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1. Document overview

- This document includes details about deployment of Dynatrace, Dynatrace active gates in GCP.
- It also includes all the infrastructure details configured for this setup. (Took recommendation from Quest team)
- Includes details like
    - Dynatrace Cluster deployment

- Installation approach
- Dynatrace Active gates deployments
- Project name
- Cluster name
- Network details
- Deployment type (IAC\Cloud CLI\GUI)

2. Dynatrace deployment on existing GKE Autopilot cluster (Cluster provisioned using IAC)

Overview: Dynatrace monitors and analyses the performance of Google Cloud Platform (GCP) services, applications, and infrastructure. It also provides insights into the health of cloud resources.

Deployment approach for Infra: IAC
Deployment approach for Dynatrace application: shell script

Prerequisites: Linux OS only
Internet access
GKE autopilot cluster
GKE cluster access
Dynatrace environment access
Dynatrace API token

2.1 Dynatrace custom role

Overview: Running the deployment script requires a list of permissions. Need to create a Dynatrace custom role with list of permissions below.

Create a YAML file named "dynatrace-gcp-monitor-helm-deployment-role.yaml" as below

```
title: Dynatrace GCP Monitor helm deployment role
description: Role for Dynatrace GCP Monitor helm and pubsub deployment
stage: GA
includedPermissions:
  - container.clusters.get
  - container.configMaps.create
  - container.configMaps.delete
  - container.configMaps.get
  - container.configMaps.update
  - container.deployments.create
  - container.deployments.delete
  - container.deployments.get
  - container.deployments.update
  - container.namespaces.create
```

```
 - container.namespaces.get
 - container.pods.get
 - container.pods.list
 - container.secrets.create
 - container.secrets.delete
 - container.secrets.get
 - container.secrets.list
 - container.secrets.update
 - container.serviceAccounts.create
 - container.serviceAccounts.delete
 - container.serviceAccounts.get
 - iam.roles.create
 - iam.roles.list
 - iam.roles.update
 - iam.serviceAccounts.actAs
 - iam.serviceAccounts.create
 - iam.serviceAccounts.getIamPolicy
 - iam.serviceAccounts.list
 - iam.serviceAccounts.setIamPolicy
 - pubsub.subscriptions.create
 - pubsub.subscriptions.get
 - pubsub.subscriptions.list
 - pubsub.topics.attachSubscription
 - pubsub.topics.create
 - pubsub.topics.getIamPolicy
 - pubsub.topics.list
 - pubsub.topics.setIamPolicy
 - pubsub.topics.update
 - resourcemanager.projects.get
 - resourcemanager.projects.getIamPolicy
 - resourcemanager.projects.setIamPolicy
 - serviceusage.services.enable
 - serviceusage.services.get
 - serviceusage.services.list
- serviceusage.services.use
```

Git repo Link: dso-gcp-dynatrace-useast-dev-75825/dynatrace-gcp-monitor-helm-deployment-role.yaml at Jeevan-X-Gavireddy_qdx-patch-1 · QDXEnterpriseOrg/dso-gcp-dynatrace-useast-dev-75825

Run the below command to create a custom role “Dynatrace GCP Monitor helm deployment role” using above YAML file by placing the project ID in which we will deploy Dynatrace.

“gcloud iam roles create dynatrace_monitor.helm_deployment --project=prj-dynatrace-useast-dev-75825 --file=dynatrace-gcp-monitor-helm-deployment-role.yaml”

The above role needs to add to GCP User for acquiring permissions to deploy the Package.

2.2 Configure log export

Overview: For third-party tools integrations logs are routed to a pub/subtopic. Using below script we are creating a pub/subtopic for Dynatrace, and we need to create a log sink to pub/subtopic.

1) wget https://raw.githubusercontent.com/dynatrace-oss/dynatrace-gcp-monitor/master/scripts/deploy-pubsub.sh
2) chmod +x deploy-pubsub.sh
3) ./deploy-pubsub.sh --topic-name dynatrace-dev-topic --subscription-name dynatrace-dev-sub

2.3 Download the Helm deployment package script

Git repo: dso-gcp-dynatrace-useast-dev-75825/dynatrace- deployment scripts at main · QDXEnterpriseOrg/dso-gcp-dynatrace-useast-dev-75825

```
wget -q "https://github.com/dynatrace-oss/dynatrace-gcp-monitor/releases/latest/download/helm-deployment-package.tar";  tar -xvf helm-deployment-package.tar; chmod +x helm-deployment-package/deploy-helm.sh
```

2.4 Edit the values.yaml file parameters (Attached YAML file with Quest recommended parameters)

values.yaml

API key parameter in values.yaml file has been stored in secret manager with Name **"dynatrace-dev-secret"** created manually from GUI as it should not be exposed.

