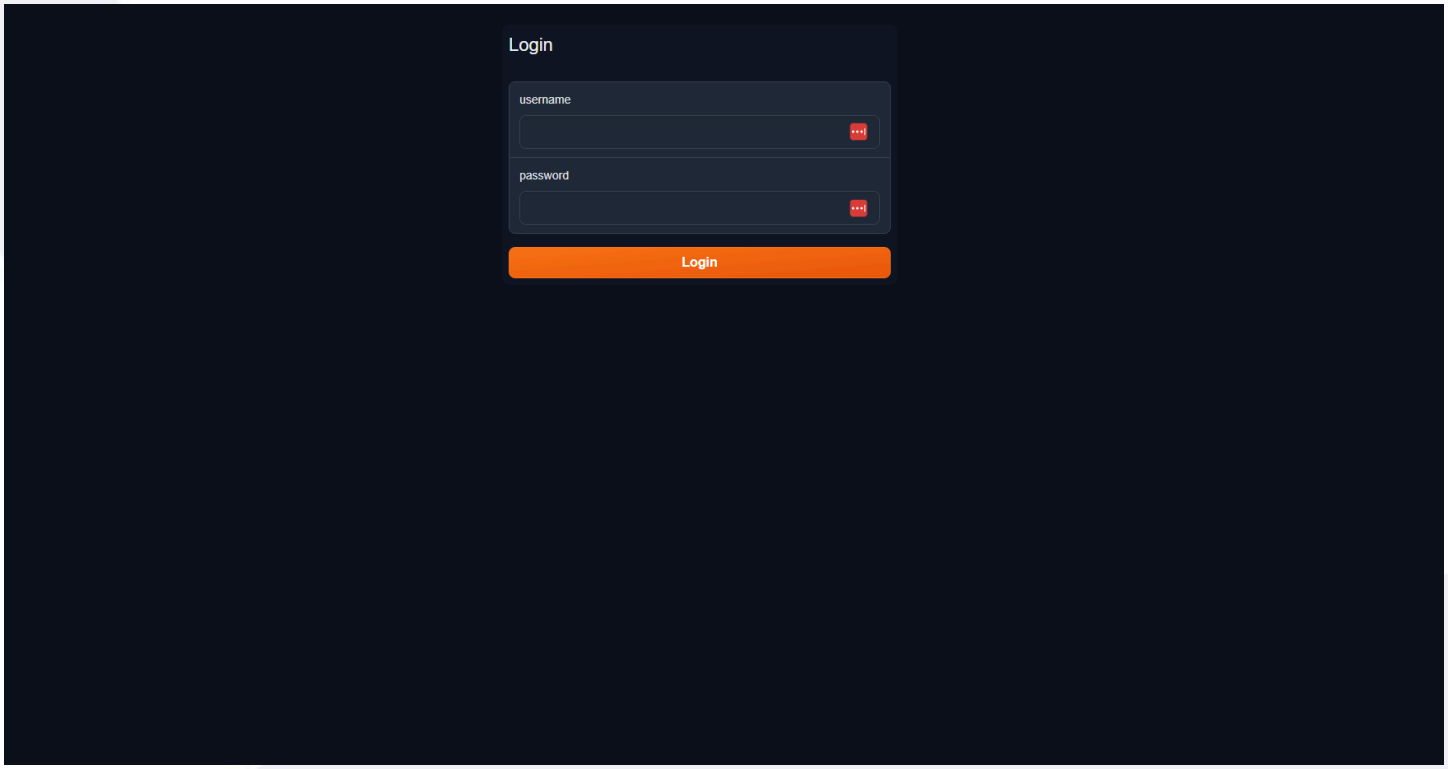
Thanks,
Best Regards.

--
If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:
[redacted]

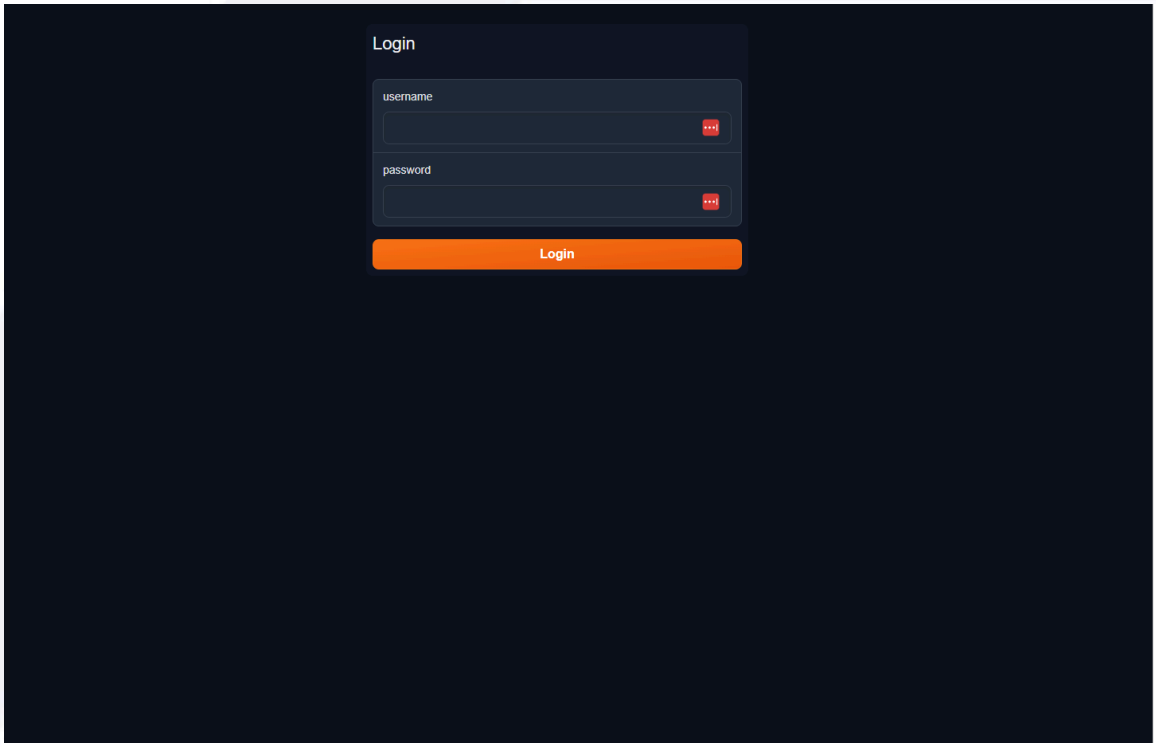
Please do not reply directly to this email. If you have any questions or comments regarding this email, please contact us at https://aws.amazon.com/support

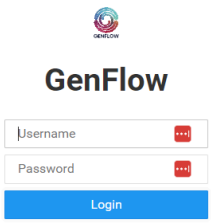
The link that you have received will take you to the GenFlow landing page

- Here you will be able to access to the different tools available to you on Genflow
    1. Go to TextGen page

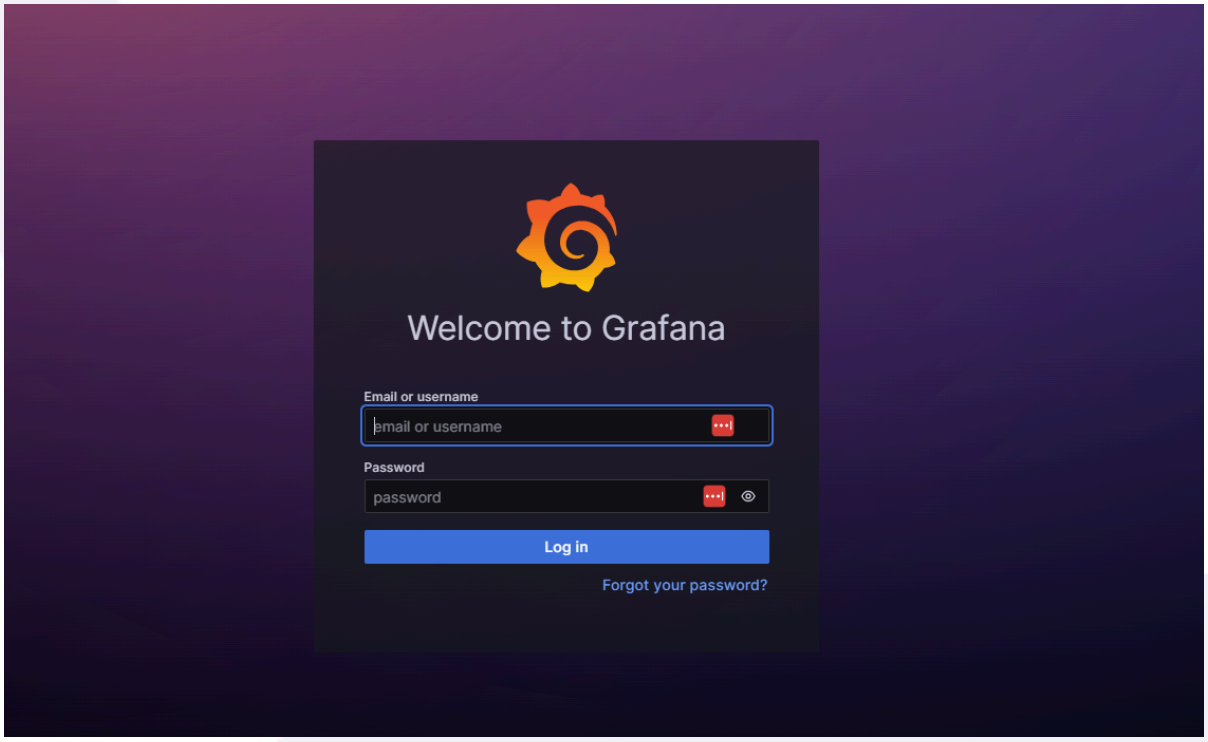


2. Go to the new TextGen page that comes with a web file system manager

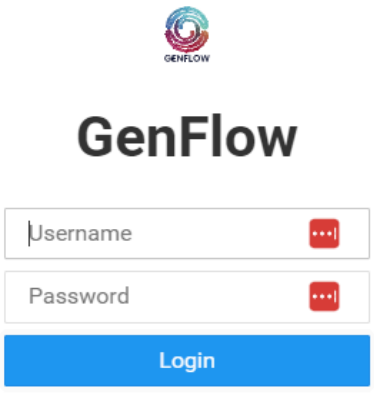




3. Go to Grafana to see the metrics of the server



4. Got directly to the web file system manager



- To access your instance through SSH use your instance-ip and the port 22. You will be able to connect through ssh only if you set a private key during the cloudformation deployment.
- Every email that is included in the SNS topic requires confirming the subscription to receive email notifications. If you miss the email, you can get the endpoints from the CloudFormation stack outputs.

