Monitoring a Compute Engine using Ops Agent (Azure)

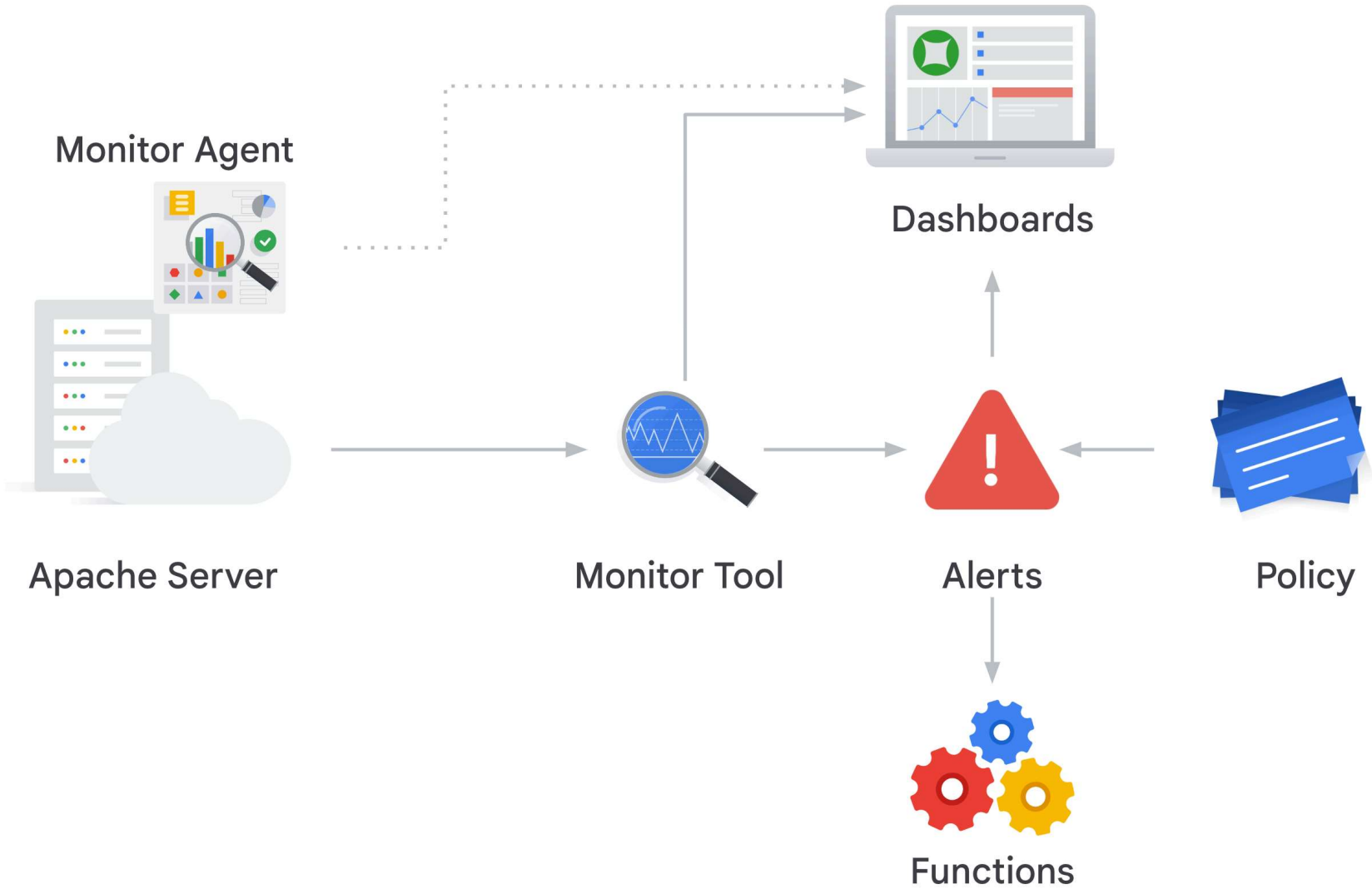
1 hour No cost

As a cloud administrator, you are in charge of monitoring your infrastructure. You would like to monitor an Apache Web Server, and visualize data on a dashboard.

