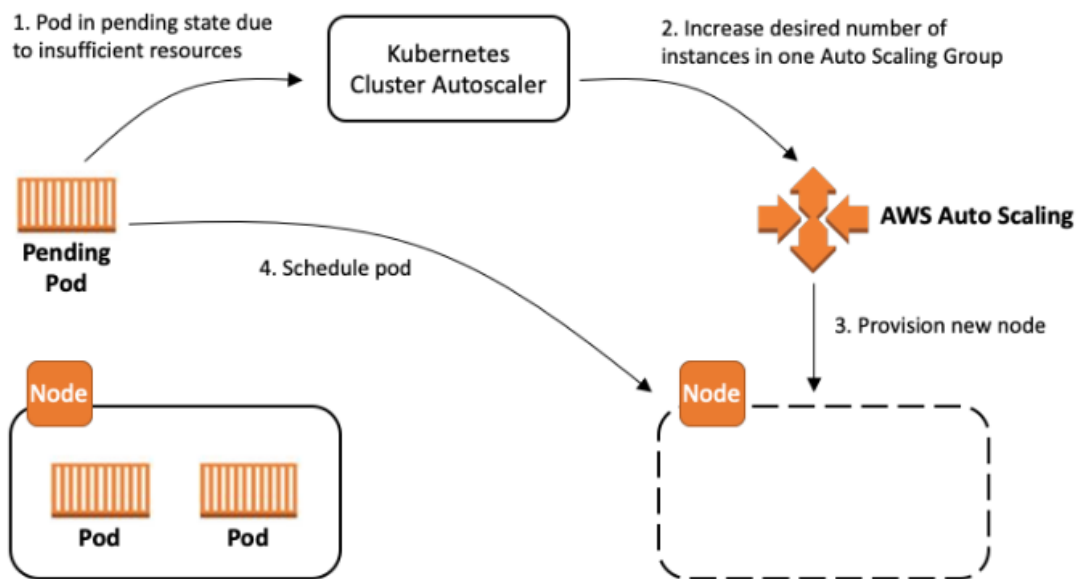


Cluster Autoscaler On EKS

What is Cluster AutoScaler ?

The Kubernetes Cluster Autoscaler automatically adjusts the number of nodes in your cluster when pods fail or are rescheduled onto other nodes. The Cluster Autoscaler is typically installed as a Deployment in your cluster.

Architectural Diagram:



As shown in image below, I deployed a simple PHP application with replicas set as 20 which cannot be handled by a single node cluster. And for the same reason, pods are in pending state.

```
root@ip-172-31-23-148: /home/ubuntu
10307 03:10:11.540477 1 reflector.go:255] Listing and watching *v1.PodDisruptionBudget from k8s.io/client-go/informers/factory.go:134
10307 03:10:11.540856 1 reflector.go:219] Starting reflector *v1.Service (0s) from k8s.io/client-go/informers/factory.go:134
10307 03:10:11.540878 1 reflector.go:255] Listing and watching *v1.Service from k8s.io/client-go/informers/factory.go:134
10307 03:10:11.543754 1 reflector.go:219] Starting reflector *v1.ReplicationController (0s) from k8s.io/client-go/informers/factory.go:134
10307 03:10:11.543773 1 reflector.go:255] Listing and watching *v1.ReplicationController from k8s.io/client-go/informers/factory.go:134
10307 03:10:11.544153 1 reflector.go:219] Starting reflector *v1.ReplicaSet (0s) from k8s.io/client-go/informers/factory.go:134
10307 03:10:11.544169 1 reflector.go:255] Listing and watching *v1.ReplicaSet from k8s.io/client-go/informers/factory.go:134
10307 03:10:11.739106 1 request.go:600] Waited for 101.120854ms due to client-side throttling, not priority and fairness, request: GET:https://172.20.0.1:443/api/v1/persistentvolumeclaims?limit=500&resourceVersion=0
W0307 03:10:11.941357 1 warnings.go:70] policy/v1beta1 PodDisruptionBudget is deprecated in v1.21+, unavailable in v1.25+; use policy/v1 PodDisruptionBudget
root@ip-172-31-23-148: /home/ubuntu# vi php.yaml
root@ip-172-31-23-148: /home/ubuntu# kubectl apply -f php.yaml
deployment.apps/php-apache created
service/php-apache created
root@ip-172-31-23-148: /home/ubuntu# kubectl get po
NAME                                READY   STATUS    RESTARTS   AGE
php-apache-d4cf67d68-2mh7q          0/1     Pending   0           5s
php-apache-d4cf67d68-2z5wt          0/1     Pending   0           5s
php-apache-d4cf67d68-4vdmq          0/1     Pending   0           5s
php-apache-d4cf67d68-54v9g          0/1     ContainerCreating 0           5s
php-apache-d4cf67d68-5q95p          0/1     Pending   0           5s
php-apache-d4cf67d68-5x4hp          0/1     ContainerCreating 0           5s
php-apache-d4cf67d68-6cwr5          0/1     Pending   0           5s
php-apache-d4cf67d68-6hngq          0/1     Pending   0           5s
php-apache-d4cf67d68-8mwx4          0/1     Pending   0           5s
php-apache-d4cf67d68-bd86m          0/1     ContainerCreating 0           5s
php-apache-d4cf67d68-bg6p7          0/1     Pending   0           5s
php-apache-d4cf67d68-c4ffj          0/1     Pending   0           5s
php-apache-d4cf67d68-c5hv7          0/1     Pending   0           5s
php-apache-d4cf67d68-fg7vq          0/1     Pending   0           5s
php-apache-d4cf67d68-hm59d          0/1     ContainerCreating 0           5s
php-apache-d4cf67d68-htg9g          0/1     Pending   0           5s
php-apache-d4cf67d68-nvq44          0/1     ContainerCreating 0           5s
php-apache-d4cf67d68-nxb8n          0/1     ContainerCreating 0           5s
php-apache-d4cf67d68-p9qdm          0/1     Pending   0           5s
php-apache-d4cf67d68-qzrtg          0/1     ContainerCreating 0           5s
root@ip-172-31-23-148: /home/ubuntu# kubectl get po
NAME                                READY   STATUS    RESTARTS   AGE
php-apache-d4cf67d68-2mh7q          0/1     Pending   0           9s
php-apache-d4cf67d68-2z5wt          0/1     Pending   0           9s
php-apache-d4cf67d68-4vdmq          0/1     Pending   0           9s
php-apache-d4cf67d68-54v9g          0/1     ContainerCreating 0           9s
php-apache-d4cf67d68-5q95p          0/1     Pending   0           9s
```

To deal with this, I have configured Cluster Autoscaler on AWS-EKS. So, when resources are not available to host the application, a new node will come up as per the requirements and configured in the Autoscaling group.

I have used the official AWS-EKS Cluster Autoscaler documentation to configure it in my environment.

Address: <https://docs.aws.amazon.com/eks/latest/userguide/autoscaling.html>

After the successful configuration of Cluster Autoscaler as per the official documentation. We can see that nodes are coming up automatically in the environment to handle the extra pods.