GenFlow Pricing

Group	AWS Service	Description	Size	Unit	Hourly cost per Unit	Monthly Cost	TCO
Storage	EBS	GP3, No snapshots	250	GB	$0.000	$20.00	$240.00
	EFS	100% data is frequently accessed.	500	GB	$0.000	$150.00	$1,800.00
	S3	500 GB standard, 1000 GET requests, 1000 PUT requests	500	GB	$0.000	$11.50	$138.00
Compute	EC2	g5.4xlarge - Single GPU - 1 GPU, 24 GPU Mem (GiB), 16 VCPUs 64 Memory (GiB)	1	instance	$1.624	$1,185.52	$14,226.24
WAF	WAF ACL		1	ACL	$0.007	$5.00	$60.00
	WAF Rule		8	Rule	$0.001	$8.00	$96.00
	WAF Request		5	Million requests	$0.001	$3.00	$36.00
Network	ALB		1	ALB	$0.023	$16.43	$197.10
	ALB Data processed		1.4	LCU	$0.008	$8.18	$98.11
	NAT Gateway		1	NAT	$0.045	$32.85	$394.20
	NAT Gateway Data processed		500	GB	$0.0001	$22.50	$270.00
Total					$1.709	$1,440.471	$17,285.652

Instances pricing

Category	Instance Size	GPU	GPU Memory (GiB)	vCPUs	Memory (GiB)	On Demand Price/hr*	On Demand Price/Monthly*
Single GPU	g5.xlarge	1.00	24.00	4.00	16.00	$1.01	$734.38

Single GPU	g5.2xlarge	1.00	24.00	8.00	32.00	$1.21	$884.76
Single GPU	g5.4xlarge	1.00	24.00	16.00	64.00	$1.62	$1,185.52
Single GPU	g5.8xlarge	1.00	24.00	32.00	128.00	$2.45	$1,787.04
Single GPU	g5.16xlarge	1.00	24.00	64.00	256.00	$4.10	$2,990.08
Multi GPU	g5.12xlarge	4.00	96.00	48.00	192.00	$5.67	$4,140.56
Multi GPU	g5.24xlarge	4.00	96.00	96.00	384.00	$8.14	$5,945.12
Multi GPU	g5.48xlarge	8.00	192.00	192.00	768.00	$16.29	$11,890.24

Monitoring

TextGen uses Grafana as its monitoring tool. There is a Grafana dashboard built by the Logicworks team, to give you insights about the physician resources usage of your TextGen instance. Some of the metrics that this dashboard shows you, are the following:

- **Uptime**: Time since last boot.
- **CPU Cores**: Number of CPU cores on the instance
- **CPU Busy**: Percentage of the CPU usage between all the cores available in the instance.
- **RAM Total**: Memory available in the instance.
- **Memory Utilization**: Percentage of the memory usage in the instance.
- **ROOT Fs**: Total local storage size in the instance.
- **Disk Utilization**: Percentage of the disk utilization in the instance.
- **CPU Device**: Name of the GPU device that the instance uses. When using it will show you the clock speed for the GPU.
- **GPU Count**: Number of GPUs available in the instance.
- **GPU Utilization**: Percentage of the GPU usage in the instance.
- **GPU AVG Temp**: Percentage of the GPU temperature.
- **GPU Power Total**: Percentage of the electricity consumed by the GPU.

To access the dashboard, you will need to use the endpoint sent to you via email notification.

To check out the dashboard, you would need to follow these instructions:

1. Sign in to Grafana.
    a. The username is admin and the password is the one set by your administrator when deploying GenFlow.
2. Click Dashboards in the left-side menu.
3. Expand the folder “General”.
4. Open the dashboard with the name “GenFlow”.


Not secure
genflow-textgen-alb-330565880.us-east-2.elb.amazonaws.com:3000/d/dc62be28-1ac6-45fd-af0f-a19ad89cf2d2/genflow?orgId=1&refresh=5s
Search or jump to...
ctrl+k
Home › Dashboards › GenFlow
Add
Last 5 minutes
5s
datasource
Prometheus
instance
node-exporter:9100
GPU
All
General Overview
Genflow
This dashboard shows the usage of the physicial resources of the ec2 instance where TextGen is running.
Uptime
12.1 min
CPU Cores
4
CPU Busy
0.2%
RAM Total
15 GiB
Memory Utilization
10.7%
RootFS ...
97 GiB
Disk Utilization
42.9%
GPU Device
NVIDIA A10G
0 kHz
GPU Count
1
GPU Memory (GiB)
22.72 GB
GPU Utilization
0%
GPU Framebuffer Mem ...
0.0220%
GPU Avg. Temp
17 °C
GPU Power Total
186 W
› Memory (0 panels)
Memory Usage
18.6 GiB
14.0 GiB

Cleanup Process

When deleting GenFlow CloudFormation stack, some AWS services are left in case later on you want to re-use them when creating a new stack. Those services are:

- EFS
- EC2 Security Groups
- S3 Bucket
- KMS Keys

If you are sure that you will not need those resources anymore, you can proceed to delete them following these instructions:

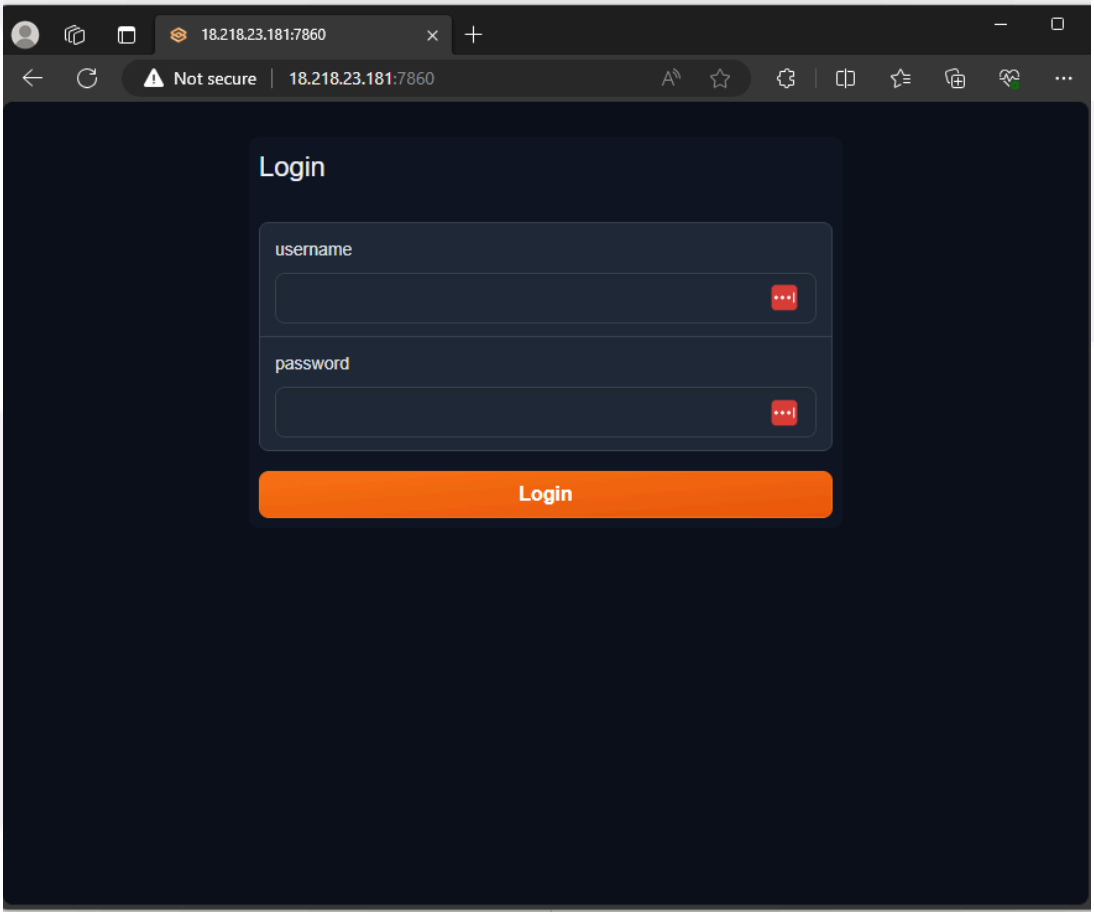
- Go to AWS Console
- Go to EFS page https://console.aws.amazon.com/efs/
- From the navigation bar, select the Region in which you launched your resources.
- Select the EFS that contains the name of the deleted CloudFormation stack and click on the top right the delete button.
- Go to EC2 page https://console.aws.amazon.com/ec2/
- From the right menu, select security groups.
- Select the EC2 Security group that contains the name of the deleted CloudFormation stack and click on the top right the actions>Delete security groups.
- Go to S3 page https://console.aws.amazon.com/s3/
- Select the S3 Bucket that contains the name of the deleted CloudFormation stack and click on the top right the empty button (the bucket should be empty to be able to delete it).
- Select the S3 Bucket that contains the name of the deleted CloudFormation stack and click on the top right the delete button
- Go to KMS page https://console.aws.amazon.com/kms/
- Select individually the KMS keys (for EFS and S3) that contain the name of the deleted CloudFormation stack and click on the top right key actions>schedule key deletion. Make sure to schedule the deletion by 7 days, so you don't have to wait too much time to create another stack with the same name.

