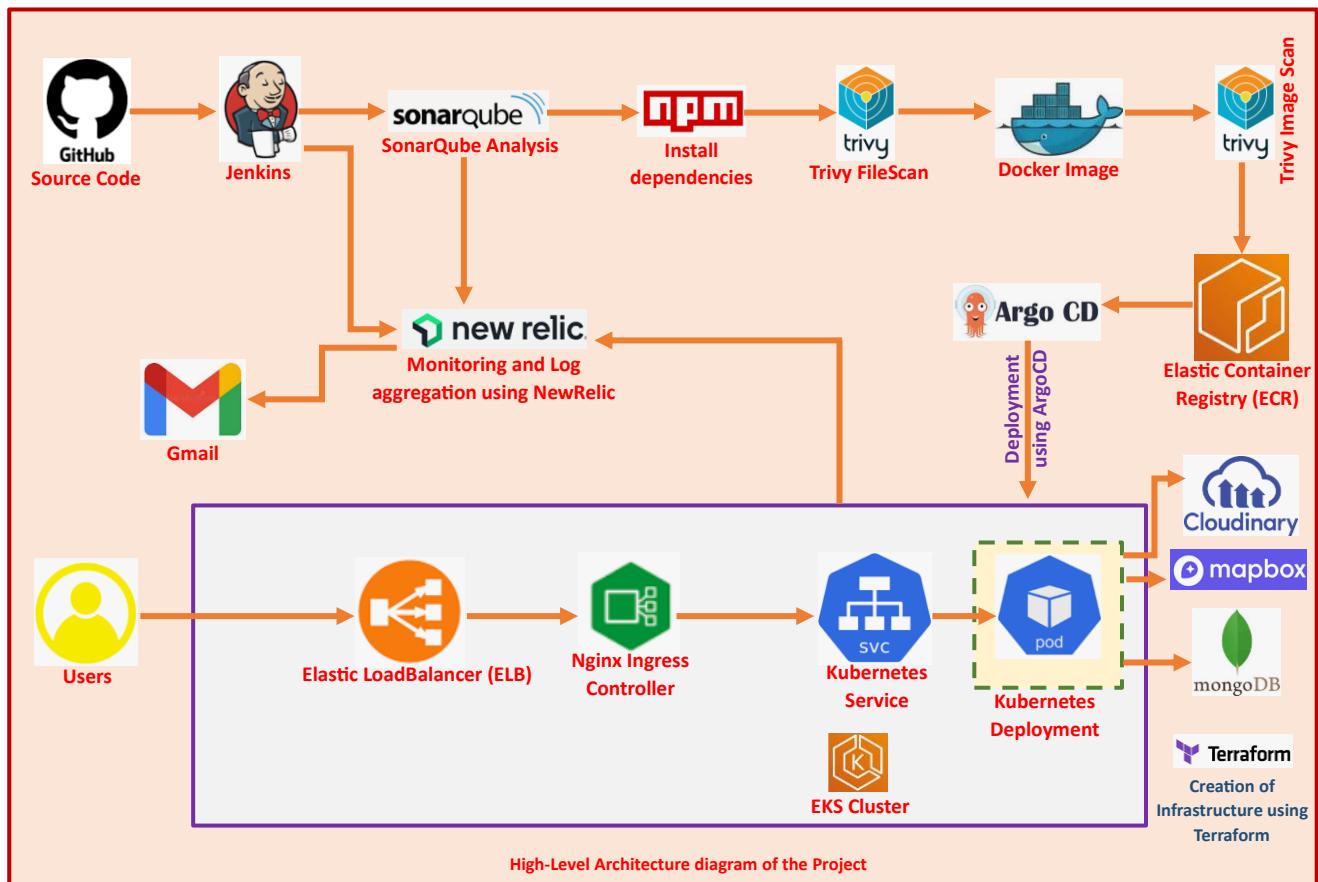


DevOps Project Yelp-Camp



This DevOps Project aims to create the infrastructure of EKS Cluster, Elastic Container Registry (ECR), Jenkins Master, Jenkins Slave and SonarQube Server with the help of Terraform. Creation of CI/CD pipeline using Jenkins for the purpose of Deployment of the Application. For Monitoring and Log Aggregation NewRelic had been used which is shown in the high-level architecture diagram above. Alerts had been created in NewRelic and will send the Email on the Group Email Id if the Alert condition crosses the threshold. In this project Mapbox, Cloudinary and MongoDB had been used. The credentials for Mapbox, Cloudinary and MongoDB had been encrypted using base64 and provided through the kubernetes secrets using helm chart present in the GitHub Repository <https://github.com/singhritesh85/helm-chart-yelp-camp.git>. Credentials used had in this project had been changed later.

Agent for NewRelic had been installed in Jenkins Master, Jenkins Slave, SonarQube Server and EKS Cluster. In EKS cluster this Agent was installed using the helm chart which is explained at the later stage in this project.

To monitor Jenkins Job using NewRelic you need to install OpenTelemetry Plugin in Jenkins and do the configuration from Jenkins Systems and for monitoring SonarQube the procedure to install the NewRelic Agent has been discussed later in this project.

The Source code for this project is present in the GitHub Repository <https://github.com/singhritesh85/YelpCamp.git>.

To configure SonarQube with Jenkins install SonarQube Scanner Plugin in Jenkins and do the configuration from Jenkins System. For Configuration of SonarQube from Jenkins System you need to provide the Name, SonarQube Server URL, and the Credentials. For Credentials you can provide credential for SonarQube in Jenkins as a secret text in the form of secret token of SonarQube.

The screenshot shows the Jenkins plugin manager interface. In the top navigation bar, the URL is 'jenkins-ms.singhritesh85.com/manage/pluginManager/available'. The search bar contains 'sonarqube scanners'. On the left sidebar, there are links for 'Updates', 'Available plugins' (which is selected), 'Installed plugins', 'Advanced settings', and 'Download progress'. The main content area displays a table with one row for the 'SonarQube Scanner 2.17.2' plugin. The table columns are 'Install', 'Name', and 'Released'. The 'Name' column shows 'SonarQube Scanner 2.17.2' with a checkmark indicating it is installed. The 'Released' column shows '8 mo 23 days ago'. A note below the table states: 'This plugin allows an easy integration of SonarQube, the open source platform for Continuous Inspection of code quality.' At the bottom right of the page, it says 'REST API' and 'Jenkins 2.479.1'.

As discussed above in this project I had used MapBox, Cloudinary and MongoDB which credentials I had provided in the .env file and these credentials I had encrypted with base64 and provided to kubernetes pod as a secret which I provided in the helm chart present in the GitHub Repository <https://github.com/singhritesh85/helm-chart-yelp-camp.git>. I had changed all the credentials for MapBox, Cloudinary and MongoDB used in this project. Below command shows how I have encrypted these credentials using base64.

```
[root@... ~]# echo -n c...v | base64  
ZGtiZmx5YmF2  
  
[root@... ~]# echo -n 4...1 | base64  
NDc3OTYxNzU4OTc3MjMx  
  
[root@... ~]# echo -n R...4 | base64  
UlpfckvDbmhqZDEySUS1eVHVhVaSKNlwHU0  
[root@... ~]# echo -n "mongodb+srv://  
bw9uz29kYitzcnY6Ly9tb25nbzpBZG1pbjEyM0BKZXh0ZXIudWUwcW4ubW9uZ29kYi5uZXQvP3J1  
dH5V3jpGvPXRYdUUmzd1tYwpvcml0eS2hcHBOYw1lPWR1ehR1cg==" | base64  
[root@... ~]# echo -n e...s | base64  
ZXhwbg1jYXR1ZGV2b3Bz
```

Below screenshot shows the credentials which I used throughout this project and these credentials I have changed later after completion of the project from the MapBox, Cloudinary and MongoDB Atlas account.

The screenshot shows the MongoDB Atlas interface. On the left, there's a sidebar with various services like Stream Processing, Triggers, Migration, Data Federation, Security, and Network Access. The main area is titled 'Clusters' and shows a single cluster named 'dexter'. It includes sections for 'Data Services', 'Clusters', and 'Enhance Your Exp...'. A modal window is open in the center, providing instructions for setting up a Node.js driver. It shows the command `npm install mongodb` and a connection string template: `mongodb://mongo:<db_password>@dexter.ueqgn.mongodb.net/?retryWrites=true&w=majority&appName=dexter`. Below this, there are 'RESOURCES' links for 'Get started with the Node.js Driver', 'Node.js Starter Sample App', 'Access your Database Users', and 'Troubleshoot Connections'. At the bottom of the modal is a 'Done' button.

Access tokens

You need an API access token to configure [Mapbox GL JS](#), [Mobile](#), and [Mapbox web services](#) like routing and geocoding. Read more about [API access tokens](#) in our documentation.

[+ Create a token](#)

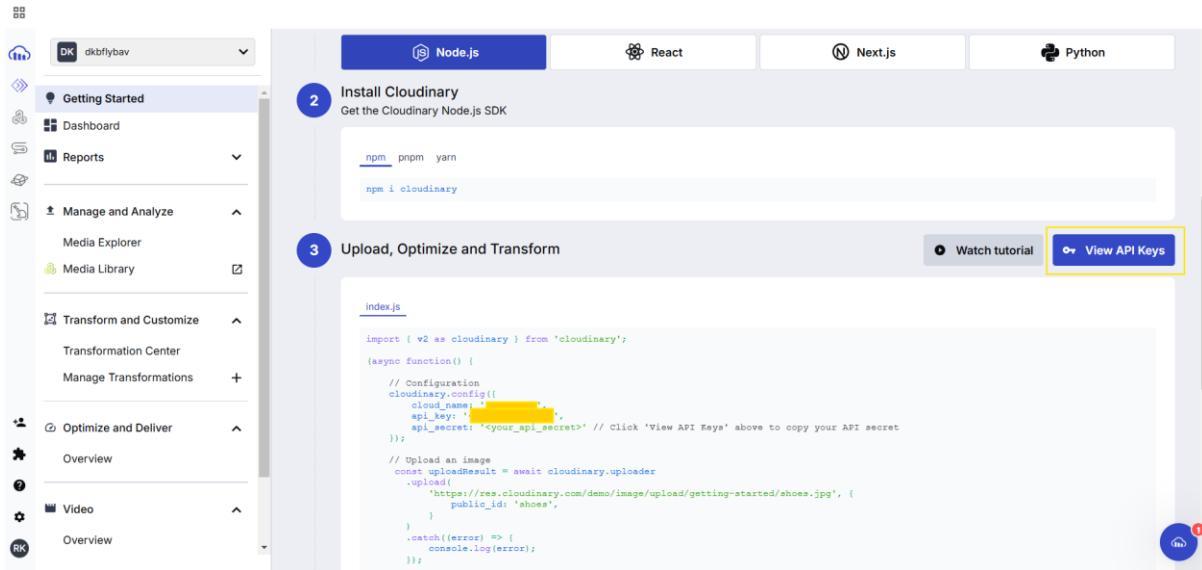
Default public token

[↻ Refresh](#)



