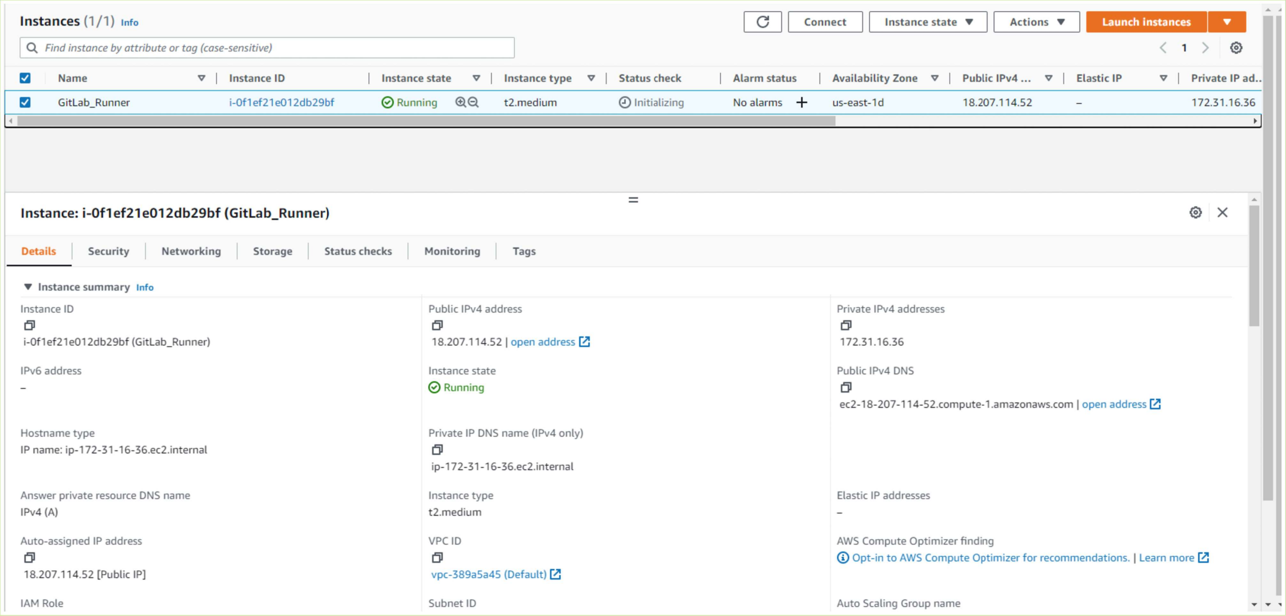
Create a pipeline (build, test, deploy)using GitLab

Table of Contents

Step 1 :: Creating an Instance (AWS Linux)

Create an Instance using AWS Linux.

Note: Allow “All Traffic” in Inbound rules



Instances (1/1) Info

Find instance by attribute or tag (case-sensitive)

☑	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 ...	Elastic IP	Private IP ad..
☑	GitLab_Runner	i-0f1ef21e012db29bf	✓ Running	t2.medium	Initializing	No alarms +	us-east-1d	18.207.114.52	–	172.31.16.36

Instance: i-0f1ef21e012db29bf (GitLab_Runner)

▼ Instance summary Info

Instance ID
i-0f1ef21e012db29bf (GitLab_Runner)

Public IPv4 address
18.207.114.52 | open address

Private IPv4 addresses
172.31.16.36

IPv6 address
–

Instance state
✓ Running

Public IPv4 DNS
ec2-18-207-114-52.compute-1.amazonaws.com | open address

Hostname type
IP name: ip-172-31-16-36.ec2.internal

Private IP DNS name (IPv4 only)
ip-172-31-16-36.ec2.internal

Answer private resource DNS name
IPv4 (A)

Instance type
t2.medium

Elastic IP addresses
–

Auto-assigned IP address
18.207.114.52 [Public IP]

VPC ID
vpc-389a5a45 (Default)

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more

IAM Role

Subnet ID

Auto Scaling Group name

Step 2 :: Installing Docker and Git

Install and configure docker and Git using below steps

```
$ sudo yum -y update

$ sudo yum install -y git

$ sudo amazon-linux-extras install -y docker

$ sudo usermod -aG docker ec2-user

$ sudo systemctl enable docker

$ sudo reboot
```