As shown in the images below, by keeping watch on the logs of Cluster Autoscaler deployment, we can see that new unregistered nodes are coming in.

```
php-apache-44070480-qg5v-0-2  CONTAINERDocker  0  39
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE      VERSION
ip-10-0-0-254.us-west-2.compute.int  Ready    <none>   7m47s    v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu# kubectl -n kube-system logs -f deployment.apps/cluster-autoscaler
I0307 03:09:53.541451    1 flags.go:52] FLAG: --add-dir-header="false"
I0307 03:09:53.541528    1 flags.go:52] FLAG: --address=":8085"
I0307 03:09:53.541534    1 flags.go:52] FLAG: --alsologtostderr="false"
I0307 03:09:53.541544    1 flags.go:52] FLAG: --aws-use-static-instance-list="false"
I0307 03:09:53.541548    1 flags.go:52] FLAG: --balance-similar-node-groups="true"
I0307 03:09:53.541552    1 flags.go:52] FLAG: --balancing-ignore-label="[]"
I0307 03:09:53.541557    1 flags.go:52] FLAG: --cloud-config=""
I0307 03:09:53.541561    1 flags.go:52] FLAG: --cloud-provider="aws"
I0307 03:09:53.541566    1 flags.go:52] FLAG: --cloud-provider-gce-lb-src-cldrs="130.211.0.0/22,35.191.0.0/16"
I0307 03:09:53.541573    1 flags.go:52] FLAG: --cloud-provider-gce-lb-src-cldrs="130.211.0.0/22,209.85.152.0/22,209.85.204.0/22,35.191.0.0/16"
I0307 03:09:53.541582    1 flags.go:52] FLAG: --cluster-name=""
I0307 03:09:53.541587    1 flags.go:52] FLAG: --clusterapi-cloud-config-authoritative="false"
I0307 03:09:53.541592    1 flags.go:52] FLAG: --cordon-node-before-terminating="false"
I0307 03:09:53.541597    1 flags.go:52] FLAG: --cores-total="0:320000"
I0307 03:09:53.541602    1 flags.go:52] FLAG: --daemonset-eviction-for-empty-nodes="false"
I0307 03:09:53.541608    1 flags.go:52] FLAG: --estimator="binpacking"
I0307 03:09:53.541613    1 flags.go:52] FLAG: --expander="least-waste"
I0307 03:09:53.541619    1 flags.go:52] FLAG: --expandable-pods-priority-cutoff="-10"
I0307 03:09:53.541624    1 flags.go:52] FLAG: --gce-concurrent-refreshes="1"
I0307 03:09:53.541629    1 flags.go:52] FLAG: --gpu-total="[]"
I0307 03:09:53.541635    1 flags.go:52] FLAG: --ignore-daemonsets-utilization="false"
I0307 03:09:53.541639    1 flags.go:52] FLAG: --ignore-mirror-pods-utilization="false"
I0307 03:09:53.541644    1 flags.go:52] FLAG: --ignore-taint="[]"
I0307 03:09:53.541649    1 flags.go:52] FLAG: --kubeconfig=""
I0307 03:11:54.517358    1 filter_out_schedulable.go:79] Schedulable pods present
I0307 03:11:54.517375    1 static_autoscaler.go:401] No unschedulable pods
I0307 03:11:54.517388    1 static_autoscaler.go:448] Calculating unneeded nodes
I0307 03:11:54.517415    1 scale_down.go:443] Node ip-10-0-0-254.us-west-2.compute.internal is not suitable for removal - cpu utilization too big (0.945596)
I0307 03:11:54.517439    1 static_autoscaler.go:502] Scale down status: unneededOnly=true lastScaleUpTime=2022-03-07 03:11:13.850318592 +0000 UTC m=+80.993840496 las
tScaleDownDeleteTime=2022-03-07 03:10:23.757924439 +0000 UTC m=+30.901446318 lastScaleDownFailTime=2022-03-07 03:10:23.757924503 +0000 UTC m=+30.901446391 scaleDownForb
idden=true isDeleteInProgress=false scaleDownInCooldown=true
I0307 03:12:04.533434    1 static_autoscaler.go:228] Starting main loop
I0307 03:12:04.533937    1 static_autoscaler.go:318] 1 unregistered nodes present
I0307 03:12:04.534421    1 filter_out_schedulable.go:65] Filtering out schedulables
I0307 03:12:04.534483    1 filter_out_schedulable.go:132] Filtered out 0 pods using hints
I0307 03:12:04.534556    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-2mh7q marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.534585    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-htg8g marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-1. Ignoring in scale up.
I0307 03:12:04.534970    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-bg6p7 marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535051    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-6cvt5 marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-1. Ignoring in scale up.
I0307 03:12:04.535323    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-4vdmg marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535356    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-cshv7 marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535516    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-p9qdm marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535573    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-fg7vq marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535649    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-8mpx4 marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535680    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-2z5wt marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535724    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-6hngb marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-0. Ignoring in scale up.
I0307 03:12:04.535749    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-5g95p marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-1. Ignoring in scale up.
I0307 03:12:04.535777    1 filter_out_schedulable.go:157] Pod default.php-apache-d4cf67d68-c4ffj marked as unschedulable can be scheduled on node template-node-for-e
ks-demo-94bfb11b-c045-chbb-341b-cea80cac3ac9-6175742077372812453-upcoming-1. Ignoring in scale up.
I0307 03:12:04.535802    1 filter_out_schedulable.go:170] 0 pods were kept as unschedulable based on caching
I0307 03:12:04.535810    1 filter_out_schedulable.go:171] 13 pods marked as unschedulable can be scheduled.
I0307 03:12:04.535823    1 filter_out_schedulable.go:79] Schedulable pods present
```

It can be clearly seen in the image below that 2 new nodes came up to host the pods in the cluster. Depicting our Cluster Autoscaler works fine.

These command will help us to keep watch on the nodes that are coming.