2.5 Steps to follow to deploy dynatrace on GKE autopilot cluster

2.5.1 **Step 1:** Connect to GKE Autopilot cluster on which Dynatrace to be installed. Sample command below

```
gcloud container clusters get-credentials gkeap-dtrace-useast-dev-65847 --region us-east4 --project prj-dynatrace-useast-dev-75825
```

2.5.2 **Step 2**: Run the deployment script

```
cd helm-deployment-package
./deploy-helm.sh
```

2.5.3 **Step 3**: Verify the installation

1. kubectl -n dynatrace get pods (verify Dynatrace pods are running)
2. Go to Dashboards or Dashboards Classic (latest Dynatrace) and filter by Tag for Google Cloud. A number of dashboards for Google Cloud Services should be available.

3. Dynatrace Synthetic Active gates deployment

Overview: Dynatrace Synthetic monitoring can tell you if your website is available, how fast it's running, if key transactions are functioning as expected, and where a potential slowdown or failure might lie.

Git Repo: [dso-gcp-dynatrace-useast-dev-75825/terraform-google-cloud-dynatrace-synthetic-active-gates at main · QDXEnterpriseOrg/dso-gcp-dynatrace-useast-dev-75825]()

3.1 instances resources and network details

- 2 VMs (active-active)
  1. vm-dtactsyn-useast-dev-01-75825
  2. vm-dtactsyn-useast-dev-02-75825
- VCPU – 8
- RAM -32GB
- Disk – 40GB
- OS – RHEL 9
- Dynatrace Network subnet – “sn-ue4-dyn-dev-1”
- Synthetic active gate software version – 1.299.33
- Synthetic active gate deployment scripts (Quest will provide from Dynatrace console)

3.2 Dynatrace synthetic active gates deployment

Active gate package download, and installation commands:

Step 1:
Download package command

```
wget -O Dynatrace-ActiveGate-Linux-x86-gcp.us.east4.nonprod-1.299.33.sh "https://vbk56183.live.dynatrace.com/api/v1/deployment/installer/gateway/unix/version/1.299.33.20240925-184604?arch=x86"   --header="Authorization: Api-Token ${{ secrets.DYNA_API_KEY }}"
```

Step 2:
Dependency repos commands

```
subscription-manager register --auto-attach
subscription-manager repos --enable rhel-9-for-x86_64-baseos-rpms
subscription-manager repos --enable rhel-9-for-x86_64-appstream-rpms
subscription-manager repos --enable Quest_Diagnostics_EPEL-RHEL9_EPEL9
```

If the machine is using RHUI subscription import the dependencies manually (Step 3 to Step 6)
Make sure the Chromium version is updated during maintenance.

Step 3:
As per Dynatrace documentation run below command for Synthetic engine dependencies for RHEL9

```
“sudo yum install -y xorg-x11-server-Xvfb xkbcomp xorg-x11-server-utils xorg-x11-fonts-100dpi xorg-x11-fonts-75dpi xorg-x11-fonts-Type1 libwayland-server mesa-libgbm curl nss-tools”
```

Step 4:
Download Chromium package

```
“curl --output chromium.tgz https://synthetic-packages.s3.amazonaws.com/Chromium/rpm/chromium-127.0.6533.88-2.el9.tgz”
```

Step 5:
Extract the installation package

```
mkdir /tmp/chromium ; tar xzf chromium.tgz -C /tmp/chromium
```

Step 6:
Install extracted package

```
sudo yum install -y /tmp/chromium/*.rpm
sudo yum install -y /tmp/chromium/*.rpm --skip-broken
```

Step 7:
Active Gate install command

```
/bin/bash Dynatrace-ActiveGate-Linux-x86-gcp.us.east4.nonprod-1.299.33.sh --enable-synthetic --set-property=synthetic=private_location_id=SYNTHETIC_LOCATION-8E625F11AD9EB7B7 --set-network-zone=gcp.us.east4.nonprod --set-group=gcp.us.east4.nonprod.syn
```