TextGen

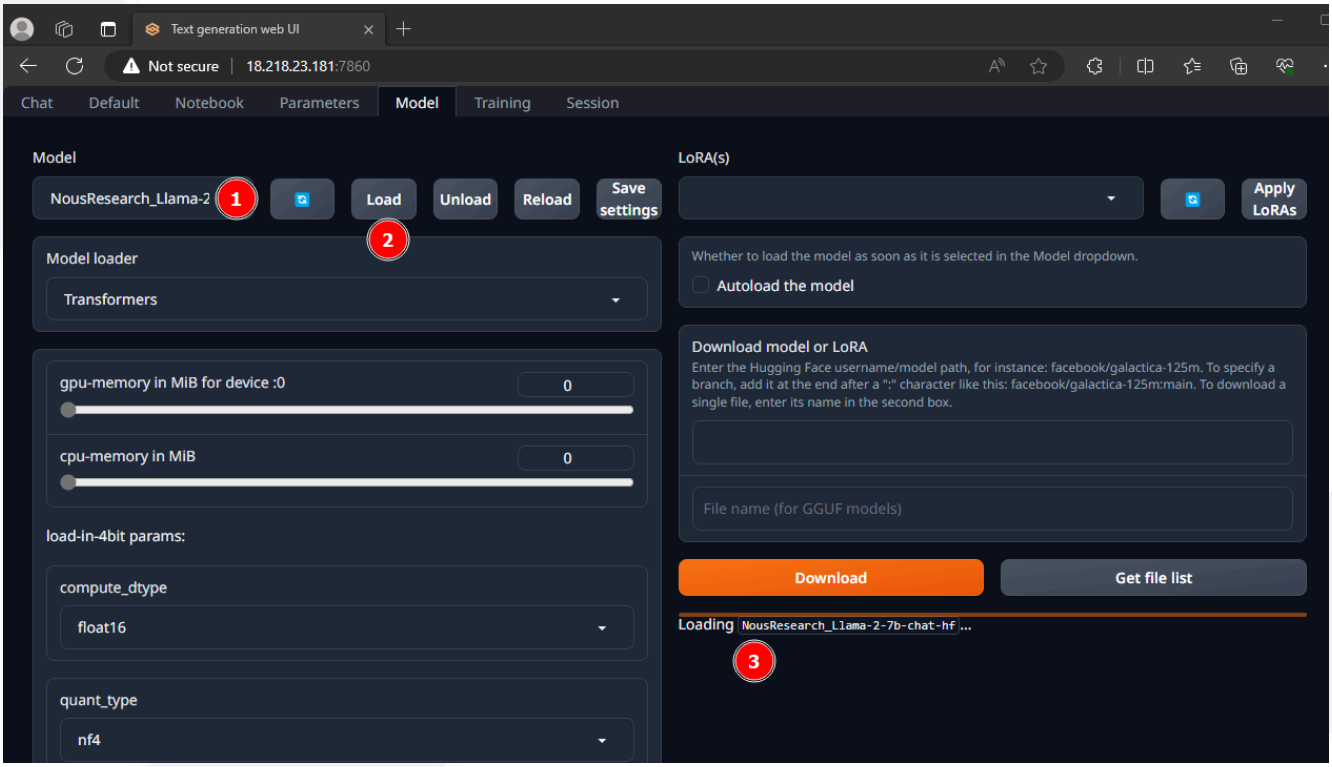
Welcome to GenFlow TextGen! Kick-start your journey with Generative AI by downloading any Language model from Hugging Face. As of now, we recommend the LLama-2 models, which are versatile and can be fine-tuned with Lora for optimal performance on a single g5.xlarge instance. Grab the model here. Once downloaded and loaded, you can instantly chat with the language model to test its capabilities.

Select a Model

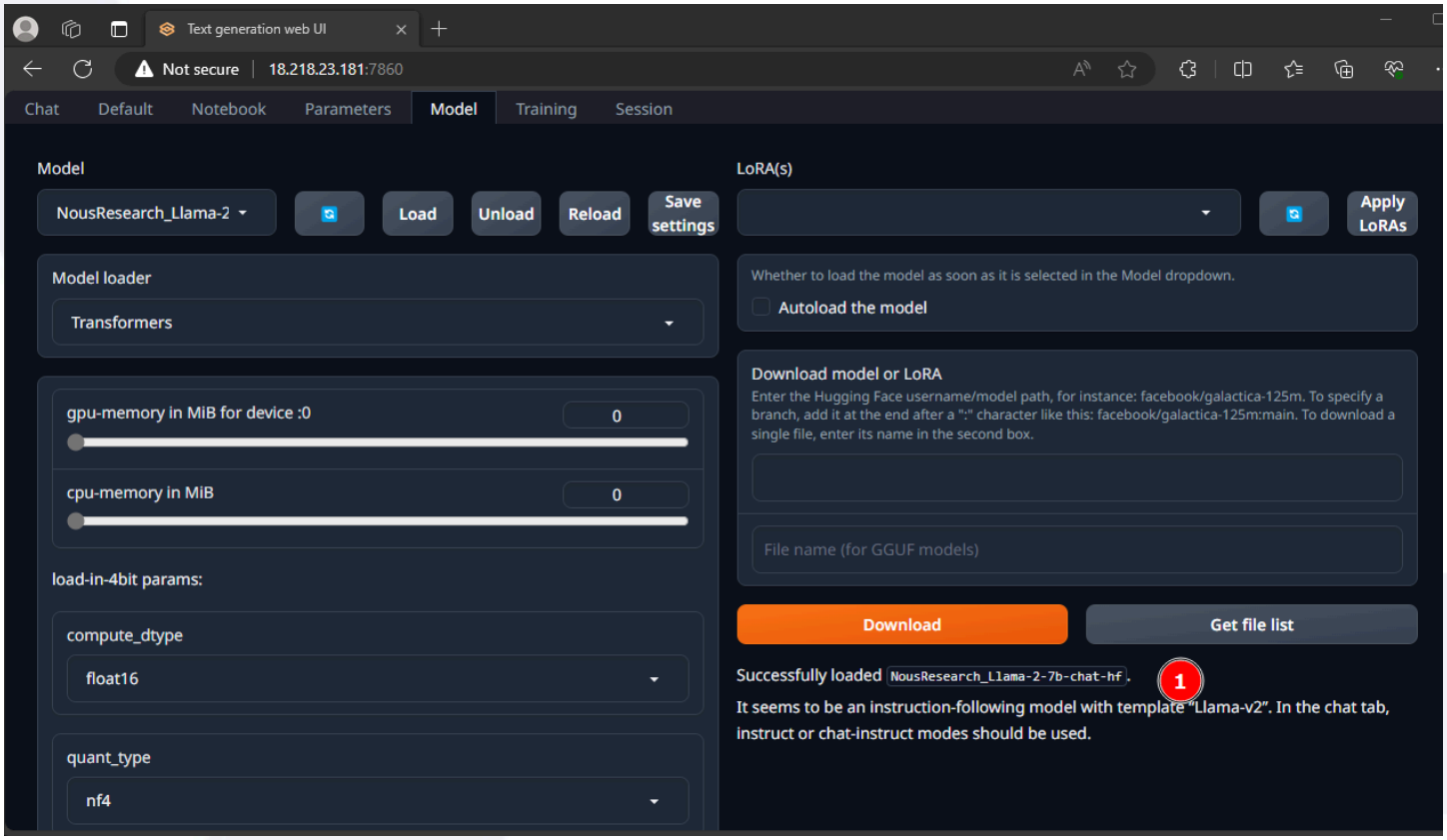
Go to the TextGen endpoint that you have received via email and log in with your credentials.



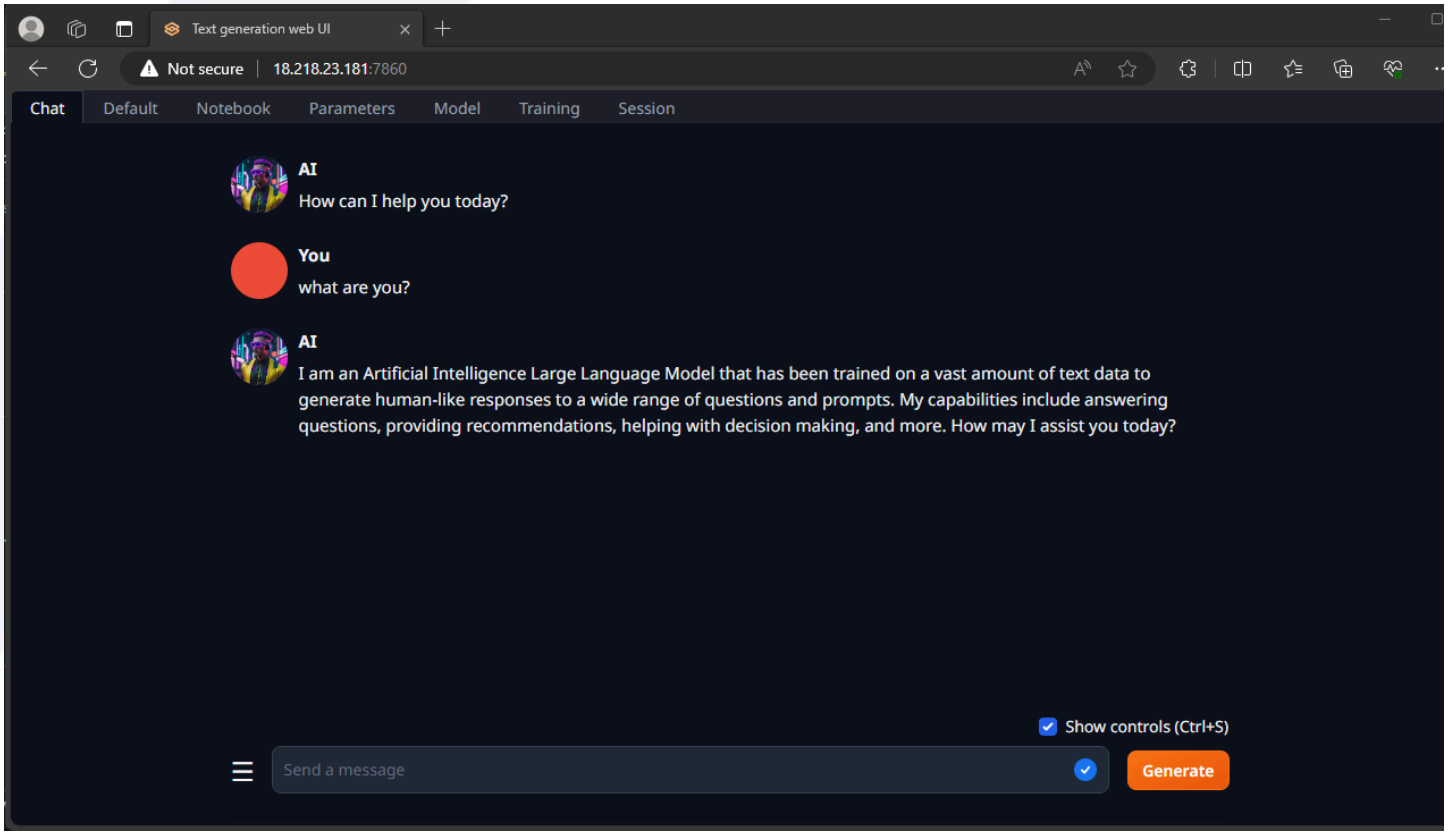
No model is loaded by default. Go to model, select the default model (1), click on the load button (2) and wait until the message indicates that the model has been loaded successfully (3).