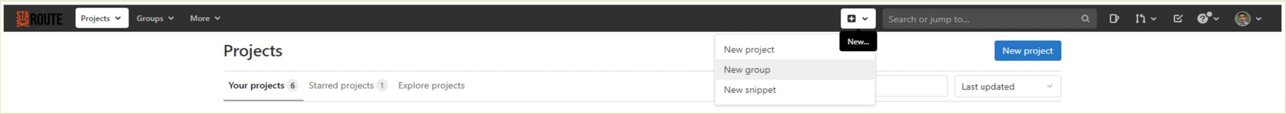
Step 3 :: Installing the GitLab Runner

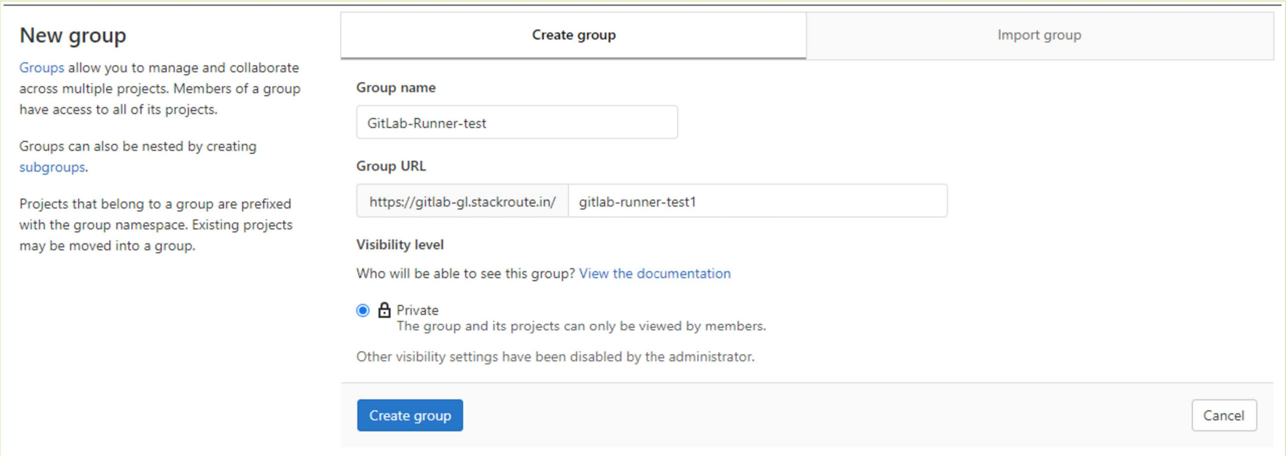
```
$ curl -LJO "https://gitlab-runner-downloads.s3.amazonaws.com/latest/rpm/gitlab-runner_amd64.rpm"

$ sudo rpm -i gitlab-runner_amd64.rpm
```

Step 4 :: Letting GitLab know that we want to use a dedicated runner

Lets create a private group just for this runner





New group

Groups allow you to manage and collaborate across multiple projects. Members of a group have access to all of its projects.

Groups can also be nested by creating subgroups.

Projects that belong to a group are prefixed with the group namespace. Existing projects may be moved into a group.

Group name: GitLab-Runner-test

Group URL: https://gitlab-gl.stackroute.in/ gitlab-runner-test1

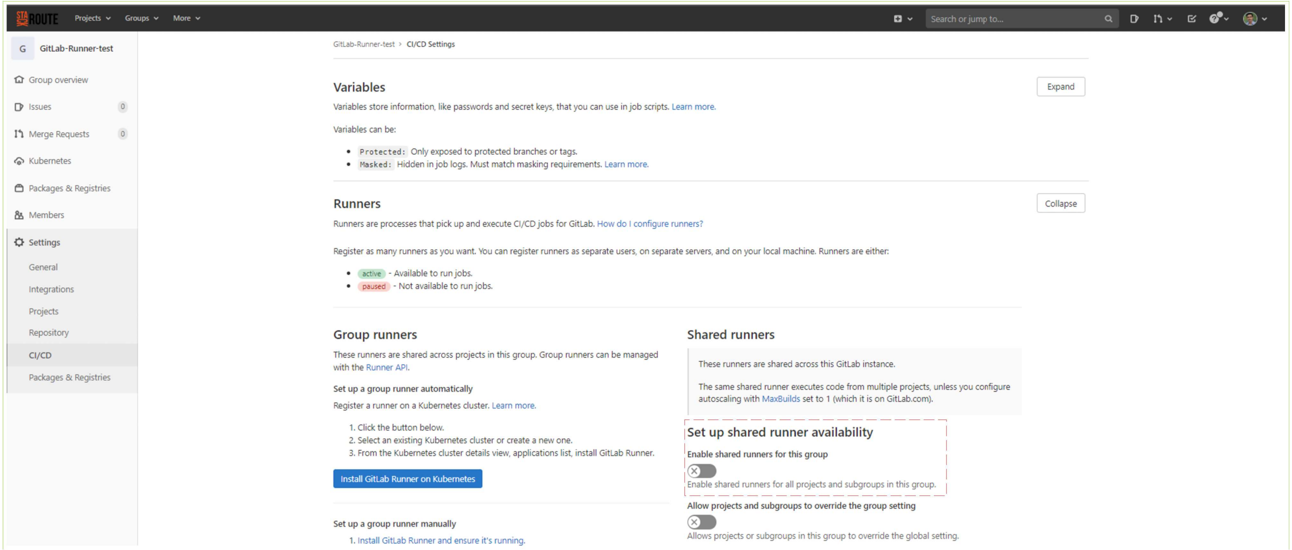
Visibility level

Who will be able to see this group? View the documentation

● Private
The group and its projects can only be viewed by members.

Other visibility settings have been disabled by the administrator.

From the group (gitlab-runner-test) select Settings -> CI/CD -> Runners -> Disable “Set up shared runner availability”



Variables

Variables store information, like passwords and secret keys, that you can use in job scripts. Learn more.