Last modified: less than a minute ago
URLs: N/A

Ry



Installation of Nginx Ingress Controller

To create the Nginx Ingress Controller, follow the procedure as shown in the screenshot attached below.

```

[root@redacted ~]# kubectl create ns ingress-nginx
namespace/ingress-nginx created
[root@redacted ~]# helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx
"ingress-nginx" has been added to your repositories
[root@redacted ~]# helm repo update
Hang tight while we grab the latest from your chart repositories...
..Successfully got an update from the "ingress-nginx" chart repository
Update Complete. Happy Helming!
[root@redacted ~]# helm install ingress-nginx ingress-nginx/ingress-nginx -n ingress-nginx
NAME: ingress-nginx
LAST DEPLOYED: Mon Apr 29 13:25:55 2024
NAMESPACE: ingress-nginx
STATUS: deployed
REVISION: 1
TEST SUITE: None
NOTES:
The ingress-nginx controller has been installed.
It may take a few minutes for the load balancer IP to be available.
You can watch the status by running 'kubectl get service --namespace ingress-nginx ingress-nginx-controller --output wide --watch'

An example Ingress that makes use of the controller:
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: example
  namespace: foo

```

NAME	AGE	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)
ingress-nginx-controller	3: redacted/TCP	LoadBalancer	redacted	redacted	80: redacted/TCP, 443/TCP
ingress-nginx-controller-admission		ClusterIP	redacted	<none>	443/TCP

```

[root@redacted ~]# kubectl edit svc ingress-nginx-controller -n ingress-nginx
service/ingress-nginx-controller edited

```

```

# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: v1
kind: Service
metadata:
  annotations:
    meta.helm.sh/release-name: ingress-nginx
    meta.helm.sh/release-namespace: ingress-nginx
  service.beta.kubernetes.io/aws-load-balancer-backend-protocol: http
  service.beta.kubernetes.io/aws-load-balancer-connection-idle-timeout: "60"
  service.beta.kubernetes.io/aws-load-balancer-cross-zone-load-balancing-enabled: "true"
  service.beta.kubernetes.io/aws-load-balancer-ssl-cert: arn:aws:acm:us-east-2:0[REDACTED]:certificate/[REDACTED]
  service.beta.kubernetes.io/aws-load-balancer-ssl-ports: https
  service.beta.kubernetes.io/aws-load-balancer-type: elb
  creationTimestamp: "[REDACTED]"
  finalizers:
  - service.kubernetes.io/load-balancer-cleanup
  labels:
    app.kubernetes.io/component: controller
    app.kubernetes.io/instance: ingress-nginx
    app.kubernetes.io/managed-by: Helm
    app.kubernetes.io/name: ingress-nginx
    app.kubernetes.io/part-of: ingress-nginx
    app.kubernetes.io/version: 1.10.1
    helm.sh/chart: ingress-nginx-4.10.1
  name: ingress-nginx-controller
  namespace: ingress-nginx
  resourceVersion: "[REDACTED]"
  uid: "[REDACTED]"
spec:
  allocateLoadBalancerNodePorts: true
  clusterIP: "[REDACTED]"
  clusterIPs:
  - "[REDACTED]"
  externalTrafficPolicy: Cluster
  internalTrafficPolicy: Cluster

  helm.sh/chart: ingress-nginx-4.10.1
  name: ingress-nginx-controller
  namespace: ingress-nginx
  resourceVersion: "[REDACTED]"
  uid: "[REDACTED]"
spec:
  allocateLoadBalancerNodePorts: true
  clusterIP: "[REDACTED]"
  clusterIPs:
  - "[REDACTED]"
  externalTrafficPolicy: Cluster
  internalTrafficPolicy: Cluster
  ipFamilies:
  - IPv4
  ipFamilyPolicy: SingleStack
  ports:
  - appProtocol: http
    name: http
    nodePort: "[REDACTED]"
    port: 80
    protocol: TCP
    targetPort: http
  - appProtocol: https
    name: https
    nodePort: "[REDACTED]"
    port: 443
    protocol: TCP
    targetPort: http
  selector:
    app.kubernetes.io/component: controller
    app.kubernetes.io/instance: ingress-nginx
    app.kubernetes.io/name: ingress-nginx
  sessionAffinity: None
  type: LoadBalancer
status:
  loadBalancer:
    ingress:
    - hostname: "[REDACTED].us-east-2.elb.amazonaws.com"

```

Rite*

```
kubectl create ns ingress-nginx  
helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx  
helm repo update  
helm install ingress-nginx ingress-nginx/ingress-nginx -n ingress-nginx  
kubectl get svc -n ingress-nginx  
kubectl edit svc ingress-nginx-controller -n ingress-nginx
```

Add the below annotations and change the targetPort from https to http

Annotations to be added

```
=====  
service.beta.kubernetes.io/aws-load-balancer-backend-protocol: http  
service.beta.kubernetes.io/aws-load-balancer-connection-idle-timeout: "60"  
service.beta.kubernetes.io/aws-load-balancer-cross-zone-load-balancing-enabled: "true"  
service.beta.kubernetes.io/aws-load-balancer-ssl-cert: arn:aws:acm:us-east-2:XXXXXXXXX:certificate/XXXXXX-XXXXXX-XXXXXX-XXXXXX  
service.beta.kubernetes.io/aws-load-balancer-ssl-ports: https  
service.beta.kubernetes.io/aws-load-balancer-type: elb
```

You need to change the targetPort for https to http in nginx ingress controller service as written below:-

Before:

```
ports:  
- name: http  
  port: 80  
  protocol: TCP  
  targetPort: http  
- name: https  
  port: 443  
  protocol: TCP  
  targetPort: https
```

After:

```
ports:  
- name: http  
  port: 80  
  protocol: TCP  
  targetPort: http  
- name: https  
  port: 443  
  protocol: TCP  
  targetPort: 80
```

Installation of ArgoCD

To install ArgoCD follow the procedure as mentioned below.

```
[root@redacted ~]# kubectl create namespace argocd
namespace/argocd created
[root@redacted ~]# kubectl apply -n argocd -f https://raw.githubusercontent.com/argoproj/argo-cd/stable/manifests/install.yaml
customresourcedefinition.apiextensions.k8s.io/applications.argoproj.io created
customresourcedefinition.apiextensions.k8s.io/applicationsets.argoproj.io created
customresourcedefinition.apiextensions.k8s.io/approjects.argoproj.io created
serviceaccount/argocd-application-controller created
serviceaccount/argocd-applicationset-controller created
serviceaccount/argocd-dex-server created
serviceaccount/argocd-notifications-controller created
serviceaccount/argocd-redis created
serviceaccount/argocd-repo-server created
serviceaccount/argocd-server created
role.rbac.authorization.k8s.io/argocd-application-controller created
role.rbac.authorization.k8s.io/argocd-applicationset-controller created

[root@redacted ~]# kubectl -n argocd get secret argocd-initial-admin-secret -o jsonpath='{.data.password}' | base64 -d
[root@jenkins-slave ~]#
```

```
[root@redacted ~]# cat argocd-ingress-rule.yaml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: minimal-ingress
  namespace: argocd
  annotations:
    kubernetes.io/ingress.class: nginx
    nginx.ingress.kubernetes.io/backend-protocol: "HTTPS"    ### You can use this option for this particular case for ArgoCD but not for all
    # nginx.ingress.kubernetes.io/ssl-redirect: "false"
spec:
  ingressClassName: nginx
  rules:
  - host: argocd.singhritesh85.com
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: argocd-server    ### Provide your service Name
            port:
              number: 80     ##### Provide your service port for this particular example you can also choose 443
```

```
[root@redacted ~]# kubectl apply -f argocd-ingress-rule.yaml
```

```
[root@redacted ~]# kubectl get ing -A
NAMESPACE   NAME      CLASS      HOSTS      ADDRESS
argocd      minimal-ingress <none>    argocd.singhritesh85.com  redacted.us-east-2.elb.amazonaws.com  PORTS      AGE
                                                               80          69s
```

kubectl create namespace argocd

kubectl apply -n argocd -f https://raw.githubusercontent.com/argoproj/argo-cd/stable/manifests/install.yaml

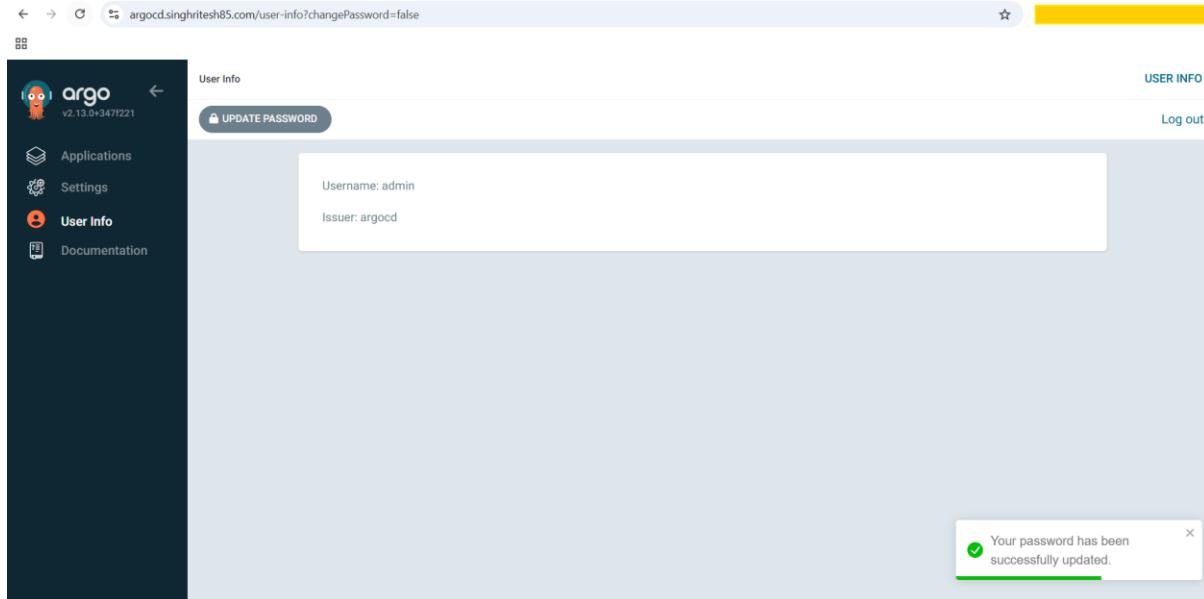
Get password for ArgoCD

```
kubectl -n argocd get secret argocd-initial-admin-secret -o jsonpath='{.data.password}' | base64 -d
```

```
cat argocd-ingress-rule.yaml

apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: minimal-ingress
  namespace: argocd
  annotations:
    kubernetes.io/ingress.class: nginx
    nginx.ingress.kubernetes.io/backend-protocol: "HTTPS"  ### You can use this option for this particular case
for ArgoCD but not for all
#  nginx.ingress.kubernetes.io/ssl-redirect: "false"
spec:
  ingressClassName: nginx
  rules:
  - host: argocd.singhritesh85.com
    http:
      paths:
      - path: /
        pathType: Prefix
      backend:
        service:
          name: argocd-server  ### Provide your service Name
          port:
            number: 80  ##### Provide your service port for this example you can also choose 443
kubectl apply -f argocd-ingress-rule.yaml
```

I have updated the default password of ArgoCD as shown in the screenshot attached below. To do so you need to provide the old password, New Password and again confirm with the New Password then your password will be changed.



