

Suspending and resuming an instance

a Beta release of Compute Engine API. This API is not covered by any SLA or deprecation policy and might be subject to backward-incompatible changes.

This document describes how to suspend and resume a virtual machine (VM) instance. For information about how to stop and start an instance, see [Stopping and starting an instance \(/compute/docs/instances/stop-start-instance\)](/compute/docs/instances/stop-start-instance). For information about the instance lifecycle, see [Instance Life Cycle \(/compute/docs/instances/instance-life-cycle\)](/compute/docs/instances/instance-life-cycle) documentation.

Suspending an instance sends an [ACPI S3 suspend](https://wikipedia.org/wiki/Advanced_Configuration_and_Power_Interface) (https://wikipedia.org/wiki/Advanced_Configuration_and_Power_Interface) signal to the instance's operating system. Suspending an instance is analogous to closing the lid of your laptop, putting the instance into a **SUSPENDED** state. Suspending an instance is ideal for:

- Development and test environments that are not being fully utilized during off periods, such as during evenings or weekends, for cost savings or faster initialization than creating new VM instances.
- Applications that require a long period of initialization after the instance has finished booting, but before the application is ready to service its first request, such as virtual developer workstations or complex Java applications.

Suspending an instance differs from [stopping an instance \(/compute/docs/instances/stop-start-instance\)](/compute/docs/instances/stop-start-instance) in the following ways:

- Suspended instances preserve the guest OS memory, device state, and application state.
- Google [charges for suspended instances \(#billing\)](#).
- You can only suspend an instance for up to 60 days. After 60 days, the instance is automatically moved to the **TERMINATED** state.

With the exception of local SSD data, all resources that are attached to the instance remain attached to the instance and will be charged, including persistent disks and static or reserved external IP addresses. All of these resources are charged according to the [price sheet \(/compute/all-pricing\)](/compute/all-pricing), even if an instance is suspended.

You cannot suspend an instance by using the standard processes that are built into the guest environment. Commands, such as the `systemctl suspend` command in Ubuntu 16.04 and later, are not available. You can only use the `gcloud` command-line tool or the Compute Engine API to suspend an instance.

If you don't care about restoring an instance's memory and device state when you resume the instance later, you can `stop` (</compute/docs/instances/stop-start-instance>) the instance instead, which does not incur additional storage charges.

Before you begin

- If you want to use the command-line examples in this guide:
 1. Install or update to the latest version of the [gcloud command-line tool](/compute/docs/gcloud-compute) (</compute/docs/gcloud-compute>).
 2. [Set a default region and zone](/compute/docs/gcloud-compute#set_default_zone_and_region_in_your_local_client) (/compute/docs/gcloud-compute#set_default_zone_and_region_in_your_local_client).
- If you want to use the API examples in this guide, [set up API access](/compute/docs/api/prereqs) (</compute/docs/api/prereqs>).

Beta restrictions

During beta, the following restrictions apply for this feature:

- You cannot suspend an instance that uses a [GPU](/compute/docs/gpus) (</compute/docs/gpus>).
- You can suspend an instance that has attached local SSD, but the local SSD contents must be discarded using a special flag for discarding local SSD data. For more information, see [Suspending a VM instance](/compute/docs/instances/suspend-resume-instance#suspend-resume-vm-instance) ([#suspending_an_instance](/compute/docs/instances/suspend-resume-instance#suspend-resume-vm-instance)).
- You cannot suspend an instance by using the standard processes that are built into the guest environment. Commands, such as the `systemctl suspend` command in Ubuntu 16.04 and later, are not available. The in-guest signal is ignored.
- You can only suspend an instance for up to 60 days before the VM is automatically stopped.

- You cannot suspend instances with more than 120 GB of memory.
- You can suspend preemptible instances, but the preemptible instance might be terminated before it is successfully suspended.
- During beta, Compute Engine might discard the preserved memory state of a suspended instance. If Compute Engine does have to discard preserved memory state, Compute Engine will move the instance to the **TERMINATED** state, and you can reboot the instance normally using the [instances.start](/compute/docs/reference/latest/instances/start) (/compute/docs/reference/latest/instances/start) method.