If you go to grafana, you would see that when loading the model, the GPU memory usage increases. This is a good way to determine if the instance size that you have choosen is enough to use the model you want to use.

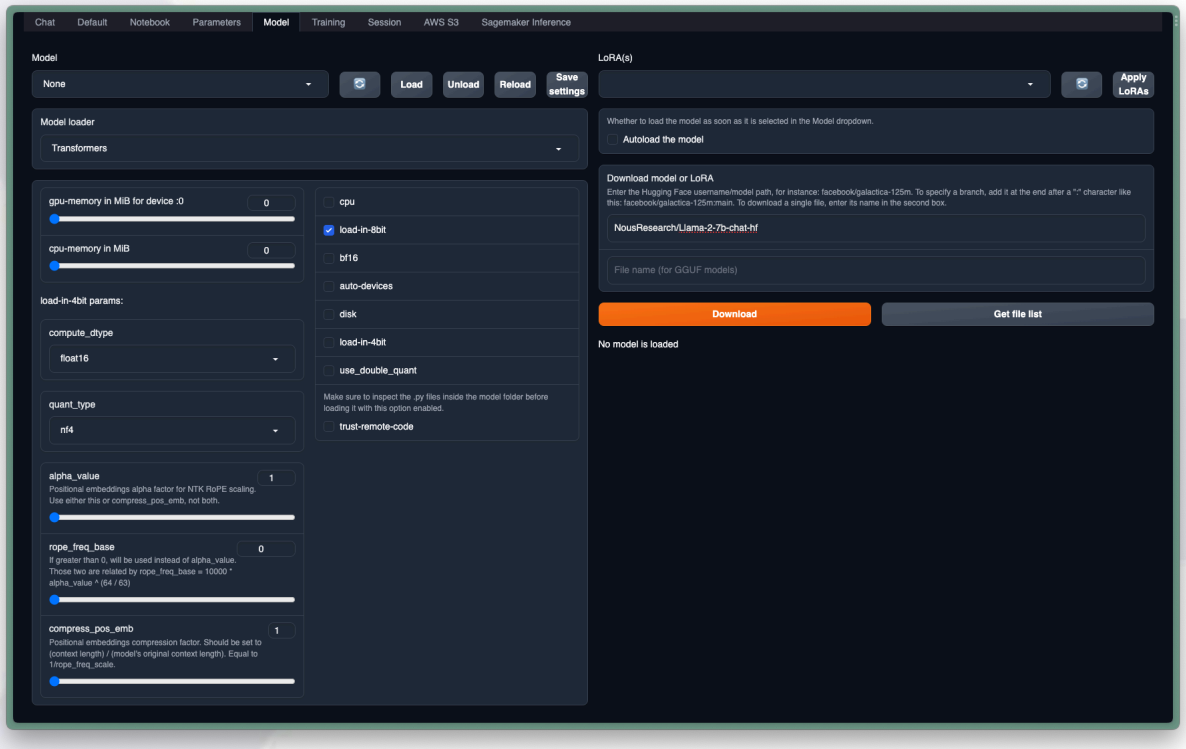


Then you can go back to the Chat page and start interacting with the model through a chat interface.



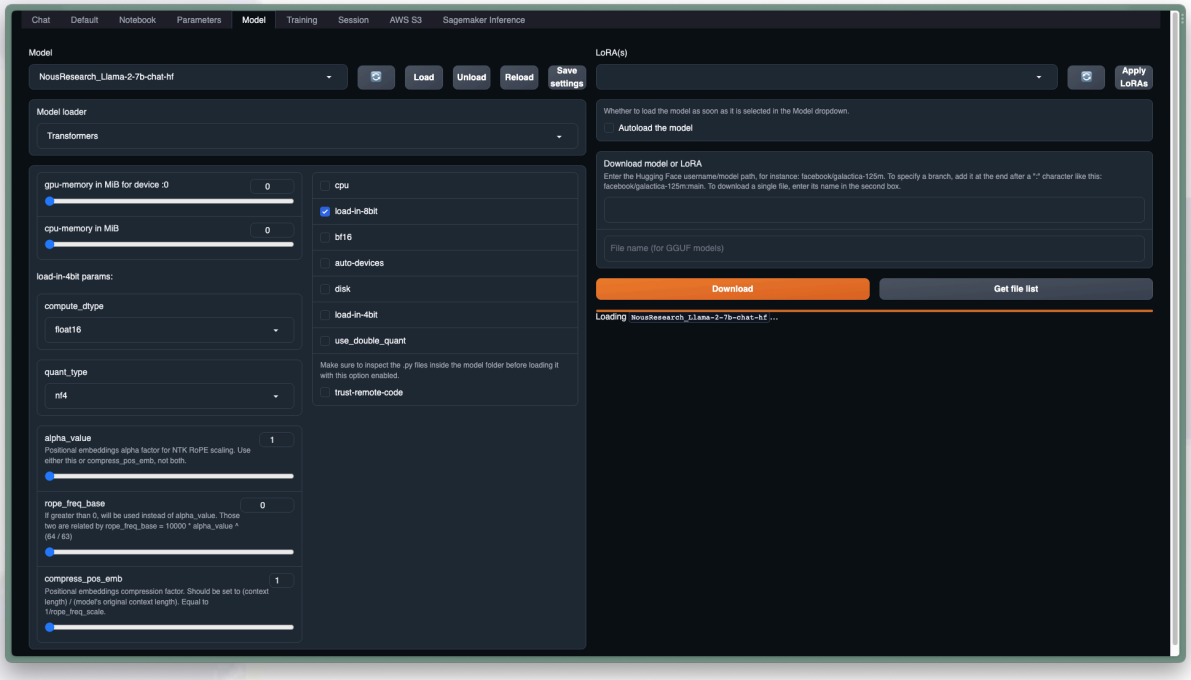
Download Model

- Navigate to Hugging Face and identify the model of your choice.
- Copy the model ID, e.g., NousResearch/Llama-2-7b-chat-hf.
- In TextGen, paste the model ID into the 'Model' tab and press download to initiate the download.



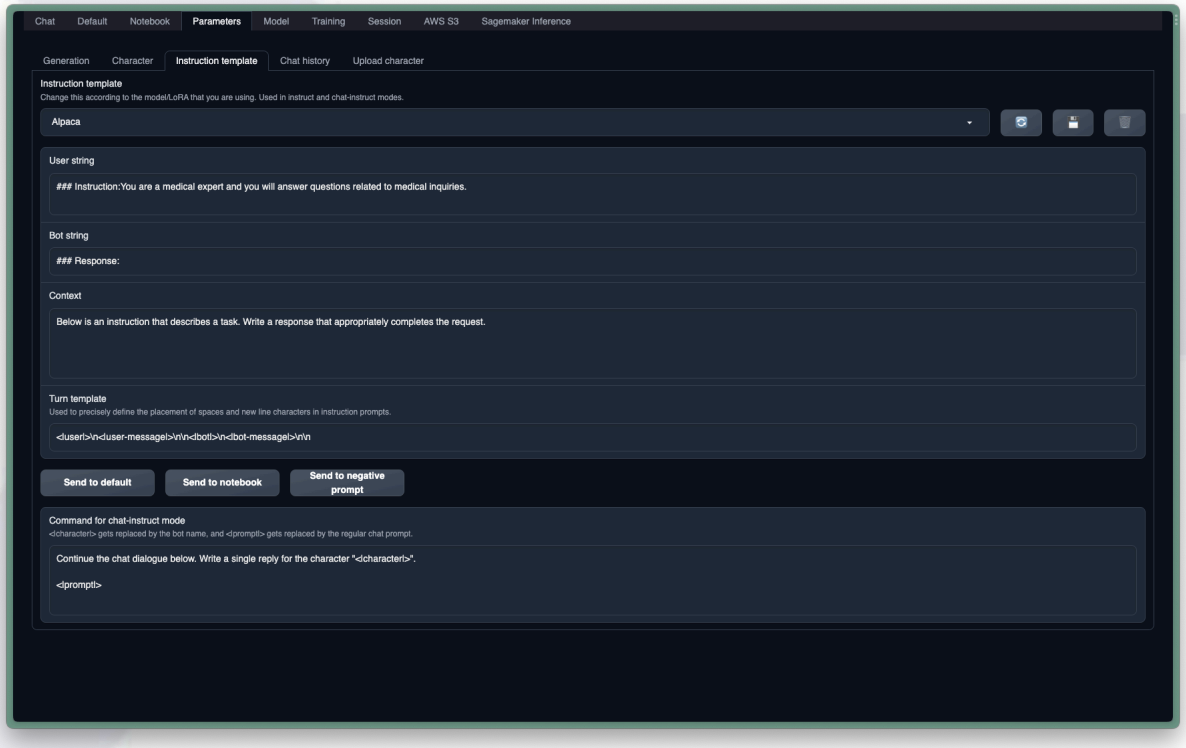
Load Model

1. Once downloaded, refresh the model dropdown menu.
2. Choose your desired model from the dropdown.
3. Before loading, adjust parameters as needed. Here are two common scenarios:
    a. For an HF model like LLama-2, opt for load-in-8bit to fit it into a g5.xlarge instance.
    b. For GGML/GTPQ models, use llama.cpp to offload memory to the CPU, ensuring compatibility with smaller instance types.