To customize the DNS setting on Jenkins Slave Server I did changes in /etc/resolv.conf file as shown in the screenshot attached below. Whenever you will reboot the Jenkins Slave Server this change will no longer exist.

```
[root@ip-172-31-31-15 ~]# cat /etc/resolv.conf
; generated by /usr/sbin/dhclient-script
search singhritesh85.com    #us-east-2.compute.internal
options timeout:2 attempts:5
nameserver 8.8.8.8      #10.10.0.2
```

To make these changes as specified above in the /etc/resolv.conf file permanent either you create a dhcp-option set and **edit vpc settings** of that VPC and attach the newly created dhcp-option set using the changed domain-name and domain-name-server or add the entry of line **supersede domain-name "singhritesh85.com";** and **supersede domain-name-servers 8.8.8.8;** in file **/etc/dhcp/dhclient.conf** and **reboot** the Jenkins Slave Server to make these changes permanently. After reboot below screenshot shows the entry of /etc/resolv.conf file.

```
[root@ip-172-31-31-15 ~]# cat /etc/resolv.conf
options timeout:2 attempts:5
; generated by /usr/sbin/dhclient-script
search singhritesh85.com us-east-2.compute.internal
nameserver 8.8.8.8
```

If you do the entry of **supersede domain-name-servers 8.8.8.8** line only; in file **/etc/dhcp/dhclient.conf** and reboot your Jenkins Slave Server then the entry of /etc/resolv.conf file will be as shown in the screenshot attached below and this will also work as I have only updated the nameserver and not the domain-name.

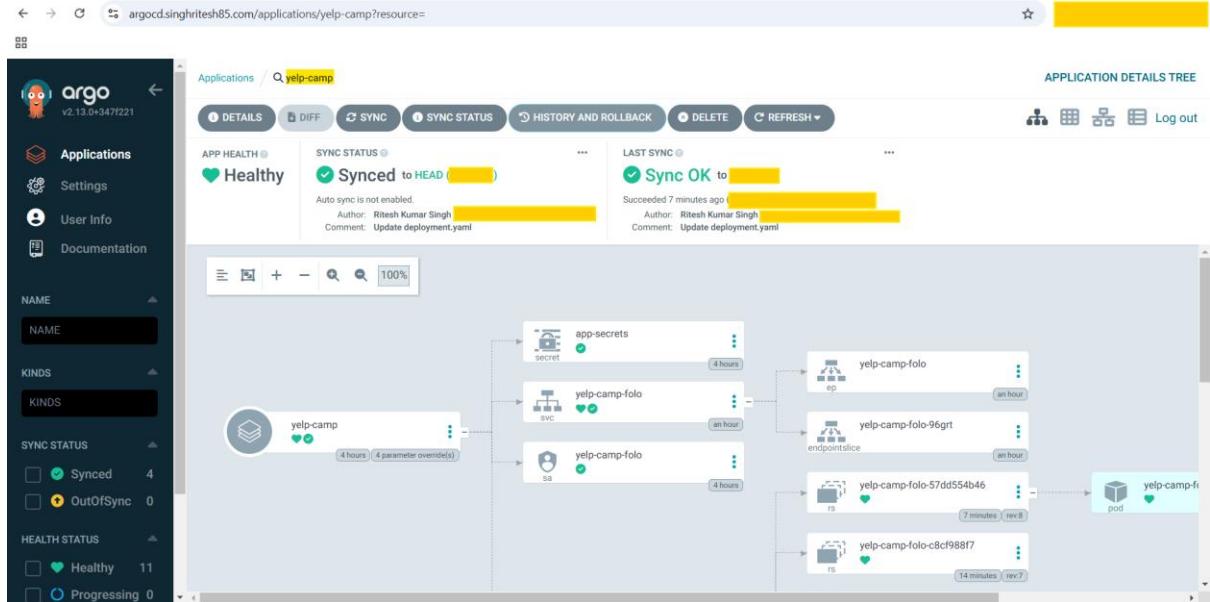
```
[root@...] ~]# cat /etc/resolv.conf
options timeout:2 attempts:5
; generated by /usr/sbin/dhclient-script
search us-east-2.compute.internal
nameserver 8.8.8.8
```

Below screenshot shows the Jenkins Job after its successful execution and SonarQube.

The screenshot displays two side-by-side web pages. On the left is the Jenkins interface, showing a successful build for a project named 'test'. On the right is the SonarQube interface, showing a successful analysis for a project named 'YelpCamp'. The SonarQube dashboard provides detailed metrics: 0 Bugs (A rating), 0 Vulnerabilities (A rating), 0.0% Hotspots Reviewed (E rating), 1 Code Smells (A rating), 0.0% Coverage (O), 0.0% Duplications (O), and 9.9k Lines of JavaScript code.

After successful execution of Jenkins Job, the screenshot for ArgoCD is as shown below.

The screenshot shows the ArgoCD application dashboard. The left sidebar contains navigation links for 'Applications', 'Settings', 'User Info', 'Documentation', and status filters for 'Favorites Only', 'Sync Status' (Unknown: 0, Synced: 1, OutOfSync: 0), and 'Health Status' (Unknown: 0, Progressing: 0, Suspended: 0, Healthy: 1, Degraded: 0). The main content area is titled 'APPLICATIONS SUMMARY' and features two large circular dashboards: 'Sync' (1 Synced, 0 Unknown, 0 OutOfSync) and 'Health' (1 Healthy, 0 Unknown, 0 Progressing, 0 Suspended, 0 Degraded, 0 Missing).



Create the Kubernetes ingress using the ingress rule as shown in the screenshot attached below.

```
cat ingress-rule.yaml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: yelpcamp-ingress
  namespace: yelp-camp
  annotations:
    kubernetes.io/ingress.class: nginx
spec:
  ingressClassName: nginx
  rules:
  - host: yelpcamp.singhritesh85.com
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: yelp-camp-folo  ### Provide your service Name
            port:
              number: 80
```

```
[jenkins@yellow ~]$ kubectl get ing -A
NAMESPACE NAME CLASS HOSTS ADDRESS PORTS AGE
argocd minimal-ingress nginx argocd.singhritesh85.com a yellow 9.us-east-2.elb.amazonaws.com 80 8m
yelp-camp yelcamp-ingress nginx yelcamp.singhritesh85.com a yellow 9.us-east-2.elb.amazonaws.com 80 8m
```

Using this ingress do the entry for DNS name in Route53 and create the record set as show in the screenshot attached below.

Record name	Type	Value/Route traffic to	TTL (s)
singhritesh85.com	NS		172800
singhritesh85.com	SOA		900
yellow..	CNAME		300
argocd.singhritesh85.com	A		-
jenkins-ms.singhritesh85.com	A		-
sonarcube.singhritesh85.com	A		-
yelcamp.singhritesh85.com	A		-

After successful execution of Jenkins Job kubernetes pods, service and deployment will be created as shown in the screenshot attached below.

```
[jenkins@yellow ~]$ kubectl get all -n yelp-camp
NAME                                         READY   STATUS    RESTARTS   AGE
pod/yelp-camp-folo-5617d                     1/1    Running   0          17m
NAME                                     TYPE      CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
service/yelp-camp-folo   ClusterIP  172.17.0.29 <none>        80/TCP   71m
NAME                                         READY   UP-TO-DATE  AVAILABLE   AGE
deployment.apps/yelp-camp-folo   1/1    1           1          71m
NAME                                         DESIRED  CURRENT   READY   AGE
replicaset.apps/yelp-camp-folo-5617d       6       1         1     17m
```

Finally, access the application Yelp-Camp as shown in the screenshot attached below.

The image displays two screenshots of the YelpCamp application. The top screenshot shows the home page with a background image of a person camping at sunset. The page includes a 'View Campgrounds' button and a '© 2020' copyright notice. The bottom screenshot shows a map of the Indian subcontinent and surrounding regions, with a blue marker indicating a specific location. The map is labeled 'All Campgrounds' and 'Mera Bharat'.

I had created two new campgrounds which entries are also reflected in the MongoDB as shown in the screenshot attached below.

The screenshot shows the MongoDB Atlas interface for the 'dexter' database. On the left, the sidebar shows various services like Stream Processing, Triggers, and Migration. The main area displays the 'test.campgrounds' collection with 2 documents. A query result is shown:

```
_id: ObjectId('XXXXXXXXXXXXXX')
geometry: Object
reviews: Array (empty)
title: "Mera Bharat"
location: "Delhi"
price: 11
```

Monitoring using NewRelic

To monitor using NewRelic you need to install the NewRelic Agent on EKS Cluster, Jenkins Master and Jenkins Slave as shown in the screenshot attached below. This Agent will extract the metrics and logs from the EKS Cluster, Jenkins Master and Jenkins Slave and send to the NewRelic.

Procedure to be followed to install NewRelic Agent on SonarQube Server will be explained at later stage in this project.

I had installed NewRelic Agent on EKS Cluster with the helm as shown in the screenshot attached below.

The screenshot shows the NewRelic interface with the 'Kubernetes' view selected. The main area has a heading 'Get set up and start seeing Kubernetes data in minutes' and a sub-section 'Visualize your cluster, from the control plane to nodes and pods. Check the health of each entity, explore logs, and see how your apps are performing.' A 'Deploy the integration' button is visible. To the right, there is a preview of a dashboard with various metrics and charts.

Kubernetes

Our Kubernetes monitoring solution gives you visibility into your Kubernetes clusters and workloads in minutes, whether your clusters are hosted on-premises or in the cloud.

Select instrumentation method

- Enter your credentials
- Configure the Kubernetes integration
- Select additional data
- Gather Log data
- Install the Kubernetes integration
- Test the connection

Enter your license key

This installation requires a license key. You can use an existing one or create a new one, and we will handle the details for you.

Use an existing key

License key Copied

Keep this key somewhere safe. For security reasons, we won't show it again. If you lose it, you'll need to create a new one.

Please copy it now as it won't be displayed again.

Kubernetes

Our Kubernetes monitoring solution gives you visibility into your Kubernetes clusters and workloads in minutes, whether your clusters are hosted on-premises or in the cloud.

Select instrumentation method

- Enter your credentials
- Configure the Kubernetes integration
- Select additional data
- Gather Log data
- Install the Kubernetes integration
- Test the connection

1 Configure the Kubernetes integration

Create a new cluster below.

Choose a Kubernetes cluster name.

Namespace for the integration (default: newrelic)

2 Configure the Kubernetes operation mode

Are you using a GKE Autopilot cluster ?

Kubernetes

Our Kubernetes monitoring solution gives you visibility into your Kubernetes clusters and workloads in minutes, whether your clusters are hosted on-premises or in the cloud.

Select instrumentation method

- Enter your credentials
- Configure the Kubernetes integration
- Select additional data
- Gather Log data
- Install the Kubernetes integration
- Test the connection

Scrape Prometheus data

Install Prometheus Agent to collect metrics from the Prometheus endpoints exposed in the cluster.