OS compatibility

Most operating systems offered on Compute Engine support the suspend and resume functionality, but there are a few OSes that do not. Use the following table to determine whether an OS supports suspend and resume.

Image family	Versions	Status	Notes
Supported OS			
Ubuntu	16, 18, 19 or later	Supported	None
Container-Optimized OS	69, 73, 77, 81 or later	Supported	None
RHEL	7	Supported	None
CentOS	7	Supported	None
Windows	2012, 2016, 2019 or later	Supported	None
SUSE (SLES)	12, 15 or later	Supported	None
Debian	8, 9	Supported, but requires some configuration	Instructions for configuring Debian 8, 9 (#debian_configuration)

Unsupported OS

CentOS	6, 8	Unsupported	None
RHEL	6, 8	Unsupported	None
SQL Server on Windows Server	All	Unsupported	None
RHEL for SAP	All	Unsupported	None
Debian	10	Unsupported	None
CoreOS	All	Unsupported	None

Pricing

When you suspend an instance, you are charged for:

- Instance memory (see [Suspended VM instances \(/compute/all-pricing#suspended_vm_instances\)](/compute/all-pricing#suspended_vm_instances)).
- Any persistent disk usage for the boot disk and any additional disks attached to the instance (see [Persistent disk pricing \(/compute/disks-image-pricing#persistentdisk\)](/compute/disks-image-pricing#persistentdisk)).
- Any [static IPs \(/compute/network-pricing#ipaddress\)](/compute/network-pricing#ipaddress) attached to the instance.

Suspending an instance

Permissions required for this task

To perform this task, you must have the following [permissions \(/iam/docs/overview#permissions\)](/iam/docs/overview#permissions):

- `compute.instances.suspend` on the instance

To suspend an instance, use the [Cloud Console \(https://console.cloud.google.com/\)](https://console.cloud.google.com/), the [gcloud tool \(/compute/docs/gcloud-compute\)](/compute/docs/gcloud-compute), or the [beta API \(/compute/docs/reference/rest/beta/instances/suspend\)](/compute/docs/reference/rest/beta/instances/suspend).

You cannot suspend an instance by using the standard processes that are built into the guest environment. You can use the [Cloud Console \(https://console.cloud.google.com/\)](https://console.cloud.google.com/), the [gcloud](#)

command-line tool, or the API to suspend an instance.

[Console](#)[gcloud](#) (#gcloud)[API](#) (#api)

1. In the Cloud Console, go to the **VM instances** page.

[Go to the VM instances page](https://console.cloud.google.com/compute/instances) (https://console.cloud.google.com/compute/instances)

2. Select one or more instances to suspend.
3. Click **Suspend**.
4. When prompted, if you want to discard local SSD data, select **Discard the SSD content**. When your instance is resumed, any local SSD data on the instance will have been discarded.

Resuming a suspended instance

+ Permissions required for this task

To perform this task, you must have the following [permissions](/iam/docs/overview#permissions) (/iam/docs/overview#permissions):

- `compute.instances.resume` on the instance

To resume a suspended instance, use the [Cloud Console](https://console.cloud.google.com/) (https://console.cloud.google.com/), the [gcloud tool](/compute/docs/gcloud-compute) (/compute/docs/gcloud-compute), or the [beta API](/compute/docs/reference/latest/instances) (/compute/docs/reference/latest/instances).

[Console](#)[gcloud](#) (#gcloud)[API](#) (#api)

1. In the Google Cloud Console, go to the **VM instances** page.

[Go to the VM instances page](https://console.cloud.google.com/compute/instances) (https://console.cloud.google.com/compute/instances)

2. Select one or more instances to resume.
3. Click **Start/Resume**.

Resuming instances that have encrypted disks

If the instance you want to resume uses [customer-supplied encryption keys](/compute/docs/disks/customer-supplied-encryption) (/compute/docs/disks/customer-supplied-encryption), you must provide those keys when trying to resume the instance.

Resume the instance by using the [gcloud tool](/compute/docs/gcloud-compute) (/compute/docs/gcloud-compute) or the [API](/compute/docs/reference/latest/instances) (/compute/docs/reference/latest/instances).