Command:

Kubectl logs -f deployment clusterautoscaler

Kubectl get nodes -w

```
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE    VERSION
ip-10-0-0-254.us-west-2.compute.internal Ready    <none>    8m39s  v1.21.5-eks-9017834
ip-10-0-0-35.us-west-2.compute.internal NotReady <none>    10s    v1.21.5-eks-9017834

root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE    VERSION
ip-10-0-0-254.us-west-2.compute.internal Ready    <none>    9m10s  v1.21.5-eks-9017834
ip-10-0-0-35.us-west-2.compute.internal Ready    <none>    41s    v1.21.5-eks-9017834
ip-10-0-1-51.us-west-2.compute.internal Ready    <none>    31s    v1.21.5-eks-9017834

root@ip-172-31-23-148:/home/ubuntu# kubectl get po
NAME                                READY     STATUS    RESTARTS   AGE
php-apache-d4cf67d68-2mh7q          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-2z5wt          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-4vdmq          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-54v9g          1/1       Running        0           102s
php-apache-d4cf67d68-5q95p          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-5x4hp          1/1       Running        0           102s
php-apache-d4cf67d68-6cvr5          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-6hngq          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-8mpx4          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-bd86m          1/1       Running        0           102s
php-apache-d4cf67d68-bg6p7          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-c4ffj          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-c5hv7          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-fg7vq          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-hm59d          1/1       Running        0           102s
php-apache-d4cf67d68-htg8g          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-mv644          1/1       Running        0           102s
php-apache-d4cf67d68-nxb8n          1/1       Running        0           102s
php-apache-d4cf67d68-p9qdm          0/1       ContainerCreating 0           102s
php-apache-d4cf67d68-qgrtg          1/1       Running        0           102s

root@ip-172-31-23-148:/home/ubuntu# kubectl get po
NAME                                READY     STATUS    RESTARTS   AGE
php-apache-d4cf67d68-2mh7q          1/1       Running    0           116s
```

As the new nodes came in, pods which were in the pending state and didn't find enough resource are now scheduled on the new nodes and in running state.

```
root@ip-172-31-23-148:/home/ubuntu# kubectl get po
NAME                                READY     STATUS    RESTARTS   AGE
php-apache-d4cf67d68-2mh7q          1/1       Running    0           118s
php-apache-d4cf67d68-2z5wt          1/1       Running    0           118s
php-apache-d4cf67d68-4vdmq          1/1       Running    0           118s
php-apache-d4cf67d68-54v9g          1/1       Running    0           118s
php-apache-d4cf67d68-5q95p          1/1       Running    0           118s
php-apache-d4cf67d68-5x4hp          1/1       Running    0           118s
php-apache-d4cf67d68-6cvr5          1/1       Running    0           118s
php-apache-d4cf67d68-6hngq          1/1       Running    0           118s
php-apache-d4cf67d68-8mpx4          1/1       Running    0           118s
php-apache-d4cf67d68-bd86m          1/1       Running    0           118s
php-apache-d4cf67d68-bg6p7          1/1       Running    0           118s
php-apache-d4cf67d68-c4ffj          1/1       Running    0           118s
php-apache-d4cf67d68-c5hv7          1/1       Running    0           118s
php-apache-d4cf67d68-fg7vq          1/1       Running    0           118s
php-apache-d4cf67d68-hm59d          1/1       Running    0           118s
php-apache-d4cf67d68-htg8g          1/1       Running    0           118s
php-apache-d4cf67d68-mv644          1/1       Running    0           118s
php-apache-d4cf67d68-nxb8n          1/1       Running    0           118s
php-apache-d4cf67d68-p9qdm          1/1       Running    0           118s
php-apache-d4cf67d68-qgrtg          1/1       Running    0           118s

root@ip-172-31-23-148:/home/ubuntu# kubectl get po
NAME                                READY     STATUS    RESTARTS   AGE
php-apache-d4cf67d68-2mh7q          1/1       Running    0           2m9s
php-apache-d4cf67d68-2z5wt          1/1       Running    0           2m9s
php-apache-d4cf67d68-4vdmq          1/1       Running    0           2m9s
php-apache-d4cf67d68-54v9g          1/1       Running    0           2m9s
php-apache-d4cf67d68-5q95p          1/1       Running    0           2m9s
php-apache-d4cf67d68-5x4hp          1/1       Running    0           2m9s
php-apache-d4cf67d68-6cvr5          1/1       Running    0           2m9s
php-apache-d4cf67d68-6hngq          1/1       Running    0           2m9s
php-apache-d4cf67d68-8mpx4          1/1       Running    0           2m9s
php-apache-d4cf67d68-bd86m          1/1       Running    0           2m9s
php-apache-d4cf67d68-bg6p7          1/1       Running    0           2m9s
php-apache-d4cf67d68-c4ffj          1/1       Running    0           2m9s
php-apache-d4cf67d68-c5hv7          1/1       Running    0           2m9s
php-apache-d4cf67d68-fg7vq          1/1       Running    0           2m9s
php-apache-d4cf67d68-hm59d          1/1       Running    0           2m9s
php-apache-d4cf67d68-htg8g          1/1       Running    0           2m9s
php-apache-d4cf67d68-mv644          1/1       Running    0           2m9s
php-apache-d4cf67d68-nxb8n          1/1       Running    0           2m9s
php-apache-d4cf67d68-p9qdm          1/1       Running    0           2m9s
php-apache-d4cf67d68-qgrtg          1/1       Running    0           2m9s
```