3.3 Dynatrace one agent deployment

Overview: OneAgent is responsible for collecting all monitoring data within your monitored environment. A single OneAgent per host is required to collect all relevant monitoring data

Steps to install OneAgent on GCP Compute engine

Step 1:
Download OneAgent from link below from Dynatrace website using shell script

```
wget  -O Dynatrace-OneAgent-Linux-gcp.us.east4.nonprod-1.299.50.20240930-123825.sh "https://vbk56183.live.dynatrace.com/api/v1/deployment/installer/agent/unix/default/version/1.299.50.20240930-123825?arch=x86&networkZone=gcp.us.east4.nonprod"  --header="Authorization: Api-Token DYNATRACE_API_TOKEN "
```

Step 2:
Run below command to install OneAgent

```
/bin/sh Dynatrace-OneAgent-Linux-gcp.us.east4.nonprod-1.299.50.20240930-123825.sh --set-monitoring-mode=fullstack --set-app-log-content-access=true --set-network-zone=gcp.us.east4.nonprod  --set-host-group=AG_SYN_NONPROD_GCP
```

4. Dynatrace Environment Active gates deployment

Overview: A Dynatrace ActiveGate is a lightweight, secure proxy that acts as a communication hub between Dynatrace OneAgents (installed on monitored systems) and the main Dynatrace cluster

Installation approach: IAC

Requirements from Quest:

Quest needs a high availability environment active gate with auto scale when a VM is highly utilized or down to route traffic from Dynatrace one agents to Dynatrace SAAS.

Agreed solution:

Managed instance group (min1-max5) with a network load balancer.

4.1 VM resources and network details

Git repo: dso-gcp-dynatrace-useast-dev-75825/terraform-google-cloud- dynatrace-active-gates at main · QDXEnterpriseOrg/dso-gcp-dynatrace-useast-dev-75825

- Managed instance group (instance auto-scale if a Mem>50%)
- Network load balancer configured backend type as MIG
- VCPU – 8
- RAM -64GB
- Disk – 60GB
- OS – RHEL latest
- Dynatrace Network subnet under non-prod VPC – “sn-ue4-dyn-dev-1”
- Environment active gate software version – 1.299.33
- Environment active gate deployment scripts (Quest will provide from Dynatrace console)

4.2 Dynatrace active gates deployment

Active gates download and installation scripts:

Step 1:

Download command:

```
wget -O Dynatrace-ActiveGate-Linux-x86-gcp.us.east4.nonprod-1.299.33.sh
"https://vbk56183.live.dynatrace.com/api/v1/deployment/installer/gateway/unix/version/1.299.33
184604?arch=x86" --header="Authorization: Api-Token ${{ secrets.DYNA_API_KEY }}"
```

Step 2:

Active Gate install command:

```
/bin/bash Dynatrace-ActiveGate-Linux-x86-gcp.us.east4.nonprod-1.299.33.sh --set-network-
zone=gcp.us.east4.nonprod --set-group=gcp.us.east4.nonprod.env
DNSENTRYPOINT=https://10.141.128.40:9999
```

4.3 Dynatrace one agent deployment

Overview: One Agent is responsible for collecting all monitoring data within your monitored environme One Agent per host is required to collect all relevant monitoring data

One Agent downloaded and installed commands

Step 1:

Download command:

```
wget  -O Dynatrace-OneAgent-Linux-gcp.us.east4.nonprod-1.299.50.20240930-123825.sh
"https://vbk56183.live.dynatrace.com/api/v1/deployment/installer/agent/unix/default/version/1.299.5
123825?arch=x86&networkZone=gcp.us.east4.nonprod" --header="Authorization: Api-Token
DYNATRACE_API_TOKEN "
```

Step 2:
Install command:

```
/bin/sh Dynatrace-OneAgent-Linux-gcp.us.east4.nonprod-1.299.50.20240930-123825.sh --set-monito
mode=fullstack --set-app-log-content-access=true --set-network-zone=gcp.us.east4.nonprod --set-ho
group=AG_ENV_NONPROD_GCP
```

Validation:

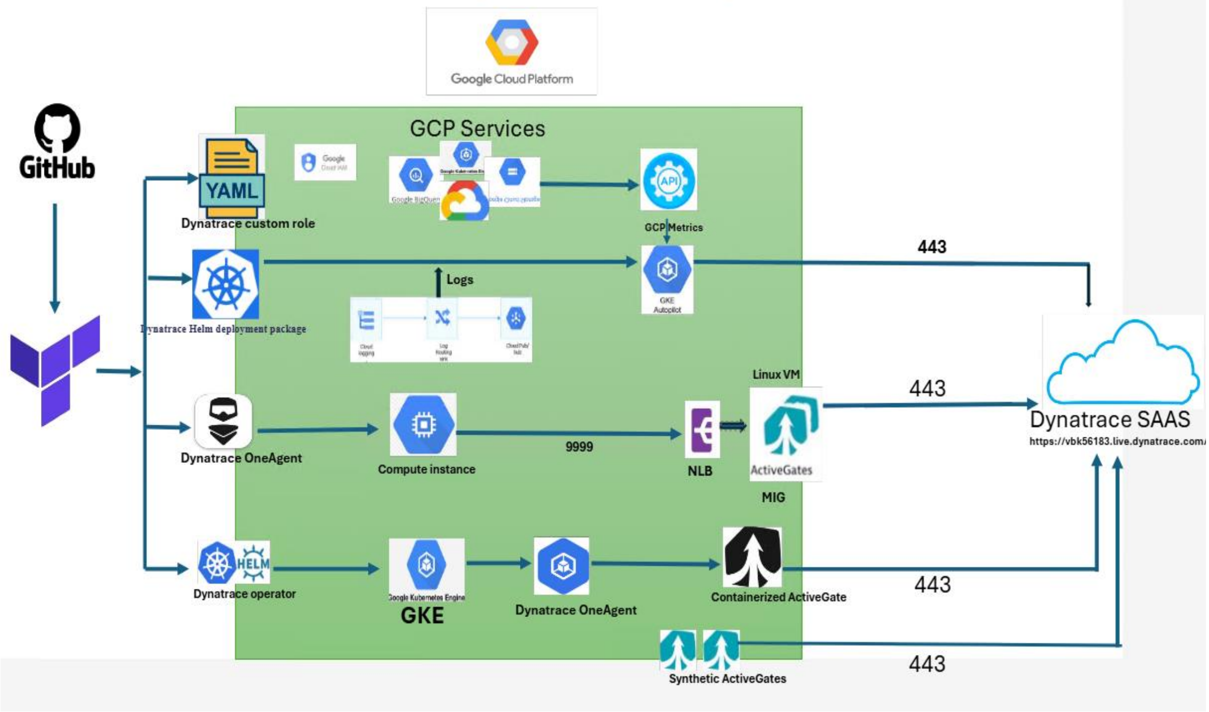
1) Dynatrace one agent service should be running on VM.
2) Active gate VM is reporting to Dynatrace SAAS

5. Metadata

GCP Project	:	prj-dynatrace-useast-dev-75825
Cluster name	:	gkeap-dtrace-useast-dev-65847
VPC	:	vpc-non-prod-shared-host
Primary Subnet	:	sn-ue4-dyn-dev-1
Secondary subnet POD	:	sn-ue4-dyn-d-sec-1 (100.67.0.0/20)
Secondary subnet Services	:	sn-ue4-dyn-d-sec-2 (100.68.0.0/24)
Synthetic active gate VM 1	:	vm-dtactsyn-useast-dev-01-75825
Synthetic active gate VM 2	:	vm-dtactsyn-useast-dev-02-75825
Traffic routing active gate	:	gce-ue4-dt-ag-np-724m
Traffic routing active gate IG	:	ig-dtactgateenv-useast-dev-75825
Service Account	:	dynatrace-gcp-monitor-sa

6. Dynatrace GCP integration Architecture

Dynatrace – GCP Integration Architecture Diagram


Google Cloud Platform
GCP Services
GitHub
YAML
Dynatrace custom role
Google Cloud IAM
Google BigQuery
GCP Metrics
Logs
Dynatrace Helm deployment package
GKE Autopilot
443
Linux VM
443
Dynatrace SAAS
https://vbk56183.live.dynatrace.com/
Dynatrace OneAgent
Compute instance
9999
NLB
ActiveGates
MIG
HELM
Dynatrace operator
Google Kubernetes Engine
GKE
Dynatrace OneAgent
Containerized ActiveGate
443
Synthetic ActiveGates
443