Setup Prompt Templates

1. With the model loaded, head to the 'Parameters' tab adjacent to the 'Models' tab.
2. Navigate to 'Instruction Template' and choose a predefined template. For our purposes, options like llama-v2 or alpaca are ideal.
3. Fill in the fields to tailor your model's behavior. In this guide, we're setting it up as a medical expert.
4. We've opted for the alpaca instruction template, aligning with our intention to use a specific dataset later in this guide that pairs well with the alpaca instruction format.
5. In the 'User String' section, set the initial prompt to: "You are a medical expert and you will answer questions related to medical inquiries."

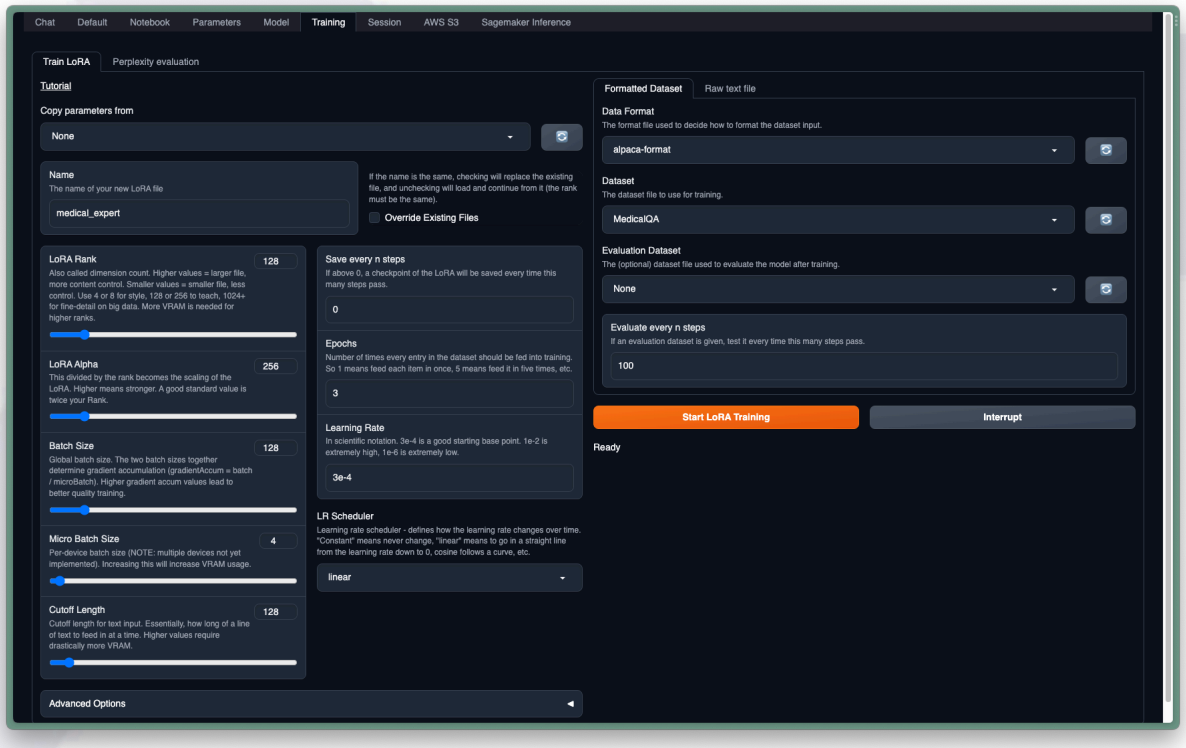


Playground

1. Navigate to the 'Chat' tab to interact with your model.
2. To utilize the previously set template, scroll down and select 'chat-instruct' from the 'Mode' section.
3. Clear chat history anytime by clicking 'Clear History'.

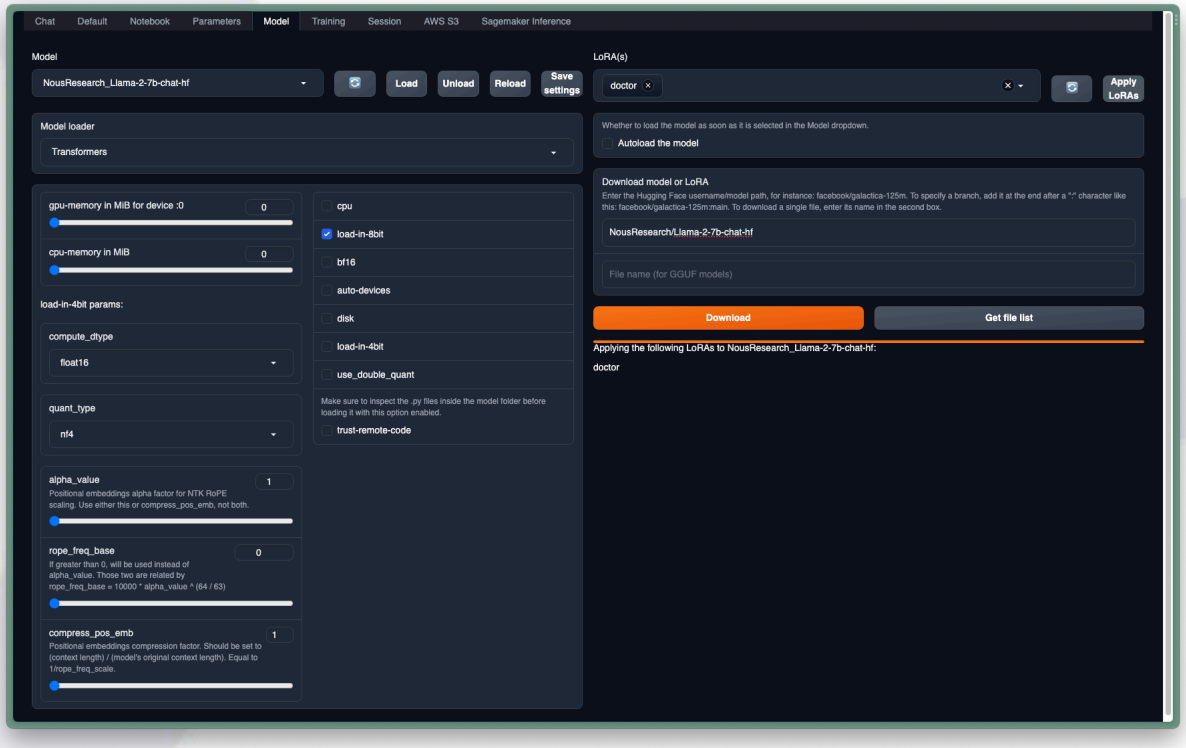
Fine-tuning

1. Navigate to the 'Training' tab.
2. Name your LoRA.
3. On the right, set data format to 'alpaca-format' and choose the 'medicalQA' dataset. If not visible, hit 'Refresh'.
4. Adjust parameters:
    a. Lora Rank (128)
    b. Lora Alpha (256)
    c. Cutoff Length (128)
    d. Feel free to experiment with other settings.
5. Click 'Start LoRA Training'.