Some of your concerns are:

- How to install and configure a monitor agent instance for the Apache Web Server
- How to generate traffic and view metrics on the predefined Apache dashboard
- How to create an alerting policy

The monitoring workflow in Azure Monitor is as shown in the diagram:



In Azure, you install an Apache Web Server over your virtual machine (VM). Then you connect an Azure Monitor Agent on this server to collect data. Using Azure Monitor, configure Log Analytics to set up the logs and metrics that you want to visualize in a dashboard. Then name the dashboard to

keep it readily available. Within Azure Monitor, you can configure the alerts to initiate a call to Azure Functions that automates the response to an alert. An Alert can also be generated whenever the definition of an Azure policy is not met.

Overview

In this lab you will create a compute engine to install and configure an Ops Agent. You will generate traffic and view metrics on the predefined Apache dashboard and also create an alerting policy.

Objectives

In this lab, you learn how to perform the following tasks:

- Create a Compute Engine VM instance.
- Install an Apache Web Server.
- Install and configure the Ops Agent for the Apache Web Server.

- Generate traffic and view metrics on the predefined Apache dashboard.
- Create an alerting policy.

Create a Compute Engine VM instance

1. In Google Cloud console, go to **Compute** and then select **Compute Engine**.
2. To create a VM instance, click **Create instance**.
3. Fill in the fields for your instance as follows:

- In the **Name** field, enter `quickstart-vm`.
- In the **Machine type** field, select **e2-small**.
- Ensure the **Boot disk** is configured for **Debian GNU/Linux**.
- In the **Firewall** field, select both **Allow HTTP traffic** and **Allow HTTPS traffic**.

Leave the rest of the fields at their default values.

4. Click **Create**. When your VM is ready, it appears in the list of instances in the Instances tab.

Click **Check my progress** to verify the objective.

Create a Compute Engine VM instance

Check my progress

Assessment Completed!

Install an Apache Web Server

To deploy an Apache Web Server on your Compute Engine VM instance, do the following:

1. To open a terminal to your instance, in the **Connect** column, click **SSH**.

2. To update the package lists on your instance, run the following command:

```
sudo apt-get update
```

content_c

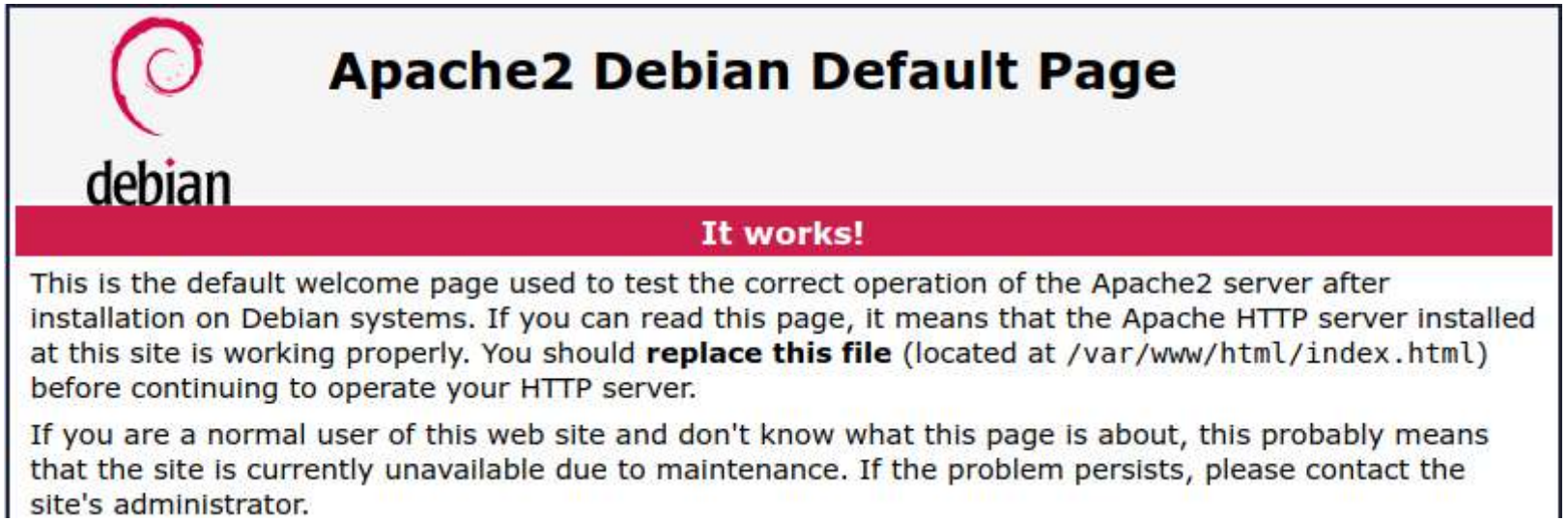
3. To install an Apache2 HTTP Server, run the following command:

```
sudo apt-get install apache2 php7.0
```

content_c

Note: Note: If the previous command fails, then use sudo apt-get install apache2 php. If asked to continue the installation, enter Y.

