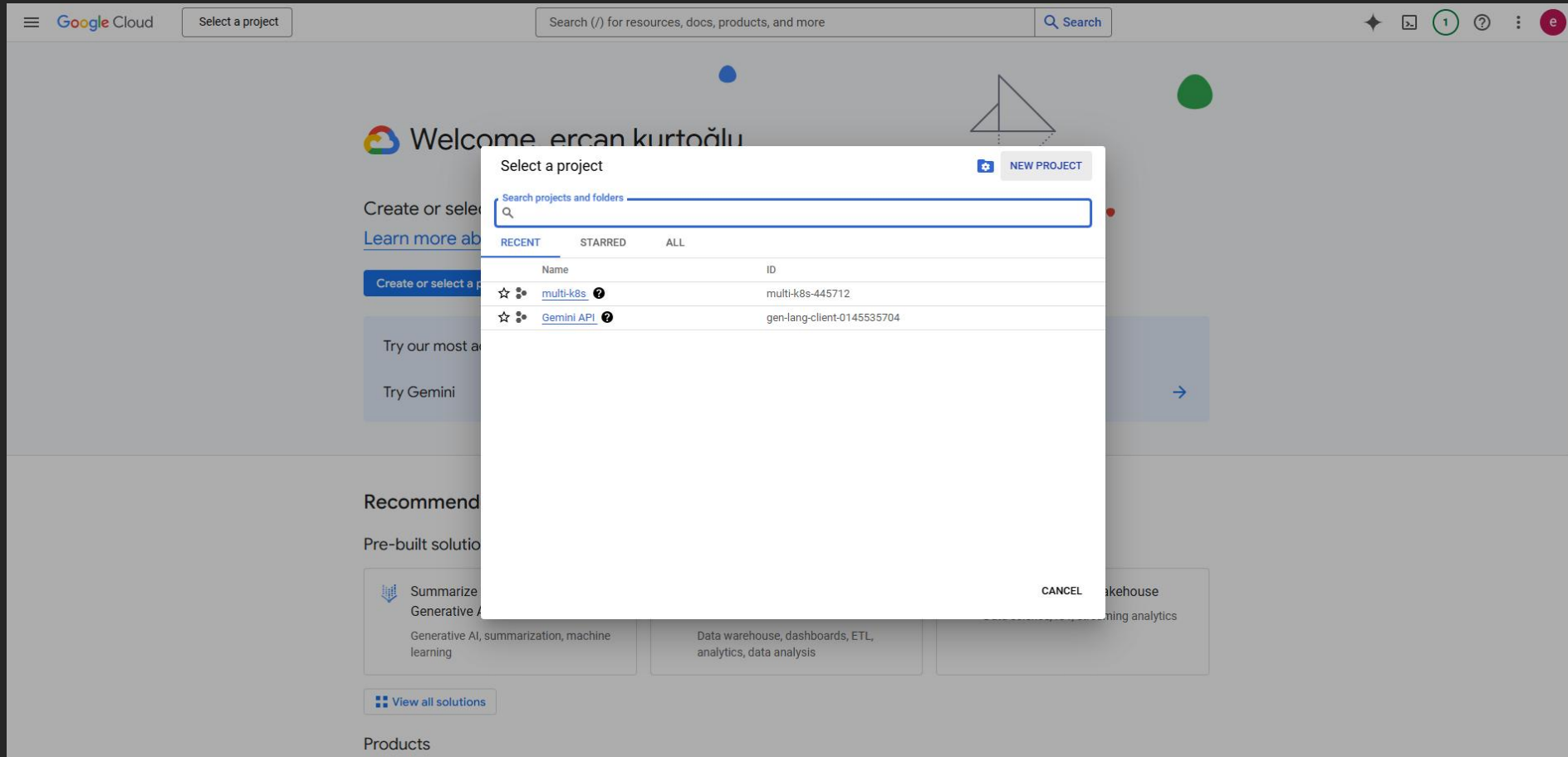


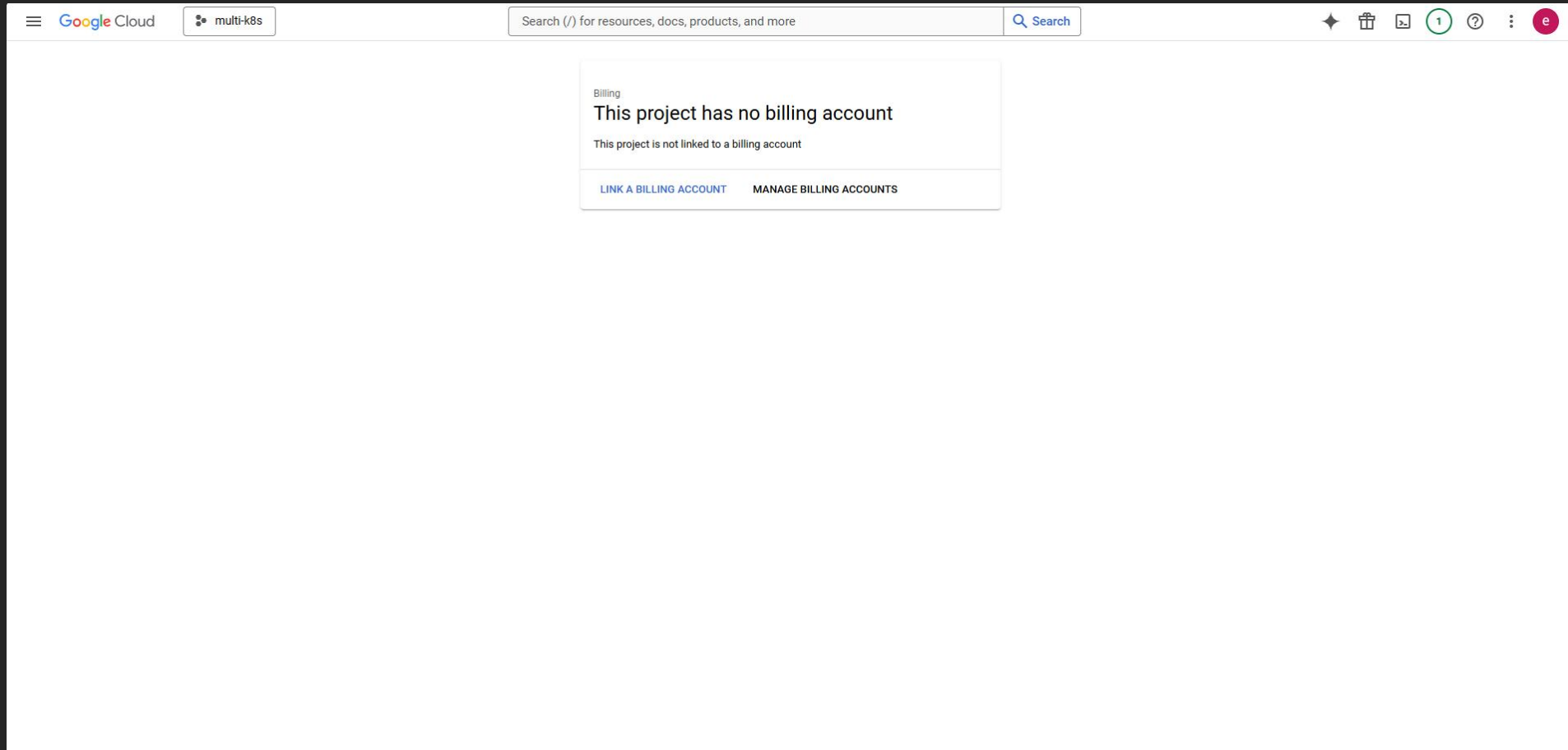
## 06. GPC

- Creating a Project
- Select a project / NEW PROJECT



## 06. GPC

- Link the Project a Billing account
- Billing / Link a Billing Account or Manage Billing Accounts



## 06. GPC

### - Create Kubernetes Clusters

### - Kubernetes Engine / Clusters / Create / Switch to Standard Cluster

Google Cloud

multi-k8s

Search (/) for resources, docs, products, and more

Search

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Create an Autopilot cluster

⚙️ SWITCH TO STANDARD CLUSTER

📖 LEARN

⚠️

Ensure that the default GKE node service account has, at a minimum, the Kubernetes Engine Default Node Service Account [role permissions](#) on your project.

• **Cluster basics**  
Set up basics for your cluster

• **Fleet registration**  
Manage multiple clusters together

• **Networking**  
Define applications communication in the cluster

• **Advanced settings**  
Review additional options

• **Review and create**  
Review all settings and create your cluster

**Cluster basics**

Create an Autopilot cluster by specifying a name and region. After the cluster is created, you can deploy your workload through Kubernetes and we'll take care of the rest, including:

✓ **Nodes:** Automated node provisioning, scaling, and maintenance

✓ **Networking:** VPC-native traffic routing for clusters

✓ **Security:** Shielded GKE Nodes and Workload Identity

✓ **Telemetry:** Cloud Operations logging and monitoring

Name

autopilot-cluster-1

Cluster names must start with a lowercase letter followed by up to 39 lowercase letters, numbers, or hyphens. They can't end with a hyphen. You cannot change the cluster's name once it's created.

Region

us-central1

The regional location in which your cluster's control plane and nodes are located. You cannot change the cluster's region once it's created.