Scrape all Prometheus endpoints except core Kubernetes system metrics (recommended)

Scrape all Prometheus endpoints

Scrape only Prometheus endpoints with quickstarts

Custom app labels

Need more information about the configuration options for the Prometheus agent?
Visit our docs

copy the above command to install the NewRelic Agent in EKS Cluster and run on a machine where kubeconfig file is present as shown in the screenshot attached below.

```
[root@ip-172-31-11-46 ~]# KSM_IMAGE_VERSION="v2.10.0" && helm repo add newrelic https://helm-charts.newrelic.com && helm repo update && kubectl create namespace newrelic ; helm upgrade --install newrelic-newrelic-newrelic/nri-bundle --set global.licenseKey=[REDACTED] --set global.cluster=eks-demo-cluster-dev --namespaces=newrelic --set newrelic-infrastructure.privileged=true --set global.lowDataMode=true --set kube-state-metrics.image.tag=${KSM_IMAGE_VERSION} --set kube-state-metrics.enabled=true --set kubeEvents.enabled=true --set logging.enabled=true --set newrelic-logging.lowDataMode=true
"newrelic" already exists with the same configuration, skipping
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "ingress-nginx" chart repository
...Successfully got an update from the "newrelic" chart repository
Update Complete. Happy Helm-ing!
namespace/newrelic created
Release "newrelic-bundle" does not exist. Installing it now.
```

Finally, following pods will be created in the namespace newrelic as shown in the screenshot attached below.

NAME	READY	STATUS	RESTARTS	AGE
newrelic-bundle-kube-state-metrics-[REDACTED]	1/1	Running	0	[REDACTED]
newrelic-bundle-newrelic-logging-[REDACTED]	1/1	Running	0	[REDACTED]
newrelic-bundle-newrelic-logging-[REDACTED]	1/1	Running	0	[REDACTED]
newrelic-bundle-nri-kube-events-[REDACTED]	2/2	Running	0	[REDACTED]
newrelic-bundle-nri-metadata-injection-[REDACTED]	1/1	Running	0	[REDACTED]
newrelic-bundle-nrk8s-ksm-[REDACTED]	2/2	Running	0	[REDACTED]
newrelic-bundle-nrk8s-kubelet-[REDACTED]	2/2	Running	0	[REDACTED]
newrelic-bundle-nrk8s-kubelet-[REDACTED]	2/2	Running	0	[REDACTED]

new relic

Integrations & Agents

Installing on account: [Yellow Bar] Leave Feedback

Data source

Kubernetes

Our Kubernetes monitoring solution gives you visibility into your Kubernetes clusters and workloads in minutes, whether your clusters are hosted on-premises or in the cloud.

Test the connection

Connection type	Status	Details
Kubernetes integration	Successful	(Successfully installed)

Test connection **See your data**

new relic

Kubernetes

Save view

Entities

Name	CPU usage (%)	Memory usage (%)
eks-demo-cluster-dev	7.91%	30.73%

+ Create a workload **+ Add data**

List **Navigator** **Lookout**

Kubernetes / Clusters

eks-demo-cluster-dev **☆** **Tags** **Metadata** **Workloads**

Infrastructure **Good**

Summary

MONITOR

- Overview Dashboard**
- Kubernetes Events**
- Control Plane**
- Live Debugging with Pixie**
- MORE VIEWS**
- Add app**
- Change tracking**
- Diagnose**
- Events explorer**
- Help**
- Logs**
- Metrics explorer**

New Kubernetes Navigator **NAMESPACES**

QUICK GUIDE

Click a node or pod on the visual to explore more details. For more filter options, click the entity types below.

Entity Type	Icon
NODE	[Icon]
POD	[Icon]
Critical	[Icon]
Warning	[Icon]
CPU	[Icon]
Memory	[Icon]
Storage	[Icon]

Manage Alerts

Since 30 minutes ago (UTC)

Installing NewRelic Agents on Jenkins Master and Jenkins Slave as shown in the screenshot attached below.

The screenshots show the New Relic interface for installing agents on a Linux system. The top screenshot is titled 'Enter your user key' and shows a user key being entered. The bottom screenshot is titled 'Install agent' and shows a command to run on a Linux host to enable infrastructure metrics. Both screenshots include a 'Continue' button at the bottom.

copy the above command to install the NewRelic Agent and run on Jenkins Master and Jenkins Slave.

```
[root@redacted ~]# curl -Ls https://download.newrelic.com/install/newrelic-cli/scripts/install.sh | bash && sudo NEW_RELIC_API_KEY=redacted NEW_RELIC_ACCOUNT_ID=3628931 /usr/local/bin/newrelic install
```

Integrations & Agents

Linux

Data source: Linux

With one command, you'll get infrastructure and log data flowing in so you can start observing your system. We'll also discover and recommend integrations for greater visibility into your stack.

Install on account: [redacted] Leave Feedback

Enter your credentials
Install agent
Test the connection

Test the connection

We'll test your connection once the installation has completed.

Agent	Status	Details
Logs Integration	Installed	Agent installed successfully.
Infrastructure Agent	Installed	Agent installed successfully.
Golden Signal Alerts	Installed	Agent installed successfully.
Integrate your AWS ...	Detected	We found an uninstrumented data source. Install Integrate your AWS account.

See your data

Hosts

	Name ↑	Agent ver...	CPU usa...	Memory ...	Storage u...	Network ...	Network r...	
☆	ip-[REDACTED]us-east-2.compute.inter...	1.57.2	8.74%	27.71%	68.73%	873 B/s	10 kB/s	...
☆	ip-[REDACTED]us-east-2.compute.inter...	1.57.2	7.67%	27.51%	58.08%	822 B/s	9.05 kB/s	...
☆	ip-[REDACTED]us-east-2.compute.internal	1.57.2	2.21%	34.88%	17.83%	1.41 kB/s	2.66 kB/s	...
☆	ip-[REDACTED]us-east-2.compute.inter...	1.57.2	2.03%	18.93%	35.18%	699 B/s	259 B/s	...
☆	ip-[REDACTED]us-east-2.compute.inter...	1.57.2	3.62%	56.57%	19.36%	3.66 kB/s	52.3 kB/s	...

I am performing synthetic monitoring on Application URL <https://yelpcamp.singhritesh85.com>. On a periodic Interval of every 1 min, it will perform the Synthetic Monitoring from All the public Locations. The below screenshot shows the result of Synthetic Monitoring.

Synthetic Monitoring / Synthetic monitors

dexter • Good

Summary

MONITOR

100% Success rate last 30 min

0/105 Checks failed last 30 min

0/20 Locations failing now

Everything's A-OK! No failures detected within the last 30 min

Duration and availability of checks in the last 30 min

Manama, BH 0 failures / 7 checks Success!

Columbus, OH, USA 0 failures / 7 checks Success!

Mumbai, IN 0 failures / 6 checks Success!

Activity stream

Monitor created dexter 12:40pm

Created monitor 'dexter'

Related entities

Is this supposed to work alone? Most things don't operate in isolation. Add more entities and we'll detect connections. Add entities

User Experience

See full map Add to dashboard

For Application Performance Monitoring (APM), follow the procedure as written below.

Integrations & Agents

← Integrations & Agents / Node.js

Installing on account: [REDACTED] Leave Feedback

Data source
Node.js

Pinpoint and solve issues down to the line of code with Node.js monitoring from New Relic. With features like service maps and error analytics, our Node.js agent helps you get the full picture of your app environment.

Select instrumentation method
 Enter your credentials
 Instrument your container
 Test the connection

Follow these steps to start monitoring your app. Use environment variables to make changes to your agent configuration.

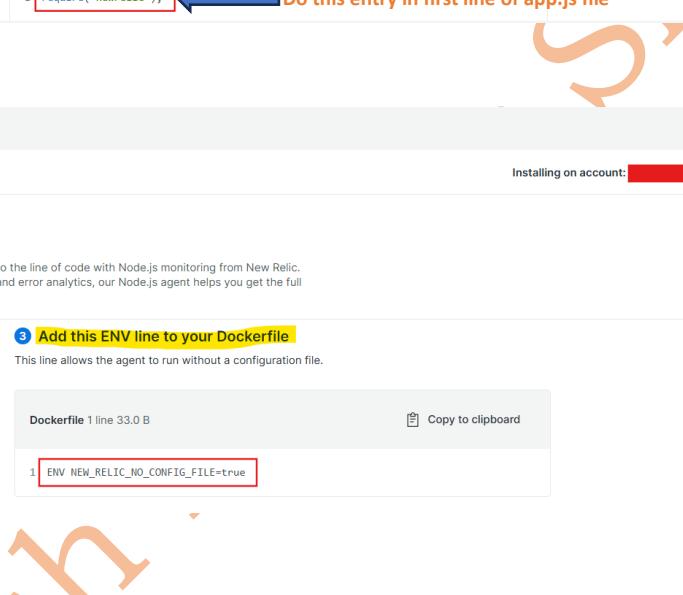
- 1 Add 'newrelic' as a dependency to your package.json file**

```
package.json 1 line 20.0 B
1 "newrelic": "latest"
```

2 In the first line of your app's main module, add:

```
1 line 20.0 B
1 require('newrelic');
```

Do this entry in first line of app.js file



Integrations & Agents

← Integrations & Agents / Node.js

Installing on account: [REDACTED] Leave Feedback

Data source
Node.js

Pinpoint and solve issues down to the line of code with Node.js monitoring from New Relic. With features like service maps and error analytics, our Node.js agent helps you get the full picture of your app environment.

Select instrumentation method
 Enter your credentials
 Instrument your container
 Test the connection

- 3 Add this ENV line to your Dockerfile**

This line allows the agent to run without a configuration file.

```
Dockerfile 1 line 33.0 B
1 ENV NEW_RELIC_NO_CONFIG_FILE=true
```



Integrations & Agents

← Integrations & Agents / Node.js

Installing on account: [REDACTED] Leave Feedback

Data source
Node.js

Pinpoint and solve issues down to the line of code with Node.js monitoring from New Relic. With features like service maps and error analytics, our Node.js agent helps you get the full picture of your app environment.

Select instrumentation method
 Enter your credentials
 Instrument your container
 Test the connection

- 4 Set the config options via ENV directives**

In addition to setting distributed tracing and logging, you can set other agent configuration options [here](#).

Analyze your AI application's responses
 Turn this on to enable AI monitoring for your AI application.

Protect your license key
 Do not include your license key in your Dockerfile or Docker image. For more information, see our documentation on license key security.
[See our docs](#)

```
Dockerfile 2 lines 71.0 B
1 ENV NEW_RELIC_DISTRIBUTED_TRACING_ENABLED=true
2 ENV NEW_RELIC_LOG=stdout
```

Do this entry in your Dockerfile



Do the below line entry in your Dockerfile.