4. Open your browser and connect to your Apache2 HTTP server by using the URL `http://EXTERNAL_IP`, where `EXTERNAL_IP` is the external IP address of your VM. You can find this address in the **External IP** column of your VM instance.



Click **Check my progress** to verify the objective.

Install an Apache Web Server

Check my progress

Assessment Completed!

Install and configure the Ops Agent

To collect logs and metrics from your Apache Web Server, install the Ops Agent by using the terminal:

1. To open a terminal to your VM instance, in the **Connect** column, click **SSH**.

2. To install the Ops Agent, run the following command:

```
curl -sSO https://dl.google.com/cloudagents/add-google-cloud-ops-
agent-repo.sh
sudo bash add-google-cloud-ops-agent-repo.sh --also-install
```

content_c

You see `google-cloud-ops-agent` installation succeeded.

3. Copy the following command, then paste it into the terminal:

```
# Configures Ops Agent to collect telemetry from the app and restart
Ops Agent.
set -e
# Create a back up of the existing file so existing configurations are
not lost.
sudo cp /etc/google-cloud-ops-agent/config.yaml /etc/google-cloud-ops-
agent/config.yaml.bak
# Configure the Ops Agent.
sudo tee /etc/google-cloud-ops-agent/config.yaml > /dev/null << EOF
metrics:
  receivers:
    apache:
      type: apache
  service:
    pipelines:
      apache:
        receivers:
```

content_c

```
          - apache
logging:
  receivers:
    apache_access:
      type: apache_access
    apache_error:
      type: apache_error
  service:
    pipelines:
      apache:
        receivers:
          - apache_access
          - apache_error
EOF
sudo service google-cloud-ops-agent restart
sleep 60
```

The previous command creates the configuration to collect and ingest logs and metrics from the Apache Web Server. For more information about ingesting logs from the Apache Web Server, see Configure the Ops Agent for Apache Web Server.

Click **Check my progress** to verify the objective.

Install the Ops Agent

Check my progress

Assessment Completed!

Generate traffic and view metrics

Monitoring dashboards let you view and analyze metrics related to your services. In this quickstart, you generate metrics on your Apache Web Server and view metric data on the automatically created **Apache GCE Overview** dashboard.

To generate metrics on your Apache Web Server, do the following:

1. In the Google Cloud console, go to **Compute Engine**.

2. In the **Connect** column, click **SSH** to open a terminal to your VM instance.

3. To generate traffic on your Apache Web Server, run the following command:

```
timeout 120 bash -c -- 'while true; do curl localhost; sleep $((RANDOM
% 4)) ; done'
```

content_c

The previous command generates traffic by making a request to the Apache Web Server every four seconds.