**Cluster tier**

Choose a GKE cluster tier based on the complexity of your workloads and your need for advanced features that improve productivity and reduce software deployment times. [View Edition Features](#)

Run business critical workloads faster, safer, and easier at enterprise scale

GKE Enterprise gives you all the power of GKE, plus multi-cluster and multi-team features, and fully managed security, governance, and service networking components. To get started, enable GKE Enterprise in the project.

CREATE

CANCEL

Equivalent

REST

or

COMMAND LINE

## 06. GPC

- Create Kubernetes Clusters
- Location type is zonal

Google Cloud

multi-k8s

Search (/) for resources, docs, products, and more

Search

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← Create a Kubernetes cluster

➕ ADD NODE POOL

🗑 REMOVE NODE POOL

📖 USE A SETUP GUIDE

⚙ SWITCH TO AUTOPILOT CLUSTER

📖 LEARN

⚠ Ensure that the default GKE node service account has, at a minimum, the Kubernetes Engine Default Node Service Account [role permissions](#) on your project.

Cluster basics

Fleet registration

NODE POOLS

default-pool

CLUSTER

Automation

Networking

Security

Backup plan

Metadata

Features

Cluster basics

The new cluster will be created with the name, version, and in the location you specify here. After the cluster is created, name and location can't be changed.

📘 To experiment with an affordable cluster, try **My first cluster** in the **Cluster set-up guides**

Name

multi-cluster

Cluster names must start with a lowercase letter followed by up to 39 lowercase letters, numbers, or hyphens. They can't end with a hyphen. You cannot change the cluster's name once it's created.

Location type

Resource prices may vary between certain regions. [Learn more](#)

☒ Zonal

☐ Regional

Zone

us-central1-a

?

☐ Specify default node locations

Increase availability by selecting more than one zone  
Current default: us-central1-a

Release channel

Select a release channel for GKE to pick versions for your cluster with your chosen balance between feature availability and stability. GKE automatically upgrades all clusters over time, even when no channel is selected. You can control the timing of upgrades through [maintenance policies](#) in cluster automation settings. [Learn about release channels](#)

Estimated monthly cost **PREVIEW**

**\$176.38**

That's about \$0.24 per hour

Pricing is based on the resources you use, management fees, discounts and credits. [Learn more](#)

✓ SHOW COST BREAKDOWN

CREATE

CANCEL

Equivalent REST or COMMAND LINE

## 06. GPC

### - Create Kubernetes Clusters - default-pool

Google Cloud

multi-k8s

Search (/) for resources, docs, products, and more

Search

◆ 📁 1 ? ⋮ e

← Create a Kubernetes cluster

+ ADD NODE POOL

🗑 REMOVE NODE POOL

📖 USE A SETUP GUIDE

⚙ SWITCH TO AUTOPILOT CLUSTER

📖 LEARN

⚠ Ensure that the default GKE node service account has, at a minimum, the [Kubernetes Engine Default Node Service Account role permissions](#) on your project.

Cluster basics

Fleet registration

NODE POOLS

default-pool

Nodes

Networking

Security

Metadata

CLUSTER

Automation

Networking

Security

Backup plan

Metadata

Features

Node pool details

A node pool is a template for groups of nodes created in this cluster. The new cluster will be created with at least one node pool. More node pools can be added and removed after cluster creation. [Learn more](#)

Name

default-pool

Node pool names must start with a lowercase letter followed by up to 39 lowercase letters, numbers, or hyphens. They can't end with a hyphen. You cannot change the node pool's name once it's created.

Control plane version - 1.30.6-gke.1125000

☐ Compact placement

☐ Queued provisioning with Dynamic Workload Scheduler

Size

Number of nodes \*

3

Pod address range limits the maximum size of the cluster. [Learn more](#)

☐ Enable cluster autoscaler

Cluster autoscaler automatically creates or deletes nodes based on workload needs. [Learn more](#)

☐ Specify node locations

Default: us-central1-a

Automation

☒ Automatically upgrade nodes to next available version

Keep nodes up to date with the cluster's control plane version. Learn more

Estimated monthly cost **PREVIEW**

**\$176.38**

That's about \$0.24 per hour

Pricing is based on the resources you use, management fees, discounts and credits. [Learn more](#)

SHOW COST BREAKDOWN

CREATE

CANCEL

Equivalent REST or COMMAND LINE

## 06. GPC

- Create Kubernetes Clusters

- Nodes / Machine series: N1 1vCPU, 3.75 GB

Google Cloud

multi-k8s

Search (/) for resources, docs, products, and more

Search

SWITCH TO AUTOPILOT CLUSTER

LEARN

Create a Kubernetes cluster

ADD NODE POOL

REMOVE NODE POOL

USE A SETUP GUIDE

Ensure that the default GKE node service account has, at a minimum, the [Kubernetes Engine Default Node Service Account role permissions](#) on your project.