Currently, you cannot resume an instance using a customer-supplied encrypted key in the Cloud Console. Use [gcloud](#) tool or the API instead.

`gcloudAPI` (#api)

Provide the key by using the `--csek-key-file` flag and the name of the instance to start. If you are using an RSA-wrapped key, use the `gcloud beta` component:

```
gcloud beta compute instances resume INSTANCE_NAME \  
--csek-key-file ENCRYPTION_KEY_FILE
```

Replace the following:

- ***INSTANCE_NAME***: the name of the instance
- ***ENCRYPTION_KEY***: the relative path to the file that contains the encryption key that you used to encrypt persistent disks that are attached to the instance

Suspend process

When you make a suspend request, you send an ACPI suspend signal to the VM instance. If the VM does not respond to the ACPI S3 suspend signal within a couple of minutes, Compute Engine cancels the suspend attempt and returns the VM to a `RUNNING` state.

The following table describes the effect of suspending a VM instance on its associated resources:

Resource	Support
Memory	Only VMs with less than or equal to 120 GB of memory can be suspended
Local SSD	Local SSD data is discarded
Persistent disk	Persistent HDD and SSD disks are retained
IP addresses	Ephemeral IPs are released during suspension, but static IPs remain attached to the VM instances. If you would like to retain your ephemeral ID, promote it.
VM configuration (such as machine type, metadata, labels, etc.)	All VM configurations, other than ephemeral IP addresses, are preserved and restored when the instance resumes.

Local SSDs and preemptible VMs

Local SSD (`/compute/docs/disks/local-ssd`) content is not preserved when an instance is suspended. By default, suspending an instance that has a local SSD returns an error. You can override this default behavior by specifying a flag to discard local SSD data, which lets the instance be suspended and resumed, but discards the contents of the local SSD in the process. In this scenario, Compute Engine resumes the instance with the same number of local SSD volumes attached, but the volumes will be empty and uninitialized.

You can suspend a preemptible VM (`/compute/docs/instances/preemptible`) but if preemption (not the advance warning that precedes the preemption) occurs before the suspend operation completes, the suspend exits and the instance is preempted.

Configuring a Debian VM to support suspend and resume

VMs running Debian 8 and 9 can suspend and resume, but they must be configured beforehand. To configure your Debian instance, complete one of the following sets of instructions, option A or option B. We recommend configuring the ACPIID if possible (option A).

Option A

This option configures the ACPIID to handle the sleep button event and adds a shell script for handling the sleep event.

1. Connect to your VM instance using ssh:

```
gcloud compute instances ssh INSTANCE_NAME
```

2. On the VM instance, create a directory under the `acpi` folder:

```
sudo mkdir -p /etc/acpi/events/
```

3. Configure ACPIID to handle the sleep button event:

```
cat <<EOF | sudo tee /etc/acpi/events/sleepbtn-acpi-support
event=button[ /]sleep
action=/etc/acpi/sleepbtn-acpi-support.sh
EOF
```

4. Create the sleep event handling script:

```
cat <<EOF | sudo tee /etc/acpi/sleepbtn-acpi-support.sh
#!/bin/sh
echo mem > /sys/power/state
EOF
```

5. Set up the permissions for the script:

```
sudo chmod 755 /etc/acpi/sleepbtn-acpi-support.sh
```

6. Restart ACPIID:

```
sudo systemctl restart acpid.service
```


Option B

1. Connect to your VM instance using ssh:

```
gcloud compute instances ssh INSTANCE_NAME
```

2. On the VM instance, install dbus:

```
sudo apt-get install dbus
```

3. Restart logind:

```
sudo systemctl restart systemd-logind.service
```

What's next

- [Delete an instance](/compute/docs/instances/deleting-instance) (/compute/docs/instances/deleting-instance) if you no longer need it.
- [Stop and start an instance](/compute/docs/instances/stop-start-instance) (/compute/docs/instances/stop-start-instance).
- Review the [Instance lifecycle](/compute/docs/instances/instance-life-cycle) (/compute/docs/instances/instance-life-cycle).

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