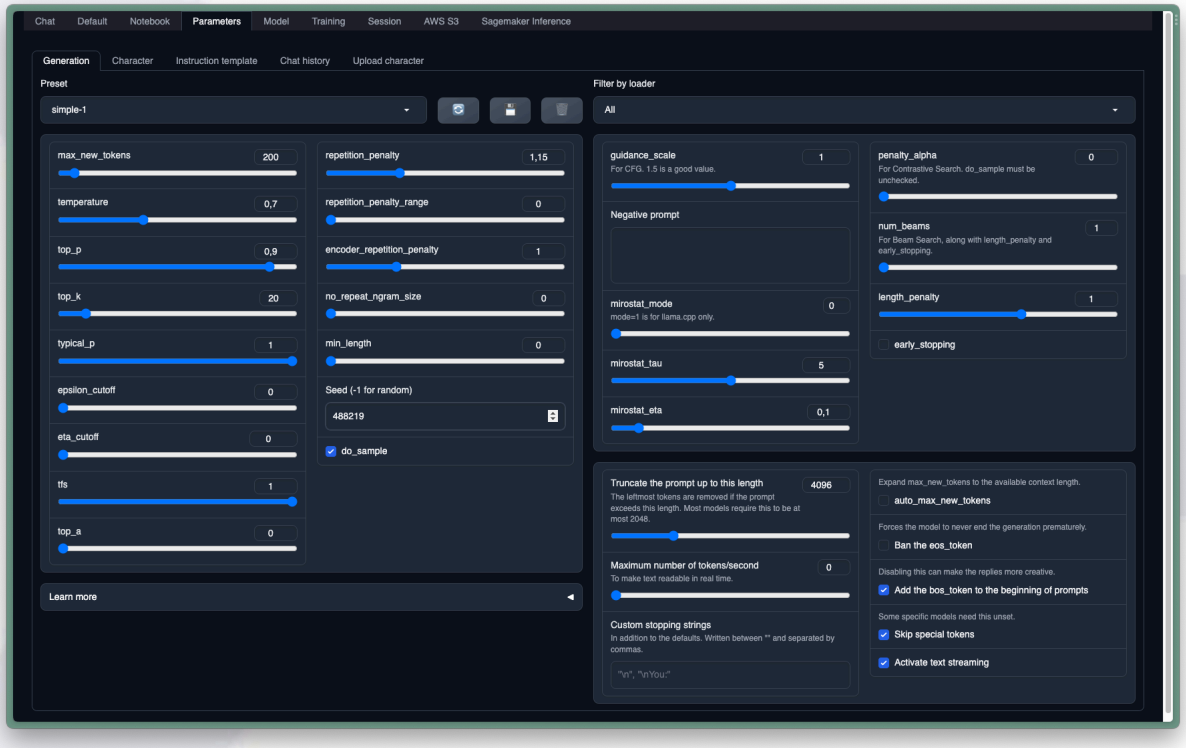
Using the Fine-tuned Model

1. Head to the 'Model' tab and click 'Reload Model'.
2. From the dropdown, select your LoRA. If not visible, refresh the list.
3. Click 'Apply LoRA' to load it.
4. Engage with your enhanced model in the 'Chat' tab.



Evaluating the Fine-tuned Model:

1. In the 'Parameters->Generation' tab, input a random seed to ensure consistent model outputs.
2. Toggle between loading and unloading the Lora to compare output differences.



Logicworks Extensions

S3 Data

S3 File Structure:
For the Genflow-TextGen app to seamlessly interact with your S3 bucket, it's crucial to maintain a specific file structure. This ensures that datasets, models, and Lora configurations are easily identifiable and accessible. Here's the recommended structure:

- Datasets: Store your training datasets in the following path: dataset/train/*.json. The app will look for .json files under this directory when you choose to download training data.
- Loras: All Lora configurations should be placed directly under the `loras/` directory.
- Artifacts: If you have model artifacts, they should be stored as: `artifacts/*/model.tar.gz`. This structure allows the app to recognize and download model artifacts.
- Models: All other model files should be placed directly under the `models/` directory.

Selecting an S3 Bucket:

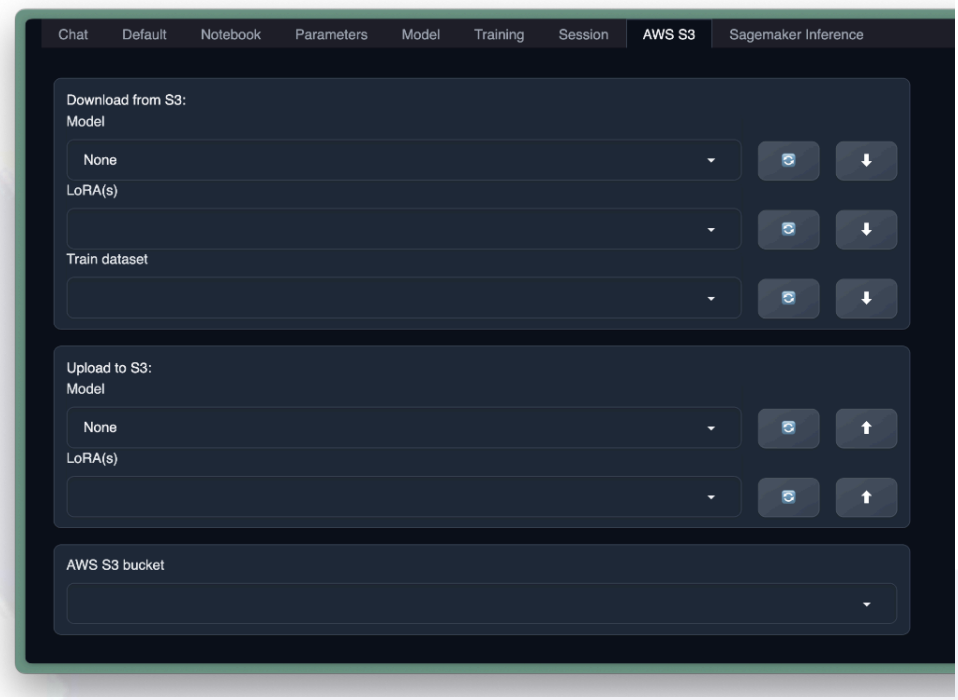
1. At the bottom of the 'AWS S3' tab, there's a dropdown menu where you can choose your preferred S3 bucket for download/upload operations.

Downloading from S3:

1. If you've stored models, Lora configurations, or training datasets on S3, they can be easily imported into the Genflow-TextGen app.
2. Navigate to the 'AWS S3' tab.
3. In the first section labeled 'Download Modules', you'll find three dropdown menus: 'Model', 'Lora's', and 'Train Dataset'.
4. Each dropdown is paired with a 'Refresh' button. Use this if you've recently added items to S3 and need to update the list of downloadable items.
5. After selecting the desired files from the dropdowns, click the 'Download' button to transfer them to the app.

Uploading to S3:

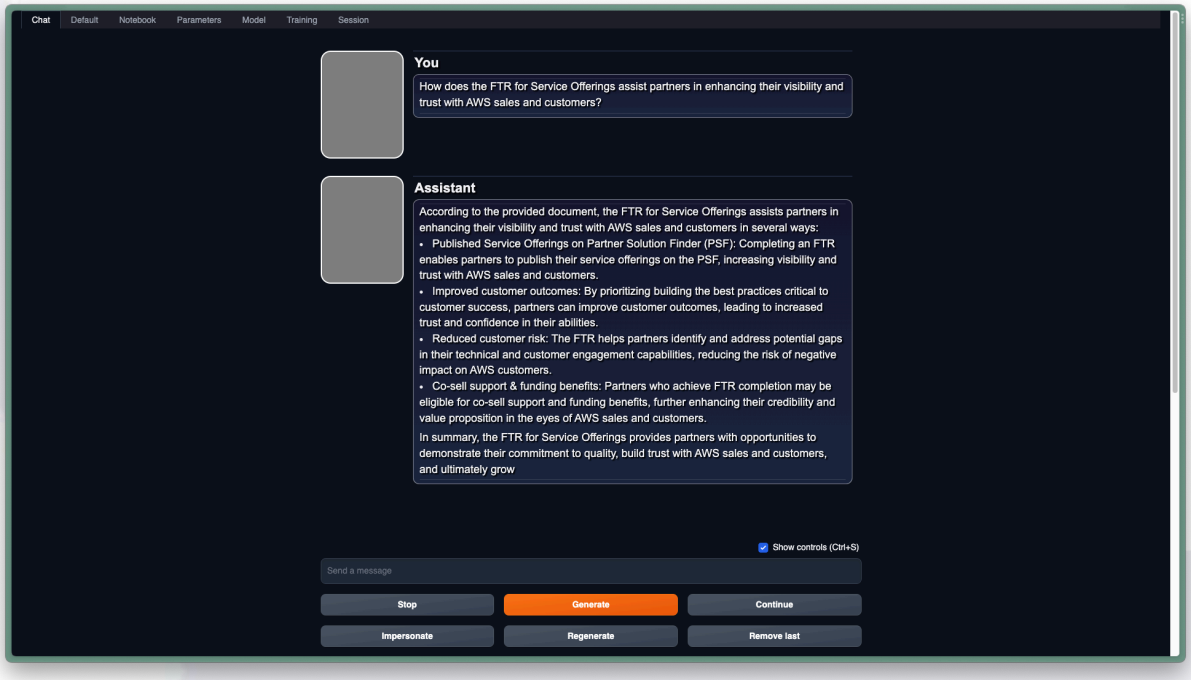
1. The Genflow-TextGen app also provides the capability to upload models and Lora configurations directly to your S3 bucket.
2. To initiate the upload:
    a. Choose the model or Lora configuration you wish to upload.
    b. Click on the 'Upload' button located adjacent to your selection.

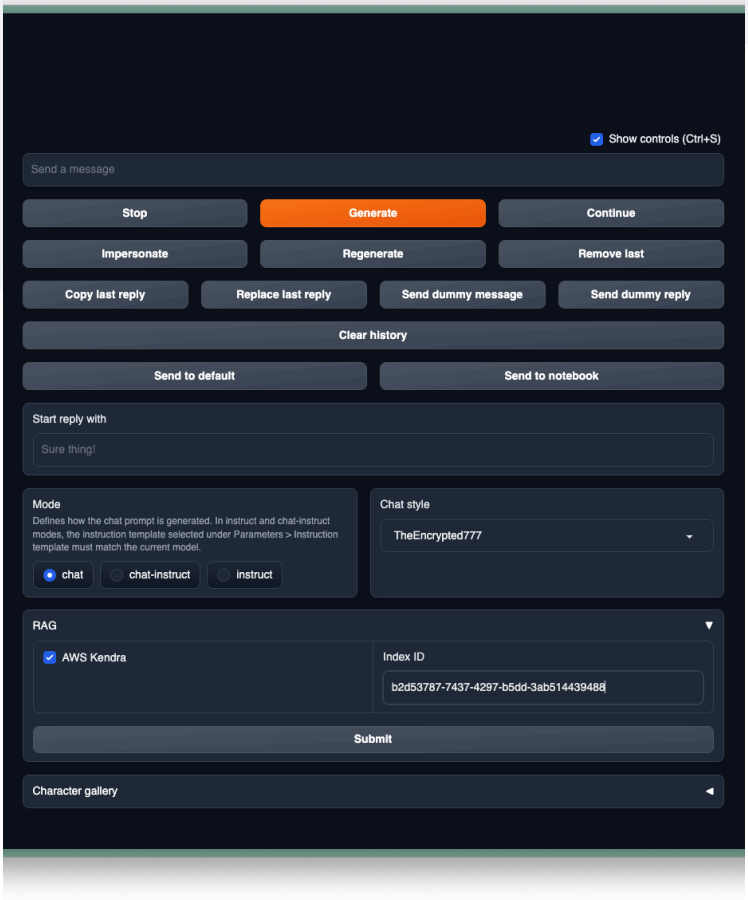


Retrieval Augmented Generation

If you're looking to enhance your chat experience with the Kendra RAG extension, follow these straightforward steps:

1. Ensure API Extension is Active:
    a. Before proceeding, confirm that the API extension is up and running, as it's essential for the Kendra RAG extension.
2. Navigate to the Chat Interface:
    a. Open Genflow and head to the "Chat" tab, which is the first on the list.
3. Access the RAG Configuration:
    a. Scroll until you find the dedicated RAG section.
4. Input the Kendra Index ID:
    a. Visit your AWS console to locate and copy the Kendra Index ID.
    b. Return to Genflow and paste this ID into the provided field in the RAG section.
5. Activate AWS Kendra Integration:
    a. Check the box labeled "AWS Kendra" to enable the feature.
6. Apply Your Settings:
    a. Click the "Submit" button.
    b. Genflow will now channel your chat through the LangChain Kendra Conversational Retrieval Chain. This mechanism fetches documents from Kendra and formulates responses based on their content.