Variables can be:

- `Protected:` Only exposed to protected branches or tags.
- `Masked:` Hidden in job logs. Must match masking requirements. Learn more.

Runners

Runners are processes that pick up and execute CI/CD jobs for GitLab. How do I configure runners?

Register as many runners as you want. You can register runners as separate users, on separate servers, and on your local machine. Runners are either:

- active - Available to run jobs.
- paused - Not available to run jobs.

Group runners

These runners are shared across projects in this group. Group runners can be managed with the Runner API.

Set up a group runner automatically

Register a runner on a Kubernetes cluster. Learn more.

1. Click the button below.
2. Select an existing Kubernetes cluster or create a new one.
3. From the Kubernetes cluster details view, applications list, install GitLab Runner.

Set up a group runner manually

1. Install GitLab Runner and ensure it's running.

Shared runners

These runners are shared across this GitLab instance.

The same shared runner executes code from multiple projects, unless you configure autoscaling with MaxBuilds set to 1 (which it is on GitLab.com).

Set up shared runner availability

Enable shared runners for this group: ☒ (off)

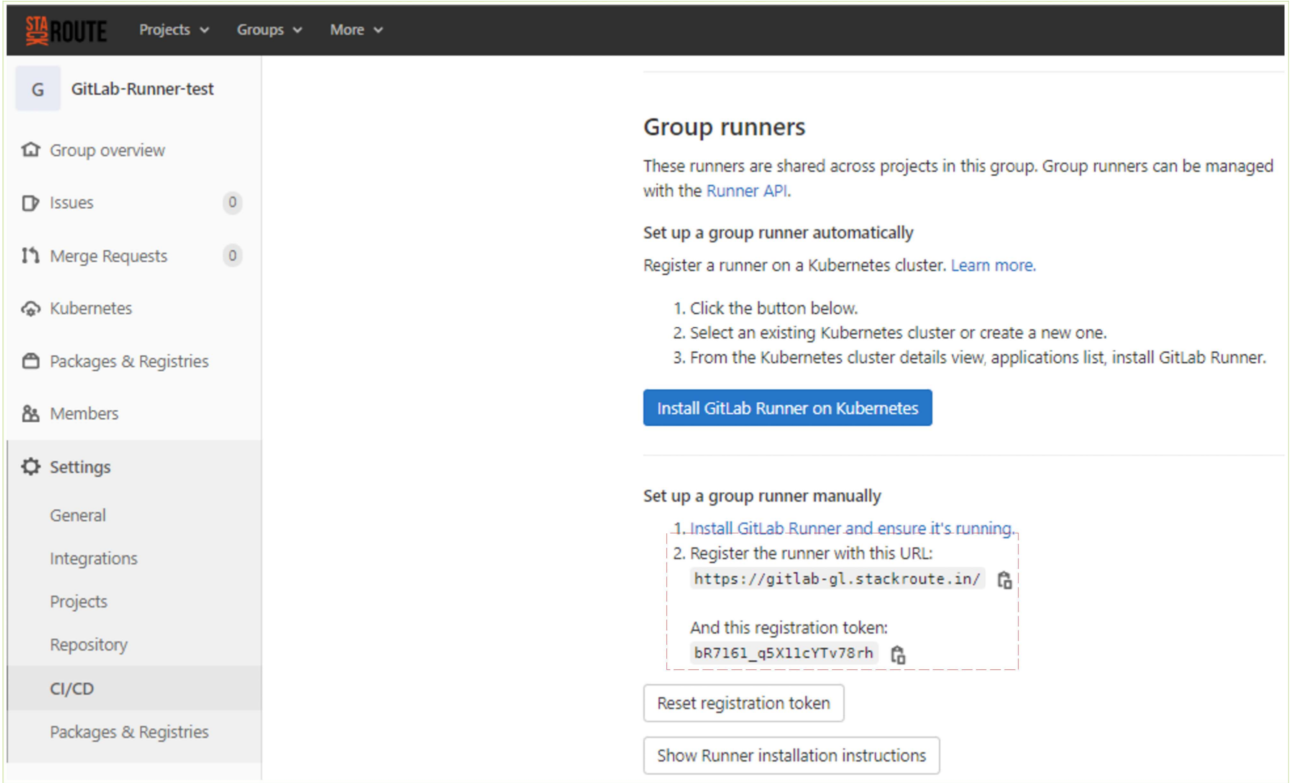
Enable shared runners for all projects and subgroups in this group.

Allow projects and subgroups to override the group setting: ☒ (off)

Allows projects or subgroups in this group to override the global setting.

