

# Combine GCP StackDriver with a GKE Cluster

This lesson focuses on combining GCP StackDriver with a GKE cluster.

## WE'LL COVER THE FOLLOWING



- GKE's Fluentd DaemonSet
- Output the logs of Fluentd containers
  - Wait until the action propagates

## GKE's Fluentd DaemonSet #

If you're using the GKE cluster, logging is already set up, even though you might not know about it. By default, every GKE cluster comes with a **Fluentd DaemonSet** that is configured to forward logs to **GCP StackDriver**. It is running in the `kube-system` Namespace.

Let's describe **GKE's Fluentd DaemonSet** and see whether there is any useful information we might find.

```
kubectl -n kube-system \
  describe ds -l k8s-app=fluentd-gcp
```

The **output**, limited to the relevant parts, is as follows.

```
...
Pod Template:
  Labels:      k8s-app=fluentd-gcp
               kubernetes.io/cluster-service=true
               version=v3.1.0
...
Containers:
  fluentd-gcp:
    Image: gcr.io/stackdriver-agents/stackdriver-logging-agent:0.3-1.5.34-
1-k8s-1
    ...
```

We can see that, among others, the DaemonSet's Pod Template has the label `k8s-app=fluentd-gcp`. We'll need it soon. Also, we can see that one of the containers is based on the `stackdriver-logging-agent` image. Just as **Papertrail** extended **Fluentd**, Google did the same.

## Output the logs of Fluentd containers #

Now that we know that Stackdriver-specific **Fluentd** is running in our cluster as a *DaemonSet*, the logical conclusion would be that there is already a UI we can use to explore the logs. UI is indeed available but, before we see it in action, we'll output the logs of the **Fluentd** containers and verify that everything is working as expected.

```
kubectl -n kube-system \
  logs -l k8s-app=fluentd-gcp \
  -c fluentd-gcp
```

Unless you already enabled *Stackdriver Logging API*, the output should contain at least one message similar to the one that follows.

```
...
18-12-12 21:36:41 +0000 [warn]: Dropping 1 log message(s) error="7:Stackdriver Logging API has not been used in project 152824630010 before or it is disabled. Enable it by visiting https://console.developers.google.com/apis/api/logging.googleapis.com/overview?project=152824630010 then retry. If you enabled this API recently, wait a few minutes for the action to propagate to our systems and retry." error_code="7"
```

Fortunately, the warning already tells us not only what the issue is, but also what to do. Open the link from the log entry in your favorite browser, and click the *ENABLE* button.

## Wait until the action propagates #

Now that we enabled *Stackdriver Logging API*, **Fluentd** will be able to ship log entries there. All we have to do is wait for a minute or two until the action propagates.

Let's see the Stackdriver UI.

open "https://console.cloud.google.com/logs/viewer"

Please type *random-logger* in the *Filter by label or text search* field and select *GKE Container* from the drop-down list. The **output** should display all the logs that contain *random-logger* text.

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Stackdriver Logs

CREATE METRIC CREATE EXPORT

text:random-logger

GKE Container All logs Any log level

No limit Jump to now

Showing logs from all time (GST) Download logs View Options

2018-12-13 01:45:52.000 GST	2018-12-12T21:45:52+0000	ERROR something hap...
2018-12-13 01:45:55.000 GST	2018-12-12T21:45:55+0000	ERROR something hap...
2018-12-13 01:46:00.000 GST	2018-12-12T21:46:00+0000	ERROR something hap...
2018-12-13 01:46:03.000 GST	2018-12-12T21:46:03+0000	INFO takes the valu...
2018-12-13 01:46:07.000 GST	2018-12-12T21:46:07+0000	DEBUG first loop co...
2018-12-13 01:46:12.000 GST	2018-12-12T21:46:12+0000	ERROR something hap...
2018-12-13 01:46:14.000 GST	2018-12-12T21:46:14+0000	ERROR something hap...
2018-12-13 01:46:19.000 GST	2018-12-12T21:46:19+0000	DEBUG first loop co...
2018-12-13 01:46:24.000 GST	2018-12-12T21:46:24+0000	WARN variable not i...
2018-12-13 01:46:27.000 GST	2018-12-12T21:46:27+0000	DEBUG first loop...
2018-12-13 01:46:31.000 GST	2018-12-12T21:46:31+0000	WARN variable not i...
2018-12-13 01:46:32.000 GST	2018-12-12T21:46:32+0000	ERROR something hap...
2018-12-13 01:46:37.000 GST	2018-12-12T21:46:37+0000	WARN variable not i...
2018-12-13 01:46:38.000 GST	2018-12-12T21:46:38+0000	INFO takes the valu...
2018-12-13 01:46:42.000 GST	2018-12-12T21:46:42+0000	WARN variable not i...
2018-12-13 01:46:44.000 GST	2018-12-12T21:46:44+0000	INFO takes the valu...
2018-12-13 01:46:53.000 GST	2018-12-12T21:46:53+0000	WARN variable not i...
2018-12-13 01:46:56.000 GST	2018-12-12T21:46:56+0000	DEBUG first loop co...

No new entries found. Waiting for more.

GCP StackDriver logs screen



By default, every GKE cluster comes with a **Fluentd DaemonSet** that is configured to forward logs to **GCP StackDriver**.

We won't go into details about how to use **Stackdriver**. It is easy and, hopefully, intuitive. So, I'll leave it to you to explore it in more detail. What matters is that it is very similar to what we experienced with **Papertrail**. Most of the differences are cosmetic.

If you are using GCP, **Stackdriver** is ready and waiting for you. As such, it probably makes sense to use it over any other third-party solution.

**Stackdriver** contains not only the logs coming from the cluster but also logs of all GCP services (e.g., load balancers). That is probably a significant difference between the two solutions. It is a massive bonus in favor of **Stackdriver**. Still, check the pricing before making a decision.

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In the next lesson, we will combine **AWS CloudWatch** with an EKS cluster.