Metadata

Features

Machine types for common workloads, optimized for cost and flexibility

Series	Description	vCPUs	RAM
<input type="radio"/> C4	Consistently high performance	2 - 192	4
<input type="radio"/> C4A	Arm-based consistently high performance	1 - 72	2
<input type="radio"/> N4	Flexible & cost-optimized	2 - 80	4
<input type="radio"/> C3	Consistently high performance	4 - 192	8
<input type="radio"/> C3D	Consistently high performance	4 - 360	8
<input type="radio"/> E2	Low cost, day-to-day computing	0.25 - 32	1
<input type="radio"/> N2	Balanced price & performance	2 - 128	2
<input type="radio"/> N2D	Balanced price & performance	2 - 224	2
<input type="radio"/> T2A	Scale-out workloads	1 - 48	4
<input type="radio"/> T2D	Scale-out workloads	1 - 60	4
<input checked="" type="radio"/> N1	Balanced price & performance	0.5 - 96	1

Machine type

Choose a machine type with preset amounts of vCPUs and memory that suit most workloads. Or, you can create a custom machine for your workload's particular needs. [Learn more](#)

PRESET

CUSTOM

n1-standard-1 (1 vCPU, 3.75 GB memory)

vCPU

1

Memory

3.75 GB

CPU PLATFORM

Boot disk type

Standard persistent disk

Secondary boot disk

ADD A SECONDARY BOOT DISK

Boot disk size (GB)

10

Boot disk encryption

CREATE

CANCEL

Equivalent

REST

or

COMMAND LINE

## 06. GPC

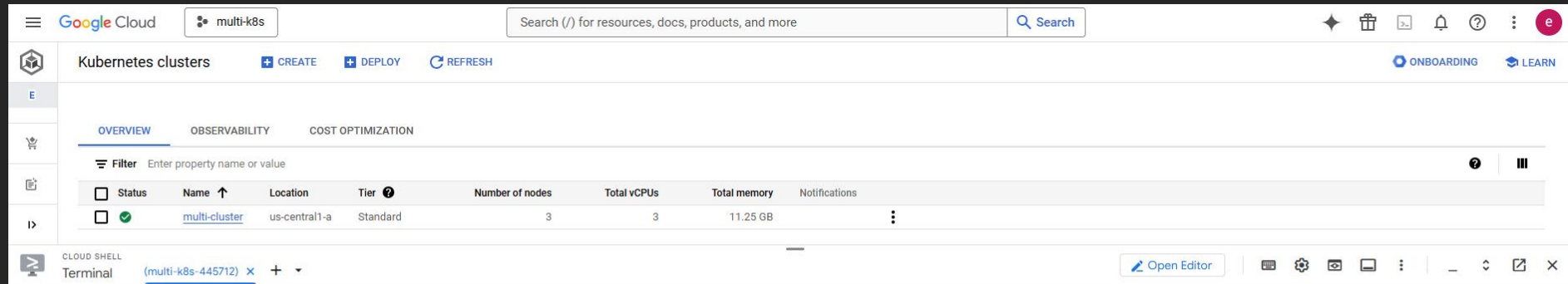
- Creating a Secret on GPC Shell
  - This secret is created due to reach PG database
  - Open GPC Shell

The screenshot shows the Google Cloud console interface for managing Kubernetes clusters. The top navigation bar includes the Google Cloud logo, a project selector set to 'multi-k8s', a search bar, and various utility icons. The main heading is 'Kubernetes clusters', with buttons for 'CREATE', 'DEPLOY', and 'REFRESH'. Below this, there are tabs for 'OVERVIEW', 'OBSERVABILITY', and 'COST OPTIMIZATION'. A filter bar is present above a table of clusters. The table lists one cluster named 'multi-cluster' in the 'us-central1-a' location, with a 'Standard' tier, 3 nodes, 3 vCPUs, and 11.25 GB of memory. The cluster status is indicated by a green checkmark. A sidebar on the left contains icons for different Google Cloud services.

Status	Name	Location	Tier	Number of nodes	Total vCPUs	Total memory	Notifications
<input checked="" type="checkbox"/>	<a href="#">multi-cluster</a>	us-central1-a	Standard	3	3	11.25 GB	

## 06. GPC

- Creating a Secret on GPC Shell
- Some entry for GCP shell config



The screenshot shows the Google Cloud console interface. At the top, there's a search bar and navigation icons. The main content area displays the 'Kubernetes clusters' page for the 'multi-k8s' project. A table lists the clusters, with one cluster named 'multi-cluster' in the 'us-central1-a' zone, having 3 nodes, 3 vCPUs, and 11.25 GB of memory. Below the table, the Cloud Shell terminal is open, showing the following commands and output:

```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to multi-k8s-445712.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ gcloud config set project multi-k8s-445712
Updated property [core/project].
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ gcloud config set compute/zone us-central1-a
WARNING: Property validation for compute/zone was skipped.
Updated property [compute/zone].
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ gcloud container clusters get-credentials multi-cluster
Fetching cluster endpoint and auth data.
kubeconfig entry generated for multi-cluster.
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $
```



