

# Cloud Console

## 1. Make a storage bucket

The screenshot shows the 'Bucket details' page for 'iantsai-cs528'. The top navigation bar includes 'Edit bucket', 'Go to path', and a 'Dark Mode applied based on your operating system preference' message. The main area displays bucket metadata: Location (us (multiple regions in United States)), Storage class (Standard), Public access (Not public), and Protection (Soft Delete). A 'Folder browser' sidebar shows a single folder named 'iantsai-cs528'. The main content area lists 'Buckets > iantsai-cs528' with options to 'Create folder', 'Upload', 'Transfer data', and 'Other services'. A table header for object listing includes columns for Name, Size, Type, Created, Storage class, Last modified, Public access, Version history, and Encryption. A message at the bottom states 'Created bucket iantsai-cs528' and 'Your bucket is ready. Just add data.'

- I created a bucket named 'iantsai-cs528'

## 2. Make a directory inside your bucket

The screenshot shows the 'Bucket details' page for 'iantsai-cs528'. The sidebar now shows two entries: 'iantsai-cs528' and 'Ian's Folder/'. The main content area displays the same bucket metadata as before. The object listing table shows one item: 'Name' ( Ian's Folder/), 'Type' (Folder), and 'Created' (—).

- I made a directory named 'Ian's Folder'

## 3. List the directory inside your bucket

The screenshot shows the 'Bucket details' page for 'iantsai-cs528'. The sidebar shows 'iantsai-cs528' and 'Ian's Folder/'. The main content area shows the bucket metadata and an object listing table with one entry: 'Name' ( Ian's Folder/), 'Type' (Folder), and 'Created' (—).

- It's already shown in the console

## 4. Copy a file into your directory

- I used the upload button to upload a file

The screenshot shows the Google Cloud Storage console interface. On the left, there's a sidebar with navigation links like 'Getting bucket information', 'Uploading objects', 'Downloading objects', 'Use cases for Cloud Storage', 'Terraform samples', 'Architecture guides for storage', and 'Prevent public access'. The main area shows a bucket named 'iantsai-cs528' with a location of 'us (multiple regions in United States)' and a storage class of 'Standard'. It has 'Public access' set to 'Not public' and 'Protection' set to 'Soft Delete'. Below this, there are tabs for 'Objects', 'Configuration', 'Permissions', 'Protection', 'Lifecycle', 'Observability', 'Inventory Reports', and 'Operations'. A 'Folder browser' section shows a tree structure with 'iantsai-cs528' expanded, revealing 'Ian's Folder/'. Underneath is a table of objects, with one entry: 'Name: Ian\_Tsai\_Resume.pdf, Size: 107.1 KB, Type: application/pdf, Created: Jan 31, 2026, 4:57:50 PM, Storage class: Standard, Last modified: Jan 31, 2026, 4:57:50 PM'. At the bottom, a message says '1 file successfully uploaded'.

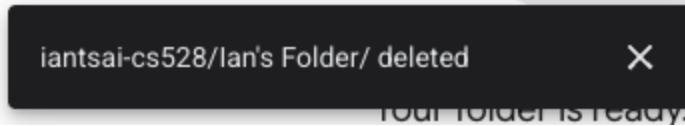
## 5. List the file inside your directory

This screenshot is similar to the previous one but focuses on the contents of 'Ian's Folder/'. The table shows the same single file entry: 'Name: Ian\_Tsai\_Resume.pdf, Size: 107.1 KB, Type: application/pdf, Created: Jan 31, 2026, 4:57:50 PM, Storage class: Standard, Last modified: Jan 31, 2026, 4:57:50 PM'.

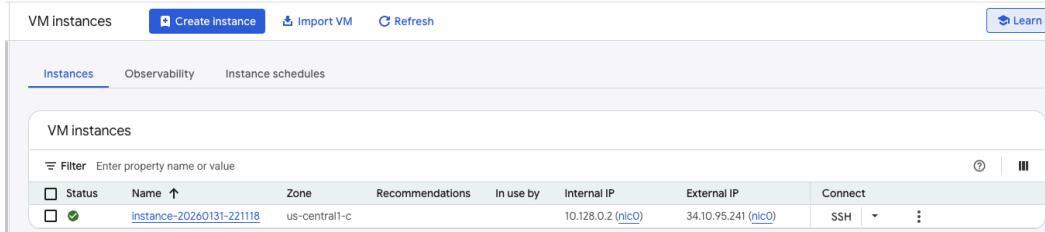
- It's already shown in the console if I click in the directory I created 'Ian's Folder' (in this case)

## 6. Delete the directory (and the file inside it) in a single operation

This screenshot shows a context menu for the 'Ian's Folder/' directory. The menu options are: 'Create subfolder', 'Delete folder', 'Edit access', 'Transfer data in', 'Transfer data out', 'Export to Cloud Pub/Sub', and 'Scan with Sensitive Data Protection'.

