Running shutdown scripts

Create and run shutdown scripts that execute commands right before an instance is terminated or restarted. This is useful if you rely on automated scripts to start up and shut down instances, allowing instances time to clean up or perform tasks, such as exporting logs, or syncing with other systems.

Shutdown scripts are especially useful for instances in a managed instance group (/compute/docs/instance-groups/manager) with an autoscaler (/compute/docs/autoscaler). If the autoscaler shuts down an instance in the group, the shutdown script runs before the instance stops and the shutdown script performs any actions that you define. The script runs during the limited shutdown period (#time_period) before the instance stops. For example, your shutdown script might copy processed data to Cloud Storage or back up any logs.

Shutdown scripts function very similarly to startup scripts. Much of the documentation for startup scripts (/compute/docs/startupscript) also applies for shutdown scripts.

An instance level shutdown script takes precedence over a project level shutdown script. If you configure a own script on a specific instance, the project level script isn't executed on that instance.

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).
  2. Set a default region and zone (/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).
- Learn about Startup scripts (/compute/docs/startupscript).
- Understand what the metadata server (/compute/docs/metadata) is.

Permissions required for this task

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

- All permissions required to create an instance (/compute/docs/instances/create-start-instance)
- `compute.instances.setMetadata` on the instance

Specifications

Limitations

There are some limitations to note when using shutdown scripts:

- Shutdown scripts have a limited amount of time to finish running before the instance stops:
    - On-demand instances: 90 seconds after you stop or delete an instance
    - Preemptible instances: 30 seconds after instance preemption begins
- Compute Engine executes shutdown scripts only on a best-effort basis. In rare cases, Compute Engine cannot guarantee that the shutdown script will complete.
- For Linux instances, you can use shutdown scripts only with image version **v20141007** or later. For Windows Server instances, you can use shutdown scripts only with image **v20150310** or later.

Shutdown script invocation

Shutdown scripts are triggered by certain Advanced configuration and power interface (ACPI) events (https://wikipedia.org/wiki/Advanced_Configuration_and_Power_Interface). such as restarts or terminations. There are many ways to restart or terminate an instance, but only some ways trigger the shutdown script to run. A shutdown script runs as part of the following actions:

- When an instance shuts down due to an `instances.delete` (/compute/docs/reference/latest/instances/delete) request or an `instances.stop` (/compute/docs/reference/latest/instances/stop) request to the API.

- When Compute Engine stops a preemptible instance as part of the preemption process (/compute/docs/instances/preemptible#preemption_process).
- When an instance shuts down through a request to the guest operating system, such as `sudo shutdown` or `sudo reboot`.
- When you shut down an instance manually (/compute/docs/instances/stop-start-instance#stop_an_instance) through the Cloud Console or the `gcloud compute` tool.

The shutdown script won't run if the instance is reset using `instances().reset` (/compute/docs/reference/latest/instances/reset).

A shutdown script can be of any file type. If there is a shutdown script present, Compute Engine will:

1. Copy the script to a local file in the instance.
2. Set permissions on the file to make it executable.
3. Execute the file when the instance is terminated.

You could, for example, provide a Python script instead of a bash script. Keep in mind that Compute Engine runs the script verbatim, regardless of the type of script.

To execute a script that is not bash, add a shebang line at the top of the file to let the operating system know which interpreter to use. For example, for a Python script, you can add a shebang line like:

```
r/bin/python
```

Shutdown script running time

Before an instance shuts down or restarts, the shutdown script has a limited time period to run. During this period, Compute Engine attempts to run your shutdown script. If the script takes longer than this time period to complete, the instance automatically terminates and all running tasks are ended. If you shut down or restart an instance by making a request to the guest operating system with the `sudo shutdown` command, the limit does not apply.

The length of the shutdown period is different depending on type of the instance. Preemptible instances (/compute/docs/instances/preemptible) have a shorter shutdown period than normal instances. For more information about the shutdown time limits on each instance type, see Shutdown period (/compute/docs/instances/deleting-instance#delete_timeout).

In general, your shutdown script must finish running within its shutdown period so that the operating system has time to complete its shutdown process and flush buffers to disk.

Use a local shutdown script

A local shutdown script is a script that lives on your local computer. Pass in a local shutdown script either as a file or by giving the contents directly to Compute Engine.

Shutdown scripts can perform as many actions as you need, but if you are passing in the file locally, your script cannot exceed the metadata value length limit of 256 KB. To use a script that exceeds the length limit, store your file on Cloud Storage. See Use shutdown script from Cloud Storage (#shutdownscriptstorage) for more information.

Provide a shutdown script file

You can only pass in a local shutdown script file through the `gcloud` command-line tool.

To pass in a local shutdown script file, supply the `--metadata-from-file` flag, followed by a metadata key pair, `shutdown-script=PATH/TO/FILE`, where `PATH/TO/FILE` is a relative path to the shutdown script. For example:

```
d compute instances create example-instance \
-metadata-from-file shutdown-script=examples/scripts/install.sh
```

Provide shutdown script contents directly

Alternatively, you can pass in the contents of your shutdown script directly.

Consolegcloud (#gcloud)API (#api)

In Cloud Console, specify a shutdown script directly using the `shutdown-script` metadata key:

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

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

2. Click **Create instance**.
3. On the **Create a new instance** page, fill in the properties for your instance. For advanced configuration options, expand the **Management, security, disks, networking, sole tenancy** section.
4. In the **Metadata** section, fill in `shutdown-script` as the metadata key.
5. In the **Value** box, supply the contents of your shutdown script.
6. Click **Create** to create the instance.

Provide a shutdown script on Windows instances

Run shutdown scripts on Windows instances using the following Windows-specific metadata keys. Choose from any of the specialized keys listed below. Each key should match the type of script you want to run.

You can specify multiple shutdown scripts by passing in different keys to your instance but each key can only be specified once per virtual machine.

The following keys can be used with a local shutdown script, using the same instructions (/compute/docs/shutdownscript#use_a_local_shutdown_script) above.

cmd shutdown scripts	bat shutdown scripts	ps1 shutdown scripts
`windows-shutdown-script-cmd`	`windows-shutdown-script-bat`	`windows-shutdown-script-ps1`

Use a shutdown script from Cloud Storage

You can store and use a shutdown script from Cloud Storage. Follow the instructions in the Startup scripts (/compute/docs/startupscript#cloud-storage) documentation but replace `startup-script-url` with `shutdown-script-url`.

For Windows instances, replace `windows-startup-script-url` with `windows-shutdown-script-url`.

Apply a shutdown script to running instances

To add a shutdown script to a running instance, follow the instructions in the Applying a startup script to running instances (/compute/docs/startupscript#startupscriptrunninginstances) documentation but replace the metadata keys with one of the following keys:

- `shutdown-script`: Supply the shutdown script contents directly with this key. Using the `gcloud` command-line tool, you can provide the path to a shutdown script file, using the `--metadata-from-file` flag and the `shutdown-script` metadata key.
- `shutdown-script-url`: Supply a Cloud Storage URL to the shutdown script file with this key.

Last updated 2020-07-30 UTC.