## 06. GPC

- Creating a Secret on GPC Shell
- Create secret for Postgres password

The screenshot displays the Google Cloud Platform (GCP) console interface. At the top, the 'Kubernetes clusters' page is visible, showing a table with one cluster named 'multi-cluster'. The table columns include Status, Name, Location, Tier, Number of nodes, Total vCPUs, Total memory, and Notifications. The 'multi-cluster' cluster is in a 'Running' state (indicated by a green checkmark) and is located in 'us-central1-a' with a 'Standard' tier, 3 nodes, 3 vCPUs, and 11.25 GB of memory.

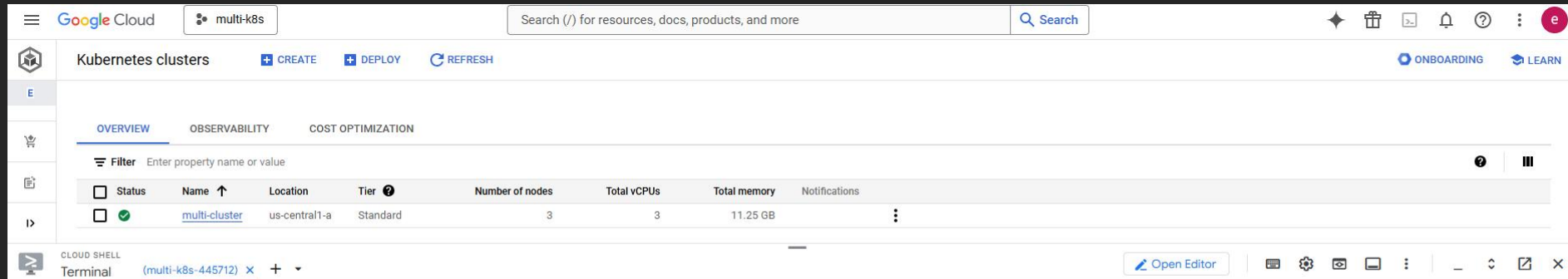
Below the table, the 'Cloud Shell' terminal is open, showing a series of commands and their outputs. The terminal session is for the project 'multi-k8s-445712'. The commands executed are:

```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to multi-k8s-445712.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
ercannkurtoglu@cloudshell:~ (multi-k8s-445712)$ gcloud config set project multi-k8s-445712
Updated property [core/project].
ercannkurtoglu@cloudshell:~ (multi-k8s-445712)$ gcloud config set compute/zone us-central1-a
WARNING: Property validation for compute/zone was skipped.
Updated property [compute/zone].
ercannkurtoglu@cloudshell:~ (multi-k8s-445712)$ gcloud container clusters get-credentials multi-cluster
Fetching cluster endpoint and auth data.
kubeconfig entry generated for multi-cluster.
ercannkurtoglu@cloudshell:~ (multi-k8s-445712)$ kubectl create secret generic pgpassword --from-literal PGPASSWORD=mysecretpassword
secret/pgpassword created
ercannkurtoglu@cloudshell:~ (multi-k8s-445712)$
```

## 06. GPC

### - Creating Ingress-Nginx with Helm

- <https://kubernetes.github.io/ingress-nginx/deploy/> -> with Helm



```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to multi-k8s-445712.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ gcloud config set project multi-k8s-445712
Updated property [core/project].
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ gcloud config set compute/zone us-central1-a
WARNING: Property validation for compute/zone was skipped.
Updated property [compute/zone].
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ gcloud container clusters get-credentials multi-cluster
Fetching cluster endpoint and auth data.
kubeconfig entry generated for multi-cluster.
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ kubectl create secret generic pgpassword --from-literal PGPASSWORD=mysecretpassword
secret/pgpassword created
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $ helm upgrade --install ingress-nginx ingress-nginx \
  --repo https://kubernetes.github.io/ingress-nginx \
  --namespace ingress-nginx --create-namespace
Release "ingress-nginx" does not exist. Installing it now.
```

## 06. GPC

### - Creating a Secret on GPC Shell

```
      backend:
        service:
          name: exampleService
          port:
            number: 80
        path: /
# This section is only required if TLS is to be enabled for the Ingress
tls:
  - hosts:
    - www.example.com
    secretName: example-tls
```

If TLS is enabled for the Ingress, a Secret containing the certificate and key must also be provided:

```
apiVersion: v1
kind: Secret
metadata:
  name: example-tls
  namespace: foo
data:
  tls.crt: <base64 encoded cert>
  tls.key: <base64 encoded key>
type: kubernetes.io/tls
ercannkurtoglu@cloudshell:~ (multi-k8s-445712) $
```