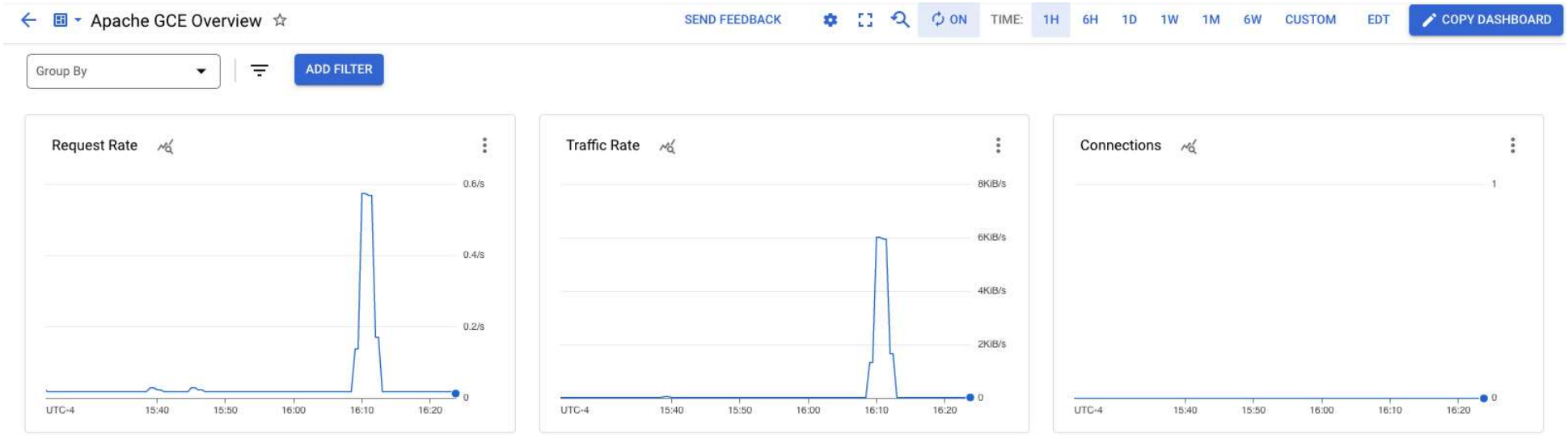
To view the **Apache GCE Overview** dashboard, do the following:

1. In the Google Cloud console, search for **Monitoring** in the top search bar and navigate to the **Monitoring** service.

2. In the navigation pane, select **Dashboards**.

3. In **All Dashboards**, select the **Apache GCE Overview** dashboard. The dashboard opens.

In the dashboard, there are several charts that contain information about your Apache and Compute Engine integration:



Create an alerting policy

1. To set up an email notification channel, do the following:

- In the Google Cloud console > **Monitoring** select **Alerting** and then click **Edit notification channels**.
- In the **Email section**, click Add new and enter your desired Email Address.
- **Name the Email Channel**: `An email address you have access to`

To create an alerting policy that monitors a metric and sends an email notification when the traffic rate on your Apache Web Server exceeds 4 KiB/s, do the following:

2. In the Google Cloud console > **Monitoring** select **Alerting** and then click **Create policy**.

3. Select the time series to be monitored:

- Click **Select a metric** and enter **VM instance** into the filter bar.
- In the **Active metric categories** list, select **Apache**.
- In the **Active metrics** list, select **workload/apache.traffic**.

The chart for Apache traffic is shown.

4. In the **Transform data** section, select the following values:

- **Rolling window**: `1 min`
- **Rolling window function**: `rate`

5. In the **Configure alert trigger** section, select the following values and click **Next**:

- **Alert trigger**: `Any time series violations`
- **Threshold position**: `Above threshold`
- **Threshold value**: `4000`

6. In the **Configure notifications and finalize alert** section, select the following values:

- **Notification channels**: `An email address you have access to`
- **Incident autoclose duration**: `30 min`

- **Name the alert policy**: `Apache traffic above threshold`

7. Click **Create policy**. Your alerting policy is now active.

Click **Check my progress** to verify the objective.

Create an alerting policy

Check my progress

Assessment Completed!

Test the alerting policy

To test the alerting policy you just created, do the following:

1. Navigate to Cloud Console > **Compute Engine**.

2. In the **Connect** column, click **SSH** to open a terminal to your VM instance.

3. In the terminal, enter the following command:

```
timeout 120 bash -c -- 'while true; do curl localhost; sleep $((RANDOM
% 4)) ; done'
```

content_c

The previous command generates traffic in your Apache Web Server.

After the traffic rate threshold value of 4 KiB/s is exceeded in your Apache Web Server, an email notification is sent. It might take several minutes for this process to complete.

The email notification you receive looks similar to the following:

Google Cloud

VIEW INCIDENT

Alert firing

VM Instance - workload/apache.traffic

workload/apache.traffic for test-project instance-1 with metric labels {server_name=localhost} is above the threshold of 4000.000 with a value of 5593.930.

Summary

Start time
Aug 2, 2022 at 9:02PM UTC (less than 1 sec ago)

Project
test-project

Policy
Apache traffic above threshold

Condition
VM Instance - workload/apache.traffic

Metric
workload.googleapis.com/apache.traffic

Threshold
above 4000

Observed
5593.930

Metric labels
server_name: localhost

Congratulations!