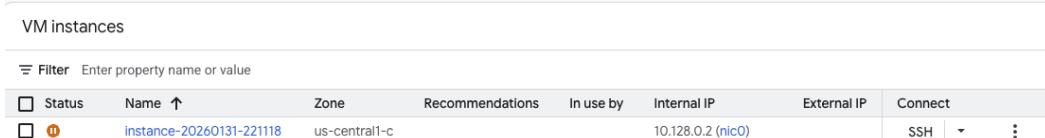
- 
- Clicked 'delete folder' which also deletes the file inside

## 7. Make a VM



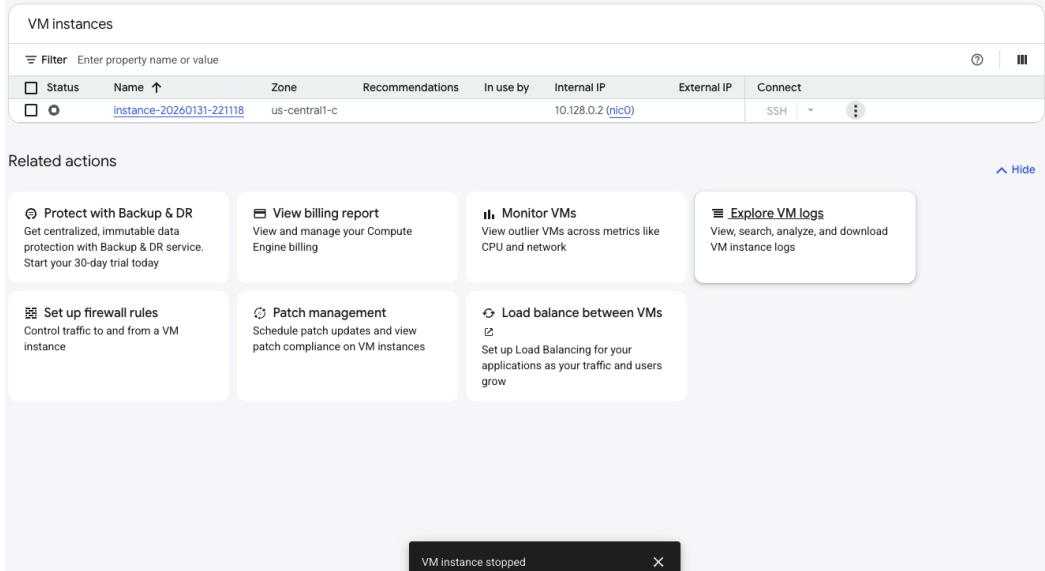
Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input type="checkbox"/>	<a href="#">instance-20260131-221118</a>	us-central1-c			10.128.0.2 (nic0)	34.10.95.241 (nic0)	SSH

## 8. Suspend the VM



Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input checked="" type="checkbox"/>	<a href="#">instance-20260131-221118</a>	us-central1-c			10.128.0.2 (nic0)		SSH