## 06. GPC

- Cert-Manager installation
- For https certification configuration

The screenshot shows the Google Cloud Platform console interface. At the top, there's a search bar and navigation icons. The main content area displays the 'Zone details' for a zone named 'mydomainzone'. Below this, there's a table with the following information:

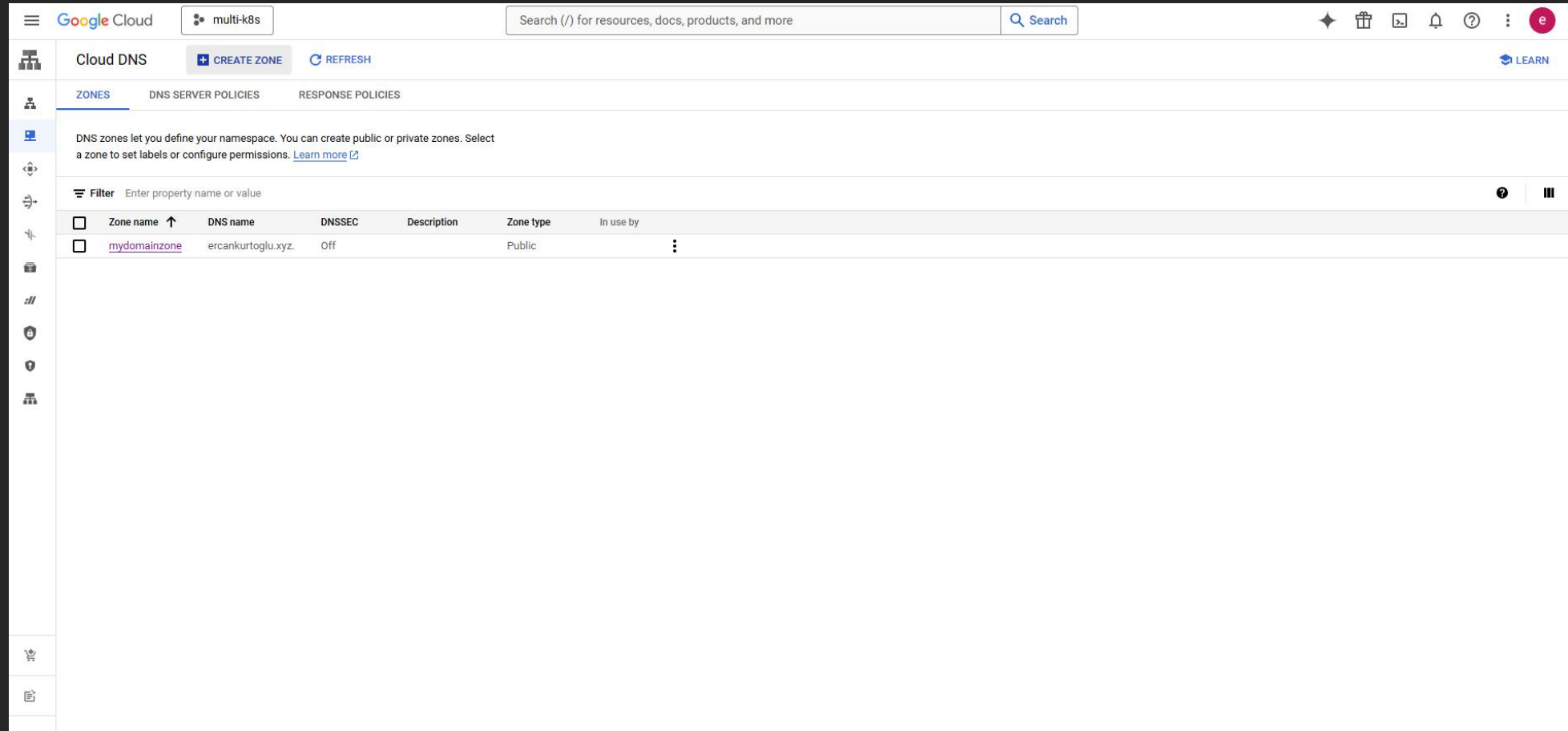
Property	Value
DNS name	ercankurtoglu.xyz.
Type	Public
DNSSEC	Off
Cloud Logging	Off

Below the table, there's a 'Cloud Shell' terminal window. The terminal shows the following commands being executed:

```
ercankurtoglu@cloudshell:~ (multi-k8s-445712) $ helm install \
cert-manager jetstack/cert-manager \
--namespace cert-manager \
--create-namespace \
--version v1.16.2 \
--set crds.enabled=true
```

## 06. GPC

- Configure DNS
- Cloud DNS / Create Zone



The screenshot shows the Google Cloud DNS console interface. At the top, there's a header with the Google Cloud logo, a project selector set to 'multi-k8s', a search bar, and various utility icons. Below the header, the 'Cloud DNS' section is active, with tabs for 'ZONES', 'DNS SERVER POLICIES', and 'RESPONSE POLICIES'. The 'ZONES' tab is selected, displaying a message about DNS zones and a 'CREATE ZONE' button. Below this, a table lists the existing DNS zones. The table has columns for 'Zone name', 'DNS name', 'DNSSEC', 'Description', 'Zone type', and 'In use by'. One zone is listed: 'mydomainzone' with DNS name 'ercankurtoglu.xyz', DNSSEC 'Off', and 'Public' zone type.