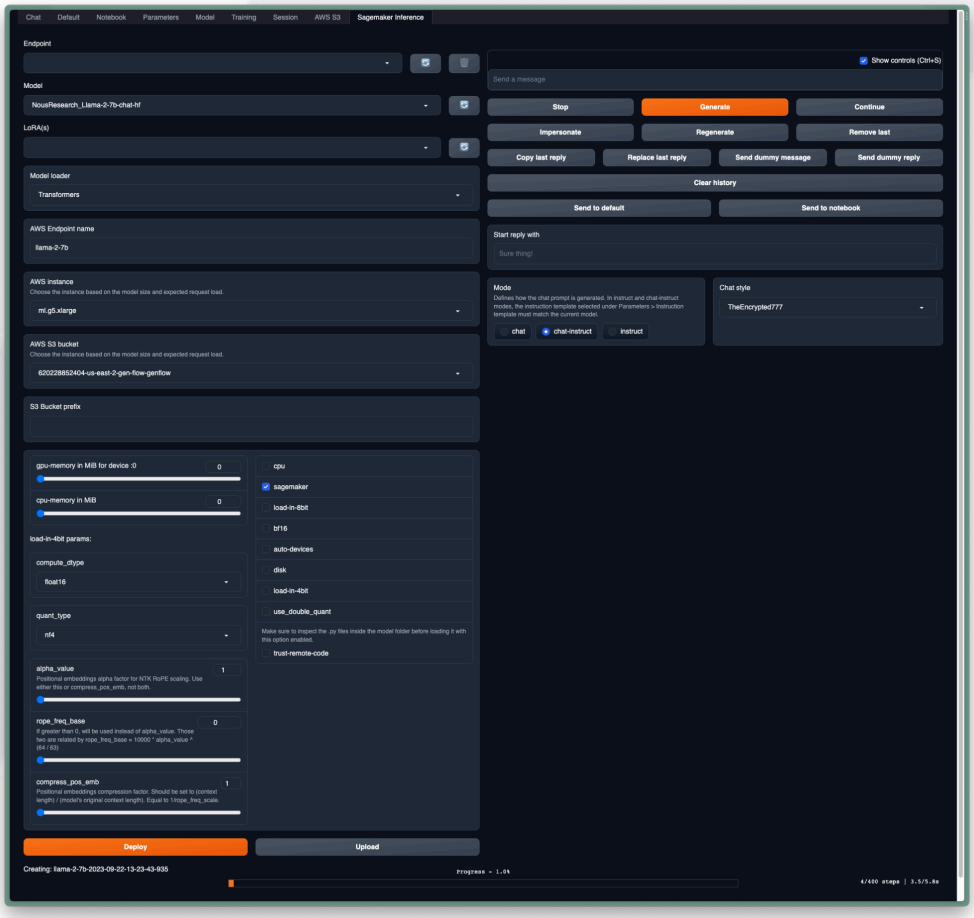

Chat
Default
Notebook
Parameters
Model
Training
Session
You
How does the FTR for Service Offerings assist partners in enhancing their visibility and trust with AWS sales and customers?
Assistant
According to the provided document, the FTR for Service Offerings assists partners in enhancing their visibility and trust with AWS sales and customers in several ways:
• Published Service Offerings on Partner Solution Finder (PSF): Completing an FTR enables partners to publish their service offerings on the PSF, increasing visibility and trust with AWS sales and customers.
• Improved customer outcomes: By prioritizing building the best practices critical to customer success, partners can improve customer outcomes, leading to increased trust and confidence in their abilities.
• Reduced customer risk: The FTR helps partners identify and address potential gaps in their technical and customer engagement capabilities, reducing the risk of negative impact on AWS customers.
• Co-sell support & funding benefits: Partners who achieve FTR completion may be eligible for co-sell support and funding benefits, further enhancing their credibility and value proposition in the eyes of AWS sales and customers.
In summary, the FTR for Service Offerings provides partners with opportunities to demonstrate their commitment to quality, build trust with AWS sales and customers, and ultimately grow
Show controls (Ctrl+S)
Send a message
Stop
Generate
Continue
Impersonate
Regenerate
Remove last


Show controls (Ctrl+S)
Send a message
Stop
Generate
Continue
Impersonate
Regenerate
Remove last
Copy last reply
Replace last reply
Send dummy message
Send dummy reply
Clear history
Send to default
Send to notebook
Start reply with
Sure thing!
Mode
Defines how the chat prompt is generated. In instruct and chat-instruct modes, the instruction template selected under Parameters > Instruction template must match the current model.
chat
chat-instruct
instruct
Chat style
TheEncrypted777
RAG
AWS Kendra
Index ID
b2d53787-7437-4297-b5dd-3ab514439488
Submit
Character gallery

Deploy to Sagemaker Endpoint

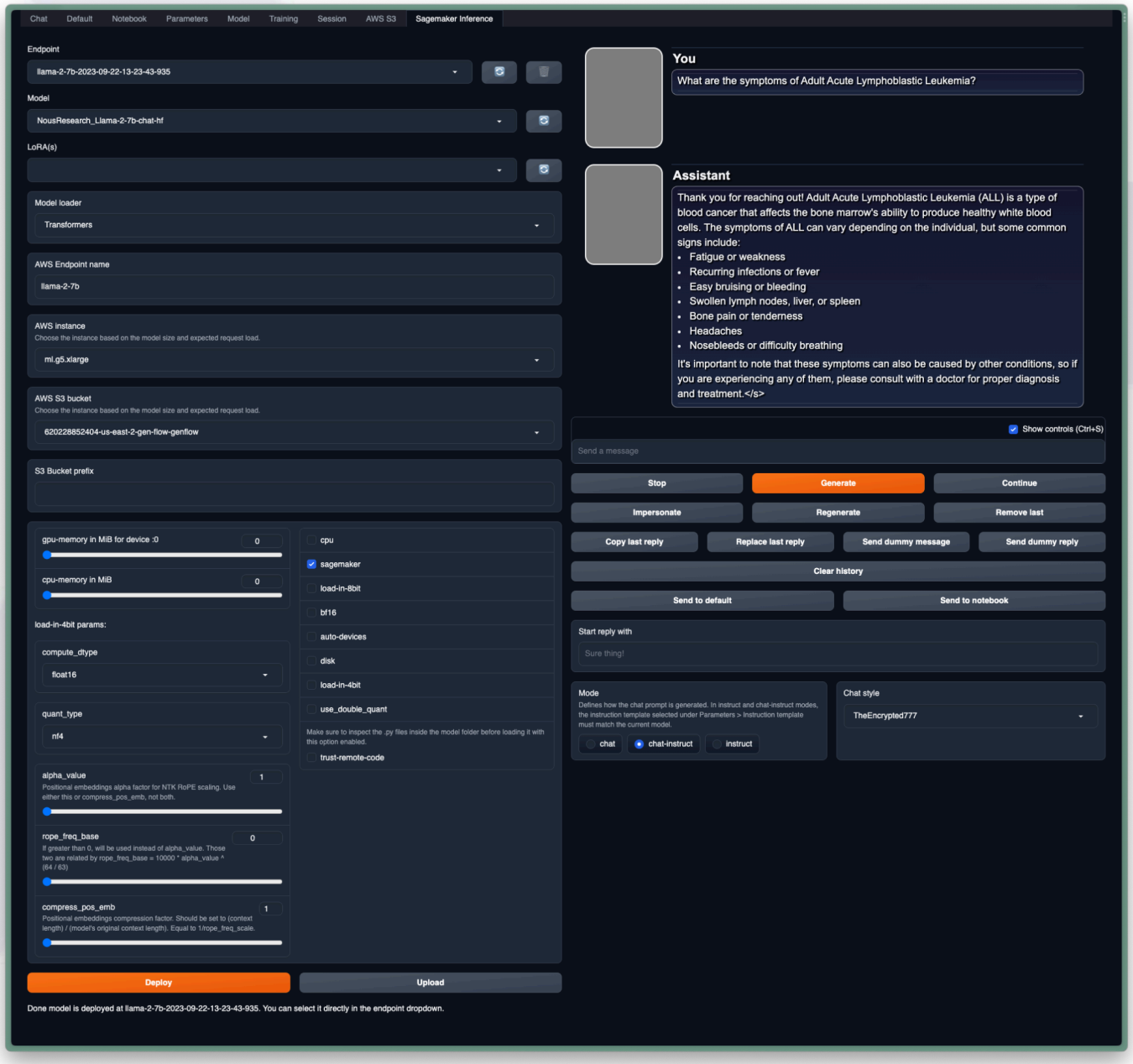
1. If you've downloaded a model from Hugging Face, you have the option to launch it directly to a Sagemaker endpoint.
2. Proceed to the 'Sagemaker Inference' section.
3. From the model dropdown, select your model.
4. Specify the AWS endpoint name.
5. Choose a suitable AWS instance size, ensuring it's compatible with your model.
6. From the dropdown menu, opt for an S3 bucket.
7. Hit the 'Deploy' button.
    a. The system will compress your model using Gzip
    b. Upload it to your chosen S3 bucket
    c. Initiate deployment
8. The entire process is expected to take around 6 minutes, and you can monitor its status with the on-screen progress bar.