Step 5 :: Configuring the GitLab CI Runner

Note : Make a note of URL and Registration Token provided by GitLab



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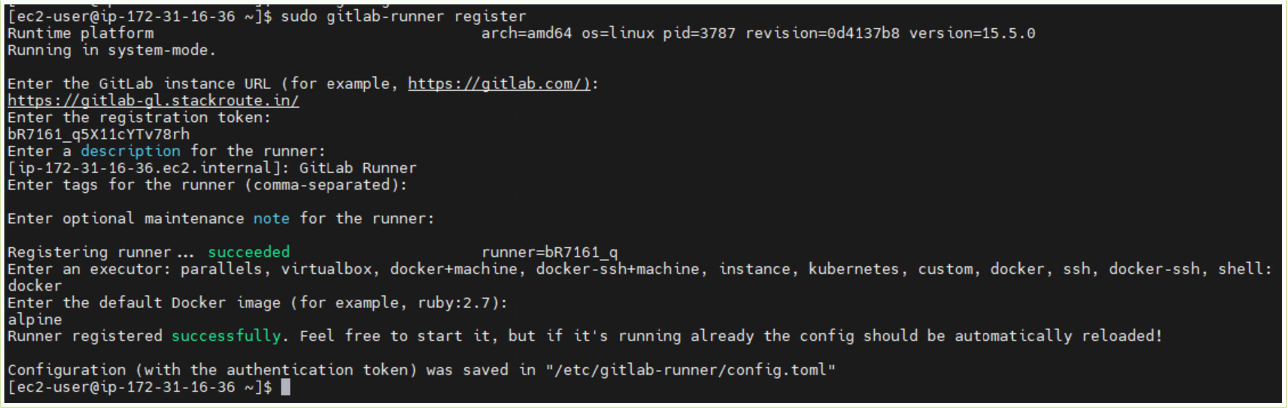
3. From the Kubernetes cluster details view, applications list, install GitLab Runner.

Set up a group runner manually

1. Install GitLab Runner and ensure it's running.
2. Register the runner with this URL:
   `https://gitlab-gl.stackroute.in/`

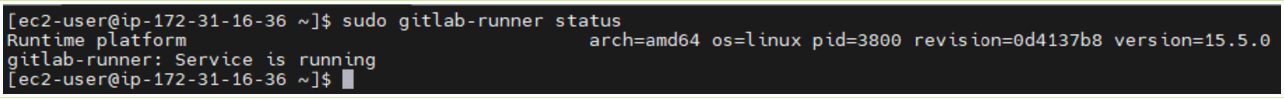
   And this registration token:
   `bR7161_q5X11cYTv78rh`

$ sudo gitlab-runner register



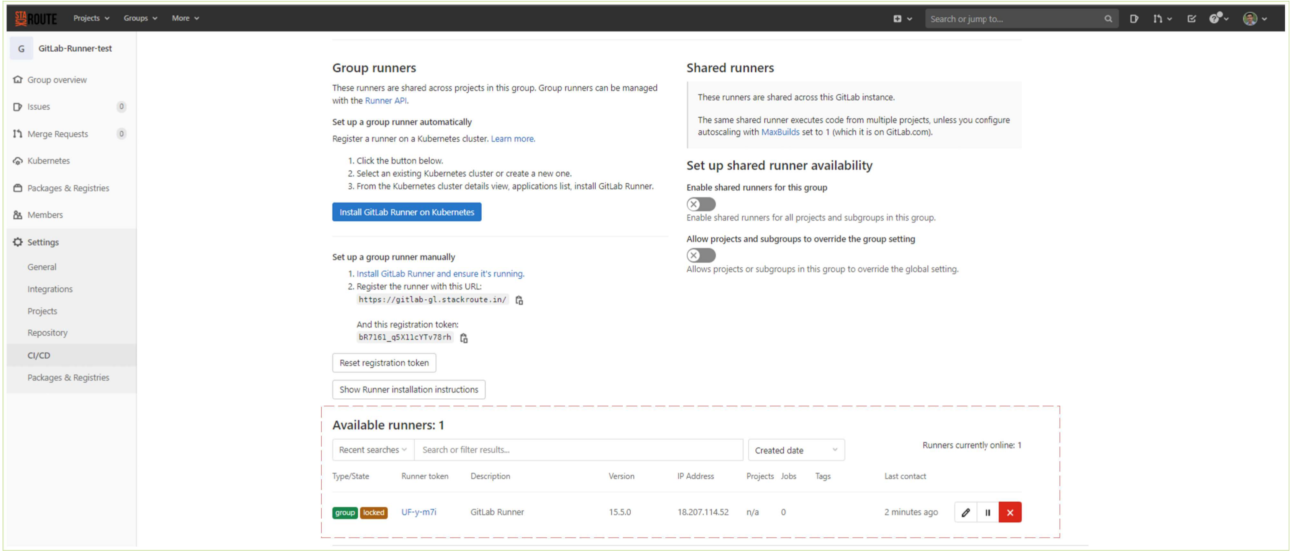
```
[ec2-user@ip-172-31-16-36 ~]$ sudo gitlab-runner register
Runtime platform                                    arch=amd64 os=linux pid=3787 revision=0d4137b8 version=15.5.0
Running in system-mode.

Enter the GitLab instance URL (for example, https://gitlab.com/):
https://gitlab-gl.stackroute.in/
Enter the registration token:
bR7161_q5X11cYTv78rh
Enter a description for the runner:
[ip-172-31-16-36.ec2.internal]: GitLab Runner
Enter tags for the runner (comma-separated):

Enter optional maintenance note for the runner:

Registering runner... succeeded                     runner=bR7161_q
Enter an executor: parallels, virtualbox, docker+machine, docker-ssh+machine, instance, kubernetes, custom, docker, ssh, docker-ssh, shell:
docker
Enter the default Docker image (for example, ruby:2.7):
alpine
Runner registered successfully. Feel free to start it, but if it's running already the config should be automatically reloaded!

Configuration (with the authentication token) was saved in "/etc/gitlab-runner/config.toml"
[ec2-user@ip-172-31-16-36 ~]$
```