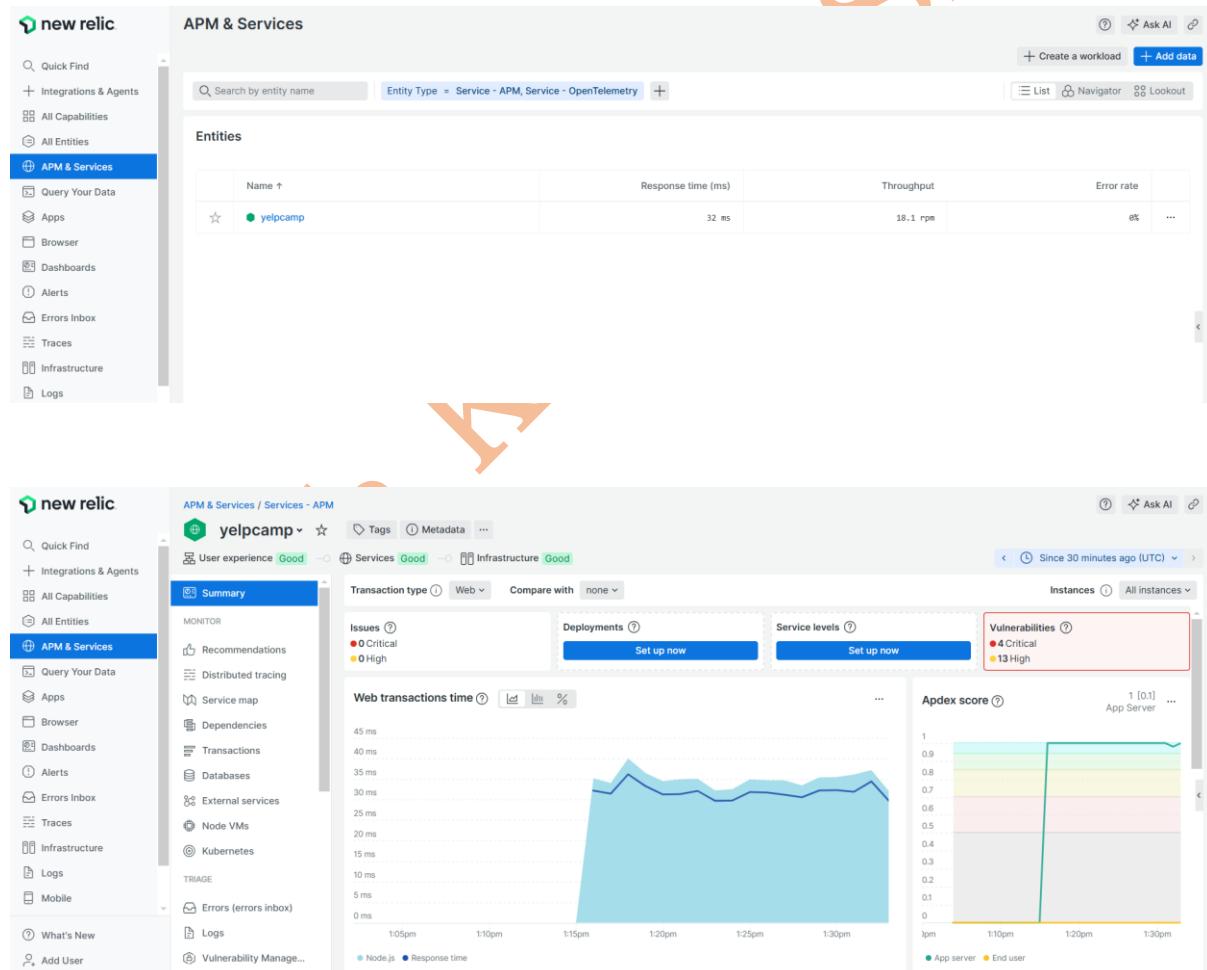
ENV NEW_RELIC_LICENSE_KEY=cXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

ENV NEW_RELIC_APP_NAME="yelpcamp"

Final entry in the Dockerfile is as shown below.

```
ENV NEW_RELIC_NO_CONFIG_FILE=true  
ENV NEW_RELIC_DISTRIBUTED_TRACING_ENABLED=true  
ENV NEW_RELIC_LOG=stdout  
ENV NEW_RELIC_LICENSE_KEY=cXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
ENV NEW_RELIC_APP_NAME="yelpcamp"
```

I ran the Jenkins Job to get the changes deployed in the Application and provided the necessary parameters to ran it and check the console for NewRelic APM and found as shown in the screenshot attached below.



Web transaction time is time taken by web application to respond to a request and send back the response.

$$\text{Appdex Score} = \frac{\text{Satisfied Request} + (\text{Tolerated Request} / 2)}{\text{Total Number of Request}}$$

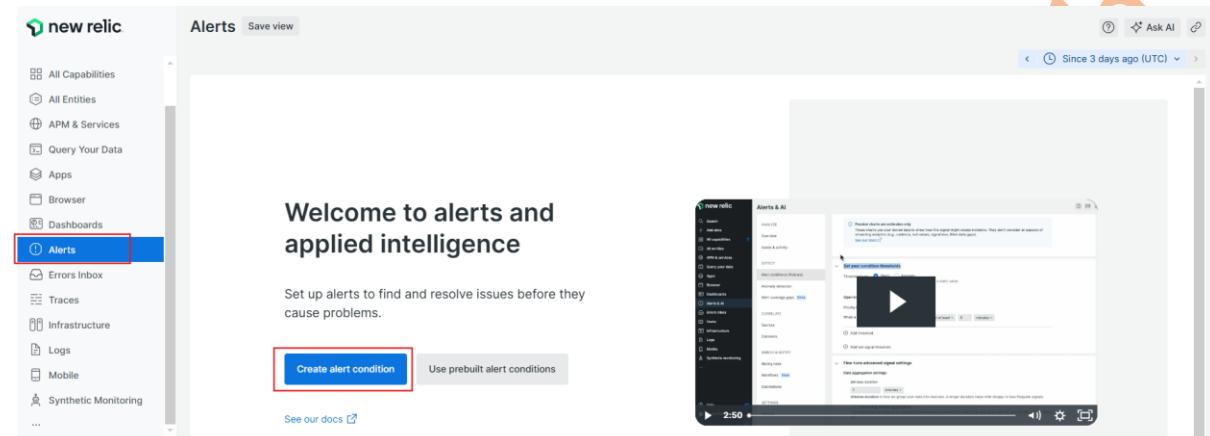
Total Request = Satisfied Request + Tolerated Request + Frustrated Request

It is calculated to measure the user's satisfaction with the web application and its value varies between 0 to 1. 0 is the worst score and 1 is the best score.

Alert in NewRelic

To configure Alerts in NewRelic, I need to configure Alert Conditions, Alert Policies, Workflows and Destination.

To configure Alert Condition, do the configuration as written below.



The screenshot shows the New Relic interface with the 'Alerts' section selected in the sidebar. The main area displays a 'Welcome to alerts and applied intelligence' message with a 'Create alert condition' button. A video player is overlaid on the right side of the screen, showing a tutorial about alert conditions. Below this, the 'Alert Conditions' page is shown, featuring a search bar and a table listing two existing alert conditions:

Alert condition	Policy	Query	Thresholds	Type	Open issues	Last modified
App-URL	Initial policy	SELECT filter(co...	Critical: above 0 at least once in 1 minute Create a warning threshold	NRQL Query	0	Nov 10, 2024
CPU-Utilization	Initial policy	SELECT average...	Critical: above 70 for at least 5 minutes Create a warning threshold	NRQL Query	0	Nov 10, 2024

The screenshot shows the AWS CloudWatch Metrics Insights interface for creating a new alert policy. The top navigation bar includes 'Alerts / Alert Policies', 'Initial policy', 'Metadata', and 'Workloads'. Below the navigation, there are tabs for 'Alert conditions', 'Notifications', and 'Settings', with 'Settings' being the active tab.

Policy name: Initial policy

Correlation: A checkbox for 'Correlate and suppress noise' is checked, with a note below stating: 'We'll analyze and group related incidents into issues. See our docs'.

Issue creation preference: A note says: 'Specify how we create issues and group incidents into them. (You get notifications when an issue opens, is acknowledged, and closes.)' Three options are listed:

- One issue per policy: 'Group all incidents for this policy into one open issue at a time.'
- One issue per condition: 'Group incidents from each condition into a separate issue.'
- One issue per condition and signal: 'Group incidents sharing the same condition and signal into an issue.'

A blue 'Save' button is located at the bottom left of this section.

Action message: This section is for configuring an email notification. It includes fields for 'Email destination' (Email ID), 'Email subject' ({{ issueTitle }}), and 'Custom Details (optional)' (Handlebars syntax placeholder). A note states: 'This payload uses Handlebars syntax. Type "{{' to select from a list of variables.''. At the bottom, a message says: 'Test notification sent successfully.' followed by a 'Send test notification' button.

At the bottom right of the main window are 'Cancel' and 'Save' buttons.



For demonstration purpose I removed the entry of record set of yelp-camp Application URL from Route53 hosted zone and checked that Alert condition comes into critical as it crosses the threshold. And hence an Email will be triggered to destination Email ID as shown in the screenshot attached below.

dexter query result is > 0.0 on 'App-URL'

New Relic Incident Intelligence <noreply@notifications.newrelic.com>

Critical priority issue is active

dexter query result is > 0.0 on 'App-URL'

Acknowledge Close issue Go to issue

1 incidents

- dexter query result is > 0.0 on 'App-URL'

After the concerned team will get notification on your group Email Id, they will Acknowledge the issue and do RCA (Root Cause Analysis). As a part of RCA, they are supposed to check the entry in Route53 hosted zone for record set if it is not present then they will make an entry for the same and this issue will be resolved. It is very important that concerned team should resolve the issue as per the SLA (between the organisation and its client).

52.5% Success rate last 30 min

303/600 Checks failed last 30 min

0/20 Locations failing now

Network Error DNS resolution failed for host... Last error detected 3 minutes ago

Hong Kong, HK 22 failures / 30 checks ... November 10th 8:49 PM November 10th 9:17 PM Run check

Sydney, AU 19 failures / 30 checks ... November 10th 8:49 PM November 10th 9:17 PM Run check

Tokyo, JP 14 failures / 30 checks ... November 10th 8:49 PM November 10th 9:17 PM Run check

Activity stream Since 30 minutes ago (UTC) Manage alerts

Critical Issue Closed dexter dexter query result is > 0.0 on 'App-URL'

Critical Issue Activated dexter dexter query result is > 0.0 on 'App-URL'

You have gaps in your alert coverage Some parts of your stack don't have alerts watching them. Set up alerts

User Experience Services 1

Monitor Jenkins with NewRelic

To Monitor Jenkins Job using NewRelic first install the plugin OpenTelemetry in Jenkins as shown in the screenshot attached below.

The screenshot shows the Jenkins Plugins page. In the top right corner, there is a search bar with the placeholder "Search (CTRL+K)" and a user dropdown for "Ritesh Kumar Singh". Below the header, the breadcrumb navigation shows "Dashboard > Manage Jenkins > Plugins". On the left, a sidebar menu includes "Updates", "Available plugins" (which is selected), "Installed plugins", and "Advanced settings". The main content area has a search bar with "OpenTelemetry" typed in. A table lists the plugin details: "OpenTelemetry 3.1423.v0d1a_2fc2429" by "monitoring observability". The description states: "Publish Jenkins metrics to an OpenTelemetry endpoint, including distributed traces of job executions and health metrics of the controller." The status is "Released" and it was "5 days 15 hr ago". There is also an "Install" button.

