Install Loki on Ubuntu

Loki is a log aggregation system developed by Grafana Labs that is designed to be cost-effective and scalable. It's particularly well-suited for applications that already use Prometheus. To install Loki on an Ubuntu system, follow these steps:

Step 1: Update Your System

First, ensure your system is up to date:

bash

```
sudo apt update && sudo apt upgrade -y
```

```
npci@node1:~$ sudo apt update && sudo apt upgrade -y
[sudo] password for npci:
Sorry, try again.
[sudo] password for npci:
Sorry, try again.
[sudo] password for npci:
Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:2 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Get:3 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [13.3 kB]
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:6 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [19.2 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1,988 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [690 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [17.8 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,121 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [730 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [26.1 kB]
Fetched 4,862 kB in 11s (460 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
65 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
Get more security updates through Ubuntu Pro with 'esm-apps' enabled:
  libpostproc55 libavcodec58 libavutil56 libswscale5 libswresample3
  libavformat58 libavfilter7
Learn more about Ubuntu Pro at https://ubuntu.com/pro
The following NEW packages will be installed:
  ubuntu-pro-client
The following packages have been kept back:
  libfprint-2-2 python3-update-manager update-manager update-manager-core
The following packages will be upgraded:
```

Step 2: Install Dependencies

Loki requires some basic dependencies. Install them using the following command:

bash

```
sudo apt install wget curl apt-transport-https -y
```

```
npci@node1:~$ sudo apt install wget curl apt-transport-https -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
wget is already the newest version (1.21.2-2ubuntu1.1).
wget set to manually installed.
The following NEW packages will be installed:
  apt-transport-https curl
0 upgraded, 2 newly installed, 0 to remove and 4 not upgraded.
Need to get 196 kB of archives.
After this operation, 624 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 apt-transport-https all 2.4.12 [1,510 B]
Get:2 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 curl amd64 7.81.0-1ubuntu1.17 [194 kB]
Fetched 196 kB in 2s (87.7 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 204780 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.4.12_all.deb ...
Unpacking apt-transport-https (2.4.12) ...
Selecting previously unselected package curl.
Preparing to unpack .../curl_7.81.0-1ubuntu1.17_amd64.deb ...
Unpacking curl (7.81.0-1ubuntu1.17) ...
Setting up apt-transport-https (2.4.12) ...
Setting up curl (7.81.0-1ubuntu1.17) ...
Processing triggers for man-db (2.10.2-1) ...
npci@node1:~$
```

Step 3: Install Loki

To install Loki, follow these steps:

Download Loki Binary:
bash

```
wget https://github.com/grafana/loki/releases/download/v2.9.1/loki-linux-amd64.zip
```

```
npci@node1:~$ wget https://github.com/grafana/loki/releases/download/v2.9.1/loki-linux-amd64.zip
--2024-09-04 14:51:53--  https://github.com/grafana/loki/releases/download/v2.9.1/loki-linux-amd64.zip
Resolving github.com (github.com)... 20.207.73.82, 64:ff9b::14cf:4952
Connecting to github.com (github.com)|20.207.73.82|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e65be/129717717/95f60514-9b6d-4c66-9cc5-fcfca9efc520?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=releaseassetproduction%2F20240904%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20240904T092153Z&X-Amz-Expires=300&X-Amz-Signature=6bc1347b904680ba2ce50d5cc3e8906203587cf3fc620f4c2cd10f0be1c1c512&X-Amz-SignedHeaders=host&actor_id=0&key_id=0&repo_id=129717717&response-content-disposition=attachment%3B%20filename%3Dloki-linux-amd64.zip&response-content-type=application%2Foctet-stream [following]
--2024-09-04 14:51:53--  https://objects.githubusercontent.com/github-production-release-asset-2e65be/129717717/95f60514-9b6d-4c66-9cc5-fcfca9efc520?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=releaseassetproduction%2F20240904%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20240904T092153Z&X-Amz-Expires=300&X-Amz-Signature=6bc1347b904680ba2ce50d5cc3e8906203587cf3fc620f4c2cd10f0be1c1c512&X-Amz-SignedHeaders=host&actor_id=0&key_id=0&repo_id=129717717&response-content-disposition=attachment%3B%20filename%3Dloki-linux-amd64.zip&response-content-type=application%2Foctet-stream
Resolving objects.githubusercontent.com (objects.githubusercontent.com)... 185.199.111.133, 185.199.108.133, 185.199.109.133, ...
Connecting to objects.githubusercontent.com (objects.githubusercontent.com)|185.199.111.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 20717061 (20M) [application/octet-stream]
Saving to: 'loki-linux-amd64.zip'

loki-linux-amd64.zip                18%[====================>                                                                ]   3.74M   744KB/s    eta 23s
```