$ sudo gitlab-runner status



```
[ec2-user@ip-172-31-16-36 ~]$ sudo gitlab-runner status
Runtime platform                                    arch=amd64 os=linux pid=3800 revision=0d4137b8 version=15.5.0
gitlab-runner: Service is running
[ec2-user@ip-172-31-16-36 ~]$
```

Now we should be able to see the runners details in CI/CD settings page



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Shared runners

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The same shared runner executes code from multiple projects, unless you configure autoscaling with MaxBuilds set to 1 (which it is on GitLab.com).

Set up shared runner availability

Enable shared runners for this group

○ Enable shared runners for all projects and subgroups in this group.

Allow projects and subgroups to override the group setting

○ Allows projects or subgroups in this group to override the global setting.

Available runners: 1

Runners currently online: 1

Type/State	Runner token	Description	Version	IP Address	Projects	Jobs	Tags	Last contact
group locked	UF-y-m7i	GitLab Runner	15.5.0	18.207.114.52	n/a	0		2 minutes ago

Step 6 :: Enabling the privileged mode

Change privileged = true in below file

```
$ sudo vi /etc/gitlab-runner/config.toml
```

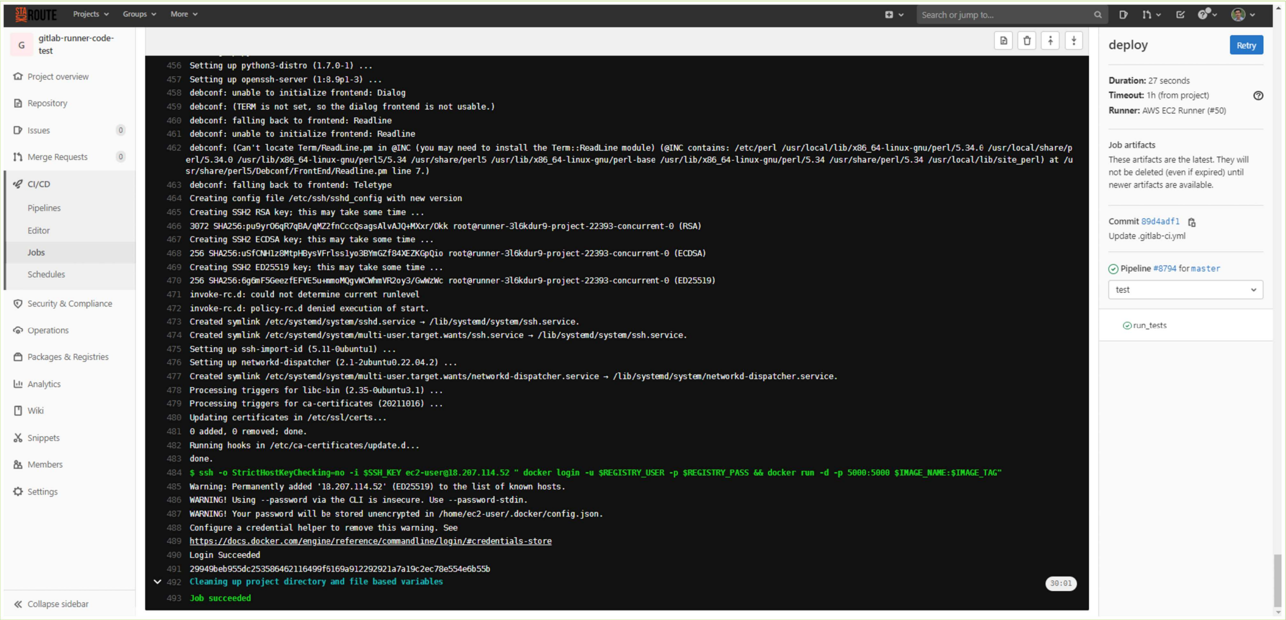
Then restart the gitlab-runner

```
$ sudo gitlab-runner restart
```