Check the Agent in NewRelic as shown in the screenshot attached below.

The screenshot shows the New Relic Integrations & Agents page. The left sidebar includes "Quick Find", "+ Integrations & Agents" (selected), "All Capabilities", "All Entities", "APM & Services", "Query Your Data", "Apps", "Browser", "Dashboards", "Errors Inbox", "Traces", "Infrastructure", "Logs", "Mobile", and "Synthetic Monitoring". The main content area is titled "Integrations & Agents" with tabs "All" and "Installed". It features a search bar with "jenkins" and a collection filter set to "All". Below the search bar, there is a message: "Looking for something else? We're making new homes for our pre-built resources. For now you can access them from here: apps & visualizations, dashboards." A section titled "View all collections" shows a single item: "Jenkins" with a small icon. An orange arrow points from the text "Check the Agent in NewRelic" to this Jenkins entry.

The screenshot shows the New Relic Installation plan page for Jenkins. The left sidebar is identical to the previous screenshot. The main content area is titled "Installation plan" and has a step "Select an account" with a green dot next to "Jenkins". Below this, there is a box for "Jenkins" with the following text: "Jenkins is an open source automation server which enables developers around the world to reliably build, test, and deploy their software." It includes a "Begin installation" button and a link "Already instrumented Jenkins? Skip this step". To the right, there is a "Ingest credentials" and "Support" section, and a note about "Looking for your license key?". At the bottom, there is a "Generate and copy license key" button and a note: "If you're using our guided install, you won't need this. We'll handle the details for you." An orange arrow points from the text "Check the Agent in NewRelic" to the "Select an account" step.

The screenshot shows the New Relic interface for configuring the Jenkins integration. On the left, there's a sidebar with various monitoring options like All Capabilities, All Entities, APM & Services, etc. The main area is titled 'Installations' and shows 'Jenkins' selected as the data source. It provides a brief description of Jenkins and three steps: 'Install the OpenTelemetry plugin', 'Configure Jenkins OpenTelemetry plugin', and 'Validate Jenkins Integration'. Step 1, 'Enter an OLTP Endpoint', has a text input field containing 'https://otlp.nr-data.net:4317'. Step 2, 'Enter your credentials', is partially visible below it.

Provide this OLTP endpoint in Jenkins while configuring the Open Telemetry as shown in the screenshot attached below and the API-Key (License Key) copied from the step as shown below.

This screenshot shows the 'Installation plan' page for Jenkins. It includes a 'Select an account' section with Jenkins selected, a detailed description of Jenkins, and a 'Begin installation' button. Below this, there's a note about already instrumented Jenkins and a 'Skip this step' link. To the right, there's a sidebar with 'Ingest credentials' and 'Support' links, and a section titled 'Looking for your license key?' with a 'Copy license key' button. A note states that if using a guided install, the key will be handled automatically.

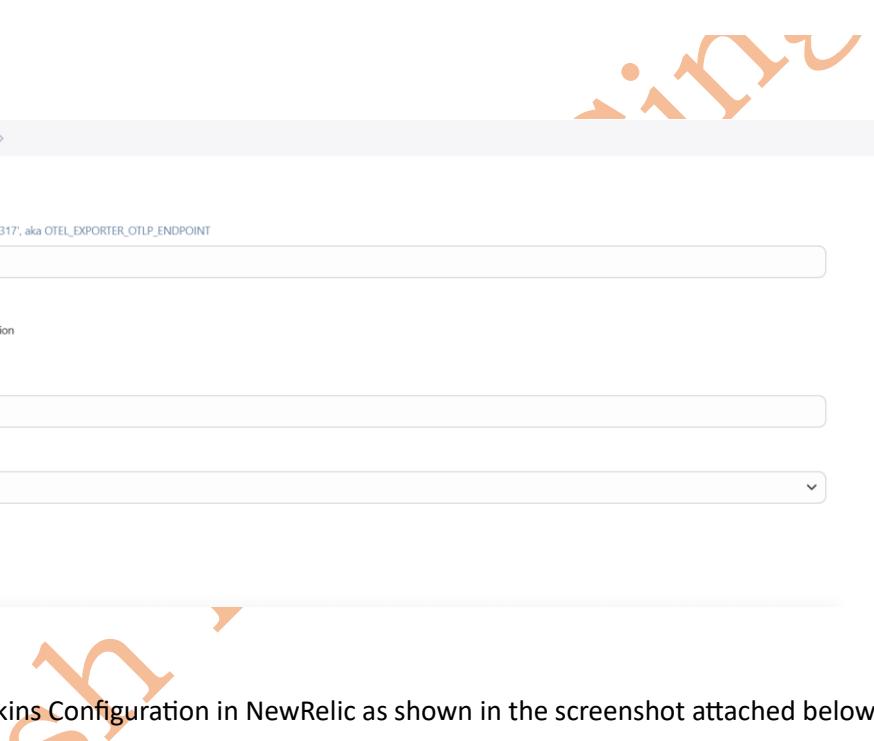
Scope ?
Global (Jenkins, nodes, items, all child items, etc)

Secret
[REDACTED]

ID ?
api-key

Description ?
api-key

Save



Dashboard > Manage Jenkins > System >

OpenTelemetry

OTLP Endpoint
e.g. "http://otel.example.com:4317", aka OTEL_EXPORTER_OTLP_ENDPOINT
https://[REDACTED]:4317

Authentication

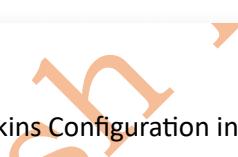
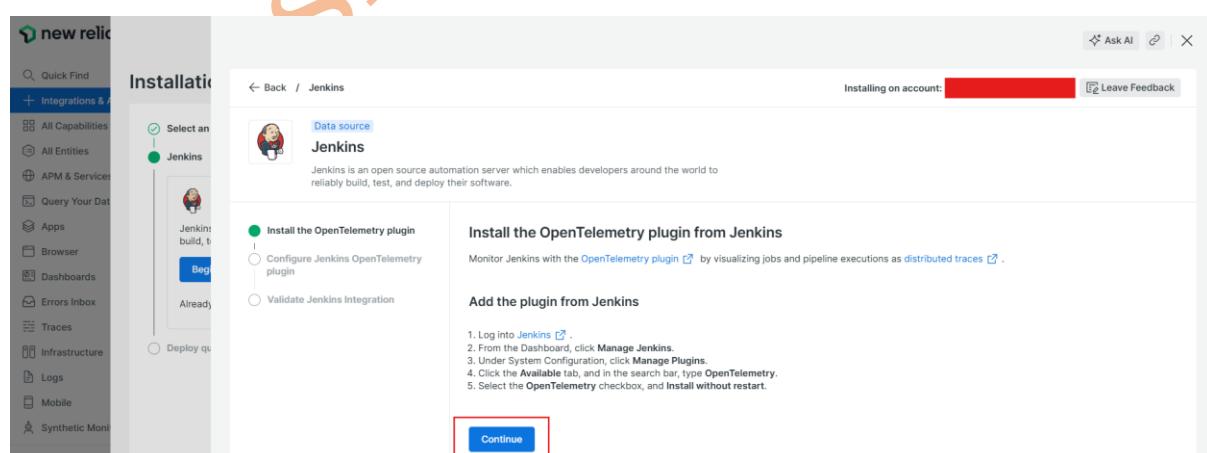
- Bearer Token Authentication
- Header Authentication

Header Name ?
api-key

Header Value
api-key

+ Add
- No Authentication

Now proceed for Jenkins Configuration in NewRelic as shown in the screenshot attached below.

new relic

Installations

Integrations & Automation

All Capabilities

All Entities

APM & Services

Query Your Data

Apps

Browser

Dashboards

Errors Inbox

Traces

Infrastructure

Logs

Mobile

Synthetic Monitoring

Installation

Select an integration

Jenkins

Already installed

Deploy quickstart

Data source Jenkins

Jenkins is an open source automation server which enables developers around the world to reliably build, test, and deploy their software.

Install the OpenTelemetry plugin from Jenkins

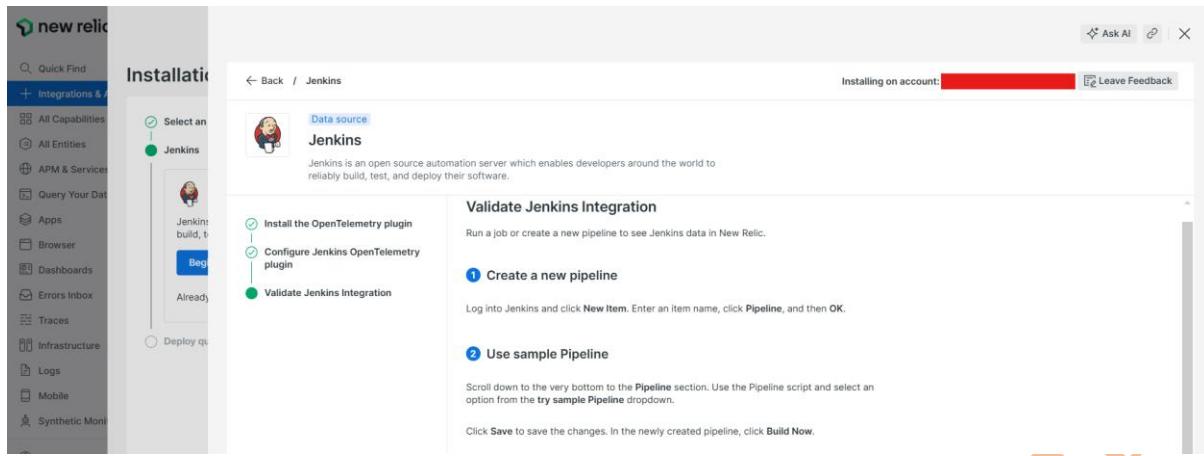
Configure Jenkins OpenTelemetry plugin

Validate Jenkins Integration

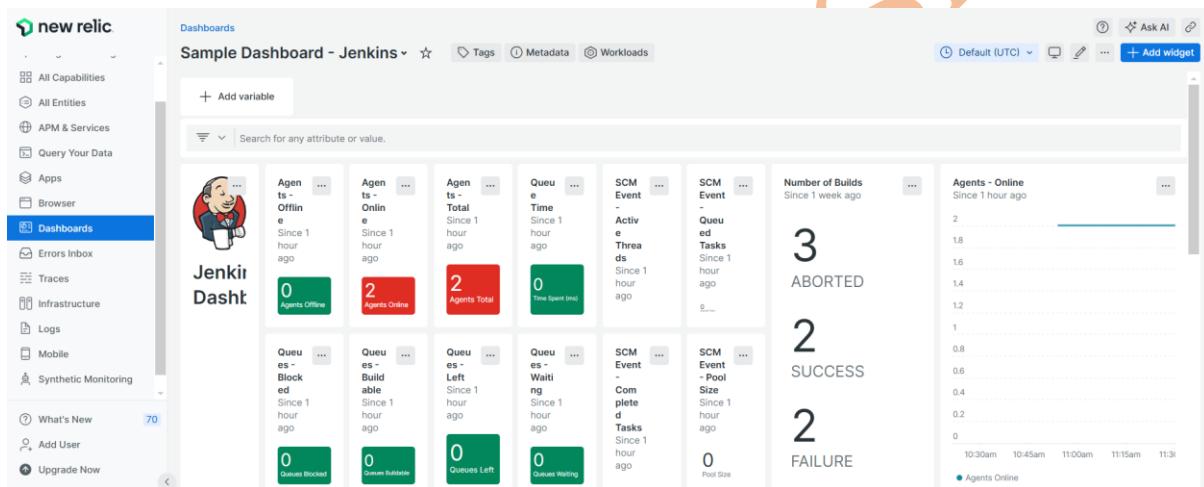
Add the plugin from Jenkins

- Log into Jenkins
- From the Dashboard, click Manage Jenkins.
- Under System Configuration, click Manage Plugins.
- Click the Available tab, and in the search bar, type OpenTelemetry.
- Select the OpenTelemetry checkbox, and Install without restart.