Note: Once you're done using the endpoint, you can easily delete it. Just click on the trash bin icon located to the right of the endpoint dropdown. This action will remove the Sagemaker endpoint.



Chat using Sagemaker Endpoint

1. Stay within the 'Sagemaker Inference' tab and look to the right to find the chat window.
2. On the left, check the box labeled 'Sagemaker'. This informs TextGen that you intend to utilize the Sagemaker endpoint.
3. From the “endpoint” dropdown, select the endpoint you recently set up.
4. Engage with the chat as you typically would, using the 'Generate' button to interact.
5. Alternatively, you can also navigate to the 'Chat' tab to access and use the chat window in the same manner.



Technical Troubleshooting: Common Errors & Tips

1. If your stack fails the first time because of a misconfiguration, the update button will not be enabled. You would need to destroy the stack and configure the parameters again.
2. If you received a
3. When deploying the **networking template**, the CIDR block should not overlap existing VPC CIDR blocks, and should be a valid CIDR range less than 28. If not, you can get an error like the following one.

Events (12)

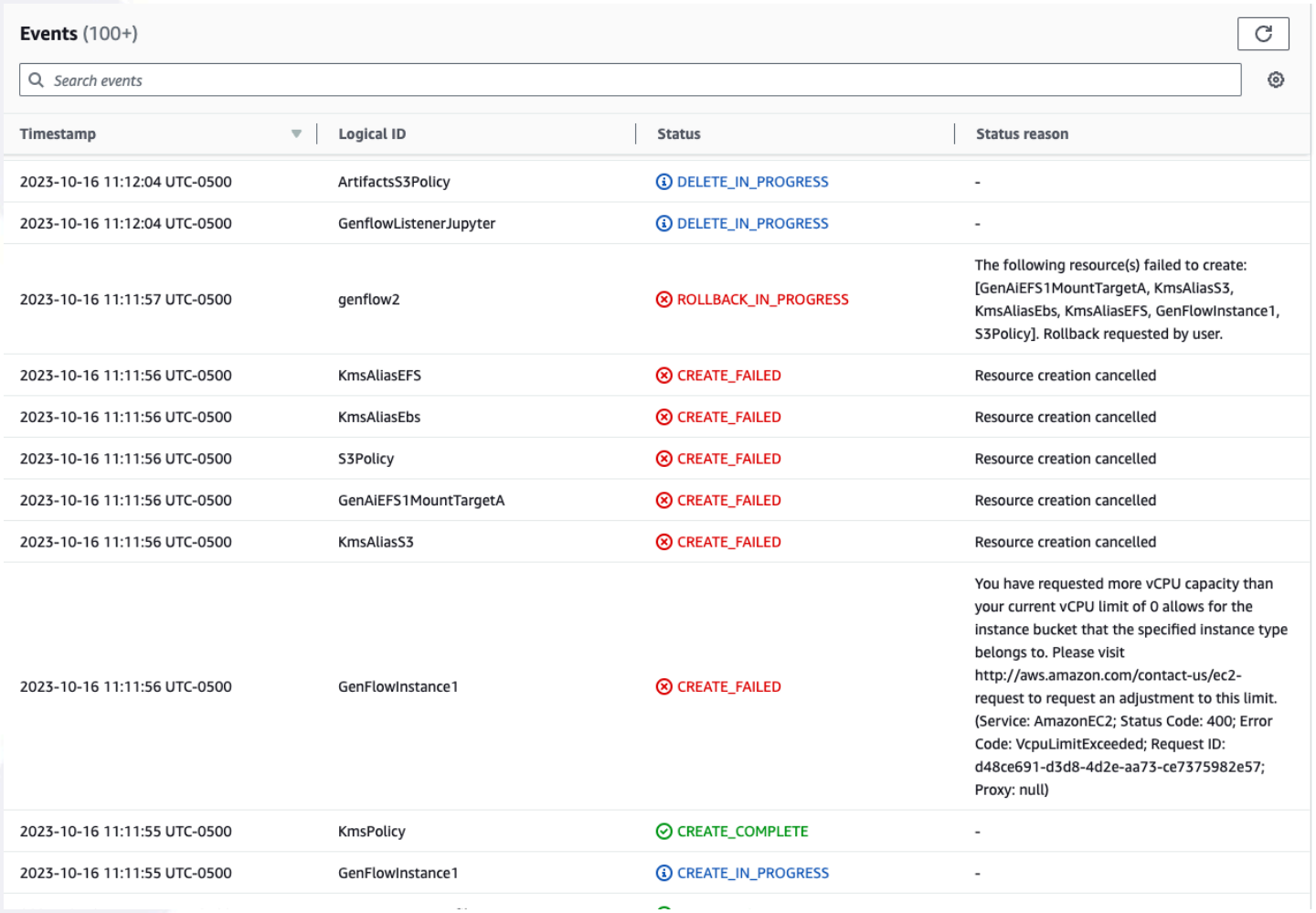
Search events

Timestamp	Logical ID	Status	Status reason
2023-10-23 16:47:36 UTC+0200	GenFlow-network	DELETE_COMPLETE	-
2023-10-23 16:47:36 UTC+0200	VPC	DELETE_COMPLETE	-
2023-10-23 16:45:40 UTC+0200	GenFlow-network	DELETE_IN_PROGRESS	User Initiated
2023-10-23 16:45:14 UTC+0200	InternetGateway	DELETE_COMPLETE	-
2023-10-23 16:45:12 UTC+0200	InternetGateway	DELETE_IN_PROGRESS	-
2023-10-23 16:45:10 UTC+0200	GenFlow-network	ROLLBACK_IN_PROGRESS	The following resource(s) failed to create: [InternetGateway, VPC]. Rollback requested by user.
2023-10-23 16:45:10 UTC+0200	InternetGateway	CREATE_FAILED	Resource creation cancelled
2023-10-23 16:45:09 UTC+0200	VPC	CREATE_FAILED	Resource handler returned message: "The CIDR '10.0.0.0/32' is invalid. (Service: Ec2, Status Code: 400, Request ID: 00b45ee0-5f57-4251-81b7-8442aeafb617)" (RequestToken: a0489c60-82be-5818-942d-c99ecde03782, HandlerErrorCode: GeneralServiceException)
2023-10-23 16:45:09 UTC+0200	InternetGateway	CREATE_IN_PROGRESS	Resource creation Initiated
2023-10-23 16:45:08 UTC+0200	VPC	CREATE_IN_PROGRESS	-
2023-10-23 16:45:08 UTC+0200	InternetGateway	CREATE_IN_PROGRESS	-
2023-10-23 16:45:05 UTC+0200	GenFlow-network	CREATE_IN_PROGRESS	User Initiated

4. When deploying GenFlow template, make sure that the name is completely lowercase. Some AWS resources uses the stack name in their names and can only use lowercase letters.

2023-10-23 16:51:35 UTC+0200	KmsAliasS3	CREATE_IN_PROGRESS	Resource creation Initiated
2023-10-23 16:51:35 UTC+0200	S3Bucket	CREATE_FAILED	Bucket name should not contain uppercase characters

5. If you get the message "*you have requested more vCPU than your current vCPU limit of **X** allows for the instance …*". That means that you have run out of vCPU that you can deploy in that specific region. Follow these instructions: [Increase service quota to run G5 on-demand instances] to fix it.
=



Events (100+)

Search events

Timestamp	Logical ID	Status	Status reason
2023-10-16 11:12:04 UTC-0500	ArtifactsS3Policy	DELETE_IN_PROGRESS	-
2023-10-16 11:12:04 UTC-0500	GenflowListenerJupyter	DELETE_IN_PROGRESS	-
2023-10-16 11:11:57 UTC-0500	genflow2	ROLLBACK_IN_PROGRESS	The following resource(s) failed to create: [GenAiEFS1MountTargetA, KmsAliasS3, KmsAliasEbs, KmsAliasEFS, GenFlowInstance1, S3Policy]. Rollback requested by user.
2023-10-16 11:11:56 UTC-0500	KmsAliasEFS	CREATE_FAILED	Resource creation cancelled
2023-10-16 11:11:56 UTC-0500	KmsAliasEbs	CREATE_FAILED	Resource creation cancelled
2023-10-16 11:11:56 UTC-0500	S3Policy	CREATE_FAILED	Resource creation cancelled
2023-10-16 11:11:56 UTC-0500	GenAiEFS1MountTargetA	CREATE_FAILED	Resource creation cancelled
2023-10-16 11:11:56 UTC-0500	KmsAliasS3	CREATE_FAILED	Resource creation cancelled
2023-10-16 11:11:56 UTC-0500	GenFlowInstance1	CREATE_FAILED	You have requested more vCPU capacity than your current vCPU limit of 0 allows for the instance bucket that the specified instance type belongs to. Please visit http://aws.amazon.com/contact-us/ec2-request to request an adjustment to this limit. (Service: AmazonEC2; Status Code: 400; Error Code: VcpuLimitExceeded; Request ID: d48ce691-d3d8-4d2e-aa73-ce7375982e57; Proxy: null)
2023-10-16 11:11:55 UTC-0500	KmsPolicy	CREATE_COMPLETE	-
2023-10-16 11:11:55 UTC-0500	GenFlowInstance1	CREATE_IN_PROGRESS	-