Step 7 :: Testing the installation

Create a blank project under the created group and import the necessary codes

Test job Log



```
Setting up python3-distro (1.7.0-1) ...
Setting up openssh-server (1:8.9p1-3) ...
debconf: unable to initialize frontend: Dialog
debconf: (TERM is not set, so the dialog frontend is not usable.)
debconf: falling back to frontend: Readline
debconf: unable to initialize frontend: Readline
debconf: (Can't locate Term/ReadLine.pm in @INC (you may need to install the Term::ReadLine module) (@INC contains: /etc/perl /usr/local/lib/x86_64-linux-gnu/perl/5.34.0 /usr/local/share/p
erl/5.34.0 /usr/lib/x86_64-linux-gnu/perl5/5.34 /usr/share/perl5 /usr/lib/x86_64-linux-gnu/perl-base /usr/lib/x86_64-linux-gnu/perl/5.34 /usr/share/perl/5.34 /usr/local/lib/site_perl) at /u
sr/share/perl5/Debconf/FrontEnd/Readline.pm line 7.)
debconf: falling back to frontend: Teletype
Creating config file /etc/ssh/sshd_config with new version
Creating SSH2 RSA key; this may take some time ...
3072 SHA256:pu9yrO6qR7qBA/qMZ2fnCccQsagsAlvAJQ+MXxr/Okk root@runner-3l6kdur9-project-22393-concurrent-0 (RSA)
Creating SSH2 ECDSA key; this may take some time ...
256 SHA256:uSfCNH1z8MtpHBysVFrlss1yo3BYmGZf84XEZKGpQio root@runner-3l6kdur9-project-22393-concurrent-0 (ECDSA)
Creating SSH2 ED25519 key; this may take some time ...
256 SHA256:6g6mF5GeezfEFVE5u+mmoMQgvWCWhmVR2oy3/GwWzWc root@runner-3l6kdur9-project-22393-concurrent-0 (ED25519)
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Created symlink /etc/systemd/system/sshd.service → /lib/systemd/system/ssh.service.
Created symlink /etc/systemd/system/multi-user.target.wants/ssh.service → /lib/systemd/system/ssh.service.
Setting up ssh-import-id (5.11-0ubuntu1) ...
Setting up networkd-dispatcher (2.1-2ubuntu0.22.04.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/networkd-dispatcher.service → /lib/systemd/system/networkd-dispatcher.service.
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for ca-certificates (20211016) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
$ ssh -o StrictHostKeyChecking=no -i $SSH_KEY ec2-user@18.207.114.52 " docker login -u $REGISTRY_USER -p $REGISTRY_PASS && docker run -d -p 5000:5000 $IMAGE_NAME:$IMAGE_TAG"
Warning: Permanently added '18.207.114.52' (ED25519) to the list of known hosts.
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /home/ec2-user/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
29949beb955dc253586462116499f6169a912292921a7a19c2ec78e554e6b55b
Cleaning up project directory and file based variables
Job succeeded
```

deploy

Duration: 27 seconds
Timeout: 1h (from project)
Runner: AWS EC2 Runner (#50)

Job artifacts
These artifacts are the latest. They will not be deleted (even if expired) until newer artifacts are available.