Continue



For the demonstration purpose I ran the Jenkins Job 7 times after providing the required parameters to run it and below is the screenshot of the NewRelic Jenkins Dashboard for Monitoring of Jenkins.



It shows two Agents are Online line (One Jenkins Master + One Jenkins Slave), I ran the Jenkins Job and made it failed and two times, ran successfully two times and aborted it three times which is shown in the screenshot above.

Monitoring SonarQube with NewRelic

To Monitor SonarQube with NewRelic install the Agent of SonarQube for NewRelic as shown in the screenshot attached below.

The screenshot shows the New Relic interface under the 'Integrations & Agents' section. A search bar at the top right contains 'SonarQube'. Below it, a collection titled 'SonarQube' is listed. The main content area displays a brief description of the SonarQube integration and a large orange decorative graphic.

This screenshot shows the 'Installation plan' for the SonarQube integration. It includes a step to 'Select an account' (with 'SonarQube' selected), a main panel with a 'Begin installation' button, and a sidebar with options like 'Deploy quickstart'. To the right, there's a sidebar for 'Ingest credentials' and 'Looking for your license key?' with a 'Generate and copy license key' button.

Install the NewRelic Agent on SonarQube as shown in the screenshot attached below.

This screenshot shows the 'Installation' step of the SonarQube setup. It lists several steps: 'Identify and optimize SonarQube performance with New Relic SonarQube monitoring.', 'Install the infrastructure agent', and 'Test the connection'. A terminal window on the right shows the command to run the New Relic agent install script, with sensitive information redacted.

```
[root@...] opt]# curl -Ls https://download.newrelic.com/install/newrelic-cli/scripts/install.sh | bash && sudo NEW_RELIC_API_KEY=[REDACTED] NEW_RELIC_ACCOUNT_ID=[REDACTED] /usr/local/bin/newrelic install
```

Provide the necessary details as shown in the screenshot attached below and create a file at the path /etc/newrelic-infra/integrations.d/nri-prometheus-config.yml

```
cat /etc/newrelic-infra/integrations.d/nri-prometheus-config.yml

integrations:
  - name: nri-prometheus

    config:
      # When standalone is set to false nri-prometheus requires an infrastructure agent to work and send data. Defaults to true
      standalone: false

      # When running with infrastructure agent emitters will have to include infra-sdk
      emitters: infra-sdk

      # The name of your cluster. It's important to match other New Relic products to relate the data.
      cluster_name: "sonarqube"

      targets:
        - description: Sonarqube metrics list
          urls: ["http://aXXXn:AXXXXXX3@X.XXX.XXX.XXX:9000/api/monitoring/metrics"]

        # tls_config:
        #   ca_file_path: "/etc/etcd/etcd-client-ca.crt"
        #   cert_file_path: "/etc/etcd/etcd-client.crt"
        #   key_file_path: "/etc/etcd/etcd-client.key"

        # Whether the integration should run in verbose mode or not. Defaults to false
        verbose: false

        # Whether the integration should run in audit mode or not. Defaults to false.
        # Audit mode logs the uncompressed data sent to New Relic. Use this to log all data sent.

        # It does not include verbose mode. This can lead to a high log volume, use with care
        audit: false

        # The HTTP client timeout when fetching data from endpoints. Defaults to 30s.
        # scrape_timeout: "30s"

        # Length in time to distribute the scraping from the endpoints
        scrape_duration: "5s"

        # Number of worker threads used for scraping targets.
        # For large clusters with many (>400) endpoints, slowly increase until scrape
        # time falls between the desired `scrape_duration`.

        # Increasing this value too much will result in huge memory consumption if too
        # many metrics are being scraped.

        # Default: 4
        # worker_threads: 4

        # Whether the integration should skip TLS verification or not. Defaults to false
        insecure_skip_verify: true

    timeout: 10s
```

```
[root@ip-172-31-18-254 opt]# cat /etc/newrelic-infra/integrations.d/nri-prometheus-config.yml
integrations:
- name: nri-prometheus
  config:
    # When standalone is set to false nri-prometheus requires an infrastructure agent to work and send data. Defaults to true
    standalone: false
    # When running with infrastructure agent emitters will have to include infra-sdk
    emitters: infra-sdk
    # The name of your cluster. It's important to match other New Relic products to relate the data.
    cluster_name: "sonarqube"
  targets:
    - description: Sonarqube metrics list
      urls: ["http://a[REDACTED]:B@[REDACTED]:9000/api/monitoring/metrics"]
      # tls_config:
      #   ca_file_path: "/etc/etcd/etcd-client-ca.crt"
      #   cert_file_path: "/etc/etcd/etcd-client.crt"
      #   key_file_path: "/etc/etcd/etcd-client.key"
    # Whether the integration should run in verbose mode or not. Defaults to false
    verbose: false
    # Whether the integration should run in audit mode or not. Defaults to false.
    # Audit mode logs the uncompressed data sent to New Relic. Use this to log all data sent.
    # It does not include verbose mode. This can lead to a high log volume, use with care
    audit: false
    # The HTTP client timeout when fetching data from endpoints. Defaults to 30s.
    # scrape_timeout: "30s"
    # Length in time to distribute the scraping from the endpoints
    scrape_duration: "5s"
    # Number of worker threads used for scraping targets.
    # For large clusters with many (>400) endpoints, slowly increase until scrape
    # time falls between the desired `scrape_duration`.
    # Increasing this value too much will result in huge memory consumption if too
    # many metrics are being scraped.
    # Default: 4
    # worker_threads: 4
    # Whether the integration should skip TLS verification or not. Defaults to false
    insecure_skip_verify: true
  timeout: 10s
```

To configure logging edit the file as shown in the screenshot attached below present at the path
/etc/newrelic-infra/logging.d/logging.yml

```
logs:
  - name: cloud-init.log
    file: /var/log/cloud-init.log
    attributes:
      logtype: linux_cloud-init
  - name: messages
    file: /var/log/messages
    attributes:
      logtype: linux_messages
  - name: secure
    file: /var/log/secure
    attributes:
      logtype: linux_secure
  - name: yum.log
    file: /var/log/yum.log
    attributes:
      logtype: linux_yum
  - name: newrelic-cli.log
    file: /root/.newrelic/newrelic-cli.log
    attributes:
      newrelic-cli: true
      logtype: newrelic-cli
  - name: sonar_logs
    file: /opt/sonarqube/logs/sonar.log
    attributes:
      logtype: sonar_logs
  - name: ce_logs
    file: /opt/sonarqube/logs/ce.log
    attributes:
      logtype: sonar_ce_logs
  - name: es_logs
    file: /opt/sonarqube/logs/es.log
    attributes:
      logtype: sonar_es_logs
  - name: web_logs
    file: /opt/sonarqube/logs/web.log
    attributes:
      logtype: sonar_web_logs
```

```
[root@... opt]# cat /etc/newrelic-infra/logging.d/logging.yml
logs:
  - name: cloud-init.log
    file: /var/log/cloud-init.log
    attributes:
      logtype: linux_cloud-init
  - name: messages
    file: /var/log/messages
    attributes:
      logtype: linux_messages
  - name: secure
    file: /var/log/secure
    attributes:
      logtype: linux_secure
  - name: yum.log
    file: /var/log/yum.log
    attributes:
      logtype: linux_yum
  - name: newrelic-cli.log
    file: /root/.newrelic/newrelic-cli.log
    attributes:
      newrelic-cli: true
      logtype: newrelic-cli
  - name: sonar_logs
    file: /opt/sonarqube/logs/sonar.log
    attributes:
      logtype: sonar_logs
  - name: ce_logs
    file: /opt/sonarqube/logs/ce.log
    attributes:
      logtype: sonar_ce_logs
  - name: es_logs
    file: /opt/sonarqube/logs/es.log
    attributes:
      logtype: sonar_es_logs
  - name: web_logs
    file: /opt/sonarqube/logs/web.log
    attributes:
      logtype: sonar_web_logs
```

After the above-mentioned configuration restarted the NewRelic service and checked its status as shown in the screenshot attached below.

```
[root@... opt]# sudo systemctl restart newrelic-infra
[root@... opt]# sudo systemctl status newrelic-infra
● newrelic-infra.service - New Relic Infrastructure Agent
  Loaded: loaded (/etc/systemd/system/newrelic-infra.service; enabled; vendor preset: disabled)
  Active: active (running) since Mon 2024-11-11 12:20:34 UTC; 5s ago
```

Finally, you will be able to monitor SonarQube as shown in the screenshot attached below.

The screenshot shows the New Relic interface for monitoring SonarQube. On the left, the navigation bar includes links for Dashboards, All Capabilities, All Entities, APM & Services, Query Your Data, Apps, Browser, and a highlighted 'Dashboards' link. Below these are links for Errors Inbox, Traces, Infrastructure, Logs, Mobile, Synthetic Monitoring, What's New, Add User, and Upgrade Now.

The main content area has tabs for Overview, PostgreSQL, Sonar JMX, Infrastructure, and Logs, with 'Overview' selected. At the top right are buttons for Default (UTC), Ask AI, and Add widget.

The dashboard displays several key metrics:

- SonarQube Health status**: Shows a chart from 2:20pm to 1:20pm. The y-axis ranges from 0 to 3. The chart shows values for GitHub status, Web status, Sonarqube Health Elasticsearch Status, and Compute engine status. Most values are at 0 or 1, except for GitHub status which is at 3.
- Elasticsearch Disk Space (%)**: Shows a chart from 2:20pm to 1:20pm. The y-axis ranges from 0 to 100. It tracks used disk space (black bars) and free disk space (green bars). Used space is around 10%, while free space is around 90%.
- Elasticsearch Disk Space - (GB)**: Three green boxes show current values:
 - 42.98 (% used disk space)
 - 4.891 (GB free disk space)
 - 8.577 (GB total disk space)
- SonarQube License**: Shows 0 since 1 hour ago.
- SonarQube Web Uptime**: Shows 100% since 1 hour ago.