As shown in the image below, what if we delete the deployment? Additional Nodes went down immediately or not? Answer to this is, yes, but by default additional nodes will wait for 20 minutes before shutting down their operation.

```
php-apache:php-apache: 2/2 Running 0 zms
root@ip-172-31-23-148:/home/ubuntu# kubectl delete -f php.yaml
deployment.apps "php-apache" deleted
service "php-apache" deleted
root@ip-172-31-23-148:/home/ubuntu# kubectl -n kube-system logs -f deployment.apps/cluster-autoscaler
10307 03:09:53.541451 1 flags.go:52] FLAG: --add-dir-header="false"
10307 03:09:53.541528 1 flags.go:52] FLAG: --address=":8085"
10307 03:09:53.541534 1 flags.go:52] FLAG: --alsologtostderr="false"
10307 03:09:53.541544 1 flags.go:52] FLAG: --aws-use-static-instance-list="false"
10307 03:09:53.541548 1 flags.go:52] FLAG: --balance-similar-node-groups="true"
10307 03:09:53.541552 1 flags.go:52] FLAG: --balancing-ignore-label="[]"
10307 03:09:53.541557 1 flags.go:52] FLAG: --cloud-config=""
10307 03:09:53.541561 1 flags.go:52] FLAG: --cloud-provider="aws"
10307 03:09:53.541566 1 flags.go:52] FLAG: --cloud-provider-gce-lb-src-cidrs="130.211.0.0/22,35.191.0.0/16"
10307 03:09:53.541573 1 flags.go:52] FLAG: --cloud-provider-gce-lb-src-cidrs="130.211.0.0/22,209.85.204.0/22,35.191.0.0/16"
10307 03:09:53.541582 1 flags.go:52] FLAG: --cluster-name=""
10307 03:09:53.541587 1 flags.go:52] FLAG: --clusterapi-cloud-config-authoritative="false"
10307 03:09:53.541592 1 flags.go:52] FLAG: --cordon-node-before-terminating="false"
10307 03:09:53.541597 1 flags.go:52] FLAG: --cores-total="0:320000"
10307 03:09:53.541602 1 flags.go:52] FLAG: --daemonset-eviction-for-empty-nodes="false"
10307 03:09:53.541608 1 flags.go:52] FLAG: --estimator="binpacking"
10307 03:09:53.541613 1 flags.go:52] FLAG: --expander="least-waste"
10307 03:09:53.541619 1 flags.go:52] FLAG: --expendable-pods-priority-cutoff="-10"
10307 03:09:53.541624 1 flags.go:52] FLAG: --gce-concurrent-refreshes="1"
10307 03:09:53.541629 1 flags.go:52] FLAG: --gpu-total="[]"
10307 03:09:53.541635 1 flags.go:52] FLAG: --ignore-daemonsets-utilization="false"
10307 03:14:55.372408 1 static_autoscaler.go:448] Calculating unneeded nodes
10307 03:14:55.372461 1 scale_down.go:447] Node ip-10-0-0-35.us-west-2.compute.internal - cpu utilization 0.064767
10307 03:14:55.372483 1 scale_down.go:447] Node ip-10-0-1-51.us-west-2.compute.internal - cpu utilization 0.064767
10307 03:14:55.372514 1 scale_down.go:508] Scale-down calculation: ignoring 1 nodes unremovable in the last 5m0s
10307 03:14:55.372607 1 static_autoscaler.go:491] ip-10-0-0-35.us-west-2.compute.internal is unneeded since 2022-03-07 03:13:55.090263056 +0000 UTC m==242.2337849
50 duration lm0.281515095s
10307 03:14:55.372625 1 static_autoscaler.go:491] ip-10-0-1-51.us-west-2.compute.internal is unneeded since 2022-03-07 03:13:55.090263056 +0000 UTC m==242.2337849
50 duration lm0.281515095s
10307 03:14:55.372640 1 static_autoscaler.go:502] Scale down status: unneededOnly=true lastScaleUpTime=2022-03-07 03:11:13.850318592 +0000 UTC m==80.993840496 las
tScaleDownDeleteTime=2022-03-07 03:10:23.757924439 +0000 UTC m==30.901446318 lastScaleDownFailTime=2022-03-07 03:10:23.757924503 +0000 UTC m==30.901446391 scaleDownForb
idden=false isDeleteInProgress=false scaleDownInCooldown=true
^C
root@ip-172-31-23-148:/home/ubuntu# vi cluster-autoscaler-autodiscover.yaml
root@ip-172-31-23-148:/home/ubuntu# kubectl get po
No resources found in default namespace.
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
```