## 9. Stop the VM



VM instance stopped

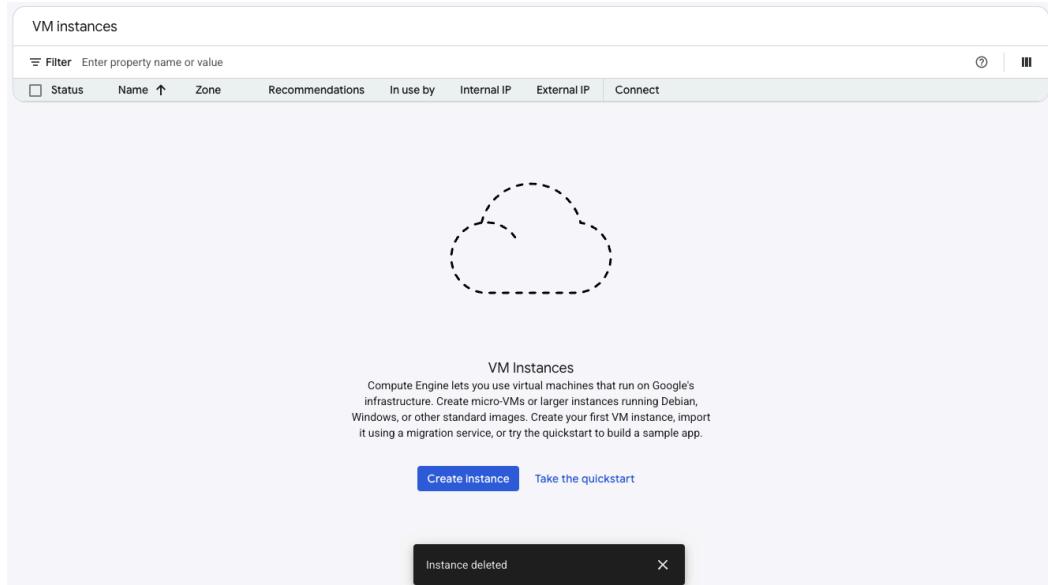
## 10. List all your VMs



Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input checked="" type="checkbox"/>	<a href="#">instance-20260131-221118</a>	us-central1-c			10.128.0.2 (nic0)		SSH

- Directly shown on console without any click in buttons

## 11. Delete the VM



## 12. Make a service account and give it permissions to access your storage bucket

The screenshot shows the 'Service accounts' page for project 'CS528'. A new service account named 'Ian's Service Account' is being created. The 'Permissions' tab is selected, showing the 'Edit access to "CS528"' dialog. It lists a single role assignment: 'Storage Object Viewer' for principal 'ian-s-service-account@cs528-485121.iam.gserviceaccount.com'. The 'Assign roles' section is visible below. A note at the bottom says 'Policy updated. It may take a few minutes for these changes to propagate.'

- Created a service account named 'Ian's Service Account' that has access to storage buckets

## 13. List all your service accounts

The screenshot shows the 'Service accounts' page for project 'CS528'. It lists three service accounts: 'Email' (disabled), '156436261849-compute@developer.gserviceaccount.com' (enabled), and 'ian-s-service-account@cs528-485121.iam.gserviceaccount.com' (enabled). The table includes columns for Email, Status, Name, Description, Key ID, Key creation date, OAuth 2 Client ID, and Actions.

Email	Status	Name	Description	Key ID	Key creation date	OAuth 2 Client ID	Actions
156436261849-compute@developer.gserviceaccount.com	Enabled	Compute Engine default service account	No keys			103803879824030529465	⋮
ian-s-service-account@cs528-485121.iam.gserviceaccount.com	Enabled	Ian's Service Account	Testing	No keys		105365552305294788406	⋮

## 14. Delete the service account

Service accounts																							
		<a href="#">+ Create service account</a>	<a href="#">Delete</a>	<a href="#">Manage access</a>	<a href="#">Refresh</a>																		
Service accounts for project "CS528"																							
A service account represents a Google Cloud service identity, such as code running on Compute Engine VMs, App Engine apps, or systems running outside Google. <a href="#">Learn more about service accounts</a> .																							
Organization policies can be used to secure service accounts and block risky service account features, such as automatic IAM Grants, key creation/upload, or the creation of service accounts entirely. <a href="#">Learn more about service account organization policy</a> .																							
<input type="text"/> Filter: Enter property name or value																							
<table border="1"> <thead> <tr> <th>Email</th> <th>Status</th> <th>Name ↑</th> <th>Description</th> <th>Key ID</th> <th>Key creation date</th> <th>OAuth 2 Client ID</th> <th>Actions</th> </tr> </thead> <tbody> <tr> <td><a href="#">156436261849-compute@developer.gserviceaccount.com</a></td> <td>Enabled</td> <td>Compute Engine default service account</td> <td></td> <td>No keys</td> <td>103803879824030529465</td> <td></td> <td><a href="#">⋮</a></td> </tr> </tbody> </table>								Email	Status	Name ↑	Description	Key ID	Key creation date	OAuth 2 Client ID	Actions	<a href="#">156436261849-compute@developer.gserviceaccount.com</a>	Enabled	Compute Engine default service account		No keys	103803879824030529465		<a href="#">⋮</a>
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## 15. Delete the storage bucket

Account Ian's Service Account has been deleted.