The screenshot shows the New Relic Infrastructure dashboard for the SonarQube application. The left sidebar includes links for All Capabilities, All Entities, APM & Services, Query Your Data, Apps, Browser, Dashboards (which is selected), Errors Inbox, Traces, Infrastructure (selected), Logs, Mobile, Synthetic Monitoring, What's New, Add User, Upgrade Now, and a user profile for Ritesh Kumar Singh.

The main dashboard displays six charts under the Infrastructure tab:

- CPU Usage (%)**: Shows usage since 1 hour ago. A red box highlights a peak at 2.49% from 1:10pm to 1:11pm.
- Memory Usage (%)**: Shows usage since 1 hour ago. The chart shows a steady increase from approximately 35% to 45%.
- Storage Usage (%)**: Shows usage since 1 hour ago. The chart shows a steady increase from approximately 30% to 35%.
- Free Disk (%)**: Shows usage since 1 hour ago. The chart shows two large spikes reaching nearly 70%.
- Network Traffic**: Shows traffic since 1 hour ago. The chart shows a significant spike reaching 3.5 M.
- Processes Running**: Shows processes since 1 hour ago. The table lists three Java processes with their details:

Process Id	Process Display Name	CPU %	Threads
31575	java	48.249	31
9713	java	0.567	47
10584	java	0.55	32

Configure Log aggregation in Jenkins Master and Jenkins Slave

To configure Log aggregation in Jenkins Master and Jenkins Slave follow the procedure as written below.

Jenkins Master

Install NewRelic Agent on Jenkins Master as discussed above and it is also shown in the screenshot attached below.

The screenshot shows the New Relic web interface under the 'Integrations & Agents' section for the 'Linux' data source. On the left sidebar, 'Integrations & Agents' is selected. The main panel displays instructions for installing the infrastructure agent on Linux, including a command-line snippet:

```
[root@... ~]# curl -Ls https://download.newrelic.com/install/newrelic-cli/scripts/install.sh | bash && sudo NEW_RELIC_API_KEY=... /usr/local/bin/newrelic install
```

Below the command, there are options to automatically answer 'yes' to prompts or use a proxy. A 'Tags (optional)' section is present with a key-value pair. The 'Install agent' button is highlighted in green.

At the bottom of the page, there is a 'See your data' button.

Open the file /etc/newrelic-infra/logging.d/logging.yml and updated with the configuration as shown in the screenshot attached below.

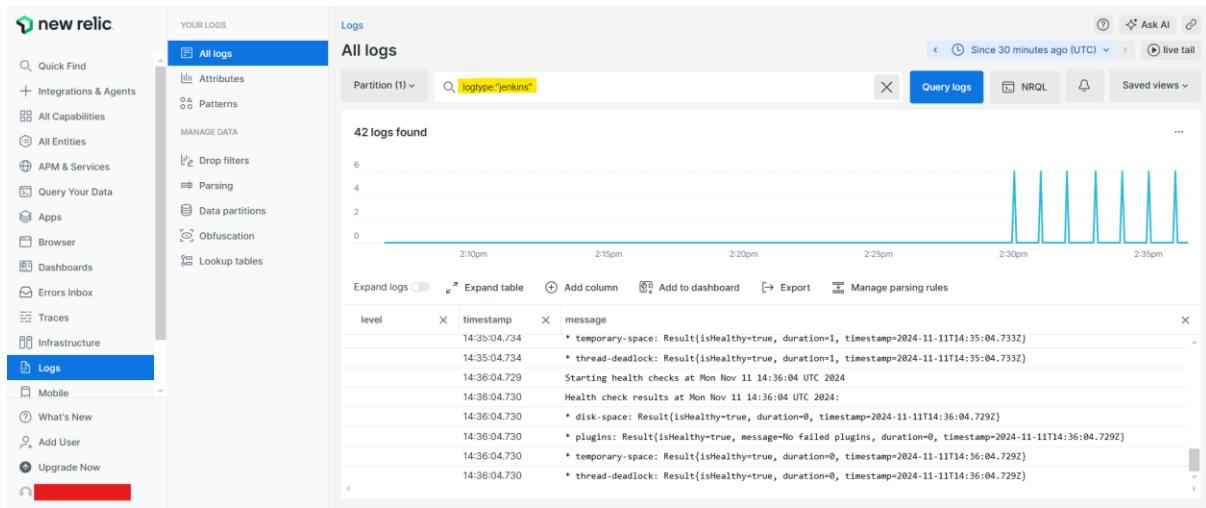
```
- name: jenkins-health-checker-log
  file: /var/lib/jenkins/logs/health-checker.log
  attributes:
    logtype: jenkins
```

```
[root@[REDACTED] ~]# cat /etc/newrelic-infra/logging.d/logging.yml
logs:
  - name: cloud-init.log
    file: /var/log/cloud-init.log
    attributes:
      logtype: linux_cloud-init
  - name: messages
    file: /var/log/messages
    attributes:
      logtype: linux_messages
  - name: secure
    file: /var/log/secure
    attributes:
      logtype: linux_secure
  - name: yum.log
    file: /var/log/yum.log
    attributes:
      logtype: linux_yum
  - name: newrelic-cli.log
    file: /root/.newrelic/newrelic-cli.log
    attributes:
      newrelic-cli: true
      logtype: newrelic-cli
  - name: jenkins-health-checker-log
    file: /var/lib/jenkins/logs/health-checker.log
    attributes:
      logtype: jenkins
```

You can also capture the Slaves and Jenkins Job related logs from the path /var/lib/jenkins/logs but here I am only capturing the health-checker logs as shown in the screenshot attached above.

Then restart the newrelic service as shown in the screenshot attached below finally, check the logs in newrelic console and filter logtype as jenkins.

```
[root@[REDACTED] ~]# systemctl restart newrelic-infra.service
[root@[REDACTED] ~]# systemctl status newrelic-infra.service
● newrelic-infra.service - New Relic Infrastructure Agent
  Loaded: loaded (/etc/systemd/system/newrelic-infra.service; enabled; vendor preset: disabled)
  Active: active (running) since Mon 2024-11-11 14:33:45 UTC; 5s ago
```



Jenkins Slave

Install NewRelic Agent on Jenkins Slave as discussed above and it is also shown in the screenshot attached below.

```
[root@redacted opt]# curl -Ls https://download.newrelic.com/install/newrelic-cli/scripts/install.sh | bash && sudo NEW_RELIC_API_KEY=redacted NEW_RELIC_ACCOUNT_ID=redacted /usr/local/bin/newrelic install
```

```
[root@redacted opt]# cat /etc/newrelic-infra/logging.d/logging.yml
logs:
  - name: cloud-init.log
    file: /var/log/cloud-init.log
    attributes:
      logtype: linux_cloud-init
  - name: messages
    file: /var/log/messages
    attributes:
      logtype: linux_messages
  - name: secure
    file: /var/log/secure
    attributes:
      logtype: linux_secure
  - name: yum.log
    file: /var/log/yum.log
    attributes:
      logtype: linux_yum
  - name: newrelic-cli.log
    file: /root/.newrelic/newrelic-cli.log
    attributes:
      newrelic-cli: true
      logtype: newrelic-cli
```

If you need to aggregate logs from any specific file to NewRelic then provide its path as mentioned below.

- name: <provide a suitable name>
- file: <provide the path of the log file>
- attributes:
- logtype: <provide a log type here>

Finally restart and check the status the NewRelic Service using the command systemctl restart newrelic-infra and systemctl status newrelic-infra respectively.

Ritesh Kumar Singh

Jenkinsfile to create jenkins declarative pipeline is as shown below.

Jenkinsfile

```
pipeline{  
    agent{  
        node{  
            label "Slave-1"  
            customWorkspace "/home/jenkins/demo"  
        }  
    }  
    environment{  
        JAVA_HOME="/usr/lib/jvm/java-17-amazon-corretto.x86_64"  
        PATH="$PATH:$JAVA_HOME/bin:/opt/sonar-scanner/bin:/opt/dependency-  
        check/bin:/opt/node-v16.0.0/bin"  
    }  
    parameters {  
        string(name: 'COMMIT_ID', defaultValue: "", description: 'Provide the Commit ID')  
        string(name: 'REPO_NAME', defaultValue: "", description: 'Provide ECR Repository URI')  
        string(name: 'TAG_NAME', defaultValue: "", description: 'Provide a tag name for Docker Image')  
        string(name: 'REPLICA_COUNT', defaultValue: "", description: 'Provide the number of Pods to be  
        created')  
    }  
    stages{  
        stage("clone-code"){  
            steps{  
                cleanWs()  
                checkout scmGit(branches: [[name: '${COMMIT_ID}']], extensions: [], userRemoteConfigs:  
                [[credentialsId: 'github-cred', url: 'https://github.com/singhritesh85/YelpCamp.git']])  
            }  
        }  
        stage("SonarAnalysis"){  
            steps {  
                withSonarQubeEnv('SonarQube-Server') {  
                    // SonarQube analysis steps  
                }  
            }  
        }  
    }  
}
```

```

        sh 'sonar-scanner -Dsonar.projectKey=YelpCamp -Dsonar.projectName=YelpCamp'
    }
}
}

stage("Quality Gate") {
    steps {
        timeout(time: 1, unit: 'HOURS') {
            waitForQualityGate abortPipeline: true
        }
    }
}

stage("Install Dependencies"){
    steps {
        sh 'npm install'
    }
}

stage("Trivy Scan files"){
    steps{
        sh 'trivy fs . > /home/jenkins/trivy-filescan.txt'
    }
}

stage("Docker-Image"){
    steps{
        sh 'docker build -t ${REPO_NAME}:${TAG_NAME} . --no-cache'
        sh 'trivy image --exit-code 0 --severity MEDIUM,HIGH ${REPO_NAME}:${TAG_NAME}'
        //sh 'trivy image --exit-code 1 --severity CRITICAL ${REPO_NAME}:${TAG_NAME}'

        sh 'aws ecr get-login-password --region us-east-2 | docker login --username AWS --password-stdin 027330342406.dkr.ecr.us-east-2.amazonaws.com'

        sh 'docker push ${REPO_NAME}:${TAG_NAME}'
    }
}

```

```
stage("Deployment"){

    steps{
        sh 'yes|argocd login argocd.singhritesh85.com --username admin --password Admin@123'

        sh 'argocd login argocd.singhritesh85.com --username admin --password Admin@123 --skip-test-tls --grpc-web'

        sh 'argocd app create yelp-camp --project default --repo https://github.com/singhritesh85/helm-chart-yelp-camp.git --path ./folo --dest-namespace yelp-camp --dest-server https://kubernetes.default.svc --helm-set service.port=80 --helm-set image.repository=${REPO_NAME} --helm-set image.tag=${TAG_NAME} --helm-set replicaCount=${REPLICA_COUNT} --upsert'

        sh 'argocd app sync yelp-camp'

    }
}

}

}

}
```

Reference: - <https://github.com/Colt/YelpCamp.git>