1. **Unzip the Binary:**
   bash

   ```
   unzip loki-linux-amd64.zip
   ```

```
npci@node1:~$ unzip loki-linux-amd64.zip
Archive:  loki-linux-amd64.zip
  inflating: loki-linux-amd64
npci@node1:~$ ls
cfstats.txt  Desktop  Documents  Downloads  loki-linux-amd64  loki-linux-amd64.zip  Music  Pictures  Public  snap  Templates  Videos
npci@node1:~$ ls loki-linux-amd64
loki-linux-amd64
```

2. **Make the Loki Binary Executable:**
   bash

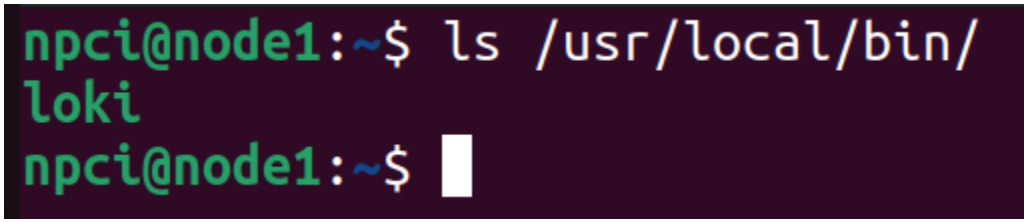
   ```
   chmod +x loki-linux-amd64
   ```

```
npci@node1:~$ ls -ltrh
total 84M
-rwxr-xr-x 1 npci npci  64M Sep 14  2023 loki-linux-amd64
-rw-rw-r-- 1 npci npci  20M Sep 14  2023 loki-linux-amd64.zip
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Templates
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Public
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Music
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Documents
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Videos
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Pictures
drwx------ 4 npci npci 4.0K Sep  2 15:42 snap
drwxr-xr-x 2 npci npci 4.0K Sep  3 14:38 Desktop
drwxr-xr-x 2 npci npci 4.0K Sep  3 17:12 Downloads
-rw-rw-r-- 1 npci npci  52K Sep  4 11:34 cfstats.txt
npci@node1:~$ chmod +x loki-linux-amd64
npci@node1:~$ ls -ltrh
total 84M
-rwxr-xr-x 1 npci npci  64M Sep 14  2023 loki-linux-amd64
-rw-rw-r-- 1 npci npci  20M Sep 14  2023 loki-linux-amd64.zip
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Templates
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Public
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Music
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Documents
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Videos
drwxr-xr-x 2 npci npci 4.0K Sep  2 15:35 Pictures
drwx------ 4 npci npci 4.0K Sep  2 15:42 snap
drwxr-xr-x 2 npci npci 4.0K Sep  3 14:38 Desktop
drwxr-xr-x 2 npci npci 4.0K Sep  3 17:12 Downloads
-rw-rw-r-- 1 npci npci  52K Sep  4 11:34 cfstats.txt
npci@node1:~$
```

3. **Move Loki to `/usr/local/bin`:**
   bash

```
sudo mv loki-linux-amd64 /usr/local/bin/loki
```

```
npci@node1:~$ sudo mv loki-linux-amd64 /usr/local/bin/loki
npci@node1:~$ ls /usr/local/bin/
loki
npci@node1:~$
```



loki -version

```
npci@node1:~$ loki -version
loki, version 2.9.1 (branch: HEAD, revision: d9d5ed4a1)
  build user:       root@21ab03f17324
  build date:       2023-09-14T16:24:53Z
  go version:       go1.20.6
  platform:         linux/amd64
  tags:             netgo
```

Step 4: Create a Loki Configuration File

Loki requires a configuration file to start. You can create a simple configuration file like this:

Get the user loki created, create directories, download loki-local-config.yaml

```
#create user for loki
sudo useradd --system loki
#create dir in /etc
sudo mkdir -p /etc/loki /etc/loki/logs
#default loki config file
sudo curl -o /etc/loki/loki-local-config.yaml -L
"https://gist.github.com/psujit775/ceaf475fc369e25a2d04501f8a7c0a59/raw"
```

```
npci@node1:~$ sudo curl -o /etc/loki/loki-local-config.yaml -L "https://gist.github.com/psujit775/ceaf475fc369e25a2d04501f
8a7c0a59/raw"
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:--  0:00:01 --:--:--     0
100   546  100   546    0     0    219      0  0:00:02  0:00:02 --:--:--   487
npci@node1:~$ ls
cfstats.txt  Documents  logcli-darwin-amd64.zip  loki-local-config.yaml  Pictures  snap       Videos
Desktop      Downloads  loki-linux-amd64.zip     Music                   Public    Templates  wal
```

```
#change permissions
sudo chown -R loki: /etc/loki
```

Configure Loki to run as a service.

#Create a file called loki.service
sudo vi /etc/systemd/system/loki.service

```
npci@node1:~$ sudo vi /etc/systemd/system/loki.service
npci@node1:~$
```

Add the script and save.