Buckets								
		<a href="#">+ Create</a>	<a href="#">Refresh</a>	<a href="#">Go to path</a> <a href="#">Learn</a>				
<input type="text"/> Filter: Filter buckets								
	Name ↑	Created	Location type	Location	Default storage class	Last modified	Public access	
No rows to display								

Store and retrieve your data  
Get started by creating a bucket – a container where you can organize and control access to your data and files in Cloud Storage.

[Create bucket](#) [Take quickstart](#)

Deleted 1 bucket

GCloud

Note:

- ‘gcloud config set project cs528-485121’ is how I enter my project

1. Make a storage bucket

```
apple ~ ➜ gcloud storage buckets create gs://iantsai-cs528 --location=us-central1
Creating gs://iantsai-cs528/...
apple ~ ➜
```

- a.
- b. Don't need to specify location too; if we don't specify, a location will be assigned

2. Make a directory inside your bucket

- a. Echo is needed to provide some form of input in this case empty content
- b. A placeholder ‘.keep’ is needed as a destination object name needed when source is stdin

```
apple ~ ➜ echo "" | gcloud storage cp - gs://iantsai-cs528/Ian-Folder/.keep
Copying file://- to gs://iantsai-cs528/Ian-Folder/.keep
...
apple ~ ➜
```

- c.

3. List the directory inside your bucket

```
apple ~ ➜ gcloud storage ls gs://iantsai-cs528/
gs://iantsai-cs528/Ian-Folder/
apple ~ ➜
```

- a.

4. Copy a file into your directory

```
apple ~ ➜ echo "hello world" > hello.txt
apple ~ ➜ gcloud storage cp hello.txt gs://iantsai-cs528/Ian-Folder/hello.txt
Copying file://hello.txt to gs://iantsai-cs528/Ian-Folder/hello.txt
Completed files 1/1 | 12.0B/12.0B
apple ~ ➜
```

- a.

5. List the file inside your directory

```
apple ~ ➜ gcloud storage ls gs://iantsai-cs528/Ian-Folder
gs://iantsai-cs528/Ian-Folder/hello.txt
apple ~ ➜
```

- a.

6. Delete the directory (and the file inside it) in a single operation

```
a. ➜ gcloud storage rm --recursive gs://iantsai-cs528/Ian-Folder  
Removing objects:  
::Removing gs://iantsai-cs528/Ian-Folder/hello.txt#1769962477543588...  
Completed 1/1
```

- b. '--recursive' is needed to remove all files inside

## 7. Make a VM

```
a. ➜ gcloud compute instances create ian-lab-vm --zone=us-central1-a  
  
Created [https://www.googleapis.com/compute/v1/projects/cs528-485121/zones/us-central1-a/instances/ian-lab-vm].  
WARNING: Some requests generated warnings:  
- You are creating a global DNS VM. VM instances using global DNS are vulnerable to cross-regional outages. To reduce the risk of widespread service disruption, use zonal DNS instead. Learn more at https://cloud.google.com/compute/networking/zonal-dns  
  
NAME ZONE MACHINE_TYPE PREEMPTIBLE INTERNAL_IP EXTERNAL_IP STATUS  
ian-lab-vm us-central1-a n1-standard-1 10.128.0.3 34.134.78.40 RUNNING
```

## 8. Suspend the VM

```
a. ➜ gcloud compute instances suspend ian-lab-vm  
No zone specified. Using zone [us-central1-a] for instance: [ian-lab-vm].  
Suspending instance(s) ian-lab-vm...done.  
Updated [https://compute.googleapis.com/compute/v1/projects/cs528-485121/zones/us-central1-a/instances/ian-lab-vm].
```

## 9. Stop the VM

```
a. ➜ gcloud compute instances stop ian-lab-vm  
No zone specified. Using zone [us-central1-a] for instance: [ian-lab-vm].  
Stopping instance(s) ian-lab-vm...done.  
Updated [https://compute.googleapis.com/compute/v1/projects/cs528-485121/zones/us-central1-a/instances/ian-lab-vm].
```

## 10. List all your VMs

```
a. ➜ gcloud compute instances list  
NAME ZONE MACHINE_TYPE PREEMPTIBLE INTERNAL_IP EXTERNAL_IP STATUS  
ian-lab-vm us-central1-a n1-standard-1 10.128.0.3 TERMINATED
```