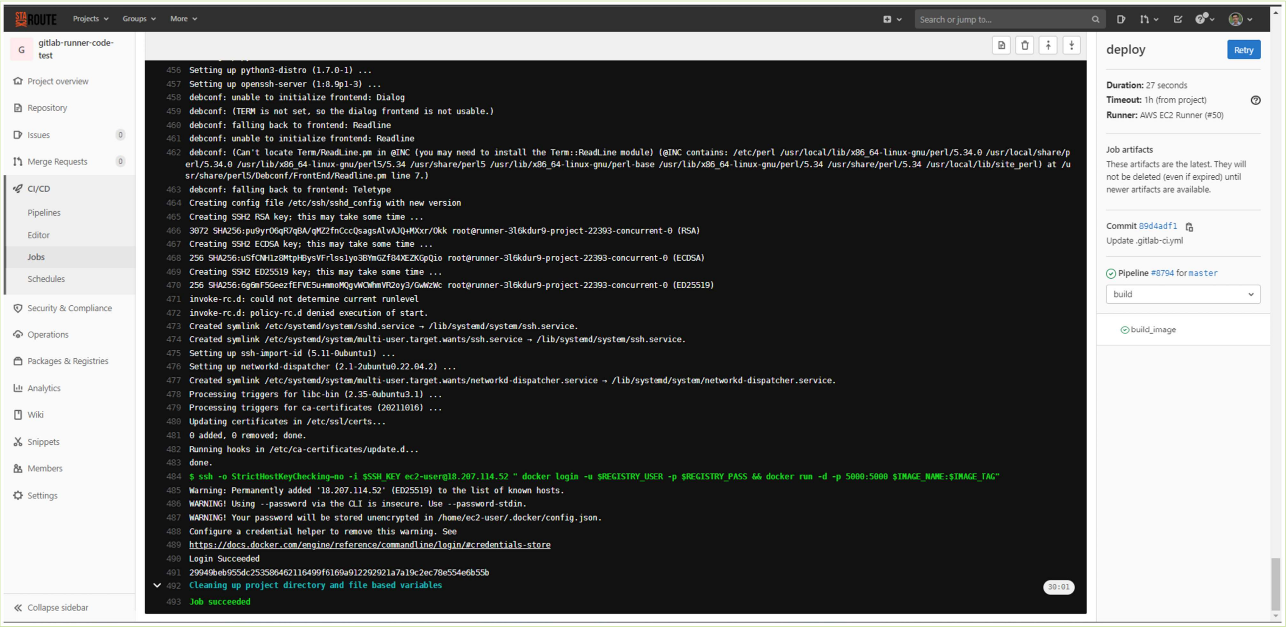
Commit 89d4adf1
Update .gitlab-ci.yml

Pipeline #8794 for master

test

run_tests

Build job Log



```
Setting up python3-distro (1.7.0-1) ...
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debconf: unable to initialize frontend: Dialog
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sr/share/perl5/Debconf/FrontEnd/Readline.pm line 7.)
debconf: falling back to frontend: Teletype
Creating config file /etc/ssh/sshd_config with new version
Creating SSH2 RSA key; this may take some time ...
3072 SHA256:pu9yrO6qR7qBA/qMZ2fnCccQsagsAlvAJQ+MXxr/Okk root@runner-3l6kdur9-project-22393-concurrent-0 (RSA)
Creating SSH2 ECDSA key; this may take some time ...
256 SHA256:uSfCNH1z8MtpHBysVFrlss1yo3BYmGZf84XEZKGpQio root@runner-3l6kdur9-project-22393-concurrent-0 (ECDSA)
Creating SSH2 ED25519 key; this may take some time ...
256 SHA256:6g6mF5GeezfEFVE5u+mmoMQgvWCWhmVR2oy3/GwWzWc root@runner-3l6kdur9-project-22393-concurrent-0 (ED25519)
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Created symlink /etc/systemd/system/sshd.service → /lib/systemd/system/ssh.service.
Created symlink /etc/systemd/system/multi-user.target.wants/ssh.service → /lib/systemd/system/ssh.service.
Setting up ssh-import-id (5.11-0ubuntu1) ...
Setting up networkd-dispatcher (2.1-2ubuntu0.22.04.2) ...
Created symlink /etc/systemd/system/multi-user.target.wants/networkd-dispatcher.service → /lib/systemd/system/networkd-dispatcher.service.
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for ca-certificates (20211016) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
$ ssh -o StrictHostKeyChecking=no -i $SSH_KEY ec2-user@18.207.114.52 " docker login -u $REGISTRY_USER -p $REGISTRY_PASS && docker run -d -p 5000:5000 $IMAGE_NAME:$IMAGE_TAG"
Warning: Permanently added '18.207.114.52' (ED25519) to the list of known hosts.
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /home/ec2-user/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
29949beb955dc253586462116499f6169a912292921a7a19c2ec78e554e6b55b
Cleaning up project directory and file based variables
Job succeeded
```

deploy

Duration: 27 seconds
Timeout: 1h (from project)
Runner: AWS EC2 Runner (#50)

Job artifacts
These artifacts are the latest. They will not be deleted (even if expired) until newer artifacts are available.