After some time, Nodes starts evicting as there is no requirement of additional nodes in the environment now.

```
root@ip-172-31-23-148:/home/ubuntu
10307 03:14:55.372408 1 static_autoscaler.go:448] Calculating unneeded nodes
10307 03:14:55.372461 1 scale_down.go:447] Node ip-10-0-0-35.us-west-2.compute.internal - cpu utilization 0.064767
10307 03:14:55.372483 1 scale_down.go:447] Node ip-10-0-1-51.us-west-2.compute.internal - cpu utilization 0.064767
10307 03:14:55.372514 1 scale_down.go:508] Scale-down calculation: ignoring 1 nodes unremovable in the last 5m0s
10307 03:14:55.372607 1 static_autoscaler.go:491] ip-10-0-0-35.us-west-2.compute.internal is unneeded since 2022-03-07 03:13:55.090263056 +0000 UTC m==242.2337849
50 duration lm0.281515095s
10307 03:14:55.372625 1 static_autoscaler.go:491] ip-10-0-1-51.us-west-2.compute.internal is unneeded since 2022-03-07 03:13:55.090263056 +0000 UTC m==242.2337849
50 duration lm0.281515095s
10307 03:14:55.372640 1 static_autoscaler.go:502] Scale down status: unneededOnly=true lastScaleUpTime=2022-03-07 03:11:13.850318592 +0000 UTC m==80.993840496 las
tScaleDownDeleteTime=2022-03-07 03:10:23.757924439 +0000 UTC m==30.901446318 lastScaleDownFailTime=2022-03-07 03:10:23.757924503 +0000 UTC m==30.901446391 scaleDownForb
idden=false isDeleteInProgress=false scaleDownInCooldown=true
^C
root@ip-172-31-23-148:/home/ubuntu# vi cluster-autoscaler-autodiscover.yaml
root@ip-172-31-23-148:/home/ubuntu# kubectl get po
No resources found in default namespace.
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
ip-10-0-0-254.us-west-2.compute.int Ready      <none>   12m   v1.21.5-eks-9017834
ip-10-0-0-35.us-west-2.compute.int Ready      <none>   4m19s v1.21.5-eks-9017834
ip-10-0-1-51.us-west-2.compute.int Ready      <none>   4m9s  v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
ip-10-0-0-254.us-west-2.compute.int Ready      <none>   14m   v1.21.5-eks-9017834
ip-10-0-0-35.us-west-2.compute.int Ready      <none>   6m29s v1.21.5-eks-9017834
ip-10-0-1-51.us-west-2.compute.int Ready      <none>   6m19s v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
ip-10-0-0-254.us-west-2.compute.int Ready      <none>   15m   v1.21.5-eks-9017834
ip-10-0-0-35.us-west-2.compute.int Ready      <none>   7m    v1.21.5-eks-9017834
ip-10-0-1-51.us-west-2.compute.int Ready      <none>   6m50s v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
ip-10-0-0-254.us-west-2.compute.int Ready      <none>   19m   v1.21.5-eks-9017834
ip-10-0-0-35.us-west-2.compute.int Ready      <none>   10m   v1.21.5-eks-9017834
ip-10-0-1-51.us-west-2.compute.int Ready      <none>   10m   v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
ip-10-0-0-254.us-west-2.compute.int Ready      <none>   30m   v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
ip-10-0-0-254.us-west-2.compute.int Ready      <none>   30m   v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu# kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
ip-10-0-0-254.us-west-2.compute.int Ready      <none>   30m   v1.21.5-eks-9017834
root@ip-172-31-23-148:/home/ubuntu#
```

As shown in the image, additional nodes are gone, and the node counts come to 1 from 3. Two additional nodes which were added by Cluster Autoscaler and adjusted back.

Thank you,
Vaishal Shah