

AI-03934 GCP Expand Boot Disk to 60GB

Owner	Ⓜ Rigel Arcayan
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In GCP, I'm 71% of disk space (30GB). Provide guidance on how to expand to 60GB and additional cost post \$300 trial - e2-highmen 8GB.

Hitting 71% of a 30GB partition is getting tight—it is smart to bump it up before services start failing or Docker containers freeze due to zero disk space.

Expanding the storage requires a two-step process: changing the size in the Google Cloud Console, and then telling your Linux operating system to recognize the new blocks.

Part 1: Step-by-Step Expansion Guide

You can scale a GCP persistent disk safely while the VM is running without incurring downtime.

Step 1: Resize the Infrastructure Layer (GCP Console)

1. Open the **GCP Console** and navigate to **Compute Engine** → **VM instances**.
2. Click the name of your instance.
3. Scroll down to the **Boot disk and local disks** section and click on the name of your boot disk.
4. Click **Edit** at the top of the disk details page.
5. In the **Size** field, change **30** to **60**.
6. Click **Save**.

Step 2: Expand the Linux Filesystem (OS Layer)

GCP expands the physical disk instantly, but your OS partition table doesn't automatically stretch to capture it.

Click the **SSH** button next to your VM instance in the console to open a terminal, and run the following sequential commands:

1. Check the disk and partition names:

~1 min.

Run `df -h` to see your current filesystem limit. Then run `lsblk` to identify the device name. Typically, your boot disk is `sda` and the root partition is `sda1`.

2. Update the GPT partition table:

~1 min.

Open the partition table utility by running:

Bash

```
sudo fdisk /dev/sda
```

At the prompt, simply type `w` and hit Enter to write the updated geometry and exit. (Ignore any "device busy" warnings).

3. Grow the specific partition:

~30 seconds.

Expand partition 1 into the new trailing space by running:

Bash

```
sudo growpart /dev/sda 1
```

Note the space between `sda` and `1`.

4. Resize the filesystem layout:

~30 seconds.

Inform your filesystem of the new boundary. If you are running an **ext4** filesystem (typical for Debian/Ubuntu):

Bash

```
sudo resize2fs /dev/sda1
```

If your image uses **XFS** instead, use `sudo xfs_growfs /`.

5. Verify the changes:

~30 seconds.

Run `df -h` one final time. Your root partition (`/`) should now show roughly 60GB total with plenty of headroom.

Part 2: Post-Trial Cost Breakdown

Once your 90-day, \$300 trial credit expires, you transition to standard "pay-as-you-go" billing. GCP calculates compute instance costs by the second and disk storage by the gigabyte-month.

Assuming you are using a standard region like **us-central1 (Iowa)**, your ongoing monthly commitment will look like this:

1. Compute Infrastructure: `e2-highmem-2`

The E2 high-memory tier starts with the `e2-highmem-2` machine type, which provides **2 vCPUs and 16 GB of RAM**.

- **On-Demand Price:** ~\$65.99 per month (assuming continuous 24/7 runtime of 730 hours).
- *Note:* If you are running a custom or non-standard shape, standard E2 compute rates average roughly \$0.033 per vCPU-hour and \$0.0044 per GB-hour.

2. Storage Infrastructure: Persistent Disk (60GB)

Storage charges scale exactly linearly based on the type of volume you choose:

Disk Type	Price per GB / Month	30GB Cost	New 60GB Cost
Standard HDD (<code>pd-standard</code>)	~\$0.040	\$1.20	\$2.40 / mo
Balanced SSD (<code>pd-balanced</code>)	~\$0.100	\$3.00	\$6.00 / mo

Performance SSD (<code>pd-ssd</code>)	~\$0.170	\$5.10	\$10.20 / mo
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The Always-Free Tier Cushion: Google Cloud accounts include **30 GB-months** of Standard HDD (`pd-standard`) storage for free, even after the trial ends. If your boot disk is configured as a Standard HDD, you only pay for the remaining 30GB of your new allocation, dropping your net storage surcharge down to just **\$1.20/month**. If you chose Balanced or Performance SSDs, the free tier credit does not apply.

Estimated Total Post-Trial Monthly Bill

- **Compute (`e2-highmem-2` 24/7):** ~\$65.99
- **Storage (60GB Balanced SSD as an average standard):** ~\$6.00
- **Total: ~\$71.99 / month** (plus local taxes).

If this environment is for testing, development, or container experimentation rather than an active production service, you can cut the compute cost drastically by setting an automated schedule to stop the VM instance overnight or during weekends when it isn't actively processing data. You only pay for compute when the instance is explicitly `RUNNING`.