## 11. Delete the VM

```
a. ➜ gcloud compute instances delete ian-lab-vm  
No zone specified. Using zone [us-central1-a] for instance: [ian-lab-vm].  
The following instances will be deleted. Any attached disks configured to be auto-deleted will be deleted unless they are attached to any other instances or the `--keep-disks` flag is given and specifies them for keeping. Deleting a disk is irreversible and any data on the disk will be lost.  
- [ian-lab-vm] in [us-central1-a]  
  
Do you want to continue (Y/n)? y  
  
Deleted [https://www.googleapis.com/compute/v1/projects/cs528-485121/zones/us-central1-a/instances/ian-lab-vm].
```

## 12. Make a service account and give it permissions to access your storage bucket

```
a. ➜ gcloud iam service-accounts create ian-sa  
Created service account [ian-sa].
```

```
gcloud storage buckets add-iam-policy-binding gs://iantsai-cs528 \
--member="serviceAccount:ian-sa@cs528-485121.iam.gserviceaccount.com" \
--role="roles/storage.objectAdmin"

bindings:
- members:
  - projectEditor:cs528-485121
  - projectOwner:cs528-485121
    role: roles/storage.legacyBucketOwner
- members:
  - projectViewer:cs528-485121
    role: roles/storage.legacyBucketReader
- members:
  - serviceAccount:ian-sa@cs528-485121.iam.gserviceaccount.com
    role: roles/storage.objectAdmin
etag: CAI=
kind: storage#policy
resourceId: projects/_/buckets/iantsai-cs528
version: 1
```

b.

### 13. List all your service accounts

```
gcloud iam service-accounts list

DISPLAY NAME          EMAIL          DISABLED
Compute Engine default service account 156436261849-compute@developer.gserviceaccount.com False
                                             ian-sa@cs528-485121.iam.gserviceaccount.com False
```

a.

### 14. Delete the service account

```
gcloud iam service-accounts delete ian-sa@cs528-485121.iam.gserviceaccount.com
You are about to delete service account [ian-sa@cs528-485121.iam.gserviceaccount.com]

Do you want to continue (Y/n)? y

deleted service account [ian-sa@cs528-485121.iam.gserviceaccount.com]
```

a.

### 15. Delete the storage bucket

```
gcloud storage buckets delete gs://iantsai-cs528
:Removing gs://iantsai-cs528/...
Completed 1/1
```

a.

gsutil

1. Make a storage bucket

```
gsutil mb gs://iantsai-cs528  
Creating gs://iantsai-cs528/...
```

o

2. Make a directory inside your bucket

```
echo -n "" | gsutil cp - gs://iantsai-cs528/ian-folder/.tmp  
Copying from <STDIN>...  
/ [1 files] [ 0.0 B/ 0.0 B]  
Operation completed over 1 objects.
```

o

3. List the directory inside your bucket

```
gsutil ls gs://iantsai-cs528  
gs://iantsai-cs528/ian-folder/
```

o

4. Copy a file into your directory

```
gsutil cp hello.txt gs://iantsai-cs528/ian-folder  
Copying file://hello.txt [Content-Type=text/plain]...  
/ [1 files] [ 12.0 B/ 12.0 B]  
Operation completed over 1 objects/12.0 B.
```

o

5. List the file inside your directory

```
gsutil ls gs://iantsai-cs528/ian-folder  
gs://iantsai-cs528/ian-folder/hello.txt
```

o

6. Delete the directory (and the file inside it) in a single operation

```
gsutil rm -r gs://iantsai-cs528/ian-folder  
Removing gs://iantsai-cs528/ian-folder/hello.txt#1769965389521164...  
/ [1 objects]  
Operation completed over 1 objects.
```

o

o '-r' = recursive

7. Make a VM

o Does not apply

8. Suspend the VM
  - Does not apply
9. Stop the VM
  - Does not apply
10. List all your VMs
  - Does not apply
11. Delete the VM
  - Does not apply
12. Make a service account and give it permissions to access your storage bucket
  - Does not apply
13. List all your service accounts
  - Does not apply
14. Delete the service account
  - Does not apply
15. Delete the storage bucket
  - Removing gs://iantsai-cs528/...
  - 'Rb' = remove bucket