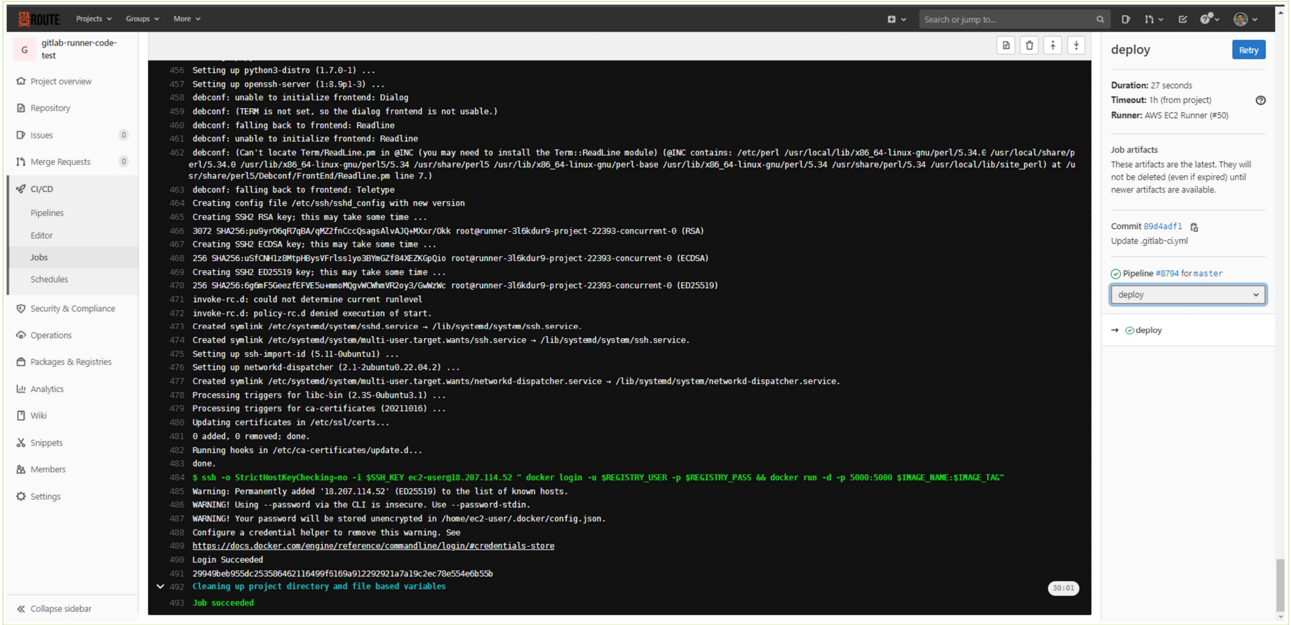
Commit 89d4adf1
Update .gitlab-ci.yml

Pipeline #8794 for master

build

build_image

Deploy job Log



```
Setting up python3-distro (1.7.0-1) ...
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sr/share/perl5/Debconf/FrontEnd/Readline.pm line 7.)
debconf: falling back to frontend: Teletype
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invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Created symlink /etc/systemd/system/sshd.service → /lib/systemd/system/ssh.service.
Created symlink /etc/systemd/system/multi-user.target.wants/ssh.service → /lib/systemd/system/ssh.service.
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Setting up networkd-dispatcher (2.1-2ubuntu0.22.04.2) ...
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Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for ca-certificates (20211016) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
$ ssh -o StrictHostKeyChecking=no -i $SSH_KEY ec2-user@18.207.114.52 " docker login -u $REGISTRY_USER -p $REGISTRY_PASS && docker run -d -p 5000:5000 $IMAGE_NAME:$IMAGE_TAG"
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https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
29949beb955dc253586462116499f6169a912292921a7a19c2ec78e554e6b55b
Cleaning up project directory and file based variables                    30:01
Job succeeded
```

deploy

Duration: 27 seconds
Timeout: 1h (from project)
Runner: AWS EC2 Runner (#50)

Job artifacts
These artifacts are the latest. They will not be deleted (even if expired) until newer artifacts are available.

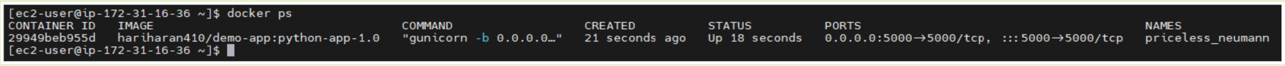
Commit 89d4adf1
Update .gitlab-ci.yml

Pipeline #8794 for master

deploy

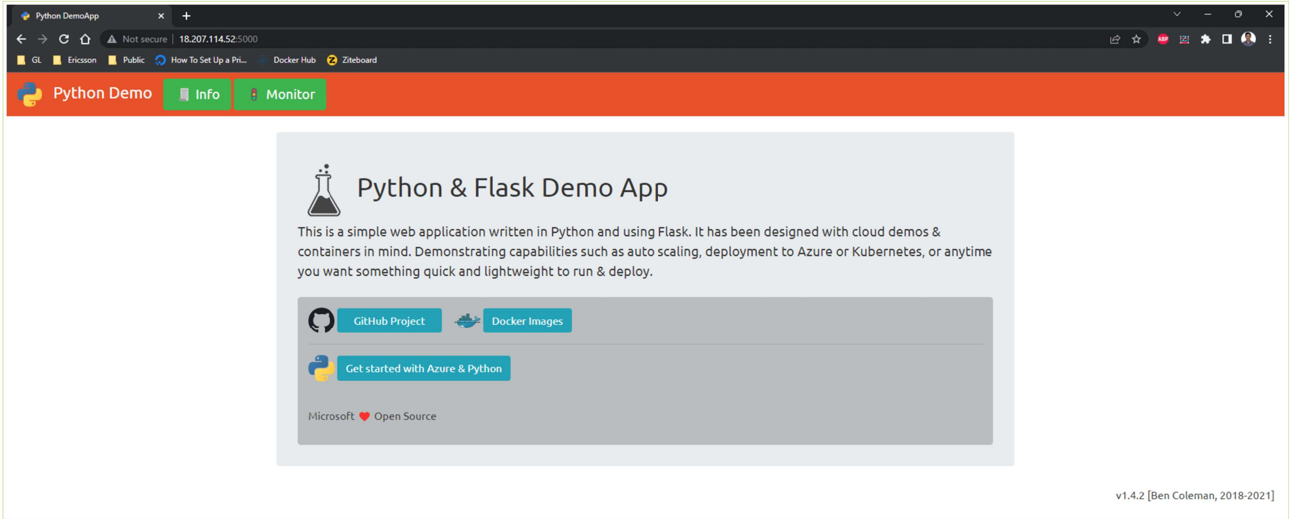
→ deploy

Container running in GitLab-runner (EC2 Instance)



```
[ec2-user@ip-172-31-16-36 ~]$ docker ps
CONTAINER ID   IMAGE                                 COMMAND                  CREATED          STATUS          PORTS                                        NAMES
29949beb955d   hariharan410/demo-app:python-app-1.0   "gunicorn -b 0.0.0.0…"   21 seconds ago   Up 18 seconds   0.0.0.0:5000->5000/tcp, :::5000->5000/tcp   priceless_neumann
[ec2-user@ip-172-31-16-36 ~]$ 
```

Final Output



Python & Flask Demo App

This is a simple web application written in Python and using Flask. It has been designed with cloud demos & containers in mind. Demonstrating capabilities such as auto scaling, deployment to Azure or Kubernetes, or anytime you want something quick and lightweight to run & deploy.

Microsoft ❤ Open Source

v1.4.2 [Ben Coleman, 2018-2021]