<input type="checkbox"/>	Zone name ↑	DNS name	DNSSEC	Description	Zone type	In use by
<input type="checkbox"/>	mydomainzone	ercankurtoglu.xyz.	Off		Public	

## 06. GPC

### - Configure DNS

#### - Add Standart

#### - type A with created IP (it comes from Kubernetes)

#### - type Cname with domain name (www prefix)

The screenshot shows the Google Cloud console interface for a DNS zone named 'mydomainzone'. The zone is of type 'Public' and has DNSSEC and Cloud Logging disabled. Below the zone details, there is a section for 'RECORD SETS' with buttons for 'ADD STANDARD', 'ADD WITH ROUTING POLICY', 'DELETE RECORD SETS', and 'REFRESH'. A table lists the current record sets for the zone.

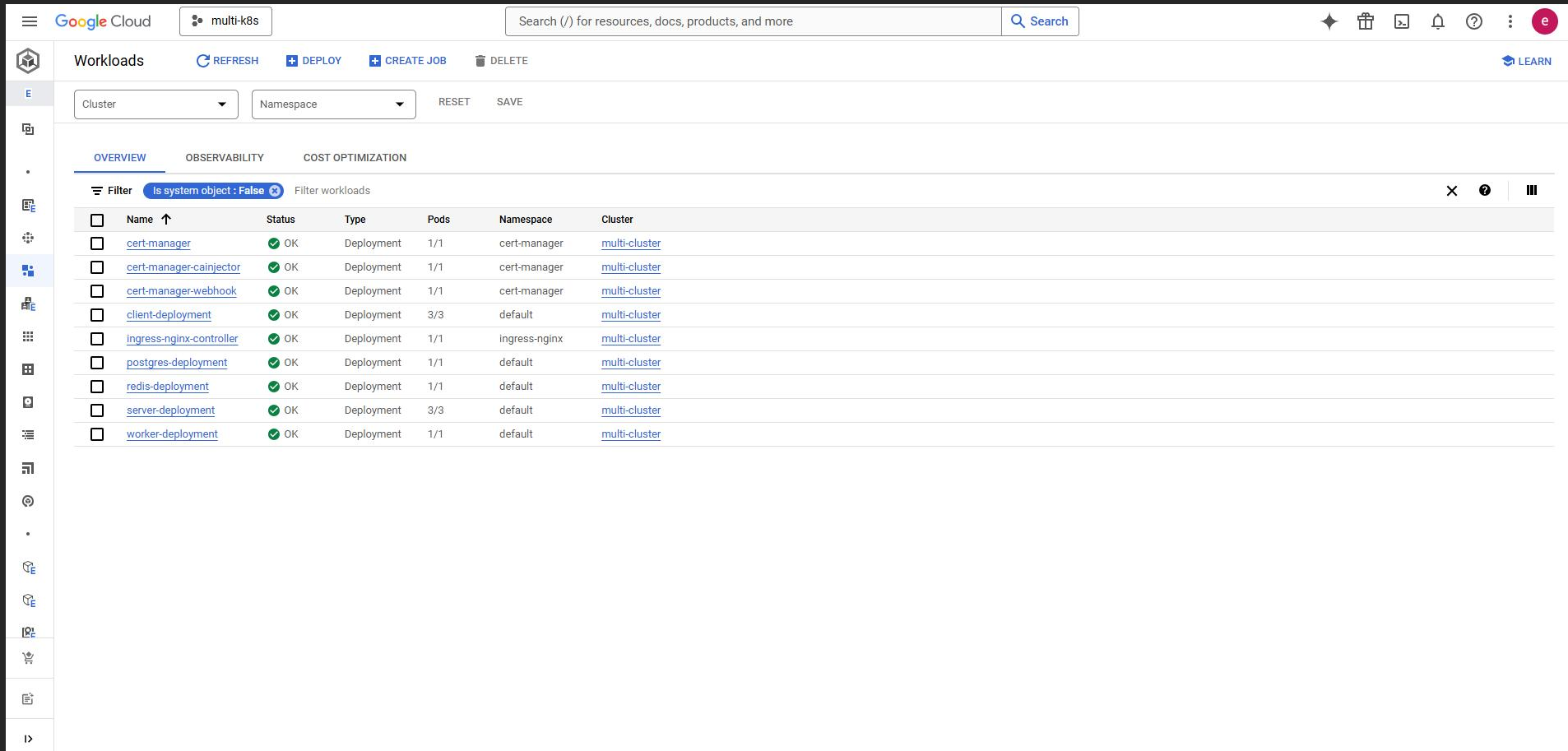
<input type="checkbox"/>	DNS name ↑	Type	TTL (seconds)	Record data		
<input type="checkbox"/>	<a href="#">ercankurtoglu.xyz.</a>	A	300	34.58.200.7		
<input type="checkbox"/>	<a href="#">ercankurtoglu.xyz.</a>	SOA	21600	ns-cloud-c1.google.com. cloud-dns-hostmaster.google.com. 1 21600 3600	▼	
<input type="checkbox"/>	<a href="#">ercankurtoglu.xyz.</a>	NS	21600	ns-cloud-c1.google.com.	▼	
<input type="checkbox"/>	<a href="#">www.ercankurtoglu.xyz.</a>	CNAME	300	ercankurtoglu.xyz.		