[Unit]
Description=Loki service
After=network.target

[Service]
Type=simple
User=loki
ExecStart=/usr/local/bin/loki -config.file /etc/loki/loki-local-config.yaml
Restart=on-failure
RestartSec=20
StandardOutput=append:/etc/loki/logs/loki.log
StandardError=append:/etc/loki/logs/loki.log

[Install]
WantedBy=multi-user.target

Run below command to start loki as a service.

sudo systemctl daemon-reload #To reload systemd
sudo systemctl start loki #to start loki
sudo systemctl status loki #to check status
sudo systemctl restart loki #to restart

You can check logs of Loki at /etc/loki/logs/loki.log

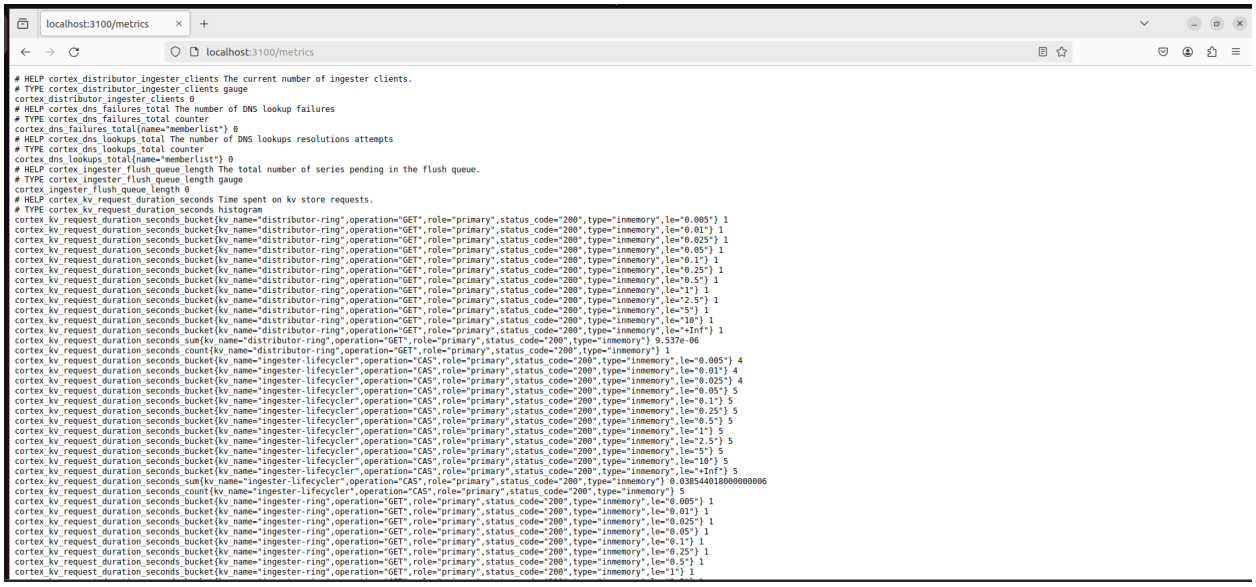
Enable Loki on system boot.

sudo systemctl enable loki.service

To Check metrics received by loki. Open browser and type below address.

http://localhost:3100/metrics

OUTPUT:


localhost:3100/metrics
localhost:3100/metrics
HELP cortex_distributor_ingester_clients The current number of ingester clients.
TYPE cortex_distributor_ingester_clients gauge
cortex_distributor_ingester_clients 0
HELP cortex_dns_failures_total The number of DNS lookup failures
TYPE cortex_dns_failures_total counter
cortex_dns_failures_total{name="memberlist"} 0
HELP cortex_dns_lookups_total The number of DNS lookups resolutions attempts
TYPE cortex_dns_lookups_total counter
cortex_dns_lookups_total{name="memberlist"} 0
HELP cortex_ingester_flush_queue_length The total number of series pending in the flush queue.
TYPE cortex_ingester_flush_queue_length gauge
cortex_ingester_flush_queue_length 0
HELP cortex_kv_request_duration_seconds Time spent on kv store requests.
TYPE cortex_kv_request_duration_seconds histogram
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.005"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.01"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.025"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.05"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.1"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.25"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.5"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="1"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="2.5"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="5"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="10"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="+Inf"} 1
cortex_kv_request_duration_seconds_sum{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory"} 9.537e-06
cortex_kv_request_duration_seconds_count{kv_name="distributor-ring",operation="GET",role="primary",status_code="200",type="inmemory"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="0.005"} 4
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="0.01"} 4
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="0.025"} 4
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="0.05"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="0.1"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="0.25"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="0.5"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="1"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="2.5"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="5"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="10"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory",le="+Inf"} 5
cortex_kv_request_duration_seconds_sum{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory"} 0.038544018000000006
cortex_kv_request_duration_seconds_count{kv_name="ingester-lifecycler",operation="CAS",role="primary",status_code="200",type="inmemory"} 5
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.005"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.01"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.025"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.05"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.1"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.25"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="0.5"} 1
cortex_kv_request_duration_seconds_bucket{kv_name="ingester-ring",operation="GET",role="primary",status_code="200",type="inmemory",le="1"} 1