Below the table, there is a section for 'EQUIVALENT REST'.

## 06. GPC

- Deployed

- Kubernetes Workloads



The screenshot displays the Google Cloud Workloads management interface. At the top, the Google Cloud logo and 'multi-k8s' project name are visible. A search bar is present on the right. The main header includes 'Workloads' and action buttons: REFRESH, DEPLOY, CREATE JOB, and DELETE. Below this, there are filters for 'Cluster' and 'Namespace', along with 'RESET' and 'SAVE' buttons. The interface is divided into three tabs: OVERVIEW (selected), OBSERVABILITY, and COST OPTIMIZATION. A filter bar shows 'Filter: Is system object : False' and 'Filter workloads'. The main content area is a table listing various Kubernetes workloads.

<input type="checkbox"/>	Name ↑	Status	Type	Pods	Namespace	Cluster
<input type="checkbox"/>	<a href="#">cert-manager</a>	OK	Deployment	1/1	cert-manager	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">cert-manager-cainjector</a>	OK	Deployment	1/1	cert-manager	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">cert-manager-webhook</a>	OK	Deployment	1/1	cert-manager	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">client-deployment</a>	OK	Deployment	3/3	default	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">ingress-nginx-controller</a>	OK	Deployment	1/1	ingress-nginx	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">postgres-deployment</a>	OK	Deployment	1/1	default	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">redis-deployment</a>	OK	Deployment	1/1	default	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">server-deployment</a>	OK	Deployment	3/3	default	<a href="#">multi-cluster</a>
<input type="checkbox"/>	<a href="#">worker-deployment</a>	OK	Deployment	1/1	default	<a href="#">multi-cluster</a>

## 06. GPC

- Deployed
- Kubernetes Workloads / ingress-nginx-controller

The screenshot displays the Google Cloud console interface for a Kubernetes deployment. The top navigation bar shows the Google Cloud logo, the project name 'multi-k8s', and a search bar. The main content area is titled 'Deployment details' and shows the following information:

- Cluster:** multi-cluster
- Namespace:** ingress-nginx
- 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: 1.12.0, helm.sh/chart: ingress-nginx-4.12.0
- Logs:** Container logs, Audit logs
- Replicas:** 1 updated, 1 ready, 1 available, 0 unavailable
- Pod specification:** Revision 1, containers: controller, volumes: webhook-cert
- Horizontal Pod Autoscaler:** Not configured
- Vertical Pod Autoscaler:** Not configured

Below the deployment details, there are three sections:

- Active revisions:** A table showing the deployment history.
- Managed pods:** A table showing the current pods.
- Exposing services:** A table showing the services exposed by the deployment.

The 'Active revisions' table has the following data:

Revision	Name	Status	Summary	Created on	Pods running/Pods total
1	ingress-nginx-controller-5485b65c4d	OK	controller: registry.k8s.io/ingress-nginx/controller.v1.12.0@sha256:e6b0de175acda6ca913891f0f727bca4527e797d52680cbe9fec9040d6f6b6fa	Jan 7, 2025, 11:22:05 AM	1/1

The 'Managed pods' table has the following data:

Revision	Name	Status	Restarts	Created on
1	ingress-nginx-controller-5485b65c4d-zsgfn	Running	0	Jan 7, 2025, 11:32:05 AM

The 'Exposing services' table has the following data:

Name	Type	Endpoints
ingress-nginx-controller	Load balancer	34.58.203.7.80 [v]
ingress-nginx-controller admission	Cluster IP	34.118.228.182

The 'Configuration' section shows the following data:

Name	Type
ingress-nginx-admission	Secret



## 06. GPC

- Deployed

- Web page

